The Future of the Eurozone and Gold

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The Centre for European Policy Studies (CEPS) is an independent policy research institute based in Brussels. Its mission is to produce sound analytical research leading to constructive solutions to the challenges facing Europe today.

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The views expressed in this report are those of the authors writing in a personal capacity and do not necessarily reflect those of CEPS or any other institution with which the authors are associated.

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1. Introduction

The sovereign debt problem of the eurozone that surfaced in late 2009 made clear that the global financial crisis and economic recession are not over. In early May 2010, European leaders agreed to set up a financial stability mechanism, with a commitment to provide liquidity close to $1 trillion in total.[1] While this action took some by surprise, it certainly sent a strong signal to the market and helped extinguish the fire in the government bond markets – at least for the time being. Yet these fire-extinguishing operations were too late to prevent the development of a crisis that is essentially a eurozone banking crisis. The banking sector is now under close scrutiny and a large number of eurozone banks have been forced to take stress tests; the results and the information disclosure that they imply will be important for the future of the eurozone.

Since 2001, gold has outperformed many asset classes and is back in vogue, especially since the onset of the financial crisis of 2007 because investors view it as an alternative to fiat money or complex financial papers that are difficult to price.

The main purpose of this report is to analyse the implications of potential eurozone developments for the gold market. To this end, we address issues directly related to current eurozone conditions and explore possible scenarios for the eurozone economies in the near future.

We analyse four scenarios[2] for the future of the eurozone, ranging from the most optimistic to the most pessimistic. The first scenario, labelled the 'dream scenario', refers to a situation in which the eurozone's financial problems are resolved and quickly backed by real economic recovery. The second one, 'muddling through', is a scenario in which the eurozone experiences a mild recovery, but problems remain and it takes time to get rid of structural weaknesses in the eurozone economy. The third scenario, 'double-dip' refers to the onset of a new recession: owing to premature exit strategies from exceptional monetary measures or other exogenous shocks, the eurozone is drawn into another recession. The last one, the 'doomsday' scenario, refers to a case in which the eurozone actually breaks up. We describe each of these scenarios and draw implications for eurozone growth, financial markets, inflation rates and euro exchange rates. We do not attempt, however, to give the probability of each of these scenarios.

In order to analyse the implications of the different eurozone scenarios for the gold market, we look at how the situations described would impact on the rest of the world. The global gold market is influenced by a set of determinants that are driven not only by what happens in the eurozone directly but also indirectly by the repercussions on global conditions. Our analysis therefore additionally attempts to trace the effects of the different scenarios on the global macroeconomic variables that matter for the gold market.

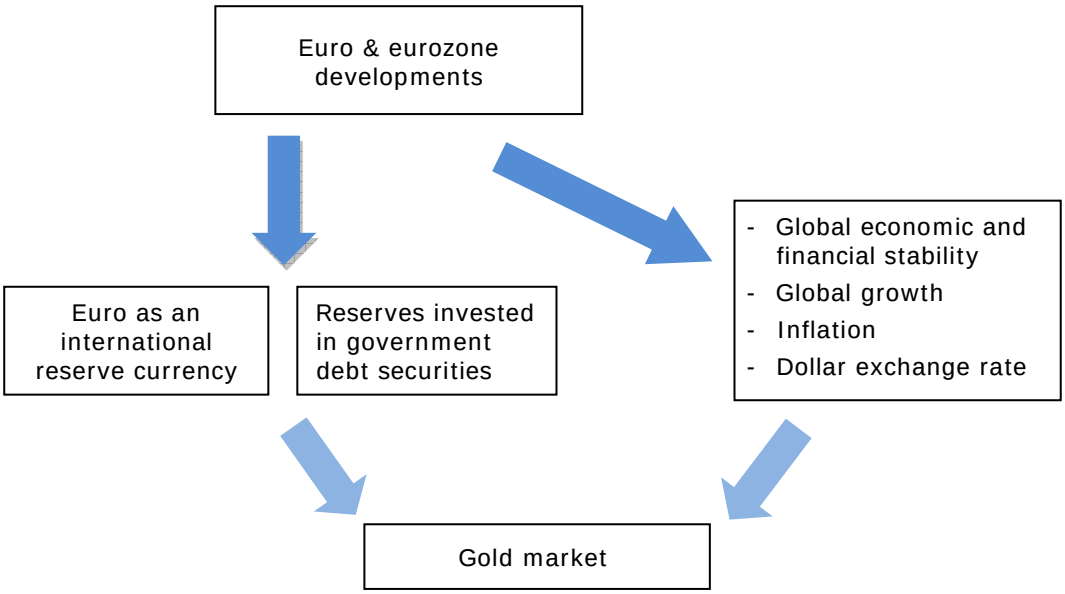
The analysis of the implications of the scenarios is structured along two main lines of reasoning. First, the euro is an international currency and more specifically a reserve currency. Macroeconomic instability and more importantly the perceived increasing risk of a breakup of the monetary union would significantly affect the demand for alternative reserve assets by central banks, namely dollars and gold. There are actually two

[1] See Box 1 for a detailed description.

[2] Some of the elements included in the scenarios are drawn from "The State of the Union" by Ralph Atkins in the *Financial Times* (31 May 2010).

dimensions to this story. When central banks hold foreign exchange reserves, they usually invest these holdings in (quasi-) risk-free, liquid assets (so the assets can be mobilised quickly for interventions in the foreign exchange market at no cost). At the global level the assets are largely represented by securities issued (or guaranteed) by governments, notably US treasuries as well as debt issued by euro area governments. The sovereign debt crisis in the euro area involves both of these dimensions of reserve assets. Official investors fear both the risk of insolvency of euro area governments[3] and a fall in the international purchasing power of the euro. Second, gold being a global asset in a global market, its price is affected by a variety of factors, such as growth in the different regions of the world, global liquidity and the US dollar exchange rate. Figure 1 summarises the linkages between macroeconomics and the gold market.

Figure 1. Linkages between gold, the euro area and global economics



This report proceeds as follows. The next section describes the main drivers of supply and demand for gold and regularities in gold price dynamics by reviewing important stylised facts and highlighting new trends that have emerged in recent years. Section 3 briefly summarises the most recent events in the eurozone, takes stock of the current situation and discusses the role of the euro in the global reserve system. Section 4 presents in detail the core contribution of this study: the construction and assessment of the four scenarios. Before moving on to outline the individual scenarios, the key economic factors and forces driving the scenarios are individually discussed. Alternative developments in each of them and their mutual interactions are depicted in the four different scenarios in section 5. Section 6 is devoted to the analysis of the potential implications of the scenarios. It includes some considerations of the likely effects of the scenarios on the global economy and reactions by the world's main central banks, namely the European Central Bank (ECB), the Federal Reserve Bank and the People's Bank of China. This completes the background for drawing the implications of each of the scenarios for the gold market. Section 7 concludes.

[3] Note that non-euro area central banks do not hold euro area debt in an indiscriminate fashion. They target AAA government securities. Although statistics are not available, there is a consensus that official investors in emerging markets, those with the largest reserve holdings, invest mainly in German and French sovereign debt.

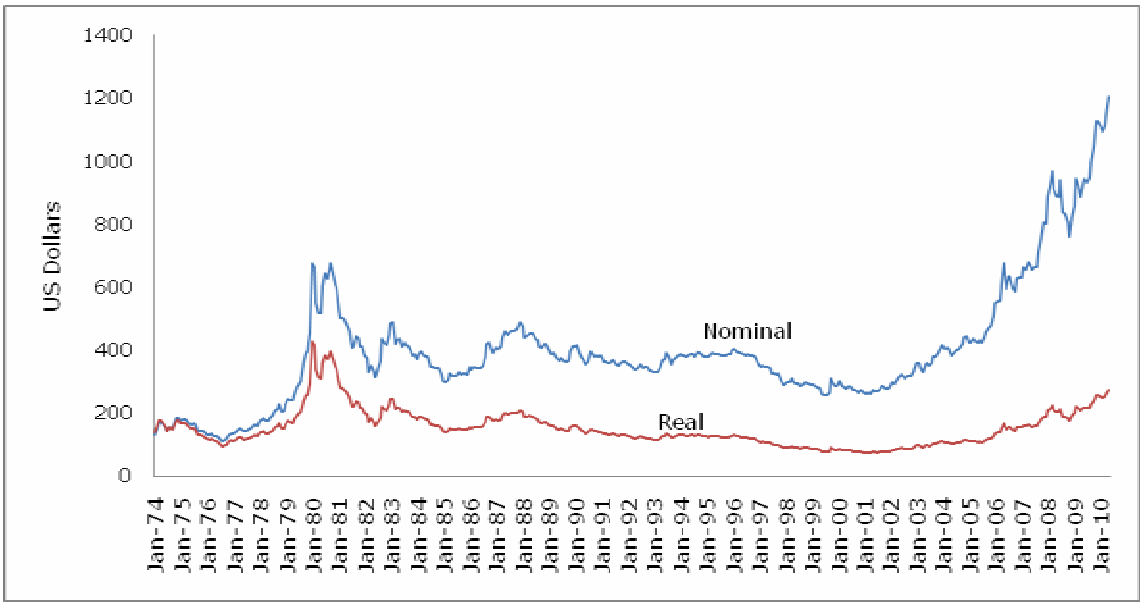
2. The economics of gold

The gold price is a complex variable. Because demand for gold is driven by various motives that are sensitive to macroeconomic conditions in different regions of the world, its dynamics are difficult to anticipate but also to fully explain. The next section provides an account of the main stylised facts.

2.1 Stylised facts

Since the collapse of the Bretton Woods system in the early 1970s and the end of the system of fixed exchange rates, the gold price has followed a clear, long-term upward trend accompanied by short-run, sometimes wide, fluctuations (see Figure 2). During the 1970s, the gold price rose on the waves of international turbulence linked to the Iran–Iraq war, the Soviet invasion of Afghanistan, the second oil crisis and the resulting increase in inflation in Western countries. Since 2001, the price of gold has risen sharply, maintained by a relatively weak supply of gold.[4] Geopolitical tensions since the 11 September terrorist attacks, the emergence of new markets in developing economies, growing speculation about the large US current-account imbalances and the required correction through a significant depreciation of the dollar have contributed to the upward trend and higher volatility.

Figure 2. Gold price in US dollars per ounce (based on the London pm fix) (1974–2010)



Note: Real gold price at 1974 prices, deflated by the US consumer price index.

Sources: World Gold Council and Federal Reserve Economic Data.

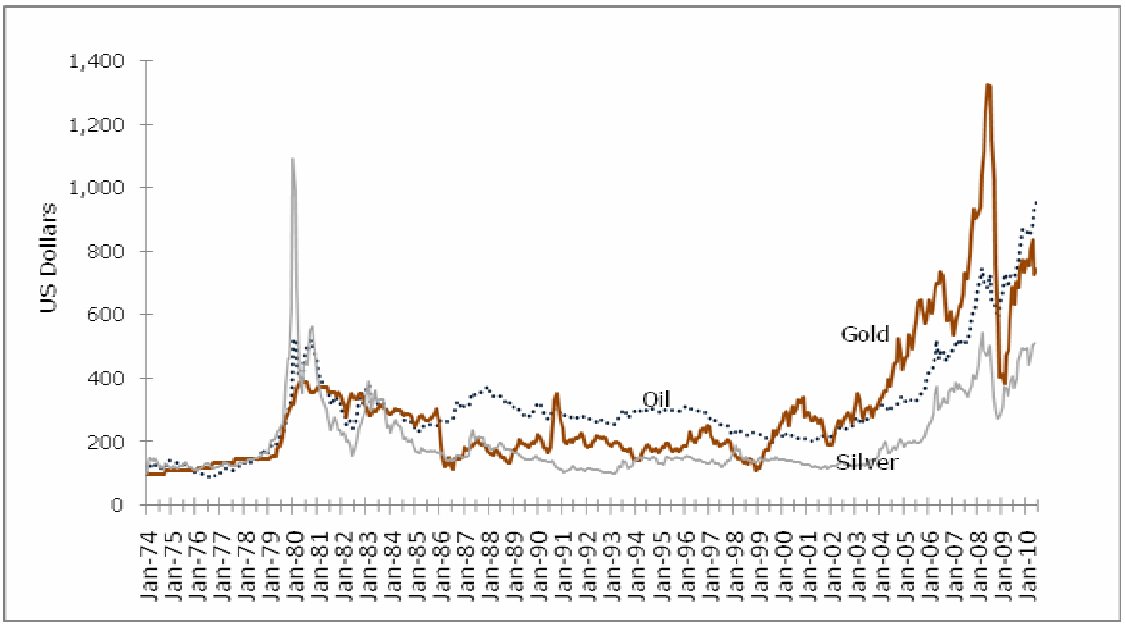
The weakness of the dollar and the US being first hit by the crisis in summer 2007 led to a rise from $665 per ounce in July 2007 to $968 per ounce in March 2008. After that, the price fell as a consequence of depressed demand at the global level and developing countries scrapping old gold to sustain their income. Then two other sequences of price increases began. The first one was mainly prompted by fears over inflation fuelled by an expanding money supply. The second one picked up around the start of 2010, driven by the rebound of demand for jewellery coming from India, central bank purchases (while

[4] Gold producers reduced their hedge books from 2001 to 2004, and a decline in official sales occurred in 2004. See the gold price chronology 1971–2007.

the signatories to the third Central Bank Gold Agreement almost stopped their net sales) and the sovereign debt crisis in peripheral eurozone countries. The price of gold hit new highs, with the monthly price (based on the London pm fix) at $1,127 per ounce in November 2009 and above the $1,200 barrier in June 2010.

As shown in Figure 2, since the eruption of the financial crisis in late summer 2007, the gold price has almost doubled in nominal terms. But in real terms, it has not reached the record set in early 1980. Figure 3 suggests that other commodity prices, like oil and silver, have experienced a similar upward trend but with a different degree of volatility.

Figure 3. Prices of gold, oil and silver in US dollars, 1974–2010 (1974=100)



Note: Nominal prices in US dollars with initial prices normalised to 100.

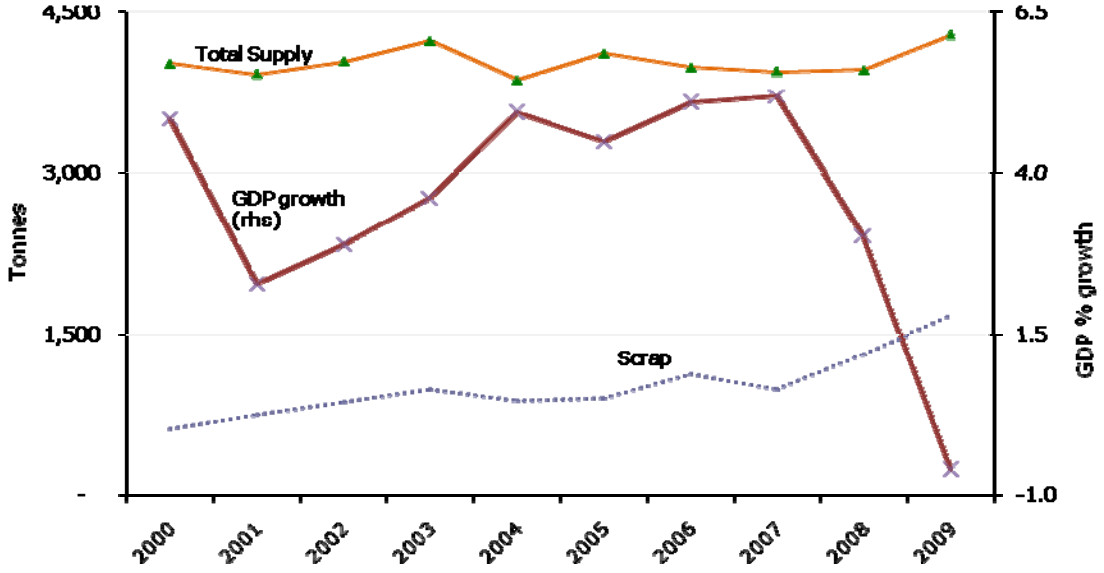
Sources: World Gold Council, London Bullion Market Association and Federal Reserve Economic Data.

Historically, the gold price and the silver price tend to move closely and the distance between the two has been relatively stable for more than two decades. The co-movements are explained by both silver demand (mainly coming from industry) and some components of gold demand (like jewellery and industry) being pro-cyclical in nature. Since 2007, however, this distance has widened significantly as the gold price has increased at a much faster pace than the silver price. The main reason for this is that unlike silver, gold is also a store of value. When this motive for gold demand prevails gold price can deviate considerably from silver price movements.

This brings us to the analysis of the main drivers of supply and demand for gold.

While gold production from mines is relatively price inelastic and does not change abruptly, demand can be subject to rapid changes and can be satisfied to some extent by existing stocks. The most volatile component of the supply of gold is scrap. This component tends to behave in a counter-cyclical fashion: in times of economic downturn or recession, people swap their gold jewellery for cash in order to sustain income (see Figure 4). Yet during 2009, data from India, one of the most important markets for jewellery, indicate an increase in the jewellery sold to dealers despite not showing a fall in income. Most likely the escalation in the price of gold combined with uncertainty about whether this trend will continue provided a strong incentive to sell gold.

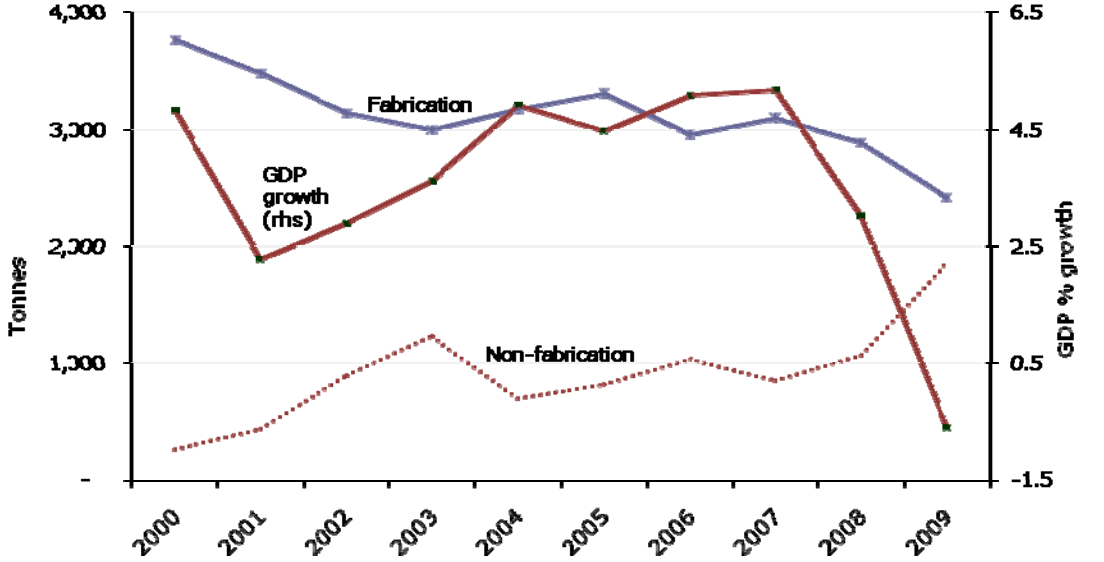
Figure 4. Supply of gold (total and scrap) and world GDP



Sources: GFMS and World Economic Outlook (April 2010).

In general terms, demand is relatively more volatile than supply – which is one reason for price volatility. Given its different uses, gold demand is driven by various motives that are sensitive to the macroeconomic environment in diverse fashions and can even affect the price in opposite directions. The main drivers of gold demand are fabrication (jewellery and industry) and investment, private and official. As shown in Figure 5, jewellery and industrial demand tend to be pro-cyclical, while investment demand can decouple from the economic cycle.

Figure 5. Demand for gold (fabrication and non-fabrication) and world GDP growth



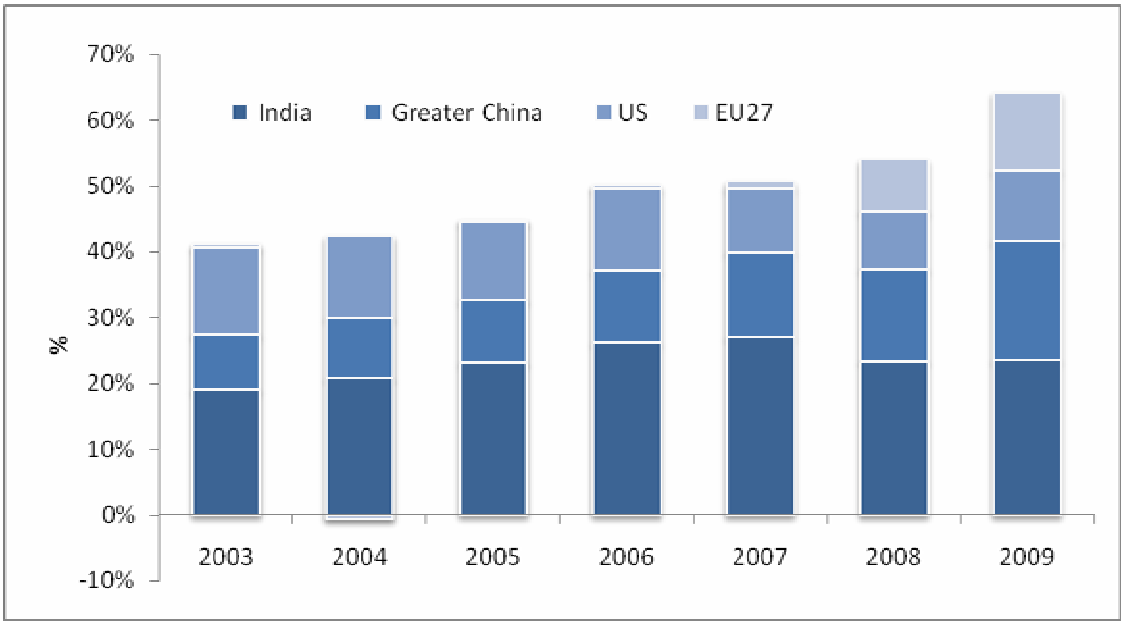
Notes: Fabrication includes jewellery, industry and coins. Non-fabrication is residual demand and includes investment, bar hoarding and net official purchases.

Sources: GFMS and World Economic Outlook database, April 2010.

In times when uncertainty about the return on conventional investment increases, investment in gold becomes more attractive regardless of the fact that gold offers neither a dividend nor a coupon. This has especially been the case in the aftermath of the financial crisis of 2007–08. The crisis showed an inherent fallacy in the financial system: its inability to price sophisticated financial papers, which has induced some investors to shift towards tangible assets, and given the recent bust in the housing market, gold has turned out to be an appealing option.

An important element to keep in mind is that neither the eurozone nor the US is primarily the biggest source of demand for gold.[5] As shown in Figure 6, total consumer demand for gold (i.e. gold bought by individuals, which excludes official sector purchases) primarily comes from India, China and only to a lesser extent from the US and Europe. In particular, over the past five years (2005–09), 63% of the demand was for jewellery and came mainly from India, China, Turkey and the Middle East.[6] Thus to gain an understanding of gold demand dynamics, it is crucial to follow closely developments in Asian economic growth.

Figure 6. Shares of total consumer demand (i.e. jewellery and net investment) for gold per region (2003–09)



Notes: The Greater China region comprises Mainland China, Hong Kong and Taiwan. The figures for Europe do not include jewellery.

Sources: World Gold Council and GFMS.

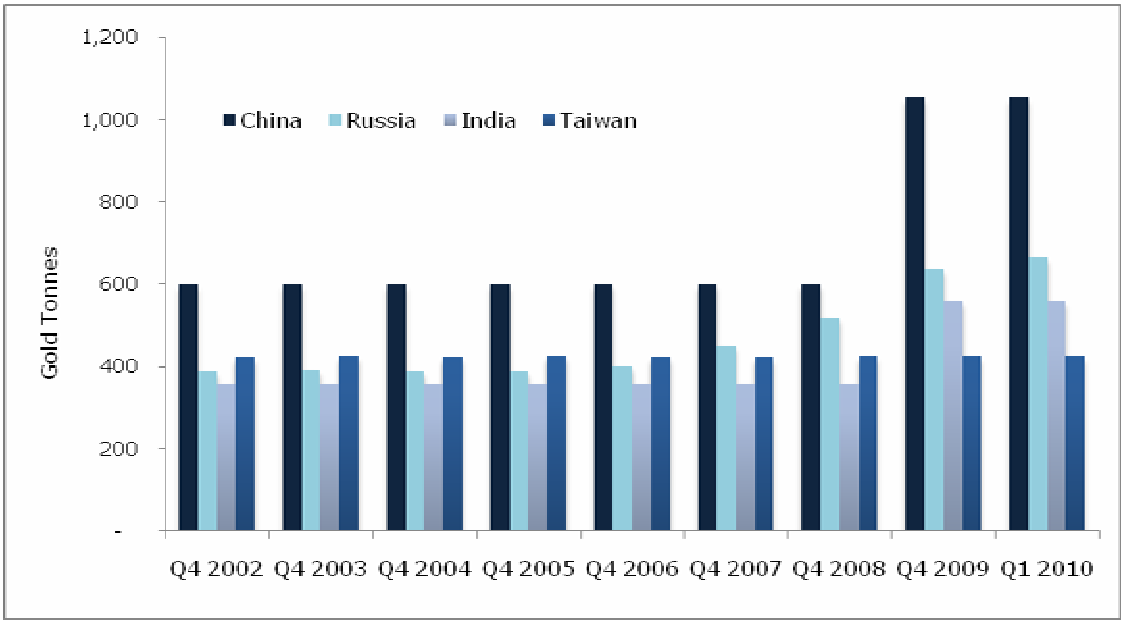
Because gold is a 'hard' asset, its purchase is also driven by hedging motives. Even if the gold price tends to be volatile and therefore gold is not a risk-free asset, it is an extremely liquid asset. Moreover, its purchasing power increases when the purchasing power of international (reserve) currencies declines. This is notably the case in times of high inflation or financial and macroeconomic instability in the country(ies) supplying international currencies. For these same properties, although gold does not have any formal role in the present global financial system, it continues to be used by central

[5] The US and Europe matter mostly for the investment.

[6] See GFMS for a regional breakdown of demand data.

banks as a reserve asset. In Western countries, central banks' gold holdings showed a steady decline after the 1970s, but following the eruption of the crisis central banks turned from being net sellers to net buyers. At present gold represents 71% of total US foreign exchange reserves and 58%[7] of the total holdings of the eurozone (i.e. national central banks plus the ECB). As shown in Figure 7 some central banks in emerging markets, which are now the largest holders of foreign reserves, have been increasing their holdings of gold in recent years. Their current gold holdings are still small, but the key question is whether they could be induced to diversify more into gold if their confidence in the euro as an alternative to the dollar deteriorates. At present, it is estimated that China's gold holdings amount to about 2%[8] of its total reserve assets (equivalent to roughly $2.5 trillion) but around 20% of them are in euro-denominated assets. It is thus clear that the potential increase in gold demand by Asian central banks could be very large indeed if they were to switch even only a fraction of their euro holdings into gold.

Figure 7. Gold official purchases, in selected emerging market countries



Note: The purchase of 454 tonnes of gold by China, announced in April 2009, took place over the six-year period 2003–09.

Source: World Gold Council.

Overall, it emerges that macroeconomic conditions affect gold market dynamics in a complex way. The literature has attempted to disentangle these factors by identifying historical regularities in the behaviour of the gold price.[9] The most relevant variables are growth, the US inflation rate, the global money supply and the US dollar exchange rate. There is also some evidence that measures approximating political and financial risks contribute to explaining short-run volatility.

[7] The eurozone and the US are the largest official holders of gold, i.e. about 20,000 tonnes or more than 60% of the world holdings.

[8] See the World Gold Council website publications on reserve asset statistics, in particular the world ranking of official gold holdings (http://www.gold.org/).

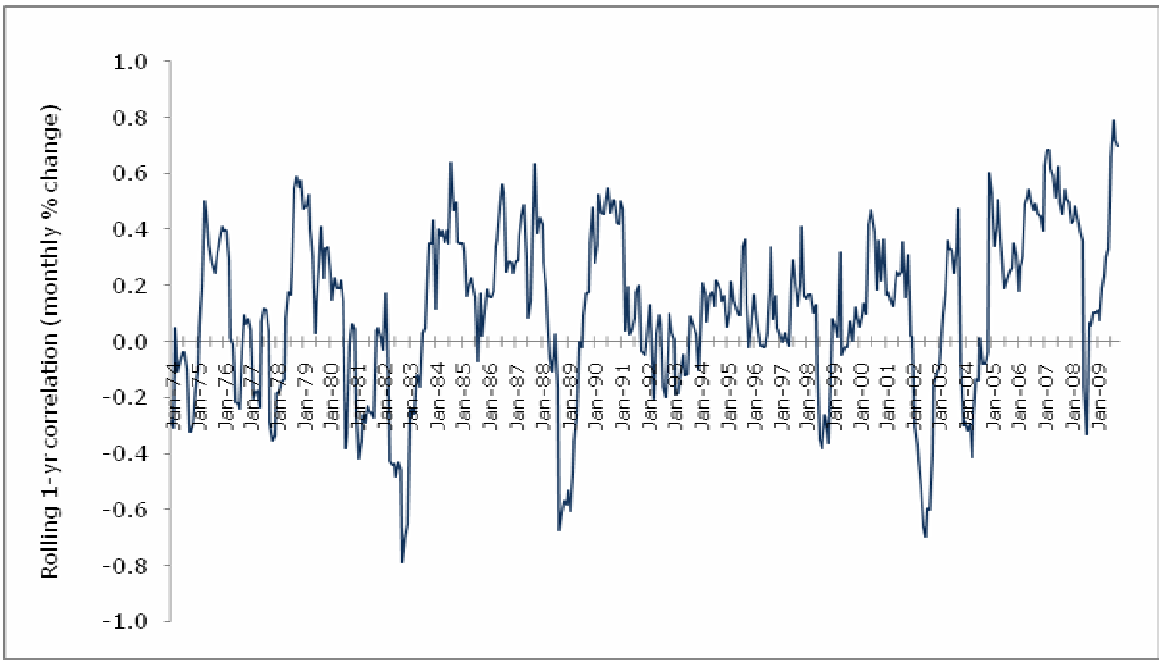
[9] See Levin & Wright (2006), Starr & Tran (2007), Attié & Roache (2009) and Artigas (2010).

The next section illustrates some stylised facts in terms of the correlation between the gold price and relevant macroeconomic variables.

2.2 Gold correlations

As mentioned earlier, a broad consensus exists about gold acting as a hedge against inflation. Figure 8 shows the rolling one-year correlation[10] between the monthly gold price denominated in US dollars and US inflation.

Figure 8. Correlation between the gold price and the US inflation rate (1974–2010)



Sources: International Monetary Fund (IMF) (International Financial Statistics database) and World Gold Council.

On average, a positive relationship holds, even if over some specific periods the sign becomes strongly negative. This was the case at the beginning of the 1980s when several geopolitical events materialised and affected the world's financial markets and gold price. Similarly over 1988–89, the appreciation of the US dollar[11] and the higher supply of gold generated downward pressures on the gold price despite almost flat inflation. Between end-1991 and end-1993, and again in 1998, long-standing low and negative levels of correlation can be observed. In 1991 inflation fell abruptly while the gold price stayed relatively stable, and in 1993 the gold price increased slightly owing to inflation fears, but at the same time tighter monetary policy started to reduce inflation. Then in 1997, in the aftermath of the Asian crisis and a reduction in gold demand its price also fell, while inflation started to rise again after a long period of decline. Another negative spike emerged after the dot-com bust of the early 2000s. In 2002 inflation started to fall in the US while the gold price picked up driven by strong investment

[10] The correlation is calculated between the monthly percentage changes of each set of series on intervals of 12-month periods. The date shown on the horizontal axis represents the middle date; it therefore represents both past and future trends.

[11] The 12-month rolling correlation between the gold price and the US dollar exchange rate reached -0.56 on average over the period 1988–89, with a negative peak at -0.76.

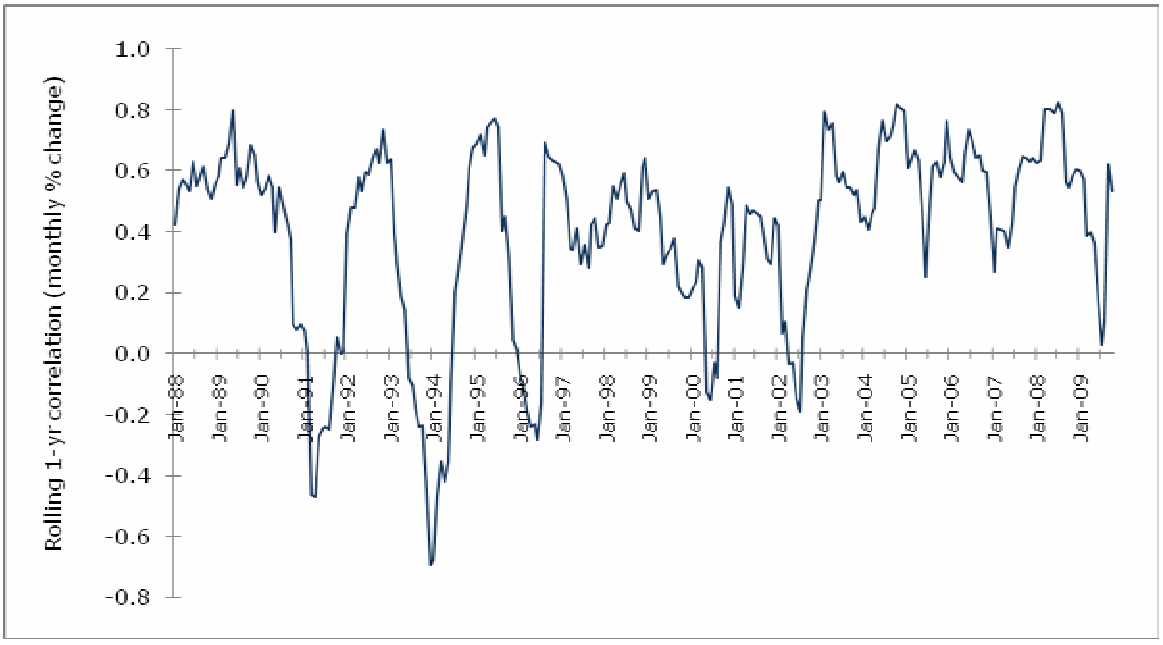
demand in advanced economies on the wave of diminishing returns on stocks and growing global uncertainty.

During 2008, a sharp drop in the level of correlation occurred again. Like 2002, this was largely the effect of the financial crisis and the high degree of uncertainty in financial markets.

As a response to the financial crisis of 2007, unprecedented liquidity-easing measures[12] were put in place by the main central banks (the ECB, the Federal Reserve, the Bank of England and the Bank of Japan) to avoid a financial meltdown. This response was reflected in an accelerated increase in liquidity: the annual M2 money supply of the G4 (the US, the UK, the eurozone and Japan) grew on average from 9% to 15% between mid-2006 and mid-2008.

Loose monetary policies and increasing global liquidity tend to generate positive expectations of inflation and therefore to affect the gold price before inflation materialises or even if it does not materialise. As shown in Figure 9, gold and the world money supply have mostly been moving in the same direction with an average coefficient of 0.40 between growth in the money supply and changes in the gold price. There have been a few exceptions, mainly during the 1990s. The lowest level was reached in the period 1993–94, when the decline in the US money supply to fight inflation fears met an increase in the gold price due to the lack of central banks' sales and strong demand driven precisely by inflation expectations.

Figure 9. Correlation between the gold price and the global money supply (M2 in G4 countries), monthly changes



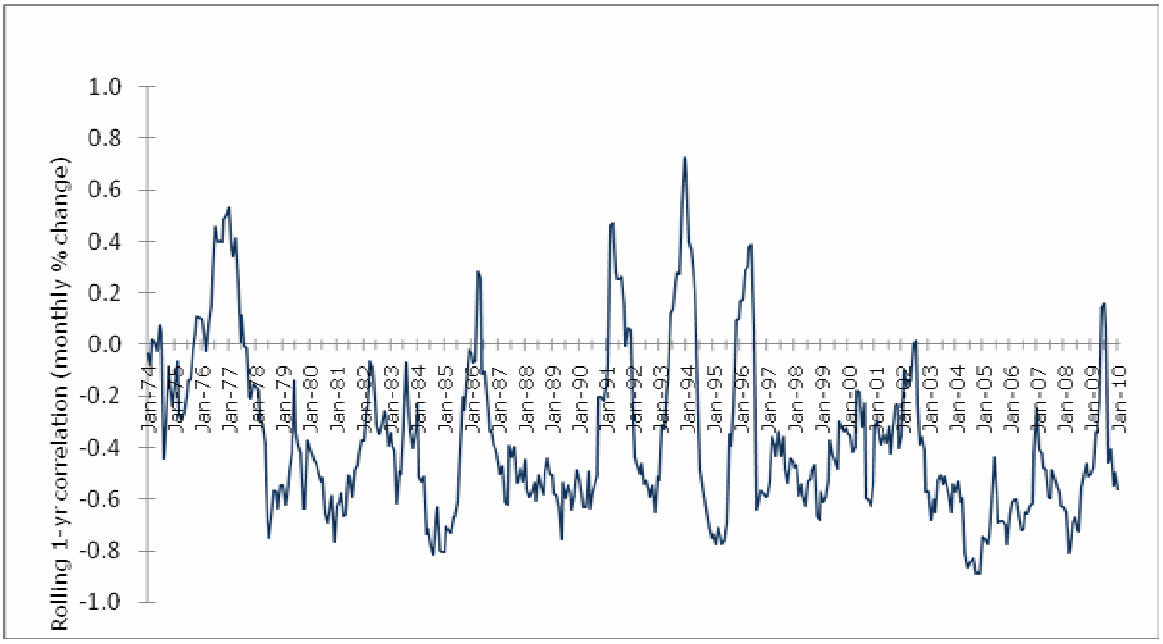
Notes: The global money supply is defined as the sum of M2 money for the G4: the euro area, Japan, the UK and the US, in US$ billions. The chart starts in 1988 due to data shortcomings (the lack of M2 aggregate for the UK).

Sources: IMF (International Financial Statistics database), Federal Reserve Economic Data, Bank of England statistics, ECB (Statistical Data Warehouse) and the World Gold Council.

[12] The US started to lower its policy interest rate in September 2007, to reach a range of 0.0-0.25%. The Bank of England closely followed the Federal Reserve's policy. Reactions from the ECB and the Bank of Japan took place much later, in October 2008.

Another variable with respect to which the gold price tends to show regular behaviour is the US dollar exchange rate. The gold price being denominated in US dollars, exchange rate movements are one of the sources of volatility observed in the gold price. As shown in Figure 10, the gold price is negatively correlated to the US dollar exchange rate against major currencies.[13] Indeed, a depreciation of the US dollar makes gold less expensive for investors outside the US, which induces a rise in the demand for gold and an increase in its price. Moreover, gold is a hedge against a weak dollar. Dollar depreciation implies a loss in the purchasing power of international investors, who therefore tend to shift their preferences in favour of an alternative asset like gold. There are a few exceptions to this expected behaviour. Interestingly they have corresponded to the deviations from the expected correlation between the gold price and inflation that we highlighted earlier, against the background of monetary policy decisions or external shocks.

Figure 10. Correlation between the gold price and the US dollar exchange rate (1974–2010)



Note: The US dollar exchange rate is defined as a weighted average of the foreign exchange value of the US dollar against the currencies of a broad group of major US trading partners (for more information about trade-weighted indexes, see http://www.federalreserve.gov/pubs/bulletin/2005/winter05_index.pdf).

Sources: IMF (International Financial Statistics database), Federal Reserve Economic Data and World Gold Council.

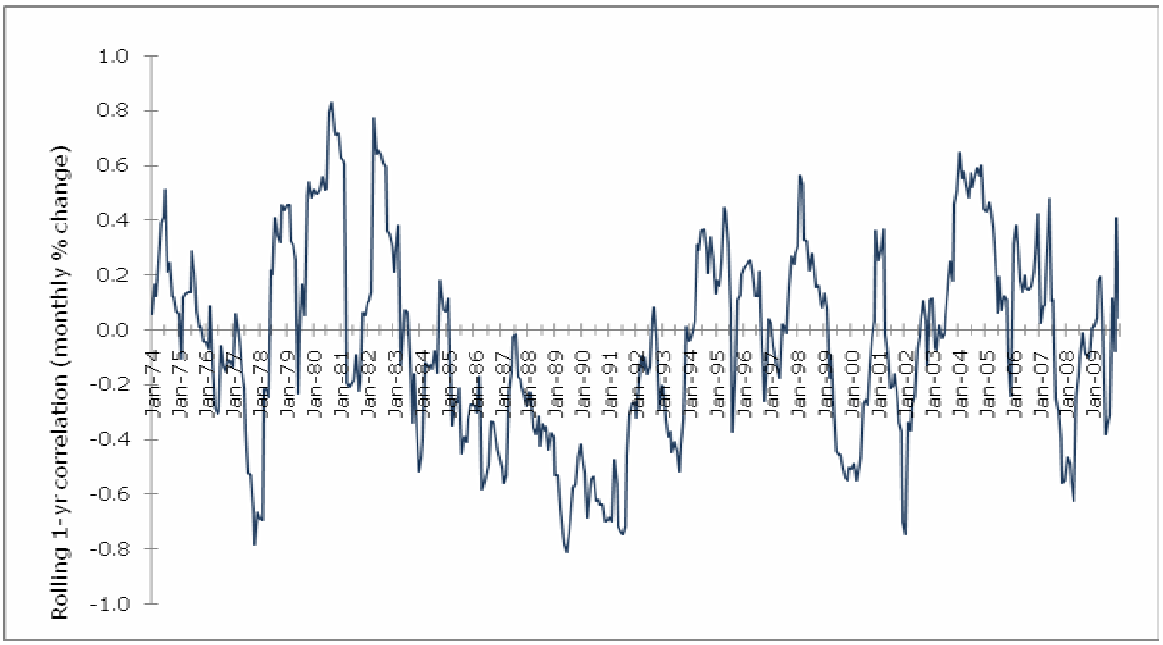
It may also be interesting to compare an indicator of the stock market with the gold price. Indeed, the return on a conventional investment like shares can be seen as the opportunity cost of holding gold. If the opportunity cost of holding gold were higher, investors would prefer assets that give greater returns, and would reduce their demand for gold.

The literature is not clear on the existence of such a negative correlation. As shown in Figure 11, the correlation between gold and the S&P 500 has historically been low, but

[13] The US dollar exchange rate is defined as a weighted average of the foreign exchange value of the US dollar against the currencies of a broad group of major US trading partners.

there is some evidence that the negative relationship holds particularly during short periods of high financial and political distress. Examples of it are the periods of October 2007–September 2008 and November 2008–April 2010, when the rolling 12-month correlation between the gold price and the index was at -63% and -10% (on average), respectively.

Figure 11. Correlation between the gold price and Standard & Poor's 500 Composite Index (1974–2010)



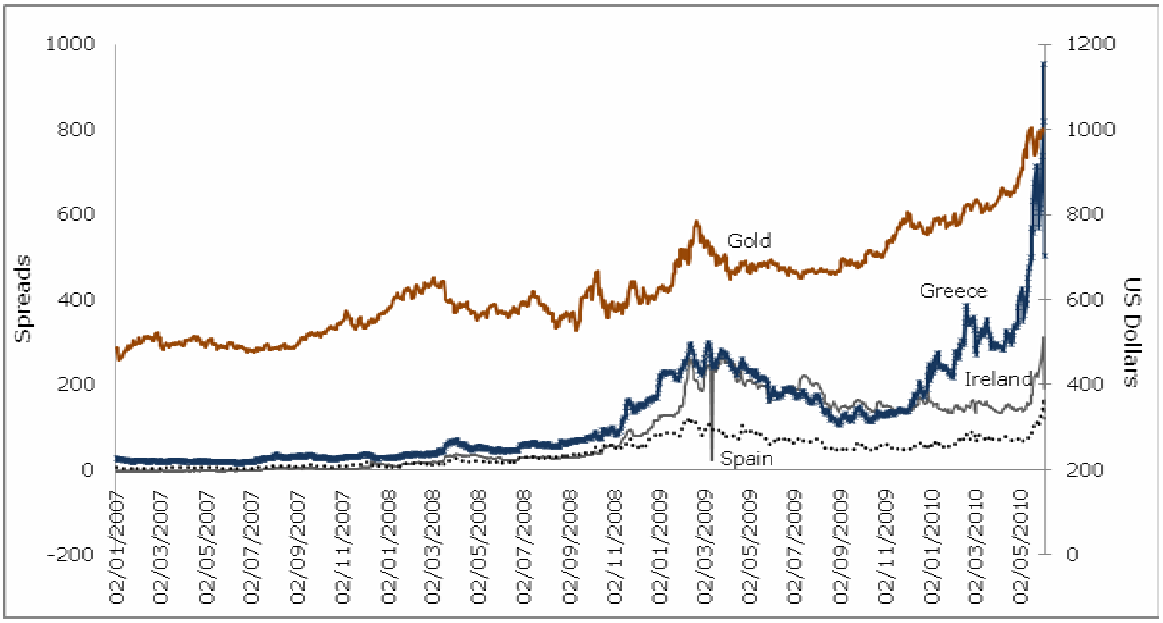
Sources: ECB (Statistical Data Warehouse) and World Gold Council.

Overall, the correlations shown above seem to suggest that some regularity tends to hold over quite long periods, but there are also special times during which the sign of the correlation is reversed. Such a period has been observed since 2007. During this period, characterised by low inflation, increasing liquidity in the global market, economic recession and significant fluctuations in the US dollar, the gold price has experienced a sharp upward trend.

It would be safe to say that high levels of global uncertainty and risk aversion have been the main drivers of this trend, often obscuring the effects of other macroeconomic variables.

Lastly, to gain a sense of the role played by the eurozone sovereign-debt crisis at the global level, Figure 12 plots the high frequency (daily) sovereign spreads in some peripheral eurozone countries against the gold price. Although the period is quite short and care must be taken not to read too much into the results, the picture displays a positive and rather close correlation, suggesting that the impact of the risk surrounding the eurozone on the gold price may be not negligible.

Figure 12. Sovereign spread in selected euro area countries and the gold price



Note: Spreads are defined as the difference between the yields on five-year government bonds and the benchmark bond, i.e. five-year German Bund.

Sources: Bloomberg and the World Gold Council.

3. The eurozone and the euro

The worst financial crisis since the 1930s showed its first symptoms in the US in the late summer of 2007, reaching its peak in September 2008 with the collapse of Lehman Brothers. The crisis quickly took on a global dimension. At first there was no doubt that the epicentre of the crisis was the US and that emerging economies and good old Europe were merely victims of contagion spread by deep financial and commercial interlinkages with the US economy. As far as Europe is concerned, however, that assessment turned out to be wrong. While Europe has not experienced a widespread subprime crisis (although it has had its own subprime version: Greece) or any bank defaults, the European banking system is huge, highly integrated and inherently fragile. Several banks have already benefited from national governments' financial support to avoid collapse. Since early 2010, the financial crisis has started to assume a different character in the eurozone, that of a sovereign debt crisis with a precise geographical connotation. It is now clear that the epicentre of the second act of the crisis could be the eurozone.

3.1 The state of the eurozone

One aspect that is often not well appreciated is that although in early 2010 the focus was on Greece and its profligate government, the fundamental condition for fixing the effects of the crisis is the recognition that the entire European banking system has a problem. In May 2010, euro area governments reached a historical agreement about pooling together €500 billion to create a rescue fund, through extended EU balance-of-payments assistance and the European Financial Stability Facility (EFSF), for eurozone member states in financial distress (see Box 1).

Box 1. The European Stabilisation Mechanism

On 9 May 2010, the European Stabilisation Mechanism (ESM) was created to preserve financial stability in Europe and especially to preserve or to restore the sustainability of public finances of the beneficiary member states. The ESM should allow the EU to respond to a financial crisis in a coordinated, rapid and effective manner by helping a country in financial distress, although its activation is subject to strong conditionality.

The ESM consists of an aid package of up to €750 billion provided by three different entities: €60 billion by the EU (EU budget), €440 billion by the European Financial Stability Facility (EFSF) and up to €250 billion by the IMF.

European resources will be depleted successively. In a first step, the EU – backed by the EU budget – can borrow up to €60 billion in financial markets and issue a loan to a member state in financial difficulty. The amount is available to all EU member states. In a second step, if the amount provided by the EU budget is depleted, the EFSF – established on 7 June 2010 for a period of three years (until 30 June 2013) – can provide additional financial aid up to €440 billion. This is only available to members of the euro area.

To finance the loans to the requesting member state, the EFSF will issue bonds (Eurobonds), notes, commercial papers, debt securities and other financing arrangements. These funding instruments will be backed by unconditional and irrevocable guarantees of euro-area member states on a pro-rata basis, amounting to a total of 120% of the amount raised in financial markets. This implies that the 16 countries will offer guarantees of up to €528 billion. This over-collateralisation of the EFSF funds is necessary to ensure that if one or more countries steps out, there are still enough resources available. In fact when a country asks for help, its contribution disappears and the quota of the others increases proportionally. Yet the countries have put a ceiling on the possible increase in the national contribution, up to 120% of their quota. Some simple arithmetic suggests that this ceiling makes sure that if Greece (which has already stepped out), Ireland, Portugal and Spain step out, the commitment of the other 12 countries still guarantees resources amounting to €440 billion, but in this case the extra guarantees would have vanished. A cash reserve will act as an additional cash buffer.

The IMF is expected to participate in the financing arrangements, complementing the EU's commitment by 50% of the EU's contribution.

Despite the impressive sum committed, the euphoria in the markets lasted no more than a single day. There are two main reasons market confidence was not restored by the agreement. First, country-specific problems, namely the Greek risk of insolvency and Spain's bank losses related to the real estate bust, were not officially recognised as problems and therefore they were not properly addressed. Second, large swathes of the European banking system remain vastly undercapitalised. According to the statistics of the ECB, in the euro area's banks the liabilities (including interbank debt) are about 20 times larger than the capital (and reserves).

If we assume that in the case of Greece losses amount to 50% of total government debt (i.e. €150 billion) and in the case of Spain 30% of its GDP (i.e. about €300 billion of housing overhang) (see Gros, 2010a), the EFSF would be amply sufficient to deal with all of these – provided these potential losses are clearly identified and the funds earmarked to deal with them. This has not been the approach followed so far, however.

Instead, European funding is only supposed to bail out governments, which in turn need the money to bail out their banks. But given the 20:1 liability-to-capital ratio in the banking sector, this arrangement implies that the funding requirements to ensure the stability of the eurozone banking system could still become astronomical despite €450 billion of potential losses.

As the above discussion shows, a tough stress testing of euro area banks, followed by mandatory recapitalisation, would help reduce public funding rather than extend it through the provision of blanket guarantees to everybody.

3.2 The euro as a reserve currency and government debt[14]

As mentioned in the introduction, one of the reasons the euro is under the spotlight is that the euro is an international and reserve currency.

Traditionally a reserve system is defined by the currency around which it is centred and this currency plays two different roles: it provides a peg for the non-free-floating currencies while at the same time it is the currency in which official reserves are accumulated. In the present reserve system, the dollar is the dominant currency while the euro plays a second-fiddle role, without ever substantially threatening the supremacy of the dollar.

Indeed there are practical obstacles to large-scale currency diversification that are not always appreciated.[15] Reserves being held in rather risk-free assets, the availability of deep and liquid markets for such assets denominated in the potential reserve currencies is a precondition for diversification. If we assume that bank deposits fit into this category, there does not seem to be any constraint on their availability: big international banks will be equally happy to accept deposits in dollars or euros. Yet in normal times at least, the remuneration on those assets will be lower than on marketable securities. Moreover, this crisis has shown that bank deposits may not always be viewed as being without risk.

If one looks at the size of the market for the kinds of short-term, safe and liquid securities required by authorities for their currency reserves, the advantages of the US quickly become apparent. Of course, by its sheer size, the euro market of government debt securities looks comparable to that of the US.[16] But the US market of quasi-risk-free securities (government debt securities, government-sponsored enterprises (GSE) debt and agency-backed mortgage pools), which are also of interest to reserve holders, is much larger than any quasi-risk-free euro market.[17] Figure 13 shows that on this account the US market is more than double that of the euro area.

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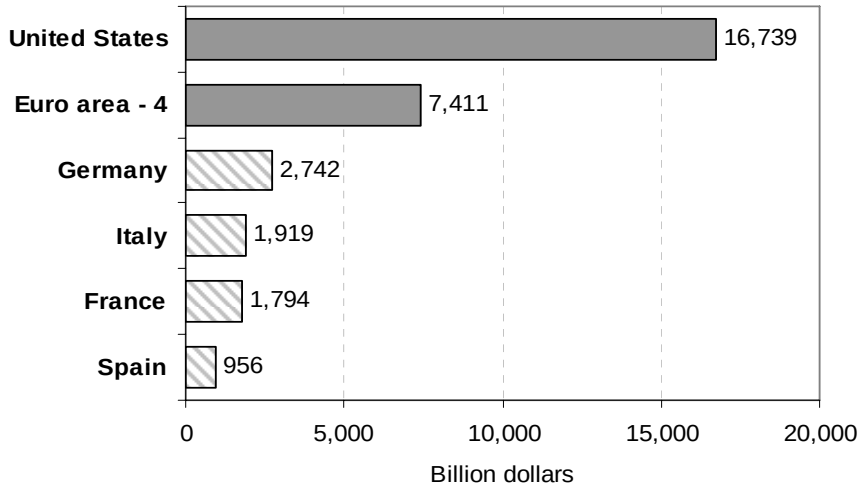
[14] See Alcidi et al. (2010).

[15] The past accumulation of reserves raises another 'practical' question. Given the accumulated amount, would a significant move out of the dollar into other currencies (the euro in particular) have disruptive consequences? The size of the international portfolios in place now makes this much less likely than just a few decades ago: during the last few years, cross-border capital flows have intensified and the size of the balance sheets of the different economies have increased significantly. Shifting some of the huge amount of reserves accumulated, say from the dollar to the euro, would of course put a downward pressure on the dollar. But provided such a move does not provoke a brutal change in exchange rate expectations – that is, provided it takes place in an orderly fashion – this pressure does not have to lead to a deep fall of the dollar against the euro.

[16] According to data from the Bank for International Settlements (BIS), as of December 2008 the outstanding amount of domestic government securities issued by euro area countries represented 22% of the world's public debt market, while Japan represented 30.6% and the US 26.5%. Despite its huge size, the Japanese government debt market offers limited potential for international investors for two main reasons: i) Japan's prolonged current-account surpluses have made it possible for government debt to be held domestically and ii) public debt is largely held by domestic (private and public) financial institutions.

[17] In Europe, GSE securities do not exist, but Pfandbriefe-style instruments can be considered a close substitute. Hence the quasi-risk-free securities market in Europe includes government securities and covered bonds, which is a larger set than Pfandbriefe-style securities, strictly speaking, but with similar characteristics.

Figure 13. Quasi-risk-free securities at the end of 2008



Notes: Euro area-4 includes Germany, France, Italy and Spain. The exchange rate to convert euros into US dollars at the end of 2008 (ECB): $1.4 per €1. US quasi-risk-free securities include federal, state and local government securities, GSE debt, and agency- and GSE-backed mortgage pools, and are taken from the Fed Z1.

Sources: National agencies and treasuries. Data on covered bonds are from the European Covered Bonds Council (provisional statistics for issuance and outstanding covered bonds, August 2009).

Furthermore, the European market for public debt is fragmented, and so are the markets for European covered bonds. The risk premia that have arisen in early 2010 on the markets for the public debt of several countries, notably Greece, provide evidence of the large differences in the quality of government securities across euro area members. In reality the size of the largest market for AAA-rated, euro-government securities, the German one, is less than a fifth that of the US. Even adding the only other large AAA country (France) yields a total asset supply of less than a third that of the US.[18] This suggests that, up to now at least, the euro area has not been playing in the same league as the US in terms of providing the liquid and safe assets demanded by the reserve-accumulating authorities.

One of the issues for the coming years is to find out whether this situation could change and euro-denominated securities could provide a valid alternative to the dollar-denominated markets (see Box 2 on the possible effects of the introduction of Eurobonds). It is not always appreciated, however, that this would require fundamental changes in the constitution of the eurozone. A key conceptual difference between the eurozone and the US (or other nation-states) is that in the latter case the government can issue assets that have zero default risk because of 'fiscal dominance': the government could always order the central bank to 'print' the money needed to service the public debt. That is not the case in the euro area, where the ECB has been explicitly prohibited, by law, from financing (national or EU) public debt. The experience of Greece shows that no individual national government could ever hope to monetise its debt through the ECB; and in practice it would also be close to impossible for a coalition of

[18] As can be inferred from Figure 13, even lumping together the two significant AAA-rated governments in Europe (Germany and France) and adding the covered bonds issued in those two countries, one arrives at a 'market' of only about a quarter that of the US market for quasi-risk-free assets.

many member states to force the ECB to do this. On the one hand, the textbook notion of a 'riskless' asset thus cannot be applied directly to the case of the euro area. On the other hand, it is necessary to recognise that in the case of the US, the fact that the US Treasury could always impose debt monetisation on the Federal Reserve eliminates the explicit risk of default, but neither the risk of inflation nor ultimately that of 'implicit default' in the event of hyperinflation.

Box 2. Might the issuance of Eurobonds change the picture?

One of the questions that arises is whether the creation of a single market for euro-area government bonds, i.e. a Eurobond market, could help overcome at least some of the obstacles to currency diversification and affect the supply of reserves.*

The creation of a Eurobond should result in the unification of the currently fragmented market for European public debt. Bonds of the same coupon and maturity would be both indistinguishable and interchangeable in secondary markets irrespective of the issuing country. The creation of a common Eurobond has been on the table since the creation of the euro but it has never seen the light of day. In good times, its cost has always been seen as too high and in bad times the perceived benefits have never seemed large enough. More recently, however, alternative proposals for Eurobonds have been made and the current debt crisis and the financial stabilisation mechanism may give momentum to these ideas. Indeed the first step towards the unification of the European markets for government debt securities and the issuance of a common Eurobond could be seen in the set-up and implementation of the ESM.

The EFSF will issue Eurobonds to collect necessary funds to extend loans to troubled countries. Hence, it represents a step towards the creation of such a common market for this kind of security and a test before the international markets.

Five theoretical proposals regarding the characteristics and the scope of a future Eurobond have been made. They are summarised in a table in the appendix. The basic idea about how a Eurobond could be put in place is more or less the same in all the proposals. But the exact method of implementation varies and the Institut Montaigne in particular takes a very different approach from the other four proposals.

It is proposed that Eurobonds are issued by a central issuing authority and each bond issue will be collectively guaranteed by the euro member states. The maximum amount of debt to be issued in Eurobonds is restricted to 60% of GDP, thus putting an upper limit on the size of the emerging Eurobond market. National sovereign-debt markets would continue to co-exist alongside the Eurobond market and they would be used for additional borrowing. The credit ratings of debt issued in national markets would be country-specific. The advantages of a common bond market are expected to be manifold, the most important being the expected increase in liquidity and the resulting attractiveness of the euro as a reserve currency.

* Note that traditional 'Eurobonds' have been traded in financial markets for a long time. Issued by private enterprises with a good credit standing, governments and supranational entities, they are bonds that are denominated in a currency not native to the country where they are issued (e.g. Euroyen bonds or Eurodollar bonds). The term 'Eurobonds' in the present context refers to the issuance of European public debt denominated in euros by the euro member states in a common market.

Still, for the time being an important issue is where the bulk of the assets will come from that are necessary to meet the coming demand for reserves.[19] More specifically, if the US deficit is contained from now on while emerging countries keep piling up reserves at a pace close to their (growing) current account surpluses, where will the missing deficits be found and what kinds of assets – safe or risky? – will be issued to finance them?

[19] The time horizon for which the special drawing rights, viewed as a super-currency, could play such a role seems more distant. Among others, see Sabucchi & Driffill (2010).

The shortage of supply may increase the attractiveness of gold as an alternative reserve asset and even more so if liquidity in euro area markets diminishes (as it has done over recent months). Table 1 shows that while it is difficult to estimate the exact volume of trading in gold it is likely to be higher than most euro-area government securities,[20] which are the main vehicles for Asian central banks to invest in euros. The gold market is highly liquid and thus potentially offers a hedge against the drying-up of liquidity that follows economic and financial distress.

Table 1. Average daily trading volumes in 2009 (US$ billions)

Assets	US$ billions
UK gilts	28.8
German government securities	25.9
US federal agency securities (primary dealer activity)	77.7
Gold traded OTC and settled in London	59-159
Japanese government bonds	288
US treasuries (primary dealer activity)	407.9

Note: OTC stands for over the counter.

Source: Dempster (2010).

4. Scenario-building: Driving factors and forces

The eruption of the sovereign debt crisis in the eurozone has generated a lot of uncertainty about the future of the eurozone and the euro itself. Of course, the degree of uncertainty increases with the length of the time horizon as the institutional framework may change in a fundamental way and it is difficult to guess how the politics of the monetary union might evolve. Over the short run (two to three years), deep institutional reforms (like fiscal union) are unlikely to materialise and the main drivers behind our observations are economic in nature.

This study uses a scenario approach as the explanatory method to illustrate 'visions' about the future of the euro area and to consider the implications for the gold market. The analysis aims at fleshing out four baseline scenarios that result from the combination of economic factors, transmission mechanisms and processes. Once the factors are identified, we elaborate on the way they interact and contribute to defining the different scenarios. In a second stage, the possible effects of euro area events on the global economy are discussed. This second-round evaluation is necessary to the extent that eurozone events can indirectly affect the gold market by impacting global variables or inducing changes in the behaviour of global actors.

In our view, five main factors determine the possible scenarios: 1) the situation in financial markets will be crucial to determining the probability of a eurozone breakup; 2) external demand and 3) exchange rate developments will affect the degree of economic recovery; and lastly 4) fiscal and 5) monetary policies, which now have little room for action, will contribute to shaping market confidence and longer-term risks. These five factors are discussed below.

Financial markets

On the wave of US experience, 91 European banks agreed to publish their capacity to face an adverse scenario. This number includes not only large cross-border banks but

[20] See Dempster (2010) for more discussion on gold as a strategic reserve asset.

also smaller banks, such as Spanish savings banks (*cajas de ahorros*) and the German regional *Landesbanken* (see Box 3 for more details).

Box 3. Stress tests of European banks

The table below shows the exposure of the five core euro-area countries with the largest banking systems. The table shows not only the level of exposure reached by the end of 2009 but also the extraordinary rates of growth of lending to peripheral Europe, which grew by close to or over 500% in the case of Greece, Spain and Ireland. These data are telling for the simple reason that experience shows that very high rates of credit growth are followed by very high loss rates. It is unlikely that banks could suddenly be able to find so many high-quality borrowers in southern Europe.

Table B3.1 Intra-euro-area banking exposure, core euro-area banks' holdings of GIPS debt*

	1999 Qtr 4 (US$ billions)	2009 Qtr 4 (US$ billions)	Change in 1999–2009 (%)
Greece	24	141	491
Ireland	60	348	481
Italy	259	822	217
Portugal	26	110	320
Spain	94	613	554
GIPS	204	1,212	495
GIPS + Italy	463	2,033	340

* GIPS refers to Greece, Ireland, Portugal and Spain.

Notes: The core euro area is Germany, France, Austria, Belgium and the Netherlands.

Source: BIS Consolidated Banking Statistics, June 2010.

This calculation was the key reason it proved possible to obtain an agreement at the level of the European Council to publish the stress test results of the 25 largest, systemically important institutions.[1)] Given the positive reception to this first step in the markets, the number of banks whose stress test results were to be published later grew to 91, covering about two-thirds of the entire EU banking system. A contributing factor in this sudden conversion to transparency will have been, of course, that European policy-makers were slowly learning from their earlier mistakes, which had been to remain consistently 'behind the curve'.

The real question is whether the stress tests just represent a tactical victory or if they also signify a strategic shift in EU policy-making.

Some elements are encouraging but market participants are not fully satisfied by some assumptions and are sceptical about an insufficient capital injection predicted by the results. A crucial element in establishing the credibility of any stress test is the severity of the stress that is applied to a bank's balance sheets. Regarding sovereign risk, the supervisors promised to apply a severe test, but the sovereign risk shock did not represent a severe deterioration of market conditions as compared with the situation observed in early May 2010.[2)]

The further conditions are, of course, that governments force institutions whose weakness has been revealed by the tests to recapitalise quickly and that public funds are made available for those institutions unable to raise new capital on the markets. It remains to be seen, however, whether the funds and the political will to do this will be available when needed.

[1)] European Council, Conclusions of the European Council, EUCO 13/10, Brussels, 17 June 2010 (http://ec.europa.eu/eu2020/pdf/council_conclusion_17_june_en.pdf).

[2)] Committee of European Banking Supervisors (CEBS), "CEBS'S Statement on Key Features of the EU-wide Stress Test", CEBS, London, 7 July 2010 (http://stress-test.c-ebs.org/documents/Summaryreport.pdf).

The main purpose of these tests is to reduce uncertainty over the risk exposure of eurozone banks by identifying where potential losses would arise. Yet for this approach to work two conditions must be fulfilled. The first condition concerns the 'significance' of the

tests. Tests should be transparent about the assumptions and credible. Credibility requires 'enough stress' included in terms of possible losses and a macroeconomic environment that is not too benign. The second condition is the existence of an appropriate mechanism of capital injection if banks that were directed to raise equity levels were not able to do so. The fulfilment of both conditions would help to reduce uncertainty and bring markets back towards normality. On these grounds, the best scenario for the eurozone could materialise.

Yet if neither of these two conditions is met because the assumptions (growth, unemployment, risks, etc.) are too generous or a convincing re-capitalisation strategy does not exist, the situation could deteriorate quickly and represent fertile ground for a breakup scenario for the monetary union.

If the two conditions are only partially met, two in-between scenarios could materialise. Differences between the two scenarios would also be shaped by interactions with other factors.

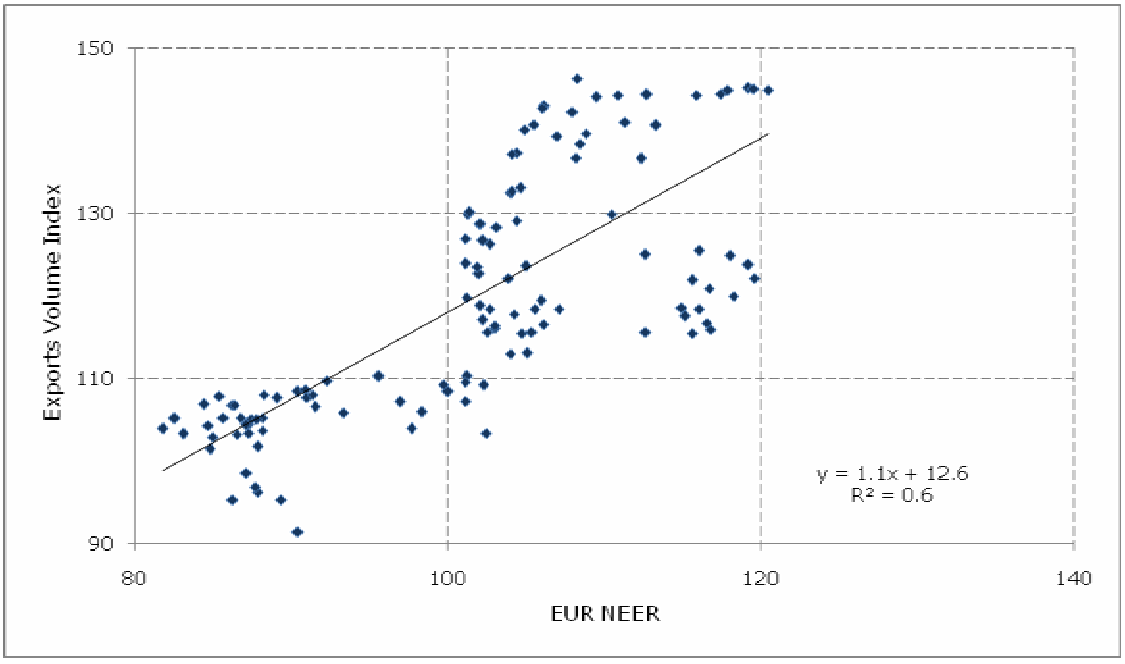
Exchange rate and global growth

Given the situation in financial markets, the exchange rate could play an important role as a source of growth, at least for some countries of the eurozone.

Over the short term, it seems quite unlikely that a significant appreciation of the euro with respect to the dollar or other currencies would occur. In principle, this could be good news for the eurozone economy. That being stated, there is no clear consensus in the literature on the variables that systematically explain export developments in the eurozone. Notably there is no consensus on the role played by the nominal exchange rate and there are no robust estimates of the elasticity of exports to the exchange rate.

Figure 14 shows a positive relation between the nominal effective exchange rate (NEER) of the euro and the volume of euro area exports over the period 2000–10 (May). At the same time, the dispersion is quite high (especially in the range of 100-120), making it difficult to give a precise forecast about the effect of exchange rate depreciation on exports.

Figure 14. Nominal exchange rate and exports in the euro area



Source: ECB (Statistical Data Warehouse).

Nonetheless, the significant fall in the nominal exchange rate and the adjustment in terms of competitiveness induced by the crisis seem to suggest that some countries could enjoy growing export demand. In terms of magnitude, important elements that will make a difference are the nature and the drivers of the global recovery. If improvements in global demand come from Asian industries in the form of investment goods, competitive and export-led economies like Germany and to some extent Italy are likely to enjoy a boost in growth.

Fiscal policy

Across the eurozone, all countries are implementing restrictive fiscal policies in order to consolidate the position of domestic public finances. As a result, governments will not be able to stimulate growth. On the contrary, negative effects from fiscal retrenchment on economic growth are likely to materialise.

At least in theory, there are reasons to believe that fiscal consolidation could affect expectations so as to offset its negative contractionary impact. Credible and consistent fiscal consolidation could be interpreted as reducing government borrowing needs in the future and a reason for increasing consumption. Moreover, if the consolidation were to affect risk premia on government bonds, this could have a positive effect on the cost of borrowing for the private sector in international markets.[21] But these kinds of effects could reasonably appear only over the longer run: given expectations of a long period of sacrifice ahead, the share of consumers who discount the future effect of the fiscal retrenchment (the so-called 'Ricardian effect') is likely to be low in the short run. All these elements together would indicate that fiscal consolidation would give rise to a negative short-term impact on real GDP growth.[22]

Monetary policy

Monetary policy has been very active in responding to the crisis. The European Central Bank has intervened by providing liquidity to the banking system and even by purchasing government bonds in the secondary market. The interest rate is now at the zero lower bound and the usual transmission mechanisms of monetary policy are currently out of service. Despite the loose monetary policy and the large amount of credit provided by the central bank, credit conditions are still very tight for banks and the private sector. As shown in Figure 15, while the narrow money supply (M1) is increasing hand in hand with the balance sheet of the bank,[23] the broad money supply (M3) has stagnated.

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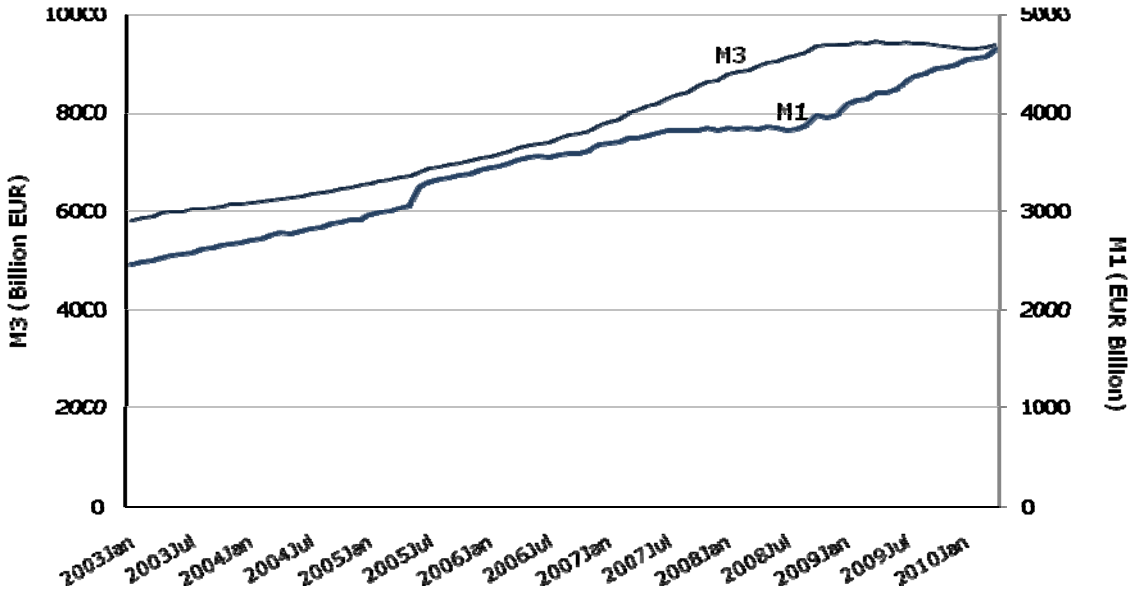
[21] There is a correlation between the risk premium paid by governments' borrowing in the international financial markets and the cost of borrowing of the private sector (see Gros, 2010b).

[22] Another element to consider is the feasibility of fiscal policy. Peripheral countries are required to implement draconian, permanent fiscal cuts that could be difficult to achieve. Past experience with fiscal adjustment suggests that in principle it can be done (see Alcidi & Gros, 2010). At present, however, the fiscal starting position of some countries is especially precarious and the confidence in the sustainability of public finances is so low that it will be a very painful process.

[23] As a consequence of the exceptional measures adopted by the ECB to provide liquidity to the financial system since the start of the crisis, the balance of the bank has increased significantly: between September 2007 and June 2010, total assets have gone from €1.2 trillion to €2.1 trillion.

Figure 15. ECB: Narrow and broad money



Source: ECB (Statistical Data Warehouse).

With short-term interest rates near zero and M3 independent of M1 changes, central banks' scope for conventional action is limited and unconventional action may be less effective than one might expect. In the short run, inflation expectations are likely to stay low and the main active role of the ECB will be to contribute to financial stability rather than macroeconomic stability.

5. Possible scenarios for the eurozone

5.1 Eurozone dream scenario

The dream scenario for the eurozone would be one in which the crisis is overcome and divergences among the members of the union move towards a convergence path.

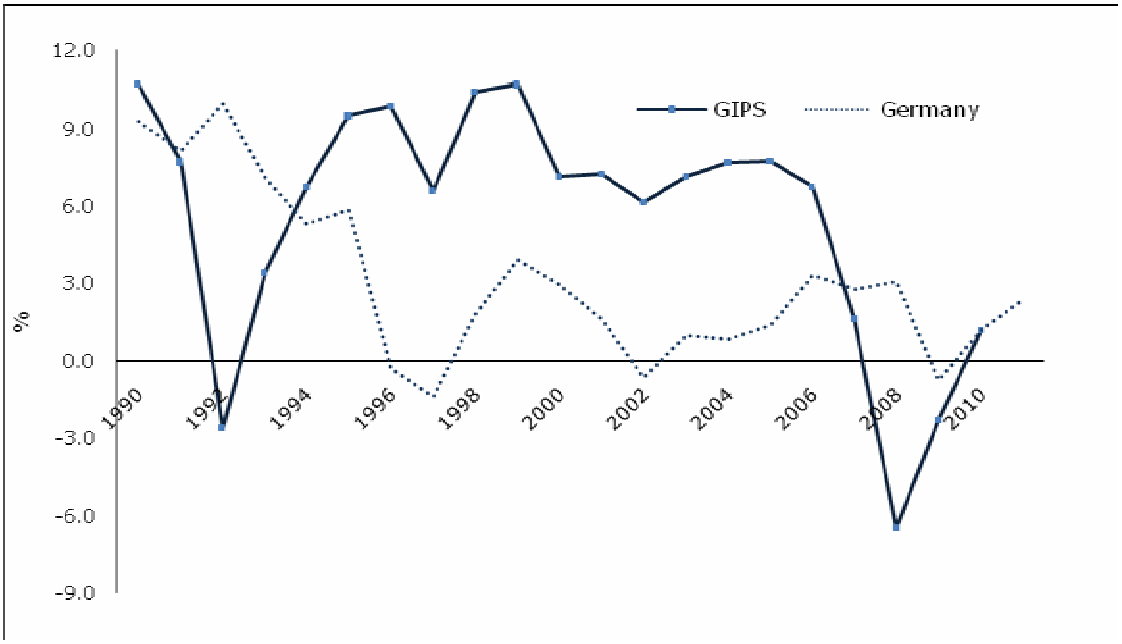
As explained above, a precondition is that the bank stress tests deliver an unambiguous picture of the state of the industry and that a clear recapitalisation strategy at a European level emerges. These results combined with credible fiscal-adjustment programmes in vulnerable member states would re-establish confidence in the eurozone. Financial markets would calm down and both government bond markets and the credit market would get back to normality (a significant fall in volatility). A weak euro can further contribute, together with a nice global recovery and strong global demand, to growth.

For convergence across the union to materialise, a wage adjustment in Europe should occur. With a gradual unwinding of the imbalances within the euro area taking place, a rather benign scenario could be imagined. The key element is the trend in German wages. It is often argued that excessive wage moderation by German trade unions was the main reason Germany has gained about 20% in competitiveness as measured by relative unit labour costs since the start of the economic and monetary union (EMU). Yet this view is contradicted by the fact that the relationship between wages and unemployment in Germany has been remarkably stable over recent decades. Moreover, some simple calculations provided in Box 4 show that the key driver of German export performance has been the huge increase in domestic demand in the part of the euro area that is now under pressure. This finding implies that the current account imbalances

within the euro area could be corrected rather quickly if there is a reversal in the relative growth rates of domestic demand.

As shown in Figure 16, for 2010 the European Commission forecasts that the growth rate of domestic demand of Germany will largely outpace the rates of Greece, Ireland, Portugal and Spain (collectively referred to as 'GIPS'). In 2011 when demand growth is expected to turn positive in the peripheral countries, the latter will still only be half that of the German rate.

Figure 16. Domestic demand growth rates



Notes: Domestic demand is at constant prices (2000) and excludes stocks.

Sources: European Commission services (AMECO) and authors' calculations.

What do these two elements imply for the future?

So far, the crisis has not led to an increase in unemployment in Germany. Moreover, consumption has also been remarkably stable, and actually increased in 2008. Domestic demand has fallen because of a sharp drop in investment. Should investment recover, the stage would thus be set for a relatively strong performance of the German economy over the next few years. The German positive cycle has traditionally been started by an increase in exports, which has then led to more investment, with consumption following only at a later stage. Robust growth in emerging markets, with their vigorous demand for the kinds of investment goods German industry is producing, would also help set the stage for such a cycle in Germany. Unemployment is projected to decline only rather slowly next year, but if the upswing in the rest of the world is strong enough and the level of the euro remains favourable, the outcome might well be much better than anticipated. In 2011 German unemployment might already reach the level at which the past relationship between wages and unemployment suggests that wages should start to increase materially. It is clear that it will take many years before the GIPS countries can regain the competitiveness they lost over the first decade of EMU. Still, the pessimism about the economic prospects of these countries has also been predicated on the idea that German wages would not increase at all, implying that convergence would solely materialise through cuts in nominal wages, which are always extremely difficult.

Box 4. Drivers of the German current-account deficit, 2000–06

In the year 2000, Germany's exports (goods plus services) to the rest of the eurozone were worth slightly less than €400 billion. With demand increasing in this market by 25%, even without any change in competitive positions, Germany's intra-area exports would increase by around €100 billion by 2006. Germany's imports from the eurozone were also worth about €400 billion in 2000. With German domestic demand increasing by 5% over the period considered, one would expect Germany's eurozone imports to increase by only €20 billion. Hence, from changes in domestic demand alone, one could expect an improvement in the German trade balance vis-à-vis the eurozone of around €80 billion. Given that the observed increase in the overall trade balance between 2000 and 2006 amounted to around €125 billion, one could conclude that the sluggishness in German domestic demand, abstracting from intra-area changes in terms of price and cost competitiveness, can explain about three-quarters of the observed change in the trade balance.

Over the period taken here, the trade balance of the eurozone remained in rough balance. This implies that Germany's balance must have improved whereas that of the other members of the eurozone must have deteriorated. Assuming that the distribution of the increase of overall eurozone imports across member countries was in line with national domestic demands and that exports to the rest of the world rose by the same percentage everywhere (since all countries, Germany and the rest of the eurozone, faced the same demand conditions), Germany's trade balance should have improved by another €35 billion.* The total increase in the German trade balance that one can calculate 'mechanically' from the weakness in domestic demand is thus around €115 billion, almost equal to the observed value. This suggests that the increase in the German trade surplus between 2000 and 2006 can be explained almost fully by differential movements in domestic demand and that changes in price and competitiveness have played only a minor role in producing intra-area divergences.

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* Calculations for trade with the rest of the world (RoW): German imports from extra-EU countries were about €350 billion in 2000; given the increase in German domestic demand of a little over 5%, one would thus expect an increase in German imports from the RoW of a little less than €20 billion. The rest of the eurozone imported a bit less than €500 billion from the RoW in 2000; with an increase in domestic demand of close to €500 billion, one would expect an increase in imports of about €140 billion. The overall increase in eurozone imports should therefore have been around €160 billion. The exports of the eurozone must have increased by the same amount since the eurozone's trade balance did not change much over the period considered here. The increase in overall eurozone exports should be distributed between Germany and the rest of the eurozone in proportion to their respective initial levels of exports (of goods) to the RoW, i.e. roughly in the proportion 200/650. This yields an increase in exports to the RoW for Germany of about €55 billion (160*200/650). For Germany, the difference between the increases in exports and imports thus amounts to 35 (billion euros), if one just considers trade with the RoW.

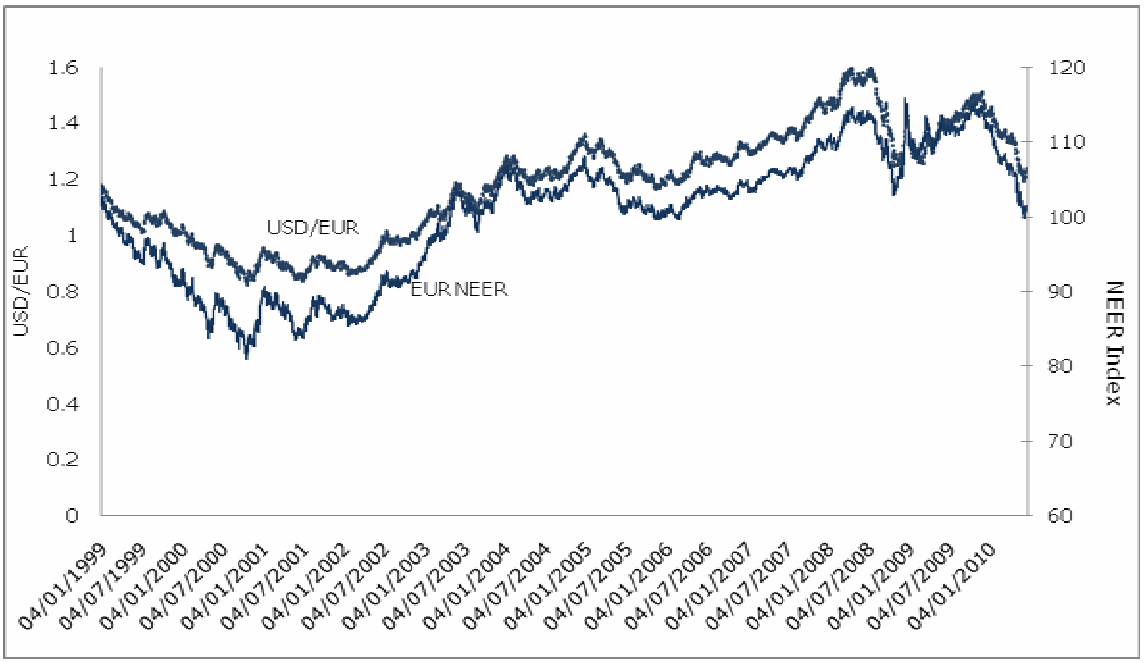
5.2 Muddling-through scenario

Assuming that the stress tests only get half marks and do not fully deliver the expected identification of all the potential losses but help shed light on the main swathes of European banks, and that the necessary equity injection is guaranteed, there are grounds for avoiding the disruption of the monetary union and even a double-dip recession if global demand continues to recover. The latter is a necessary condition, even if not sufficient, for growth to pick up. If the exchange rate is relevant in determining exports, the euro's depreciation could be the watershed between the muddling-through and double-dip scenarios.

The nominal exchange rate of the euro has been depreciating sharply in recent months: as shown in Figure 17, since its peak in October 2009 the euro has fallen in nominal terms by more than 11% vis-à-vis its 21 major trading partners and more than 17% vis-à-vis the US dollar. If these trends are not reversed in the coming months, growth can turn positive in the euro area, even if not very strongly so.

Certainly this requires that global demand recovers sufficiently so that the expansion in exports is able to offset the negative growth effect of fiscal retrenchment. There seems to be little doubt that fiscal austerity can positively affect growth in the short run since non-Keynesian or expectation effects of fiscal consolidation are unlikely to materialise during the next two to three years. According to some estimation,[24] fiscal austerity measures could affect GDP growth by as much as -0.4% in 2010 and -0.2% in 2011.

Figure 17. Nominal effective exchange rate of the euro and the US$/€ exchange rate (1999=100)



Source: ECB (Statistical Data Warehouse).

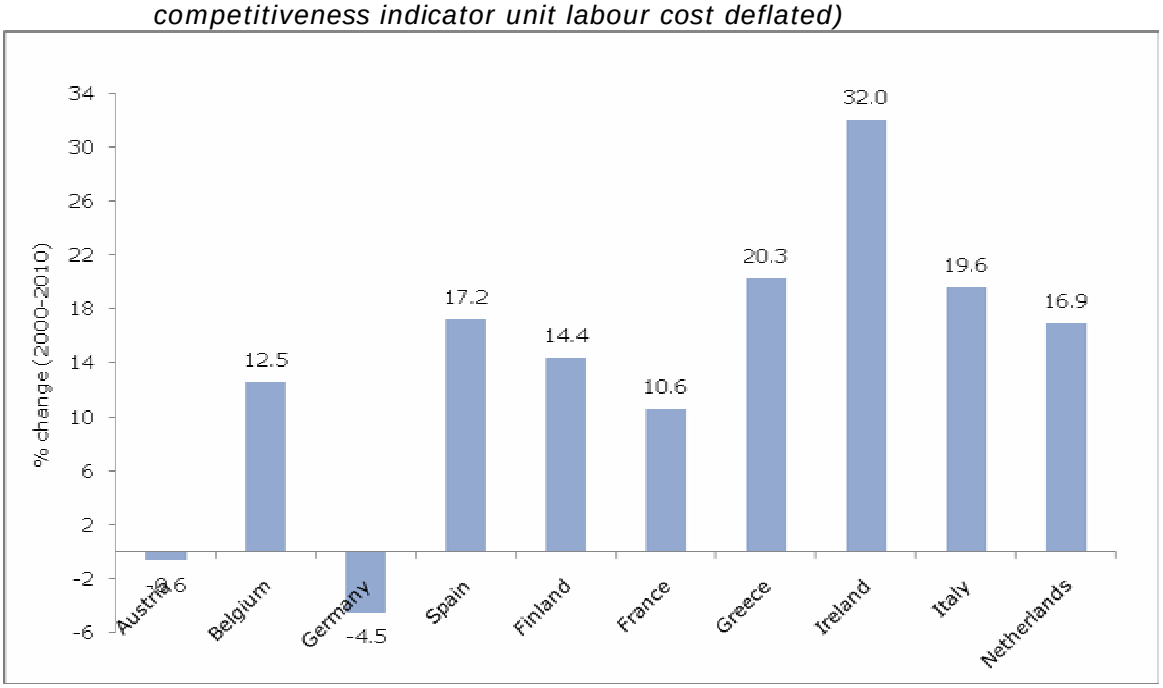
How realistic is the expectation that a weak euro can boost exports in a significant way? Competitiveness is what actually matters, and as mentioned earlier, in this respect the eurozone is characterised by a high degree of heterogeneity.

Over the period 2000–08, partly because of the strong nominal appreciation of the euro all the countries of the euro area experienced a loss of competitiveness, but on different scales. Then as a result of the crisis and the falls in demand and in the euro, all the countries have changed their pattern but only a few have been able to re-absorb the loss of competitiveness experienced earlier. Figure *18* shows that while Germany and Austria are already back to the level of competitiveness of 2000, other countries, namely Greece, Ireland and Spain, are well above that level.[25]

[24] For instance, these include simulations from the QUEST III DGSE model of a permanent reduction in the deficit-to-GDP ratio by 1% of GDP in the EU-27 (European Commission, 2010).

[25] Even though the level of the Irish real exchange rate is still very high, Ireland is the country that has made the largest adjustments since the euro started to fall after its peak in October 2009.

Figure 18. Change in the real exchange rate by country (real harmonised competitiveness indicator unit labour cost deflated)



Note: Positive values imply that in 2010 the real exchange rate (RER) was higher than in 2000 and therefore the level of competitiveness was lower.

Sources: Statistics from the ECB (Statistical Data Warehouse) and authors' calculations.

Under this scenario, in the short run the effect of the recovery may be quite uneven across the union, as differences across countries in the level of competitiveness could play an important role. Differences could also be exacerbated by the nature of the global recovery. If global demand comes from Asia's emerging markets in need of capital goods, Germany and other euro area exporters of industrial equipment may benefit with sound growth rates, but the situation of less-competitive countries would be left fundamentally unchanged. In this picture, both inflation and interest rates are likely to stay low and no major changes are expected for the euro.

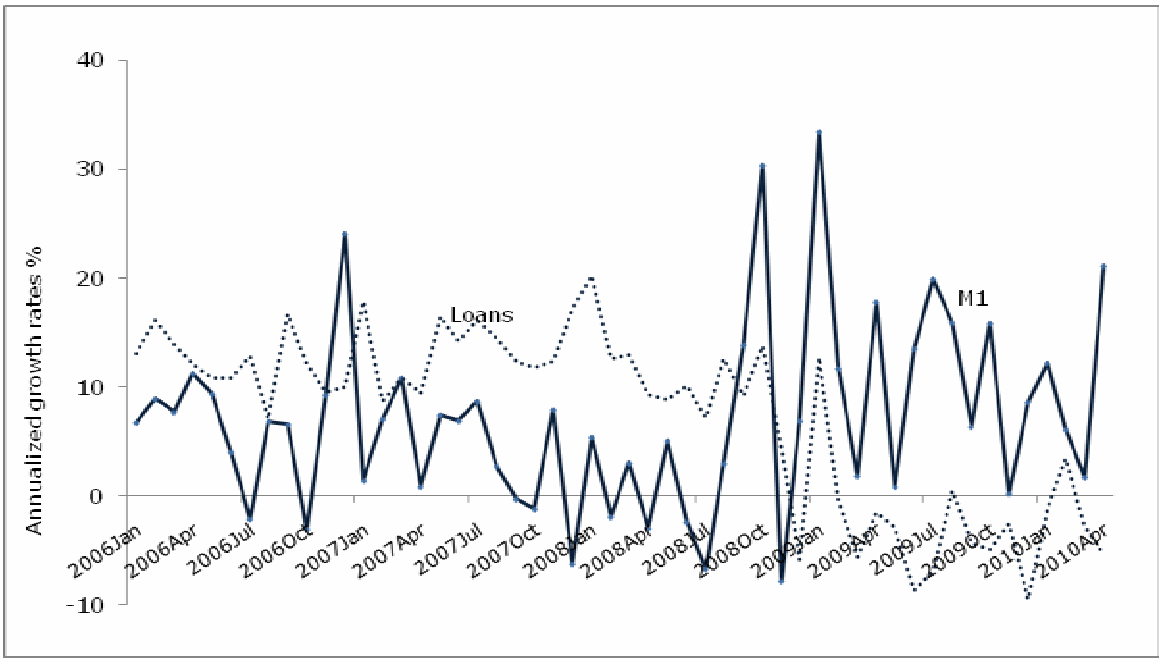
5.3 Double-dip scenario

If the bank stress tests fail to restore market confidence, uncertainty will continue to govern market dynamics. Combined with a lack of confidence in European institutions and possibly a premature exit strategy from extraordinary monetary policy measures, the scenario of a double-dip recession becomes likely because a credit squeeze could materialise again.

The key reason the economy nose-dived globally in the post-Lehman period is a combination of heightened risk aversion and a sharp fall in the availability of credit, both for consumption (a key issue in the US) and investment (a key issue for Europe). In response to the near freezing of financial markets, central banks switched to an ultra-loose monetary policy, pushing interest rates to close to zero and providing banks with almost limitless liquidity. This policy was only partially successful. In the euro area, the loose stance of monetary policy was reflected in a surge in the monetary base (M1).

But as shown in Figure 19, loans to non-financial corporations have trended downwards since early 2008. A significant amount of bank credit is trapped by financial intermediaries. Because of market uncertainty, banks are very reluctant to lend to each other and prefer to keep liquid money at the ECB despite the low interest rates.

Figure 19. M1 and loans to non-financial corporations



Source: ECB (Statistical Data Warehouse).

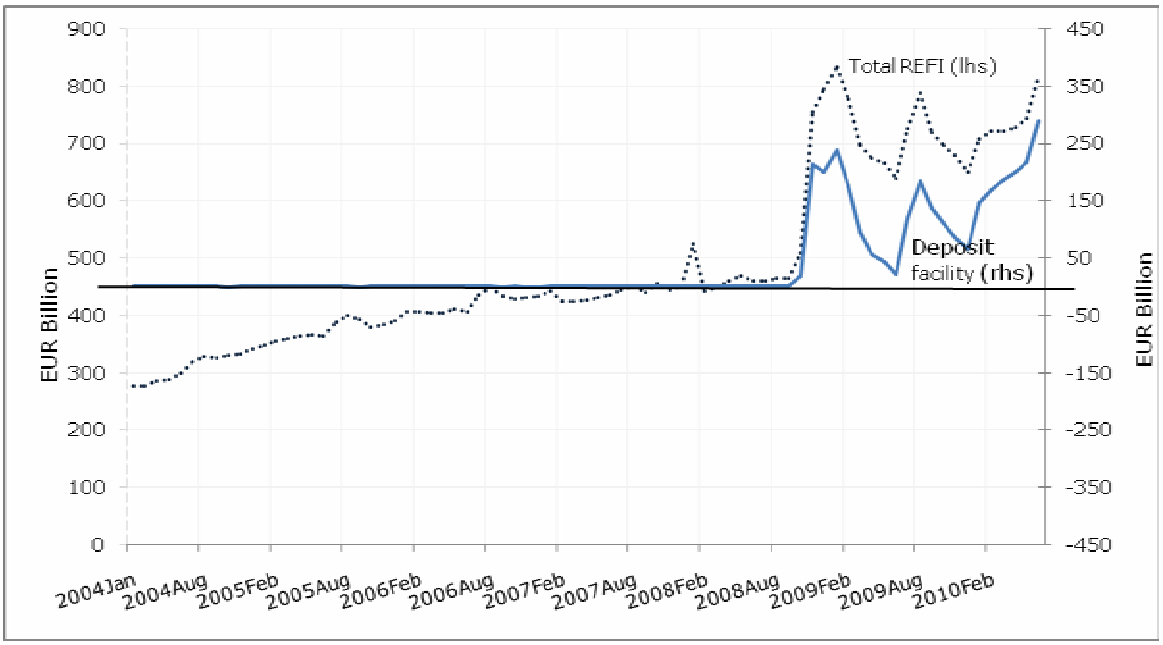
The annual growth rate of loans to non-financial corporations declined in the first quarter of 2010 and the latest (April 2010) European survey on credit conditions suggests that the degree of tightness in market conditions has remained unchanged and is expected to persist during the next quarter.

In the eurozone, the inventory restocking cycle has been a significant factor in boosting growth over the last year. Manufacturers aggressively cut inventories during the most acute phase of the recession, and as world demand has started to increase eurozone demand has also gradually grown. Yet because of the continuing high level of uncertainty over the recovery's shape and strength, it is not surprising that capital expenditure has failed to pick up so far. Gross fixed investment still fell in the first quarter of 2010. One reason might be that most industries are still operating at historically low utilisation rates. Another reason might be the perpetuating low level of available credit. An increasingly strained banking sector remains an important factor behind sluggish credit growth, with a knock-on effect on overall growth. This is especially true in Europe, where the non-financial sector heavily relies on the banking system as a source of financing (see Alcidi & Gros, 2009).

The ECB seems to have played a key role in enabling the euro area economy to continue functioning despite a dysfunctional banking system. Figure 20 illustrates the intermediary role that the ECB is playing now. It seems quite clear that the balance sheet of the ECB has become the real interbank market. The very close correlation between the lending by the ECB (to banks) and the deposits that banks have at the ECB suggests that some banks deposit huge amounts at the ECB while others undertake huge refinancing operations from the ECB. Banks with excess liquidity prefer to park these funds at the ECB rather than lend them to other banks or firms that need liquidity, presumably because they do not trust the solidity of their potential counterparts. Between May 2008 and May 2010, the ECB provided a total of slightly over €350 billion in additional total

refinancing, but at the same time banks deposited slightly over €250 billion at the ECB.[26] The total net financing of the ECB towards the banking system can be gleaned from the difference between the two lines in Figure 20: it amounts to only about €100 billion today. Taking the post-Lehman situation as the starting point (i.e. October 2008), one finds that the ECB has not provided any net new financing to the banking system.

Figure 20. The ECB's refinancing for banks and deposit facility



Source: ECB (Statistical Data Warehouse).

Which banks have surplus funds and which banks need refinancing from the ECB? The scarce available data suggest that the ECB is operating as a sort of 'centralised counterparty' to intermediate funds to the four GIPS countries that are in financial difficulties. According to Table 2, Greece, Ireland, Portugal and Spain together have received over €200 billion in net financing from the ECB over the last two years. By contrast German banks have been providing funds by lending over €60 billion to the ECB. Thus, de facto the ECB is already operating as a 'European Financial Stability Facility'.[27] The central question going forward is whether the ECB can continue doing this on a large scale. If the ECB were to tighten its standards or otherwise 'exit' this policy, the banking sectors in the GIPS countries would immediately come under intense pressure, and probably with it the entire euro-area banking sector, precipitating the economy into another downturn.

[26] Banks have different claims on the ECB (or national central banks), but the two most important items are current accounts, which include the minimum reserves and tend to be rather stable over time, and the deposit facility. The latter was about zero before May 2008; since then it has been rising sharply (as shown in Figure 20) and it represents almost the total increment in banks' deposits at the central bank.

[27] It is clear that the Greek banking system would have been bankrupt if it had not received about €80 billion (or 30% of GDP!) in net funding from the ECB. Moreover, this funding was provided at the official refinancing rate of the ECB, namely 1%, when market rates had been much higher, even before the market closed for the Greek government.

Table 2. Net financing provided by the ECB (and the Eurosystem) to banks across the euro area (in € billions)

	Increase in lending by central banks to credit institutions May 2008–May 2010	Increase in liabilities of central banks to credit institutions May 2008–May 2010	Net lending
ECB	353.8	330.8	23.0
Belgium	-3.7	6.9	-10.6
France	60.2	45	15.2
France: Non-French MFIs	-	5.9	-5.9
Germany	21.6	83.1	-61.5
Greece	83	4.4	78.6
Ireland	55.7	5.6	50.1
Italy	7.7	10.2	-2.5
Luxembourg	-17.9	9.7	-27.6
Netherlands	54.5	58.2	-3.7
Portugal	33.6	0	33.6
Spain	70.5	14.9	55.6
Total (sum of country data)	365.2	243.9	121.3
GIPS	242.8	24.9	217.9

Note: The latest available data for France and Germany is April 2010. MFIs stands for monetary and financial institutions.

Sources: ECB, national central banks and authors' own calculations.

If the eurozone falls into another recession, but the worst for the eurozone is avoided, one could expect no big change in the role of the euro as an international currency in the short run. Uncertainty will nonetheless remain elevated and the strength of the currency will continue to be questioned with some possible adjustments in favour of alternative assets. On the growth front, it is likely that this will not be good news for the rest of the world and some effects of the recession will spill over outside Europe, but emerging economies should be able to decouple.

5.4 Doomsday scenario

The government debt crisis has laid bare the inherent fragility of the eurozone. This fragility originates in the situation that while monetary policies are completely centralised by the European Central Bank, most other tools of economic policy have been kept in the hands of the national governments. Put differently, the fragility of the eurozone stems from monetary union not being embedded in a sufficiently strong political union. Consequently, the different national economic policies pursued by the member states lead to economic divergences that at some point become unsustainable. When a crisis erupts, the eurozone lacks the institutions to deal with it.

The inherent fragility of the eurozone has led many observers to question its viability and to forecast its demise. How might a doomsday scenario for the eurozone develop?

Starting from the present debt crisis, it is not difficult to see how a collapse of the eurozone could occur. A failure of the bank stress tests to deliver useful information about the current state of major banks and the lack of a clear plan of action to deal with the results could trigger the 'mother of all crises' in the eurozone. As a result of the Greek debt crisis, the eurozone member countries have already committed €100 billion

to avert an imminent default by the Greek government. The debt crisis, however, has now also taken hold of the market for Spanish government bonds. It is not unlikely that the Spanish government will have to commit large amounts of funds to save the Spanish banking system (mainly the *cajas de ahorros*). This in turn will trigger a massive sale of Spanish government bonds, leading to record-high borrowing costs for the Spanish government.

These developments affect the banking system in the eurozone, and not just the southern banks. Banks in Germany and France are heavily exposed to southern government debt. The stress tests being conducted are unlikely to reveal the true nature of this exposure because of political manipulation. But this will not reduce the need to start massive amounts of recapitalisation of German and French banks, leading to further increases in government debt in these countries.

Once this happens it will become clear that the recently created special-purpose vehicle will be insufficient and may lack credibility to deal with these multiple problems, for several reasons. First, the guarantee levels provided by the different national governments that will apply in individual bailout operations are unclear. Second, these uncertainties may lead to a failure to attain AAA rating. Third, and most importantly, there is a political problem lurking in the background. The bailout of southern European countries is intensely unpopular in Germany. When in addition the German government will be called upon to recapitalise the German banking system and to use massive amounts of funds to do so, it is likely that the bailouts of southern European countries will be even less popular. It will certainly test the cohesion of the German coalition government. It is not inconceivable that a second and much larger bailout operation involving Spain could lead to a breakup of the coalition. The political consequences could be grave. A new German parliament elected on a no-bailout platform may decide to order the German withdrawal from the bailout operations.

Such a move would lead to a collapse of several government bond markets in the eurozone. The costs and benefits of remaining in the eurozone would be changed fundamentally for a number of countries. These countries would be tempted to leave the eurozone, making it possible to 'solve' the excessive government debt burdens by inflation and devaluation.

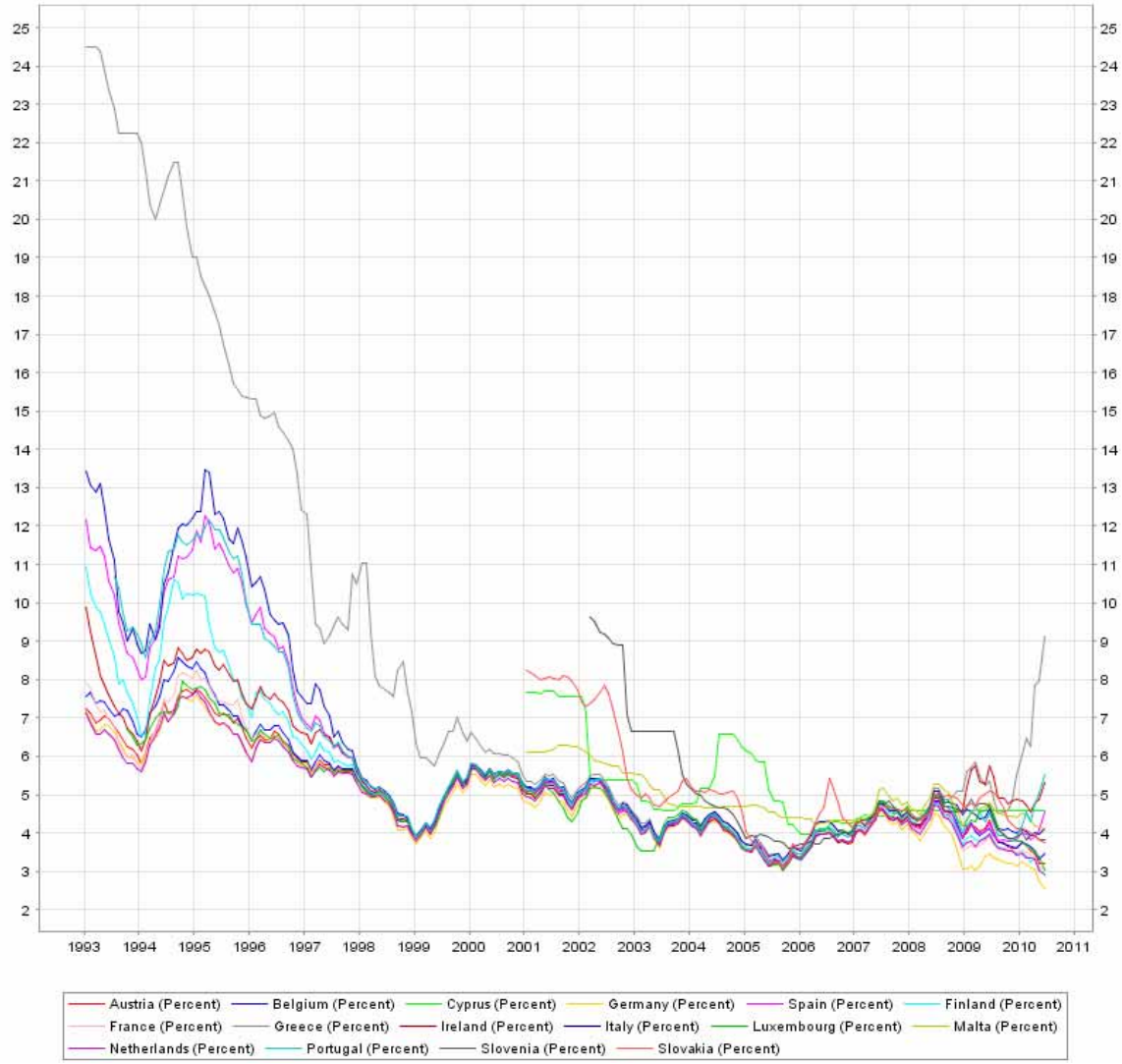
In this scenario, the eurozone would break up into different parts. Many possibilities arise. We analyse only one such scenario here, i.e. a shrinking of the eurozone to a core group of countries around Germany (say, the Netherlands, Austria and Belgium), with the other countries going their own way alone and reintroducing national currencies.

In this scenario, the core eurozone would face strong appreciation of the currency, leading to a new recession and mounting budgetary problems. The economies of the core eurozone countries may actually experience deflation, as the recession, together with significant appreciation of the currency, reduces the general price level.

The opposite is likely to happen in the breakaway countries. The currencies of these countries would depreciate dramatically. This would stimulate their economies temporarily but also reinstate inflation as a chronic feature.

Figure 21 shows the long-run trends in government bond yields in the eurozone countries from 1993 to 2010. The period prior to the start of the eurozone was characterised by very large interest differentials but also by a growing convergence that set in after markets realised that countries would join the eurozone. The government bond crisis that started in 2009 marks renewed divergence among these bond yields, although this divergence remains small from a historical perspective. Nevertheless, if the eurozone were to break up, it is very likely that one would observe a return to the yield differentials seen during the 1990s, where differentials of more than 10% (1,000 basis points) were not uncommon. And in contrast to the 1990s, there would not be the dynamics towards convergence.

Figure 21. Ten-year government bond rates in the eurozone



Source: Statistics from the ECB (Statistical Data Warehouse).

This scenario would imply unstable financial markets, negative growth prospects for the eurozone and likely spillovers outside Europe.

Great uncertainty would surround the 'remains' of the euro. On the one hand, international investors may prefer to abandon it completely, with a flight towards alternative currencies and assets. On the other hand, if a new eurozone made of the core EU countries led by Germany emerges, it may be seen as a credible and homogeneous monetary union. In this latter case, the new euro could still have the status of a reserve currency even if diminished compared with now.

6. Implications of the scenarios

On the grounds of what has emerged from the economics of gold, developments in the eurozone will affect the gold market mainly through its impact on Asia – both Asian demands for jewellery and for official investment purposes – and through uncertainty in the advanced economies.

Accordingly, in drawing out the potential implications of the four scenarios for the gold market, we consider how the predictions given by various European scenarios suggested

in the previous sections would affect the rest of the world and induce reactions of the main world central banks. We define the 'rest of the world' as referring mainly to the US, China, India and the rest of emerging Asia. Not only are these economies major consumers of gold, but also they are the largest reserve providers and holders. Moreover, their economic impact on world economic growth would be the largest around the globe in the relatively near future of two to three years. Note that the interactions between Europe and the rest of the world follow an iterative process. Whatever happens in Europe affects the rest of the world and vice versa. For the scope of this report, we focus on the former. It is possible that the European impacts on the rest of the world would have repercussions back on Europe, but they would be of a second-order degree and often mixed with the factors originating from the source economies.

This background provides an adequate basis on which to make an overall assessment of what each of the scenarios may imply for the gold market. Table 3 at the end of this section summarises the main findings.

Eurozone dream scenario

From the analysis in the previous section, it emerges that the ECB is playing a crucial role of 'intermediation' in the euro interbank market. It seems reasonable that if the best scenario were to materialise, financial markets would calm down, the interbank market would go back to normality and an exit strategy from unconventional policy measures would also be implemented by the ECB.

In such a scenario, recovery should appear in the eurozone and also contribute to growth on a global scale, by restoring market confidence and supporting demand. The global recovery would stimulate industrial demand for gold and jewellery, but at the same time would likely reduce private investment in gold provided uncertainty is significantly reduced.

The eurozone inflation rate has never been too worrisome. The brightest scenario might send eurozone inflation somewhat higher than the other ones, but it is expected to be relatively small chiefly because of the moderate growth prospects. Furthermore, firms across the world are still operating largely below capacity and unemployment is still high, which makes it quite unlikely that the output gap could close over the next two years. The relatively stable inflation prospects allow for stable European export prices. This is relevant because the major channels through which eurozone inflation or deflation pressures are transmitted to the rest of the world are euro exchange rates and exports.

Hence, inflation risks would be low and inflation hedging would be unlikely to become a source of strong demand for gold. Of course, over the longer run, the outlook could change in accordance with the speed of the recovery and the laxity of monetary policy.

As far as central banks' demand for gold is concerned, this would be expected to continue to rise, especially on the part of large reserve holders. If the Chinese current account resumes its past trend on the wave of global recovery, global demand for reserves would increase again. The dream scenario would allow reserve holders to switch more easily to the euro, the attractiveness of which would increase accordingly. If eurozone financial markets were to develop in a positive way, this process would occur more rapidly and its magnitude would amplify. Under this scenario, the euro could strengthen, implying some depreciation of the dollar but without major shifts in the near term. Even assuming that euro-denominated assets could satisfy the bulk of increased demand, gold holdings would not be expected to decline, if anything they would rise as a source of portfolio diversification.

Muddling through

The slow recovery of European economies portrayed in three of the four scenarios would of course not be a good signal for the global economy. But it is not likely that they would lead to a considerable slowdown of growth in the rest of the world. First of all, the financially stressed countries are neither the leading economies in the eurozone, nor highly open economies vis-à-vis the rest of the world. We might expect a lower level of GDP growth in the case of a worsening in the recovery process in Europe, but its international transmission would not be dramatic. Note that from the EU's point of view, China is its largest export market, but from the Chinese point of view, its largest export market (on which much of China's economic growth depends) is the US. In terms of imports, it is the other East Asian economies that China relies upon more than the EU.

It is highly unlikely that financial market turmoil in southern Europe would induce a global economic recession. In particular, emerging markets are expected to grow at a much faster pace than Western countries, even if the growth rates observed before 2008 are not likely to be repeated over the next two years. This implies that jewellery and industrial demand would remain high and significant increases in the supply of old gold scrap would be unlikely.

In the muddling-through scenario, the positive growth in the eurozone, even if low, combined with a resolution to the financial crisis would suggest that the demand for the euro as a reserve currency may increase but not significantly so. This could also contribute to greater currency volatility (for both dollars and euros) and with it a slight rise in the demand for gold by both private sector and official investors.

In this scenario, central banks would probably abstain from major actions, as inflation risks would be low and financial instability would disappear gradually.

Double-dip

If a double-dip recession were to occur in the eurozone, the high level of government debt could appear unsustainable in several member countries and increase the risk of further downgrades. This would imply that the adverse scenario assumed in the stress tests materialises. Consequently, several banks would urge capital injections and all of the banking system would be under pressure. The ECB could be forced to step in again to provide further refinancing and rehabilitate the government bond-purchase programme. This would put the euro under pressure, with more uncertainty from the side of reserve holders, and we would expect some limited withdrawal from the euro as a reserve asset. If in addition the US were to be in a situation of sluggish growth for the next two years, the Chinese current-account deficit would likely decline, which in turn would lead to a decline in the demand for international reserves.

Overall, this would suggest that low growth in the reserve currency countries could increase the likelihood of further shifts towards gold, but in general the demand for reserves could lessen. In addition, high levels of uncertainty and falling returns on conventional investments should keep the demand for gold as an investment elevated. If emerging markets manage to decouple, the recession in the euro area should only partially affect industrial demand and jewellery as well as the supply of old gold scrap.

Doomsday

If the doomsday scenario were likely to appear, extreme measures to save the banks and governments would be undertaken by the ECB. The law does not allow the ECB to monetise government debt, but it is likely that the same measures that have been taken as a response to the Greek crisis could be implemented on a much larger scale. This could fuel expectations of high inflation and accelerate the breakup of the union.

This extreme scenario could trigger bold reactions by the largest central banks. As far as the People's Bank of China is concerned, policy changes are very difficult to anticipate in any scenario, but it seems reasonable that the increasing probability of a scenario with a

falling euro and downgraded sovereign debt could act as a catalyst for the People's Bank of China to reduce its holdings of euros. This implies that unless more flexibility in the renminbi exchange rate is allowed (if any, likely to be limited over the short term) and demand for reserves stops growing, the demand for alternative reserve currencies and assets like gold will increase. Of course, the collapse of the euro would worsen the mistrust in reserve currencies, including the dollar, and could further increase international pressures for reform of the global reserve system in the direction of a supranational reserve currency.

The eurozone developments are unlikely to have a direct effect on US monetary policy. It nonetheless seems quite clear (also after the G20 summit in Toronto) that growth is a much higher priority in the US than in Europe, where inflationary risks are far more feared than stagnation. From this perspective and given the high levels of debt, it seems safe to say that loose monetary policy would persist for quite some time and inflationary risks are more elevated in the US than in Europe, but are still low over the short run. Domestic demand is still weak, and given the continuing high degree of risk aversion, it seems unlikely that another credit bubble could materialise. The evolution of the Federal Reserve's balance sheet suggests that despite the fact that it has grown substantially (much more than the ECB's balance sheet) over the last three years, its action has been extremely 'targeted': taking on bad assets (more than $1.1 trillion of mortgage-backed securities) but without evidence so far of significant quantitative easing.

These factors imply that there is little danger of a steep rise in inflation and hence, there should not be a strong impact on gold demand as a hedge against inflation.

If the eurozone were to break up, the real economic impact on the rest of the world would be limited as the core countries would likely remain in the eurozone. The prolonged low-growth period anticipated in Europe is not news: in 2010 alone the average real growth rate of the EU is predicted to be half that of the US.[28] The current stress in European financial markets and debt problems should weaken the euro. The present eurozone problems may affect the composition of global reserves. In contrast, in the doomsday scenario the euro is likely to lose in the short run. The middle scenarios would not likely bring much change to the current composition.

In this scenario, it cannot be excluded that another crisis would hit the already-fragile advanced economies, and thus the risk of a deep recession would be high. As a consequence, deep uncertainty would prevail. Some previous eurozone countries would now face intense inflationary pressures. The countries remaining in the eurozone would likely be hit by a recession as a result of an appreciation of the euro. Exchange rates would be highly volatile, as the market would not know how to price the new currencies. Overall, the profound financial uncertainty created by this scenario would probably lead to higher demand for gold.

[28] Derived from *World Economic Outlook*, IMF (2010).

Table 3. Implications of eurozone scenarios for the rest of the world and gold

	Global financial markets	Global growth	Global inflation	US dollar exchange rates	Reserve currency	Gold market
Dream scenario	Positive	Positive	Slightly up	Weaker dollar	More euros	Stronger jewellery and industrial demand; weaker private investment demand
Muddling through	Not much, but rather positive	Not much	Not much	Variable	Not much change	Jewellery and industrial demand not much affected, nor investment
Double-dip	Not much, but rather negative	Not much	Not much	Stronger dollar	Not much change	Flight to safety: investment demand stronger and jewellery demand not much affected
Doomsday	Negative, probably leading to a global crisis	Negative	Slightly down	Stronger dollar	Fewer euros	Flight to safety: investment demand dramatically stronger and jewellery demand somewhat weaker

Source: Authors' compilation.

7. Conclusions

The government debt crisis has exposed the fragility of the eurozone. After much hesitation, the eurozone authorities managed to respond by setting up a financial stability facility. Yet this has not prevented the sovereign debt crisis from spilling over into the vulnerable banking sector, with destabilising effects over the first half of 2010. It is too early to say whether the bank stress tests will reassure investors. It is clear, however, that developments over recent months have created some lasting uncertainty about the future of the eurozone.

As shown in the first part of this report, macroeconomic conditions affect gold market dynamics in a complex way. The most relevant variables are growth (particularly Asian), inflation, global money supply and the US dollar exchange rate. Hence, it is mostly a set of factors outside the euro area that affect demand for gold. Nonetheless, there are important transmission mechanisms through trade links, knock-on growth effects and central banks' behaviour that mean future developments in the eurozone are not neutral for the gold market.

This report has analysed four different, future scenarios for the eurozone, ranging from an optimistic one in which the eurozone fully recovers in the next two years to a pessimistic one in which the eurozone breaks up. We have also introduced two intermediate scenarios, a muddling-through and a double-dip scenario. We have subsequently analysed the implications of these four scenarios for economic trends (inflation and growth, exchange rates, current account balances and reserve holdings) in the eurozone countries and in the rest of the world. Finally, we have studied how these four scenarios, through their effects on macroeconomic developments in the eurozone and in the rest of the world, could affect the price of gold.

As the main conclusions, we find that in the dream scenario recovery should appear in the eurozone and also contribute to growth on a global scale, by restoring market confidence and supporting demand. This should stimulate industrial demand for gold and jewellery, but at the same time it would likely bring down private investment in gold provided uncertainty is significantly reduced. Under this scenario, the demand for foreign reserves could increase and the euro could strengthen against the dollar. Even assuming

that euro-denominated assets could satisfy the largest part of the increased demand in reserves, European debt markets remain widely fragmented and gold holdings are not expected to decline – if anything they may increase as a source of portfolio diversification.

Under the muddling-through scenario, it seems unlikely that the financial market turmoil in southern Europe could induce a global economic recession. In particular, emerging markets are expected to grow at a much faster pace than Western countries, even if the growth rates observed before 2008 are unlikely to be repeated over the next two years. This implies that jewellery and industrial demand would remain high and a significant increase in the supply of gold scrap would seem to be precluded. A general sluggishness in the advanced economies could also contribute to greater currency volatility (for both dollars and euros) and with it a slight rise in the demand for gold by both private sector and official investors.

The double-dip scenario suggests that the associated higher degree of uncertainty and weak economic performance in the reserve currency countries would keep the demand for private gold investment elevated and increase the appeal of gold as a reserve asset. But in general, demand for reserves could lessen as a consequence of smaller current-account surpluses in emerging markets. Similar to the muddling-through scenario, it seems likely that even if the growth rates of key Asian economies decelerate, owing to weak demand from the US, growth would continue in this part of the world. Some of those economies would have to shift away from an export-led growth model but they have substantial domestic potential for high growth rates. Hence, the recession in the euro area should only partially affect gold industrial demand and jewellery.

Lastly, as the doomsday scenario does not exclude another crisis hitting the already-weak advanced economies, the risk of a deep recession could be high and unforeseeable developments could materialise. Because of the considerable financial uncertainty, this scenario would likely lead to higher demand for gold.

Overall, given lingering slack in advanced economies, in the near term we do not foresee a resurgence in inflation, the fear of which was an important factor in gold demand during the 1970s and 1980s. Should inflation eventually surface, it will only do so after balance sheets have been repaired. If this is done through a gradual deleveraging by private and public sectors, excessive inflation fears can be avoided. At present, some risks of deflation exist in the US but Federal Reserve Chairman Ben Bernanke has signalled in the past that the US will prevent this dangerous outcome from materialising by all means. Over the near future, motives other than inflation hedging are likely to be the main drivers of gold market dynamics. Growth in Asia's emerging economies will certainly play an important role and it seems likely that events in the eurozone will affect it only partially. Uncertainty is another influential driver. Even if extreme events are averted, uncertainty is not likely to disappear over the short term and market confidence is still far from pre-crisis levels, which implies that the gold price could continue to trend upwards for a period underpinned by investment demand from both the private sector and official investors. Finally, even if the reputation of the euro as a reserve currency improves, the holdings of gold by central banks will not fall. On the contrary, if further concerns about sovereign debt arise some central banks will start to diversify away from the euro, thus making the dollar and gold, *ceteris paribus*, more attractive.

List of abbreviations

BIS	Bank for International Settlements
ECB	European Central Bank
EDA	European debt agency
EFSF	European Financial Stability Facility
EIB	European Investment Bank
EMU	Economic and monetary union
ESM	European Stabilisation Mechanism
GDP	Gross domestic product
GIPS	Greece, Ireland, Portugal and Spain
GSE	Government-sponsored enterprise
IMF	International Monetary Fund
ISC	Independent stability council
NEER	Nominal effective exchange rate
RER	Real exchange rate
RoW	Rest of the world
S&P	Standard & Poor's

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Appendix. Summary of Eurobond proposals

	De Grauwe & Moesen (2009)	**Jones (2010)**	**Depla & von Weizsäcker (2010)**	**Leterme (2010)**	**Bonnevay (2010)**
Proposal	Eurobond based on EIB equity shares	Dual bond structure	Blue/red bond scheme	European debt agency (EDA)	Increasing fiscal coordination between France and Germany
Collective responsibility	Collective guarantee according to equity shares in the EIB	Collective guarantee	Collective guarantee (joint and several liability to ensure a AAA rating)	Collective guarantee	Explicit and joint responsibility backed by tax revenues
Issuing body	European institution (for instance, the EIB) or member states' governments	Central issuing authority (not specified) Member state governments would authorise bond issues and meet the resulting servicing requirements	An independent stability council (ISC) supported by a secretariat with the necessary economic and fiscal expertise The ISC would prepare an annual proposal for the allocation of blue bonds, and governments of all the participating countries would vote on the proposal	The EDA under the authority of the Ministry of Finance of the Eurogroup and the ECB, supported by the EIB acting as a secretariat	An unspecified agency would issue Eurobonds and transfer the capital raised to the national treasuries according to a predetermined issuance timetable
Features of the Eurobond	Euro-area governments' participation in the bond issue on the basis of equity shares in the EIB Interest rate (coupon): the weighted average (by EIB equity shares) of yields observed in national government bond markets at the moment of issuance The proceeds of the bond issuance would be distributed proportionally [1)] Governments would pay national interest rates on their respective parts of the bond	Limits on the volumes issued: globally (max. 60% of GDP) and in a given year (max. 3% of GDP) – "responsible borrowing"	Government debt of up to 60% of GDP issued in the form of a senior, common, European government bond (blue bond) Differentiated allocation of the blue bond borrowing quotas by country (60% of GDP for fiscally sound countries vs. a lower proportion of GDP for countries with a weaker fiscal position, with gradual eviction from the scheme possible) [2)]	The EDA would take over existing debt titles and issue new titles as agreed by ECOFIN and the Eurogroup Existing debt: the EDA would differentiate among debtors – differences in interest rates would reflect the differences in the credit rating of member states and maturing old debt would be replaced by new titles with a uniform interest rate New issues would benefit from a uniform interest rate	First phase of the introduction: strictly Franco–German, financing common long-term investment projects – Obligations Assimilables du Tresor (OATs), Bunds and Eurobonds would co-exist on capital markets, with the residual value of national securities reduced every year Second phase: still Franco–German, with a progressive increase in the number of budgetary items financed by the Eurobond (an increase in budgetary coordination) In the long run: introduction of the Eurobond in other member states of the eurozone

Excessive borrowing	No information about the possible interaction of Eurobond and national bond markets	National sovereign bond issues – rating and price would vary from country to country	"Red bonds" – national sovereign bond issues for debt exceeding 60% of GDP as junior national debt	National sovereign bond issues if the deficit level exceeds the deficit target	In the long run: coordination of budgets would eliminate the necessity for domestic sovereign papers
Advantages	Reduction in the free-riding incentive Easier and cheaper access to financing for countries facing high spreads Possibly increased liquidity in the market if it is sufficiently sized Meets the desire for safety on the part of investors and financial institutions 'Pareto optimal' proposal	Increase in transparency A deeper and more liquid government bond market than a national one Lower borrowing costs Export of savings across the eurozone without accepting implicit sovereign risk Greater attractiveness of the euro as a reserve currency Limited scope of the Eurobond market compared with the ever-expanding US government bond market might prove attractive [3)]	Increase in liquidity (blue bonds) Lower cost of borrowing: from increased liquidity and from the pooling of borrowing Enhanced attractiveness of the euro as a reserve currency	Enforcement of the Stability and Growth Pact Creation of a single European market for government debt (liquidity gains) The EDA would be an important symbol of a unified, European government bond market, improving the role of the euro and the world level EDA's impact on the interest rate structure within the eurozone	The Eurobond would guarantee permanent fiscal coupling between France and Germany, and the disappearance of asymmetric shocks, increasing the effectiveness of common monetary policy
Default		Orderly default: renegotiation of country-specific obligations before suspension of debt-servicing payments on the common issue bonds Servicing obligations would be temporarily picked up by other member states (which would be reimbursed with interest once the crisis has passed)	In case of default, blue debt would be senior and red debt would be junior: blue bonds would be affected by the default only to the extent that it is not absorbed by the red bonds		

[1)] It is possible that the interest rate obtained in the market could differ from the weighted interest rate.

[2)] Countries not complying with the rule of sustainable debt levels will be 'punished' by reduced access to the Eurobond market.

[3)] According to this proposal, the Eurobond market cannot exceed in volume a maximum of 60% of euro area GDP (the sustainable debt level as assumed in the Stability and Growth Pact).

Source: Authors' compilation.