ECN320 SRP for session 9. Alternative Currency Regimes; Monetary Union

Global Monetary System and Monetary Targets

After 150 years of monetary experimentation, the world remains unsure how to organise global finance (see chart, monetary milestones). In 1944, delegates gathered in Bretton Woods, New Hampshire to reopen an old debate surrounding a tension involving global commerce: the more certainty countries create around exchange rates, the less room they have to manage domestic economic affairs. Most monetary systems were a product of accident rather than design. The classical gold standard developed in the UK as it industrialised. Economic success led others to transact on its terms. Germany adopted gold in 1871 putting Europe's two leading economies on one standard; others followed [1].

The gold standard's priority was the lubrication of global trade. Exchange rates were fixed across economies and capital flowed without any regulatory hindrance. The free flow of capital left currencies vulnerable, but the system survived for decades thanks to governments' commitment to gold. Central banks refrained from destabilising actions and lent to each other in times of crisis [1].

The first world war changed this. Countries instituted capital controls and printed money to pay for the war. Europe tried to patch up the system after the war but it did not work well. Gold reserves grew increasingly unbalanced; France and the US built growing hoards, while the UK and Germany ran short. Central bank solidarity was also in short supply. The US, which at times controlled 46% of the world's gold, could have rebalanced the system by expanding its money supply and allowing prices to rise. It refused because of domestic worries, chiefly a desire to limit a Wall Street boom [1].

The revived system broke under the strain of depression. Struggling economies were forced to choose between saving domestic banks and defending their currencies' pegs to gold. Central bankers failed to recapture the cooperative spirit that prevailed before 1914. Austria and Germany dropped out of the system in 1931. By 1936 the gold standard was dead [1].

Bretton Woods was another crack at a universal system, but came with compromises of a patchwork of policies. Countries fixed their currencies' values relative to the dollar, which was pegged to gold. But pegs could be adjusted in extraordinary circumstances. The IMF was created to help manage crises; the World Bank was designed to lend money to poor countries; and the way was paved for the General Agreement on Tariffs and Trade: a trade forum [1].

Early on, the Bretton Woods institutions flirted with irrelevancy. The World Bank's lending to Europe between 1947 and 1953 amounted to just 5% of US aid under the Marshall Plan. As controls on capital and trade were lifted, tensions became apparent. Governments funded welfare states, went on military adventures, and trade imbalances and inflation ballooned, each weakened confidence in currency pegs. By the late 1960s these strains became unmanageable. In 1967 the UK was forced to devalue; and in 1971 President Richard Nixon opted to drop the gold peg and devalue rather than make cuts to balance budgets and control inflation. Big countries withdrew from the system to float their currencies [1].

The repeated collapse of fixed exchange-rate regimes did little to shake faith in the idea. The European Monetary System was introduced in 1979—the precursor to the euro zone. Markets found reasons to question peripheral economies' willingness to subordinate domestic policy to the demands of the system. Skepticism fuelled attacks on UK and Italian pegs, driving them out of the system in 1992. Italy went on to sign up for deeper monetary integration in the eurozone. The euro crisis is a variation on an old theme [1].

Developing countries found pegs hard to resist. Fixed rates can encourage monetary discipline and tame inflation—a common emerging-world problem—while reducing borrowing costs. Yet too often pegs end painfully, as over-indebted economies (from a credit binge) find it impossible to maintain the discipline needed to protect them (resulting in a BOP crisis). Markets pounce, initiating crises and force a devaluation—e.g., the Asian financial crisis of 1997-8 [1].

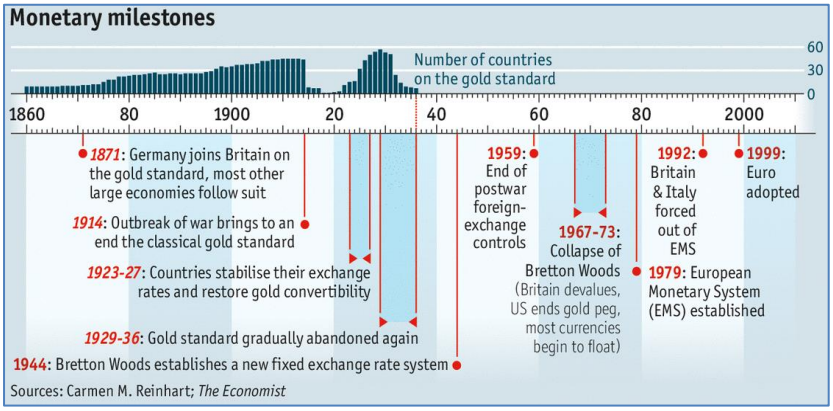
Despite this history, floating exchange rates can be unpopular. Instead, emerging economies manage rates through market intervention. China, the second-largest economy, has been an energetic manipulator of the yuan, and has at times used an outright dollar peg. In 2014, less than 10% of emerging markets allowed the market to set their exchange rate [1].

The aversion to floating is a puzzle. Modern technology reduces currency transaction costs. IMF research finds that flexible exchange rates reduce vulnerability to both macroeconomic and financial crises. The Peterson Institute for International Economics, a think tank, found that economies with floating currencies did better in the GFC and its aftermath [1].

Between 1980 and 1997, many developing countries did shift out of fixed exchange-rate systems (pegging to a single currency, such as the dollar, or to a basket of currencies) to more flexible arrangements [2]. However, after the collapse of Europe's exchange-rate mechanism in the early 1990s and, even more dramatic, the East Asian debacle of 1997-98, many economists concluded that exchange rates which were sort of fixed, but not quite, were a big mistake [4]. There was a subsequent shift in preferences towards the extremes—a "corner solution" of either a pure float or an absolute fix [3].

Thus, the orthodoxy evolved, thanks to the might of global capital markets, proclaiming that the muddled middle way would not do. A country had to adopt a "corner solution", choosing at one extreme either to let your currency float freely, or at the other to fix it for good, either in a monetary union (as in Europe) or by means of a strict fix, dollarization (using the US dollar or another foreign currency as the national currency of the home country) or a currency board (a credible, strict fix to the dollar short of dollarization). The first preserves a country's ability to conduct its own monetary policy; the second surrenders that power in return for a stable exchange rate. Efforts to have a bit of both were doomed because they created the conditions for financial crises [4].

In the mid-1970s, 86% of developing countries had some type of pegged exchange rate, but by the end of 1996 fewer than half did. About one-third of the countries that claimed to have flexible regimes also claimed to have independently floating rates (but some of them undoubtedly engaged in



"dirty floating", using official intervention to guide exchange rates on the sly) [2].

Guillermo Calvo and Carmen Reinhart[1] (2000) studied how developing countries described their currency regimes, and compared this with the facts. The labels mean little: some "floating" currencies (India's, for example) had been curiously stable, not much less so than some "fixed" ones (such as Thailand's up to 1997). Governments often used interest rates or currency intervention to influence their supposedly floating exchange rates. Officially, countries may have bowed to intellectual fashion, but their behaviour evinced what the researchers called "fear of floating" [4].

One of the most steadfast and convincing advocates of a particular kind of "intermediate" regime was John Williamson (2000) of the Institute for International Economics. He made a persuasive case[2] arguing that emerging-market countries were right to be reluctant floaters because the foreign-exchange markets have repeatedly demonstrated their ability to drive currencies into serious medium- and longer-term misalignment, with severe consequences for growth. At the other extreme, currency boards also produced currency misalignments (as Argentina's demonstrated). Nor are the "corner solutions" immune to crisis, as often supposed—although Mr Williamson conceded that a floating rate helps to discourage excessive capital inflows [4].

The middle is unjustly neglected, and dangerously so in view of the IMF's zeal for the extremes. It is right to talk of the "impossible trinity"—to note that these days, much as you would like to, you cannot have all three out of perfectly mobile capital, monetary independence and a stable currency. But it is a straightforward fallacy to conclude that you must therefore choose only two of the three, rather than opting (as most countries do in practice, whatever they may claim) for a blend that makes compromises in one or more respects. As a rule, economics prefers interiors to corners, and trade-offs to all-or-nothing choices [4].

The basic argument in favour of flexible exchange rates is that it makes it easier for an economy to adjust to external shocks, such as a rise in the oil price which widens a country's trade deficit. A flexible exchange rate also allows countries to devote monetary policy to domestic ends, such as price stability, rather than having to use interest rates to keep the exchange rate on target. But flexibility has disadvantages as well. The most important are that exchange rates can be volatile and, on occasion, grossly misaligned. This can hinder trade and upset the economy [2].

So, no exchange-rate system is ideal. Whether governments fix, float or "manage" their currencies, problems arise [3]. What is best depends on a particular economy's characteristics. In its *World Economic Outlook* the IMF (1997) considered some of the factors which affect the choice:

- **Size and openness of the economy**. If trade is a large share of GDP, then the costs of currency instability can be high. This suggests that small, open economies may be best served by fixed exchange rates.
- **Inflation rate**. If a country has much higher inflation than its trading partners, its exchange rate needs to be flexible to prevent its goods from becoming uncompetitive in world markets. If inflation differentials are more modest, a fixed rate is less troublesome.
- **Labour-market flexibility**. The more rigid wages are, the greater the need for a flexible exchange rate to help the economy respond to an external shock.
- **Degree of financial development**. In developing countries with immature financial markets, a freely floating exchange rate may not be sensible because a small number of foreign-exchange trades can cause big swings in currencies.
- **The credibility of policymakers**. The weaker the reputation of the central bank, the stronger the case for pegging the exchange rate to build confidence that inflation will be controlled. Fixed exchange rates have helped economies in Latin America to reduce inflation.
- **Capital mobility**. The more open an economy to international capital, the harder it is to sustain a fixed rate [2].

The Asian financial crisis of 1997-98 forced SE Asian currencies to cut their currency ties to the dollar as pegged exchange rates crashed [5]. The issue was whether their currencies should have floated freely? That is, how did the SE Asian economies rate against this checklist? They are relatively small, highly open economies: imports accounted for more than 40% of GDP in Thailand, Malaysia and the Philippines, twice the average for developing countries. Inflation rates were modest by developing country standards, and labour markets relatively flexible. Free-floating exchange rates were probably not the best option. SE Asia needed something in between a fixed and a flexible exchange rate, with more flexibility than before, but without a totally free float [2].

Many Asians argued that fixed exchange rates were a key ingredient in their region's record of strong, steady growth, and that without this firm foundation the region's growth prospects would have been weaker. An IMF report found no evidence that developing economies with fixed exchange rates grew any faster during 1980-1997 than those with flexible exchange rates. Inflation was consistently lower in countries that pegged their exchange rates, but the gap narrowed in the 1990s. Their real exchange rates were also less volatile [2].

Some economists said that unless governments anchored their currencies to something, currencies would drift into a vicious circle of depreciation and higher inflation. There was a concern that central banks in the region lacked the credibility to enforce tough monetary policies without some external constraint. The counter-position was that it would have been pretty foolish for SE Asian economies to return to fixed rates in a world of highly mobile capital. A fixed peg is also a fixed target for speculators. A more serious drawback, seen in Thailand, was that by appearing to eliminate currency risk a fixed rate encouraged firms and banks to borrow heavily in foreign currency at cheaper interest rates than on domestic funds. This money can then inflate speculative bubbles, especially in property. The result of all this is that the economy overheats and the financial sector is left dangerously exposed [2].

Thus, some argued that linking to a trade-weighted basket of currencies could provide more flexibility than a dollar peg. If Thailand had done this it would have been less vulnerable to the dollar's appreciation against the yen. Even better, currencies could have been allowed to move within an exchange-rate band (10% either side of a central value, say) against an appropriate basket of currencies. By introducing some uncertainty about the exchange rate, this would reduce the incentive for heavy foreign-currency borrowing. A currency band combines the advantages of both fixed and floating exchange rates: it helps to impose discipline on monetary policy, but still provides flexibility if the country is hit by big capital inflows or outflows [2].

In Latin America in the 1990s, dollarisation hogged the headlines. Argentina, which had a currency board, flirted with the idea of adopting the dollar in 1999. Ecuador abandoned the sucre and adopted the dollar in 2000. Central America's small

[1] "Fear of Floating." NBER working paper, no. 7993, http://www.nber.org/papers/w7993.pdf

[2] "Exchange-Rate Regimes for Emerging Markets: Reviving the Intermediate Option." See www.piie.com

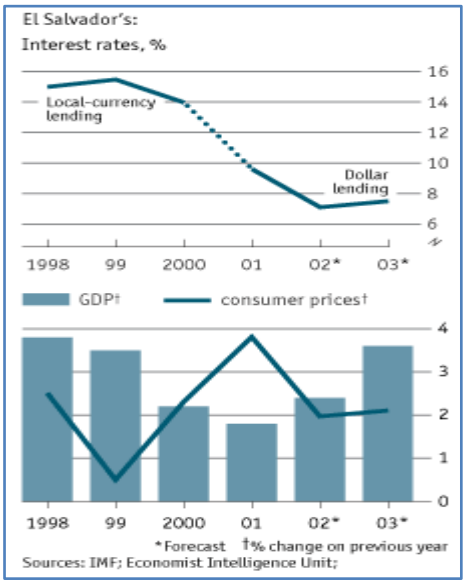
states studied the option (Panama had long adopted the dollar), with El Salvador dollarising in 2001 [5].

Dollarization

El Salvador's switch to the dollar was a carefully planned policy by several governments. The colon was pegged to the dollar in 1994 and begun its two-year phase out in Jan 2001. By Sep 2002, 85% of transactions were in dollars and it was the only unit of account in the financial system [6].

Dollarisation may well have made sense for El Salvador. Its economy, unlike Argentina's, which also contemplated such a move before it broke with its currency board, was more closely tied to that of the US, which took in two-thirds of its exports. Remittances of Salvadorians living in the US were sending $2 bn a year, equal to a seventh of GDP [6].

Since 1992, successive governments geared economic policy towards dollarization, e.g., pursuit of free-market reforms and privatisation. El Salvador combined relatively high growth with low inflation (see chart). Dollarization helped to combine high growth with low inflation. Interest rates fell and consumer credit grew. Firms and the government benefitted from cheaper international financing and reduced transaction costs for firms [6].



But dollarisation poses challenges. Regional neighbours and economic competitors floated their currencies. So, when their currencies depreciated, El Salvador had to respond with higher productivity and lower costs to remain competitive. To work, dollarisation requires deep structural reforms rather than relying on devaluing [6].

Currency boards are widely regarded because they were a good solution for economies troubled by high inflation and financial instability. Steven Hanke of Johns Hopkins University urged poor countries to adopt it. A few successes—Hong Kong (pegged since 1983), Bulgaria and Estonia—supported currency boards' reputed stabilising powers. Argentina suffered a decade of rising inflation, and two bouts of hyperinflation, when the economy minister, Domingo Cavallo, introduced it in 1991 [3].

Given the country's history of hyperinflation and the few economic choices it had, Argentina went with a currency board. It would deal decisively from fiscal and monetary profligacy, which a currency board imposes. In the five years after, the government cut wasteful spending and subsidies. This was not at the expense of economic growth (6% per year during 1991-96). The inability to rely on printed money to finance deficits focusses minds [3].

The currency board fixed its exchange rate. The central bank maintained foreign reserves to back the (narrowly defined) money supply in full, implicitly promising to convert all local currency into dollars, at the stated parity without limit, if need be. This makes a peg as credible as it can be, short of outright dollarisation, while facilitating dollarisation [4]. The reward for this stark clarity was monetary stability: zero expectations of devaluation and, therefore, lower interest rates than would otherwise prevail. In principle, it should have immunised the economy against the sorts of speculative attacks that plagued South-East Asian countries in 1997-98 [3].

For small countries open to trade and lacking a central bank with inflation-fighting credibility a currency board may be the best insurance against hyperinflation. For larger countries, such as Argentina, the choice of foreign-exchange regime was bound to be more difficult. At first, the results of the currency board were impressive cutting inflation and holding it down. It promoted stability and growth for much of the 1990s. Argentina may simply have suffered plain bad luck in the late 1990s-2001 with the strength of the dollar. In 2001 the economy was in a hole. The currency board was blamed for Argentina's plight: it arranged a loan from the IMF and from other official lenders that was the biggest external bail-out since Brazil's in January 1999. The rate of unemployment was 15%, wages were falling and output was stagnant. As for monetary stability, interest rates on Argentina's bonds were ten percentage points higher than the US equivalent—reflecting not fears of a devaluation, but the risk of default. The deepening crisis in Argentina was more than just the latest emerging-market meltdown [3].

Even as default loomed it would be wrong to conclude that Argentina's policy was an unmitigated disaster, or that, regardless of circumstances, a currency board is a wrong solution. What the economic difficulties do show is that the currency board was not the easy option that many of its more enthusiastic advocates had claimed—and that the sacrifice of monetary independence involves real economic costs [3].

Rudiger Dornbusch of MIT, not shy of contrarian positions, published a defence of currency boards. He argued that, Argentina notwithstanding, boards have virtues that can outweigh their drawbacks[3]. Mr Dornbusch conceded that currency boards involve costs, from the political to the practical. First, countries must swallow their pride and abandon their "monetary sovereignty": henceforth, interest rates are set not locally but, in effect, in Washington, DC, or Frankfurt. Second, currency boards require the government to give up seignorage—the implicit profits from printing money. Third, the fixed exchange rate can get badly out of line with those of trading partners. A strong dollar hurt Argentina, while its neighbours devalued to boost their economies [3].

According to Mr Dornbusch, the causes of Argentina's troubles were deeper than its overvalued peso. They included the legacy of high debt and earlier deficits, trade unions that had consistently thwarted reform, and obsolete industries that produced goods so shoddy that they were uncompetitive at almost any exchange rate [3].

In fact, it is wrong to separate all these issues from a currency-board debate. Argentina's notoriously intransigent unions were always likely to make it harder to get good results from a fixed currency. While the currency board stopped the government from printing money, it enabled excessive borrowing from abroad—a big part of their crisis. Still, Mr Dornbusch's main

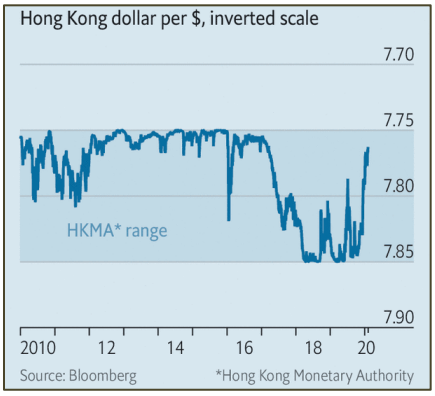
[3] R. Dornbusch, "Exchange Rates and the Choice of Monetary-Policy Regimes", *American Economic Review*, Vol. 91, No. 2.

point, that it is wrong to blame the currency board for all of Argentina's ills, is surely right [3].

Hong Kong's currency board

In Oct 2013, Hong Kong celebrated the 30th anniversary of its currency's peg to the dollar at around HK$7.80 [7]. Its system was adopted to stop a currency crisis in Oct 1983 and survived three US recessions and speculative attacks during the Asian financial crisis (AFC). In 1997 the overnight interest rate briefly reached 280% to show how far the Hong Kong Monetary Authority (HKMA) was willing to go to maintain the fix [9]. During the GFC and the Fed's QE, the peg came under upward, not downward pressure. The HKMA had to import the Fed's easy monetary policy despite its healthier economy. The result was high inflation and surging home prices. As its economy diverged from the US', it converged with that of the rest of China. And yet, the HK$ and the yuan grew apart because China's currency appreciated by a third [7].

In 2005, the peg was refined with two promises: to buy dollars at the price of HK$7.75 and sell them for HK$7.85 [8]. The strength of the HK$ obliged the HKMA to keep the first promise (buying US$) many times since 2005, often drawing the accusation of manipulating its currency for competitive advantage. But the HKMA had to manipulate the HK$ upwards, too. The first occasion presented itself in Apr 2018, when the HK$ weakened to HK$7.85, forcing the HKMA to buy HK$ in exchange for US$. The HKMA would sell as many US$ as people would want at 7.85. The HK$'s weakness reflected the gap between rising US rates and Hong Kong's low borrowing costs [8]. In 2019 there were other such occasions (see chart, HK$ to US$) [9].



Selling US$ raise concerns over exhausting reserves to defend the currency, but the HKMA had enough foreign assets to buy its entire money supply (strictly defined) twice over [8][9]. HKMA purchases of HK$ are withdrawn from circulation to reduce money supply enough to force up interest rates, stopping the weakness. The only worry in 2018 was that higher interest rates would weigh on Hong Kong property prices, which rose by 30% during 2016-18 [8].

Hong Kong could adopt the mainland's currency; in 2013, more than 10% of bank deposits in Hong Kong were already in yuan. However, these alternatives have drawbacks too. China dominated Hong Kong's trade, but much of that trade was priced in dollars, and yuan assets were subjected to capital controls [8].

Since the exchange rate is rigid other prices and wages are remarkably flexible. During the GFC, even senior civil servants took a pay cut. This flexibility allowed the economy to adjust quickly to cyclical ups and downs without the help of an independent monetary policy. Prices, particularly for property, have taken on a life of their own. But a more flexible exchange rate is not enough by itself to prevent asset-price boons: Singapore's house prices also soared despite its strengthening currency. As nearby countries like India and Indonesia fretted about capital outflows and plunging currencies, the stability offered by Hong Kong's peg looked as good on its 30th birthday as it ever had [8].

In 2019, Hong Kong's GDP fell for the first time in a decade thanks to the trade war and anti-government protests. Then in 2020 there was the pandemic. Hong Kong's economic fate was of international concern. Vast sums of global capital flow in and out of its asset markets and its border-straddling banks. Some worried about the financial resilience, noting how in the property market prices had tripled in 10 years and the top-heavy banking system had assets worth 845% of GDP. Under such conditions, Hong Kong's currency peg to the dollar could come under notice [9].

In 2022, Hong Kong's interest rate rose from 0.5 to 4.75% following the Fed's tightening, when the city's economy was weak. So, while US monetary policy can lead to wild swings in Hong Kong's property market, it is an argument for careful financial regulation. The city's fortunes rest with finance and financing trade between China and the rest of the world. So long as China's currency is not convertible the Hong Kong dollar fills that gap. If Hong Kong ever lost its access to the US financial system, the HK$ and the US$ remained linked and credible.

In the 2000s, emerging Latin American countries—along with other emerging economies including Poland, South Africa and the Czech Republic—began setting monetary policy through a more-or-less formal process of inflation targeting. The goal became to keep the flexibility of a floating currency, allied to a rigorous monetary framework to conquer inflation [5].

Brazil had the most technically sophisticated inflation-targeting framework[4]. Brazil published quarterly inflation reports that offered probabilities of different inflation paths. For 2000, the country's inflation target was 6%, falling to 4% in 2001 (with an allowable range of plus or minus two percentage points around the target). Chile had the longest history of publicly announced inflation targets. In 1990, it began publishing them for the following year, but it was only in the 2000s that the inflation rate became the main goal of monetary policy. Mexico, too, announced inflation targets, but had a less formal approach than Brazil [5].

Prior to the GFC, the strategy of combining floating currencies with an explicit inflation target proved remarkably successful in the countries that pursued it. Floating currencies did not lead, as many feared, to extreme exchange-rate volatility. Though there was a bout of jitters—notably in Brazil in the summer of 1999 after an initial big fall in the *real*, after Brazil abandoned its exchange-rate peg. However, inflation was within its target range at just under 9%. After gradually reducing inflation throughout the 1990s, Chile ended the decade with prices rising at the remarkably low annual rate of 2.3%. Mexico still had a higher rate of inflation (close to 11% in 1999) but there, too, the trend was downward. Given this record, it was hardly surprising that other emerging economies were keen on similar arrangements. The then newly flexible currencies of Latin America had actually been quite stable and succeeded in hitting their inflation targets, allowing their currencies to float [5].

So, while floating rates are less vulnerable to sudden speculative crises, and the openness, accountability and anti-inflation focus that targets can instil in emerging-economy governments made

[4] "Inflation targeting in emerging market countries," "AEA papers and proceedings", May 2000

flexible regimes more welcome. But this was no panacea either. First, emerging economies have specific problems that make inflation-targeting difficult. Many, for instance, still had relatively high rates of inflation (say, 20% or more). At these levels it is difficult to predict future inflation rates with any accuracy, so setting targets might actually damage the central bank's credibility. Exchange-rate flexibility (which is a prerequisite for inflation-targeting) can also bring problems. In Latin America, in particular, many countries have a big share of assets and liabilities denominated in dollars. This means that big exchange-rate movements can have a devastating impact on a country's balance sheet. That is one reason why even in floating-rate regimes, governments pay attention to the value of their currencies [5].

Plus, inflation-targeting had barely been tested prior to the GFC. Brazil's striking success at combating inflation was short term: it had yet to solve its deep-seated fiscal problems. Brazil, Chile and Mexico all saw their economic prospects brighten as commodity prices rose, rich-country economic growth strengthened and private capital flows to emerging markets resumed. That meant that inflation targeting, especially in Brazil, had been politically easy, since it meant growth and gradually falling interest rates [5].

Less clear was how the system would cope with a financial shock caused, say, by a sharp slowdown in the US. When hard times came, would central banks be able to raise interest rates, prevent excessive currency volatility and stick to their inflation targets? The real risk is that emerging-market currencies would destabilize, inflation could over/undershoot its target, central banks could lose credibility and confidence would erode [5].

In short, no exchange-rate regime offers a magic solution. There is no necessary relationship at all between the exchange-rate regime and economic performance: growth can be high or low under any type of regime. What really makes a difference to a country's prospects is the quality of the overall economic policies that are pursued [2].

Breaking the dollar fix: Case of China's currency basket

In 2005 the yuan became unpegged from the dollar. The currency remained tightly managed though with the yuan revolving around the dollar. That benefited China, but it also stored up problems, which were exposed most dramatically in 2015 when it suffered massive capital outflows. Since then, the central bank steadily moved the yuan to a multi-currency orbit, tracking 24 in all. In economic terms, this is known as a currency-basket regime [10].

While the yuan floats according to the trade value of the basket, the analysis of the yuan's value is often compared to that of another large currency, the dollar. The depreciation of the yuan to the dollar in 2020 attracted attention, particularly as it remained strong overall (see chart exchange rate). In late May the People's Bank of China (PBOC) set the yuan's daily reference rate at 7.13 to the dollar, the weakest since 2008 [10].

At the end of 2015 China started announcing the yuan' exchange rate against a basket of currencies. It took a while to work out the kinks in the new system, but the evidence is that the yuan was among the most stable currencies in the world since mid-2016. Its real effective exchange rate – its value against the currencies of its trading partners, adjusted for inflation – rose by just 0.2% until 2020, anchored by the official basket [10].

The yuan's stability is partly by design. Every morning the PBOC sets its reference rate on the basis of two variables: the previous day's close against the dollar and the need to limit changes against the basket. The formula tends to push the yuan towards the middle of the pack. If the dollar is generally weak, the yuan will strengthen against it, but depreciate against the other currencies – exactly what happened in Jun 2020. The PBOC also adds a third variable, the "counter-cyclical adjustment factor", when it deems that the yuan is moving too much [10].

Every day the yuan can move up or down by 2% from its reference rate against the dollar. It has never hit that limit and China is growing comfortable with allowing bigger swings within it. Over the long term, this may have contributed to its stability. On any given day, it is not obvious where the yuan will end up, and traders take both sides of the market [10].

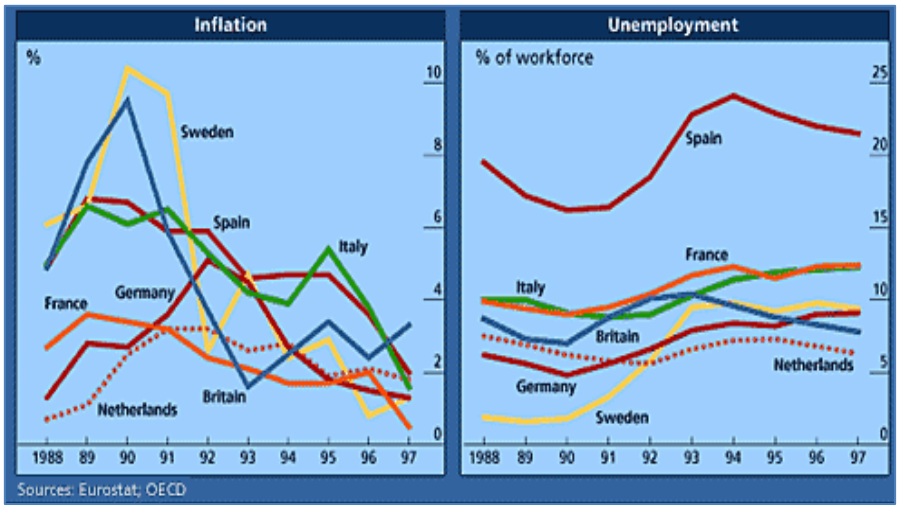
The basket regime seems to have allowed the PBOC to stop conducting heavy-handed intervention. Foreign-exchange reserves held steady at around $3.1trn since mid-2016, implying that the yuan faced no great appreciation or depreciation pressure. However, the PBOC became more targeted in its intervention. When the yuan is weak, it called on the state-owned commercial banks to sell forward dollars in foreign-exchange swaps, to signal that the yuan will strengthen in the future. The biggest intervention of all is China's capital controls, which remain very tight [10].

MONETARY UNION

In 1961 Robert Mundell, an American academic, published a short article outlining a theory of "optimal currency areas". The theory was refined later, but its essence remains the same. It proposes that there are gains to be had from sharing a currency across borders—more transparent prices, lower transaction costs, greater certainty for investors, enhanced competition. For the EU the European Commission put these gains at 0.5% of GDP—some $40 bn a year [16][17]. A single monetary policy run by an independent central bank should deliver price stability, a valuable gain for the many European countries with poor inflation records. However, a single policy can also impose costs, especially if interest-rate changes affect different economies in different ways (see charts on inflation and unemployment in Europe) [16].

The broader benefits of a single currency must be weighed against the loss of policy instruments: an independent monetary policy and the option of changing the exchange rate. Losing these is especially grave if a country or region is likely to suffer

"asymmetric shocks" that affect it differently from the rest of the single-currency area, because it is no longer able to respond by loosening its national monetary policy or devaluing its currency [16].



Optimal currency theory then looks at alternative responses to asymmetric shocks, singling out three. The first is mobility of labour: workers in the affected country must be able and willing to move freely to other countries. The second is flexibility of wages and prices: the country must be able to adjust these in response to a shock. The third is some automatic mechanism for transferring fiscal resources to the affected country [16].

The theory concludes that for a currency area to have the best chance of success, asymmetric shocks should be rare, implying that the economies involved are on similar cycles and have similar structures. Moreover, the single monetary policy should affect all the constituent parts in the same way (in the jargon, through similar transmission mechanisms). There should be no cultural, linguistic or legal barriers to labour mobility across frontiers; there should be wage flexibility; and there should be some system of stabilising transfers [16].

The euro's launch would be a risky venture at the best of times, but in 1998, it looked a blessing for once-shaky currencies such as the French franc and Italian lira. Pegs around the world had come unstuck, and other European currencies yo-yo-ed, but the EMU stayed solid. In January 1999, the periodic crises that had rocked Europe's currencies over the previous 30 years could be a thing of the past [17].

Currency stability would benefit the euro economies. So too would the promise, underwritten by an independent European Central Bank (ECB), of low inflation. That would be a boon for Italy and Spain, countries with poor inflation records. Greater macroeconomic stability is a prize well worth having, but the euro's biggest benefits may have been microeconomic. Businesses and individuals would save by handling one currency not many [17].

These gains are small change compared with the boost to the EU's single market that the euro could provide. The single market had delivered fewer efficiency gains than many had hoped. But it was argued that when the euro arrived, more consumers and companies would have to treat the euro-zone as a single entity, even though national tax systems and regulations still differed [17].

It would instantly be easier to compare prices and wages across the euro area, to encourage arbitrage and increase efficiency. For example, traders will be able to ship cars from Italy, where they were cheap, to France, where they were dear, without fear that currencies would move against them. In addition, remaining barriers against parallel imports—in this case, exclusive car-dealerships—would look even more outrageous than in 1998. Transparent pricing would increase competition because it will be easier for companies to sell across the euro-zone and for consumers to shop around. That should force European companies to restructure faster, further boosting economies [17].

The single currency would also give a boost to the development of a liquid euro-wide capital market, lowering the cost of capital and improving its allocation. This could be especially helpful to smaller companies that have in the past relied on backward domestic banks. For investors and pension funds, too, it will mean a wider choice of securities at keener prices [17].

Currency certainty, low inflation, increased trade and more efficient markets: all promised big benefits. But a single currency involves big risks too. Euro members gave up both the right to set their own interest rates and the option of moving exchange rates against each other. That loss of flexibility may be a big sacrifice if their economies do not behave as one and cannot easily adjust in other ways [17].

How well the euro-zone functions would depend on how closely it resembled or came to resemble an "optimal currency area". If Finland and Portugal, say, are to share a currency, they should not, in an ideal world, be exposed to different sorts of shock. Their business cycles need to be broadly in line, and the structures of their economies alike. If they are affected differently by an economic shock—if a recession in Latin America hits Portuguese exports more than Finnish ones, say, or if Finnish productivity rises relative to Portugal's—they need to be capable of speedy adjustment [17].

It did not take an economics professor to see that none of the conditions for an optimal currency were met in the EU in 1998. There were cyclical and structural differences among EU economies, and interest rates operated in different ways. The euro-zone experienced frequent, big asymmetric shocks from the decade since 1988, including the unification of Germany and the collapse of Finland's trade with the former Soviet Union. Adjustment was painfully slow. There was little or no labour mobility among the member countries, and wages are notoriously rigid. Moreover, there was always little enthusiasm for an expansion of the EU budget to allow for big fiscal transfers [12]. To top it all, governments agreed on a crazy fiscal straitjacket called the "stability pact" that would limit national fiscal policy measures [17].

Monetary union in Africa

Many Central Africans objected to the west African and central African CFA francs, two monetary unions pegged to the euro and backed by France. This arrangement delivered low inflation and currency stability to the 14 African countries that used one or other of the CFA francs. Some saw the CFA a relic of past subjugation and portrayed it as a "colonial tax". The symbolism was powerful. The currency's acronym originally stood for "French Colonies of Africa" and the CFA was a lightning rod for anti-French sentiment.

In Dec 2019 Emmanuel Macron and Alassane Ouattara, the presidents of France and Ivory Coast, announced the changes to the currency area existing since 1945. The west African CFA franc, used by eight countries, was ditched in 2020 and replaced by the eco, and has looser ties to France. The

central African CFA franc remained unchanged, but the six countries using it were to implement similar reforms.

France would continue to support the currency's peg to the euro. But this guarantee—in effect a promise to make unlimited transfers from the French treasury if the eco comes under speculative attack—is one that markets may doubt, especially in a crisis. "How can we short this thing?" asked one hedge fund trader, on hearing news of the new currency.

As old safeguards were dismantled, the eco became a test of confidence. Countries using the CFA deposited half their foreign-exchange reserves into an account at the French treasury. This obligation ended with the eco, allowing them to go to the Central Bank of West African States in Dakar (BCEAO). France lost representation on the currency union's board, so with less oversight and no control over its reserves, France could hesitate to write a blank cheque.

Maintaining the eco's peg to the euro may also impose uncomfortable limits on the monetary sovereignty of its members. Any country that maintains a fixed exchange rate while letting capital flow freely across borders—as west African ones would do—forfeits a measure of monetary autonomy. For instance if the BCEAO were to slash interest rates from their benchmark of 2.5%, capital would probably flee to the relative safety of Europe. The central bank could burn through reserves, but eventually it would either have to raise interest rates or let the exchange rate slide.

By choosing to retain the peg, west African governments deliberately bound their own hands. A problem for central banks everywhere is convincing people that they will not give in to political pressure to stoke booms or print money. The peg is, in effect, a commitment to track the anti-inflationary stance of the ECB. This has produced benefits: inflation has been much lower in Ivory Coast, which uses the CFA franc, than in neighbouring Ghana, which does not.

Monetary policies aimed at keeping inflation low in Europe are not necessarily right for Africa. The rigidity of a peg was also a worry. If wage growth in the eco zone exceeded the euro-zone's (adjusting for productivity) then the eco's fixed exchange rate would become overvalued. That would retard exports and encourage imports.
Economist, "The end of the CFA: Francly speaking", 4 Jan 2020, p. 26-7.

One way to deal with such "asymmetric" shocks is for capital and labour to move out of a depressed region (Portugal, say) and into a flourishing one (Finland). Another is for wages—and thus prices—to fall in Portugal and rise in Finland, boosting the demand for Portuguese products at the expense of Finnish ones. Another response is to make transfers from regions doing well to those doing badly—either through governments or through individuals earning returns on foreign assets. If the effects of shocks persist, fiscal transfers merely delay the day of reckoning; ultimately, wages or people (or both) must shift [17].

Many economists compare and contrast Europe with the US, which has a similar-sized economy and population. The US has a single currency, but it may not be an optimal currency area either. US regions also suffer from asymmetric shocks—New England's property collapse in the late 1980s caused recession there while the rest of the US economy boomed, Texan oil in the mid-1980s, and California's defence bust of the 1990s. However, at least wages and prices are more flexible, Americans readily move to where jobs have shifted, searching for jobs across state borders freely and willingly, capital and product markets are more deregulated than in Europe, and the federal government plays an important stabilising role. Calculations in the 1980s suggested that, on average, 40% of any drop in gross state product was offset through higher benefits received from, or lower taxes paid to, the federal authorities [16][17].

This optimal currency area theory may sound esoteric, but it is a main reason why so many economists, especially but not only in the US, were hostile to EMU. One noted critic, Martin Feldstein at Harvard University, even suggested that the single currency could lead to war[5] [16].

Oddly enough in view of his strictures, Mr Mundell himself took a more favourable view of the euro than many of his followers. This may be because there are practical answers to many of the theoretical objections. The US is probably not an optimal currency area either, but the existence of the dollar has moved it closer to becoming one. Both the amount of labour mobility and the extent of stabilising fiscal transfers in the US may have been exaggerated. One study suggested that in 1998 only 10% of any fall in gross state product is compensated via the federal government[6] [16].

The first difficult consideration is that the arrival of the euro would change Europe, just as the dollar did in the US. But how? The single currency may itself make the euro-zone more of an optimum currency area by making asymmetric shocks rarer and less likely because economies become more closely intertwined: by promoting the convergence of trade and economies, by applying pressure to deregulate labour markets and to increase fiscal flexibility, and by eliminating shocks that are policy-induced. Indeed, the arguments of some of the economics literature are circular, to the point where an optimal currency area sometimes seems to be defined as one that has a single currency [16][17].

The euro could boost trade. If countries increasingly trade similar products—French Renault cars for German Volkswagens, for example—their business cycles may converge. Even if they do not, trade increases spillovers between economies. If Germany and France trade more, an upturn in Germany will mean that French exports to Germany rise by more than before. Policy-induced shocks should diminish. Granted, the ECB's monetary policy may affect economies differently, because some are more responsive to interest-rate changes than others, but national monetary policies would no longer differ and devaluations would no longer create or amplify shocks, as they did during the 1992-93 currency crisis when the French jacked up interest rates to defend the franc and the Italian lira fell too far [17].

There is, admittedly, a risk that asymmetry could rise if euro countries specialise more. If Germany (like Detroit) specialises in cars, say, and France (like Silicon Valley) in computers, their

[5] M. Feldstein, "The euro and war", *Foreign Affairs*, Nov/Dec 1997.

[6] A. Fatas, "Redistribution vs insurance: Does Europe need a fiscal federation?", *Economic Policy* 26: Prospects and Challenges for the Euro. FEPR/Blackwell, 1998.

economies may diverge more than now. But empirical evidence suggests this is unlikely. Using 30 years of data from 20 rich countries, Jeffrey Frankel and Andrew Rose, both at the University of California, Berkeley, found that closer economic integration tended to produce more highly synchronised business cycles [17].

Nevertheless, there could still be some asymmetric shocks. Broadly, the euro economies face two challenges: how to smooth differing cycles of boom and bust; and how to adapt to structural change. When the euro economies are not growing in unison, a common monetary policy risks being too loose for some and too tight for others. The euro interest rate set by the ECB may be too low to keep a lid on inflation in booming economies such as Spain or Ireland (in 1998) and too high to stimulate growth in flagging ones such as Germany or Italy [17].

Economists' doubts about the euro tended to ignore the alternative. The euro was not a necessity for economic integration. Yet, in an increasingly integrated Europe, the independent use by a member country of monetary policy or the exchange rate is seldom easy to justify. Monetary policy should focus on price stability, as the ECB was required to do. As for devaluation, most studies suggest that its beneficial effects on competitiveness are only temporary; over time they are eroded by higher prices. Devaluation also causes tensions inside the single market; in 1993, French officials say, France lost nearly 1% of GDP thanks to "competitive" devaluations in Italy and Britain [16].

Arguments about the economics of the single currency also ignored the fact that, barring an extraordinary external shock, Europe was about to embrace the euro. To abandon it would do enormous political damage to the EU, and could have triggered a potentially devastating bout of currency instability. The D-mark would have shot up, and so would interest rates in Italy and Spain. In these circumstances, just keeping the single market together might become difficult. The lack of a viable alternative was itself a powerful, if negative, argument for going ahead with EMU [16].

However, Europe's shortcomings, too, could be exaggerated. For instance, labour mobility was limited not just between European countries, but within them too; yet their own single national currencies seemed to be working perfectly well. Asymmetric shocks may have been less common in diversified Europe than in some of the highly specialised US regions—and they were more likely to hit industries or regions than individual countries, making the exchange rate the wrong adjustment tool. This would be good both for Europe's consumers and their economies, subject to two caveats. One is that some industries might end up concentrated in particular regions or countries, as has happened in the US. Nobody knew how far this would go, though the single currency would clearly give specialisation a push. If Europe started to look more like the US, the risk of asymmetric shocks could increase. Second is the restructuring that the euro would promote, i.e., restructuring could deliver benefits only if companies could shed labour, i.e.,deregulation of labour markets [16].

How fast would reforms come? Here opinions differed. Some economists reckon that capital markets are quick to change. Some of the economic effects of EMU had already emerged in 1998. The most immediate impact would be on Europe's capital markets, which were likely to become more like the US's. Henry Kaufman, a shrewd Wall Street financier, went so far as to forecast "a new colonisation by Anglo-American financial markets". Banks were likely to lose their prime role in financing industry to the securities markets, which could be expected to develop rapidly. The euro area's bond market would rival the US's, and so would its stockmarkets. Capital market reforms could both reduce the cost of capital and improve its allocation. Some economists reckoned that ineffective capital markets were a main causes of Europe's high unemployment [16].

Early on most prospective euro members announced that both existing and new government debt would be denominated in euros from 1 January 1999. Companies would follow suit. Yet other economists pointed to the absence of benchmark bonds. France was manoeuvring to give this status to its Treasury bonds, though in the long run German government bonds seemed a better bet. In addition, there are lots of tax, regulatory and cultural differences among euro countries that remained in the way of free investing and borrowing across borders. A genuine single capital market could take some years to emerge [16].

The euro merger mania stretched to industries beyond finance. Once prices across Europe were in euros, instead of escudos or Finnish marks, price comparisons would be instant—and competition, at both retail and wholesale level, would hot up significantly. That is why industries selling into most European markets—such as car and drugs makers—were all cutting costs and seeking partners in preparation for the pressure the euro may put on their margins [16].

The second caveat, about restructuring of the labour market that the euro could promote, is even more serious because it was perhaps the most critical economic issue of all. Would the EMU help bring about structural changes? There was widely differing opinion. Some were sceptical, considering that the two are essentially unrelated. The arrival of the single currency made it more urgent to bring in broader structural reforms to Europe's sclerotic economies. True, the single currency started at a serendipitous moment, but despite relatively buoyant economies Europe continued to suffer from high unemployment, most of it structural rather than cyclical—which the euro on its own would do little to cure, and could conceivably worsen in the short run. The loss of independent monetary and exchange-rate flexibility made it essential to improve European economies' flexibility in other respects [16].

The International Monetary Fund, for instance, gave a warning[7] that, without structural reforms, the euro could make Europe's economies even more rigid and less competitive. France and Germany maintained a de facto monetary union (the franc was pegged to the D-mark) for over a decade, yet both were hideously slow to introduce structural reforms. The French hardly embraced flexible labour markets despite very high unemployment. In the short run, restructuring could have increased Europe's already unacceptably high unemployment. That may explain why European countries remain so unwilling to change labour-market regulations that make it hard to fire (and costly to hire) workers. Comparisons of US and European bank mergers suggest that cost savings were twice as high in the US because jobs can be cut more easily [16].

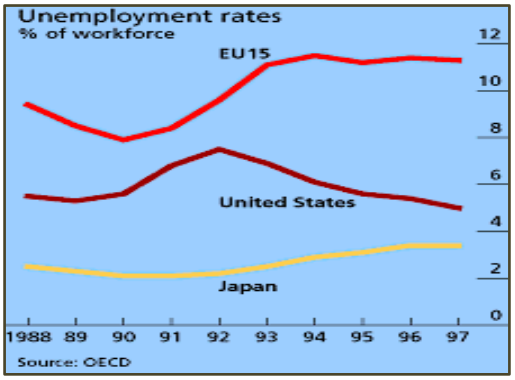
There were some signs that EMU would act as a catalyst for structural change. There is indeed some evidence that this was happening in the late 1990s. Italy and Spain partially deregulated their labour markets. All European countries, even France, continued to privatise state-owned industries. There was a growing consensus that Europe's pension problem must be dealt with. In making the single market more competitive, and increasing price transparency, the euro was bound to increase the pressure for change. As Jean-Claude Trichet, governor of the Bank of France, put it: "The single currency was per se a major structural reform" [16]. EU labour markets were becoming less rigid, despite remaining far less flexible than the

[7] IMF, "EMU and the world economy", *World Economic Outlook*: special section, Oct 1997.

US's. Companies increasingly bypassed strict job-protection laws; and firms were freer to vary workers' hours, although France's (and Italy's) moves towards a 35-hour week were a worry. It was conceivable that European workers would recognise that, with devaluation no longer an option, wage demands would have to be more flexible. It was also possible that they would not [17].

Unless Europe deregulated its product and labour markets, the risk was that some regions may overheat, while others face periods of stagnation. Many of the euro's microeconomic benefits can go unrealised. Thus, without structural reforms, the euro's economic promise may be wasted. And stagnation and unemployment would raise political tensions too [17].

Yet if labour-market regulation genuinely protected jobs, Europe's unemployment performance would be better than the US's, not worse (see chart, unemployment rates). The evidence is clear: the way to cut unemployment is to deregulate, trim welfare states and cut wages and, especially, non-wage labour costs; not, as Europe has done, to regulate, protect welfare and allow non-wage labour costs to go through the roof [16].



Europe's governments did themselves no favours with the design of the Maastricht criteria and the accompanying stability pact. Indeed, the blueprint was so inappropriate that, without changes, it could turn into yet another obstacle to structural reform [16].

The absence of fiscal transfers was more serious. As long ago as 1977, the MacDougall report advocated a big expansion of the European budget, to perhaps 7% of GDP, to enable it to play a more substantial stabilising role. Alexandre Lamfalussy, the first president of the European Monetary Institute, thought monetary union would necessitate a much bigger EU budget. However, most EU members, under pressure to cut public spending at home, were unwilling to let the budget rise above its 1998 ceiling of 1.27% of their combined GDP [16].

Meanwhile, national fiscal policy remained available (though unhelpfully constrained by the "stability and growth pact"). Indeed, given that the public sector as a proportion of GDP is bigger in Europe than in the US, national fiscal policies in the EU could have commensurately bigger stabilising effects. Commission officials also drew attention to Article 103(a) of the Maastricht treaty, which permitted an aid package to a euro member that got into real difficulties [16].

This loss of national monetary autonomy need not have mattered too much, so long as fiscal policy could take the strain instead. The Germans, say, could ease fiscal policy to kick-start their economy. The Spanish could raise taxes or cut government spending to cool theirs. But stability-pact constraints may stop the first; while, after years of belt-tightening to qualify for the euro, booming countries would find it politically hard to squeeze budgets further, especially if they were in surplus [17].

Higher interest rates hit some economies harder than others

In March 1998, reports published by the European Monetary Institute and the EC tested the fitness of countries to join the single European currency. They applauded the convergence in the 1990s in countries' budget deficits, inflation, exchange rates and interest rates, but that did not mean that the 11 economies expected to participate in EMU were identikit copies of one another. Far from it. Differences remained in their financial structures, which made some economies more sensitive than others to interest-rate changes.

From 1 January 1999, all member countries would share a common short-term interest rate. Some economists warned that a single monetary policy may be unwise if growth rates and hence inflationary pressures differed across Europe. For example, Ireland's economy grew by 10% in 1997; Germany's grew by 2.5%. This suggests that Ireland needed higher interest rates than Germany. However, even if all countries were at the same point in the economic cycle, Europe's central bank would still have a problem. Differences in the way interest rates affect output across Europe mean that a given rise in rates would depress some economies more than others.

Why do interest-rate changes affect countries' output differently? Higher rates influence economies in three main ways. First, they raise the cost of borrowing and so deter new investment or purchases of consumer durables on credit. It has long been argued the UK consumers are more sensitive to changes in interest rates than their counterparts in continental Europe. Studies found that there are also big differences in the way the expected EMU members respond to interest rates.[8] [9] Second, there is an "income effect": debtors feel poorer because their debt-service costs are higher, whereas savers feel richer because their interest-income has gone up. Third, there is an exchange-rate effect: a rise in interest rates pushes up the currency and so squeezes exports.

Several things follow:

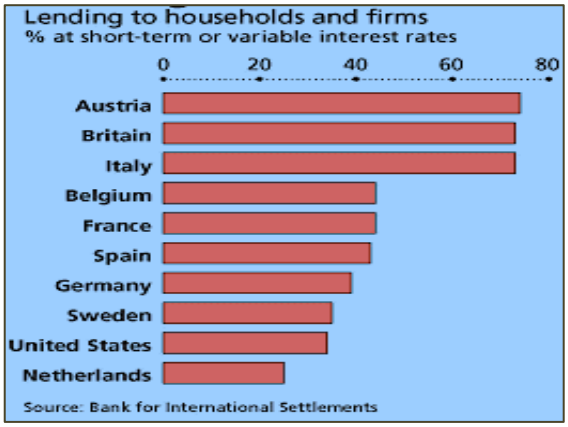
- The higher the proportion of borrowing that is short term or at variable interest rates, the bigger the income effect and hence the bigger the drop in spending when interest rates rise. Lending on such terms is most popular in Austria, Britain and Italy (see chart, lending to households and firms). In contrast, in France, Germany, and the Netherlands, borrowing is mostly long term and at fixed interest rates.
- Banks vary in the speed with which they pass on rises in official interest rates to their customers. In Britain, the Netherlands and Spain short-term bank-lending rates are almost fully adjusted within three months. At the other extreme, even after 12 months French banks pass on only three-fifths of any increase in rates and German banks only three-quarters. This reflects closer relationships between banks and customers in these countries and less competition between banks.
- The shape of firms' and households' balance sheets is important. Countries' with lower levels of private-sector debt, like Italy, Germany and Belgium, will be hit less hard by a rise in interest rates than heavily-indebted countries.
- The more open an economy, the bigger will be the impact on output of an appreciation of the euro against the dollar as a result of higher interest rates. Ireland and Belgium are the most exposed: their exports outside the expected EMU area account for 34% and 21% of GDP respectively,

[8] "The Real Effects of Monetary Policy in the European Union: What are the Differences?" IMF Working Paper No. 160, Dec 1997.

[9] "A Red Letter Day?" CEPR Discussion Paper No. 1804, Feb 1998.

compared with around 10% or less in France, Germany, Italy and Spain.

It is true that the creation of a single currency could help, over time, to reduce differences between countries, and hence improve convergence in the impact of monetary policy. For example, a euro-wide consumer-credit market could boost competition and lead banks to pass on changes in interest rates more swiftly.



But such convergence would not happen overnight. Meanwhile, the way Europeans borrow and save was changing quickly because of extra banking competition and financial innovation. That mades the ECB's task of judging the impact of monetary policy even more uncertain. As Mr Dornbusch and his colleagues warn, "shooting at a moving target in the fog is no easy task".

"Economics focus: Can one size fit all?", *Economist*, 26 Mar 1998, p. 82.

A different way of smoothing divergent business cycles would be to increase EU-wide fiscal transfers. To get the biggest bang for its euro, Brussels could spend any increased tax revenue on cyclical spending, such as unemployment benefit. Then if Spain were booming while Germany was in recession, Brussels would, in effect, tax Spanish workers to pay Germans' unemployment benefit, limiting Spanish growth and stimulating Germany's. But imagine selling a scheme like this to the Spanish government [17].

If not public, could private transfers play a role instead? If French investors, say, held a large portfolio of international assets, they would be cushioned by the income from those investments when the French economy was doing badly. Look again at the US. When New England's economy slid in the 1980s, residents' net income from investments across the US was worth around 9% of regional GDP. Unfortunately, most EU residents had hardly any foreign financial assets. Net foreign investment income is worth only around 0.2% of GDP in France and Germany. That may change, though, as euro-wide capital markets develop [17].

Structural change was likely to pose a bigger challenge than cyclical divergences. Adjustment to shocks would always be slow and painful so long as wages in the EU were highly inflexible and Europeans remain reluctant or unable—for cultural, language, or pension reasons,—to move to find a job. Regions that suffer an adverse shock could be stuck in a slump with high unemployment until they do adjust [17].

Such worries are not new. Southern Italy has long had a stagnant economy with high unemployment. Eastern Germany and Andalusia may be trapped in similar binds. Until now, Italy, Germany and Spain have mostly thrown cash at regional problems rather than tackling their causes. After the euro's launch, that would be costlier [as the euro crisis proved in 2008]. Pressure for greater EU-wide aid may grow. But so too will the need to free up labour and product markets [17].

Benefits of monetary union cut down to size

Despite controversies about Europe's bold experiment in monetary union, there is some agreement about where the costs and benefits lie. The costs are macroeconomic, caused by forgoing the right to set interest rates to suit the specific economic conditions of a member state. The benefits are microeconomic, consisting of potential gains in trade and growth as the costs of changing currencies and exchange-rate uncertainty are removed.

In 2003, for example, the UK's Treasury ruled out membership because the country's economy had not yet converged sufficiently with that of the euro area to be able to live with interest rates set in Frankfurt. But it tossed a juicy bone to disappointed euro-enthusiasts with some salivating figures for possible gains in trade and growth from joining the club. In rather than out, Britain could enjoy a rise in trade with the euro area over 30 years of up to 50%, which would boost living standards by up to 9%.

Richard Baldwin, a trade economist at the Graduate Institute of International Studies in Geneva, worked out that the boost to trade within the euro area from the single currency would be much smaller: between 5% and 15%, with a best estimate of 9%. Furthermore, the gain would not build up over time. The three EU countries that stayed out—the UK, Sweden and Denmark— gained almost as much as founder members, since the single currency raised their exports to the euro zone by 7%.

Researchers continued to find large trade effects from currency unions. Mr Baldwin explains why these estimates are unreliable. The main problem is that most of the countries involved are an odd bunch of small, poor economies that are in unions because of former colonial arrangements. Such is their diversity that it is impossible to model the full range of possible influences on their trade. But if some of the omitted factors are correlated with membership of a monetary union, the estimate of its impact on trade is exaggerated. And causality is also likely to run the other way: small, open economies, which would in any case trade heavily, are especially likely to share a currency. Much of the trade effect of monetary unions comes from a collapse in exports and imports when they dissolve. However, this can be caused by the imposition of tariffs by newly independent countries, civil disruption or war.

The intractable difficulties in working out the trade effect from previous currency unions means that previous estimates are fatally flawed. But the euro has now been in existence since the start of 1999, with notes and coins circulating since January 2002, so there is an increasing body of evidence based on its experience. That has certainly highlighted the macroeconomic disadvantages for its 12 member states. The loss of monetary sovereignty has hobbled first Germany and, more recently, Italy.

Despite these drawbacks, some studies have pointed to a substantial increase in trade within the euro area arising from monetary union, for example by 20-25% in the first four years. As with the previous currency unions, however, many other explanatory influences might have come into play. Fortunately, unlike those earlier unions, there is a "control" group: the three countries that stayed out. This is particularly useful because they have shared other relevant aspects of membership of the EU, such as trade policy. It is on the basis of this that Mr Baldwin reaches his best estimate of a 9% increase in trade within the euro area because of monetary union.

As important, he establishes that the boost to trade did not occur, as expected, by lowering the transaction costs for

trade within the euro area. Had it done so, the stimulus would have been a fall in the prices of goods traded between euro-zone members relative to those traded with countries outside the currency union. However, Mr Baldwin fails to find either this expected relative decline or the trade diversion it would have generated from the three countries that stayed out. He argues that another mechanism was at work. The introduction of the euro has in effect brought down the fixed cost of trading in the euro area. This has made it possible for companies selling products to just a few of the 12 member states to expand their market across more or all of them. This explains why the boost to trade has essentially been a one-off adjustment; and why countries that stayed out have benefited almost as much as those that joined.

There is also an important lesson for the 12 members of the euro area. Even if their economies were insufficiently aligned to be best suited for a currency union, one hope has been that the euro would make them converge as they trade much more intensively with one another. The message from Mr Baldwin's report is that this is too optimistic. Countries in the euro area would have to undertake more reforms, such as making their labour markets more flexible, if they are to make the best of life with a single monetary policy.

Economist, "Economics focus: The euro and trade", 22 Jun 2006, p. 88.

Labour market reform

In 2017, it would have been unfair to call France the sick man of Europe; half the continent was wheezing or limping. Yet there was room for improvement. Real output per person had barely risen in the decade since the financial crisis. Government spending stood at 57% of GDP, outstripping the tax take; France's budget deficit, at 3.4% of GDP, was among the largest in the euro area's core. The biggest worry, however, concerned the labour market. The unemployment rate, at 10.1%, was stubbornly high. Nearly a quarter of French young adults were unemployed. Worklessness, especially among young people, was a source of rising social tension and a corrosive force in French politics. France needed to steal the German trick—turning labour-market morass to miracle—in half the time it took Germany [18].

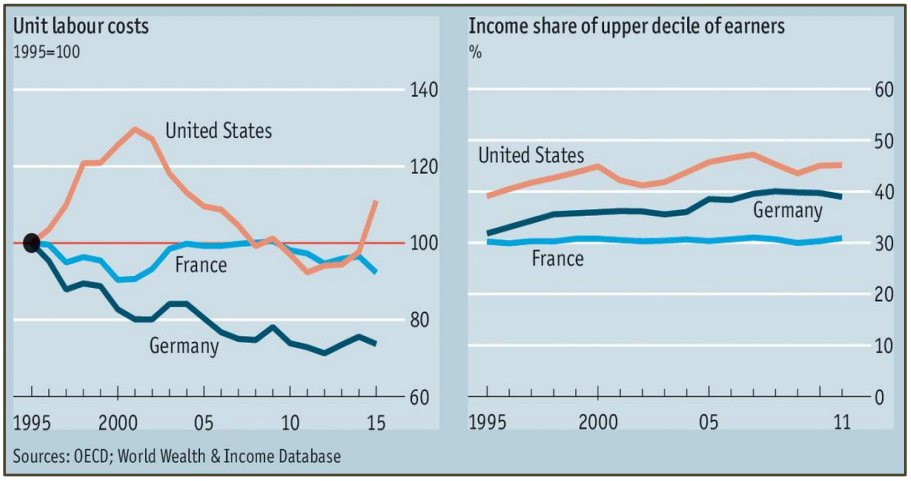
Mr Macron, however, would need to be careful about mimicking German reforms too slavishly. The groundwork for Germany's miracle was laid well before the Hartz reforms, in response to unique circumstances. German reunification in 1990 placed great fiscal strain on the economy. And the collapse of Soviet power gave Germany's eastern neighbours—economies with skilled but low-cost workforces and close historical relationships with Germany—better access to Western markets. Conditions seemed ideal for a swift industrial decline. That prospect spooked German workers into docility. Wage contracts became increasingly localised (helped by the absence of the national wage floors imposed in France) and strike action was rarer than in France or Italy. Union membership dropped; the share of workers covered by industry-level wage agreements fell from 75% in 1995 to 56% in 2008 [18].

How did the Germans manage it? The popular narrative of the German turnaround begins with the "Hartz reforms"—named after Peter Hartz, who ran the commission that formulated them—enacted from 2003 to 2005. Germany's structural unemployment rate had risen steadily from the early 1970s. Each recession added workers to the jobless rolls who subsequently never left. The Hartz reforms overhauled job training and placement programmes and reduced barriers to part-time work. Most important, they transformed a wildly generous system of unemployment and welfare payments, which allowed some workers to collect indefinite benefits equivalent to about half their previous salary, into one which paid fixed amounts for a limited time. The reforms inspired intense opposition and, in 2005, cost Gerhard Schröder the chancellorship (it passed to one Angela Merkel). Yet the pain appears to have been worth it. German leaders are certainly not slow to evangelise about the benefits of reform [18].

As a result, from the early 1990s labour costs for German firms fell sharply relative to those in other economies (see left-hand chart). Low labour costs reduced the incentive for firms to shift production abroad and boosted the competitiveness of German exports. (Flexibility also shielded the German labour market during the Great Recession, when a sharp fall in GDP barely affected the unemployment rate.) The same political economy that allowed lower German labour costs probably enabled the passage of the Hartz reforms. Yet it made its own, independent contribution to rising German employment [18].

Nor can the global context be ignored. In the 2000s the world economy grew at an average annual pace of around 4%, despite the Great Recession. China, which bought much of the industrial equipment manufactured in Germany, grew especially rapidly. Booming global trade amplified the benefits to Germany of rising competitiveness. And German labour costs were falling while those of its European neighbours were flat or rising. Now, the global outlook for output and trade is far murkier. And much of the euro-area periphery is also trying to lower labour costs and boost competitiveness. The Hartz reforms certainly succeeded in pushing some workers back into the labour force and into work; one analysis suggests they reduced Germany's structural unemployment rate by 1.4 percentage points, for instance. But other shifts in the economy were just as critical to the German turnaround [18].

Moreover, change in Germany's labour market was not a story of improvement across the board. Growth in employment soared, but growth in total hours worked did not. To a great extent, Germany redistributed working hours rather than created new ones. Though wages for the better-paid climbed rapidly, especially in manufacturing, they fell for the lowest-paid. So income inequality in Germany, on some measures, followed a remarkably US trajectory (see right-hand chart). Increased employment in France is a worthy goal; but to make it the sole priority could have unpleasant consequences for some workers [18].



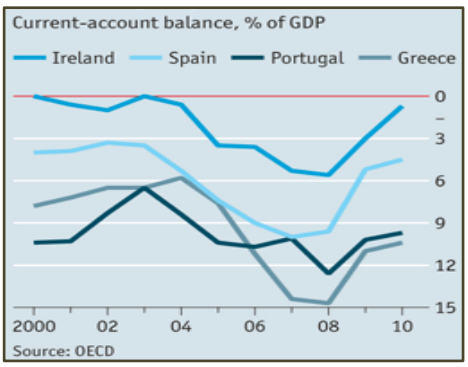
Background on the Euro Crisis

Pre-crisis Shortcomings and Institutional Weaknesses

The ECB is a supranational institution. A stand-alone monetary union without the usual fiscal and political foundations was conceived at the momentous Maastricht summit in December 1991. The treaty set "convergence" criteria, e.g., low inflation and long-term interest rates, to check whether countries were economically fit enough to join the single currency. This included fiscal criteria, notably ceilings for budget deficits of 3% of GDP and for public debt of 60%. The treaty stipulated that there would be no bail-out of a country that got into fiscal trouble [19].

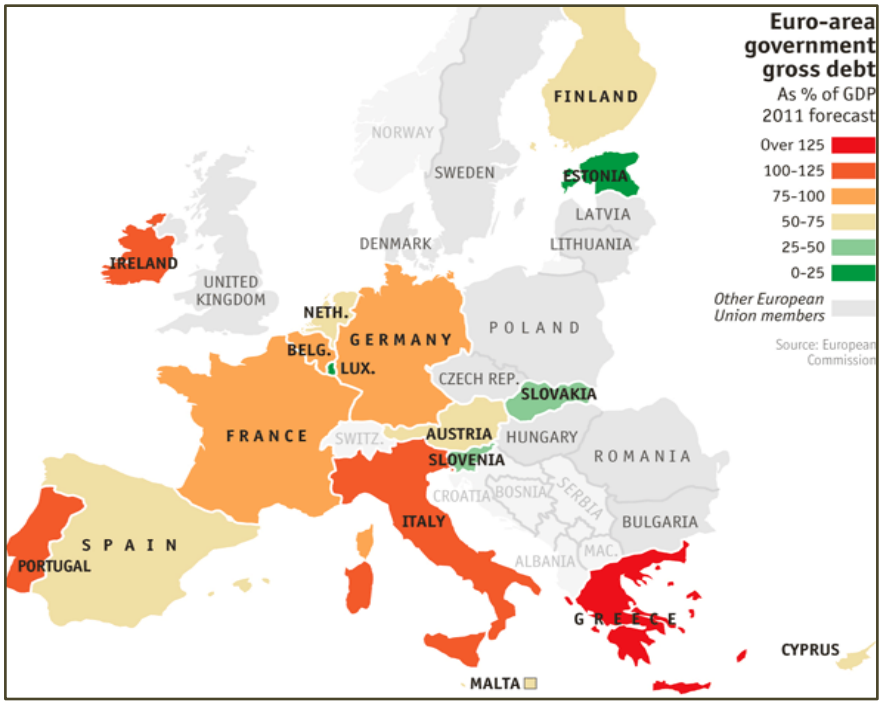
The rules were less strictly applied. Belgium and Italy were allowed to join the euro at the outset, even though their debt exceeded not 60% but 100% of GDP—because that debt was falling. As for the fiscal tests, what was to stop countries from misbehaving once they had joined? The answer, tacked on in the late 1990s to the Maastricht criteria, was a "stability and growth pact" to reinforce responsible public finances within the euro area. This too was watered down in 2005, largely at the insistence of France and Germany, after they themselves faced possible sanctions for breaching the budget-deficit limit. Economic convergence at one point in time also proved misleading. What determines whether a country can survive, let alone thrive, in a monetary union is flexibility in both labour and product markets, since it cannot realign its costs through devaluation [19].

The elimination of exchange-rate risk unleashed cross-border lending, which built up large exposures among the banks in the lending countries while debt piled up in the borrowing countries. The lending was on lax terms. Credit markets paid no heed to the risks that were building up from sustained big CA, which would have caused alarm in emerging economies (see chart, current-account balance). They smiled on Ireland's property boom, overlooked Portugal's slack growth and forgave Greece its poor public finances. Spain also benefited from dirt-cheap money despite a housing-market bubble and a CA deficit [19].



In German eyes, initially at least, the euro crisis was all about profligacy. Greece set the tone when it lied about its macroeconomic circumstances and lived beyond its means (see chart, euro-area government debt) [20]. So, in hindsight it was no surprise that the debt crisis started in Greece, which failed to join the euro area when it was set up in 1999 because it did not meet the economic or fiscal criteria for membership. Revisions to its budgetary figures showed that it shouldn't have been allowed in when it did join, in 2001. When its debt crisis flared up in 2010 European leaders hoped to contain it at the Greek border, providing a bail-out worth €110 billion ($158 billion) over three years, of which €80 billion came from other euro-area members and €30 billion from the IMF [19].

Europe's attempt to grapple with the sovereign-debt crisis would become more nailbiting by the day. Any hope of containment was shattered when Ireland's banking difficulties forced a second euro-zone rescue in November 2010. After that a third bail-out became inevitable, for Portugal, as the cost of its government borrowing shot up and Portuguese banks were shut off from normal funding, having to rely on the ECB. What caused consternation was a new shock—from Greece, again—that the first package was insufficient and that the country needed more money for longer [19].



There was no disputing Greek excesses, nor the fact that the Eurozone's troubled members, which also included Portugal, Ireland, Spain and Italy, had a heavy price to pay for the bail-outs. However, those other troubled countries were not exactly profligate. Before the crisis the governments of both Ireland and Spain ran budget surpluses. Both meticulously kept within the limits for deficits and debts set down by the stability and growth pact—unlike Germany, which flouted the rules for four years from 2003 (and avoided punishment). Nor did Italy lurch into extravagance [20].

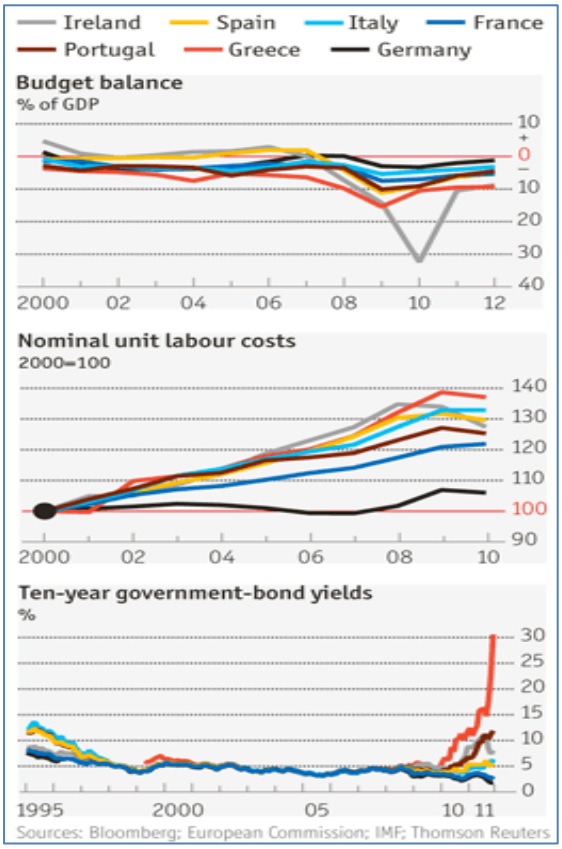
Nevertheless, for weeks European leaders feuded over what to do about Greece, which clearly needed more help with its precarious public finances. A second rescue package was offered in July 2011, adding even more funding to the original bail-out in May 2010 (amounting to €85 bn stretched out to 2014), but which would not be forthcoming unless the Greek parliament endorsed the extra doses of painful austerity in its budget, together with a big programme to privatise state assets worth €50 billion (20% of GDP). This was in doubt politically in Greece, sending tremors through financial markets and causing stockmarkets to fall around the world. The debt crisis proved intractable, partly because leading policymakers disagreed about the way forward and at times seemed lost themselves [19].

Apart from Greece, however, debt in these countries became a burden not because of government profligacy but because each enjoyed a decade of low interest rates and were then hit by the

financial crisis. That is, the problem was not of profligacy, but of financial excesses, private debt, bubbles culminating with a banking crisis that turned into sovereign debt defaults. Easy credit-fuelled debt in households and the financial sector. The ECB oversaw a binge of cross-border lending. In the crisis, unemployment and hardship deepened, increasing the bill for welfare. Some countries, such as Ireland and Spain, needed to find money to prop up their banks. These new expenses fell on the state just when tax receipts collapsed—catastrophically in countries that had seen a property boom [20].

The flood of easy money disguised the hard truth that the competitiveness of the peripheral economies, gauged by measures like unit labour costs, had steadily worsened after joining the euro. As one senior negotiator in the bail-out talks lamented, Greece was part of the single-currency area even though it had effectively managed to stay out of the single market. With the lowest export-to-GDP ratio in the euro area, membership became a way to import cheap goods, rather than a means to foster higher productivity. Ireland, with exports roughly equal to GDP, was quite different, but Portugal also had a lowish exports-to-GDP ratio for a small economy within a market. With the lowest exports-to-GDP ratio in the euro area, membership became a way to import cheap goods rather than a single-currency zone and, like Greece, had insulated much of its economy from the single market [19].

Low interest rates led to a surge in domestic demand. That, coupled with rigid labour markets in some places, led to sharp rises in nominal wages and a loss in competitiveness relative to Germany. [A decade after its reunification boom turned sour, Germany took bitter medicine, holding wages down and boosting productivity]. Germany (see middle chart, labour costs) [19].



Once the credit machine went into reverse as the financial crisis broke in the summer of 2007, the underlying weaknesses of the peripheral economies were exposed. The debt that had piled up in the good years became oppressive once lenders scented trouble. Spreads on government bonds over safe German Bunds, which had earlier narrowed to wafer-thin margins, ballooned. Ireland had what looked like impeccable public finances, with government debt as low as 25% of GDP in 2007, but these were flattered by swollen property-market taxes and then swamped by the costs of propping up banks that had gone on a bender, the bill for which was reckoned at 42% of national output. As a result, the debt burden reached 112% in 2011. Portugal's, too, would vault above 100% of GDP, while Greece's would rise to almost 160% [19].

Regulators of financial institutions made mistakes long before the Lehman bankruptcy, most notably by tolerating global CA imbalances and the housing bubbles that they helped to inflate. Central bankers had long expressed concerns about the big US deficit and the offsetting capital inflows from Asia's excess savings. Ben Bernanke highlighted the savings glut in early 2005, a year before he took over as chairman of the Fed from Alan Greenspan. But the focus on net capital flows from Asia left a blind spot for the much bigger gross capital flows from European banks. They bought lots of dodgy US securities, financing their purchases in large part by borrowing from US money-market funds [21].

Although Europeans claimed to be innocent victims of Anglo-Saxon excess, their banks were actually in the thick of things. The creation of the euro prompted an extraordinary expansion of the financial sector both within the euro area and in nearby banking hubs such as London and Switzerland. Research by Hyun Song Shin, an economist at Princeton University, focused on the European role in fomenting the crisis. The glut that caused the US's loose credit conditions before the crisis, he argues, was in global banking rather than in world savings [21].

Moreover, even where troubled euro-zone countries had not been profligate, they ran unsustainable CA deficits. Low interest rates fuelled domestic spending and spurred inflation in wages and goods, which in turn made their exports more expensive and left imports relatively cheaper. Europe's own internal imbalances proved just as significant as those between the US and China. Southern European economies racked up huge CA deficits in the first decade of the euro while countries in northern Europe ran offsetting surpluses. Germany, whose economy is remarkable in many ways, was as unbalanced as the euro-zone's peripheral economies. Its surpluses from its export machine were recycled, financing southern European consumption and overheated the housing markets of countries like Spain and Ireland. The euro crisis, in this respect, was a continuation of the financial crisis by other means, as markets agonised over the weaknesses of European banks loaded with bad debts following property busts [20][21].

The ECB did nothing to restrain the credit surge on the periphery, believing (wrongly) that CA imbalances did not matter in a monetary union [21].

Interest rates surged. Before the crisis, investors assumed no euro-zone government would default on its debt. Then, as Peter Boone and Simon Johnson of the Peterson Institute in Washington, DC, explained, Germany signalled that defaults could happen and that investors should have share in the losses—a reasonable demand, but a hard one to introduce in the middle of a crisis. Blazing rows erupted between Jean-Claude Trichet, then the French president of the ECB, and Wolfgang Schäuble, Germany's redoubtable finance minister, over German demands to inflict some of the pain on private holders of Greek bonds and the central bank's resistance to anything that could be construed as a default [19][20].

Some investors asked to be rewarded for the extra risk and others, unwilling to start paying for credit research, just walked away, setting off a spiral of falling bond prices, weakening banks and slowing growth. The charts (budget balance and 10-year bonds) show that from a point of relative convergence in 2000, budget deficits only seriously deviated from the ceiling after 2007 (except in Greece where it happened earlier). Interest

rates, measured as 10-year government bond rates, diverged in 2010, implying the ECB was losing control over its monetary policy (one interest rate over the whole euro-zone) [20].

How much was to have come from taxpayers? The answer hinged on how far private creditors who lent to the Greek government could be made to "participate", a euphemism for picking up some of the bill. The Germans pressed hard for debt maturities to be extended; the ECB was adamantly opposed to such a policy, although it would accept a promise by bondholders to buy new bonds when the existing ones matured [19][20].

To end the crisis, euro-zone members agreed to write down half of the Greek debt owned by the private sector, recapitalise Europe's banks and boost the fund created as a firewall to protect solvent euro-zone governments. It was an ambitious plan, but Greece would need even more help and the firewall did not look strong enough to withstand a bout of contagion [20]. The risk of contagion to other countries through banking losses, which prompted the original rescue, remained acute, not least since the markets would immediately fret about Ireland and Portugal falling in turn. Worries rekindled, too, about Spain, which had, to that point, managed to avoid a bail-out [19].

Inherently, there were two conflicting economic tensions in the rescue packages. The first was that the austerity programmes needed to cut deficits were killing the growth needed to make debt bearable. The other inherent tension was that steps needed to improve competitiveness within the euro area required prices and wages to be held down, making it even harder to cope with debt. Then, there were also conflicting political forces within both the borrowing and lending countries [19].

These disagreements meant that one solution to the debt crisis was a non-starter. Sharing budgetary resources, either through direct transfers or through the issue of "E-bonds" underwritten by the euro area's taxpayers, was anathema in Germany, where the notion of a "transfer union" in which the better-off subsidise the worse-off was political poison, not least because of the vast transfers from western to eastern Germany since reunification [19].

An alternative course would be to try to make a "no bail-out" model work. Jordi Galí, an economist at Pompeu Fabra University in Barcelona, would ban collective rescues and stop trying to patrol euro-area states through debt and deficit limits. Instead he would leave the job of policing their public finances to investors. This would require recapitalisation of European banks so that they could withstand sovereign defaults, but that was not the only snag. Investors knew that when a banking crisis loomed, European governments would flinch and extend taxpayer support [19].

Both these courses of action at least offered clear paths forward. By contrast, the long-term reforms set out by European leaders early in 2011 fell short of the comprehensive solution they purported to provide. Under a "pact for the euro" there would need to be economic and fiscal workouts that would allow countries to cope better with the rigours of monetary union—including, for example, greater wage flexibility. They would have to put into law their determination to get a grip on public finances. The temporary support measures would have to be turned into a permanent "stability mechanism" with an effective lending capacity of €500 billion that would be available to countries only if their debt were deemed sustainable. Private bondholders were served notice that they would be at risk from mid-2013 when the new regime came into force [19].

In effect the reforms formalized the bail-out strategy but tried to also ensure it would not have to be used again and would leave open the possibility of restructuring. One objection was that pressure remained on deficit countries within the euro area to put their houses in order, whereas none was brought to bear on surplus countries such as Germany. But, the biggest worry was that the reforms would be overtaken by events [19].

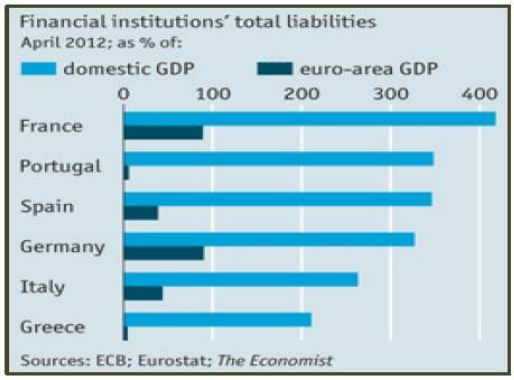
The EU's Response and Institutional Weaknesses

The US stabilized its financial system relatively quickly after the collapse of Lehman Brothers, an investment bank, in 2008. The euro-zone's banks remained fragile. Why did it take longer to address the banking crisis in Europe? This was partly because banks in Europe are treated as national champions – large in relation to national GDP, and European companies rely more on banks for finance than do US firms [22]. More important, in a corporatist political culture, small banks were often tools of political patronage and source of influence for local politicians, e.g., Spain's unlisted regional savings banks, '*cajas*', or Germany's *landesbanken*, reflected the lobbying and political positions taken in the run up to resolving the euro-zone's difficulties [23][22]. Spain's cajas, for example, increased their share of the financial system, measured in terms of assets, from about 10% in the 1960s to nearly half by 2010, increasingly lending outside their region of origin [23].

Second, because Europe viewed the problem as one of government profligacy, the euro-zone was woefully late in trying to stabilize its banks and ensuring that taxpayers did not have to pay when they failed. Perhaps the biggest reason for the neglect was that the first euro explosion took place in Greece, caused by profligacy (rather than bank failure). For Germany, in particular, the cure was enforcing fiscal discipline. EU leaders during 2008-2012 designed new rules and penalties to curb budget deficits and debt reduction. Ireland, with its banking crash, was treated as an outlier, a victim of unregulated "Anglo-Saxon" capitalism. The mood changed once the crisis hit Spain, a country that previously had a budget surplus, low debt and an admired national banking regulator. Its deficits and debt were the consequence of a property bubble bursting, not the cause [22].

Thus, the area's most troubled countries suffered a slow run of two sorts: depositors pulled money out of banks, and investors withdrew from sovereign bonds. Each panic reinforced the other. Some argued that what started as a banking crisis mutated into a debt and then an economic crisis [22]. It was apparent early on that the ECB was the only existing institution capable of acting (and responding to a banking crisis). Other institutions and/or mechanisms would be needed, but those would either require treaty changes or political agreement over any new structures – either implied a longer-term response. In the absence of other alternatives, the ECB took the lead, working with EU institutions and the IMF. The idea of a stateless central bank running a currency beyond the bounds of a state never looked stranger or harder to sustain in the height of the euro crisis [24].

National bank supervision, national bank resolution and national deposit-insurance funds did not work because they joined banks and governments at the hip, so that problems afflicting one was transmitted swiftly to the other. The complication was that national banks rather than being too big to fail became too big to save. Banking systems in many EU countries dwarfed their national economies [25]. With assets and liabilities several times larger than GDP, even relatively strong European economies such as France, Germany or the Netherlands could struggle to stand behind their banking systems were they to get into serious trouble, as Ireland found to its cost in 2008 (see chart, financial institutions liabilities) [26]. A contamination of national balance-sheets by troubled banks was at the heart of the crisis in Spain. Banking liabilities in the UK, Switzerland and Denmark were four to five times larger than their national economies [25].



The contagion within the euro zone was related to exposure to the debt of periphery countries. Failure to set up some system created market worries about the balance sheets in banks in northern countries (see chart, foreign bank's exposure to debt). The troubles of Spain's *cajas* and Germany's *landesbanken* showed that small banks posed as much of a "systemic" threat as big cross-border ones [22]. However, banks and governments alike struggled to give up control to a distant banking regulator that might, for instance, tell national champions to reduce their exposures to domestic housing markets or make fewer loans to small business to cut risk [25].

Hence, nearly four years after the collapse of Lehman Brothers did the EC issue a proposal for an EU-wide system of restructuring and winding up of failing banks, to take effect in 2018 [22]. This move came long after the ECB was put into the awkward position of having to act as lender of last resort and applying unorthodox measures, i.e., arguing that purchases of indebted government's debt was a means of ensuring that monetary policy was applied throughout the euro-zone [24].

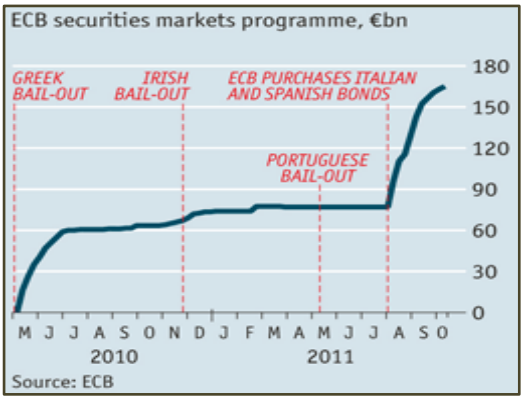
Since its creation in 1999 and before the GFC, the ECB was responsible for monetary policy, keeping inflation at the 2% target, over the euro zone as its membership increased, but it was not equipped with the tools or the legal authority to handle the debt crisis. Europe's politicians repeatedly failed to get ahead of the curve in combating market fears. The vacuum forced the ECB, the only institution in the euro area capable of intervening promptly and decisively, into territory far outside its remit [24].

- Aug 2007: ECB provided liquidity, moving beyond the standard tools aimed at price stability. The ECB bought covered bonds (bank debt backed by loans) to ease banks' funding difficulties. (These purchases were far smaller than the QE programs that began in the US and UK) [24]. The ECB offering loans to commercial banks for up to a year against a broad range of collateral drove down long-term interest rates had the effect of QE [27].

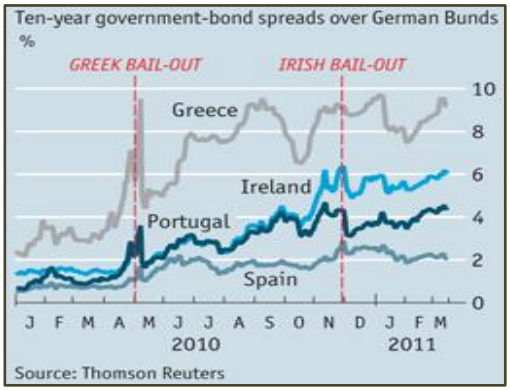
- 2009: The discovery that Greece misrepresented the state of its public finances started a sovereign debt crisis [28].

- May 2010: The EU and IMF agreed to a first bail-out package of €110bn for Greece, and created the temporary crisis resolution mechanism, European Financial Stability Facility (EFSF) in June to disburse temporary emergency funds for euro-area states in financial distress. The EFSF was a private company whose aim was to preserve financial stability in the monetary union by issuing debt to raise the funds needed to extend loans to struggling euro-zone countries; intervene in primary or secondary debt markets; and finance recapitalization of financial institutions through loans to governments. The EFSF's funds amounted to €750bn, including €60bn in EC funds guaranteed by the EU budget, €440bn in EU guarantee commitments and €250bn from the IMF [24] [29] [30]. The EFSF deflected the ECB from having to implement QE.

- May 2010: ECB established a temporary securities market program, SMP, (see chart, ECB securities markets programme) [24]. The SMP allowed the ECB to purchase national debt instruments (issued either by euro-area governments or public entities) on the secondary market, and debt instruments issued by private entities, incorporated in the euro area, on primary and secondary markets. Purchases started with Greece in May 2010, and extended to Ireland and Portugal, totaling €75bn in the spring of 2011 [24] [31].



- The ECB's discreet, slow-motion bank rescues exposed its balance sheet to bigger risks, accepting as collateral even dodgier government debt offered by troubled banks, but the ECB used the power that such support gave it over the banks to push reluctant governments in Ireland and Portugal to accept the inevitable: bail-outs from euro-area creditors in conjunction with the IMF. It had to justify acceptance of junk-rated Greek debt by invoking the official but untenable view that the country was still solvent. The ECB argued that it bought bonds, "not to bail out governments", but to help the "transmission" of interest rates to the market. i.e., to reduce spreads (see chart, 10-year bond spreads) [24] [31].



- Nov 2010: EFSF funds provided a bail-out loan to Ireland for macroeconomic adjustments, to stabilize its banking sector, to restore fiscal sustainability to cover budget deficits through 2014, and to implement growth-enhancing reforms [29][30].

- May 2011: A bail-out for Portugal used funds from the EFSF and IMF to restore fiscal sustainability correcting budget deficits by 2013, to implement growth and competitiveness-enhancing reforms, and to assistance to the financial sector. Privatization and structural adjustment programs were required [29][30].

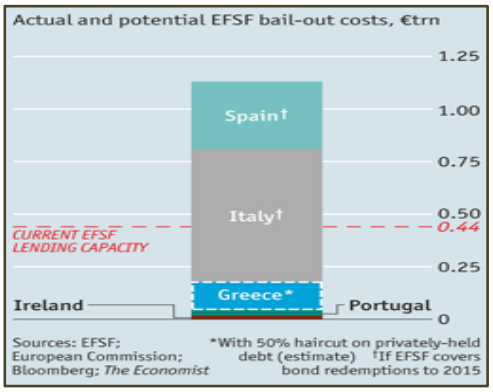
- Mid-2011: EU leaders admitted Greece needed additional assistance and recognized that Italy had come under attack by bond vigilantes. The EFSF needed a boost to its lending capacity and its role; to allow it to buy bonds on the primary market; acquire sovereign debt at a discount on the secondary market; to finance the recapitalization of banks; and to extend pre-emptive credit lines to countries that were under pressure in debt markets [28] [32].

- Aug 2011: Contagion led to the ECB to take a more dramatic step of buying Italian and Spanish government debt. The intervention lowerd Italian 10-year debt from more than 6% to about 5%, but as yields creeped up purchases had to increase (see chart, bond yields and purchases) [33]. For many ECB policymakers, these bond purchases blurred the distinction between monetary and fiscal policy on which the central bank's credibility as an inflation-fighter depended [34]. The ECB note that those purchases was a stopgap measure until the EFSF assumed responsibility. The EFSF did not have the sufficient €440bn (only around €280bn remained, given its commitments to Greece, Ireland and Portugal). The EFSF could borrow from the ECB, but this action would be illegal under a strict reading of the Maastricht treaty [24][31].

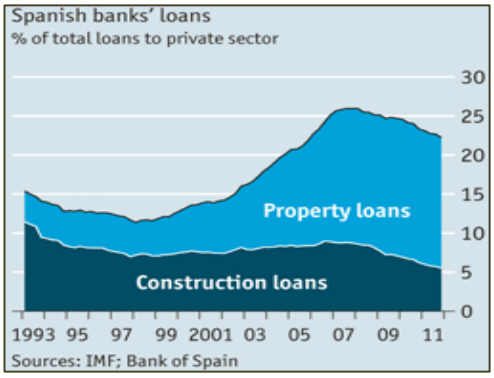
From a German perspective, the ECB by buying Spanish and Italian debt had taken a political decision to arrange for the whole euro area to lend to troubled countries within it. This was the ECB doing exactly what it was not supposed to do. The drafters of the Maastricht treaty on economic and monetary union went out of their way to build a firewall between the ECB and government finances [35]. The ECB, to restore stability, declared that it had to stand behind all solvent countries' sovereign debts and commit to use unlimited resources to ward off market panic, thus being dragged into the fiscal area acting as monetary and fiscal agent. So long as the governments were solvent and the bank sold the bonds back to the market after the crisis, this did not amount to monetizing government debt. It was argued that the ECB could buy several trillion euros worth of bonds without unleashing inflation [36].

- Oct 2011: The 17 euro-zone parliaments ratified boosting the EFSF fund from €250bn to €440 bn, but by then the sum would be insufficient to launch financial rescues for Italy and Spain (see chart, actual and potential EFSF bail-out costs) [37] [32]. The EFSF could have supported Spain or perhaps even Italy, but not both. To halt the upward pressure on Italian and Spanish bond yields, the EFSF needed €1,500bn [28].

- Mar 2012: There was a Greek sovereign debt default. Investors holding more than three-quarters of Greece's private debt agreed to participate in the country's €206bn debt restructuring. The ECB began to reaccept Greek bonds as collateral from banks seeking cheap loans to run their day-to-day operations [38].



- Jun 2012: EU agreed to give Spain up to €100bn of euro-zone loans to recapitalize its banks. Spain was an exceptional case. It was seen as too big to fail an insufficient funds to rescue it. Spain's crisis was not like those of Greece and Portugal. Its case was really all about the banks and their exposure to the property bubble. Spain's banks had not invested in the toxic off-balance-sheet products that sank banks elsewhere. Spain's banks had, as regulators required, made thrifty counter-cyclical provisions, but they were parties to an ungodly property bubble (see chart, Spanish bank loans) [23].



- Oct 2012: In earlier EU summits, a permanent rescue mechanism to replace the EFSF, the European Stability Mechanism (ESM), was agreed. The date to bring it into force was moved up from 2013. The ESM had a lending capacity of €500bn and a total subscribed capital of €700bn, of which €80bn would be paid up and €620 in callable capital and guarantees. The up-front commitment of funds gave the ESM a more secure triple A rating than the EFSF [28].

The ESM could only be activated "if indispensable to safeguard the stability of the euro area as a whole" and strict conditions were attached to assistance to limit the moral hazard implicit in a crisis management mechanism and to ensure that the existence of the ESM did not weaken incentives for sound fiscal and macroeconomic policies in euro-area countries [38].

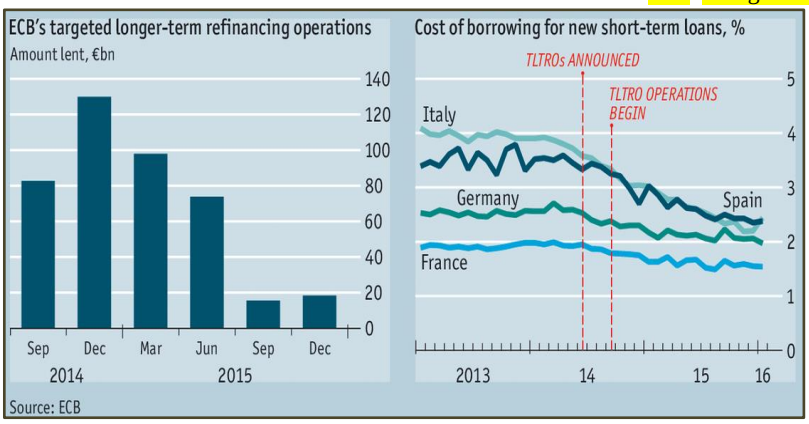
- Dec 2011: The ECB introduced a follow-up mechanism by which cash could be injected into banks, the long-term refinancing operations (LTRO). In the first of two phases of LTRO injections the ECB provided unlimited funds in 3-year loans to banks at its main interest rate (which it cut to 1%) [27][39].

- Feb 2012: a second phase LTRO injected another €530bn into 800 banks. The net injection of liquidity was €310bn. Most of the loans were from "core" euro-zone countries led by Germany but not the peripheral nations where funding problems were most acute. Italian and Spanish banks

dominated the take-up of funds, but half of the 800 banks involved were German, though they accounted for less than €100 bn of the funds. There was greater participation by smaller banks, including carmakers' financing arms, because they were invited by the ECB, which relaxed requirements on collateral. Smaller banks were often those with the closest relationships to the continent's host of small and medium-sized companies and the idea was to improve the supply of credit to the "real" economy, easing the fear of a credit crunch for businesses [45]. Italian banks took about €260bn from not just the LTRO but other liquidity schemes from euro-zone central banks. Spanish banks took €250bn and French banks €150bn [40].

Critics argued that the LTRO was "back-door QE" aimed at reducing the risk of a euro break-up or a sovereign default. The concern was that it would prolong troubled banks, lessen the pressure on banks by backstopping their finances and making them dependent on artificially cheap funding, and raised fears about the structure of their balance sheets. The actions raised some long-term questions: What was the exit strategy? What would happen in three years when the money that had been injected (in Dec 2011 and Feb 2012) needed to be refinanced? If the loans were for southern European countries to rekindle economic growth, what would happen if did not work [40]?

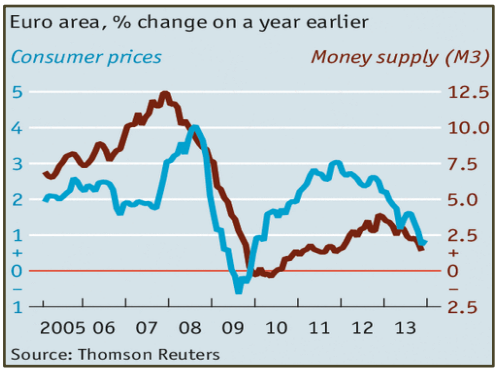
- Sep 2014: ECB deployed "targeted longer-term refinancing operations" (TLTRO), extending cheap credit to banks that boost lending to business. It was aimed at countries like Italy and Spain, where monetary easing had not reduced borrowing costs by as much as it had in Germany or France [41]. These "targeted" long-term loans tackled a flaw in the ECB's 2011-12 scheme when banks in southern Europe used cheap three-year funding to buy sovereign debt rather than to lend more to companies [42]. Some saw TLTRO I as a damp squib because not all the $400 bn ($436 bn) of funding on offer was taken up in its early stages, and later demand dropped off further (see left-hand chart, ECB's lending under TLTRO). Borrowing costs around the euro zone converged (see right-hand chart),



- Dec 2014: The ECB was appointed as the single bank supervisor for the euro zone though it was never given the task of serving as lender of last resort. The ECB had to operate its monetary policy for general macroeconomic objectives in addition to purchasing sovereign debt. Thus, the ECB performed the role of lender of last resort in a timid way. European leaders tried to solve this problem by creating the EFSF/ESM, but its capacity remained insufficient and the institutions never had the credibility to stop the forces of contagion – precisely because they could not actually print money [43].

- 2014: The ECB was the only leading central bank to have avoided embarking on QE. Germany opposed any policy seen as a bailout for the region's weaker economies. While other big central banks used QE to stimulate recovery, the ECB relied mainly on lowering interest rates and providing unlimited liquidity to banks on longer terms against worse collateral [44].

The twin threat in late 2014 was the stalling of euro-zone recovery and a slide towards deflation, a worry in the euro area because debt was high in many states and deflation raised its burden in real terms [44]. The deflation and slower growth in money supply reflected the euro area's concerns (see chart euro area prices and money supply) [42]. Cuts in the lending rate were set to address deflation.



But beyond rate cuts, the ECB had two options before turning to QE proper: strengthening its forward guidance and setting negative interest rates. Other central banks provided harder guidance: the Fed and the Bank of England tied pledges not to raise rates to explicit thresholds for unemployment (and even then not to treat these as automatic triggers). The ECB's version could be hardened with the bank's long-term liquidity operation at a fixed low rate. The credibility of the guidance could help to keep forward interest rates very low [42].

Introducing negative rates would be more radical but consistent with forward guidance, which applied to all the bank's policy rates. The rate that would go negative was the one the ECB paid on overnight money left with it, which since July 2012 had been zero. A negative deposit rate would in effect charge banks for parking spare funds at the ECB [42].

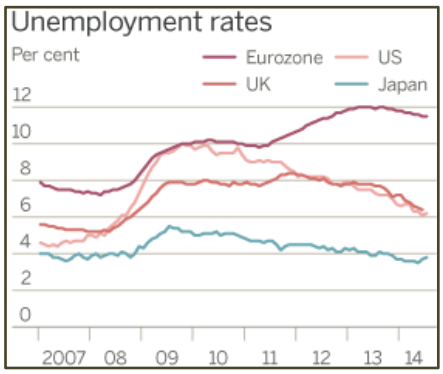
The case for the ECB going negative owed to the fragmentation of the euro zone, the deposit rate mainly affected banks in northern creditor countries, which could access the money markets. If the deposit rate turned negative, this would ease money-market rates because it acted as a floor for them. This would help to stimulate activity in northern Europe and could ease upward pressure on the euro, which had been uncomfortably strong for export businesses. An even bigger prize would be if the policy restored a euro-zone interbank market by nudging northern banks to lend again to their southern counterparts, which had been relying on central-bank funding [42].

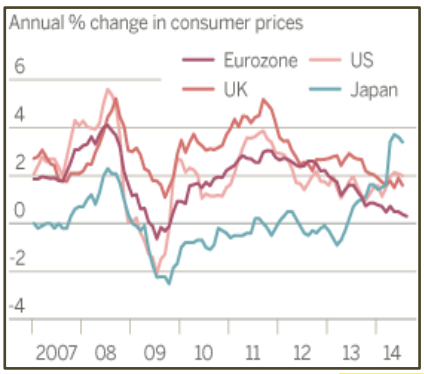
- Aug 2014: In a speech at Jackson Hole amidst central bankers, Mario Draghi went off his text to utter a line that would send a potent message to global financial markets and political leaders across Europe. The ECB's governing council, he said, "will use all the available instruments needed to ensure price stability in the medium-term". Mr. Draghi was very aware of the power of his words. Another of his ad-libs, made in 2012, was that the ECB would do "whatever it takes" to save the euro, seen as a masterstroke that halted the downward economic spiral that had gripped the Europe [46].

Turning to QE was the policy that most clearly tackled the risk of deflation by lowering long-term interest rates and shoring up the money supply, which was barely growing. The ECB

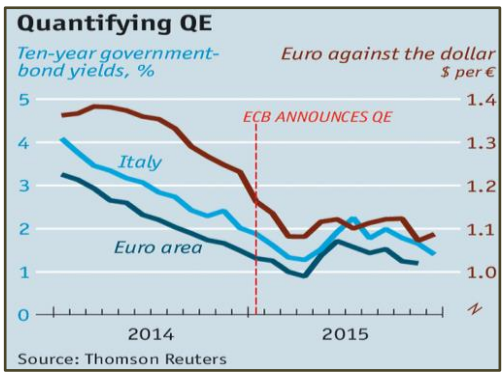
signaled its readiness to pursue QE aggressively after exhausting all other alternatives. It would buy in secondary markets a basket of bonds reflecting the economic weight of the 18 euro-zone countries (nearly 30% would thus have to be German). But it was particularly difficult to adopt because the Bundesbank opposed bond-buying on the ground that it blurred monetary and fiscal policy, especially in a currency union where there is no equivalent to federal US debt. In Dec 2014 Yves Mersch, a member of the ECB's executive board, said that purchasing a basket of government bonds would pose "immense economic, legal and political challenges" [42].

For the first time, the ECB president proposed what amounted to a fiscal and monetary compact with the currency area's lawmakers. The only way to defeat the region's low inflation and double-digit unemployment was, he said, "a policy mix that combines monetary, fiscal and structural measures at the union level and at the national level" (see charts on unemployment and inflation) [46].





- Sep 2014: The ECB started QE. An ECB study of QE found that it was responsible for half of the percentage-point fall in the average yield of ten-year government bonds in the euro zone between Sep 2014 and March 2015. The contribution to declines in countries such as Italy, which had been assailed by the bond markets, was even bigger, at 0.7 percentage points (see chart, quantifying QE) [47].



- Jan 2015: The ECB announced that it was to purchase €60bn a month for at least 19 months, adding hefty purchases of government bonds to an existing scheme to buy covered bonds and asset-back securities (currently around €10 bn-worth a month). Special rules applied to purchases of the bonds of countries like Greece which received bail-outs. The bulk of any losses on sovereign debt that were purchased would be borne by national central banks [48].

There were two main channels through which QE was likely to work in the euro zone. One is the "signalling" effect. By adopting the policy, the ECB sent a clear message to markets and to firms that it was determined to bring inflation closer to 2%. The other was through the exchange rate. The euro had already been weakening by spring 2014 and further weakening of the single currency seemed likely [48].

- Dec 2016: The ECB announced that it would reduce from April 2017 the amount of bonds it bought each month, from €80bn ($85bn) to €60bn. Mr. Draghi insisted this was not a "taper", a word that implied a gradual reduction in purchases to zero. The ECB considered dropping a self-imposed rule to buy no more than a third of any country's government debt but acknowledged that there were legal risks in so doing. Since Germany had a shrinking debt pile, bond purchases would be limited because purchases had to be proportionate to economic heft. It would cause a stink if the ECB decided to buy proportionately more bonds of high-debt countries such as Italy—or indeed France [56].

There were other reasons to believe the ECB was heading for the QE off-ramp. The euro-zone economy was puttering along nicely. Although the core rate of inflation, which excludes volatile food and energy prices, was stuck below 1%, headline inflation had picked up sharply and was expected to rise further in the spring – 2016's big fall in oil prices dropped out of the annual rate. The QE programme was conceived when deflation was greatly feared. As the risk of it diminishes, it is harder for the ECB to justify further hefty asset purchases—even if there were enough eligible bonds to buy [56].

- Feb 2017: The spread between ten-year government bonds in France and Germany had reached its widest level in four years. The proximate cause seemed to be a growing concern about political risks to the euro. A big influence was the growing conviction that the ECB would soon decide to wind down QE [56]. This again illustrated the concern with quantitative tightening.

Banking Union

A true banking union requires three pillars: (1) a single supervisor; (2) a single resolution authority, with access to common backstop funds; and (3) a joint deposit-insurance scheme. (see chart, fully-fledged banking union) [49]. The case for a euro-zone banking union was strong. Weak banks in Spain and Ireland wrecked their countries' public finances; governments in Italy and Greece with shaky finances leaned on their banks to buy government bonds. The best way to sever this dangerous link between banks and governments was to wrest responsibility for supervising and, if need be, resolving banks away from national governments [50].

The essential first step toward a banking union was in July with the appointment of the ECB as the single bank supervisor for the euro zone, taking direct charge of oversight of the euro-zone's largest banks [51]. Mr. Draghi argued that that the ECB should have oversight of all 6,200 or so euro-zone banks to unify supervision under the banking union. Germany argued that it should supervise only the big cross-border banks (about 200 banks in the EU). This had much to do with its fear of what supervisors might say about its own *Landesbanken*, wholesale banks with a history of duff judgments [50]. Germany's powerful network of savings banks, Sparkassen, also lobbied against any supranational supervision, arguing that they were not to blame for the financial crisis and should not bear the cost of additional supervision [53]. Germany also argued that the

ECB could not properly supervise so many banks and should supervise only a handful of big cross-border banks [50]. Better to do a more thorough job on a smaller number of key institutions. The EC countered that risks come not only from big "systemic" cross-border banks but from smaller ones as well [53]. It was also feared that supervisory powers under the ECB might conflict with its monetary policy mandate.

Fully-fledged banking union

Single supervisory Mechanism (SSM)	Single Resolution Mechanism (SRM)	Single Deposit Guarantee Scheme
* Homogenous supervisoy stds across euroarea * ECB directly supervises 128 biggest banks, 85% of toal euro-area bank assets * Comprehensive assessment of banks (stress tests)	* Single authority responsible for resolution of euro area banks * Resolution financed by shareholders and creditors (bail-in = 8% of toal liability (pre-defined liability * Bank levies (at nat'al level) to raise funds	* No single deposit scheme created * Harmonized deposit guarantee scheme as set out in Single Rule Book * Deposit guaranteed up to €100,000 everywhere n EU * Funds from deposits collected from banks over 10-yr period

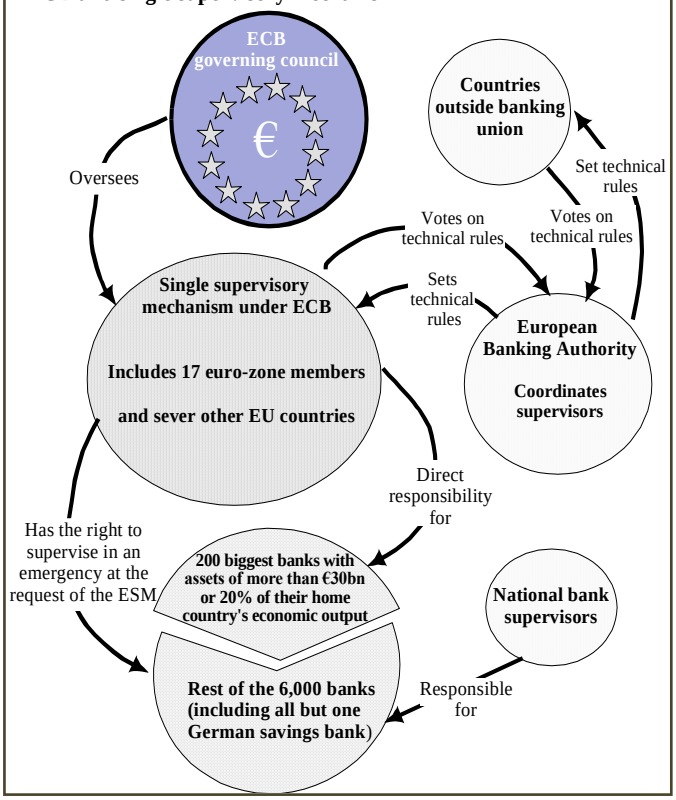
Based on EU-wide rules for banks, the Single Rule Book, e.g, Dir. On Capital Requirements (Basel III) since 2014, Bank Recovery and Resolution and Deposit Guarantee Scheme (DGS) starting in 2015.

Banks no longer "European in life, but national in death". Bail-in should become the rule, bail-outs the exception.

The ECB was given direct responsibility for banks with assets of more than €30bn or representing more than a fifth of a state's national output (see chart, ECB and the single supervisory mechanism) [54]. The common banking regulator for the 28 EU states remained the European Banking Authority (EBA) and left national supervisory bodies to deal with the 6,000 smaller lenders as before [52][51]. Those within the euro-zone came under the ECB in what the EC called the Single (European) Supervisory Mechanism [52]. However, the ECB might not actually had the power to order failing banks to raise capital or to shut them down. With such ill-defined powers the ECB would have to use brinkmanship to enforce its writ. "There is only really one sanction…If the ECB cuts off access to euro liquidity then the bank is dead." EU officials argued that the system was built around a single line of authority, with the ECB setting the day-to-day operating procedures for all supervisors. A clause inserted into the text allows the ECB to take over supervision of a lender at the request of the ESM, the euro-zone bailout fund, paving the way for an emergency injection of capital when unanimous approval was obtained [53].

The steps toward the next two pillars, involving solidarity, were harder. The big issue was trying to raise money for the bank-resolution funds and the common deposit-insurance [25]. As a supranational bank supervisor, the ECB would need to have the central resolution authority to restructure or wind up failed banks (if necessary by bailing in creditors). This requires access to joint resolution funds and deposit guarantees (financed at least in part by the industry itself) and some kind of European fiscal backstop (equivalent to the US Federal Deposit Insurance Corporation) [51]. The plan, as it was, neither provided for a common "resolution fund" to mop up after failed banks, nor a shared deposit-insurance fund to prevent bank runs. Even if paid for initially by the banks, these would have had to be backed by taxpayers, notwithstanding German qualms. A pre-financed resolution fund big enough to clean up the mess from the failure of even a single medium-sized bank would probably have had to be €100bn. The cost of dealing with a systemic crisis would be far bigger. Sweden's taxpayers ended up paying about 3.6% of GDP to clean up their banking system after its crisis in the early 1990s, which as a proportion of euro-zone GDP would have been €340 billion [50].

ECB and single supervisory mechanism



Bail-out funds could go straight to banks. Direct, joint-financed bank recapitalization through rescue funds was be a big step towards Germany accepting a broader notion of risk-sharing [22]. This was still a long way from the partial debt mutualisation that the euro zone needed, but it marked a step forward from Germany's exclusive obsession with fiscal austerity [38]. However, mutualization of risk needed to encompass a euro-zone bank resolution fund as well as a joint deposit-insurance scheme. However, France and Germany both pulled the common resolution fund and the single deposit insurance off the agenda in Jun 2013 because the sums of money involved were simply too big. The final plan amounted to use one-and-half-pillars and pray the edifice held [25]. An insurance fund would have to have covered €11tn in deposits [25]. Even a modest prefunded deposit-insurance pot would have had to raise more than €100bn ($127 bn) from an already creaking banking system [50].

By 2014, there were six ways the financial sector was changed – or was supposed to have changed [55]:

1 Governments were no longer sole masters of their banks
Europe's banking union pooled power and money unmatched since the euro's creation. Euro-zone governments centralised the right to police banks and to decide when and how banks die. In return the costs of failure would be shared through a €60bn fund. Critics said it was underfunded, too complex and riddled with ways for ministers to protect national champions. All the reforms amounted to half a banking union, but it was regime change for the European financial system.

2 Taxpayers were no longer first in line to bail out banks
Vast amounts of public money were devoted to propping up European banks, some €473bn in capital alone. Much of it went to institutions that were bailed out because the alternative was worse. Regulators' big idea was shifting that bailout risk from taxpayers to creditors. A common EU rule book for bank failures would mean that shareholders and bondholders would be hit first when a bank is in trouble. It was a sea change, but

there were also potential bailout loopholes that some ministers could find too tempting to resist.

3 Better-funded banks, with less leeway on paying bonuses
Banks made great strides in addressing the woefully inadequate capital buffers seen during the financial boom. The EU law broadly followed the Basel III international accord, which would require big improvements in the quality and quantity of capital, as well as the easy-to-sell assets banks must retain. Yet the EU gave Basel its own twists. One was the addition of a bonus cap, which appears to have triggered a big rise in bankers' fixed pay. A second was in the form of capital tweaks to help particular banking models in France, Italy and Germany – tweaks that meant Europe was likely to be one of the few jurisdictions found in breach of Basel III.

4 Bank-dominated markets moved out of the shadows
Sprawling and opaque markets such as fixed income and over-the-counter swaps were dragged into the light. More trades would move to electronic venues such as exchanges, which show prices to a bigger audience and leave audit trails for regulators. Complex laws underpinned how capital markets would operate. Banks faced fresh curbs on share trading and the uninsured bets they can take in the vast, $700tn OTC derivatives market. The law caught up with technology and tried to rein in high-frequency trading. Most important, perhaps, was the requirement for investors to post collateral, or insurance, to backstop those derivatives trades – sometimes for the first time – and offset the risk by sending them through clearing houses, a collection of unobtrusive, utility-like institutions that guarantee deals when one party defaults.

5 Regulators left no financial frontier untouched
No corner of the financial system would be left unregulated. For primarily political reasons, it started with placing a regulatory bridle on hedge funds and private equity for the first time. But Brussels gradually moved into the far reaches of the financial world to tackle new sectors and practices: credit-rating agencies, the audit business, short selling and benchmarks, pension funds and shadow banking.

6 The regulatory game moved to the technicians
As legislating was finishing, the lobbying began. There were political compromises left deliberately ambiguous. Some 400 extra technical standards and guidelines needed drafting to put the laws into force, ranging from how bonuses should be paid to what specific curbs are placed on high-frequency traders. This amounted to giving a "technical" answer to a political fix [55].

Fiscal Union
Fiscal union implied an even greater degree of integration and loss of sovereignty by euro-zone member states. First, what is meant by fiscal union must be clarified. In addition to the harmonized monetary policy at the European level through the ECB, there was a need for stronger institutions to oversee the implementation of a commonly agreed finance policy. Obviously, stronger community institutions or structures and rules to ensure that countries that shared the same currency implemented the fiscal policies that they have agreed on together did not imply harmonization of domestic taxes or the total loss of national budgetary sovereignty [57].

The growing consensus was that the stability and viability of MU demanded changes to EU treaties. A new structure had to win the confidence of voters and investors alike, and needed to acknowledge the real monetary risks of the ECB being coerced into acting as a sovereign lender of last resort over the euro zone. The structure had to be based on clearly delineated responsibilities for monetary, fiscal and funding policy.

The creation of an EU fiscal union was to be founded upon a three-pillar plan for existing and new institutions that addressed:

(1) the monetary policy instruments to be used by the ECB and defining its role as lender of last resort;
(2) the creation of euro-zone debt agency for joint responsibility for public debt; and
(3) a mechanism of enforcement of fiscal and funding concerns, i.e., economic governance over fiscal policy [34].

The three pillars would be buttressed by the ECB; a European Debt Agency (EDA), an institution that had to be created, which would be the sole issuer of euro-zone sovereign debt; and a European monetary fund which would be responsible for safeguarding medium-term debt sustainability and would oversee the fiscal union by assessing member states' economic and fiscal performance, providing support programs and policing reform and adjustment programs [56].

There were four broad steps taken toward erecting the three pillars of EU fiscal union. These steps included the measures in use then and the more far-reaching actions (including treaty changes) required in the future:

(1) a change of the ECB's current actions as the *de facto* lender of last resort and its future legally defined role;
(2) the current and future actions of the EFSF/ESM;
(3) the creation of a Eurobond and its institutional support structures; and
(4) the measures taken over fiscal control on the current troubled countries and the development of euro-area supra-national economic governance over fiscal policy over all Member states in future [34][56][58].

Naturally, there was disagreement over the order, direction, and size or degree of each step. For example, Germany made it clear that any first step towards fiscal union should first involve, for example, a reinforcement of the Stability and Growth Pact with automatic sanctions, and that more ambitious steps must be enshrined in treaty before moving forward (e.g., ECB's role and the issuance of commonly backed Eurobonds). Moreover, introducing eurobonds or urging the ECB to intervene massively in sovereign bond markets as a short-term financial solution would not solve the fundamental problem of excessive debt in the euro-zone that had undermined the trust of investors. Fiscal union first required closer coordination and direct supervision of national economic and budgetary policies. New procedures required governments to submit budget outlines to Brussels before submitted for final approval to national parliaments. European institutions would monitor fiscal and macroeconomic imbalances and demand remedies if and when thresholds were breeched [59]. Debt and deficit limits had to be enforceable (in the European Court of Justice, preferably) and institutions needed the powers to demand changes in national budgets if they broke the rules, and to impose automatic penalties if they did not fall into line [60].

Opponents of this view argued that while EU treaty changes were needed to finish constructing the foundation, there were interim actions that must be taken. EU treaty changes take time and the debt problem needed immediate attention. Hence, the short-term introduction of Eurobonds was a necessary first step, and the ECB could fund the EFSF/ESM directly until the EDA was established. Once the EDA was established, the sovereign bonds acquired in the process of funding the EFSF and ESM would be passed on to the EDA so that the ECB could return to its purely monetary policy role.

Whatever the order or process the EU eventually would take toward fiscal union, the three-pillar structure should have produced tangible benefits. Member states would have time to implement fiscal and economic reform and adjustment programs; the EU banking system would be provided with stable collateral and more time to prepare for the restructuring of debt; and the euro-zone area would be provided a uniform, low and stable cost of capital, a necessary element for economic

growth during a period of fiscal adjustment and austerity [34]. If the euro area were able to borrow as a whole, it too should benefit from low borrowing costs, helped by the liquidity advantage of creating what could become a vast government-bond market. This supposed that the framework would not weaken budgetary discipline, reducing the incentive for weaker states to get their finances in order first [56].

The actions taken in regard to the four steps toward fiscal union are summarized under the points below. The first two steps, the ECB acting as the de facto lender through its modest efforts to inject liquidity in 2007 and the creation of the EFSF/ESM in 2010, were already advanced.

1. ECB's tightrope to stay within treaty limits and its role as *de facto* lender of last resort

2. European Financial Stability Facility (EFSF) and European Stability Mechanism (ESM)

The extent of the problems stretched both the ECB and the EFSF/ESM, requiring agreement over the additional steps, creation of a Eurobond and institutional structures for improved economic governance over fiscal policy, essentially banking and fiscal union.

3. Creation of a Eurobond

The EFSF/ESM's limitation was its value in comparison with the money needed to backstop PIIGS. The next step would be to mutualize the debt, i.e., all euro member countries governments would back the bonds issued by national governments [61]. The only long-term solution for providing a backstop for Italy or Spain was a Eurobond. There was no way Germany could guarantee Italy or France could guarantee Spain. The problem became so big that the only credible guarantees were joint.

"Eurobonds", shorthand for euro-area sovereign debts that were jointly guaranteed by the 17 member countries, could provide a solution. In aggregate, the public finances of the currency block compared favourably with the US which could borrow at dirt-cheap rates (2011's euro-wide budget deficit was 4.1% of GDP, less than half the US's 9.6%). But replacing all national government bonds with collectively underwritten debt was a non-starter. A fully mutualised euro-zone debt market would be enormous—at €8 trillion ($10.5 trillion), not far short of the US's—and thus very liquid. That would have lowered average borrowing costs a bit, but the big gains through lower yields would go to the block's fiscal sinners (the Signori), while the good guys (the Herrs) would be charged more to tap the markets than they were then. Such a move risked undermining the euro area's public finances in the long run by taking pressure off renegades. To prevent that, national budgets would have to be tightly controlled at a euro-zone level, entailing much deeper political integration than was conceivable [62].

Proponents argued that the most convincing message that could be sent to the markets about the determination of euro-area governments to stand by the euro would be the introduction of common euro-zone bonds, or Eurobonds. Initial ideas offered could be the set up of a European Debt Agency that would replace the EFSF/ESM [28]. Unfortunately, the euro-zone bond was something that required new institutions and would have to be a multistep process as was the introduction of the euro itself during the 1990s because it would require a change in European treaties and required changes in various national constitutions.

Some member states argued that such a step would require a fiscal union, others have made a fully-fledged political union a prerequisite for a Eurobond. Ms. Merkel argued it was wrong to suggest that "collectivisation of the debt would allow us to overcome the currency union's structural flaws" – a concern echoed by the Netherlands and Finland, two other triple A-rated euro-zone members [63]. Countries with a record of strict fiscal prudence opposed Eurobonds, describing them as a fatal temptation, enabling less disciplined nations to piggyback on the strong credit ratings of the disciplined and forcing them to pay higher interest rates [28].

Despite the objections, the EC Commission's green paper put forth some serious proposals. The proposal with the greatest traction was the introduction of two types of euro-zone debt instruments – "blue bonds" and "red bonds". The euro-area sovereign bond market could consist of two distinct parts:

- stability bonds (or "blue bonds"): The issuance of stability bonds would occur only up to certain predefined limits (the EU debt ceiling under fiscal rules of 60% of GDP) and thereby not necessarily covering the full refinancing needs of all member states. These bonds would imply a uniform refinancing rate for all member states and would be considered safe assets in an investment portfolio;
- national government bonds ("red bonds"): The remainder of the issuance required to finance member state budgets would be issued at the national level under national guarantees (i.e., debt above the 60% threshold). The scale of national issuance by each member state would depend on the agreed scale of common issuance of stability bonds and its overall refinancing needs. Depending on the size of these national bond markets and issuances and the country's credit quality, these national bonds would have country-specific liquidity and credit features and accordingly different market yields. These bonds would naturally attract higher interest rates. In theory, these arrangements would provide a strong incentive for government to cut their debt to below 60% [58][64].

Despite German brush-offs, there were good reasons why this proposal should have risen to the top of the euro-zone's political agenda. It would be a lifeline for states facing a run on their debt. An ability to refinance up to 60% of GDP into jointly guaranteed bonds would have prevented usurious interest rates for several years – enough time to put public finances on a sustainable path [27]. A commonly backed "stability bond" would ensure all euro-zone members could meet their financing needs and create a vast market that could compete with US Treasuries as a global benchmark [64]. The extensive pooling of sovereign debt was fiercely resisted in Germany, where officials believed it would revive market pressure on profligate euro-zone countries, allowing weak economies to become "free riders" on the strong credit rating of Germany and other triple A sovereigns. The measure failed.

4. Economic governance over fiscal policy

In Mar 2012, the 25 EU leaders signed the Treaty on Stability, Coordination and Governance aimed at strengthening fiscal disciplines and introducing stricter surveillance within the euro area by establishing a "balanced budget rule". This fiscal compact included a requirement for national budgets to be in balance or in surplus, a criterion that would be met if the annual structural government deficit did not exceed 0.5% of GDP at market prices. The balanced budget rule had to be incorporated into members' national legal systems. The EU Court of Justice would be able to vary national transposition of the balanced budget rule. Its decision was binding, and could be followed up with a penalty of up to 0.1% of GDP, payable to the ESM. Any financial assistance under the ESM would be conditional on ratification of the treaty and the inclusion of the balanced budget rule into national legislations [65].

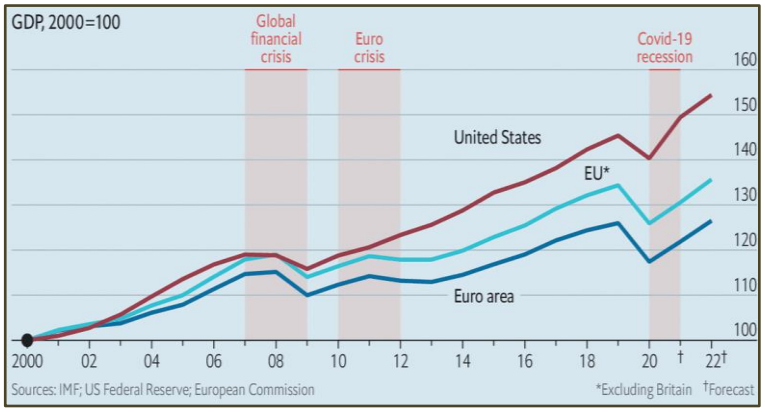
The new-look MU had strengthened rules on economic governance, covering areas such as budget deficits, public debt and competitiveness (while allowing member states to maintain national sovereignty over taxation and expenditure – provided their debt positions and related deficits remained sustainable). The crucial element was "reversed qualified majority voting" for warnings and sanctions if a government broke the rules. Fines would be semi-automatic because governments would have to muster a majority to reject a sanctions proposal from the European Commission. Whether any government would ever be punished is another matter. No fines were ever imposed under the EU's old stability and growth pact [28].

Eurozone macroeconomic policy response to the pandemic

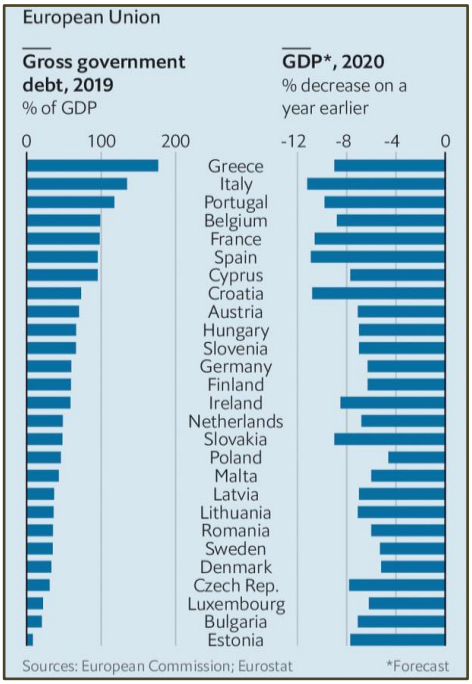
In Jan 2020 Brussels was an optimistic place. The EU had survived a decade that included the near collapse of the bloc's currency, a refugee crisis and Brexit. Then the pandemic, a shock of anyone's fault, brought sweeping lockdowns confining EU citizens to their homes. On the fiscal side, things were not going to be easy. The bloc's GDP was to drop by more than 7%, compared with a 4.3% fall in 2009, the worst year of the GFC. Italy's borrowing cost started to increase. The pandemic triggered a series of crises; what started as a health crisis, became an economic crisis, then a political crisis, then a financial crisis, and with the policy responses a constitutional crisis [66].

Before the pandemic, GDP in the EU was only 12% above its 2007 level; US output was 22% higher. In 2020, covid-19 took nearly 8% off of the EU's GDP, almost twice the decline as in the US. In purchasing-power-parity terms, the EU's economy was roughly the same size as the US's in 2000. In 2021 it was 7% smaller. A bigger divergence in transatlantic GDP growth may be about to begin (see chart, GDP) [67].

In the great recession of 2007-09, US's federal budget deficit reached nearly 10% of GDP, or almost two-thirds more than the central government deficit across the EU. Borrowing on both sides of the Atlantic subsequently fell much faster than economic conditions warranted. But the US's deficit began widening again from 2016 while European deficits shrank [67].



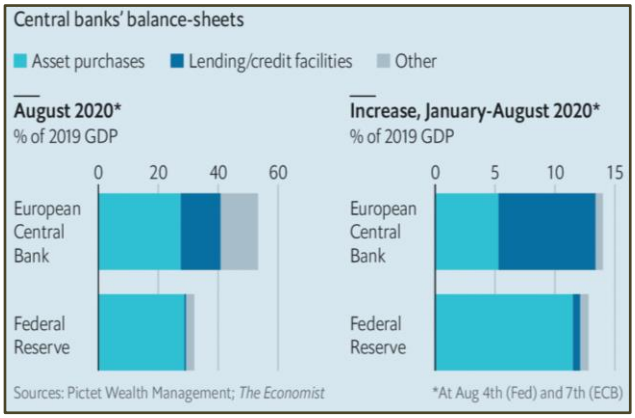
In 2019, debt levels across member states had exceeded the targets set in the fiscal compact [75]. Some member states such high debt levels making the ESM inadequate, and any austerity forced upon by foreign creditors would only bring impossibly exacting conditions on vulnerable macroeconomies. Germany and other member states continued as before, but in this case opposing "coronabonds", a one-time mutualisation of debt, on the same grounds of moral hazard and risk of common borrowing without centralised supervision [74]. The debt levels in some countries and the changes in GDP from the pandemic highlighted the need to act quickly (see chart, EU debt and GDP) [75]. Europe had not re-embraced austerity. Budget rules intended to limit member states' borrowing were suspended in 2020 and were not be reimposed until at least 2023. [67].



EU subsidies (i.e., fiscal policy) had been an issue before the pandemic. France and Germany had railed against European rulings that they said prevented the creation of corporate champions able to compete with rivals from China and the US. EU rules on subsidies must prevent individual member states from providing support that gives their firms an advantage over those of other member states [68].

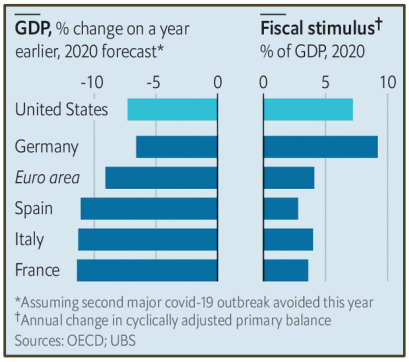
As the pandemic hit, however, national governments released emergency fiscal stimulus (state aid in EU jargon). State aid rules were suspended (targets for limits for debt-to-GDP ratios, budget deficits and ability to pursue fiscal stimulus). Europe loosened its purse strings far more in the fight against covid-19 than it did during the GFCs; across the EU government borrowing rose to nearly 10% of GDP in 2020. By contrast, the US again did more, notching up a budget deficit of 19% of GDP in 2020 and 15% in 2021 with the passage of another $1.9trn stimulus package [67]. Germany accounted for 51% approved state aid during the crisis. This uneven use of state aid went against the EU solidarity and called into question the nature of Europe's common economic response to the crisis (see box, EC approved state aid) [68].

Total EC approved state aid, €1.95tn, May 2020



Germany €994,5bn (51%)	France €331,5bn (17%)	Italy €302bn (15,5%)
	UK €78bn (4%)	Poland €48,8bn (2,5%)
	Belgium €58,5bn (3%)	Rest of the EU €136bn (7%)
Source: EC		

Nevertheless, a comparison of the fiscal stimulus in the US and EU demonstrates how Europe learned the lessons of the GFC response (see chart, GDP and fiscal stimulus). This fiscal stimulus is in addition to country-specific expenditures of state aid. In normal times state aid is all but banned by the EU to ensure a level playing field for firms. The rules were quietly shelved as the EU grappled with covid-19 lockdowns [68].



The balance sheets of the Fed and ECB compares the monetary responses to the macroeconomic challenges posed by the pandemic (see chart, central bank balance sheets). The fed focused on supporting capital markets whereas the ECB provided lending/credit support given the bigger role banks play in intermediating credit in the euro area [69].

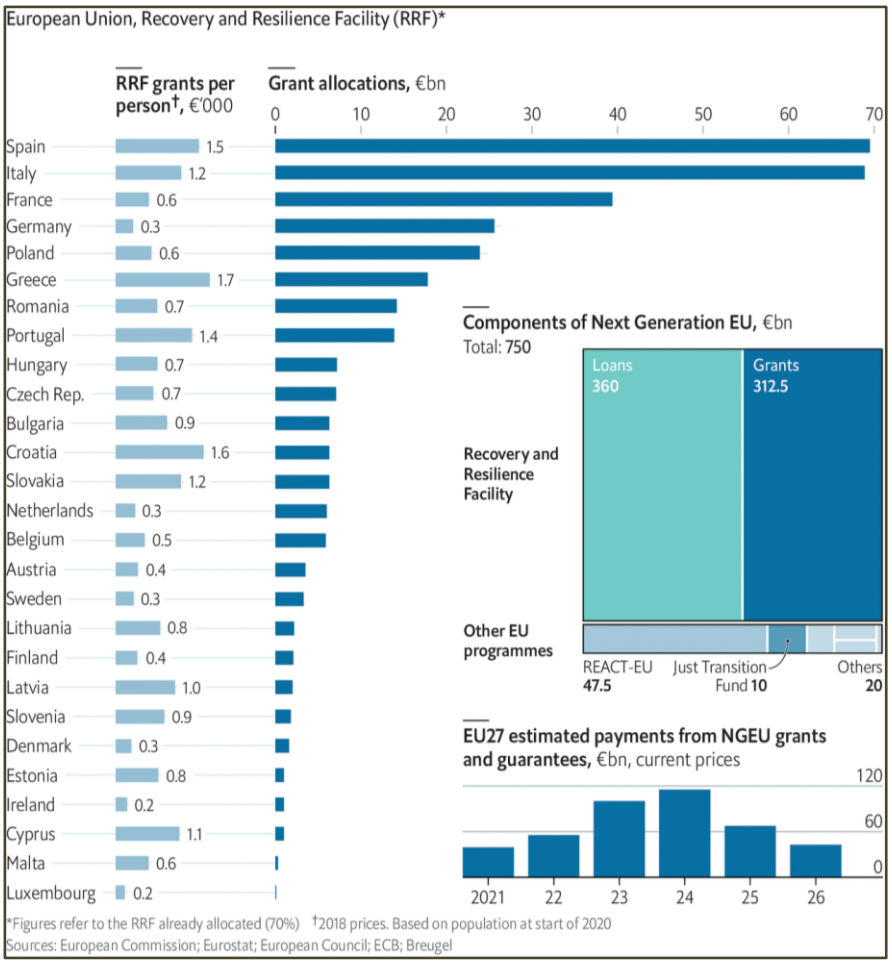
The EU's policy response required that it learn some of the lessons of the limited response to the euro crisis. The ECB took the lead as before announcing a €750bn emergency bond-buying plan in the early days of the lockdowns, later expanded to €1,35trn [73]. In addition to bond-buying the ECB souped up its long-term repo operations to lend more to banks through a "pandemic emergency long-term repo operation". The novelty with the PELTRO was that the link between the loan and the ECB's benchmark rate was severed so that banks meeting the lending criterion could access funds at a much lower interest rate of -1% [69].

The fiscal response answered the ECB's pleas to balance its monetary activism. In Jul 2020, Brussels announced an historic fiscal agreement. The deal struck two elements: the regular EU budget, or multiannual financial framework (MFF), worth nearly €1.1trn ($1.3trn) over seven years; and a one-off "Next Generation EU" (NGEU) fund of €750bn ($880bn), or 5.6% of the bloc's annual GDP, to help countries recover from the covid-19 recession and correct for the imbalances and restore solidarity[73][70]. Of that, €672,5bn would be used to create a Recovery and Resilience Facility (RFF) making grants and loans to member states; the other €77,5bn would be spent on EU-wide programs like REACT-EU, a top-up to the union's structural and investment funds [70].

The RFF was debt-funded rather than coming out of member states' existing budgets, adding a considerable stimulus. The commission has the task of judging compliance. The southern European countries were allocated most of the cash (see chart, EU RFF [70]). The commission has an interest in making the recovery fund work, so as to act as a model for future plans like it. Bend the rules too much, though, and the support of the flinty northerners will vanish [71].

The deal broke two historic taboos. The EC acting on behalf of member states could incur debt on an unprecedented scale [73]. The EU would issue hundreds of billions in debt and distribute the proceeds mostly to the poorer member states [70]. The NGEU was funded by borrowing over five years, with bonds issued at maturities extending to 2058. Second, €390bn of the €750bn would be distributed as grants, and hence would not add to governments' debt loads – breaching what had been a red line over substantial intra-EU fiscal transfers. Both developments were previously unimaginable [73]. A role for collective debt backed by member governments had always been roundly rejected by Germany and countries which share its view on fiscal probity [70].

The deal was also a means of deflecting from Germany's constitutional court ruling over the ECB's bond-buying program in 2015. Germany's court did not argue that the ECB had improperly engage in monetary financing, but rather that it had failed to apply a "proportionality" analysis, when assessing the impact of its policies, on a litany of conservative concerns:



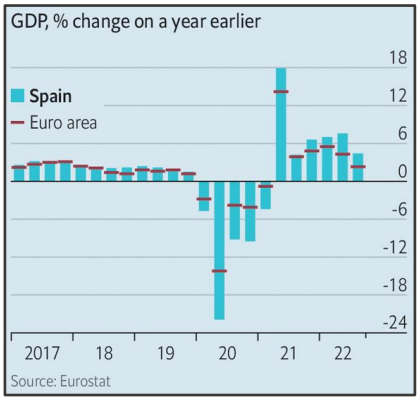
"public debt, personal savings, pension and retirement schemes, real estate prices and keeping afloat of economically unviable companies" [72]. This makes the deal a test of how the EU could operate in the future. The reform and investment plans were substantive, according to European Commission officials [71].

Even before getting under way, the NGEU had an effect on bond markets, helping to keep the cost of borrowing in countries with weaker economies close to their experienced by their stronger brethren. By Aug 2020, the yield gap between Italian and German government bonds, which reflect market worries about Italy, narrow to 1.5%. By issuing a large pan-European bond, the EU would create a financial instrument to match US Treasuries: a safe asset underpinning a true economic union [70]. Though this set precedent for collective debt it remains likely the "frugal four" would be the biggest hurdle to the deal – Austria, Denmark, the Netherlands and Sweden – would resist future attempts [73].

Post-covid fiscal policy: euro-zone perspective

The pandemic and the energy crisis that followed it added two elements to the EU's fiscal wiring, leading to more fiscal integration (and increased coordination with the ECB). As the pandemic raged, the first element was the EU's post-pandemic recovery fund of €807bn called Next Generation EU (NGEU), financed with common EU debt, a novel form of European solidarity [76][78]. The money is a form of redistribution: it is borrowed by the EU, but to be paid back by its richest members while being doled out to its poorest. This gave fiscal capacity for southern Europeans to stimulate their own economies in the recovery [78].

Spain was the second biggest beneficiary of the NGEU (see chart GDP, % change). The €77bn in grants, plus loans, would support public-private projects making high-value-added products like electric cars, and digitizing small businesses and health care [79].

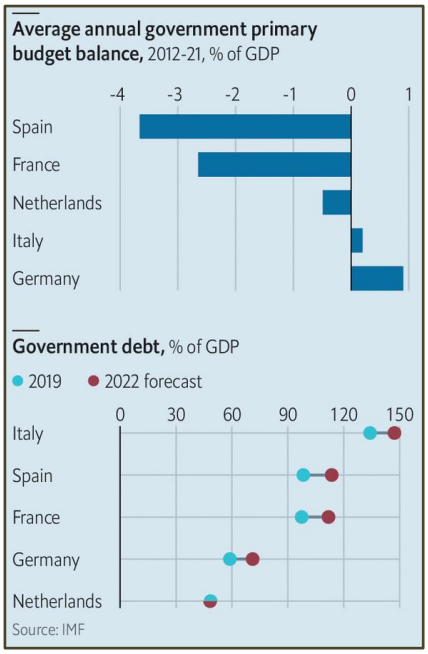


Next, the ECB furthered itself as the lender of last resort to governments in all but name because billions were spent to backstop governments early in the pandemic, and then set up a new bond-buying programme called "Transmission Protection Instrument" (TPI) as a back-up, to prevent rising interest rates from causing havoc in bond markets. Some feared the backstop could encourage governments to spend too much. "The ECB's new bond-buying programme makes it strictly necessary to have a credible fiscal framework," argued Luis Garicano of Columbia University. The ECB agreed. Eligibility for the bank's bond-buying was compliance with the European Commission's (EC) fiscal rules [76].

The EC is largely in charge of first negotiating member states' national investment and reform plans, and then monitoring their implementation. Brussels sets out a path for net government expenditure to bring down debt levels. This is a simplified version of the previous debt-reduction targets, which became unrealistic for highly indebted countries. National governments send comprehensive plans back to Brussels on how to reach that path. If a plan involves bold investment or reform packages, the adjustment can be made less onerous. Stronger fiscal plans with the commission assuming the role of fiscal decision-maker raises a question of whether it has the political legitimacy to do it [76].

That the EC wanted to oversee new fiscal rules makes sense. A group of 19 independent countries needs guardrails if the currency is shared. Previous rules proved ineffective and partially misguided [76]. [With public investment trending downward, despite global real rates of interest being close to zero, following the fiscal rules meant missing an opportunity to borrow cheaply to invest in economic and environmental regeneration and boost growth and macroeconomic resilience.]

In normal times, the EU forbade state handouts to businesses. EU rules ensure that whatever national policies do at home, they do not beggar their neighbours too much. State-aid rules were suspended during covid-19 as governments bailed out everything from airlines to pizzerias [78]. The reapplication of state-aid rules in 2024 would come after debt in most countries rose sharply and interest rates were far higher than in 2019 – so member states have argued over how to change fiscal rules before reapplying them (see charts, primary budget balance and government debt) [76][77].



The consensus is that complicated fiscal rules needed an update. Start with climate. The EU's target of cutting emissions by 55% by 2030, relative to 1990, requires additional public spending of more than 1% of GDP per year over the current decade, reckons Agora Energiewende, a think-tank. The more governments allow the EU's carbon-permit price to rise, or impose tighter emissions regulations, the lower the public bill. But few governments were willing to be tough with voters: most would rather try to lower emissions by doling out subsidies [77].

Governments across Europe helped businesses and households deal with soaring power prices. Utility bills were capped, taxes trimmed, benefits boosted [78]. The most egregious of these, Italy, cost the treasury around €130bn ($144bn, or 7% of GDP) since 2020. Part of it is known as the "super-bonus" scheme, which gave home-owners transferable tax credits a generous 90% of the costs of energy-saving renovations. More handouts were to come [77]. In late 2022, Germany flashed its cash with a surprise €200bn energy package to secure its own economic prospects. Because of healthy state finances, Germany could

afford to borrow up to 5% of GDP to create a "protective shield" that insulated Germans from the cost of higher energy [78]. This elicited fierce resistance [77], and revived calls for solidarity with poorer EU countries [78].

Defence is another big-ticket item. Germany set up a €100bn fund to plug its armed forces' most urgent gap. Overall European countries defence increases were prompted by Russian's invasion of Ukraine and a bill of rebuilding the country after the war could cost €380bn over a decade, reckon the World Bank, the EU and UN [77].

Meanwhile as the continent ages and Europe's working-age population shrinks, the total number of employed persons could follow. Climate change, defence, Ukraine and ageing (pensions and medical care) could add about 3.3% of GDP in spending per year between 2019 and 2030 [77].

There is little to offset increased costs in the EU. Faster growth was unlikely. As the post-pandemic economic recovery winded down, EU growth projections were below 2%. A shrinking workforce can only produce more with higher productivity or more capital. Investment in renewables and energy efficiency make the economy greener, but hardly more productive [77].

The real problem behind Germany and others' state aid is not that it prompts envy among neighbours. The real problem is that the largess goes to businesses, creating large distortions to Europe's single market. How can a Spanish steelmaker, whose indebted government cannot afford to shield it from high gas prices, compete with a German rival whose energy bills are being subsidized? Under such rules Europe's only thriving companies would be those based in countries whose governments can afford to back them [78].

So, is another NGEU the answer to the German splurge? The original NGEU was agreed on the condition it would be a one-off. Thus, a new NGEU is unlikely especially while the existing scheme still has lots of money left to dole out. A compromise might be to revive another covid-era scheme, which allowed countries with high interest rates to borrow cheaply by having their loans guaranteed by those with better finances. So, while some countries' fiscal programs put their own interests first, the EU has not entirely forgotten it is a union [78].

Post-covid monetary policy: euro-zone perspective

In 2014, the ECB was charged with supervising banks. That, together with regulatory changes forced banks to fund lending with more capital, making it more likely that troubled lenders could be restructured, meaning that sovereigns are less exposed to the risks stemming from collapsing banks than they were before the euro crisis (i.e., breaking the "doom loop" that connected weak banks and indebted sovereigns) [83].

Crudely put, euro-area banks were loaded up with home sovereign debt. When fears of sovereign default intensified, banks' balance-sheets crumbled, which then required them to be propped up by an already wobbly state. As banks cut lending, the real economy weakened, further worsening the public finances [83].

After the GFC in 2007-09, banks in southern European countries started to buy large amounts of bonds issued by their home government (which bank regulators consider to be risk-free, meaning that banks did not need to fund their holdings of them with capital). Between 2009 and 2015, Spanish lenders increased their holdings of national government bonds from around 2% of total assets in 2009 to more than 9% by 2015; Italian banks increased their holdings of home sovereign debt from 4% to nearly 11% [83].

Banks in most big euro-area countries have reduced their exposures to their home sovereign. But Italian banks are the big exception. They remain just as exposed to their government's debt as they were a decade ago. That, and European resolution of banks remains incomplete, and common deposit insurance has not been set up at all. Thus, the safety-net for banks and deposits remains predominantly national, and the exposure of banks to sovereigns has not been solved. In Italy, at least, this part of the doom loop is alive and kicking (see chart, home bias of bank exposure) [83].

The monetary policy response to covid lockdowns was a further bout of quantitative easing (QE) to complement the fiscal stimulus. In 2022, the ECB's response to post-covid inflation and the fallout of Russia's invasion of Ukraine was a more complex challenge than most major central banks faced. The eurozone bore the brunt of the effect of the war, which drove up energy and food prices and fuelled political instability, while the risk of a fresh eurozone debt crisis was never far away (due to the incomplete nature of its monetary union with different countries having separate budgets and bond markets) [80].

With inflation rates rising in 2022, central banks had to begin implementing quantitative tightening (QT). The Bank of Canada shed a fifth of its balance-sheet in 2022. The Fed's balance-sheet shrank by $85bn in October, twice the size of the reduction three months earlier. The BOE had begun the process. The ECB, by contrast, had yet to let go of a single bond. ECB president, Christine Lagarde, said details would be provided after the bank finished raising interest rates (in response to the inflation) [84].

QT is a nerve-racking experience for all central bankers. When buying bonds during QE, policymakers were unsure about the impact of their growing balance-sheets. In reverse, the uncertainty is greater, particularly given the fragility of financial markets and the global economy. Experiments with QT had gone badly in the past, as in 2019 when the Fed roiled the Treasury market [84] or in 2013 with the "taper tantrum" reaction from the fear that the end of QE would cause markets to cease.

The financial sector has become so dependent on easy liquidity through QE that the very act of QT has created a systemic risk that demands more QE. About $170tn was in the pool that central banks' QE programmes had in support of markets through the pandemic. QE created an "everything up" bubble during 2020-21, but as policy makers hit the breaks in early 2022, it triggered a near $10tn liquidity drop and collapse of asset markets [85].

QT is trickier for the ECB because it has 19 bond markets to worry about. Other central banks bought just one government's debt. For the ECB, one effect of QE is that it reduces the spread between the low borrowing costs of Germany and those of indebted economies like Italy. When inflation was low the ECB could pass this off as a side-effect of its stimulus. As inflation rates rose, interest rates need to rise and with it the

spread. So, other arguments were needed in favour of containing the spreads [84].

The ECB's policymakers were caught in something of a bind. Rapid QT would release short-term German bunds from its balance-sheet, ease Europe's shortage of collateral and placate inflation hawks. But it would also threaten to widen spreads on long-term debt that—in a nightmare scenario like the euro-zone crisis—could be pushed still wider by traders turned off by risky peripheral collateral. Delaying QT protected the periphery, but at the cost of raising the financial stakes (i.e., the increased risk and cost of bailouts) [84].

QE and QT has resulted in greater involvement of the central bank in the "repo" markets (repurchasing agreements involving government bonds and cash), in which firms post bonds as collateral for short-term financing. A repo contract involves a firm selling a security to another institution and agrees to buy back the asset at a higher price by a certain date, typically overnight. This amounts to a short-term collateralized loan. When the central bank sells a security and agrees to buy it back, this is referred to as a "reverse repo".

European financial firms borrow and lend €11.5trn ($12trn) every year in its "repo" markets (i.e., bonds for cash). The market is so big in part because policymakers encouraged its growth in the early days of the euro zone, hoping that German and Greek bonds would change hands on the same terms. This dream of a uniform repo market died during Europe's debt crisis a decade ago, when companies thought Irish and Portuguese bonds were so risky that they stopped swapping them altogether, ultimately widening spreads. But it left legions of lightly regulated traders ravenous for German bunds [84].

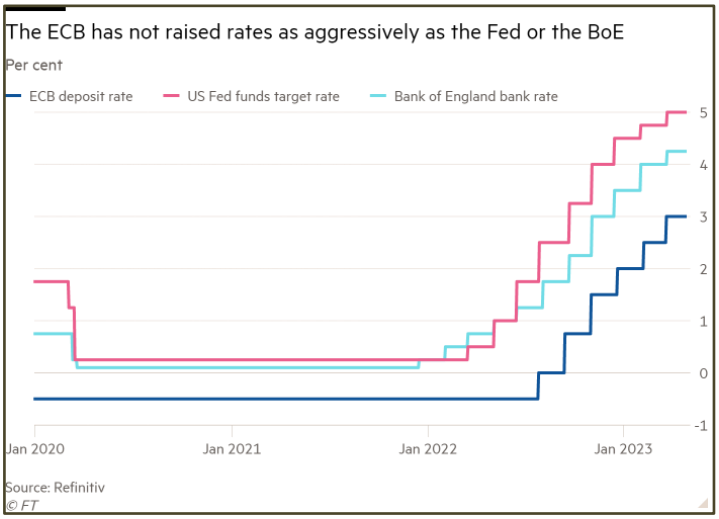
Thus, the ECB prepared to intervene in financial markets in two novel ways: by limiting what it deemed an acceptable difference (or spread) in rates between sovereign borrowers; and by greening its bond purchases and banking rules (to help address energy and climate-related issues). In doing so, the ECB abandoned market neutrality and discriminated between assets [82].

An emerging consensus developed: in a diverse monetary union, managing sovereign spreads is part of monetary policy. Preventing borrowing costs among euro-zone governments from diverging, requires monetary-policy decisions working similarly across the bloc. Rising rates should not lead to a widening spread because the extra costs would be transmitted to private borrowers in some regions, causing them to feel a bigger squeeze than in others [82]. This involves an "anti-fragmentation" tool to lower spreads, say by buying the bonds of weaker countries (provided they meet certain conditions) [83]. This requires the ECB to define what counts as an "excessive" spread, but can encourage vulnerable countries to borrow at will, knowing the ECB is capping their spreads [82].

Worries that the currency union might start to look shaky remained in the air. The fiscal position of Italy in particular, which in 2022 had net public debt in the region of 140% of GDP, preoccupied investors. Should interest rates rise much more, financial markets might start to doubt its ability to pay its debts [83].

In Jun 2022, the ECB called an emergency meeting to discuss the widening spreads between member countries' government-bond yields, almost exactly a decade ago that, as yields soared, Mario Draghi, then its president promised to do whatever it took to preserve the single currency [83]. During the euro crisis, between 2011 and 2015, a bigger spread between sovereigns contributed to the doom loop. So, cleaning up its banks and the ECB pledged to do whatever it takes to save the euro has made it less of an issue: lending rates to firms in Italy, in 2022, were at the level they were before the euro crisis, relative to Germany's, despite widening sovereign spreads [82].

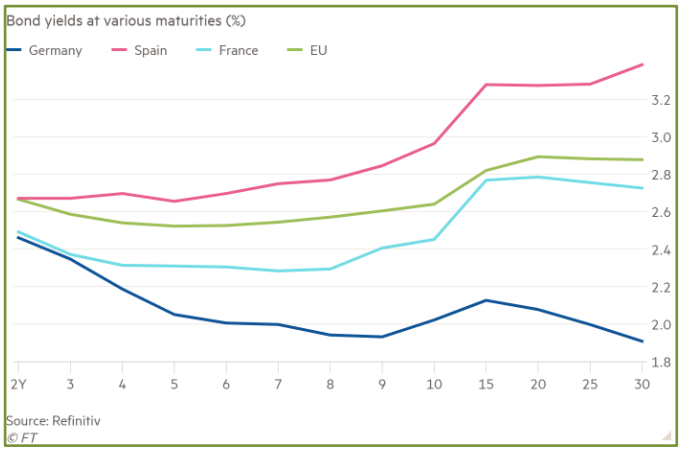
The ECB like other central banks debated how much to raise interest rates. But the ECB intended to normalise policy "gradually", i.e., slower increases in rates to avoid wide spreads. Many believed the ECB was too timid to curb inflation, which hit double-digit rates in half the countries in mid-2022 [80] (see chart, ECB not raised rates as aggressively)[81].



Macroeconomic policy arguably was more difficult in 2022 than it was in 2012 during the euro crisis when the policy choice was clear between monetary or fiscal policy solutions. Both were less clear in 2022. Borrowing costs were already rising faster for heavily indebted southern European countries, such as Italy than for more fiscally solid norther counterparts, which can test the sustainability of national debt levels [80].

To tackle an unwarranted divergence in a country's bond yields by buying its bonds using the TPI. Rather than buy as many bonds as needed to cap the country's borrowing costs at a fixed level (as the Bank of Japan did), the ECB is unlikely to target a specific bond yield for each nation and instead use its judgement on when to intervene. Germany and the Netherlands always express concern with the ECB encouraging fiscal profligacy among member states and straying into "monetary financing" of governments. Distinguishing political risk from market speculation (to explain diverging spreads) empirically is impossible (see chart, bond yields at various maturities) [80].

The nature of the financial system changed. The markets no longer serve as pure capital raising mechanisms. Rather, they are capital refinancing systems largely dedicated to rolling over the staggering global debts of well over $300tn. For every $1 raised in new finance, $7 of existing debts need to be rolled over. Refinancing crises hit more and more regularly. Hence, the importance of liquidity [85].



Finally, the ECB increasingly sees its duty to curb the financial risks of climate change – its second break away from market neutrality. In July 2022 the ECB said it would "tilt" its corporate-bond buying towards issuers "with better climate performance". The bank makes it hard to pledge carbon-intensive assets as collateral for loans from the central bank [82].

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