The first will be the last: almost 25 years living with the euro

Jan Luiten van Zanden

The problem: the euro

The euro is the subject of the valedictory lecture that I give today on June 15, 2022. I started my career in 1988 as a professor at the Free University Amsterdam with a lecture about Colijn (the Dutch Minister President who dominated monetary decision making) and the gold standard, and its negative effects on the Dutch economy between 1931 and 1936. I argued that adherence to gold was a major mistake in policy that led to what has been called the "Dutch continuation" of the Great Depression. That adherence also resulted in an example of how, according to biblical wisdom, the "the first shall be the last" (Matthew 19:30), and vice versa: countries with large gold reserves and an orthodox monetary policy, such as the Netherlands, stuck to the gold standard the longest, and it was these countries that were the last to recover from the crisis – and vice versa. Such a reversal, in which the first became the last, has also occurred with the euro, as I intend to explain in this lecture.

Today I intend, in a manner of speaking, to come full circle and discuss an equally dramatic turn of events in monetary policy some 25 years ago,[i] i.e. the introduction of the euro, or more precisely the formation of the Economic and Monetary Union (EMU), of which the euro is the embodiment. I will argue that the introduction of the euro was arguably an even bigger mistake, almost dwarfing Colijn's adherence to the gold standard.

As a starting point, I will mention another pressing political problem in the Netherlands: that of housing. In virtually every recent opinion poll, the current housing boom, characterized by ever upward spiraling prices, has emerged as one of the most pressing social problems of our time. It is estimated that an additional one million homes need to be built – a minimum of one hundred thousand per year – to bring the current scarcity under control. (The conclusion: build the country to the brim, and do so as quickly as possible). Only seldom, however, is attention paid to the monetary side of this development. The decision by the European Central Bank (ECB) to artificially maintain extremely low interest rates has, along with the pumping of massive amounts of money into the European economy through its bond purchasing programs, strongly fueled the boom currently being experienced in the housing market. This expansionary policy was the ECB's logical, and perhaps necessary, response to the global financial crisis that broke in 2008 and threatened to spiral out of control in 2012. The statement in 2012 by the president of the ECB, Mario Draghi, that he would do "whatever it takes" to defend the euro materialized in this policy.[ii] Initially, the policy was supported by all central bank members, but as the recovery progressed it became clear that the interests of the EU's northern members were not being (optimally) served.[iii] In the last few years prior to the COVID-19 crisis, remarkable scenes emerged in which governors of the central banks of northern members spoke out against the policy pursued by the ECB, openly stating that they had voted against it.[iv] Not only did ECB policy drive up property prices (and stock prices), thereby widening wealth and intergenerational inequalities, low interest rates also pushed up the ratio of private debt to Gross Domestic Product (GDP), making member states more vulnerable to a following crisis. Dependency on low interest rates and an exceedingly expansionary monetary policy also pushed the ECB's "core business", i.e. combating inflation, into the background, leaving us virtually powerless now that inflation has suddenly risen sharply. (As well as limiting our responses should a new financial crisis occur…).[v]

The crucial point is, however, that the policies pursued following Draghi's famous "whatever it takes" statement once again make it clear that the interests of Europe's North and South were and still are very different – and divergent. Simply put, prior to Draghi's statement in 2012, the North dominated ECB decision-making to the detriment of some southern member states, Greece in particular. In 2012, the situation was reversed, resulting, for example, in the problems in the housing market I just referred to. Nevertheless, deep down the fundamental problem remained the same: monetary policy cannot simultaneously serve the interests of the North and the South, and that, therefore, choices must be made that inevitably come at the expense of one of the two.

The emergence of the EMU

But let's take a step back for a moment and, as befits historians, try to uncover the roots of the problem. The EMU was and still is very much a political project, born out of the political problems that arose after the fall of the Berlin Wall in November 1989 and the unification of Germany that followed in October 1990. With its concerns about controlling German economic power, France became the driving force behind the idea of monetary unification. All previous attempts to achieve this – the currency Snake (1972-1976) and the European Monetary System (EMS, the exchange rate scheme set up in 1979) – had failed because the differences between the participating countries in terms of policy and actual economic development were too great. Despite the lack of a clear diagnosis of the causes of these failures, it was hoped that by creating a common currency new failures could be avoided. Most economists were therefore very critical of these plans, because the EU was not an "optimal currency area". Economists such as Paul De Grauwe have explained that labor markets were insufficiently integrated and that the role of the European Union was too small to absorb imbalances arising from local shocks.[vi] Be that as it may, the politicians involved – including our own Gerrit Zalm – did not take criticism of these plans seriously. The political reality was just different. (Perhaps this reflected the 'falling forward' view that the political integration actually necessary to make monetary integration a success would be catalyzed by problems arising from the introduction of the euro, so that ultimately a strong European Union would emerge, but perhaps that is bestowing too much credit upon the actors of that time).[vii]

Evaluation

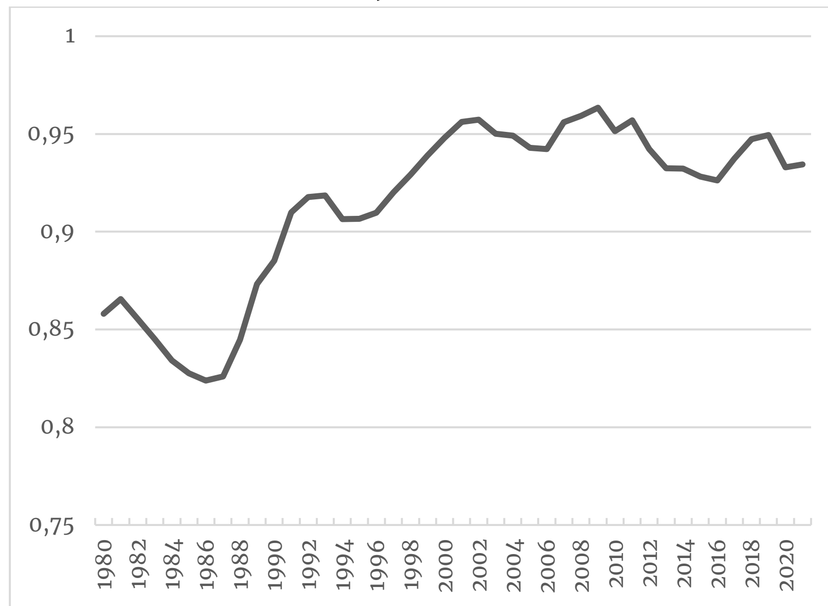
Whatever the case, the euro was introduced in 1999 (mutual exchange rates had already been fixed in 1997, so we can still speak of a 25th anniversary of sorts). Now is a good time to evaluate what that means. To start with the good news, the euro has developed into a relatively stable currency, and until recently the euro area has been characterized by relatively low inflation. For an experiment with a new currency, this is in a sense a success. The commitment problems that characterized the "lighter" forms of monetary cooperation, such as the Snake and EMS, were now "solved" by the introduction of a new, common currency, which meant that there was no turning back for participating countries. Its irreversible nature was the euro's strong point: in normal times speculation against the stability of the system was pointless – but not under exceptionally abnormal circumstances, as the case of the Greek crisis has demonstrated. Furthermore, its irreversible nature also brought with it a complete lack of flexibility or adaptability.

The EMU was intended to be a step in the process towards far-reaching European integration – yet, in fact, it brought instead much division. When it was launched, the expectation was that virtually all EU member states would participate – and the hope was that the UK would join despite its original opt-out position (the right not to participate). It is highly speculative, but in my view not improbable, that the euro played a part in creating the breeding ground for Brexit.[viii] In any case, it is certain that the European Union has been split into two camps by the EMU: those that adopted the euro and those that did not. Sweden and Denmark initially chose to stay out and later many of the larger Central European member states decided to do the same. Indeed, Poland's economic miracle of recent decades took place entirely outside the EMU. The dichotomy within the European project – between the euro countries and the non-euro countries – is a high price to pay for the creation of the euro.

But why is it not attractive for countries such as Poland, Sweden, Denmark and Hungary to participate in the EMU – why did they vote with their feet? Despite the high expectations raised in the 1990s about the economic benefits of this extra step towards European integration – all countries involved would benefit from increased growth and employment – nothing has come of it.

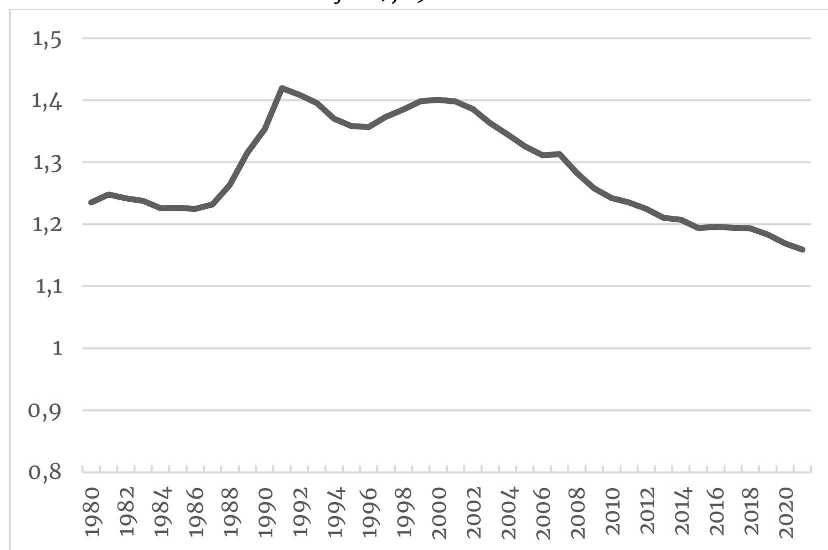
To study the effects of the euro, let us first look at the average GDP growth per capita of two groups of countries: those EU-countries with the euro and those that remained outside the Eurozone.[ix] To be clear, I have calculated the ratio between the two groups, using unweighted averages of the national GDP per capita series from the Maddison Project dataset. Chart 1 shows this ratio for countries that were already members in 2000. Before the introduction of the euro in 1999, the euro countries are growing faster than the non-euro countries, but somewhere around the year 2000 the pattern changes, and the non-euro countries grow at least as fast as the euro countries. On average, GDP growth of the euro group is slowing and/or that of the non-euro group is accelerating.

Chart 1 Ratio between average GDP per capita euro countries and non-euro countries (original members), 1980-2021



Source: Maddison Project.

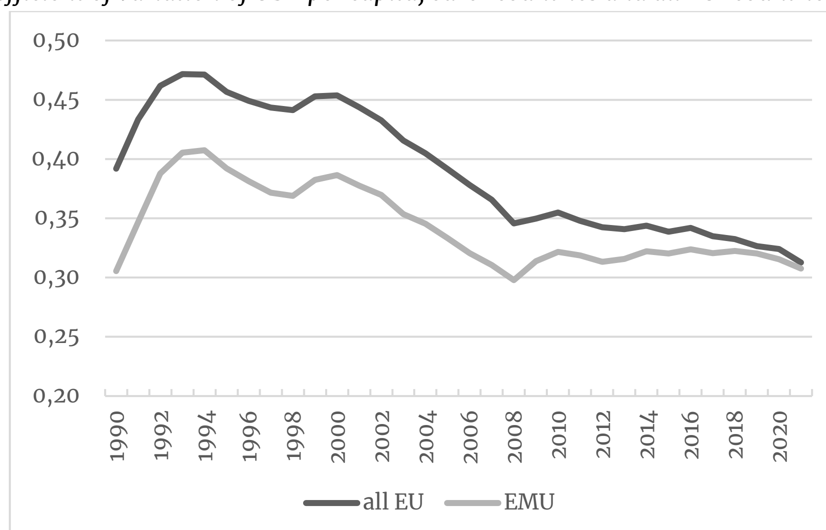
Chart 2 Ratio between average GDP per capita of Euro-countries/non Euro-countries (all current members of EU), 1980-2021



Source: Maddison Project

If we extend the sample to all countries that are now members of the EU and make the same comparison, i.e. between the Eurozone and non-Eurozone countries, an even sharper picture emerges in Chart 2, with another clear break trend around the year 2000, shortly after the introduction of the euro. Before 2000 the Eurozone countries grow faster on average than the non-Eurozone countries, but average GDP growth clearly slows from then on.

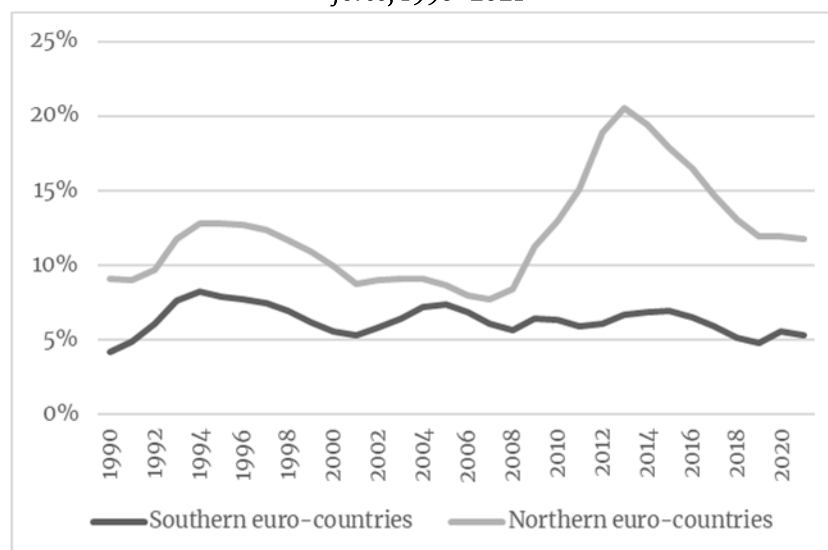
Chart 3 Coefficient of variation of GDP per capita; euro-countries and all EU-countries, 1990-2021



Source: Maddison Project.

The process of convergence whereby poorer countries gradually rise to the level of richer countries is seen by economists as the primary raison d'être of such experiments in economic integration. This convergence process did not accelerate after 1999, but, rather, it largely came to a halt. At least, this applies to the euro countries, but not to the entire EU, because, as Chart 3 shows, convergence continued there.[x] In any case, this does not indicate that the introduction of the euro accelerated the integration of the euro countries – quite the contrary. On balance, the picture is therefore quite negative: GDP growth in the euro countries was on average between 0.5 and 1.0 per year lower than that of the USA, Australia, Canada, Switzerland, the Eastern EU member states and the UK.

Chart 4 Average unemployment in the northern and the southern euro-countries in percent of the labour force, 1990-2021



Source: EU-statistics.

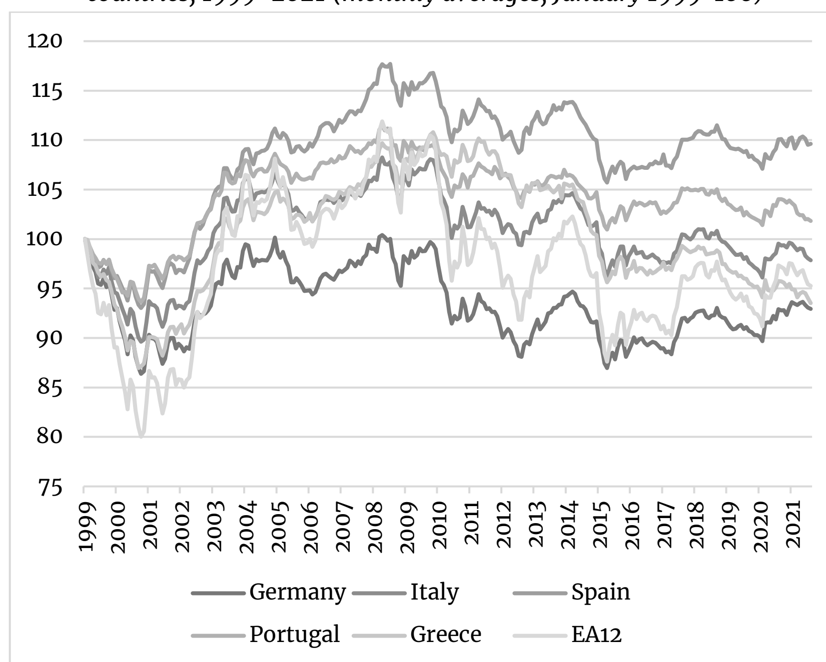
Finally, let us look at the impact of the euro on unemployment within and between Eurozone countries (Chart 4). Integration should lead to convergence of unemployment rates, which to some extent did take place up until 2008. From then on, however, the difference in rates between North and South skyrocketed: in the North unemployment barely increased, while in the South it rose dramatically, and although the gap has narrowed since 2014, it remains large – certainly larger than before the introduction of the euro.

The absence of real economic benefits is particularly evident in the development of international trade: in the 1960s and 1970s, development of the European project had led to enhanced growth of trade within the European Common Market, benefiting all participating countries. The EMU had no such effect, however: in relative terms mutual trade even tended to decline, not because transaction costs increased, but most probably because the most dynamic emerging markets were to be found in countries such as China, India, and certainly also the US, while in relative terms the European economy stagnated.[xi] In effect, the EMU was the wrong project at the wrong time. Europe invested a great deal of time and energy in lowering the transaction costs of mutual trade, while promising growth opportunities lay elsewhere. Dramatically put, Europe's gaze turned inward on itself at a time when the real action was taking place elsewhere.

Why such a failure?

Why has convergence within the Eurozone stagnated, and why has the growth of these euro economies stagnated? The main explanation appears to be as follows: the northern economies, such as Germany and the Netherlands, were characterized by their strong external position (balance of payments), low levels of inflation and currencies that tended to remain stable. Southern economies, on the other hand, such as Portugal, Italy, Spain and Greece – as well as France - had much weaker external positions, higher inflation and currencies that in the long run declined in value. These characteristics reflected differences in their underlying political economies that I will not be discussing here. In the South, economic and financial problems were to some extent "solved" by periodic currency devaluations. Relatively high inflation made it possible to cope with high levels of public debt and equally high government deficits. Experiments to stabilize exchange rates such as the Snake in the 1970s and the EMS in the 1980s failed because of disparities between the North – Germany, in particular – and the South, especially France. Nevertheless, the lesson learned from the failure of the Snake and the EMS was not that these countries were so different that they could not form one monetary block. Quite the contrary, with the introduction of the euro it became impossible for countries to address growing disparities in their competitiveness via corrections in their exchange rates. Furthermore, after the introduction of the euro, the process of convergence of rates of inflation between the twelve members of the EMU stagnated. As a result, with the launching of the EMU, price levels within the EU once again began to diverge. This is most clearly expressed in the estimates of real effective exchange rates (REERs) since early 1999: German competitiveness, for example, increased strongly compared to that of Mediterranean member states (Chart 5). (In other words: due to low inflation the German price level became much lower than that of the southern countries, which meant a strong improvement in the competitiveness of German business.)

Chart 5 A measure of competitiveness: the Real Effective Exchange Rates of Germany and the Mediterranean countries, 1999-2021 (monthly averages, January 1999=100)



Source: Darvas, Z. (2021). Timely Measurement of Real Effective Exchange Rates, working paper Bruegel, *https://www.bruegel.org/2021/12/timely-measurement-of-real-effective-exchange-rates/*

In effect, the euro reflected the weighted average of the two sorts of economies, those with strong currencies and those with weak currencies. Moreover, during the euro's first eight years – its honeymoon – transaction costs did actually fall, and it did lead to a large flow of capital from the North (with low interest rates and low levels of inflation) to the South (with higher interest rates and inflation). As a result, price levels in the South increased by much more than those in the North, thus undermining the international competitiveness of the South and boosting competitiveness in the North. The real effective exchange rates of the North and South of the Eurozone diverged dramatically: Germany became increasingly competitive; Spain, Portugal, Italy and Greece saw their competitiveness undermined.

Prior to 1999 this would have been corrected by readjustments in exchange rates, but following the introduction of the euro that was no longer an option. In a way, Germany profited from the euro because it was a relatively weak currency in comparison with the independent D-mark. The Netherlands also profited from the euro, because it became part of a large currency area that included a number of "weak" economies: when the exchange rate between euro and guilder was fixed (in 1997) it was at the end of a period of wage moderation, which resulted in an under-valuation of the guilder; this under-valuation was frozen by the conversion rate into euros. Such changes in international competitiveness help to explain why the process of convergence stalled upon introduction of the euro. Overall, growth in the South was constrained by the weak competitiveness arising from its monetary unification with the North.

The first ten years of the EMU resulted in growing disparities within the Eurozone, but this was still trifling compared to what was to happen after the 2008 Global Financial Crisis (GFC). The South had become dependent on the inflow of money from the North, but that suddenly dried up during the crisis, and underlying weaknesses surfaced almost immediately: banks had taken much more risk than they could deal with – a global phenomenon, which was perhaps the core problem behind the GFC. In the North, governments could still afford to bail out their banks, as public finances were in relatively good shape; in the South, however, such pressures added to the already fragile state of government finances.

The most dramatic example of the consequences arising from the combination of a system of fixed exchange rates (i.e. the euro) and relatively weak domestic institutions is, of course, Greece, which suffered a depression without parallel in Europe. In 2002, when it entered the EMU, Greece's GDP per capita was 86% of the EU average, and it clearly profited from the inflow of capital during its first years of EMU membership, as the increase in its GDP to 91% of the EU average by 2007 demonstrates. As from 2008, however, GDP began to contract, falling back to 68% by 2017. In "beyond GDP" literature it is often argued that GDP does not tell us a lot about well-being, but in extreme cases such as Greece after 2008, it still seems to be a good indicator of decline in welfare; in reality, the decline in welfare was probably even steeper than decline than that of GDP, through, for example, institutional decline and increasing inequality.

Why did this happen? How did Greece become such a tragic victim of the financial crisis? The crucial problem was the enormous budget deficit that came to light in these years (Nor did it help that previous governments had been rather successful in covering this up). Debt levels rapidly increased to more than 200% of GDP – a clearly unmanageable situation – and the budget deficit was spiralling out of control at more than 12% of GDP. The problems Greece faced were huge – and to make matters worse, widespread corruption also undermined the government's ability to raise taxes (from those who still had the capacity to pay). Greece had gone through similar episodes in the past – in a way it was a "serial defaulter". Its problems were usually solved by going into bankruptcy and restructuring of public debt to bring it down to a level that was sustainable – banks and other investors did not like being "shorn" or "restructured", but in this way the problem was addressed relatively quickly, and there was a certain logic to the idea that creditors who were in the business of earning a profit from taking financial risks, should also bear those risks when things went wrong. Such a "periodic" financial crisis had had limited consequences for the international/European economy – after all, Greece was a relatively small country that accounted for less than two percent of European GDP.

Yet, this new – euro – crisis was different. To begin with, financial authorities and ministers of finance from the other euro countries were afraid for "contagion", for the stability of the entire euro system if the banks that had financed the public debt were going to be hurt by debt restructuring. The fact that most banks were based in the North also contributed to the stubbornness of northern member states to come to the aid of Greece. If a euro country such as Greece could go bankrupt, what did this mean for the EMU, since other countries – Italy and even Belgium – were facing similar problems? Would this lead to a Grexit? And who would be next?

By blocking the path for debt restructuring and adhering to the strict rules of the Stability and Growth Pact (SGP), the only way out for Greece was to pay its way out of the problem, by forcing the Greeks to raise taxes and cut expenditure to such an extent that the budget could be balanced, and perhaps public debt could be sustained or even reduced. This was a huge mistake, for a number of reasons. Not only were the measures that had to be taken draconian, they were also counterproductive – raising taxes, for example, undermined the economy and led to a further fall in GDP, which in turn meant falling tax revenues. Empirical research had shown that the "tax multiplier" was probably about 2, meaning that every extra euro of tax collected resulted in a two euro decline in GDP, so – assuming that the overall tax rate was about 50% of GDP – the net effect was exactly zero. In fact, problems in Greece only increased, as the willingness to pay taxes further declined. Occasionally, missions by the International Monetary Fund and the EMU – represented by ministers of finance such as Jeroen Dijsselbloem – had to conclude that things were not improving and that even sterner measures had to be implemented. The crisis dragged on and on, depressing not only Greek society and the economy, but also fuelling a divisive public debate in Europe that occupied centre stage for quite some time.

Clearly, Greece paid an incredibly high price for joining the EMU. Other southern countries, as well as Ireland, went through a similar process, albeit on a generally less dramatic scale. The ban on debt restructuring made matters much worse and was in the long run untenable; by the time the ban was relaxed much of the harm had already been done. The way the EU handled the financial crisis had not only dramatic consequences for its southern states, it also undermined trust in the entire EU project. Leading politicians defended the hard line taken against Greece and other countries by blaming deficient institutions and politicians in the countries concerned, even going so far as to promise that "not a single euro" would go to rescuing Greece. This was justified by painting a highly negative picture

of Greece and the Greeks by the media and policy makers on both sides of the populist/non-populist divide. Hard liners could have known that such promises were unrealistic, but, increasingly, in the eyes of many the EU was exposed as an institution that channelled money from the North to the South, an opinion that further undermined trust. In the South, frustration about the inadequacy of EU solutions and support grew for obvious reasons – and in both camps trust in EU institutions declined dramatically during precisely these years (2007–2012), until "finally" the EU found answers to some of the problems.[xii] Nevertheless, the whole episode was and still remains to be a serious dent in the image of the European integration process: that the "club" and its members were prepared to treat one of their own in such a disrespectful manner was shocking.

This European continuation of the 2008 financial crisis throughout the period 2008–2012 is the drama of the euro – much like the unnecessary "Dutch continuation" of the 1930s depression through into the period 1933– 1936 by sticking to the gold standard. Both had in common that these dramatic mistakes were grounded in a strong trust in conservative financial policies – such as the anchor of the gold standard. In the case of the EMU, its anchor was the Stability and Growth Pact (SGP) of 1997, in a way the underlying "constitution" supporting the euro, which regulated entry into the EU "club" and the behavior of members once they had joined. One key SGP rule was and still is that a budget deficit should not be greater than 3% of GDP; if this limit is exceeded sanctions are to be imposed. This rule is a mistake for two reasons. First, the limit is completely arbitrary. Indeed, even many northern countries that supported it had had much higher budget deficits (e.g. The Netherlands in the early 1980s, and Germany following its unification in the 1990s). Perhaps the readiness to impose this ceiling can be explained by the – albeit unfounded – optimism of the late 1990s, when economists believed in the emergence of a "new economy" and a "great moderation". The second reason is that it does not make sense to add, in economically hard times, to the financial problems of a country by imposing fines. Such a country needs support, funds and an easing of its burdens, not a harsh punishment. The underlying idea of the fines was that a country is solely responsible for the situation it finds itself in and should, therefore, solve any problems itself.

In practice, however, this approach did not work, which had become clear already in 2003, when Germany and France were the first countries to infringe SGP rules; an exception was made for them, based on their promises to put their finances in order. Nevertheless, the SGP's fiscal rules were used to justify the harsh treatment meted out to Greece and other debtor countries during Europe's "Great Recession". This time, no exceptions were to be made.

This "orthodoxy" was so strong that during the European recession of 2011–2013, even in the Netherlands the government began to cut expenditure on a vast scale to ensure compliance with SGP rules, as well as to lead by example, i.e. to be the "best boy in the class". The result was a relatively mild setback of the economy – another "Dutch continuation" of a crisis, caused, much the same as in the 1930s, by policy failure, and this time followed by austerity measures in many areas – defense, the environment, climate policy – that would lead to major problems ten years later and hasty efforts to correct them.

The unbalanced basis for the EMU was not accidental, but rather a direct consequence of its prehistory. As I have already mentioned, it was the French who favoured plans for a monetary union, whereas the Germans were generally opposed – they preferred to stick with their beloved D-mark and feared that they were going to pay for the malfunctioning of the new system. The EMU, created in the 1990s despite German opposition, was designed in such a way that it could overcome German and – more generally "northern" – objections. The SGP (i.e. budgetary governance) was one of the pillars on which the EMU was built, the other being the European Central Bank, responsible for monetary policy. The bank's primary aim was to regulate money supply in such a way that inflation would hover close to 2% per annum; other aims, such as facilitating full employment, that might have balanced policy a bit, were not included in its charter. More importantly, perhaps, the first two presidents of the ECB were selected to reassure the Germans of the conservative policies that were going to be implemented: Wim Duisenberg (Dutch) and Jean-Claude Trichet (French) were, if anything, in their policies more German than the Germans. That the ECB was located in Frankfurt, close to the German capital market, was another feature that strengthened German influence.

During the honeymoon years prior to the financial crisis, the generally very cautious, anti-inflationary policies of the ECB – compared with the Federal Reserve and the Bank of England – did not matter much, although they did not help much either. But when the global financial crisis was already in full swing, and when it gradually mutated into the Great Recession and its European continuation, the conservative policies of the ECB did matter. Interest rates were kept much higher than those in the USA (initially because the USA was supposed to be the epicentre of the financial earthquake), which did not help to ease tensions or support banks and governments facing financial problems. In particular the increase of the base rate in July 2011 – when all signs were flashing red, both in the USA and Europe – was a serious policy mistake.[xiii]

Conclusions

This brings me back to where this story began: policies that are suitable for one part of Europe may be unsuitable for another, which the years since the "whatever it takes" statement have clearly shown. In my view, it is clear that EMU has caused great damage to the European project. It is striking that this matter is hardly debated, perhaps because it is considered a *fait accompli* that cannot be changed. Let me be clear: my criticism does not stem from any nationalistic opposition to European integration – quite the contrary, there are many reasons why that process is absolutely necessary for a secure and vital future for Europe, and why it must be pursued with maximum effort. Unfortunately, however, the euro only gets in the way. The tragedy of this major error in policy is that the process appears to be irreversible, that an attempt to dissolve the Economic and Monetary Union may well turn into, in the words of Barry Eichengreen, "the mother of all financial crises".[xiv] No one wants to be responsible for that! And so we keep quiet, just as people were largely silent as they held on to the gold standard in the 1930s.

Similar attempts in the past to introduce fixed exchange rate systems usually fell apart in times of crisis. The international gold standard lasted some 40 years, from 1872 to 1913, and was a disaster when reintroduced in the 1920s; the parallel with the impact of the EMU goes even further, because this reintroduction of the gold standard was largely a political project that was out of step with changed national and international realities.[xv] The Bretton Woods system, the next attempt to create a stable international monetary system, functioned properly for about 20 years (from about 1950 to 1971/1973). It is a sign of hubris to think that we can – in our even more rapidly changing times – design a system that works "forever". Usually a deep crisis is the proximate cause of a collapse of such "stable" systems. The choice is, I think, not between whether to stick with the euro or not, but rather one of either leaving the euro in a planned, orderly manner or being forced to exit during a deep financial crisis. There is perhaps a price to be paid for the current *omertà* about the euro.

The paradox of the gold standard was that countries that had strong financial positions and sound monetary policies at the start of the Great Depression, by holding onto gold, were hit the hardest and longest – a good example of the first becoming the last, and vice versa. The paradox seems to be repeating itself, albeit in a different way: ECB policy must necessarily start from the problems and limitations of the weakest partner in the EMU context, in order to prevent them from being left out. Now, Italy seems to have taken over this position from Greece. While the EMU and certainly the Stability and Growth Pact started out as instruments for imposing the norms and policies of the strong northern economies on the Mediterranean members of the union, EMU policy is now dictated by the needs and wants of the weakest members, to ensure that they are kept onboard.

It makes sense – and I'll close with this – that if you form a club whose members are obliged to remain members permanently, then the rules of the game will ultimately be determined by the weakest member. This is how, I think, Draghi's "whatever it takes" statement should be understood. Within the EMU, policy will be determined not by the "first" but by the "last" – which will turn out badly for the North, and that is the price we must pay for the hubris of creating a system fixed "for eternity". Now we are stuck with a monetary system that has virtually no means available to halt inflation, a system that has fueled soaring real estate, stock and cryptocurrency prices, with all the resulting consequences for social inequality and which, I fear, will be rather impotent in the face of a new financial crisis – we are certainly paying dearly for the euro!

Notes

i. The euro was officially introduced in 1999, but the currencies involved were already linked in 1997, so that with a bit of imagination we can speak of the euro's 25th anniversary.

ii. In addition, it appears that the housing market is characterized by a negative supply- response: as prices rise, speculation encourages owners to withhold supply or to sell outside the market, fuelling the boom even more.

iii. As well as problems in the housing market and, due to low interest rates, inflated share prices, because of low interest rates this policy has also caused major problems with the financing of the pension system.

iv. For example, an interview of Klaas Knot in the Financial Times, 23 September 23, 2019; The polarization also occurred within the ECB: under President Duisenberg there was no voting; under Trichet voting was kept confidential; and under Draghi it became a subject of open discussion (with thanks to Arthur van Riel).

v. *cf.* Knot, *Financial Times*, 6 February 2022.

vi. De Grauwe, P. (2016). *Economics of Monetary Union, 13th Edition*. Oxford University Press, pp. 24-50.

vii. For this political interpretation see A. Mody, *EuroTragedy. A Drama in Nine Acts.* Oxford UP, Oxford 2020, 5-12; a test of this 'endogeneity' hypothesis in: Bąk, H., & Maciejewski, S. (2015). Endogeneity and specialization in the European Monetary Union. *International Journal of Management and Economics*, 46(1), 7-40.

viii. At least, this is the view of John Stevens, a British member of the European Parliament between 1989 and 1999: The euro has in fact been the critical factor in determining Brexit. Stevens, J. (2021). *Brexit, the Euro and Rejoin*. The Federal Trust. https://fedtrust.co.uk/brexit-the-euro-and-rejoin/

ix. The GDP figures of Charts 1-3 are taken from Bolt, J., & Van Zanden, J. L. (2020). Maddison style estimates of the evolution of the world economy. A new 2020 update. *Maddison-Project Working Paper* WP-15.

x. There is – perhaps unfortunately – consensus on the lack of real convergence within the euro group: Franks, M. J. R., Barkbu, M. B. B., Blavy, M. R., Oman, W., & Schoelermann, H. (2018). *Economic convergence in the Euro area: coming together or drifting apart?* International Monetary Fund working paper. Bak and Maciejewski even find divergence in underlying economic structures within the euro countries: Bąk, H., & Maciejewski, S. (2015). Endogeneity and specialization in the European Monetary Union. *International Journal of Management and Economics*, 46(1), 7-40.

xi. Mody, EuroTragedy, 171; Camarero, M., Gomez, E., & Tamarit, C. (2013). EMU and trade revisited: Long-run evidence using gravity equations. *The World Economy*, 36(9), 1146-1164, also conclude that the effect of the euro on intra-European trade was marginal. See the overview of this literature in De Grauwe, P. (2020). *Economics of the monetary union.* Oxford University Press, USA, pp. 27-28.

xii. Mody, EuroTragedy, 424-425.

xiii. Mody, EuroTragedy, 296-297.

xiv. Eichengreen, B. (2010) 'The Euro: Love it or Leave it?' *Vox Column.* https://voxeu.org/article/eurozone-breakup-would-trigger-mother-all-financial-crises.

xv. Eichengreen, B. (1992) *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939.* Oxford University Press.