

Cross of Euros[†]

Kevin H. O'Rourke and Alan M. Taylor

The eurozone is in trouble. Unemployment is over 12 percent and is getting worse. Youth unemployment is 24 percent. In Spain and Greece, total unemployment exceeds 26 percent, and youth unemployment exceeds 55 percent. These two countries, together with Ireland, Cyprus, and Portugal, are in official bailout programs. If Slovenia eventually joins the club, as seems possible, then a third of the eurozone's 17 members will be in such programs. Capital controls imply that Cypriot euros are no longer convertible into euros elsewhere. There has been a sharp decline in eurozone citizens' confidence in European institutions: reported "distrust" in the European Union exceeds "trust" in 15 out of 17 countries and by an average 28 percentage points overall. In Greece, the fascist Golden Dawn party entered Parliament in 2012 and is gaining in opinion polls. Economies, societies, and political systems are fraying at the seams.

In the Cypriot, Irish, and Spanish cases, banking crises caused economic collapse and loss of political sovereignty. Pre-crisis cross-border flows of capital pushed up wages, prices, and asset prices in recipient countries, implying major adjustment problems that now have to be faced, but the fact that many of these flows have been

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channeled through banks has led to some of the eurozone's most intractable problems. The costs of dealing with banking crises has worsened governments' fiscal positions, putting further strain on banks' balance sheets, in turn crimping credit creation, thus leading to a further deterioration in the economy and governments' fiscal positions, and so on.

The eurozone crisis gives rise to three questions. First what macroeconomic policy mix is consistent with running a diverse monetary union involving 17 independent nation states? More specifically, what policy mix will be required to ensure that the adjustment problems that countries like Greece and Spain now face can be successfully overcome and that the eurozone does not collapse in the short to medium run? Second, what is the minimum institutional framework consistent with the survival of the eurozone in the medium to long run? If macroeconomic adjustment problems cannot be overcome in the shorter run, and if necessary institutional reforms cannot be delivered in the longer run, then a third question becomes potentially relevant: how can the costs of a eurozone break-up be minimized?

Although there are no convincing historical analogies for the eurozone, which is a unique experiment (Eichengreen 2008), we begin with an overview of some of the historical analogies that are often mentioned. Nonetheless, history can provide us with lessons regarding all three questions. The gold standard provides lessons regarding what short-run adjustment strategies the eurozone should be pursuing today (Eichengreen and Temin 2010). The history of American monetary union provides lessons regarding what institutions the eurozone will need in the longer run to survive, and, perhaps more pessimistically, the circumstances in which these are likely to come about, if they ever do. Finally, history also provides lessons relevant to the break-up of the eurozone, should it come to that.

Why Previous “Monetary Unions” Offer a Poor Analogy

In this section, we offer some comparisons and contrasts between the euro and previous arrangements that superficially appear somewhat similar, but were actually very different. Table 1 summarizes the other arrangements and the key points of comparison.

European monetary union has eliminated exchange rate variability among eurozone members by replacing national currencies with a single currency, the euro. The euro is managed by a common European Central Bank whose primary objective is price stability, defined in practice as involving inflation less than 2 percent. If this goal is satisfied, the central bank is also supposed to support “general economic policies in the Union” with a view to achieving objectives such as full employment. The eurozone members are all members of the European Union, but remain independent states. Under the original architecture, national authorities handle banking supervision, resolution, and deposit insurance; there is no banking union. Neither is there a common eurozone fiscal authority, nor anything approaching a

Table 1
Comparing Currency Unions

	<i>EMU</i>	<i>Latin Monetary Union</i>	<i>Scandinavian Monetary Union</i>	<i>Anglo-Irish monetary union</i>	<i>Currency boards</i>	<i>United States</i>	<i>Gold standard</i>
Does it eliminate exchange rate variability?	Yes	No	No	Yes	Yes	Yes	No
Does it eliminate national currencies?	Yes	No	No	No	No ^d	Yes	No
Is exit easy?	No	Yes	Yes	Yes	Yes	No	Yes
Is there a temporary escape clause?	No	Yes ^a	Yes ^a	No	No	No	Yes
Is there a common central bank?	Yes	No	No	No	No ^c	Yes	No
Are high-denomination coins mutually acceptable?	N/A	Yes	Yes	N/A	N/A	N/A	No
Are low-denomination coins mutually acceptable?	Yes	No	Yes	Yes ^c	Varies	Yes	No
Is paper currency mutually acceptable?	Yes	No	Yes ^b	Yes ^c	Varies	Yes	No
Is there a fiscal union?	No	No	No	No	No	Yes	No
Is there a political union?	No	No	No	No	No	Yes	No
Is there a banking union?	No	No	No	No	No	Yes	No
Is the union symmetric?	Yes	Yes	Yes	No	No	Yes	Yes
High labor mobility?	No	Partial	Partial	Yes	Varies	Yes	Partial

^a Could suspend convertibility of paper currency into specie.

^b Occurred in stages; agreements in 1894 and 1901.

^c British currency accepted in Ireland.

^d Except in cases involving dollarization.

^e There are two common central banks in the CFA franc zone, corresponding to the West African and Central African Currency Unions.

eurozone government. Bailouts of member states are supposedly prohibited, and a series of fiscal rules were (unsuccessfully) adopted to make this credible. There is no legal means of leaving the eurozone, even temporarily, aside from leaving the European Union altogether.

The Latin Monetary Union was created in 1865, initially involving Belgium, France, Italy, and Switzerland. Its purpose was to harmonize the gold and silver content of the coins of the four countries (Redish 1993); it was a coinage agreement, not a monetary union. There was no common unit of account, no common political framework, and no common central bank. The Scandinavian Monetary Union involved Denmark, Norway, and Sweden (Henriksen and Kærgård 1995). Gold coins, and token silver and bronze coins, were legal tender in all three countries. In 1885 the three central banks opened current accounts with each other, gaining the right to draw drafts in each other's currencies at par. Nevertheless, the central banks remained independent of each other, there was no economic policy coordination in other areas, and countries retained their own currencies.

There have been a number of small-scale “monetary unions,” typically between a larger and a smaller state, in which each state’s currency is legal tender in the other (or the larger state’s currency has legal tender status in the smaller state). The Anglo-Irish monetary union which lasted from Irish independence in 1922 until 1979 is one such example: Honohan (1994) considers this to have been *de facto* a currency board arrangement throughout virtually the entire period. History records more than 60 currency board systems, mostly occurring in colonial situations where dependent states and territories issued their own currency (Hanke and Schuler 1998). The key requirements are that the issuer must freely exchange local for foreign currency at par and must hold enough foreign-denominated safe assets to cover its entire monetary base liabilities. Currency boards typically do not involve a common central bank or currency, and countries can choose to leave at any time.

The United States has a *true* monetary union, not simply a more or less hard exchange rate peg between state currencies. As we will see, it gradually developed a common central bank, a banking union, and a fiscal union. The obvious difference between the United States and the eurozone is that in the American case political union preceded monetary union, while the European gamble has been to try to develop a monetary union in the absence of political (and fiscal and banking) union.

Finally, the gold standard was not even formally speaking an exchange rate agreement. Rather, it was a series of country-by-country monetary regimes linking the value of currencies to the price of gold, obliging central banks or their equivalents to hold sufficient reserves to be able to make this commitment credible. It only became a quasi-fixed exchange rate regime as a by-product of free trade in gold, which led to gold prices being almost (not entirely as arbitrage was costly) equalized in different countries. Countries retained their own currencies, central banks, and political and financial sovereignty and could sever the link between their currencies and gold whenever they wished.

The Adjustment Problem: What Can We Learn from the Gold Standard?

Most of the debate in the run-up to the adoption of the euro was couched in terms of traditional optimum currency area theory (Mundell 1961; Kenen 1969). If the benefits of a common currency are that it increases trade, then benefits should be increasing in the extent of trade integration within the currency area. What about the costs? Here, optimum currency area theory focuses on how the regions within the area are able to adjust to macroeconomic shocks. If shocks are symmetric across regions, then a common monetary policy response is appropriate, reducing the cost of a common currency. If shocks are asymmetric, then labor flows from depressed to booming regions will help adjustment, as will wage and price flexibility, or a central fiscal authority that can smooth shocks across regions; but if these

alternative adjustment mechanisms are absent, the regions may be better off with separate currencies so that the exchange rate can be used as a tool of adjustment. The history of the gold standard is a rich source of lessons on how adjustment across countries takes place in modern economies and polities.

The Gold Standard, the Trilemma, and Adjustment in Theory and Practice

The gold standard was supposed to ensure aggregate price stability by making it impossible for governments to engage in inflationary policies. It also offered the prospect of microeconomic benefits by encouraging international integration, and indeed it boosted trade by more than the euro has done (Estevadeordal, Franz, Taylor 2003; Mitchener and Weidenmier 2008; Baldwin 2006; Santos Silva and Tenreyro 2010). But how did it cope with macroeconomic adjustment?

The gold standard operated as a straitjacket on macroeconomic policy, according to the macroeconomic policy *trilemma* which says that a country cannot simultaneously choose three policies: 1) a fixed exchange rate, 2) open capital markets, and 3) monetary policy autonomy. It must pick two. If a country chooses open capital markets, “uncovered interest parity” must hold; that is, since arbitrage equalizes expected returns at home and abroad, the domestic interest rate must equal the foreign interest rate plus the expected appreciation of the foreign currency. If a country chooses open capital markets *and* fixed exchange rates, domestic interest rates have to equal the base-country interest rate, ruling out monetary policy autonomy. If a country chooses open capital markets *and* wishes to set domestic interest rates at levels suitable to domestic conditions, then exchange rates can no longer be fixed. However, a country can choose an autonomous monetary policy and a fixed exchange rate if it imposes capital controls. While the trilemma is a simplification, ample historical evidence supports its key predictions (Obstfeld, Shambaugh, and Taylor 2004, 2005). It provides a useful organizing framework for international macroeconomic history (Eichengreen 1996; Obstfeld and Taylor 2004) as the essential historical plot lines revolve around which leg of the trilemma countries have chosen to sacrifice.

The gold standard, like the eurozone and the US monetary union, offers lessons about what happens when the exchange rate across an area is fixed and capital markets are open, implying that monetary policy is the same across gold standard adherents, eurozone members, or US states, as the case may be. Many scholars have stressed the potential for economic instability in this setting, and the paucity of tools available in response. With a flexible exchange rate, a local demand boom would drive up interest rates, drawing in capital from abroad and appreciating the currency. This in turn would moderate the boom. With a fixed exchange rate, local interest rates cannot rise. Indeed, local central banks must prevent interest rates from rising by expanding money supplies, amplifying the boom. The opposite follows in slumps. As Ford wrote (1962, p. 188), “It is easy to understand the dislike of some Argentines for a system which dictated that a slump must be aggravated by monetary reactions, although, doubtless, they had forgotten that the same system served to enhance booms.”

Under the gold standard, the key goal for policymakers was to avoid losing gold. When a country found itself with a balance-of-payments deficit (that is, a current account surplus insufficient to finance capital outflows, or borrowing insufficient to finance a current account deficit), it needed a mechanism to staunch the resulting outflow of gold and eventually to reverse it. Such a mechanism involved, among other things, lowering the prices of domestic goods relative to those of foreign goods (depreciating the real exchange rate), thus improving the trade balance. Such “real depreciation” can be achieved by depreciating the nominal exchange rate—that is, lowering the value of the currency in which domestic prices are expressed—but this step was ruled out under the gold standard. Real depreciation had to be achieved by lowering the domestic price level, a strategy sometimes referred to as “internal devaluation” in the eurozone context.

In Hume’s (1742) formulation of the “price-specie-flow mechanism,” adjustment was supposed to be automatic. He argued that gold outflows, which were needed to pay for trade deficits, would lower the money supply, since the latter was tied to gold reserves. This in turn would lower the internal price level, depreciate the country’s real exchange rate, and improve the trade balance. Conversely, surplus countries would experience gold inflows, inflation, and real exchange rate appreciation.

The late nineteenth century world was more complicated than the world envisaged by Hume. Rapidly expanding international financial markets meant that trade deficits could be financed by borrowing rather than by gold exports. Yet interwar observers, looking back at the pre-1914 experience, believed that adjustment under the gold standard had been smooth as a result of monetary authorities following the “rules of the game.” Central banks in deficit countries were supposed to raise discount rates, thus shrinking money supplies and allowing for Humean price reductions and real depreciations. In surplus countries, they were supposed to lower discount rates, implying symmetric adjustment. Economic historians have known for a long time that central banks did *not* follow the rules of the game: adjustment was far from automatic, much less symmetric (Bloomfield 1959; Morgenstern 1959; Eichengreen 1992, Chapter 2). And yet the classical gold standard worked fairly smoothly during the late nineteenth century, at least in core economies such as Britain, France, and Germany.

One reason for this was that key economies such as Britain did not suffer from severe balance-of-payment imbalances so not much adjustment was required.¹ In addition, five specific pre-1914 economic and political conditions meant that insofar as macroeconomic adjustment was needed, it was easier to achieve it than it would become in the interwar period (or in the eurozone today).

¹ For example, Britain’s payments remained fairly well balanced because sterling’s role as a “vehicle currency” facilitating international transactions meant that long-term capital outflows were in part matched by short-term capital inflows, as borrowers placed money on deposit in Britain; and they were in part matched by exports of British capital goods (Eichengreen 1992, 2008).

First, wages and prices were more flexible then than subsequently: Hanes and James (2003) find no evidence of downward nominal wage rigidity in the United States between 1841 and 1891. This nominal flexibility was already declining before World War I: Hanes (1993, 2000) finds a decline in flexibility from the 1890s onwards associated with the spread of large-scale, capital-intensive, concentrated industry. Cross-country analysis by Basu and Taylor (1999) and Chernyshoff, Jacks, and Taylor (2009) provides further evidence of greater nominal flexibility in the pre-1914 era. By contrast, the escape route of internal devaluation via downward nominal price adjustment appears elusive in today's world, where most significant real depreciations have come through nominal exchange rate adjustments (Shambaugh 2012).

Second, even in cases where macroeconomic adjustment increased unemployment (for example, because falling prices and downwardly sticky wages implied rising real product wages), typical nineteenth century limits on who was allowed to vote meant that the interests of the workers who suffered most could be largely ignored by policymakers with few adverse repercussions (Eichengreen 1992). Modern democracies work differently.

Third, this period was also one of international mass migration, whose timing was influenced by business cycle conditions, and which therefore relieved labor market pressures during periods of stress (Hatton 1995; Hatton and Williamson 1998, chap. 4).

Fourth, limited political opposition to the gold standard, and ample gold reserves that were spread out among the core countries, implied that policymakers' commitment to the gold standard was usually regarded as credible. Credibility implied that capital flows tended to be stabilizing: that is, if an exchange rate started depreciating, it was expected that it would soon appreciate, meaning that private investors would buy the currency—thus helping to bring about the needed appreciation and in the process reversing gold outflows (Eichengreen 1992).

Fifth, when these mechanisms did not suffice, international cooperation between core central banks willing to lend to each other, or intervene together, could be relied upon to stabilize the situation.

It was a different story for countries in southern and eastern Europe, Latin America, and Asia. Trade with these countries amounted to two-thirds of core European trade, and more than 40 percent of US trade. Some pegged to silver, others had inconvertible currencies, and still others tried to peg to gold with only sporadic success. Catão and Solomou (2005) find evidence of large nominal and real depreciations in peripheral economies vis-à-vis the core during time of crisis, such as the late 1870s and early 1890s, and also find that trade balances improved when real exchange rates depreciated.

Summing up, adjustment under the classical gold standard was, in principle, supposed to involve "internal devaluation." Such a strategy was easier before World War I in both economic and political terms than it was during the interwar period. Nevertheless, in the core economies adjustment typically happened in other ways, and only limited adjustment was required in the first place. In the periphery, where

more adjustment was required at times of stress in the international economy, and where countries did not benefit from the same international cooperation that core economies enjoyed, countries frequently adjusted via nominal depreciation. Even in the heyday of the gold standard, the “internal devaluation” strategy was nowhere near as ubiquitous as is sometimes thought.

The Gold Standard and the Great Depression

The economic and political environment was very different after World War I, implying that the gold standard worked much less smoothly than it had before (Kindleberger 1973; Temin 1989; Eichengreen 1992).

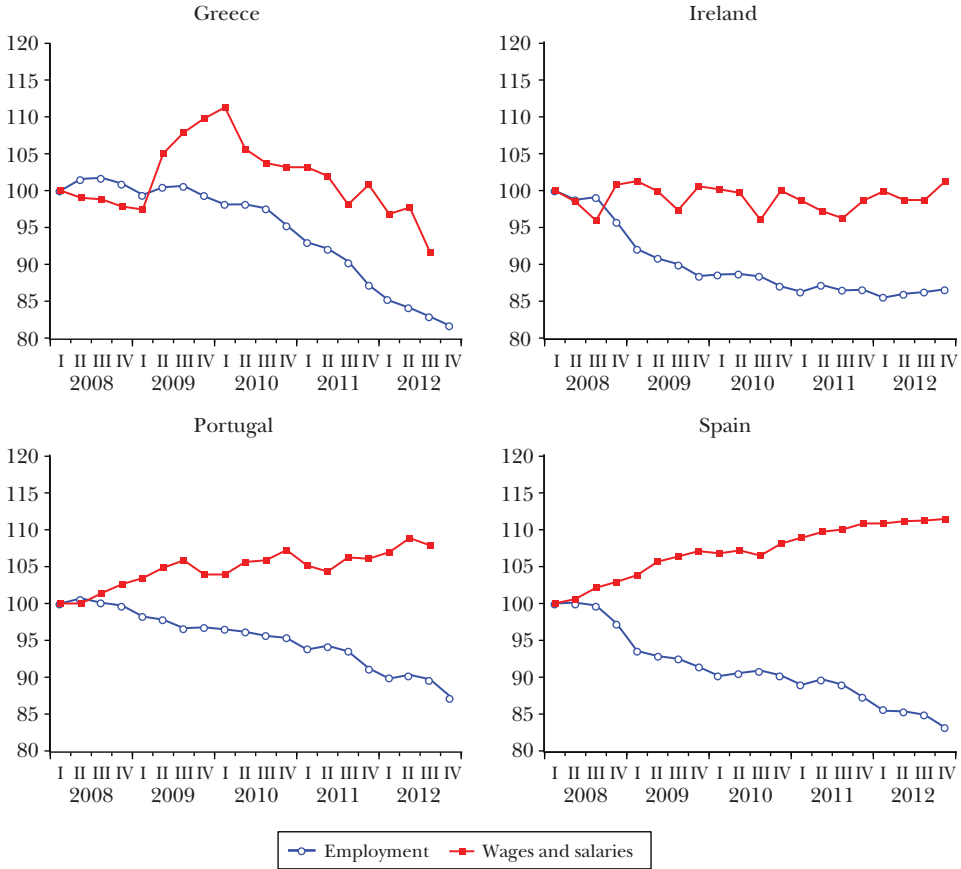
First, the underlying imbalances facing core economies and requiring adjustment became much larger than previously. Britain’s balance-of-payments position was more fragile. Its net international asset position had been greatly weakened by the war, implying less investment income, while war debts were another drain on the economy. Its trade position had been weakened as a result of competitors seizing overseas markets during the conflict. The pound went back onto the gold standard at the pre-war rate in 1925, implying an overvalued exchange rate, particularly vis-à-vis the US dollar and the French franc. Britain experienced large balance-of-payments deficits from about 1925 onwards and a deep industrial slump. Moving beyond the British case, the United States was now emerging as the largest net lender, especially to Latin America and countries such as Germany. When the Federal Reserve raised interest rates in 1928 in an attempt to halt a runaway stock market, these borrowing countries faced a sudden stop in capital imports, and with it, a need to adjust. Many countries abandoned the gold standard soon thereafter.

Second, the process of adjustment to economic shocks became less smooth than it had been before 1914 (Eichengreen 1992). Nominal wages were more rigid. Voting rights had broadened. The macroeconomic and political costs associated with adjustment based on internal devaluation were thus higher than before. These changes reduced the credibility of governments’ commitment to the gold standard, implying that capital flows were now potentially destabilizing (Obstfeld and Taylor 2003). Credibility also suffered because World War I had brought general distrust, periods of capital controls, devaluations, and later some hyperinflations, trade barriers, and other shocking forms of economic and political uncertainty. International cooperation between central banks was less effective given political frictions and different views on what constituted appropriate economic policy.

Perhaps most damaging was the asymmetric nature of international adjustment under the interwar gold standard. Countries with a balance-of-payments deficit (like Britain) had an incentive to raise discount rates to prevent gold outflows, while surplus countries (like France) who were experiencing gold inflows had an incentive to “sterilize” them—that is, to adjust the money supply in ways that prevented the inflow of gold from causing inflation—so that they would continue accumulating gold. World gold reserves rose steadily between 1925 and 1932, but with the United States not lowering its gold holdings, and with France rapidly increasing its reserves, there was insufficient gold elsewhere (Irwin 2010). Deflation in countries

Figure 1

Average Nominal Wages and Salaries and Total Employment, 2008–2012



Source: Eurostat.

Note: The wage data are adjusted for working days; no seasonal adjustment in the case of Ireland.

like Germany was not matched by inflation elsewhere, making macroeconomic adjustment all the more difficult.

Several lessons from this disastrous interwar experience are directly relevant for today’s Europe.

First, nominal wages were sticky downward during the Great Depression (Bernanke and Carey 1996), implying that deflation led to rising real wages, and falling employment and output. Wages were not unusually rigid during this period (Hanes 2000); rather, downward stickiness is a fact of life in modern economies. Figure 1 shows indices of wages and salaries between 2008 and 2012 in Greece, Ireland, Portugal, and Spain, four countries currently trying to achieve nineteenth-century style internal devaluations. As can be seen, wages have been steadily rising in Portugal and Spain, despite very high levels of unemployment there. Even in

Ireland, a country widely regarded as having unusually flexible labor markets and as having successfully accomplished an “internal devaluation,” there is no sign of wages falling, although they have managed to avoid rising. In all four countries, by contrast, employment levels have been continually falling, although the Irish decline came to an end in the second half of 2012.²

The one important eurozone exception to the general conclusion that nominal wages are rigid downwards is Greece, where manufacturing wages declined by more than 10 percent in the three years starting in 2010. The impact of the depression on the fabric of Greek society has been particularly harsh: if this is what it takes to produce nominal wage declines, prudence might suggest alternative adjustment mechanisms, such as rising wages and prices in surplus countries. As in the interwar period, however, eurozone countries running current account surpluses are reluctant to accept temporarily higher inflation rates.

Second, deflation during the interwar period was dangerous in other ways. It increased the real value of debts, placing indebted households, businesses, and financial institutions under pressure (Fisher 1933). It weakened bank balance sheets in the financial crisis, with knock-on effects for businesses reliant on bank lending. It increased real interest rates and induced households to postpone expensive purchases. Deflation helped deepen the Depression; even if internal devaluation were possible in modern economies, deflation would not be desirable.

Third, large public debts are difficult or impossible to stabilize when deflation is increasing the real value of the debt and slowing economic growth.³ During the interwar period, Britain ran primary budget surpluses of 7 percent of GDP during the 1920s. Despite these efforts, the deflationary low-growth environment meant that the British debt-to-GDP ratio increased substantially over the decade. The IMF’s (2012, p. 112) conclusion is that this episode is “an important reminder of the challenges of pursuing a tight fiscal and monetary policy mix, especially when the external sector is constrained by a high exchange rate.”

Fourth, as the interwar period wore on, more countries (such as Germany) attempted to adjust based not only on internal devaluation, but also with fiscal austerity. This strategy was costly, since fiscal multipliers were high in the 1930s, given weak economies and interest rates affected by the zero lower bound. Almunia, Bénétrix, Eichengreen, O’Rourke, and Rua (2010) find multipliers well in excess of one in a sample of 27 countries between 1925 and 1939; thus, fiscal austerity policies amplified the Great Depression.

Fifth, countries only started to recover from the Great Depression once they left the gold standard (Eichengreen and Sachs 1985; Campa 1990). Revaluing countries’ gold reserves as they exited made it possible to boost the money supply. In leaving

² Constant nominal wages are consistent with falling unit labor costs if labor productivity increases. Irish unit labor costs fell in the initial stages of the crisis, but the effect is partly a statistical illusion due to a shift in the composition of the Irish workforce, with low-productivity workers being laid off (Darvas 2012).

³ Flandreau, Le Cacheux, and Zumer (1998) show that European public debts tended to rise as a percentage of GDP in the deflation of 1873–96, before falling thereafter as prices rose.

gold, expectations of deflation were replaced by expectations of inflation (Temin and Wigmore 1990; Romer 1992; della Paolera and Taylor 1999; Eggertsson 2008). There were transitory competitiveness gains for early movers who depreciated first. Countries also tended to do better when they embraced capital controls and used the policy space so liberated, even if their exchange rate remained officially pegged to gold (Obstfeld and Taylor 2004). Regaining monetary independence, one way or another, was the route to recovery.

Sixth, the Depression had calamitous political consequences. Voting for extremism was negatively related to GDP growth during this period, at least in countries that had not been inoculated by a history of democracy stretching back to before World War II (de Bromhead, Eichengreen, and O'Rourke 2013). Ponticelli and Voth (2011) find a strong correlation between fiscal austerity and political chaos (as measured by riots and other disturbances) over the last 100 years or so, and the result is robust when restricted to the interwar sample. It is foolish to ignore the potential political consequences of internationally lopsided and deflationary adjustment strategies.

The experience of the 1930s is not only a cautionary tale of the limitations of adjustment strategies based on internal devaluation and fiscal austerity, but an illustration of the power of monetary policy and of the value of macroeconomic policy flexibility. It is a useful reminder that Keynes' short run is the time frame within which politics occurs, for good or ill.

From Optimum Currency Area Theory to the Fiscal and Banking Nexus: Lessons from the United States

The United States is more likely than the eurozone to satisfy the three Mundell-style optimal currency area criteria regarding the integration of product markets, symmetry of shocks, and labor mobility, as well as Kenen's criterion regarding the ability of a central fiscal authority to smooth shocks across regions. Figure 2 illustrates some of the key differences organized around these four criteria.

Regarding market integration, Panel A shows that cross-border interstate trade amounts to 66 percent of GDP in the United States; in the 17-country eurozone, such trade amounts to only 17 percent of eurozone GDP. The US economy is strongly ahead on this criterion.

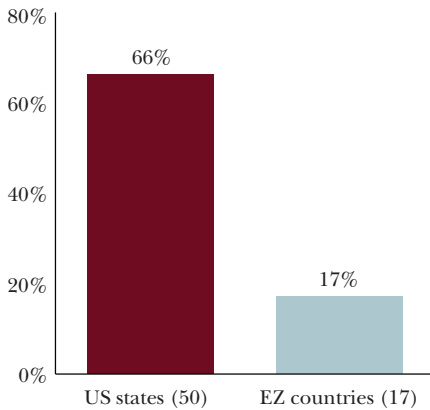
For the symmetry criterion, we look at the correlation between local growth and growth in the monetary union as a whole. Panel B indicates that the average correlation between real GDP growth in the eight US Census regions and national real GDP growth is 0.78. In the eurozone, the average correlation between GDP growth in the eurozone countries and GDP growth across the whole eurozone is about 0.5. Thus, on the symmetry criterion, the eurozone has lower average correlations between the shocks in its constituent countries than we see in the United States (and the eurozone correlations are also far more varied). This difference may reflect aggregation in large Census regions: it disappears if we take the sample

Figure 2

Optimum Currency Area Criteria: Eurozone versus the United States

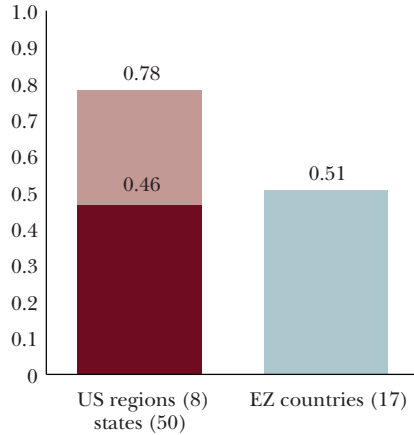
A: Integration Criterion:

Interstate exports [Inter-eurozone country exports] relative to US GDP [eurozone GDP]



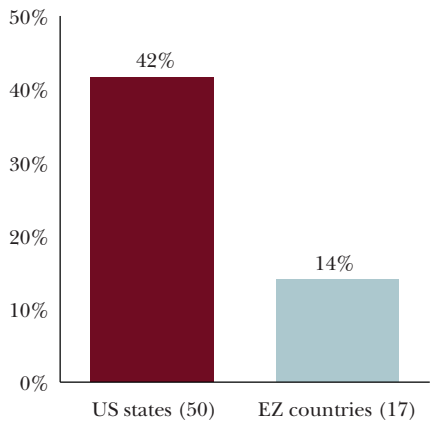
B: Symmetry Criterion:

Correlation of local growth with US [eurozone] average growth



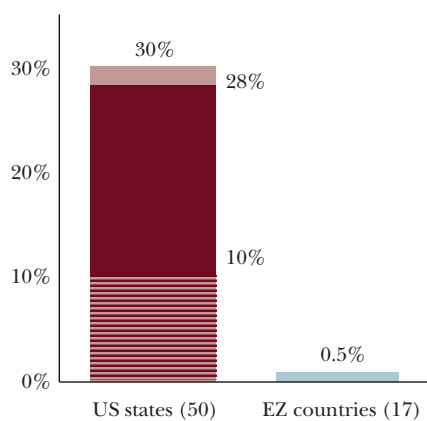
C: Labor Mobility Criterion:

Persons born outside state [country] in US [eurozone]



D: Fiscal Criterion:

Share of local income shock offset by federal transfers



Notes and Sources: Panel A: Data for 2007; intra-US trade volumes from the 2007 Commodity Flow Survey, minus 2007 US imports from the Bureau of Economic Analysis, National Income and Product Accounts (BEA NIPA), all divided by GDP from BEA NIPA; eurozone trade with eurozone, and eurozone GDP, from Eurostat. Panel B: Annual data for 1997–2007; US, state, and census region real GDP growth rates from BEA (the higher correlation statistic is for the regions); eurozone and eurozone country growth rates from Eurostat. Panel C: Data for 2012; US data from Statistical Abstract; eurozone data from Eurostat. Panel D: Upper and lower range of US estimates and euro point estimate taken from multiple older sources in HM Treasury (2003); US 28 percent figure based on recent Federal income tax elasticities alone, from Auerbach (2009, figure 2).

of 50 US states, but these are smaller and more diverse units than the 17 eurozone countries. The US economy has perhaps a minor advantage as a single currency area based on the symmetry criterion.

As regards the labor mobility criterion, in Panel C, the average share of people in a US state who were born outside that state is 42 percent. The equivalent index for the eurozone, people born outside the country where they currently reside, is only about 14 percent. This difference is deep-seated: the US economy attained something approaching a single labor market sometime in the nineteenth century. Elastic flows of population from Europe, and then across North America to the open frontier, ensured that labor markets were very fluid, and they have remained so ever since. Over two centuries, US regional real wage gaps have never exceeded 10–30 percent (Margo 1998; Rosenbloom 1996, 2010). Such levels of mobility and integration remain a distant prospect for most of Europe, given language and other barriers.

The US economy also has a central federal fiscal authority, implying national fiscal taxes and transfers that vary with the local business cycle and operate as intra-union automatic stabilizers. Such cross-border automatic stabilizers are absent in both the eurozone and the European Union, and there seems to be no appetite to create them. On the fiscal criterion, Panel D shows a wide range of measures of these federal fiscal stabilizer effects for the United States, but a recent estimate based on income tax alone shows an offset of 28 cents for a state-level \$1 income loss, while among eurozone countries, the corresponding figure is effectively nil.

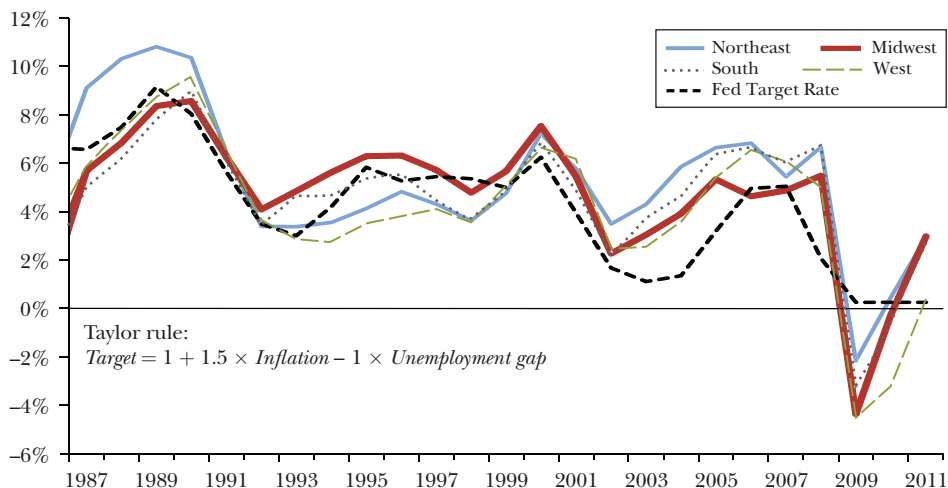
Figure 3 presents a different and arguably more direct take on the question of whether the US economy is better suited for a common currency than the eurozone. It plots estimates of optimal monetary policy responses based on rates of inflation and unemployment (Taylor 1993) for four US regions versus the whole country since 1987, and for the eurozone core and periphery versus the whole since 1999. The contrasts are striking. The estimated rule for the four US regions considered separately indicates small gaps between their “desired” policy rates and the national Fed target rate: divergences are usually between 0 and 200 basis points, a little more after the crisis. The “desired” policy-rate gaps between the eurozone and its core and periphery regions are much larger and more persistent. Prior to the crisis, the target interest rate for the periphery was consistently 300 basis points *above* the core; afterwards it was between 500 and 700 basis points *lower*. By this metric, a one-size-fits-all monetary policy appears more tenable in the United States than in the eurozone.

Banking Union

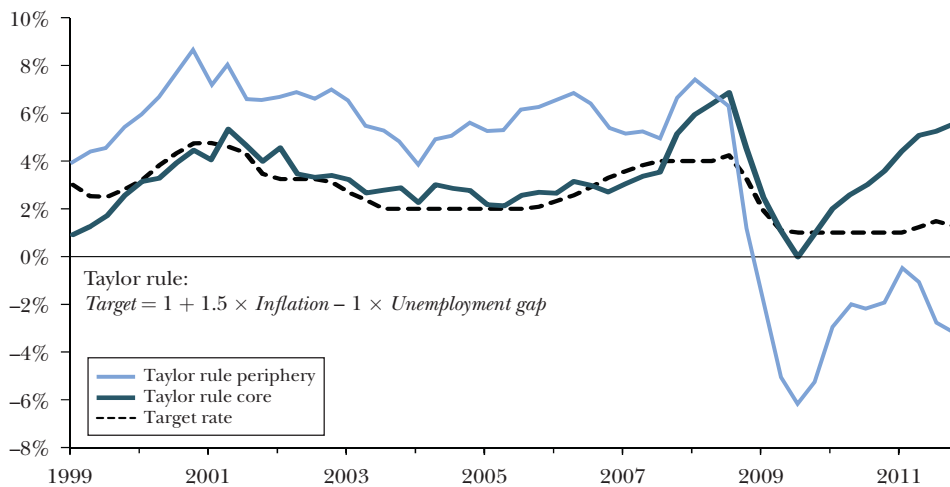
That said, optimal currency area theory neglects some of the most important issues facing the eurozone since the crisis exploded, in particular those having to do with banking and financial stability (Obstfeld 2013). The United States has since the 1930s had an effective national banking union, fully backstopped by a combination of the Federal Reserve and the US Treasury, and augmented by deposit insurance and other collective programs. As of now, the eurozone has virtually nothing in

Figure 3
Monetary Policy Taylor Rules: Eurozone versus the United States

A: Taylor rule by US census region



B: Taylor rule in the euro area: periphery versus core



Source: Malkin and Nechio (2012).

Notes: The two scales are commensurate (1800 basis points). The Taylor rule used is: $Target = 1 + 1.5 \times Inflation - 1 \times Unemployment\ gap$, where the last term is the difference between the measured unemployment rate and the natural rate (the unemployment rate where inflation neither decelerates nor accelerates).

place, except for ad hoc measures offered by the European Central Bank directly or, when collateral is weak, via emergency liquidity assistance through national central banks. Absent banking union, these are ultimately national burdens on taxpayers (as in Ireland) or depositors (as in Cyprus).

America had neither a banking union nor an economically meaningful fiscal union when it gained its independence in the late eighteenth century. However, the United States has maintained a single currency area since the beginning (apart from a brief time during the Civil War when three currencies were in use). How did American monetary union function in the absence of these institutions? And what did it take—and when, and how—to eventually deepen the US institutional architecture?

For a long period, until the US Civil War, bank notes in the United States—that is, promissory notes issued by banks that could be used to transfer funds or to make payments—did not uniformly trade at par with currency (Gorton 2012). Even after this, bank deposits did not always trade at par with currency: that is, if you deposited currency in a bank account, and later withdrew it, the amounts might not match. “Free banking” was mostly the norm, there was no monetary authority, and in this decentralized system only gold functioned as a fixed reference value for money, or as true (par) money itself.

Yet payments frictions were in many respects the least of America’s problems. Throughout this time, the US economy suffered asymmetric shocks at the regional level which states felt they couldn’t or didn’t want to offset given fiscal orthodoxies, and which centralized monetary policy, such as it was, was designed to ignore (Rockoff 2003). How did the economy adjust? States and localities suffered, and defaulted if necessary, banks went under, and labor emigrated to more prosperous towns nearby or states far away.

Eventually the United States experienced a sequence of crises sufficiently intense to spur change. The first shock came at the time of the US Civil War (Gorton 2012). The need for union war finance spurred the National Banking Acts, creating a new standardized national currency, with these uniform notes backed by banks’ holdings of US Treasury debt. The Acts also set up a Comptroller to regulate the new form of nationally chartered banks. The new structure placed a large quantity of US Treasury debt on bank balance sheets and not just as a wartime expedient; it remains there to this day as the US banking system’s reference safe and liquid asset. Yet no central bank or lender of last resort appeared at this time, and pockets of “non-par” banking survived, especially in rural areas. Bank runs and crises remained, and recessions recurred frequently, but in a political-economic equilibrium where macroeconomic management was not expected to play a role.

Still, by the time, in the early twentieth century, that US banks had become large enough that they constituted systemic risks, they were holding US government securities as their safe and liquid assets, rather than state and local debt: Illinois banks do not hold much, if any, Illinois debt, for example. As a result, defaults by state and/or local governments did not entail a systemic threat to the financial system as a whole. By contrast, in today’s eurozone, each “subsidiary sovereign”

nation's banks largely hold national debts of their own country, implying a national sovereign-bank doom loop (Goodhart forthcoming).

Despite the National Banking Acts and even with the emergence of banks' collective self-regulation by clearinghouses, the US economy was characterized in the late nineteenth and early twentieth centuries by increasingly frequent and serious financial crises (1893 and notably 1907) and by deep recessions and depressions (the 1880s and 1990s). During the Panic of 1907, only a large privately coordinated intervention led by J. P. Morgan restored calm. This raised the fear that without a true central bank, with lender of last resort capability backed by unlimited balance-sheet capacity, the system was becoming increasingly fragile, and unacceptably so. In response to this sense of rising systemic risk, the Federal Reserve was established in 1913, creating a full-fledged monetary union with monopoly note issue, par clearing for all member banks, and a national payments system.

However, in its early years the new Federal Reserve System suffered regional tensions, and proved ineffective in halting the 1930s banking panics. It was politically hobbled at first by a mindset suspicious of central banking. In a small but revealing example, the Fed's attempt to eliminate non-par banking was halted by Supreme Court action in the 1920s in the case of *American Bank v. Federal Reserve Bank* (262 U.S. 643 [1923]). Non-par banks clung on until the Monetary Control Act of 1980. In the depths of the Great Depression, some regional Federal Reserve banks threatened not to lend gold to one another through the interregional Gold Settlement Account (set up in 1915). Doubts as to whether Federal Reserve banks would lend to each other were decisively squashed by changes to the Federal Reserve Act in 1935. From then on, the subtly renamed Interdistrict Settlement Account cleared balances in infinitely suppliable fiat money via the System Open Market Account and mutual imbalances are periodically reset to zero reflecting a common pool approach. Today's eurozone equivalent of the Interdistrict Settlement Account is TARGET2, with balances that net out among the separate national central banks and the European Central Bank. These within-system balances represent a small fraction of banking system assets in both the United States (1.9 percent) and the eurozone (2.6 percent); but while they represent only 1.7 percent of US GDP, they represent a much larger 9.4 percent share of eurozone GDP (due to the eurozone's larger banking system). Crucially, since the 1930s there has been absolutely no concern that the US intersystem balances might be limited in size or be subject to settlement (exit/redemption) risk.⁴

The US financial collapse of the 1930s was utterly devastating, consistent with a pattern of more common and destructive crises in modern, credit-fueled, highly financialized economies where levered balance sheets imply "financial acceleration"

⁴ For more on the Interdistrict Settlement Account versus TARGET2, see Koning (2012), Bijlsma and Lukkezen (2012), and Cour-Thimann (2013). The last paper stresses that nothing like the exploding TARGET imbalances can occur in the United States because the Interdistrict Settlement Account is mutualized: it is zeroed out on a regular basis, effectively by treating the Fed's SOMA securities as a "common pool" of assets shared by the system and owned by the national political entity.

(Schularick and Taylor 2012; Jordà, Schularick, and Taylor 2012). In good times, banks, firms, and households feed off wealth effects, borrow, and drive up asset prices after positive shocks and create more wealth and leverage; but after negative shocks this process goes into reverse, producing a vicious circle of contraction (Bernanke 1983; Bernanke and Gertler 1989). The US policy response was to legislate a new prudential architecture, built around the Banking Act of 1935 and other measures. Central regulation and insurance edicts were promulgated; deposit insurance was instigated with concomitant supervision; the Glass–Steagall Act of 1933 separated commercial and investment banking; and the role of the Federal Reserve Board of Governors was upgraded, permitting them to impose uniform monetary policy in all regions without opposition. A century and a half after its founding, the United States finally had a strong central bank and lender of last resort, with substantial powers, especially if exigent circumstances should recur.

Fiscal Union

Just as banking union progressed gradually in the United States, so too did fiscal union. Initially the central government left states to themselves under a “no bailout” constitutional settlement brokered by Alexander Hamilton: the US central government enacted a once-and-for-all debt mutualization, assuming all state-level Revolutionary War debts, but then expected each of the states to stand on its own fiscally, observe near-budget balance, and, if need be, default (Sargent 2012).⁵ These rules survive to the present, and many states have been through fiscal distress and even default. The ability to default provided a dimension of flexibility at times of crisis, while protecting federal taxpayers from moral hazard risk and bailout burdens entailing higher taxes and/or inflation on the collective. State-level debts are typically modest in size, and, as noted, that paper is largely kept off US banks’ balance sheets. But such arrangements also implied a potential bias toward procyclical fiscal policies at the state-and-local level, a destabilizing feature witnessed again in today’s Great Recession.

Under these constitutional arrangements, US fiscal union was weak or non-existent in the nineteenth century. An important step was the Sixteenth Amendment to the US Constitution in 1913 allowing a federal income tax. After World War I and the Depression, federal expenditures and taxes grew consistently large enough to provide substantial and elastic fiscal transfers (unemployment insurance, agricultural support, and later Social Security) and steady components of spending (like defense spending) that were shared between states and so helped smooth out asymmetric shocks. The federal system also leads to longer-run transfers between states, reflecting persistent cross-state imbalances in incomes, defense activity, the location of retirees on Social Security and so on.

Thus, the US fiscal and banking union has gradually evolved an interesting and, so far, durable mix of hard long-run rules, such as the “no bailout” setup allowing state

⁵ Some haircuts or debt “reprofiling” were involved under Hamilton’s scheme; the net-present-value losses were severe for the continental debts, not so much for the states’ debts (Hall and Sargent 2013).

default, and institutional innovations that have made the system more stable. Since the Civil War, the system has been insured from a state-level financial doom loop by the primary role of US Treasury securities as liquid bank assets; since the Great Depression, it has provided an even more elastic short-run policy regime, embedded in intra-union fiscal stabilizers and union-level banking sector backstop and oversight. In contrast, since the current eurozone crisis began, the authorities involved have been unable to decide on whether there should be bailouts or not, defaults or not, automatic stabilizers or not, or bank backstops and oversight or not. Indeed, at various times they have veered towards almost all of these positions.

With US history in mind, an optimist might argue that since the eurozone project is barely 10 years old, and the United States took perhaps 140 years to fully develop an appropriate institutional structure, we should be impressed rather than concerned by how far the eurozone has come already. The evolution of US monetary and fiscal institutions was a fitful and crisis-ridden process, from the fights (ongoing) over the role, if any, for central banking and for large fiscal transfers; the longstanding political obstacles to government deposit insurance, at the state and then federal levels; and the conflict over a hard monetary regime, only resolved by the gigantic disaster of the 1930s, but not before a series of disputes, notably the bimetallism and “cross of gold” arguments of the 1890s, had posed deep questions about the desirability of a deflation-prone and asymmetrically adjusting regime. There were times when the monetary regime, sometimes even the monetary union itself, were deeply unpopular and the subject of national or regional tensions.⁶

Recent developments in Europe, such as the 2012 decision in principle to move towards a banking union, offer some hope of eventual institutional reform. Unfortunately, more rapid change may be required today in the eurozone than was the case in nineteenth-century America. The nature of modern economies, and of politics in the independent democracies that comprise the eurozone, is such that Europe may not have the luxury of experimenting for 140 years before finding workable arrangements. Popular calls for public goods, social insurance, countercyclical macroeconomic policy, and financial stability cannot be brushed aside so easily as in the less-democratic era of the nineteenth-century classical gold standard.

The United States began with a secure political union from which exit (although tried once during the Civil War) is now unthinkable and this provided a stage on which economic and monetary union developments could be slowly constructed. The US national constitution embodied key assumptions about the existence and permanence of the national debt (a key collective safe asset), federal

⁶ The Democratic Party Platform adopted at Chicago, July 9, 1896, was “Opposed to the Gold Standard”: “Gold monometallism is a British policy, and its adoption has brought other nations into financial servitude to London. It is not only un-American, but anti-American . . .” (<http://projects.vassar.edu/1896/chicagoplatform.html>.) On political cleavages over gold in the Populist era, see Rockoff (1990). Calls to end, audit, or otherwise change the Federal Reserve, or to return to gold, echo today.

taxing power (ultimate central fiscal capacity), as well as the common currency and the commerce clause (truly free interstate trade). Onto this, after major crises, a banking union and an economically meaningful fiscal union were later grafted. In comparison, neither the eurozone nor the European Union comprise a political union; exit is conceivable from both and openly discussed; there is no central fiscal authority in either, nor any common debt, and there seems to be no appetite on the part of creditor nations to go down that route. Recognizing these limits means that what is desirable for the eurozone may not be feasible, a glum thought to which we will return in the conclusion.

Costs of Exit: Lessons from Past Break-ups

What if the eurozone ultimately fails? History can speak of past cases in which common currencies split up, although again the analogies are imperfect.

Austro-Hungarian Empire

Following the end of World War I in 1918, the Austro-Hungarian empire was rapidly divided into successor states: the Kingdom of Serbs, Croats and Slovenes (Yugoslavia after 1929); Czechoslovakia; Austria; Hungary; and Romania. Initially the monetary union based on the krone continued, with banknotes for the entire region being printed in Budapest and Vienna, but this arrangement proved unsustainable (Garber and Spencer 1994). The separate states decided to introduce their own currencies from early 1919 onwards.

In one way, this process proved straightforward: countries typically over-stamped existing banknotes and converted bank deposits into the new currency at a prearranged parity, imposing levies or forced loans in the process as needed. However, Garber and Spencer (1994) note a feature of the process with obvious implications for any eurozone break-up: the fact that these measures were enacted at different times in different countries led to large flows of currency across borders, despite attempts by the authorities to block them, as people sought to move their currency holdings to wherever they thought they would be most valuable. These decisions were based partly on assumptions about where the conversion would take place at the most favorable rate and partly on assumptions about future rates of inflation; the old currency also tended to flow to where it remained legal tender the longest (in this instance, Hungary). The obvious implication is that any break-up of the eurozone would work best if it happened quickly and in a coordinated manner, with “temporary” capital controls being essential. Another implication is that any suggestion of a future break-up could prove extremely destabilizing as investors and households anticipate the capital gains and losses that it would imply (Eichengreen 2010).

The Austro-Hungarian example does not imply that hyperinflation is a necessary consequence of a currency break-up, as is sometimes suggested: the hyperinflation experienced in both Austria and Hungary reflected the inflationary financing of

large budget deficits that had helped precipitate the break-up of monetary union in the first place. Czechoslovakia put in place an institutional framework prohibiting such policies, and suffered deflation rather than inflation, as it attempted to rejoin the gold standard at the pre-war parity.

Argentine Currency Board

Argentina has exited currency board experiments three times, in 1914, 1929, and 2002. The most recent exit illustrates some problems that could occur in the event of a eurozone break-up. A recession was followed by a sudden stop in lending by foreign creditors in 2001, including (eventually) even the IMF; fiscal space was gone. In the endgame especially, Argentina had borrowed large amounts from local banks. When the government defaulted, the banks became insolvent as well, leading to a textbook “triple crisis”: a banking crisis, a sovereign debt crisis, and a currency crash (della Paolera and Taylor 2003). In the aftermath came the problem of who bore the losses.

In 2002, Argentina declared that dollar loans would be repaid in pesos. This reduced the cost to the government of bailing out Argentina’s banks, but also led to a plethora of costly legal disputes (Roubini and Setser 2004). These included disputes about “pesification” itself and about the asymmetric pesification values attached to different claims; these dragged on for many years, generating considerable uncertainty. The external default led to an eventual bond exchange where, although a majority of creditors accepted a write down, there remain minority “vulture” holdouts who are still fighting in New York courts a decade later. Capital controls (*corralito*) had to be imposed immediately to prevent arbitrage and have never been fully dismantled. Costly side effects thus have to be set against the benefits of devaluation and default to Argentina—costs which must likewise be weighed up by any states looking at a possible eurozone exit.

Conclusions

Europe’s current depression drags on. The jury is still out on whether the eurozone can achieve the minimal collective institutions needed to sustain deep integration and macro-financial stability of the kind that the US economy can take for granted. Drawing on the lessons of history, what do we think these institutions might be?

The fact that the eurozone scores so poorly on optimal currency area grounds suggests a need for mechanisms allowing smoother and more symmetric adjustment between its members. Moves to enhance labor mobility, for example by improving pension or health insurance portability, can help—but, we suspect, only to a limited extent.⁷ A stronger fiscal center as in the United States is desirable, but there seems

⁷ Indeed, emigration reduces the tax bases of the countries concerned, making it more difficult to pay for the fixed costs of running states and the retirements of those left behind; and it makes it more difficult to pay back large debts, which is another argument in favor of debt restructuring in these countries (see O’Rourke, 2010; Coppola, 2013).

little prospect of this; thus, member states will have to engage in countercyclical fiscal policy, if at all, by themselves. For some countries, the size of their existing debts means that debt restructuring will be required for them to regain the ability to do this (Wyplosz 2012).

The difficulty of developing eurozone-wide automatic stabilizers should focus attention on the design and policies of the European Central Bank. Since asymmetric adjustment based on internal devaluation is so costly and ineffective, the European Central Bank should allow a higher rate of inflation for the eurozone as a whole at times of economic and financial stress to facilitate relative price adjustment. This could be embedded in various policy regimes, like the much-debated nominal GDP target or the “Evans rule” of the US Federal Reserve, which promises to keep interest rates low until certain unemployment targets are reached. A shift to such a regime need not be viewed as incompatible with the price stability mandate of the European Central Bank. If these kinds of changes are politically impossible, pessimism about the euro’s survival becomes more justifiable.

The institutional architecture of the eurozone needs to be deepened if a recurrence of the present crisis is to be avoided. A banking union seems essential. This would involve common banking supervision, common resolution procedures, and common deposit insurance—and in consequence at least some elements of a fiscal union (Pisani-Ferry, Sapir, Véron, and Wolff 2012; Goyal, Brooks, Mahmood, Tressel, Dell’Ariccia, and Pazarbasioglu 2013). However, Europe’s banking system will remain fragile as long as national banks hold national debt of the “subsidiary sovereign” (Goodhart forthcoming); in contrast, a “safe” eurozone asset would allow governments to default or restructure their debts without collateral damage to financial systems in their own countries and potentially, via contagion, across the entire eurozone (Brunnermeier et al. 2011). The creation of such a safe European asset is particularly important since the ability of national governments to default is also essential, being the logical corollary of the no-bailout clause which has worked well in the US context and which seems consistent with the requirements of national democracies. By contrast, the eurozone attempt to avoid fiscal free riding by legally constraining national governments has been an intrusive failure, mimicking the German “centralized-federal” approach, which has not even worked well within Germany (Mody 2013; Wyplosz 2012).

So where the eurozone needs to go in the long run, we argue, is towards a genuine banking union; a eurozone-wide safe bond to break the sovereign-bank doom loop; a central bank that is more flexible and willing to act as a true lender of last resort against such bonds and other assets as necessary; and a fiscal union at least sufficient to support the above. But the short-run problems facing countries in the periphery of Europe are now so great that politicians may never get a chance to solve these long-run problems because the eurozone may well have collapsed in the meantime. The history of the gold standard tells us that an asymmetric adjustment process involving internal devaluation in debtor countries, with no corresponding inflation in the core, is unlikely to be economically or politically sustainable. A more flexible and countercyclical macroeconomic policy mix, involving some combination

of looser monetary policy, a higher inflation rate, a weaker euro, debt restructuring, and fiscal stimulus by core governments (or some European Union–level institution such as the European Investment Bank) is currently needed in order to make the adjustment process less asymmetrical and lessen the risk of a eurozone collapse.

US experience suggests that major institutional reforms tend to follow major political and economic crises, such as the Civil War, the Panic of 1907, and the Great Depression. But these crises occurred within the context of a pre-existing state. It is one thing to develop deeper US federal institutions at times of crisis within what is already one country, but another thing to do so in a union of 17 independent states. There, a sufficiently major crisis may lead to countries deciding to abandon the euro project altogether, which is why the possibility of a eurozone break-up cannot be excluded. In 1978, Chancellor Helmut Schmidt, seeking to reassure a Bundesbank nervous that the proposed “European Monetary System” would not pose excessive demands on Germany, quoted a Latin legal phrase, “*Clausula rebus sic stantibus. . . . Ultra posse nemo obligatur.*” This roughly translates as “a fundamental change of circumstances could make a treaty inapplicable . . . no one [country] is obligated to do more than they can do.”⁸

A number of countries across Europe may eventually ask themselves if fundamental circumstances have changed in a way that renders their previous commitment to the eurozone inapplicable. A eurozone break-up would involve the redenomination of assets and liabilities, and in all likelihood sovereign defaults in some cases as well. This would imply large cross-border redistributive effects with substantial official-sector claims in dispute. An even larger plethora of private contracts would be affected, involving not only eurozone banks and firms; the scope for legal chaos seems clear. If the eurozone is destined to break up, then speed and cooperation are essential if both destabilizing capital flows and years of costly litigation and uncertainty are to be avoided. Such a benign scenario may seem fanciful in the extreme, but if eurozone policymakers do not rapidly move towards a different macroeconomic policy mix, and at the very least a meaningful banking union, then Europe may ultimately find itself clutching at such straws.

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⁸ “EMS: Bundesbank Council meeting with Chancellor Schmidt (assurances on operation of EMS) [declassified 2008].” Bundesbank Archives (N2/267). Translation from the Margaret Thatcher Foundation, <http://www.margaretthatcher.org/document/111554>. Schmidt noted that such considerations had already led Germany to unilaterally and without prior notification contravene international treaty law on the Bretton Woods intervention commitments and withdraw support for the US dollar in 1973, precipitating a crisis; the same issues would arise with Germany's decision to terminate support for the Exchange Rate Mechanism in 1992, precipitating another crisis.

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