

Massachusetts Institute of Technology
Department of Economics
Working Paper Series

**CURRENCY CRISES
FROM ANDREW JACKSON
TO ANGELA MERKEL**

Peter Temin

Working Paper 13-07
February 13, 2013

Room E52-251
50 Memorial Drive
Cambridge, MA 02142

This paper can be downloaded without charge from the
Social Science Research Network Paper Collection at
<http://ssrn.com/abstract=2217016>

Currency Crises from Andrew Jackson to Angela Merkel

Peter Temin

Abstract

This paper presents a narrative of currency crises for the past two centuries. I use the Swan Diagram as a theoretical framework for this narrative and conclude that many so-called banking crises are in fact currency crises. These crises are caused by capital flows in war and peace and typically result in recessions. The Swan Diagram helps us to consider external and internal imbalances together and understand their interactions. It also reminds us that national histories often ignore the international aspect of economic crises. This paper draws on and extends work reported in Peter Temin and David Vines, *The Leaderless Economy, Why the World Economic System Fell Apart and How to Fix It* (Princeton, 2013).

JEL Nos. E32, F44, N10, N20.

Peter Temin

Department of Economics

Massachusetts Institute of Technology

50 Memorial Drive

Cambridge, MA 02142

ptemin@mit.edu

Currency Crises from Andrew Jackson to Angela Merkel

I contend in this paper that many so-called banking crises are in fact currency crises. I do so in three steps. First, a bit of simple theory to structure the discussion. Second, a narrative of currency crises in the last two centuries, and finally some thoughts about conditions today.

Any survey of past crises has to take account of Reinhart and Rogoff's magisterial history of what they call financial folly. They classify financial crises as banking crises and foreign (external) and domestic (internal) debt crises (Reinhart and Rogoff, 2009, p. 11). They discuss currency debasements in the context of external debt crises, but they do not separate a category of currency crises. I therefore add it to their categories as an analog of banking crises. I define a currency crisis as a dramatic decrease in a country's nominal exchange rate or increase in its currency controls. Speed and size of the change add to the drama, but there is no bright line separating crises from devaluations.

Recall that banks experience runs when depositors fear that banks will not be able to cash out their deposits at par. A country can experience a run on its currency when investors fear that the country will not be able to purchase its currency at par. There has to be a par for a currency for this analogy to hold, and currency crises are a phenomenon of fixed exchange rates. They therefore involve countries on gold or silver standards before the Great Depression and with fixed exchange rates thereafter. Even banking crises in the interwar years were confined to countries on the gold standard (Grossman, 1994).

Krugman (1979) started the modern literature on currency crises with the demonstration that they occur before countries actually run out of foreign reserves when investors fear that they

are on a path to do so. I rely on Krugman's insight but use here an older theory that allows us to back up a bit and discuss the origins of investor fears rather than the moment of crisis, following Reinhart and Rogoff. Trevor Swan (1955) represented the interaction of internal balance and external balance in what has become known as the Swan Diagram, which can be used to understand the links between internal and external balances that are the focus of this paper.

The Swan Diagram concerns two markets, and it contains two variables. The markets are for domestically produced goods and for international payments; the variables are domestic production and the real exchange rate. As with the IS/LM diagram, a quantity is on the horizontal axis while a price is on the vertical axis. The Swan Diagram puts domestic demand on the horizontal axis, consisting of consumption plus investment, government purchases plus net exports, sometimes known as *absorption*. The vertical axis is the real exchange rate, that is, the nominal exchange rate times the ratio of prices at home and abroad. For simplicity, I present the real exchange rate as the value of the home currency abroad, so a fall in the real exchange rate can be brought about by a depreciation of the currency or by a fall in costs and prices at home relative to costs and prices abroad. A fall in the real exchange rate, measured this way, means that the country is becoming more competitive relative to countries abroad.

The first of the two markets is domestic production, expressed as the familiar Keynesian definition of national production or income:

$$Y = C + I + G + (X - M)$$

Production is the same as income, since income includes the payments to those who produce goods and services; these payments, together with any taxes paid, equal the value of what is

produced. A country is in internal balance when domestic production is just large enough to fully use all the resources in the economy; that is, when labor is fully employed and inflation is low.

The second market is for international payments. It is measured as the balance on current account in the national accounts, and it is roughly equal to exports, minus imports:

$$B = X - M$$

A country is in external balance when exports are just large enough to fully pay for imports so that foreign trade is balanced, allowing for any payments of interest which have to be made abroad and for any long-term capital inflow or foreign direct investment going to the country.

These equations already show the most important lesson of the Swan Diagram; internal balance and external balance must be thought about at the same time. The level of domestic production and the balance on current account are clearly related to each other. The first equation shows that whenever there are higher exports or reduced imports, that is, whenever there is an increase in net exports, this will add to demand for domestic goods and so to domestic production. But higher domestic production increases the demand for imports and worsens the balance of payments on current account from the second equation. So attempts to achieve internal balance, by having an appropriate level of domestic production, and attempts to achieve external balance, by having an appropriate level of the balance of payments on current account, must be thought about together.

The diagram shows how to do this joined-up thinking. Consider first external balance. As the real exchange rate drops, a country's exports become more attractive abroad, while its imports become more expensive. In order to restore balance, domestic demand will need to expand to increase the demand for imports enough to match the increase in exports from the fall

in the real exchange rate. In other words, the line that defines external balance—an optimum B—slopes downward. A country is in surplus below the line and deficit above it.

What happens if we start on the line of internal balance, that is, at non-inflationary full employment, and government purchases increase? A rise in demand from an expansionary fiscal policy will lead to inflation. The real exchange rate rises, our exports will become more expensive in other countries and will fall, and imports will become cheaper and will rise. The reduction in domestic demand from the fall in exports and the rise of imports reduce the pressure on the domestic economy. This means that the line that defines internal balance, that is, a position of non-inflationary full employment, has a positive slope. To the right of the line, there is inflation; to its left, unemployment.

Now we put these two lines together in Figure 1, where the diagram looks like a supply and demand diagram or an IS/LM diagram. The external balance line is downward sloping, and the internal balance line is upward sloping. The diagram shows one can only achieve both external and internal balance at the point where the two curves cross. That is to get both external and internal balance one must have the appropriate values for both domestic demand and the real exchange rate.

It might seem that external balance occurs only when exports minus imports is zero. This however is not the case. Countries may wish to industrialize by exporting more than they import, using what is known as an export-led growth strategy. Other countries may wish to industrialize by importing more than they export in order to build an infrastructure of roads, railroads, and schools that promote the growth of industry. Similarly the optimum level of domestic production – the position of domestic production at which there is internal balance – is

not described in this model. It is usually taken to be as close to full employment as a country can get without inducing unwanted inflation. We normally define full employment as the highest employment consistent with stable prices.

Above the external balance line, the country is in deficit on its current account. To the left of the internal balance line, the country is experiencing unemployment. Deficits need to be financed, and being in deficit means that a country accumulated foreign debts. These debts can be a problem. Unemployment is of course a difficulty: wasting resources, degrading the work force and even leading to political troubles. The costs of unemployment are not recorded in newspapers and annual reports like foreign debts, but they are no less real. Countries therefore want to be in both internal and external balance, the point where the two curves cross. It is an equilibrium in the sense that countries will approach it from any point and stay there if possible.

I examine what happens when a country is out of equilibrium by looking first at the possibility that a country could be *vertically* out of equilibrium, that is, directly above or below it. As shown in Figure 1, it then would have multiple problems. Being off both curves, it would be experiencing unemployment and an international deficit or inflation and an international surplus. Despite the combination of difficulties, the imbalances can be cured by moving the real exchange alone. Since the real exchange rate is the nominal exchange rate times relative prices, it can be changed either by changing the exchange rate or prices. I discuss this choice extensively later.

A country that is *horizontally* out of equilibrium faces a similar task. Again, it will be experiencing both internal and external problems, but in different combination than with a vertical displacement. And the policy needed to get to equilibrium is similarly clear; changing

fiscal policy one way or the other will do the trick. In fact, monetary or fiscal policy will work, although only fiscal policy appears in the simple Keynesian identities above. (If there is full capital mobility, as within the Eurozone today, then no single country can affect the interest rate, and monetary policy cannot be used.) Wars typically move countries to the right in Figure 1, creating both internal and external imbalances. Austerity, in the 1920s and again today, moves countries to the left—increasing internal imbalances in an attempt to eliminate external imbalances.

Now consider a more complex case. To see what happens when a country is diagonally out of equilibrium, consider the case of a country that is in internal balance, but which has international debt that its creditors can no longer tolerate. This country is on the internal balance line up and to the right of equilibrium. This country needs to have a fall in both the real exchange rate and the fiscal stimulus. The fall in the real exchange rate by either devaluation or deflation will stimulate exports and therefore domestic production. The fall in fiscal stimulus then will have to be large enough to offset this effect and make room for the goods which are exported abroad and move the country toward equilibrium. Lack of coordination will generate either unemployment or inflation. The simple representation by the Swan Diagram points to the central problems of macroeconomic policies in open economies. It does this in the same way that the IS/LM diagram points to the central macroeconomic problems of closed economies.

As described in this example, foreign debt can become problematic if investors begin to wonder whether the country will be able to reliably service its debt. It is clear that the country requires a combination of policies to resolve its debt problem. The first policy is to reduce domestic absorption; this policy is known now as austerity. Austerity on its own moves the country to the left in the diagram; the country has to move beyond equilibrium to achieve a

current account surplus and begin paying down its debt. As the diagram shows, the cost of this policy is unemployment. How successful will this policy be? It seems unlikely to achieve its goal of reassuring investors and reducing foreign indebtedness because of the costs of unemployment. The growth in unemployment reduces tax revenues, which in turn lowers the ability of the government to repay foreign debts. It also triggers government expenditures that may conflict with debt repayment. European history of the early 1930s and again in the last few years suggests that austerity policies intensify the problem of foreign debt instead of reducing it.

The second policy is devaluation. Devaluation on its own will increase exports and reduce imports and will move the country down the graph; as in the previous description, the country has to move past the external balance line to generate a surplus to repay its foreign debt. As the diagram shows, the cost of this policy is inflation. This will not be successful if devaluation on its own causes inflation to increase so that the real exchange rate does not fall. In that case, the attempt to implement it does not move the country down in the Swan diagram at all.

The indebted country requires a combination of both policies. Devaluation will increase exports and reduce imports. Austerity—just the right amount—will reduce home demand for goods and leave room for extra exports and for the home-produced goods that replace imports. The right combination of policies will move the economy to the intersection of the external balance line and the internal balance line. There will be modest temporary inflation as the price of imported goods goes up; such modest inflation will help the country repay its debts, as the real value of its debt is reduced. To move diagonally in Figure 1, a country needs two policies; a firmly fixed exchange rate does not permit one of them to be used.

Britain was the first industrial country to prosper by an export-led strategy. The British concentrated on exporting manufactures, and they achieved great success as they had industrialized first. Cotton textiles initially were their largest export, but they were joined by woolen goods, iron and steel, coal, and machinery. If importing countries could not pay for these goods, Britain lent them the funds. This pattern of exports paid for by balance-of-payments surpluses allowed Britain to continue its exports throughout the nineteenth century. It also enabled Britain to accumulate an enormous portfolio of foreign assets. This in turn allowed the City of London to dominate international finance and become the conductor of the international orchestra (Keynes, 1930, vol VI, pp. 306-07).

The United States generally remained in both internal and external balance throughout the nineteenth century except during various shocks. The first one, known as the Jacksonian inflation, was eerily like current problems to which I will progress. The disturbance began when England exported capital to the United States to finance a land boom in the 1830s. Anglo-American trade with China was disrupted at this time in the run up to the Opium Wars. Mexican silver that previously flowed to China through this trade lodged in American banks, allowing bank reserves to rise. Prices rose, particularly the price of land. The appreciation of the real exchange rate was financed by capital imports from England until the Bank of England called a halt in 1836. The result was a financial crisis in 1837 that led several states to default on their debts in the following few years. The boom and bust took place during the administration of Andrew Jackson. His policies, not wise by modern standards, have been seen as the cause of the crisis, but they are only one part of a more complex story (Temin, 1969; Rousseau, 2002).

In terms of Figure 1, the English capital exports caused the United States to move upward along its internal balance curve, inducing inflation which raised its real exchange rate, resulting

in a vertical rise. When the Bank of England decided that American securities were no longer good investments, they forced the United States to adjust. The United States did so by having a banking panic that lowered prices and reduced spending, moving the economy to the left and inducing deflation to move the United States downward back to its previous equilibrium. The 1837 crisis is known as a banking problem, and banks suspended payments in the course of it. But this was only the means by which the United States—on a specie standard with no central bank—devalued its currency, and this was a currency crisis.

England was not so fortunate. They were on the other side of the American depreciation, and they found their currency appreciated. In addition, they lacked the flexible prices of the Americans as they had already shifted out of agriculture as they began industrialization. They ended up with a lingering recession, as we would now call it. They also were on the wrong side of American state bond defaults, and their recession continued into the Hungry Forties. In terms of the Swan Diagram, England moved upward and to the left. This did not have much effect on its external balance, but it increased unemployment (Temin, 1974).

The United States fought a bloody and extended civil war a generation later to keep the growing nation together. As might be expected, this brutal conflict created both internal and external imbalances in the American economy. The inability of the government to acquire sufficient resources to fight the war from its tax revenues and its consequent need to borrow extensively led it to move to the right in Figure 1. The expansion of absorption led both to inflation and a balance-of-payments deficit. The United States clearly had to abandon the gold standard—as many countries would do in the First World War. This led to a depreciation of the dollar, expressed as the discount of “greenbacks,” that is, paper dollars, against the nominal equivalent of gold. The war ended with greenbacks heavily discounted and with the government

determined to return to gold, as the British Cunliffe Commission of 1918 would echo later as well. It took the United States almost two decades to reduce the discount enough to go back onto gold in 1879.

The domestic imbalance was widely recognized, but the external imbalance was not identified until quite recently due to the great size of America and the regional conflicts that emerged. The Civil War was a conflict between the North and the South. The postwar deflation became a contest between the East and the West. Western farmers who typically were in debt and suffered from deflation did not understand why prices needed to be forced lower. The deflation continued after the resumption due to gold scarcity in the late nineteenth century and was seen as a conflict between staying on gold and going onto a silver standard—silver being mined in the West. The plea, “You shall not crucify mankind upon a cross of gold,” was made in 1896, long after the Civil War devaluation had been forgotten (Friedman and Schwartz, 1963, pp. 7, 58-61; Officer, 1981).

This speech was made not long after there had been a currency scare in 1892-93. The risk that the United States might switch to silver, devaluing the dollar relative to European gold currencies, rose in the 1890s as Congress debated free-silver proposals. Calomiris (1993) estimated that the risk of devaluation was never large, but that the fear of a temporary devaluation raised short-term interest rates in the 1890s. It may be excessive in a paper about currency crises to mention this non-event, but it provides background for the discussion of recent Eurozone activity.

We can use the Swan Diagram to make sense of this convoluted tale. The country’s need for resources with which to prosecute the Civil War forced the government to both expand its

spending and devalue its currency. The resulting inflation offset the gain in the real exchange rate from the devaluation, leaving the government out of both internal and external balance. The wholesale price level doubled during the war and stayed over 50 percent more than in 1861 through 1870. The exchange rate doubled also, but went back to its pre-war level more quickly than prices. The result was an appreciation of the real exchange rate that lasted for a decade after the Civil War (Carter, et al, 2006, Series Cc113, Ee615). The devaluation helped the United States get back into external balance during the war, while the deflation imposed after the war to get back onto gold kept domestic demand low. It also kept political strife high.

These two nineteenth-century experiences, the Jacksonian crisis and the Civil War, provide a template for most of the currency crises of the twentieth century. Wars and peace-time capital flows both lead to currency problems in the context of fixed exchange rates. The First World War recapitulated the American Civil War, while the rash of currency crises in 1931 echoed the expansion and crisis a hundred years earlier. The First World War of course started out with currency crises in 1914 and various combatants going off gold, following the pattern of the United States in the 1860s (Silber, 2007). They did not alter the gold price of their currency, but they limited in various ways access to gold. “To have remained faithful to their legal obligations under the international gold standard convention would have meant for many countries a dissipation of gold reserves and a further blow to confidence without solving the foreign exchange difficulty (Brown, 1940, vol. 1, p. 15).” Countries managed their efforts during the war with the freedom they gained and suffered inflation as a result. After the war, they let the value of their currencies float and deflated their economies to restore the gold value of their currencies. This led to internal political strife in many countries, following the earlier pattern of the United States.

The Italian government deflated rapidly to speed resumption of the gold standard, putting enough strain on the political system that Mussolini could mount a successful challenge to democracy in 1922. The Germans were so outraged by losing the war and having to pay reparations that they responded to the renewed invasion of the Ruhr to force reparations payments by having a hyperinflation in 1923. The British worked so hard to argue down wages to aid their resumption of gold that they had a General Strike in 1926. And the French refused to deflate and adopted a new, low value of the franc, destabilizing gold flows around the world (Temin, 1989; Irwin, 2010).

As in America, we tend to see German events as internal. The hyperinflation was internal, but the exchange rate fell as the price rose. Observers at the time wondered whether the nominal exchange rate was the cause or the effect of the hyperinflation, but in terms of the Swan Diagram, it was domestic expansion that led that led to devaluation through the monetization of the resulting debt. The rapid change in the nominal exchange rate in 1923 was a currency crisis in addition to a hyperinflation.

The European politics of the 1920s were more virulent than those in America after the Civil War for several reasons. The rich history of European politics in the aftermath of the war is well documented and well known. There also was a shortage of gold in the 1920s that was of enough concern that the League of Nations created a Gold Delegation in 1928 to consider the problem. Gold reserves of central banks fell between 1913 and 1925 from 48 percent to 41 percent of their notes and sight deposits. Given the inflation in those years, the smallness of this decline implies that central banks were able to acquire added gold reserves easily. But where did this added gold come from? It was withdrawn from circulation. Central banks held fully 92 percent of all monetary gold in 1929, up from 62 percent in 1913 (League of Nations, 1930, p.

81). “Gold coin in circulation had fallen from nearly \$4 billion in 1913 to less than \$1 billion in 1928 (Eichengreen, 1992, p. 199n, 199-203).”

This was a massive change in public behavior. People went from using gold coins to using paper money in a very short time. Given the long history of transacting in coins, there must have been strong inducement for them to change to notes and deposits. Evidence from America in the years after 1929 reveals the mechanism. Americans converted bank deposits to currency in the early 1930s. In addition to the fear of bank failures, the reduction of interest rates reduced the cost of holding cash. Declining yields on bank deposits altered the portfolio preferences of people in favor of holding cash instead of interest-bearing deposits, exerting a larger upward pressure on the currency-deposit ratio than the fear of bank failures (Boughton and Wicker, 1979). The opposite effect must have been operating in Europe a decade earlier. Central banks kept their discount rates higher than they would have been if gold had been plentiful. The rise in interest rates led to the radical change in behavior noted in the Gold Delegation’s report. The need to acquire gold added to the deflationary pressure in most countries after the First World War.

These turbulent years were succeeded by a few peaceful ones that appeared to be prosperous. In terms of the Swan Diagram, the principal industrial countries all had regained internal balance, but they were far from external balance. German prosperity was based on a massive capital inflow from the United States through many private loans as well as the official Dawes and Young Loans. France with its undervalued currency had an import surplus and was importing gold at a rapid rate. Britain was acting as a bank, borrowing short and lending long, in an attempt to regain its pre-war primacy. Currency reserves in Germany and Britain were scarce as both France and the United States accumulated gold. The result of this set of external

imbalances was a series of currency crises in 1931 that turned a bad recession into the Great Depression.

These crises have been seen as banking crises, and banks were involved in them, but they were primarily currency crises. The first crisis was a banking crisis that brought down the currency, but the following ones were currency crises in which banks were collateral damage. The first crisis came in May when the Credit Anstalt failed in Austria. The bank was large enough to cause a run on the currency, and Austria had a currency crisis. Austria however was too small to affect even neighboring Germany, and its currency crisis stands as a precursor of the major crises of the summer and fall rather than as a cause (Ferguson and Temin, 2003).

The government budget of Weimar Germany was severely out of balance by 1931. Tax revenues had fallen, and unemployment expenses had risen. It proved impossible to agree on a budget, and Chancellor Brüning governed by decree. Loans from the US and France covered the deficit in early 1931, but Brüning then championed a customs union with Austria and cast doubt on his commitment to pay reparations. France of course had been insistent on reparations, and Brüning's threats abandoned Germany's reluctant commitment to its neighbor. Brüning's statements exacerbated tensions left over from the First World War and reduced French loans to Germany. Gold reserves at the Reichsbank and deposits at the large German banks held up until Chancellor Brüning's statement on reparations in early June, and then quickly fell.

The Reichsbank tried to replenish its reserves with an international loan, but Brüning's attempts to shore up his domestic support had dried up international capital flows. The French tied political strings around their offer of help that were unacceptable to the Germans, while the Americans pulled in the opposite direction to isolate the German banking crisis from any long-

run considerations. The absence of international cooperation was all too evident, and no international loan was forthcoming.

The data in Figure 2 reveal the path of the currency crisis. The graph shows the daily price of Young Plan bonds in Paris and the weekly gold reserves of the Reichsbank from April through June 30, 1931. Young Plan bonds were traded widely, and the series of Paris bond prices provides a good index of investor sentiment in the spring and summer of 1931. After rallying early in the year, the bond price stayed remarkably constant from March to May, and then fell sharply during the week of May 27. Gold reserves at the Reichsbank also stayed remarkably constant until the beginning of June, when they too fell. There was no news about German banks in late May, but German newspapers began by May 25 to discuss the rumor that Brüning was likely to ask for some sort of relief in regard to reparations, as he did in early June. This, not phantom withdrawals from banks, was the beginning of the fatal run on the currency that paralyzed the Reichsbank precisely at the moment it needed reserves to foster domestic stability.

Banks appealed to the Reichsbank for help, particularly the Danatbank which was hard hit when the currency crisis caused one of its major clients to fail. But the Reichsbank ran out of assets with which to monetize the banks' reserves as its gold reserves shrank. Despite some credits from other central banks, the Reichsbank had fallen below its statutory requirement of 40 percent reserves by the beginning of July, and it was unable to borrow more. The Reichsbank could no longer purchase the Berlin banks' bills. As in 1837, bank problems were the result, not the cause of the currency crisis (Ferguson and Temin, 2003; Temin, 2008).

Widely cited in the literature as a banking crisis, this was a currency crisis that also led to temporary nationalization of German banks. Germany abandoned the gold standard in July and

August 1931. A series of decrees and negotiations preserved the value of the mark, but eliminated the free flow of both gold and marks. In one of the great ironies of history, Chancellor Brüning did not take advantage of this independence of international constraints and expand. He continued to contract as if Germany was still on the gold standard. He ruined the German economy—and destroyed German democracy—in the effort to show once and for all that Germany could not pay reparations. When Brüning said later he had fallen 100 meters from the goal, he meant the end of reparations, not the recovery of employment, and he betrayed no doubt that the proper policy had been to stay within the rhetoric and framework of the gold standard even after abandoning convertibility itself (James, 1986, p. 35; Eichengreen and Temin, 2000).

As a consequence of the German moratorium the withdrawal of foreign deposits was prohibited, and huge sums in foreign short-term credits were frozen. As other countries realized that they would be unable to realize these assets they in turn were compelled to restrict withdrawals of their credits. Many other European countries suffered bank runs and currency crises in July, with especially severe crises in Hungary and Romania. More importantly, the German crisis gave rise to a run on the pound and then the dollar.

Britain had attempted to maintain its pre-1914 role as an exporter of long-term capital to the developing countries, but it could no longer achieve this in the 1920s by means of a surplus on current account and had to finance it by substantial borrowing from abroad. Much of the capital attracted to London was short term, leaving Britain vulnerable to any loss of confidence in sterling. The increasing deficits on the current accounts of Australia and other primary producers who normally held a large part of their reserves in London compelled them to draw on these balances in adverse times, and this further weakened Britain's position. Britain had turned

itself into a bank, borrowing short and lending long, a dangerous maturity mismatch. When confidence drained away in the summer of 1931, British authorities realized that sterling's parity could no longer be sustained. After borrowing reserves from France and the United States in July and August, Britain abandoned the gold standard on September 20.

The influence of history was of critical importance. Foreign concern about the scale of Britain's budget deficit increased markedly with the publication of the Report of the May Committee in July 1931 and was the proximate reason for the final collapse of confidence in sterling. It is difficult in hindsight to understand this obsession with the deficit given the relatively trifling sums under discussion. Nevertheless, this currency crisis followed the German crisis in a cascading collapse of the gold system.

The Bank of England, after an initial delay to rebuild its gold reserves, sharply reduced interest rates in 1932. As in Germany, British monetary authorities continued for a time to advocate gold-standard policies even after they had been driven off the gold standard. They cried "Fire, Fire in Noah's Flood," as Hawtrey (1938, p. 145) phrased it. Although the grip of austerity was strong in the immediate aftermath of devaluation in Britain as well as in Germany, it wore off within six months in the face of public criticism by James Meade and others. British economic policy was freed by devaluation, and monetary policy turned expansive early in 1932.

Across the ocean, Mellon and Hoover remained staunch in their belief in the curative powers of the gold standard even as the American economy collapsed around them. One reason for the economic decline was a reduction in the quantity of money as people reversed the progress made in the 1920s and took cash out of American banks. They were responding to continuing bank failures and to low interest rates. The bank failures have received a lot of attention, but the effect of interest rates, as noted earlier for the 1920s, was more important

(Friedman and Schwartz, 1963; Boughton and Wicker, 1979). This process interacted with the debt-deflation process outline by Fisher (1933) to depress the economy in a kind of austerity from inactivity instead of design.

The Fed *raised* interest rates in October 1931 to defend the dollar. This contractionary policy in the midst of rapid economic decline was the classic central-bank reaction to a gold-standard crisis. Friedman and Schwartz (1963, p. 317) acknowledged the power of the gold standard in this action in their account of the American contraction:

The Federal Reserve System reacted vigorously and promptly to the external drain, as it had not to the previous internal drain. On October 9, the Reserve Bank of New York raised its rediscount rate to 2 1/2 per cent and on October 16, to 3 1/2 per cent--the sharpest rise within so brief a period in the whole history of the System, before or since. . . The maintenance of the gold standard was accepted as an objective in support of which men of a broad range of views were ready to rally.

The United States did not have a currency crisis, but the forces leading up to the German crisis and the American defensive interest-rate hike were the same. Brüning and Hoover maintained their deflationary policies for as long as they were in office and continued to champion them after they lost power. Even after losing the 1932 election, Hoover kept trying to enlist the president-elect in support of the gold standard. As late as February 1933, he tried to chide Roosevelt into a commitment to support the gold price of the dollar (Hoover, 1933). Twenty years later Hoover (1952, p. 189) repeated approvingly his 1932 claim that maintaining the gold standard had been good for the United States: “We have thereby maintained one Gibraltar of stability in the world and contributed to check the movement of chaos.”

The postwar world economy was far different than the interwar years. In an effort to avoid the crises of the interwar years, the Bretton Woods system allowed countries to change

their exchange rates for sufficient cause. It was a system of stable rates, not fixed rates. Britain was forced to devalue twice under the Bretton Woods system, in 1949 and 1967. Britain had drifted above its equilibrium in the Swan diagram before the crises, and the currency crises brought it back near equilibrium. The adjustment was sufficient in both cases to last a few decades, but there was a durable movement vertically up in the Swan diagram resulting in a crisis after about two decades. From this point of view, Britain had moved in half a century from the center of the world economic system to the periphery (Cairncross and Eichengreen, 2003).

The United States embarked on the Vietnam War in earnest in 1965. President Johnson intensified the war at the same time as he promoted many domestic reforms. He hesitated to raise taxes in the midst of all these controversial activities, and he threw the United States into a replay of the internal and external imbalances during the Civil War. In an uncanny rerun of events a century earlier, the United States economy overheated from the new demands made upon its resources, and the current account went into deficit. In terms of Figure 1, the United States moved to the right and had domestic inflation and an international deficit jointly caused by an increase in domestic demand.

The American import surplus created strains on other Bretton Woods countries, and pressure grew for the United States to devalue, but that was hard in view of the dollar's use as a reserve currency. There was an alternative, namely that the Allies' former enemies, Germany and Japan, could have appreciated. They however did not see why they should help out the richest and most powerful country in the world. Countries converted their gold holdings into gold, and the gold backing of the dollar decreased. This pressure threatened to turn into a run on the dollar, and President Nixon acted to forestall that disruption in 1971. Nixon closed "the gold window," imposed a 90 day wage and price freeze as well as a temporary tariff. Only the first of

these measures lasted, and a new set of exchange rates were abandoned in favor of floating exchange rates after several abortive attempts to settle on a set of fixed rates. Like the British devaluations, the “Nixon Shock” was to avoid a currency crisis. Since the United States was a major currency, however, the Nixon Shock destroyed the Bretton Woods system and should be classified as a currency crisis.

The resulting devaluation corrected the external imbalance, but it made the internal balance worse by intensifying American inflation. Inflation turned into stagflation around the world as the scarcity of oil and wheat in 1973 sent prices skyrocketing and led to capital outflows from industrial countries to the Middle East at the same time as unemployment rose. Economic theory had followed Keynes in focusing on demand shifts, and there was no theory of the supply side that related to economic policy. The high prices of raw materials were supply shocks, which cried for explanation. Macroeconomics was in disarray. Economic policy in the 1970s was a sequence of confused efforts to end the inflation. Success finally came at the end of the decade when President Carter appointed Volcker as Chairman of the Federal Reserve System. Volcker dramatically reduced domestic demand—absorption—by highly deflationary monetary policy. Interest rates sky-rocketed, and the misery index composed of the inflation and unemployment rates went out of sight. President Carter failed in his bid for reelection, and his successor, President Reagan, got the credit for ending the inflation (Stein, 2010).

Many Latin American countries had borrowed heavily in the 1960s and even more heavily in the 1970s as inflation lowered real interest rates. Their currencies became overvalued as they imported capital, and the resulting debts proved unsustainable during the Volcker deflation in the United States, as this abrupt change in American monetary policy sharply raised real interest rates and placed a large burden on the Latin American debtors. “Debtors frozen out

of the world capital market learned first hand the old banking truth: ‘It is not speed that kills, it is the sudden stop’ (Dornbusch, 1989, pp. 9-10).” They had rolling currency crises in the early 1980s, and devaluation and austerity were tried to service their debts. These policies did not solve the debt problems, and it required a lost decade and forbearance of some of their loans in the Brady plan at the end of the 1980s to end this crisis (Edwards, 1999; Frieden, 1991).

European countries drifted back toward fixed exchange rates during the 1980s to avoid the short-run fluctuations that occur with floating rates. Then came the shock of German reunification at the end of the decade which created huge fiscal demands on West Germany. There were an enormous number of things to do in Eastern Germany. The infrastructure was entirely out of date, as were factories. West German fiscal problems were made worse by Chancellor Kohl’s decision to reunify the two German monetary systems at a one-for-one exchange rate between the East and West. This decision made the East uncompetitive; it needed not just huge investment in infrastructure, but welfare payments for unemployed workers. The necessary payments meant that West Germany suddenly experienced a huge fiscal expansion and a booming economy as a result.

In the face of this huge fiscal deficit, the Bundesbank raised interest rates significantly. Other countries in the European Monetary System needed to follow Germany. This had unwanted effects on these countries. Britain, in particular, was already in recession. The country was being governed by a demoralized Conservative party, exhausted by more than a decade of Thatcherite rule. Everyone knew the Conservatives wanted to win the election in 1992, and that the economic circumstances being inflicted by membership of the European Monetary System were likely to make this impossible. The country was too uncompetitive, just as it had been under the gold standard in 1931, especially with higher interest rates pulling the economy down

further. The action of the Bundesbank in raising interest rates led to very vociferous anti-German comment, especially as British voters realized that monetary policy in the so-called European Monetary System was being decided entirely on the basis of the needs of Germany.

Ultimately it was just a matter of time until Britain was forced out of the European Monetary System – although Bank of England defended the currency long enough to enable George Soros to make many billions of dollars at the expense of the British taxpayer. Britain withdrew from the Exchange Rate Mechanism in September 1992. There was a valiant last-minute attempt to raise British interest rates to extraordinary levels –to 15 percent – to try to defend the pound. But ultimately the beliefs of financial markets that such a policy would be impossible to sustain proved dominant, and Britain had a currency crisis.

Italy was ejected from the EMS the day after Britain. Quite soon Sweden was thrown out too – but not until the high interest rates used to defend Swedish currency contributed to the bankruptcy of the entire Swedish banking system. There were significant attacks on France in the year which followed. It became clear that the European Monetary System could not stay where it was. Europe needed to go back to floating exchange rates or forward to monetary union. Europe faces a similar choice today in: its monetary union will either go backward – it will break up – or it will go forward to a real monetary union. The devaluations in 1992 were currency crises, and the current problems of the European Monetary System seemed destined to develop into more currency crises.

The problem of maturity mismatch, borrowing short to invest long as Britain did in the 1920s, was illustrated vividly on the other side of the world by currency crises in Thailand, South Korea, Indonesia and Malaysia—the Asian Tigers—in 1997. These small, open countries had industrialized and increased their exports rapidly in the preceding years. Their governments and

banks financed this expansion by borrowing short-term and rolling over the resulting international debts. This process became vulnerable from the combination of fixed exchange rates and inadequate domestic financial institutions. When the investors declined to renew their funding, the countries did not have liquid assets to replace the loans, and a crisis enveloped East Asia. In terms of Figure 1, the Asian tigers were in internal, but not external, balance. They were on the internal-balance line above the external balance line. They needed capital inflows to continue their growth. When investors had second thoughts, the countries had currency crises, defaulted and devalued (Corbett and Vines, 1999).

The European Monetary Union was established in 1999 after a seven-year period of preparation in the aftermath of the currency crises of 1992. There were 12 members of the union initially, and the number grew to 17 today. Until three years ago, it appeared that the establishment of the euro had been highly successful. Many Member States enjoyed the benefits of belonging to a currency union, notably the high growth rates which resulted. The area was cushioned against economic shocks, and disruptions due to intra-European exchange rate realignments were a thing of the past. Financial market integration continued apace, although it was stronger in wholesale and securities markets than in retail banking and short-term corporate lending. There were wide divergences in growth rates within the Eurozone, and even serious divergences in the competitiveness levels and balance of payments positions of the Eurozone economies, but these appeared to be manageable. Europeans felt they had emerged from the turmoil that followed the end of the Bretton Woods system almost three decades earlier.

They instead were repeating the hidden imbalances of the late 1920s. The data graphed in Figure 3 show that large current account deficits emerged in Southern Europe. Capital imports raised real exchange rates in the GIPS, the collective acronym for Greece, Italy, Portugal

and Spain. The worsening of the competitiveness position did not have the moderating effect imagined in the design of the euro, and the boom and inflation went on until 2008. The countries remained out of external balance for a sustained period of time, and, as a result, internal imbalances got worse and worse, as in Europe in the late 1920s.

The reverse occurred in Germany. The low level of inflation there caused an improvement in German competitiveness, leading to an increase in exports, a reduction in imports, and an improvement in the current account. That was meant to cause an increase in expenditures within Germany; and this was meant to increase relative inflation in Germany and stop Germany from becoming excessively competitive relative to the other countries. A large current account surplus emerged in Germany, as shown also in Figure 3, but this did not have the desired internal moderating effect. The boom in Germany went on and on becoming more and more competitive, continuing until recently with a current account surplus which was continually rising. The design of the euro may be fine in the long run; it ignored bubbles in the short run stimulated by low interest rates. The European experience here anticipated the recent housing booms in the United States and China.

Germany is the putative leader of the European Monetary Union, but it is not playing the part. In November 2011, German Chancellor Angela Merkel and French President Nicolas Sarkozy together announced that Greece might end up having to leave the euro. As the European crisis escalated, a German newspaper reported that the Merkel government was inching toward accepting euro bonds in some form, even if her public stance remained against them, and that some of her party said there could be a trade-off of this kind in exchange for treaty changes. “We aren’t saying never,” a legislator from Merkel’s coalition, told journalists. “We’re just saying no euro bonds under the current conditions.” But quashing recent speculation of a

softening in Germany's hardline stance on the euro, Chancellor Merkel repeated her firm opposition to bonds issued jointly by the euro zone countries and to an expansion of the role of the European Central Bank. "Nothing has changed in my position," she said (Erlanger and Kulish, 2011).

Fortunately, Merkel's position softened soon afterwards. . . At the end of December the European Central Bank started the biggest injection of credit into the European banking system in the euro's thirteen-year history. It loaned nearly loaned €500 billion to around 500 banks for an exceptionally long period of three years at an interest rate of just one percent, of which the largest amount was tapped by banks in Greece, Ireland, Italy and Spain. Then the European Central Bank provided another set of around 800 Eurozone banks with further €500 billion in cheap loans in February. These are staggering sums of money, and they were not prevented by Germany. And on January 30, 2012, European Union countries signed a German-inspired treaty designed to underpin the euro by means of tighter fiscal rules.

I imagine that the German chancellor looked in the rear-view mirror and saw a disastrous parallel from eighty years earlier. In May 1931, another German chancellor said that Germany would not help a European neighbor, as recounted above. The parallel actions – Merkel in November 2011 and Brüning in May 1931 – are important for several reasons. In both cases, they made a bad situation worse. In addition, both statements spoke to domestic concerns of the chancellor, ignoring the international repercussions. Merkel was given a reprieve by the European Central Bank that quelled the nascent European panic in 2012. She has softened her stance and promoted changes in the European Monetary Union. She has participated in a series of high-level consultations to address some causes of the current distress, and discussions

continue. We do not yet know if the effects of Merkel's initial views will live on as Brüning's statements have.

In the meantime, the European Monetary Union is replaying the American events of the 1890s. Fear of currency crises has caused wild fluctuations in asset prices, but—as yet—no devaluations. Only time will tell if there will be a set of crises in 2013 to rival the sequence of 1931. Europe appears to be entering a descent that recapitulates US experience in the early 1930s. The parallel is with the slow, cumulative deflation from disintermediation and bank failures that lasted from 1930 to 1933 and the effect of deflation on debts. Banks, like countries, need to exchange deposits for cash at a fixed rate, and members of the EMU need to pay their debts in euros. It seems likely as I write this in late 2012 that there will be a currency crisis soon in Europe, perhaps the “mother of all financial crises (Eichengreen, 2010).”

Countries were on the internal-balance line in Figure 1, but off the external-balance line. As in the description of earlier crises, two policies are needed to get back to equilibrium: devaluation and austerity. If the Eurozone is to remain intact, then deflation is the only way to diminish the real exchange rate, and austerity needs therefore to be severe in order to reduce prices as well as domestic demand. Given the difficulty of lowering wages in an industrial world, this is a tall order, as the chaos endangered by a similar effort after the First World War demonstrated.

Cooperation is needed to avert a European currency crisis. Germany needs to augment domestic demand, while the GIPS need to reduce theirs. Southern Europeans cannot use the mix of policies used in many previous currency crises as devaluation is not allowed in the Eurozone. They have only one tool: domestic demand. This will put enormous economic and political

strain on the GIPS. This strain will only be bearable if there is agreement between them and Germany to return to normal demand after the crisis is over.

Leadership helps nations get to cooperative outcomes. It is sadly lacking in international affairs today. It is possible, however, for nations to act in ways that ease strains on other countries even without explicit cooperation. On the world stage, China, which has been following an export-led strategy for the past generation, is beginning to turn inward. As Chinese wages rise and the Chinese real exchange rate rises, the Chinese surplus on current account will peak and even begin to decline. This will ease pressure on the United States and Europe, perhaps enough for America to prosper and Europe to muddle through its crisis (Temin and Vines, 2013). Europe is now living through the threat of currency crises reminiscent of the turmoil in financial markets caused by the possibility of devaluation in the 1890s United States. Let us hope there is a similarly happy ending now.

References

- Boughton, James M., and Elmus Wicker (1979) "The Behavior of the Currency-Deposit Ratio during the Great Depression," *Journal of Money, Credit and Banking*, 11 (November).
- Brown, William A. (1940) *The International Gold Standard Reinterpreted, 1914-1934*. New York: National Bureau of Economic Research.
- Cairncross, Sir Alec, and Barry Eichengreen (2003) *Sterling in Decline*. Basingstoke: Palgrave Macmillan.
- Calomiris, Charles (1993) "Greenback Resumption and Silver Risk: The Economics and Politics of Monetary Regime Change in the United States, 1862-1900," in Michael D. Bordo and Forrest Capie (eds.), *Monetary Regimes in Transition*. Cambridge: Cambridge University Press, pp. 86-132.
- Carter, Susan B., Scott Gartner, Michael Haines, Alan Olmstead, Richard Sutch, Gavin Wright (2006) *Historical Statistics of the United States: Earliest Times to the Present*. New York: Cambridge University Press.
- Corbett, Jenny and David Vines (1999) "The Asian Crisis: Lessons from the Collapse of Financial Systems, Exchange Rates and Macroeconomic Policy," in Pierre-Richard Agénor, Marcus Miller, David Vines and Axel Weber (eds.), *The Asian Financial Crisis: Causes, Contagion and Consequences*. Cambridge: Cambridge University Press, pp. 67-110.

- Dornbusch, Rudiger (1989) "The Latin American Debt Problem: Anatomy and Solutions," in Barbara Stallings and Robert Kaufman (eds.), *Debt and Democracy in Latin America*. San Francisco: Westview Press, pp. 7-22.
- Edwards, Sebastian (1995) *Crisis and Reform in Latin America: From Despair to Hope*. New York: Oxford University Press.
- Eichengreen, Barry (1992) *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939*. New York: Oxford University Press.
- Eichengreen, Barry (2010) "The Breakup of the Euro Area," in Alberto Alesina and Francesco Givazzi (eds), *Europe and the Euro*. Chicago, University of Chicago Press, pp.11-56.
- Eichengreen, Barry, and Peter Temin (2000) "The Gold Standard and the Great Depression," *Contemporary European History*, Vol. 9, No. 2, pp. 183–207.
- Erlanger, Steven, and Nicholas Kulish (2011) "German Leader Rules out Rapid Action on the Euro," *New York Times*, November 24.
- Ferguson, Thomas, and Peter Temin (2003) "Made in Germany: The German Currency Crisis of 1931," *Research in Economic History*, Vol. 21, pp. 1–53.
- Ferguson, Thomas, and Peter Temin (2004) "Comment on the 'The German Twin Crisis of 1931,'" *Journal of Economic History*, Vol. 64, No. 3. pp. 872–876.
- Fisher, Irving (1933) "The Debt-Deflation Theory of Great Depressions," *Econometrica*, Vol. 1, No. 4, pp. 337–357.
- Frieden, Jeffrey A. (1991) *Debt, Development, and Democracy: Modern Political Economy and Latin America, 1965-1985*. Princeton: Princeton University Press.
- Friedman, Milton, and Anna Schwartz (1963) *A Monetary History of the United States, 1860–1963*. Princeton, NJ: Princeton University Press.

- Grossman, Richard (1994) “The Shoe That Didn’t Drop: Explaining Banking Stability during the Great Depression,” *Journal of Economic History*, Vol. 54, No. 3 pp. 654–682.
- Hawtrey, Ralph (1938) *A Century of Bank Rate*. London: Longmans, Green.
- Hoover, Herbert H. (1933) “Lincoln Day Address, February 13, 1933,” *Commercial and Financial Chronicle*, 136 (18 Feb.), 1136-8.
- Hoover, Herbert H. (1952) *The Memoirs of Herbert Hoover: The Great Depression, 1929-1941*. New York: Macmillan, 1952.
- Irwin, Douglas A. (2010) “Did France Cause the Great Depression?” NBER Working Paper 16350. Cambridge, MA: National Bureau of Economic Research.
- James, Harold (1986) *The German Slump: Politics and Economics, 1924-1936*. Oxford: Clarendon Press.
- Keynes, John Maynard (1930) *A Treatise on Money, Volumes 1 and 2. Collected Writings of J. M. Keynes*, Vols. V and VI.
- Krugman, Paul (1979) “A Model of Balance-of-Payments Crises,” *Journal of Money, Credit and Banking*, 11 (August), 311-25.
- Krugman, Paul (2011) “Wishful Thinking and the Road to Eurogeddon,” *The Conscience of a Liberal*, November 7. Available at krugman.blogs.nytimes.com.
- League of Nations (1930) *Interim Report of the Gold Delegation of the Financial Committee*. Geneva: League of Nations Publications..
- Officer, Lawrence H. (1981) “A Test of Theories of Exchange-Rate Determination,” *Journal of Economic History*, Vol. 41, No. 3, pp. 629–650.

- Reinhart, Carmen M., and Kenneth S. Rogoff (2009) *This Time Is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Rousseau, Peter (2002) "Jacksonian Monetary Policy, Specie Flows, and the Panic of 1837." *Journal of Economic History* 62:2, pp. 457 - 488.
- Silber, William L. (2007) *When Washington Shut Down Wall Street: The Great Financial Crisis of 1914 and the Origins of America's Monetary Supremacy*. Princeton: Princeton University Press.
- Stein, Judith (2010) *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies*. New Haven: Yale University Press.
- Swan, Trevor. (1955) "Longer Run Problems of the Balance of Payments," paper presented to the Annual Conference of the Australian and New Zealand Association for the Advancement of Science. Published in H.W. Arndt and W.M. Corden (eds.) (1963) *The Australian Economy*. Melbourne: Cheshire Press, pp. 384–395. Reprinted in R. Caves and H. Johnson (eds.) (1968) *Readings in International Economics*. Homewood, IL: Irwin, pp. 455–464.
- Temin, Peter (1969) *The Jacksonian Economy*. New York: W. W. Norton.
- Temin, Peter (1974) "The Anglo-American Business Cycle, 1820-60," *Economic History Review*, May, pp. 207-221.
- Temin, Peter (1989) *Lessons from the Great Depression*. Cambridge, MA: MIT Press.
- Temin, Peter (2008) "The German Crisis of 1931: Evidence and Tradition," *Cliometrica*, Vol. 2, No. 1, pp. 5–17.
- Temin, Peter, and David Vines (2013) *The Leaderless Economy: How the World Economic System Fell Apart and How to Fix It*. Princeton: Princeton University Press.

Figure 1

The Swan Diagram

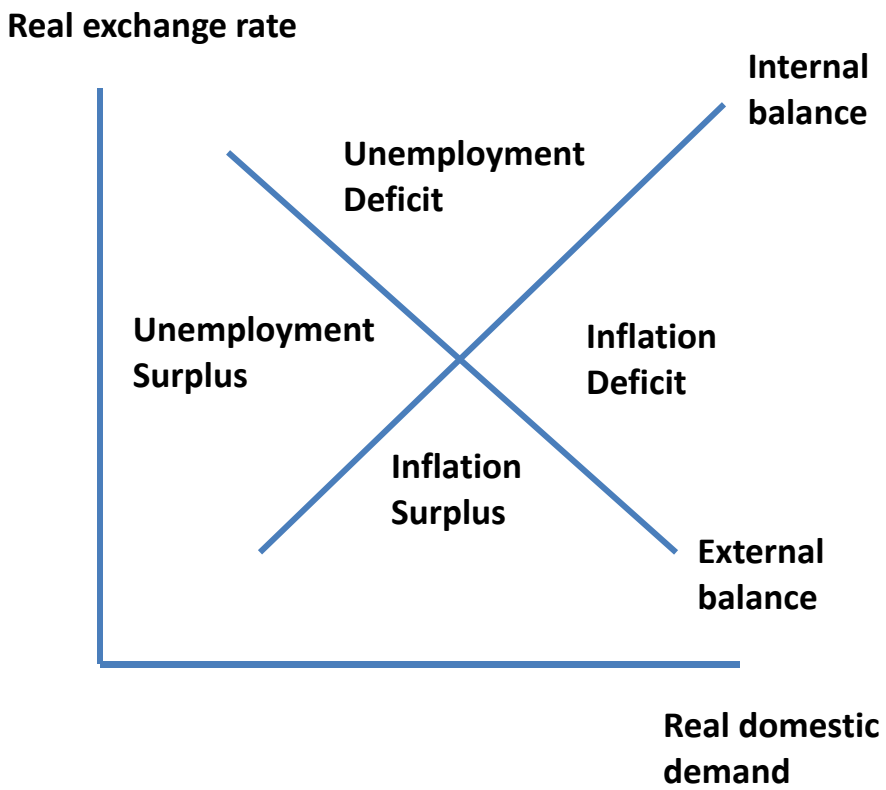
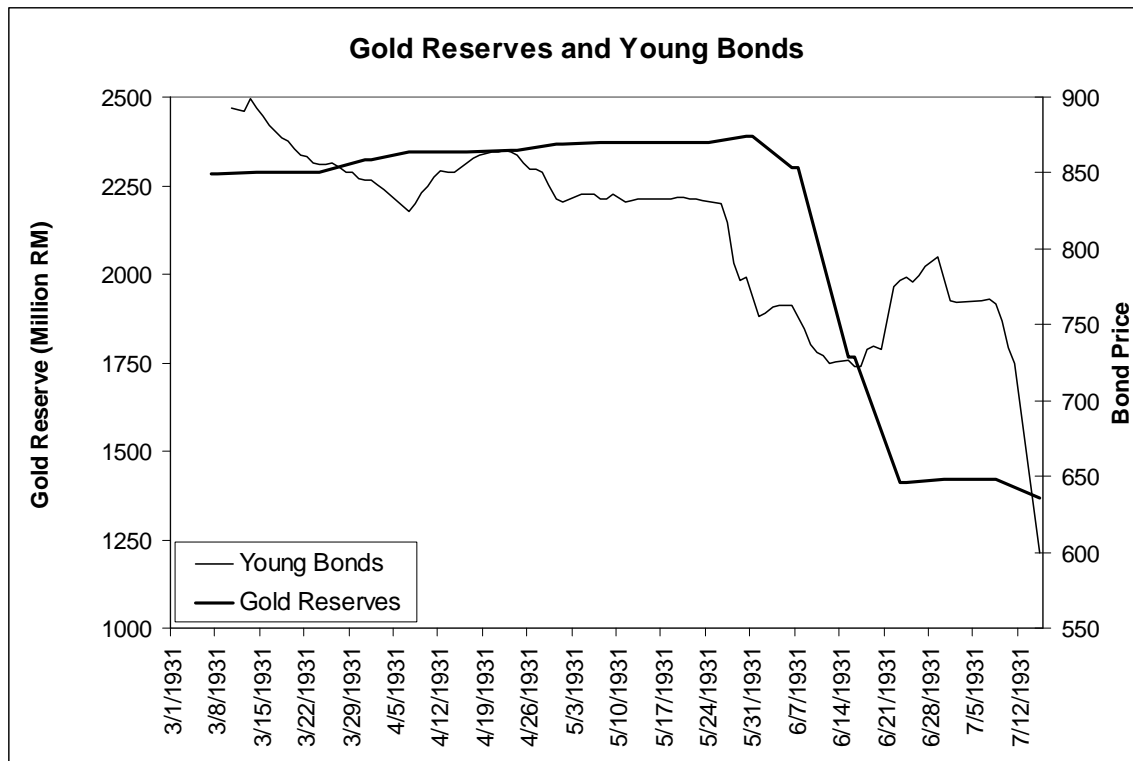


Figure 2

Reichsbank Gold Reserves and Young Plan Bond Prices in Paris

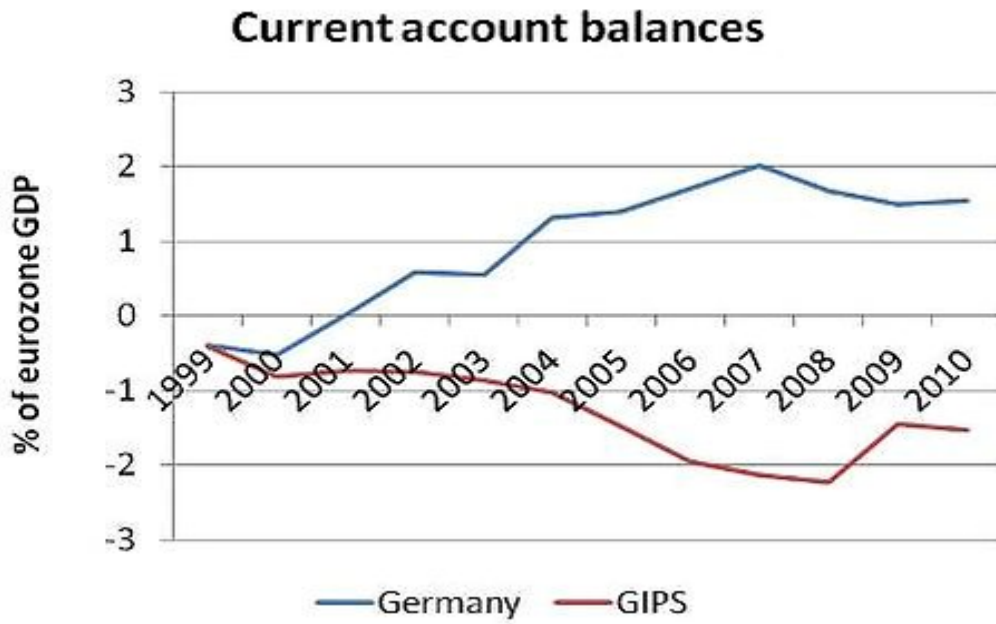
April 1 to June 30, 1931



Source: Ferguson and Temin, 2003, 2004.

Figure 3

Current Account Balances



Source: Krugman, 2011.