

THE GOLD STANDARD, THE EURO, AND THE ORIGINS OF THE GREEK SOVEREIGN DEBT CRISIS

Harris Dellas and George S. Tavlas

The planners of a European monetary union would be well advised to study the reasons the pre-World War I gold standard was a successful monetary regime.

—Anna J. Schwartz (1993)

The entry of Greece into the eurozone in 2001 was widely expected to mark a transformation in the country's economic destiny. During the decade of the 1980s, and for much of the 1990s, the economy had been saddled with double-digit inflation rates, double-digit fiscal deficits (as a percentage of GDP), large current-account imbalances, very low growth rates, and a series of exchange rate crises. Adoption of the euro—the value of which was underpinned by the monetary policy of the European Central Bank (ECB)—was expected to produce a low-inflation environment, contributing to

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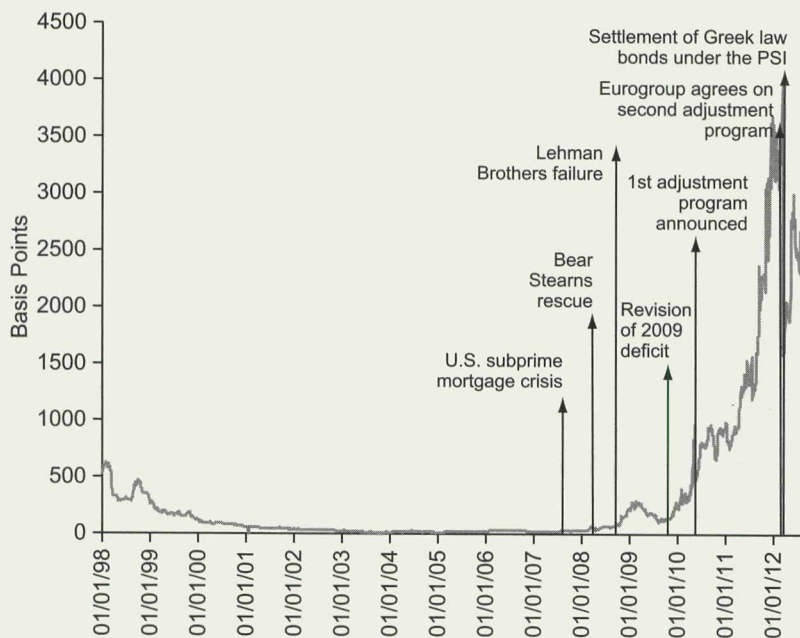
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lower nominal interest rates and longer economic horizons, thereby encouraging private investment and economic growth. The elimination of nominal exchange-rate fluctuations among the former currencies of members of the eurozone was expected to reduce exchange rate uncertainty and risk premia, lowering the costs of servicing the public sector debt, facilitating fiscal adjustment, and freeing resources for other uses.

And that is precisely what happened—at least for a while. In the years immediately prior to and immediately after Greece's entry into the eurozone, nominal and real interest rates came down sharply, contributing to high real growth rates. From 2001 through 2008, real GDP rose by an average rate of 3.9 percent per year—the second-highest growth rate (after that of Ireland) in the eurozone. Inflation, which averaged almost 10 percent in the decade prior to eurozone entry, averaged only 3.4 percent over the period 2001–08. Then, beginning in 2009, everything changed as Greece became the center of a major financial crisis. Interest rates on long-term government debt soared from the low single digits prior to the crisis to a peak of 42 percent in early 2012; the country had to resort to two successive adjustment programs (in May 2010 and March 2012) with official international lenders; and the Greek government restructured its debt. Between the end of 2008 and mid-2012, the economy contracted by a cumulative 20 percent (and it continues to contract), and the unemployment rate jumped from less than 8 percent to about 25 percent. Like Odysseus's return trip home from the Trojan War, the road to Ithaca led to a Tartarean hell.

What happened? And why did it happen? To answer these questions, we begin by describing the origins of the Greek financial crisis, highlighting the crucial role of growing fiscal and external imbalances. Next, we identify what we believe was a key factor that abetted those imbalances—namely, the absence of an automatic eurozone adjustment mechanism to reduce members' external imbalances. To illustrate our argument, we compare the adjustment mechanism in the eurozone with the adjustment mechanism for the participants of the classical gold-standard regime of the late 19th and early 20th centuries. Are there major differences between the working of the gold-standard adjustment mechanism and that of the eurozone? What are the lessons that can be drawn from a comparison between the gold standard and the eurozone? We address these questions in what follows.

FIGURE 1
GREEK SPREADS: YIELDS ON GREEK OVER GERMAN
10-YEAR BENCHMARK BONDS



SOURCE: ECB Statistical Data Warehouse.

The Years of Living Dangerously

As mentioned, Greek interest rates came down sharply in the years immediately prior to, and immediately after, the country's entry into the eurozone. Figure 1 shows the monthly interest-rate spread between 10-year Greek and German government bonds for the period 1998–2012.¹ The spread fell steadily, from over 600 basis points in early 1998 to about 100 basis points one year prior to Greece's eurozone entry. By the time Greece entered the eurozone in 2001, the spread had fallen to around 50 basis points;

¹In 1994, the Greek government set a goal to enter the eurozone on January 1, 2001. The convergence of Greek economic indicators to those of other European Union countries contributed after 1994 to the narrowing of interest-rate spreads prior to eurozone entry. For an analysis of the Greek economy before eurozone entry, see Garganas and Tavlas (2001).

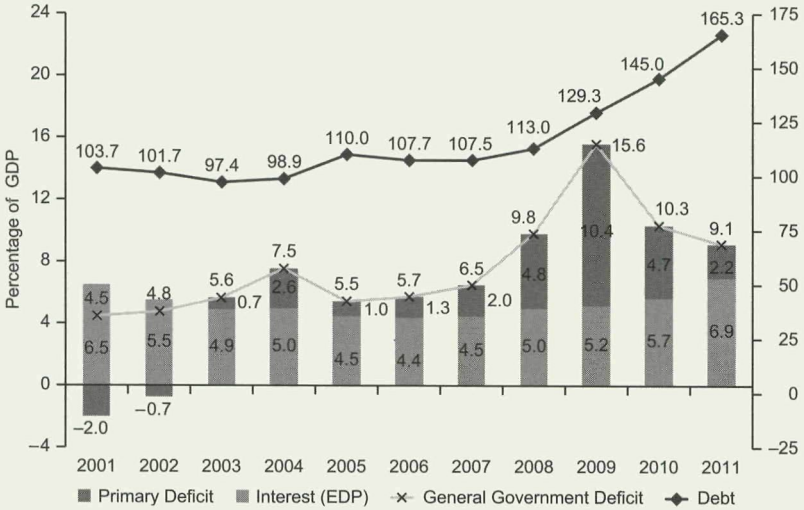
it continued to narrow subsequently, declining to between 10 and 30 basis points from late 2002 until the end of 2007. During the latter period, the absolute levels of nominal interest rates on the 10-year Greek instrument fluctuated in a range of 3.5–4.5 percent, compared with a range of 5.0–6.5 percent in the year prior to eurozone entry.

Although entry to the eurozone contributed to a period of low interest rates and rapid real growth, deep-seated problems in the Greek economy remained unaddressed, reflecting a procyclical fiscal policy; as a result, the country continued to run large fiscal and external deficits. Figures 2 and 3 show data on fiscal deficits and government debt as a percentage of GDP. Several features stand out with regard to the period 2001–09. First, fiscal deficits consistently exceeded the Stability and Growth Pact's limit of 3 percent of GDP during the entire period, rising to 9.8 percent of GDP in 2008 and 15.6 percent of GDP in 2009.² Second, the widening of the deficits was mainly expenditure-driven; between 2005 and 2009 the share of government spending in GDP rose by 9 percentage points (to 54 percent), with the bulk of the rise occurring between 2006 and 2009, a period that featured a government run by a conservative party. Third, beginning in 2007, the deficits underpinned an unsustainable increase in the government debt-to-GDP ratio, culminating in the crisis that erupted in late 2009.

The large and widening fiscal deficits contributed to growing current account deficits. There are two main series on the Greek current account. One is compiled by the Bank of Greece, based on information on international transactions reported by commercial

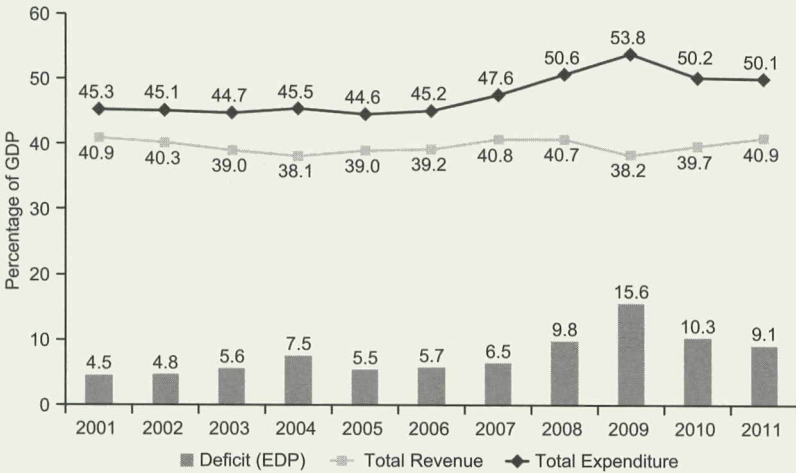
²The European Union's Stability and Growth Pact requires that members' fiscal deficits be below 3 percent of GDP and their debt-to-GDP ratios below 60 percent of GDP. Entry into the eurozone is, in part, contingent on the satisfaction of these fiscal criteria. In the case of the debt-to-GDP criterion, countries can be allowed to join if the debt ratio is seen to be approaching the 60 percent critical value at a satisfactory pace. The latter circumstance applied to Greece. In the year 2000, Greece was allowed entry into the eurozone with a debt-to-GDP ratio near 100 percent of GDP (because the ratio was on a declining path) and a fiscal deficit initially reported at 3.0 percent of GDP; the latter figure was subsequently revised to 4.5 percent of GDP after Greece became a member of Europe's monetary union.

FIGURE 2
GREECE: EVOLUTION OF GENERAL GOVERNMENT DEFICIT, PRIMARY DEFICIT, AND DEBT



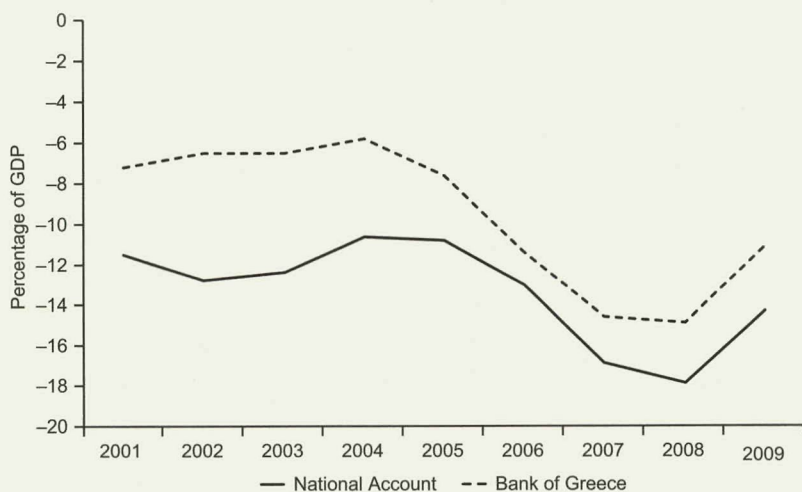
SOURCE: ELSTAT (Hellenic Statistical Authority).

FIGURE 3
GREECE: TOTAL REVENUE, EXPENDITURE, AND DEFICIT



SOURCE: ELSTAT (Hellenic Statistical Authority).

FIGURE 4
GREEK CURRENT ACCOUNT



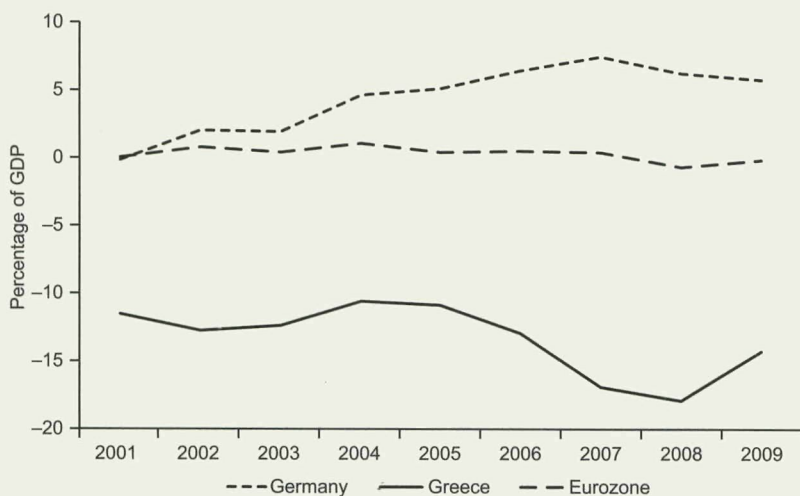
SOURCE: ELSTAT (Hellenic Statistical Authority), European Commission Annual Macroeconomic Database.

banks. The other, used in the national accounts and by the European Union, is derived from customs information.³ Both series are plotted in Figure 4. Both show that the deficit was large (in relation to GDP) upon Greece's entry in the eurozone, and grew even larger in the following years. The Bank of Greece data show that the current account deficit rose from about 7 percent of GDP in 2001 to almost 15 percent in 2008, before declining to about 14 percent in 2009. The national account series shows the current account deficit rising from 11.5 percent of GDP in 2001 to almost 18 percent in 2008, before declining to about 15 percent in 2009.

Figure 5 compares the current account positions of Greece, Germany (the center country of the eurozone), and the eurozone as a whole, based on national accounts data to ensure consistency. The reason that we compare Greece with Germany will become clear later when we discuss the adjustment mechanism in the eurozone. Two points are important to mention. First, during the period

³Differences between the two are roughly attributed to different compilation methods and data sources that are difficult to cross-check.

FIGURE 5
CURRENT ACCOUNTS



SOURCE: European Commission Annual Macroeconomic Database.

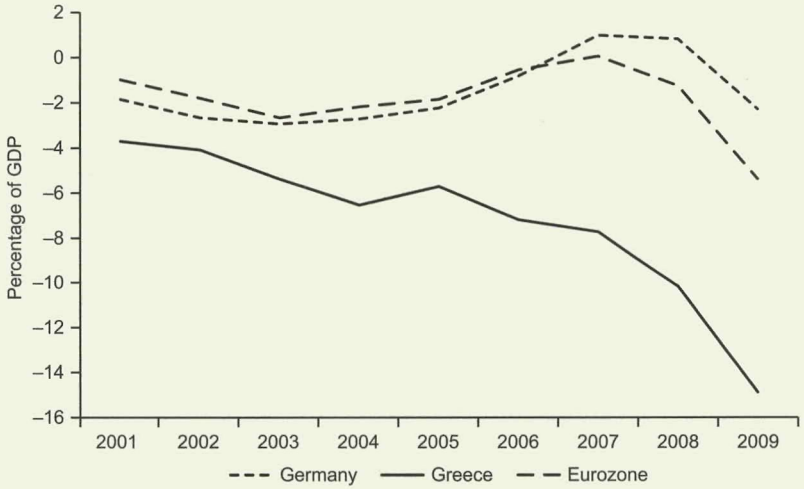
2001–09 the current account of the eurozone as a whole was roughly in balance. Second, the current account of Germany went from essentially a balanced position in 2001 to a surplus of around 6 percent of GDP in 2008, a swing of some 6 percentage points, almost the same percentage as the increase in Greece's current account deficit during the same period.⁴

Figures 6 and 7 show the relative contributions of the public and private sectors, respectively, to the evolution of the current account balances of Greece, Germany, and the eurozone as a whole. Again, several points stand out. In the case of Greece, the widening of the current account deficit was caused entirely by the behavior of the public sector;⁵ net public saving (relative to GDP) fell from around minus four percent in 2001, to minus 15 percent of GDP in 2009. During the same period, net private saving (relative to GDP) in

⁴Nonetheless, the nominal magnitudes were very different. In 2008, Germany's current account surplus totaled €154.1 billion; Greece's current account deficit was €41.7 billion.

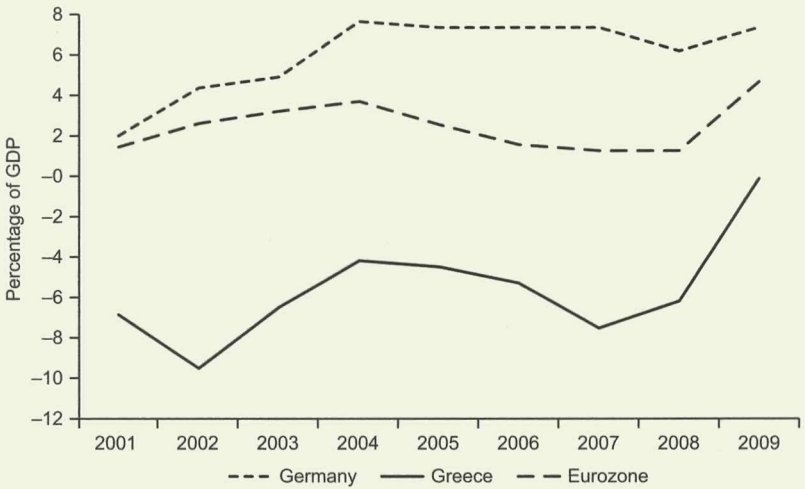
⁵This circumstance differs from those of Ireland, Portugal and Spain, where the private sector was mainly responsible for the widening of the current account positions of those countries. See Holinski, Kool, and Muysken (2012).

FIGURE 6
NET PUBLIC SAVING



SOURCE: European Commission Annual Macroeconomic Database.

FIGURE 7
NET PRIVATE SAVING



SOURCE: European Commission Annual Macroeconomic Database.

Greece rose, from about minus 7 percent to around minus 1 percent of GDP. For Germany and the eurozone as a whole net public saving increased from 2001 through 2007, before declining in 2008; net private saving rose in both Germany and the eurozone as a whole.

Eruption

The global financial crisis that erupted in August 2007, following the collapse of the U.S. subprime mortgage market, initially had little impact on Greek financial markets. Spreads on the 10-year instrument, which were in a range of 20–30 basis points during January–July of 2007, remained in the vicinity of 30 basis points for the remainder of 2007 and the first few months of 2008 (Figure 1). With the collapse (and sale) of Bear Stearns in March 2008, spreads widened to about 60 basis points, where they remained until the collapse of Lehman Brothers in September of 2008. The latter event brought spreads up to around 250 basis points during the first few months of 2009, but they gradually came back down to about 120 basis points in August and September of 2009.

Then came a double shock in the autumn of 2009. Two developments combined to disrupt the relative tranquility of Greek financial markets. First, in October the newly elected Greek government announced that the 2009 fiscal deficit would be 12.7 percent of GDP, more than double the previous government's projection of 6.0 percent. In turn, the 12.7 percent figure would undergo further upward revisions, so that the outcome was a deficit of 15.6 percent of GDP. Second, in November 2009 DubaiWorld, the conglomerate owned by the government of the Gulf emirate, asked creditors for a six-month debt moratorium. That news rattled financial markets around the world and led to a sharp increase in risk aversion. In light of the rapid worsening of the fiscal situation in Greece, financial markets and rating agencies turned their attention to the sustainability of Greece's fiscal and external imbalances. The previously held notion that membership of the eurozone would provide an impenetrable barrier against risk was destroyed. It became clear that, while such membership provides protection against exchange-rate risk, it cannot provide protection against credit risk.

The two shocks set off a sharp and prolonged rise in spreads, which continued into early 2012. As shown in Figure 1, the spread on

the 10-year sovereign widened from about 130 basis points in October 2009, to around 900 basis points one year later.⁶ The widening took place despite a May 2010 agreement between the Greek government and the International Monetary Fund, the European Central Bank, and the European Commission for a 3-year €110 billion adjustment program. By early 2012, the Greek-German spread had widened to about 4,000 basis points and it became clear that Greece's rising debt burden was no longer sustainable. In March 2012, the Greek government agreed to a new €130 billion adjustment program with the official lenders, and the country restructured its sovereign debt.

To summarize the above discussion, Greece entered the eurozone with a current account deficit of about 10 percent of GDP (depending on the current account series used); the current account deficit widened sharply in the following years, leading to the crisis that erupted in late 2009. The major factor underpinning Greece's large and growing current-account deficits was the decline in net public saving. Germany, in contrast, went from a current account deficit of about 1 percent of GDP in the early 2000s to a surplus of about 6 percent by the time of the outbreak of the Greek crisis. As we will see, changes in the relative competitive positions of Greece and Germany help explain the movements of the external positions of the two countries. A question that arises is how a country like Greece, which entered Europe's monetary union with an external deficit of about 10 percent of GDP, was able to function for many years without adjusting its external position. To address that question, we turn to a comparison of the adjustment mechanisms under the classical gold standard and the euro.

The Gold Standard and the Euro

A prominent feature of recent discussions about the eurozone has been a comparison of the functioning of that area's fixed

⁶Gibson, Hall, and Tavlás (2012) estimate a cointegrating relationship between Greek spreads and their long-term fundamental determinants and compare the spreads predicted by this estimated relationship with actual spreads. The authors find that spreads were significantly below what would be predicted by fundamentals from the end of 2004 up to the middle of 2005; by contrast, in 2010, spreads exceeded predicted spreads by some 400 basis points.

exchange rate regime with that of the gold standard of the late-19th and early-20th centuries (see Buttonwood 2010, Eichengreen and Temin 2010, Boone and Johnson 2012, James 2012). In this connection, James (2012: 1) stated: “The European Monetary Union, as many of its critics maintain, looks a lot like the pre-1913 gold standard, which imposed fixed exchange rates on extremely diverse economies.” How relevant is the gold standard metaphor?⁷ In this section, we briefly describe key characteristics of the gold standard of the late 19th and early 20th centuries, and compare adjustment to external imbalances between the two regimes during noncrises periods. The latter comparison, in particular, will help shed light on the underlying origins of the present crisis in the eurozone.

*What Was the Classical Gold Standard?*⁸

Essentially, the gold standard was a regime under which the exchange rates of the participating countries moved within narrow limits approximating their respective gold points without the support of exchange restrictions, import quotas, or related controls.⁸ The authorities of the participating countries maintained these fixed prices by being willing to buy or sell gold on demand at that fixed price. The classical gold standard, under which the circulation of domestic currencies was tied (to varying degrees) to gold, and international settlements were made primarily in gold (and, to a lesser extent, in pound sterling), prevailed in its most pure form

⁷The recent literature focuses on similarities between the gold standard and eurozone regimes. For example, Eichengreen and Temin (2010) pointed out that both regimes lack an escape mechanism to facilitate adjustment, with the escape mechanism being more binding for the euro regime than it was for the gold standard since, under the gold standard, countries retained their national currencies so that they could modify the regime. In our discussion, we focus on a major *difference* between the two regimes. For recent analyses of the performances of alternate exchange-rate regimes, see Tavlas, Dellas, and Stockman (2008) and Dellas and Tavlas (2013).

⁸The gold points were the points at which it became profitable to either export or import gold because of deviations between the market and mint prices of gold (Eichengreen 1996: 196). Effectively, the gold points functioned as the edges of exchange rate bands under which the exchange rate could fluctuate without occasioning either corrective gold flows or central bank intervention (Eichengreen 1994: 42).

during the period from 1880 to 1913 (see Bloomfield 1959: 9, Bordo 1981: 2, Eichengreen 1996: 42).⁹

Bordo (1981, 1993) compared the performance of the classical gold standard with its successor regimes, including the gold exchange standard that operated from the mid-1920s until the mid-1930s, the Bretton Woods regime that operated from the mid-1940s until the early 1970s, and the managed float that began in the early 1970s. Overall, Bordo (1993: 182) found that the classical gold standard performed less well relative to other regimes in terms of the stability of real variables but achieved the lowest rate of inflation and the highest degrees of inflation and interest-rate convergence, raising the following question: "Why was . . . the classical gold standard so unstable [in terms of real variables] yet so durable?"

Three (interrelated) characteristics of the classical gold standard appear to have contributed to its durability. First, it "facilitated adjustments to balance of payments disequilibrium" (Bloomfield 1959: 22; see, also, Eichengreen 1992: 29–66). Second, it operated with "virtually no instances of major or sustained 'runs' on any of [the] currencies [of the leading participating countries]" (Bloomfield 1959: 21); indeed, devaluations of currencies on the gold standard "were highly exceptional" (Bloomfield 1959: 2). Third, it provided "an effective defense against [inflationary policies] of a kind that time and again [had previously] led to the debasement and depreciation of once-proud currencies" (Friedman 1953: 179).

What countries were members of the classical gold standard club?¹⁰ Historians distinguish between core members of the club and peripheral members. Core countries included France, Germany, and the United Kingdom, with Belgium and the Netherlands also sometimes considered part of the core category. Among the common features of these countries are that each had relatively well-developed financial markets and a central bank. The periphery included Canada, South Africa, the United States, and parts of Latin America

⁹As Scammell (1965: 32) put it, "The nineteenth century gold standard was a gold *coinage* standard, in which gold coins circulated domestically and were interchangeable with notes at the central bank." Although fiat (paper) money was increasingly used during the classical gold standard to economize on the scarce resources tied up with commodity money, fiat money became acceptable only because it was convertible into gold (Bordo and Kydland 1996: 63).

¹⁰As Bloomfield (1959: 14) observed, "The composition of the gold standard 'club' changed over the course of the [1880–1914] period."

(Argentina, Brazil, Mexico), Asia (including Australia, New Zealand), and Europe (Austria-Hungary, Greece, Italy, Spain, Portugal, Russia, Switzerland, and the Scandinavian countries).¹¹ Their economies were typically financially less developed than those of the core countries and most of them did not have a central bank during at least part of the gold standard period.

Some of the peripheral countries participated in the gold standard only during part of the 1880–1913 period. Additionally, some countries that were not formally on the gold standard nevertheless followed policies that were consistent with a fixed price of their currencies against gold in an effort to “shadow” the gold standard. With regard to countries that are sometimes considered to have been members of the European periphery, the following particular circumstances merit comment.

- Greece joined the gold standard in January 1885 but dropped out in September of 1885, because, as Lazaretou (2004: 14) noted, the government failed to control the fiscal deficits and thus to support the credibility of the system. It rejoined the gold standard in 1910. Given the very limited duration of its participation in the gold standard, and the inconsistency of its policies with such participation, in what follows we do not consider Greece to have been a member of the periphery.
- Italy joined the gold standard in March 1883 but dropped out in February 1894 (Fратиanni and Spinelli 1984). Following a period of floating exchange rates from 1894 until 1902, the monetary authorities shadowed the gold standard. As Bordo and Kydland (1996: 78) argue, “The monetary authorities acted as if they were on the gold standard. . . . Money growth was low and the budget was often in surplus.” Thus, Italy’s economic indicators were in line with those of full-time periphery members.¹²

¹¹There is not a clear consensus among historians as to which countries comprised the *periphery*. For example, Eichengreen (1996: 39) included the United States while Officer (2010) did not. Since the Federal Reserve System was not established until December 1913, most historians consider that the United States was part of the gold standard periphery. This circumstance also applies to Switzerland, since the Swiss National Bank was not established until 1907. Austria-Hungary and Russia are sometimes considered to be core countries, but they did not join the gold standard until the mid-1890s.

¹²Cesarano, Cifarelli, and Toniolo (2012: 253) argued that the policy of “shadowing the gold standard proved very successful.”

- Portugal was a member of the gold standard from 1854 until 1891; its departure from the gold standard in 1891 was, in part, related to domestic political instability, following a failed attempt to establish a Republic (Duarte and Andrade 2004). After its departure from the gold standard, Portugal shadowed the gold standard, without committing to it (Soto 1999: 468).
- Spain was a member of the gold standard from 1874 until 1883; it suspended gold convertibility in 1883, in the aftermath of a sovereign crisis (Martin-Acena 1994: 136–37). Spain then pegged its currency to the pound sterling in an attempt to shadow the gold standard (see Soto 1999: 468).¹³

The Adjustment Mechanism

The gold standard proved to be a remarkably durable regime, with periods of tranquility far outlasting crisis periods, while the tranquility of the eurozone has proved to be short-lived. What accounted for the gold standard's tranquility? In answering this question, we must distinguish between the operation of the gold standard at its core and at its periphery.

The Core—For its core participants, the gold standard possessed an adjustment mechanism that served to reduce external imbalances (Scammell 1965, Eichengreen 1996). Consider first the operation of the gold standard in the absence of capital flows. To simplify the discussion, let us assume a two-country world comprised of Greece and Germany, in which Greece runs a trade deficit and Germany runs a trade surplus. Let us also assume that only gold coins circulate and prices and wages are flexible in both countries. In such a situation, the gold standard adjustment process—called the price-specie-flow mechanism—worked as follows:

- Greece experiences a gold outflow, decreasing the money supply and reducing credit growth (perhaps reducing the quantity of credit) in that country, causing prices and wages to fall.
- Germany experiences a gold inflow, increasing the money supply and raising credit growth in that country, causing prices and wages to rise.

¹³According to Soto (1999: 469), “There was a credible attempt to adhere to the [gold standard] system, but only the decision of shadowing was taken.”

- As a result of the change in relative prices, Greece's exports rise and its imports fall, eliminating its trade deficit. The opposite occurs in Germany.

Capital flows reinforced the overall self-equilibrating character of the system as it operated in the late 19th and early 20th centuries. Typically, the central bank of a country experiencing a trade deficit would increase its discount rate, reducing its holdings of domestic interest-bearing assets and drawing cash from the market (Eichengreen 1996: 28). This action produced two main effects. First, the money supply and credit growth in the country raising rates declined, reducing (or eliminating) the need of gold outflows from that country. In fact, capital could flow into the country as a result of the rise in the discount rate, smoothing the required adjustment. Second, the rise in interest rates would reduce economic activity in the country concerned, decreasing prices and, thereby, contributing to the elimination of the country's external imbalance, through both relative-price adjustment and the decrease in aggregate demand.

The pre-World War I gold standard operated in the above manner among the core countries (Scammell 1965: 35). These countries possessed the institutional capacity to make their commitment to the gold standard credible. Thus, they were able to issue debt denominated in their own currencies, each of which represented a certain amount of gold.

What did this institutional capacity comprise? Effectively, it included the following elements. First, the requirements of fixed exchange rates and free convertibility dominated the requirement of domestic economic stability—that is, external balance took precedence over internal balance (Friedman 1953: 166–67). Because there was no well-articulated theory connecting changes in monetary policy with domestic economic conditions, there was little or no pressure on central banks to adjust interest rates in response to changes in those conditions (Eichengreen 1992: 30). Consequently, economic agents were assured that the authorities would take any necessary actions to restore external equilibrium without the need to adjust the nominal exchange rate or to restrict convertibility. Second, the monetary authorities operated within an environment in which “the public sector was in general only a small one, where fiscal policy and debt management policy in their modern sense were virtually unknown, and where government budgets were for the most part in balance”

(Bloomfield 1959: 20).¹⁴ Third, should the budget fall into a deficit there was no question of the authorities' commitment to restore balanced budgets, if need be, by raising tax rates. This commitment was rendered *credible* by their institutional capacity to raise taxes—that is, the core countries possessed strong legal frameworks, well-developed public administrations, and efficient bureaucracies. As a result of their credible commitment to sound finance, the core economies could run small budget deficits, if needed, to respond to extraordinary shocks without raising concerns about their ability to service their debts.

Because there was no question about the authorities' commitment to (1) do whatever it takes to maintain the price of gold and convertibility, and (2) balance the budget, for a core country facing an incipient crisis, "capital flowed in quickly and in significant quantities," mitigating the crisis (Eichengreen 1996: 31; see, also, Friedman 1953: 186). Since production by governments was mainly composed of nontraded goods and services, the small size of the public sector typically meant that the nontraded goods sector was a relatively small one. Consequently, a given size of an internal devaluation would have a relatively large impact on traded goods, increasing exports, reducing imports, and facilitating external adjustment.¹⁵

The Periphery—In contrast, the situation among the economies in the periphery varied. These economies were financially less developed and, therefore, needed access to international financial markets in order to finance both private and public investments. At the same time, their fiscal policy institutions lacked credibility and international investors were reluctant to lend to them at low interest rates without gold or foreign exchange clauses in loan contracts (Eichengreen and Hausmann 1999). Thus, for the capital-scarce peripheral economies, participation in a system of hard pegs, such as the gold standard, addressed the problem of dynamic inconsistency in monetary policy and acted as a "good housekeeping seal of approval," providing them access to international capital markets at lower interest rates than would otherwise have been the case (Bordo and Rockoff 1996, Obstfeld and Taylor 2003). However, external

¹⁴Goodhart (1992: 192) made a similar argument: "Governments generally abided by a balanced budget objective, which could be managed, in effect, as representing the required fiscal constraint on national policies."

¹⁵The high degree of discipline imposed by the gold standard would make it difficult to implement today. As Bordo (1992: 270) put it, "[In present circumstances] few countries [would be] willing to accept the gold standard's discipline."

shocks (mainly to commodity prices) and (especially) domestic fiscal shocks sometimes triggered a sudden stop to capital inflows to those countries, leading to currency and sometimes debt crises.

The frequency of external debt defaults was much higher for the Latin American peripheral participants, which had a proclivity for following expansionary fiscal policies, than it was for the European peripheral members, which typically ran relatively small fiscal deficits.¹⁶ In this connection, Reinhart and Rogoff (2011: 91) reported three cases of external debt default among European peripheral countries during the period 1880 to 1913: Spain in 1882, Russia in 1885, and Portugal in 1890.¹⁷ Reinhart and Rogoff also reported 19 cases of default among the Latin American periphery during the same period.

Table 1 reports data on fiscal balances, government spending, and current account balances as percentages of GDP for four European core countries (France, Germany, the Netherlands, and the United Kingdom) and three European peripheral countries that participated in the gold standard for most of the period 1880 to 1913 (Denmark, Norway, and Sweden) along with occasional gold standard participants (Italy, Spain, and Greece).¹⁸ The data are averages over the period 1880 to 1913.

Several features of Table 1 are important to mention. First, the fiscal balances were in most cases essentially in balance. Second, in most cases the share of government spending was 10 percent or less of GDP. Third, the core countries ran current account surpluses (on average), while the peripheral countries typically ran current account deficits (on average). However, the current account deficits of the peripheral countries typically were small; for each of the peripheral countries reported in the table, the current account deficit averaged below 3 percent of GDP.¹⁹ Fourth, the major exception is the case of

¹⁶Eichengreen (1994: 44) described the experiences of the Latin American periphery as follows: "Latin American countries repeatedly failed to control their fiscal policies, leading to a monetarization of budget deficits, the suspension of gold convertibility, and currency depreciation."

¹⁷Reinhart and Rogoff (2011) reported that Greece defaulted on its debt in 1893. As noted, Greece was not on the gold standard in 1893.

¹⁸The choice of countries was based on the availability of data for those countries during the period in question.

¹⁹Although, Table 1 reports average values for the period 1880 to 1913, each of the three series in Table 1 shows low volatility for each country reported in the table.

TABLE 1
 SELECTED ECONOMIC INDICATORS, GOLD STANDARD COUNTRIES, 1880–1913
 (Percentage of GDP, Period Averages)

	Fiscal Balance	Government Spending	Current Account	Inflation Rate	Nominal Debt
Core Countries					
France	-0.5	11.7	2.7	-0.1	95.9
Germany	-2.8	5.4	1.8	0.7	39.3
Netherlands	-2.0	10.0	4.5	0.1	74.6
UK	-0.1	7.6	5.1	0.1	45.9
Peripheral Countries					
Denmark	-0.6	6.3	-2.6	0.4	19.1
Italy	-1.0	13.9	0.7	0.2	104.6
Norway	-0.7	7.6	-2.7	0.9	21.4
Spain	0.2	8.8	1.6	0.4	94.9
Sweden	-0.04	6.6	-2.6	0.5	16.9
Non-Member					
Greece	-12.8	23.5	-7.1*	0.9	143.5

*Trade balance

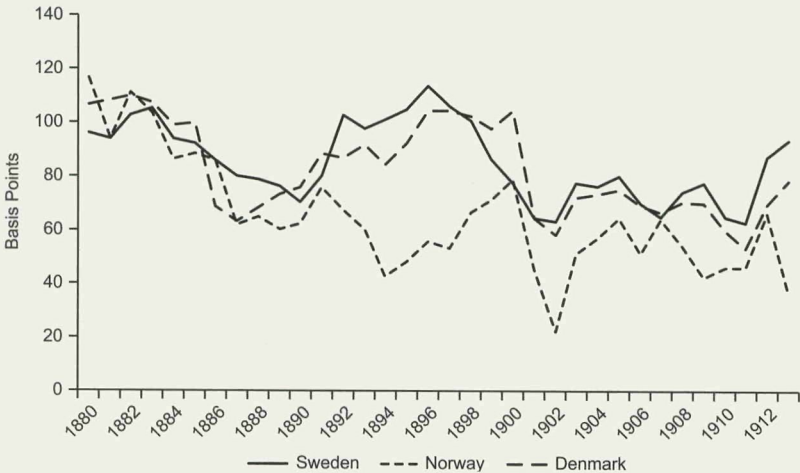
SOURCES: Martin-Acena (1994); Mitchell (2007); Smits, Horlings, and van Zanden (2000); Lazaretou (2011).

Greece, which, in an effort to build its infrastructure following centuries of occupation, consistently ran large fiscal and external deficits. It is no coincidence, therefore, that Greece, in contrast to the members of the gold standard club, suffered a series of sovereign debt and currency crises under the gold standard.

Figures 8.1 and 8.2 show (long-term) interest-rate spreads against the United Kingdom for three full-time peripheral countries—Denmark, Norway, and Sweden—along with Greece, Italy, and Spain during the period 1880–1913. Again, several points are important to highlight. Typically, spreads under the gold standard were fairly large—in the range of 100 to 400 basis points—despite the small external and fiscal imbalances of the participating countries. The case of Greece is the exception that proves the rule. It was not a member of the gold standard for most of the gold standard period, and its spreads were far above those of other European countries during the gold standard years. It also had by far the largest imbalances and the largest government sector.

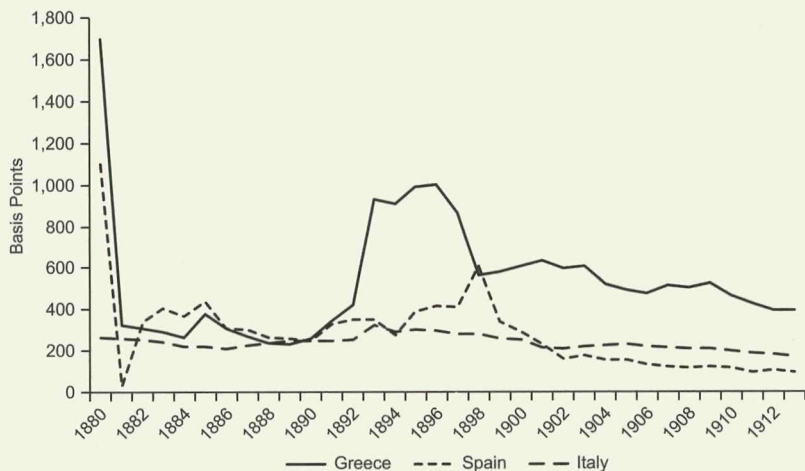
The upshot of the data on spreads is that investors drew a distinction between the sovereign risk of the core country—the United Kingdom—and the sovereign risk attached to the debt of the

FIGURE 8.1
LONG-TERM INTEREST RATE SPREADS VS. THE UK:
SWEDEN, NORWAY, AND DENMARK



SOURCE: Schularick and Taylor (2009).

FIGURE 8.2
LONG-TERM INTEREST RATE SPREADS VS. THE UK:
GREECE, SPAIN, AND ITALY



SOURCE: Schularick and Taylor (2009).

periphery. The latter debt carried a risk premium, despite the mostly sound fiscal and current account fundamentals of the countries concerned. The knowledge that sovereign credit risk—and, therefore, spreads—would rise if imbalances rose limited the size and persistence of the imbalances. In turn, these small imbalances underpinned the durability of the system.

To summarize, a key feature of the classical gold standard was the distinction between the operation of the system in the core countries and its operation in the periphery.

- In the core countries, government budgets were, for the most part, in balance. The adjustment mechanism operated through the price-specie-flow mechanism to restore external equilibria. This mechanism was reinforced, if need be, by the counter-cyclical policies of national central banks. As a result of the authorities' commitment to maintain balanced budgets and to restore external equilibria, the regime proved to be durable, with virtually no sustained runs on any of the core currencies.
- In the European periphery, attacks on currencies and sovereign defaults among the countries of the European periphery were rather infrequent events, reflecting the small external

imbalances of these countries, the size and persistence of which was limited by three factors. First, fiscal shocks were relatively small in comparison to such shocks today because of the small size of governments. Second, the adjustment mechanism for the core countries was also more or less operational for the European peripheral countries, limiting the size and persistence of external deficits. Third, as reflected in the spreads on interest rates, there was no expectation that the core countries would step in to provide debt relief to a heavily indebted peripheral country. Therefore, the debt of the European periphery was considered to contain sovereign risk, limiting the demand for such debt by foreign investors. Consequently, European peripheral countries found it difficult to finance large current account imbalances on a sustained basis.

- The experiences of Greece, which, as noted, was not a member of the gold standard club for most of the gold standard period, and the Latin American peripheral countries differed from those of the full-time European members of the club. In particular, Greece and the Latin American peripheral countries experienced frequent sovereign defaults and currency crises, typically triggered by domestic fiscal shocks.

A key implication of the experiences of the participants in the gold standard is the following: Adherence to a hard peg is no panacea and cannot be sustained without the support of *credible* fiscal institutions.²⁰

The Euro Standard

As mentioned, the effective functioning of the gold standard required a high degree of wage-price flexibility so that adjustment to external imbalances could take place. To bring about the necessary changes in wages and prices, money and credit flowed from countries experiencing external deficits to countries running external surpluses.

Ever since the work of Robert Mundell (1961) on the conditions needed to form monetary unions, the economic literature has placed a high priority on the necessity of wage and price flexibility to facilitate adjustment to external imbalance in the absence of separate

²⁰The experience of the gold standard provides clear-cut evidence for the rationale of the EU's Stability and Growth Pact.

TABLE 2
 MONEY (M3) AND CREDIT GROWTH
 (ANNUAL AVERAGES, 2001–2009)

	Greece	Germany	Euro Area
M3	8.8	5.7	7.9
Total Credit	10.0	1.9	6.6
Credit to Public Sector	0.3	-1.8	1.9
Credit to Private Sector	16.7	2.7	7.9
Current Account Balance (% of GDP)	-13.4	4.4	0.3

SOURCES: ECB Statistical Data Warehouse and European Commission Annual Macroeconomic database.

currencies and the capacity to adjust the nominal exchange rate.²¹ However, as our discussion of the gold standard has indicated, wage and price flexibility is a necessary but not a sufficient condition for the operation of a fixed exchange rate regime. What is crucial is the existence of an adjustment mechanism that triggers the necessary changes in wages and prices.

The case of Greece under both the gold standard and the euro illustrates the importance of the adjustment mechanism. As noted, Greece tried to participate in the gold standard but was unsuccessful because it could not abide by its fiscal requirements. Consequently, it was not able to benefit from the gold standard adjustment mechanism, which would have contained the external deficits. In contrast, under the euro, Greece was able, upon entry, to borrow at near-core interest rates and at the same time, in the absence of an adjustment mechanism, remain a member without undertaking fiscal adjustment.

Indeed, the case of Greece between 2001 and 2009, the year in which the Greek crisis erupted, illustrates the absence of an adjustment mechanism. Table 2 presents the average growth rates of M3, total domestic credit, credit to the private sector, and credit to the public sector for Greece, Germany, and the eurozone between 2001

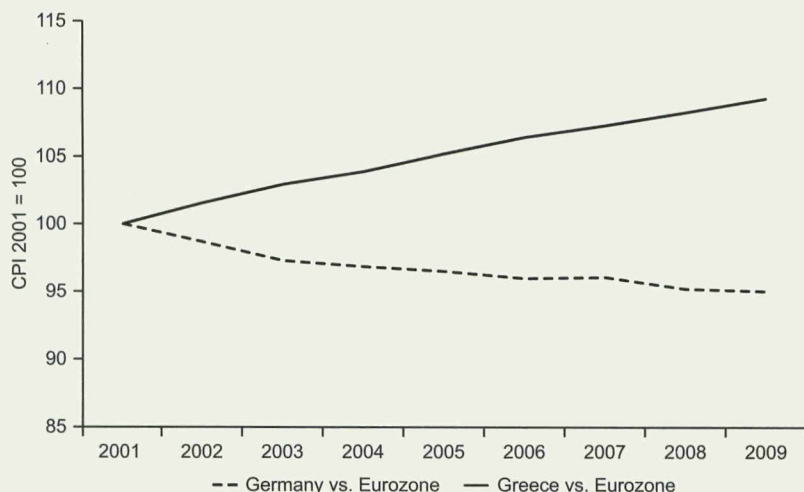
²¹Dellas and Tavlas (2009) critically assess the development of the literature on optimum currency areas.

and 2009. As shown in the table, M3 growth and credit growth were considerably higher in Greece, a country with an external deficit during the period in question, than they were in Germany, a country with an external surplus, or the eurozone as a whole, which had, essentially, balanced external accounts during that time. What is particularly striking is the much faster credit growth to the private sector (16.7 percent) in Greece than in Germany (2.7 percent). In other words, money and credit flowed in the opposite direction of that needed to bring about external adjustment.

A consequence of these flows is shown in Figure 9, which presents real (effective) exchange rates for Greece and Germany during 2001–09; since Greece and Germany share the same currency, changes in the real exchange rate mainly reflect changes in the relative domestic (consumer) prices. As shown in the figure, Greece's real exchange rate appreciated by about 15 percent against that of Germany, the opposite of what we would expect on the basis of the countries' external positions, but entirely consistent with the relative flows of money and credit in the two countries.

What caused money and credit to rise at high rates in Greece between 2001 and 2009? The data on Greek government debt and credit growth in Table 3 provide answers to that question. Several

FIGURE 9
REAL EFFECTIVE EXCHANGE RATES



SOURCE: European Commission Annual Macroeconomic Database.

TABLE 3
GREECE: SELECTED ECONOMIC INDICATORS

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Government Debt (% of GDP)	103.7	101.7	97.4	98.9	110.0	107.7	107.5	113.0	129.3
Level of Government Debt (billions of euros)	151.9	159.2	168.0	183.2	212.4	224.9	239.5	263.3	299.7
Change in Government Debt (billions of euros)	10.9	7.3	8.8	15.2	29.2	12.5	14.6	23.8	36.4
Domestic	4.4	0.0	-8.2	-4.6	-5.0	-0.2	-9.8	-1.1	6.9
Foreign	6.5	7.3	17.0	19.4	34.3	12.7	24.5	24.9	29.5
Share of Debt Held by Residents (% of total)	56.6	54.1	46.3	40.0	32.1	30.2	24.2	21.6	21.3
Domestic banks	26.9	25.1	21.6	18.3	18.5	19.2	17.1	15.2	15.5
Share of Debt Held by Nonresidents (% of total)	43.4	45.9	53.7	60.0	67.9	69.8	75.8	78.4	78.7
Total Domestic Credit Growth (%)	12.2	8.2	6.9	9.1	11.6	15.8	10.6	13.6	2.0
Credit growth (from domestic banks) to public sector	-1.0	-2.3	-3.3	-1.5	1.1	2.6	-2.2	0.7	2.8
Credit growth (from domestic banks) to private sector	13.2	10.5	10.1	10.6	10.5	13.2	12.8	12.8	-0.8

SOURCES: ECB Statistical Data Warehouse and ELSTAT.

points are especially noteworthy. First, while the stock of government debt rose by €147.8 billion from 2001 through 2009, domestic holdings of that debt declined by €22.1 billion. Foreign holdings of Greek government debt rose by €169.9 billion, accounting for more than the overall increase in debt. Consequently, the share of Greek sovereign debt held by Greek residents fell from 56.6 percent to 21.3 percent while the share held by nonresidents rose from 43.4 percent to 78.7 percent. Second, Greek banks were large net sellers of Greek government debt. At the time of Greece's entry in the eurozone in 2001, Greek banks held very large portfolios of Greek government bonds, a result of the requirements of the country's highly regulated financial system of the 1980s and 1990s rather than the banks' free choice of portfolio composition. This fact is demonstrated by the winding-down of the banks' holdings of Greek government paper following the liberalization of the financial sector that was completed in the mid-1990s. They used the proceeds received from the sale of the Greek sovereigns, in part, to lend to the private sector. Consequently, credit to the private sector surged, especially from 2001 until 2008; credit growth to the private sector accounted for the bulk of the large expansion of total credit during 2001 to 2009 (Table 2).

What underpinned the foregoing phenomenon was the perception by international investors that Greek sovereign debt carried little risk of default. The decrease in spreads on these financial instruments to about 30 basis points in the mid-2000s (Figure 1) suggests that markets indeed held such a perception. These perceptions, however, seem to have been unreasonable in the face of historical evidence linking the probability of default to the size of public debt relative to GDP. For instance, during the 1980s Latin American countries typically defaulted at public debt-to-GDP ratios that were a fraction of that of Greece. Moreover, Greece's public debt-to-GDP ratio was not only very large but was increasing during a period of above-average economic growth, a worrying pattern. The only way the low risk premia can be justified is by assuming that investors expected that the core of the eurozone would have no choice but to bail out Greece in the event of a financial/fiscal crisis. The expectation of a bailout lowered the default risk and provided an incentive to issue increasing amounts of debt.

It is this circumstance that differentiates the euro regime from the gold standard and allowed Greece to build up large external imbalances. In contrast to the euro regime, under the gold standard there

was no expectation that the core members would bail out the peripheral members. European members of the gold standard periphery, by and large, maintained low fiscal deficits and current accounts that were close to balance. If the fiscal policies of the peripheral countries were not consistent with balanced external accounts, domestic interest rates would rise and money and credit growth would slow, facilitating external adjustment. In turn, the small fiscal and external imbalances under the gold standard underpinned its durability. Countries such as Greece, the fiscal institutions of which could not conform to the system's fiscal requirements, were forced off the gold standard. The price they paid for fiscal profligacy was much higher interest rates than the peripheral participants of the gold standard.

The above process did not operate in the eurozone because investors did not draw a distinction between the sovereign debt of the core countries and the sovereign debt of the peripheral countries, such as Greece. Consequently, there was no mechanism to adjust money and credit growth, and Greece was able to run large current account and fiscal deficits without taking remedial policy measures. This behavior resembled that of the Latin American countries and of European countries (such as Greece) that were not members of the gold standard.

Conclusion

The experiences of the core and periphery countries under the classical gold standard are relevant for the eurozone. The behavior of the core participants has been quite similar across the two monetary arrangements (i.e., small budget deficits, or even surpluses, and sustainable current-account balances). Under the gold standard, European peripheral countries ran current account deficits, but the size of those deficits was small relative to those experienced by Greece under the euro. They were small because fiscal shocks were smaller and, more importantly, because the adjustment mechanism while imperfect, worked to mitigate the buildup of external imbalances. Countries with external deficits would experience higher interest rates, a loss of gold reserves, and lower money and credit growth. The resulting reduction in wages and prices would contribute to the restoration of trade competitiveness.

This mechanism was not operative in the case of Greece under the euro. In the eurozone, the market's perception that Greek sovereign

debt represented a safe investment—probably founded on the expectation of a bailout by core countries—suppressed the effect of sovereign credit risk on Greek interest rates. At the same time, low interest rates greased the wheels of fiscal expansion by sending the message that there was no price to be paid for the buildup of sovereign debt. Hence, while external imbalances were essentially self-correcting under the gold standard, they were self-perpetuating in the eurozone due to the perception of an absence of credit risk.

We draw two main conclusions. First, the durability of a monetary union is crucially dependent on the existence of a well-functioning adjustment mechanism. Second, adherence to a hard peg is no panacea and cannot be sustained without the support of credible fiscal institutions.

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