Country Risk, Currency Risk, and the Gold Standard

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Can policymakers enhance credibility by adopting hard currency pegs? Emerging-market borrowers may be able to borrower at lower rates if the adoption of fixed exchange rates confers credibility. A hard peg could potentially impact two components of sovereign yield spreads: (1) country risk and (2) currency risk. While there is a large modern literature analyzing this issue, there is little historical evidence on the relative importance of country risk and currency risk on sovereign yield spreads. The pre-World War I gold standard provides a natural testing ground for this question since it is, arguably, the most important and well-known hard peg in modern history. Using a new database of over 250,000 observations of weekly sovereign debt prices from the period 1870-1913, we examine the movement in sovereign yields denominated in *both* local currency and pounds sterling (or gold) in order to credibly identify the country-risk and currency-risk components of sovereign yield spreads. Our analysis indicates that the gold standard was not a very credible monetary regime in many of the largest emerging markets of the gold standard period. Years after a country joined the gold club, local currency bonds often traded at significantly higher interest rates (roughly 500 basis points more) than a country's foreign currency debt denominated in pound sterling. We find some evidence that the spread between a country's local currency and sterling bonds declined in the years leading up to gold standard adoption, although the effect was statistically insignificant in the analysis of event studies. Consistent with this result, we find little empirical evidence that adopting the gold standard lowered country risk.

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I. Introduction

Can policymakers enhance credibility by adopting hard currency pegs? Countries may be able to borrower at lower rates if the adoption of fixed exchange rates confers credibility. This may be particularly important for emerging-market countries since interest rates for sovereign borrowing tend to be higher than those for high-income countries. Lower yield spreads for emerging-market countries can translate into lower rates of borrowing, which in turn can stimulate investment and economic growth (Schmukler and Seven, 2002).

The analysis of sovereign-debt yield spreads is central to the debate about exchange-rate regime choice. Proponents of fixed exchange rates argue that they significantly reduce the premium on emerging-market debt. This premium has two components: (1) country risk and (2) currency risk.[1] Country risk represents the risk that an emerging market country will default on its debt obligations, while currency risk represents the compensation that an investor receives for an adverse movement in the exchange rate of a local-currency bond (Domowitz, Glen, and Madhavan, 1998). Advocates of hard pegs (such as currency boards, dollarization, and currency unions) argue that these currency regimes can reduce the currency risk premium, and may even eliminate it if the monetary regime is perfectly credible.[2] On the other hand, the currency-risk premium may remain positive if the hard peg is not considered perfectly credible by financial markets (Schmukler and Serven, 2002, Edwards, 2000).

[1] There is a large empirical literature in international and development economics on the country-risk and/or currency-risk components of yield spreads for emerging market debt. For example, see Edwards (1984, 1986), Mauro, Sussman, and Yafeh, (2000, 2006), and Sturzenegger and Powell, (2000).
[2] Additionally, fixed exchange rates may reduce the probability of speculative attacks and contagion effects.

The debate over fixed exchange rates is certainly not a new one. Indeed, there is a large historical literature on the effects of joining the gold standard during the age of the first global capital market, 1870-1913. In an influential paper, Bordo and Rockoff (1996) argue that the gold standard was a "good housekeeping seal of approval." Adherence to the gold standard was a signal to financial markets that a country was committed to prudent monetary and fiscal policies. They find that sovereign yield spreads (defined as the representative long-term interest rate for country *i* minus the "risk-free" rate on the British consol) were 40 basis points lower for emerging market countries that adopted the gold standard. In a subsequent study that used a larger sample, Obstfeld and Taylor (2003) also found that gold standard adherence signaled credibility and reduced country borrowing spreads for the pre-World War I gold standard.[3]

Some recent research has criticized the "good housekeeping" hypothesis on the basis of omitted variables and sample selection bias. Flandreau and Zumer (2004), for example, find that adherence to the gold club did not reduce interest rates for a sample of 17 large borrowers during the gold standard period once a broader range of economic variables is included in the empirical analysis. They suggest that the real debt burden and economic growth of a country were more important indicators of credit worthiness than membership in the gold club. Ferguson and Schularick (2006) find that the gold-standard effect disappears once the sample of sovereign borrowers is expanded to include many smaller countries in the periphery of the world economy. They conclude that the gold standard was a "thin film" that investors look through to assess sovereign risk in the first global capital market.

[3] Mauro, Sussman, and Yafeh (2002) find that interest rates in Japan fell dramatically after the country joined the gold standard in 1897.

Although this research has greatly increased our understanding of the determinants of yield spreads during the classical gold standard, it has not separately identified the country and currency risk components of yield spreads.[4] That is, recent studies have estimated the "gold standard effect" by only looking at hard currency debt or including hard currency (sterling denominated debt) and domestic debt (paper and gold obligations) in the same regressions. This paper offers an alternative identification strategy for measuring country and currency risk during the pre-World War I gold standard. We follow the methodology of international economists used to examine modern-day emerging-market spreads, and measure the country risk premium by computing the yield spread between a sovereign bond denominated in a foreign currency (in our case, pounds sterling or French francs) and the risk-free rate (the British consol). We also compute the currency risk premium as the spread between a country's local-currency sovereign debt and its debt issued in gold, pound sterling, or French francs on international markets.[5] Using a new database of more than 250,000 weekly observations collected from *The Economist*, *The Commercial and Financial Chronicle*, and other financial newspapers, we display a series of graphs (ocular regressions) and employ event studies to investigate the time-series behavior of sterling-denominated and local-currency yields spreads on the London capital market in the weeks, months, and years before and after a country adopted the gold standard.

[4] There is, however, a growing literature in economic history on foreign currency debt and the policies that emerging markets can implement so that they can issue debt in their own currency. Another line of research focuses on the role of foreign currency debt in financial crisis (Bordo, Meissner, and Redish 2005; Bordo and Meissner, forthcoming).

[5] Domowitz, Glen, and Madhavan (1998) find that changes in country and currency risk components are weakly correlated, suggesting that the two risk measures reflect distinct economic factors.

We divide our sample into two groups: (1) countries with gold or sterling denominated debt and (2) countries with local currency and sterling (gold) denominated debt. We use the first group to measure the country risk premium, while the second group gives us insight into the currency risk component associated with holding the sovereign debt of a particular country. Short-run event windows of less than two years are used to capture the "adoption effect" of joining the gold standard. Event windows of two to eight years are employed to capture long-run adherence to the monetary rule and credibility of the exchange rate regime. If sovereign bond markets were well-informed and efficient, then according the good-housekeeping hypothesis, yield spreads should fall for all sovereign debt, since joining the gold standard encouraged countries to adopt sound fiscal and monetary policies.[6]

Our preliminary results suggest that joining the gold club did not entirely eliminate the interest rate differential between a country's local currency debt and bonds issued on international capital markets. Five years after a country joined the gold standard, the spread between a country's paper and gold bonds averaged nearly 500 basis points. The existence of a large currency premium after countries adopted the gold standard suggests that financial markets believed that the hard peg was not fully credible. Investors still considered devaluation and departure from gold a high probability event in emerging markets. Graphical evidence suggests that adopting gold may have reduced the interest-rate differential between a country's local currency bonds and its sterling denominated debt, although we do not find support for this hypothesis using a battery of event studies. We emphasize that our results, at this stage, are quite preliminary since

[6] We assume that the "good housekeeping seal of approval" hypothesis applies to both the country- and currency-risk components of yield spreads given that Bordo and Rockoff (1996) do not explicitly discuss the implications of their argument for each part of the yield spread.

they are based on the six emerging market countries for which we had data on paper (domestic currency) bonds; however, the power of our statistical tests should increase as we expand the sample of paper bonds in a future draft. Finally, consistent with this result, we find little empirical evidence that adopting the gold standard lowered country risk.

The paper is organized as follows. We first discuss the recent literature on the gold standard and whether it reduced the cost of borrowing in international capital markets. We then describe the new weekly database on sovereign debt prices and how we will use it to analyze the effects of adopting the gold standard. Section 3 provides a series of country and panel event studies to estimate the effect of joining the gold standard on long-term yield spreads. Finally, the paper concludes that the primary effect of joining the gold standard was to reduce currency risk rather than country risk.

II. The Gold Standard as a Rule

A. Theoretical Background

Bordo and Kydland (1995) provided an interpretation of the role of the gold standard as it relates to the literature on rules for policymakers. Accordingly, being on the gold standard tied the hands of the fiscal and monetary authorities of a country. The monetary rule served as a credible commitment mechanism that solved the classic time-inconsistency problem (Kydland and Prescott, 1985). Government policy is said to be time inconsistent when a policy plan that is determined to be optimal and to hold indefinitely into the future is subsequently revised. For example, suppose that a

government sells debt to finance a war. The government has the option to default on the debt and gain revenue in the short run. However, this is a time-inconsistent policy since it will be more difficult for the government to issue debt in the event of a future war or other well-understood emergency. On the other hand, policies that are set period-by-period are said to be discretionary and can produce very different results from time-consistent policies. In comparison to policies set period-by period, time-consistent policies often produce higher social welfare and ensure long-run price stability.

Bordo and Kydland (1995) also argue that the gold standard had an escape clause. Countries could suspend specie convertibility in the event of a war or a fiscal emergency; however, after the war or extraordinary event, it was well understood that a country would return to specie convertibility at the pre-war parity. Generally, resumption occurred after a "reasonable" delay period during which a country would impose deflationary policies to retire fiat currency printed for war finance. The United States and France, for example, fought wars in the 1860s and 1870s and issued large amounts of irredeemable paper currency and debt. Following the end of the war, both countries imposed deflationary policies to restore convertibility following the cessation of hostilities, and both had returned to a specie standard by 1880. Bordo and Kydland (1995) conclude that the gold standard was a contingent rule with an escape clause.

B. Empirical Implications

One testable implication of the gold standard as a rule is that adherence to the monetary rule lowered the cost of capital in international capital markets. As noted

above, the empirical evidence is unclear as to whether joining the gold standard reduced interest rates for sovereign borrowers during the gold standard. The empirical results appear to be sensitive to the sample of countries used in cross-sectional studies as well as to the econometric methodology. The divergent results may reflect two underlying issues. First, gold-standard adoption is an endogenous variable that depends on a host of country-specific factors that may also change depending on whether the country is on the gold standard. For example, high-income countries such as England, France, and the United States joined the gold club in the nineteenth century. A gold dummy that is supposed to measure the "beneficial" effects of the monetary rule may be capturing the advantages of good institutions and stable political regimes of high-income countries. Second, earlier studies have not separated the effects of country risk from currency risk in sovereign yield spreads.

We propose two solutions to these empirical problems. First, we examine the time-series behavior of high frequency (weekly) sovereign yield spreads in the weeks, months, and years before and after a country adopted the gold standard. The event study approach side-steps the endogeneity problems of cross-sectional studies: in these studies, it is difficult to identify a "gold-standard" effect because the fixed-exchange rate regime is highly correlated with a host of macroeconomic variables, including the inflation rate, the level of income, and measures of political stability.

Second, we examine the currency risk premium, which is defined as the current yield of country *i*'s bonds denominated in *domestic* currency over its sterling-denominated or gold-denominated debt. This allows us to isolate country risk from currency risk. Moreover, by examining interest-rate differentials between two bonds of

the same country, where the primary difference between the obligations is their currency denomination, we can largely eliminate the need to control for observed and unobserved differences in sovereign-specific fundamentals – something that has been difficult to account for fully in cross-country studies of country risk.[7] The spread between a country's local currency bonds and its sterling denominated debt should largely reflect devaluation risk associated with leaving a hard peg.

The currency risk premium is an important measure of credibility that cannot be identified by examining country risk.[8] If a country credibly commits to joining the gold standard, then the probability of an exchange rate devaluation should be zero, which implies that "paper bonds should be as good as gold": that is, the interest-rate differential between a country's local currency and sterling bonds should be zero (Obstfeld and Taylor, 2003). A large spread of local currency over sterling denominated debt after the introduction of the gold standard, however, would suggest that the commitment to the fixed exchange rate was not seen as a credible monetary regime by financial markets.

There are a couple of potential shortcomings with the use of the currency risk premium as a methodology for identifying devaluation risk of a hard peg. The presence of capital controls might drive a wedge between a country's currency bonds and sterling denominated issues that traded on the London exchange. Indeed, the presence of capital controls has made it more challenging to analyze the credibility of modern hard pegs. Fortunately, for our analysis, the gold standard was a period of unfettered capital markets

[7] Empirical studies of sovereign risk during the gold standard have found the ratio of debt-to-revenue, budget deficit, and exports per capita to be important determinants of yield spreads (Ferguson and Schularick, 2006; Flandreau and Zumer, 2005).

[8] Some studies have measured the credibility of the gold standard in core countries by estimating "target zones" that use short-term interest rates and parity conditions between two countries to estimate expected devaluation. Unfortunately, this methodology cannot be used for many emerging markets because short-term interest rates are not available.

that were largely free of government intervention. The currency risk premium might also reflect differential default risk rather than devaluation risk if there is a greater probability of defaulting on a domestic currency bond than a sterling denominated issue. This is probably not a significant problem with our sample of countries, however, given that most large emerging market borrowers faithfully serviced their gold and paper bonds for the entire gold standard period. The two possible exceptions are Argentina and Brazil, which defaulted on their debt obligations in 1890 and 1898, respectively. In both instances, however, Argentina and Brazil defaulted on their sterling (gold) and paper bonds employed in our analysis, suggesting that differential default risk is not likely a significant problem for our sample.

III. Data and Time-Series Plots

A. Summary and Descriptive Statistics

To analyze the effect of the gold standard on sovereign yield spreads, we assembled a new database of more than 250,000 weekly observations on bond prices. The database includes the universe of sovereign listings reported in *The Economist* from November 5, 1870 until June 30, 1914. We supplement *The Economist* database with weekly bond yields from *The Commercial and Financial Chronicle*. For domestic bond markets, we collected monthly and weekly interest-rate data from financial newspapers located in the country of interest. We report the full range of data sources in the Appendix of the paper.

Table 1 presents a timeline of gold standard adoption for every country that joined the gold standard in the period 1870-1914 and had bonds that actively traded on the London Stock Exchange. Column 1 gives the date of gold standard adoption that we define as the day that the monetary authority for a given country initiated or resumed specie convertibility. Column 2 lists the period of gold standard adherence for the 15 sovereign borrowers in our sample. We limit our analysis to adoption and adherence episodes where a country remained on the gold standard for at least 2 years.[9] Details of gold standard adoption dates for each country are given the Appendix.

Tables 2 through 5 present summary tables of descriptive statistics of yield spreads for each country. We calculate two different yield spreads to measure various types of risk associated with investing in emerging market debt. The country risk premium is defined as the interest-rate differential between a country's foreign currency bonds and the "risk-free" British consol rate. The country risk premium represents the risk that a country will default on its debt obligations. The currency risk premium is measured as the spread between a country's local currency bonds and the interest-rate on its foreign currency (sterling) debt. The currency risk premium represents the compensation that an investor receives because of the possibility of an expected depreciation in the exchange rate of a local-currency bond.

We calculate current yields for the "representative" long-term interest rate for each country in our sample by dividing a bond's coupon by its price in period t. The summary tables report average interest-rate differentials (in basis points) for 10- and 4-

[9] We do not consider adherence to the gold standard for a period of less than two years to be a credible attempt to join the monetary rule. Although our choice of two years is arbitrary, the decision rule was selected to eliminate short-lived attempts by Argentina, Brazil, and Greece to join the gold club during the late nineteenth century.

year windows or the largest available window. The windows are centered on the day that a country joined the gold standard except in a few cases where data constraints prevented the construction of a symmetric window. The 4- and 10-year windows are designed to measure long-run adherence to the gold standard. Each table reports the average yield spread (in basis points) for the 10- or 4-year window (or largest available sample period) for each sovereign borrower along with the average interest-rate differential in the window before and after a country joined the gold club. Column 4 shows the change in the interest-rate differential from the pre- (off-gold) and post-event (on-gold) periods. If joining the gold club reduces yield spreads and is a "good housekeeping seal of approval," then yield spreads should decline in the "on-gold" period. Column 5 reports the number of observations in each window.

Table 2 shows that the country risk premium declined an average of 40 basis points in the five years after a country joined the gold standard. The 40 basis point figure is identical to the size of the "gold standard effect" estimated by Bordo and Rockoff (1996). Argentina and Turkey experienced more than a 200 basis point drop in their country risk, while the premium for Greece fell more than 125 basis points in the sample period after the sovereign borrower joined the gold. The large drop in country risk for Argentina may also reflect the long-awaited economic recovery from the Baring Crisis. The resolution of a debt crisis and the establishment of foreign financial control could help explain part of the decline in the yield spreads for Greece and Turkey (Mitchener and Weidenmier, 2005). The country risk premium for Brazil, Egypt, Italy, Nicaragua, and Russia decreased between 20 and 80 basis points in the "on gold" period. The interest-rate differential changed very little for Austria, Ceylon, India, Mexico, Sweden,

and South Africa (Cape of Good Hope) after these countries joined the gold club. Costa Rica was the only the sovereign borrower in the sample where the yield spread increased in the post-event period, rising by more than 163 basis points. The large rise may reflect political instability in the region in the late 1890s.

Summary statistics for the 4-year window, presented in Table 3, show that country risk dropped an average of approximately 26 basis points in the two-year period after a country adopted the gold standard. The country risk premium declined for 12 out of 15 emerging market borrowers --yield spreads increased for India, Nicaragua, and South Africa. Turkey is the only country where the yield spread declined by more than 100 basis points. The simple summary statistics from Table 3 show that the decline in interest-rate differentials was less than half the size of the drop in the 10-year windows.

As for the currency risk premium, tables 4 and 5 provide some preliminary evidence on this hypothesis from a sample of six large emerging market borrowers: Argentina, Austria, Brazil, India, Mexico, and Russia. The average currency risk premium for the three sovereign borrowers declined more than 94 basis points in the "on-gold" period of the 10-year window and more than 50 basis points in the four-year window after a country adopted the hard peg. The currency risk premium is also capturing a factor that is largely distinct from the determinants of country risk given that the correlation between the change in the currency risk premium and the country risk premium is less than 0.20 for the six emerging market countries in the sample.

There is substantial cross-sectional variation in the currency risk premium in our sample of six emerging market borrowers. For example, the currency risk premium for Argentina decreased more than 350 basis points in the on-gold period while the yield

spread for Mexico fell more than 200 basis points when the two countries joined the gold club in the 10-year event window. The interest-rate differential for India, on the other hand, declined approximately 35 basis points in the 10- and four-year windows, which represents about a 15 percent decline in its yield spread over the sample period. Currency risk for Austria fell by more than 40 basis points in the 10-year window after the country joined gold, but was generally stable in the 4-year window. The currency risk premium for Brazil and Russia did not significantly change in four- or 10-year event windows.

B. Figures and Ocular Regressions

Although the descriptive statistics are informative, they only present average yield spreads before and after a country joined the gold standard. It may be the case that yield spreads declined between the pre- and post-event period, but a movement in the underlying trend is masked by using average interest-rate differentials. To provide some perspective on this question, Figures 1-22 show time-series plots of yield spreads for each debt issue in the sample. The vertical line in each figure denotes when a country joined the gold standard. The first fifteen figures show the country risk premium for our sample of sovereign borrowers. Country risk for Argentina, presented in Figure 1, shows a general decline in the pre and post-event periods. As shown in Figure 2, country risk for Austria decline from approximately 180 basis points in 1888 to about 140 basis points when it adopted the gold standard. The yield spread for Austria was quite stable for the remainder of the 10-year window. Country risk for Brazil, presented in Figure 3, declined from more than 450 basis points to 150 basis points in the 10-year period surrounding the

country's adoption of the gold standard. Figure 4 shows that country risk for Ceylon jumped precipitously in 1903. The large movement reflects a reduction in the interest rate on the British consol from 2.75 to 2.5 percent. Otherwise, the yield spread fluctuates between 60 and 90 basis points for the British colony and gives little hint of a "gold standard effect." The country risk premium for Chile, shown in Figure 5, actually increased in the period that the sovereign borrower adhered to the gold standard. The interest-rate differential actually declined after the country abandoned the monetary rule in July 1898. The country risk premium for Costa Rica, presented in Figure 6, is quite volatile and does not possess any obvious pattern before and after joining the monetary rule.

Figures 7 and 8 show that country risk for Egypt and Greece possessed a downward trend in the five-year period after the two sovereign borrowers joined the monetary rule. Figure 9 indicates that the country risk premium increased for India in the years leading up to gold standard adoption, but then the yield spread began to fall after the British colony joined the gold club. Figure 10 presents the country risk premium for Italy. Country risk declined over the entire sample period, although some of this effect may be driven by France's adoption of the gold standard given that Italian bonds were denominated in francs. Figures 11 and 12 show that the country risk premium for Mexico and Nicaragua remained quite flat over the pre- and post-event periods. This possibly suggests that financial markets did not view these two countries' commitment to the gold standard to be very credible. Country risk for Russia, presented in Figure 13, declined in the pre-event period but then stablized in the five-years after the country joined the gold club. The decline in the pre-event period may reflect the effects of

important monetary and fiscal reforms in the early 1890s that prepared the country for gold standard adoption in 1897 (Mauro, Sussman, and Yafeh, 2006).

Country risk for South Africa and Sweden, Figures 14 and 15, fluctuated within a very narrow range before and after the two countries joined the gold standard. The lack of an apparent "gold standard effect" may possibly be attributed to the fact that Sweden and South Africa were already pursuing time consistent monetary and fiscal policies before they joined the gold standard. Figure 16 shows that country risk for Turkey initially declined after the country settled with its foreign creditors following a debt default in the late 1880s. After this point, the interest-rate differential remained flat for the remainder of the sample period. In general, the country risk premium for the sample of 16 sovereign borrowers appears to have possessed a slight downward trend for some, but not all, of the emerging markets over the 10-year window. The apparent reduction in interest-rate differentials over the 10-year period may reflect "a gold standard effect" or some other economic factor that explains the increase in financial market integration in the first global capital market, 1870-1914.

Figures 17-22 show the currency risk premium for Argentina, Austria, Brazil, India, Mexico, and Russia. The currency risk premium provides some insight into the credibility of the classical gold standard. As noted above, if a hard peg is perfectly credible, then the yield spread between a country's local currency bonds and its debt denominated in pound sterling should fall to zero. As Figures 17-22 show, this is clearly not the case for our sample of six emerging market countries.[10] The currency risk premium for Argentina, presented in Figure 16, declines substantially in the years leading

[10] We are in the process of adding more emerging market countries to expand our sample of local currency bonds. We plan to add weekly or monthly bond yield data for Chile, Greece, Italy, and Japan.

up to the country's adoption of the gold standard in 1899. However, the currency risk premium remained at approximately 1,000 basis points after the country adopted the gold standard in October 1899. The interest-rate differential between Austrian paper and gold bonds, shown in Figure 18, displays similar time-series behavior. Although exchange rate risk declined markedly as the country adopted the gold standard in 1892, the currency risk premium averaged approximately 120 basis points in the 5-year period after the country joined the gold club.

Figure 19 shows the currency risk premium for Brazil. The yield spread averaged approximately 100 basis points before and after the South American country joined the gold standard. For India, the interest-rate differential between rupee and sterling denominated debt, presented in Figure 20, averaged 240 basis points in the five years after the country joined the gold club. There is also a large currency risk premium for Mexico after the country joined the gold club and experienced a large decline in the interest-rate differential between its local and sterling denominated bonds. As shown in Figure 21, the currency risk premium for Mexico averaged almost 500 basis points in the 5-year period after the country joined the gold standard. Figure 22 shows the currency risk premium for Russia. The Russian currency risk premium is quite stable over the 10-ear window and averaged more than 800 basis points in the pre-gold and gold standard periods. Overall, the large currency risk premium observed in our sample of six, emerging-market borrowers suggests that investors did not consider the gold standard to be a very credible hard peg.

In addition, we have collected some local and foreign currency yield data for Chile to provide some additional insight into the currency risk premium for emerging

market borrowers during the gold standard.[11] Figure 23 shows the yearly interest-rate differential between Chile's internal peso bonds and its external sterling bonds from 1892-1903. The South American country joined the gold standard in 1895 and remained on the hard peg for less than four years. The currency risk premium averaged more than 583 basis points while the country adhered to the gold standard. The large interest-rate differential suggests that the hard peg was not very credible. This may help explain why Chile was on the gold standard for such a short period of time.

We interpret the descriptive statistics and ocular regressions of country and currency risk as evidence that the primary effect of the gold standard was to reduce a sovereign borrower's currency risk premium. The analysis also suggests that the gold standard was not very credible for many emerging market countries since the interest-rate differential between a country's local currency debt and its sterling bonds often remained more than two or three hundred basis points years after a country joined the gold standard. The gold standard may also have reduced country risk, but this effect appears to have been of secondary importance. We now turn to an event studies analysis in order to estimate, more precisely, the short-run and long-run effects of gold standard adoption on interest-rate differentials during the period 1870-1914.

IV. Event-Study Analysis

To estimate the gold-standard effect, we employ a series of event studies using a "market" model of bond yield changes over a 10-year period or the largest available

[11] Bordo and Rockoff (1996) discuss the relationship between Chilean internal peso bonds and its sterling denominated external debt, but do not interpret the interest-rate differential as a measure of the currency risk premium and its implications for the credibility of the hard peg.

sample. We use this approach to measure the relative importance of country risk and currency risk for 16 emerging market countries during the gold standard.[12] We look at changes in yield spreads rather than the determinants of interest-rate differential to test whether adherence and adoption of the gold standard led to significant changes in country and currency risk. The empirical models for the country and currency risk specifications can be written as follows:

$$YIELDSPREAD_{it,CR,CUR} = \beta_0 + \beta_1 \Delta CONSOL_t + \lambda_{i,CR,CUR} GOLD_{it} + \varepsilon_{it} \quad (1)$$

where the dependent variable is either the change in the country (CR) or currency risk premium (CUR) for country i from the previous week *t*. β_0 is a time-invariant constant, β_1 measures changes in the overall market on the yield spread, and λ_1 is an "event window" indicator variable that captures the effect of joining the gold standard on the country (CR) or currency risk (CUR) sample. The white noise error term is given by ε_{it}.

We estimate the long-run "adherence effect" or the "good housekeeping" effect of the gold standard (for country risk and currency risk) by examining event windows of the two, three, and four-years, both before and after a sovereign borrower joined the gold standard. Then, we combine the pre- and post-event windows to estimate four, six, and eight-year windows that cover both the "on-" and "off-gold" periods. To capture the "adoption" or announcement effect of the gold standard on yield spreads, we employ a similar strategy except the event windows cover shorter periods: three, six, and 12

[12] Our sample includes the following countries: Argentina, Austria, Brazil, Ceylon, Chile, Costa Rica, Greece, India, Italy, Mexico, Nicaragua, Russia, South Africa (Cape of Good Hope), Sweden, Turkey, and United Kingdom (for the consol rate).

months. The event study analysis allows us to determine if investors and financial markets at that time considered the gold standard as a credible commitment mechanism that lowered interest-rate differentials in international capital markets. If they considered adherence to gold a signal of financial rectitude, then yield spreads should significantly fall. Since we do not have home currency bonds for all countries, equation (1) is estimated using two different samples: (1) those for which we can compute country risk and (2) those for which we can compute currency risk. The country risk models include yield spread data on 16 countries while the models with the currency risk premium include data on five countries.[13] We estimate separate pooled OLS and country fixed effects models – the latter to control for unobserved heterogeneity across countries. All models are estimated with robust standard errors.

The results for the long-run event studies appear in Tables 6 and 7. Table 6 shows that changes in British consols (the market control) did not have a statistically significant effect on yield spreads in the pre-event period.[14] The point estimate for the effect of the gold standard on the country risk premium has the "wrong" sign (positive) in the six different empirical specifications. A slightly different story emerges from the long-run event study of the currency risk premium that appears in Table 7. In all six specifications, the currency risk premium is positively and significantly correlated with changes in the market interest rate. The coefficient estimates on the event dummies are also negative and economically large, suggesting that adopting the gold standard reduced the currency risk premium by at least one-half a basis point per week. However, the event dummies are not

[13] We did not include Brazil in the empirical analysis reported in the paper given its small sample size. However, the empirical results are robust to including Brazil in the sample.
[14] In the future, we also plan to supplement the empirical analysis with capital-asset pricing models (CAPM).

significant at the five- or ten-percent levels. The statistical insignificance of the event dummies in the currency risk premium regressions may reflect the fact that our tests have weak power since they are currently based on data for only six countries with 2,175 observations (as compared to the country risk event studies that have 16 countries with more than 7,000 observations).

Tables 8 and 9 present the empirical results of the effects of long-run adherence in the post-event period. Again, we find that changes in the market interest rate and the event dummies are not statistically significant in the country risk regressions. The post-event indicator variables, however, suggest that joining the gold standard reduced sovereign yield spreads in all six specifications. As for the currency risk premium, the results are similar to those reported in the pre-event analysis. The interest-rate differential is positively and significantly correlated with changes in the market control. The "on-gold" dummies are negative and economically large in four out of six regressions, but not statistically significant.

Tables 10 and 11 reports the empirical results for the long-run windows that combine the pre- and post-event windows in Tables 6 through 9. None of the event dummies is statistically significant at the five- or 10-percent level in the country risk regressions. Four of the specifications indicate that country risk increased in the period surrounding gold standard adoption. As for the models of the currency risk premium, the event dummies are economically large, suggesting that joining the gold club lowered currency risk. However, we find that the event dummies are not statistically significant at conventional levels.

Our preliminary empirical analysis of yield spreads using long-run event studies suggests a couple of conclusions. First, there is little evidence that adherence to the gold standard significantly reduced the country risk premium. Second, the size and negative sign on the event dummies in the currency premium regressions suggest that joining the gold standard may have had a significantly reduced currency risk; however, we will need to expand our sample size in order to test whether this effect is statistically significant. The preliminary results suggest that the primary effect of the gold standard, if one exists, was to reduce the interest-rate differential between a sovereign's local currency bonds and external debt.

We now turn to the short-run event studies to measure the "adoption effect" of joining the gold standard. Tables 12 and 13 show the empirical results of the short-run event windows for three, six, and 12 months in the pre-event period. Interest-rate differentials did not significantly respond to changes in the consol market in the country risk regressions. The three, six, and 12 month event dummies have the wrong sign and suggest that country risk increased in the period leading up to gold standard adoption. The three-month dummy variable was significant at the 10-percent level. In Table 12, the country risk premium is positively and significantly correlated with changes in the market control. The event dummy variables of three, six, and twelve months are not statistically significant at the five- or ten-percent level.

The results for the post-event window are reported in Tables 13 and 14. The country risk premium is not significantly correlated with changes in the consol market. Although the three post-event dummies are not statistically significant in the pooled OLS

or fixed effects models, the coefficients are large, and suggest that joining the gold club reduced yield spreads by at least 1 basis point per week.

We find similar results in our analyses of the currency risk premium. The interest-rate differential is positive and significantly correlated with the market variable. The event dummies are not statistically significant, but the magnitude of the currency-risk effect is large. The coefficient estimates suggest that adopting the gold standard lowered yield spreads by one-half basis point per week in the three-month post-event window, 0.2 basis point per week in the six-month post-event window, and 0.6 basis points in the one-year event window.

Tables 15 and 16 combine the pre- and post-event windows for the short-run analysis. The country risk premium is not significantly correlated with changes in the market control. The event dummies are also not statistically significant at the five- or 10-percent levels, although the indicator variables are economically significant. The point estimates suggest that joining the gold standard reduced yield spreads by 0.15 basis points per week in the six-month period, 0.13 basis points per week in the one-year period, and 0.44 basis points in the two-year window. As for the currency risk premium, we find that the interest-rate differential is positive and significantly correlated with changes in the market control. The event dummies are positive with the wrong sign and are not statistically significant in the six different specifications.

Our preliminary empirical analysis suggests that joining the gold standard did not have a statistically significant effect on the country or currency risk premium in the period right around the adoption date. As we noted in our discussion of the adherence or long-run effects, it may be the case that, after we expand our sample of emerging market

borrowers with debt issued in domestic currency that the currency risk effect will be statistically and economically significant. On the other hand, if the current results hold, they may suggest that countries adopted the gold standard for a reason other than to lower the cost of borrowing in international capital markets. For example, Lopez Cordova and Meissner (2003) suggest that countries may have adopted gold to increase trade; they show that joining the gold standard increased trade by approximately 30 percent during the period 1870-1913.

V. Conclusion

Did joining the gold standard improve a country's credibility and reduce interest-rate differentials in capital markets? This paper offers new evidence to address this question by decomposing sovereign yield spreads during the classical gold standard period into its country and currency risk components. Using a new database of more than 250,000 sovereign debt prices, we examine the time-series behavior of two different types of yield spreads to identify country and currency risk premium associated with investing in emerging markets during the first global capital market, 1870-1914. Our preliminary results from descriptive statistics, ocular regressions, and a battery of event studies suggest that the gold standard was not a very credible monetary regime given the large interest-rate differential between a country's local currency bonds and its sterling denominated debt years after a country joined the gold standard (approximately 500 basis points). Although graphs of the currency risk premium for individual countries suggest that it may have declined in the period leading up to a country's adoption of the gold

standard, the event studies based on our current sample of countries does not find this effect to be statistically significant. Consistent with the large currency risk premium found in our sample of emerging markets, we find little empirical evidence that joining the gold standard significantly reduced the country risk premium.

In the future, we plan to expand our sample of local currency bonds to include several additional emerging markets to provide further evidence on the global credibility of the classical gold standard. The large currency risk premium in emerging markets probably also explains why so many bonds issued in international capital markets during this period were denominated in pound sterling. Risk-averse investors were concerned that a depreciation in an emerging market bond denominated in a local currency might erode the return on their investment in foreign government securities. The evidence presented here suggests that it may be useful for future research to consider the economic and political determinants of currency risk during the gold standard period.

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Table 1

Timeline of Gold Standard Adoption and Adherence

Country	Date of Adoption	Dates of Adherence
Argentina	October 31, 1899	10/31/1899-8/2/1914
Austria	August 2, 1892	8/2/1892-8/4/1914
Brazil	October 15, 1906	10/15/1906-12/12/1914
Ceylon	September 26, 1901	9/26/1901-9/4/1914
Chile	June 1, 1895	6/1/1895-7/11/1898
Costa Rica	October 26, 1896	10/26/1896-9/18/1914
Egypt	November 17, 1885	11/17/1885-8/2/1914
Greece	March 19, 1910	3/19/1910-12/1914
India	January 1, 1898	1/1/1898-9/5/1914
Italy	March 1, 1883	3/1/1883-1894
Mexico	May 1, 1905	5/1/1905-1914
Nicaragua	March 20, 1912	3/20/1912-1914
Russia	January 3, 1897	1/3/1897-7/1914
South Africa (Cape of Good Hope)	February 9, 1882	2/9/1882-9/6/1914
Sweden	May 30, 1873	3/30/1873-1914
Turkey	January 6, 1881	1/6/1881-8/4/1914
United States	January 1, 1879	1/1/1879-9/7/1917

Table 2
Country Risk Premium, 10-Year Windows

Country	Whole Period (1)	Pre-Gold (2)	On Gold (3)	Change (4)	Obs. (5)
Argentina	431.56	556.71	306.20	-250.51	521
Austria	143.79	147.79	139.74	-8.043	521
Brazil	248.65	290.82	206.31	-84.51	521
Ceylon	78.01	79.00	76.98	-2.01	521
Chile	253.02	234.92	281.78	46.86	521
Costa Rica	1005.25	925.49	1088.90	163.41	521
Egypt	269.61	300.17	231.37	-68.80	422
Greece	640.59	699.32	572.42	-126.90	484
India	45.89	46.93	44.90	-2.03	521
Italy	567.83	607.75	528.10	-79.65	521
Mexico	203.93	210.88	198.85	-12.03	452
Nicaragua	542.20	549.68	501.73	-47.95	309
South Africa (Cape of G. Hope)	118.66	134.22	103.04	-31.18	463
Russia	147.70	142.76	154.05	11.29	
Sweden	166.43	169.14	164.99	-4.15	396
Turkey	696.40	826.55	613.18	-213.37	426
Country Average	344.77	366.27	325.78	-40.49	

Table 3
Country Risk Premium, 4-Year Windows

Country	Whole Period (1)	Pre-Gold (2)	On Gold (3)	Change (4)	Obs (5)
Argentina	376.49	405.42	347.57	-57.84	209
Austria					
Brazil	228.48	242.53	214.19	-28.34	209
Ceylon	71.53	74.65	68.39	-6.26	209
Chile	256.26	259.66	252.48	-7.18	209
Costa Rica	1410.54	1426.72	1400.14	-26.58	209
Egypt	294.84	328.07	261.94	-66.13	209
Greece	670.43	709.44	631.71	-77.73	209
India	52.83	50.05	55.65	5.59	209
Italy	553.44	566.45	540.56	-25.89	209
Mexico	207.33	210.49	204.19	-6.31	209
Nicaragua	499.96	499.24	501.73	2.49	153
Russia	105.00	113.65	96.33	-17.32	209
South Africa (Cape of G. Hope)	144.37	138.99	149.75	10.76	209
Sweden	164.01	166.75	161.23	-5.51	209
Turkey	652.56	704.57	599.86	-104.71	209
Country Average	364.24	377.31	351.56	-25.77	

Table 4
Currency Risk Premium, 10-Year Windows

Country	Whole Period (1)	Pre-Gold (2)	On Gold (3)	Change (4)	Obs (5)
Argentina	1286.63	1465.26	1107.95	-357.31	521
Austria	240.31	260.856	219.649	-41.207	521
Brazil*	105.54	103.307	107.94	4.63	71
India	256.47	282.47	245.46	-37.01	371
Mexico	582.70	709.13	489.38	-219.75	452
Russia	804.745	789.23	812.70	23.471	313
Country Average	537.72	591.45	497.18	-94.27	

*Monthly data.

Table 5
Currency Risk Premium, 4-Year Windows

Country	Whole Period (1)	Pre-Gold (2)	On Gold (3)	Change (4)	Obs (5)
Argentina	1217.85	1271.52	1164.74	-106.78	209
Austria	217.65	213.23	221.98	8.75	209
Brazil*	108.63	110.89	106.06	-4.83	41
India	256.47	281.47	245.46	-36.02	209
Mexico	575.23	665.32	489.38	-175.94	209
Russia	795.69	789.17	802.37	13.20	209
Country Average	528.59	555.27	505.00	-50.27	

*Monthly data.

Table 6
The Effects of Long-Run Adherence to the Gold Standard: Pre-Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.066 (.430)	-.063 (.410)	-.010 (.488)	-.004 (.442)	-.209 (.509)	-.215 (.478)
$\Delta Market_t$	-.019 (1.657)	-.021 (1.83)	-.019 (1.658)	-.021 (.183)	-.018 (.758)	-.020 (.183)
2-Year	.456 (.749)	.443 (.870)				
3-Year			.140 (.707)	.122 (.771)		
4-Year					.576 (.758)	.589 (.736)
R-squared	0.00001		0.00001		0.0001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 7
The Effects of Long-Run Adherence to the Gold Standard: Pre-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.181 (.563)	-.163 (.541)	-.179 (.576)	-.177 (.569)	-.066 (.527)	-.078 (.598)
$\Delta Market_t$	.532 (.248)	.534** (.266)	.531** (.248)	.533** (.266)	.527** (.249)	.530** (.266)
2-Year	-.577 (1.000)	-.652 (1.107)				
3-Year			-.449 (1.003)	-.455 (1.013)		
4-Year					-.671 (1.039)	-.639 (.974)
R-squared	0.002		0.002		0.002	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 8
The Effects of Long-Run Adherence to the Gold Standard: Post-Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	.116 (.442)	.110 (.408)	.309 (.485)	.297 (.438)	.277 (.605)	.278 (.510)
$\Delta Market_t$	-.018	-.021 (.183)	-.016 (1.657)	-.018 (.183)	-.016 (1.657)	-.018 (.183)
2-Year	-.369 (.579)	-.343 (879)				
3-Year			-.856 (.625)	-.818 (.778)		
4-Year					-.491 (.693)	-.494 (.735)
R-squared	0.00001		0.0002		0.0001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 9
The Effects of Long-Run Adherence to the Gold Standard: Post-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.239 (.599)	-.222 (.541)	-.236 (.667)	-.204 (.591)	-.443 (.980)	-.410 (.728)
$\Delta Market_t$	.537** (.247)	.539** (.266)	-.235** (.863)	.539** (.266)	.531** (.247)	.534** (.266)
2-Year	-.339 (.774)	-.411 (1.107)				
3-Year			-.235 (.863)	-.322 (.992)		
4-Year					.213 (1.051)	.155 (.966)
R-squared	0.002		.002		0.002	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 10
The Effects of Long-Run Adherence to the Gold Standard:
Combined Pre- and Post-Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	.028 (.567)	.024 (.482)	.510 (.827)	.500 (.611)	-.034 (2.467)	-.089 (1.247)
$\Delta Market_t$	-.019 (1.657)	-.022 (.183)	-.018 (1.657)	-.020 (.182)	-.020 (1.651)	-.022 (.183)
4-Year	.018 (.668)	.026 (.731)				
6-Year			-.731 (.883)	-.716 (.761)		
8-Year					.076 (2.462)	.136 (1.306)
R-squared	0.00001		0.0001		0.00001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 11
The Effects of Long-Run Adherence to the Gold Standard:
Combined Pre- and Post-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	.006 (.786)	.067 (.659)	.151 (1.041)	.226 (.834)	1.961 (5.086)	2.235 (2.220)
$\Delta Market_t$	.538** (.247)	.540** (.266)	.536** (.247)	.538** (.266)	.537** (.247)	.538** (.266)
4-Year	-.680 (.921)	-.808 (.960)				
6-Year			-.699 (1.147)	-.811 (1.020)		
8-Year					-2.395 (5.103)	-2.682 (2.278)
R-squared	0.002		0.002		0.002	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 12
The Adoption Effects of Joining the Gold Standard: Pre-Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.048 (.367)	-.048 (.366)	-.073 (.375)	-.072 (.371)	.006 (.384)	.008 (.383)
$\Delta Market_t$	-.020 (1.657)	-.022 (.182)	-.021 (1.657)	-.023 (.182)	-.019 (1.657)	-.022 (.183)
3-Month	3.064* (1.780)	3.054 (2.203)				
6-Month			2.054 (1.060)	2.044 (1.612)		
1-Year					.265 (1.110)	.252 (1.144)
R-squared	0.0003		0.0002		0.00001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 13
The Adoption Effects of Joining the Gold Standard: Pre-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.407 (.483)	-.406 (.478)	-.360 (.494)	-.357 (.485)	-.197 (.518)	-.189 (.502)
$\Delta Market_t$	.535** (.247)	.538** (.266)	.532** (.247)	.535** (.266)	.532** (.247)	.534** (.266)
3-Month	2.886 (1.755)	2.837 (2.765)				
6-Month			.676 (1.278)	.624 (2.025)		
1-Year					-.1018 (1.127)	-1.082 (1.443)
R-squared	0.002		0.002		0.002	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 13
The Adoption Effects of Joining the Gold Standard: Post-Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	.116 (.367)	.117 (.366)	.145 (.375)	.146 (.371)	.139 (.399)	.140 (.383)
$\Delta Market_t$	-.020 (1.657)	-.023 (.182)	-.019 (1.657)	-.021 (.182)	-.019 (1.657)	-.022 (.182)
3-Month	-2.901 (1.912)	-2.915 (2.203)				
6-Month			-2.057* (1.132)	-2.072 (1.611)		
1-Year					-.916 (.696)	-.926 (1.146)
R-squared	0.0002		0.0002		0.0001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 14
The Adoption Effects of Joining the Gold Standard: Post-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.306 (.482)	-.304 (.478)	-.308 (.496)	-.305 (.485)	-.248 (525)	-.240 (.502)
$\Delta Market_t$	.534** (.247)	.537** (.266)	.534** (.247)	.536** (.266)	.535** (.247)	.537** (.266)
3-Month	-.495 (1.862)	-.549 (2.766)				
6-Month			-.226 (1.151)	-.280 (2.025)		
1-Year					-.597 (.925)	-.659 (1.443)
R-squared	0.089		0.089		0.065	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 15
The Adoption Effects of Joining the Gold Standard:
Combined Pre- and Post Event Window
Dependent Variable- Country Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	.044 (.374)	.045 (.371)	.050 (.391)	.051 (.381)	.135 (.431)	.138 (.410)
$\Delta Market_t$	-.019 (1.657)	-.022 (.183)	-.019 (1.657)	-.022 (.183)	-.020 (1.657)	-.022 (.183)
6-Month	-.153 (1.369)	-.167 (1.611)				
1-Year			-.131 (.832)	-.145 (1.184)		
2-Year					-.443 (.737)	-.458 (.870)
R-squared	0.00001		0.00001		0.00001	
Obs.	7535	7535	7535	7535	7535	7535

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Table 16
The Adoption Effects of Joining the Gold Standard:
Combined Pre- and Post-Event Window
Dependent Variable- Currency Risk Yield Spread Change

Independent Variable	(1) Pooled OLS	(2) Fixed Effects	(3) Pooled OLS	(4) Fixed Effects	(5) Pooled OLS	(6) Fixed Effects
Constant	-.392 (.493)	-.389 (.485)	-.346 (.521)	-.339 (.500)	-.090 (.587)	-.071 (.541)
$\Delta Market_t$	.533** (.247)	.536** (.266)	.533** (.955)	.536** (.266)	.533** (.247)	.535** (.266)
6-Month	1.239 (1.381)	1.189 (2.024)				
1-Year			.222 (.955)	.166 (1.492)		
2-Year					-.956 (.864)	-1.036 (1.107)
R-squared	0.002		0.002		0.002	
Obs.	2175	2175	2175	2175	2175	2175

Robust standard errors are in parentheses. *denotes significance at the 10-percent level. **denotes significance at the 5-percent level. ***denotes significance at the 1-percent level.

Figure 1
Country Risk Premium for Argentina, Nov. 1894 - Oct. 1904
(Basis Points)

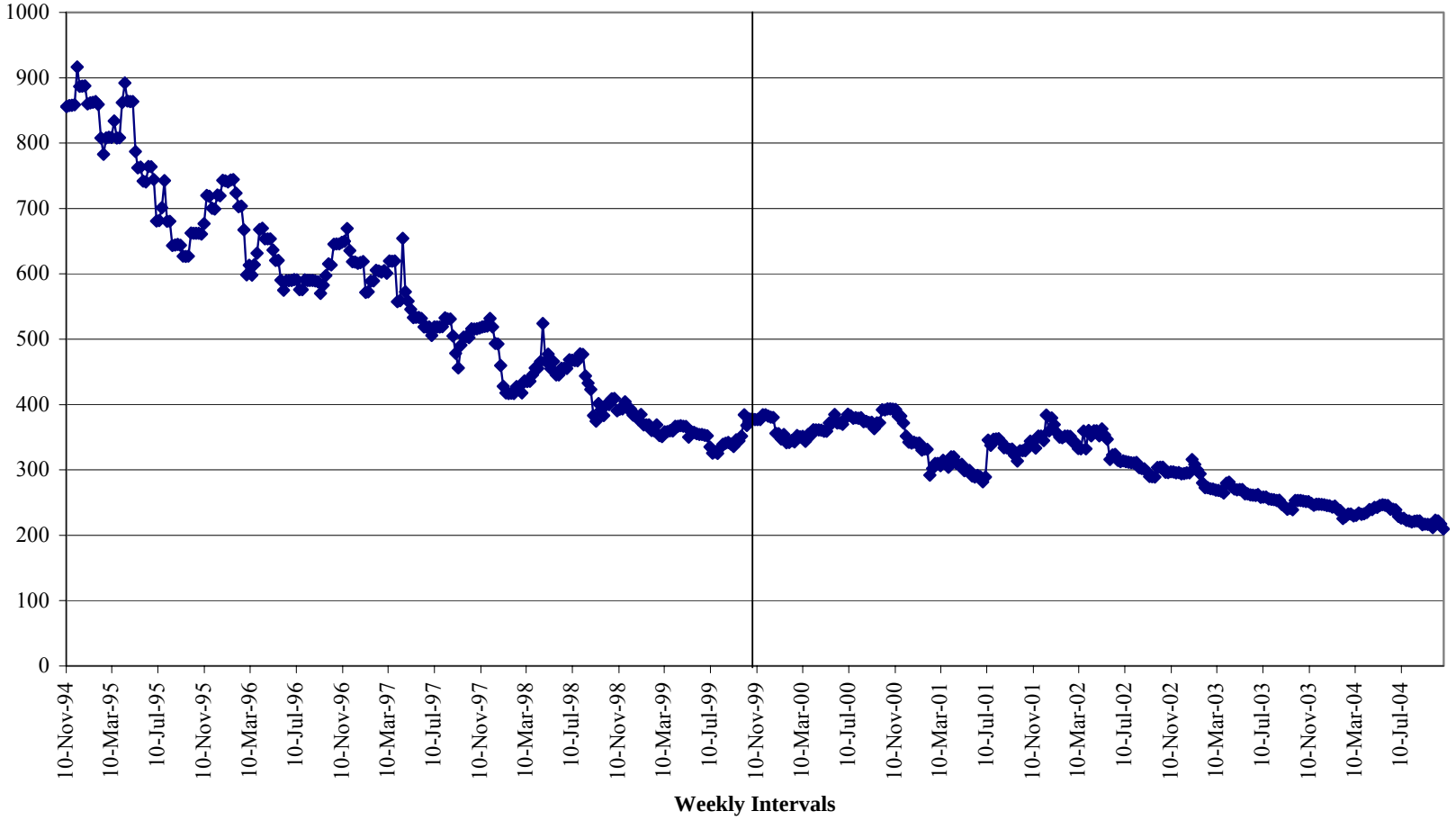


Figure 2
Country Risk Premium for Austria, 1888-1897
(Basis Points)

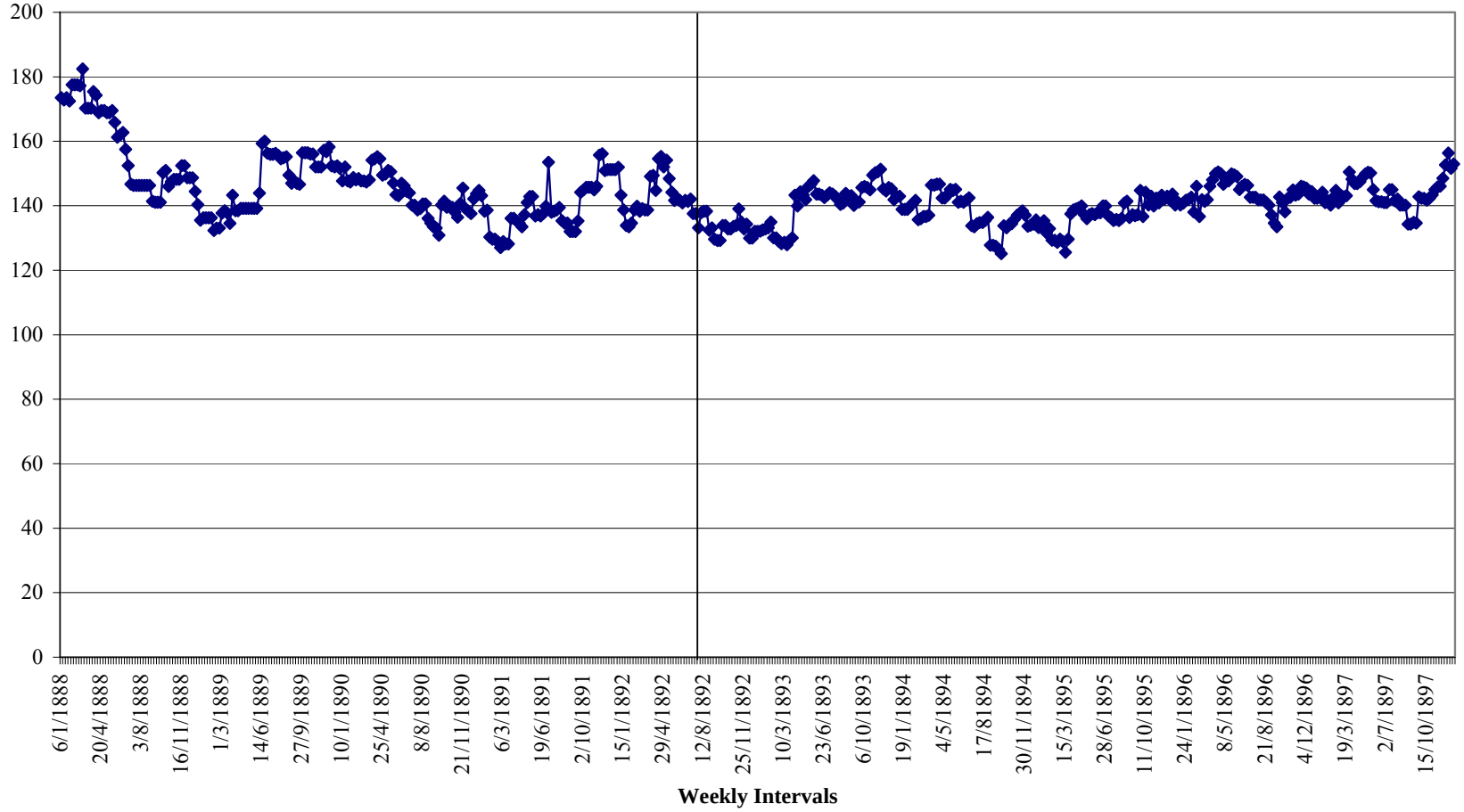


Figure 3
Country Risk Premium for Brazil, Oct. 1900 - Oct. 1910
(Basis Points)

Figure 4
Country Risk Premium for Ceylon, Oct. 1896 - June 1906
(Basis Points)

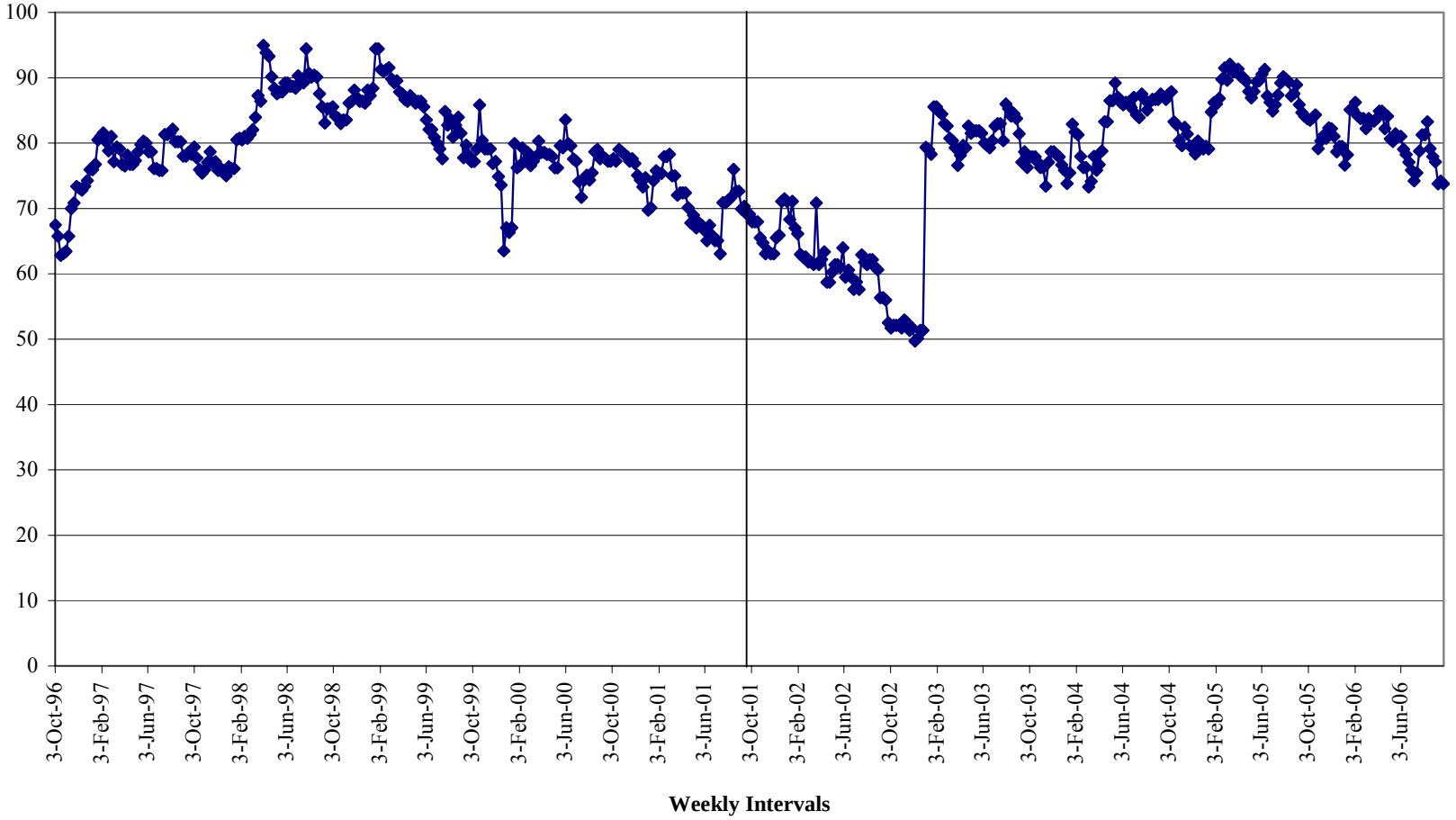


Figure 5
Country Risk Premium for Chile, June 1890 - Dec 1901
(Basis Points)

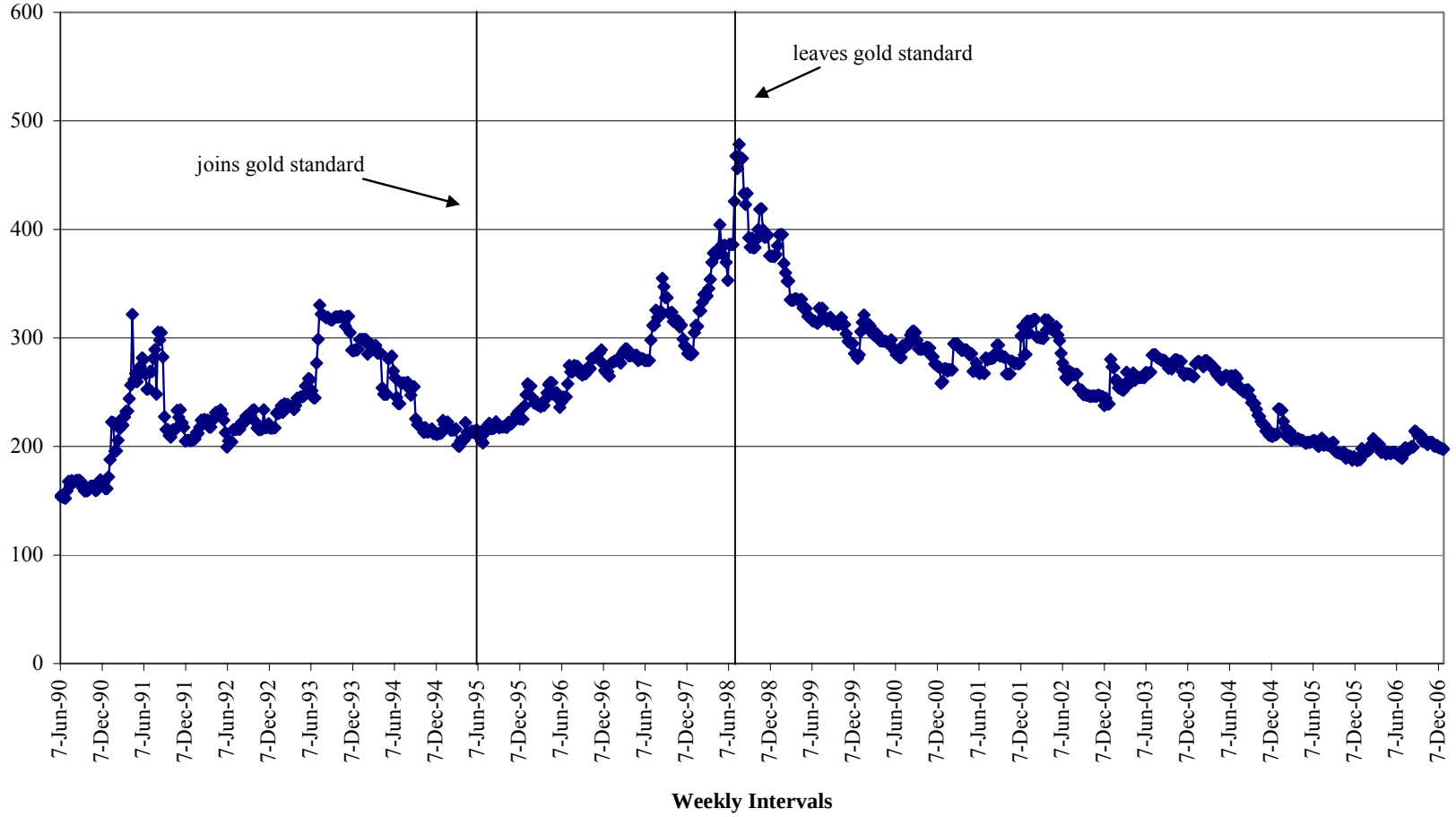


Figure 6
Country Risk Premium for Costa Rica, Nov. 1891 - Oct. 1901
(Basis Points)

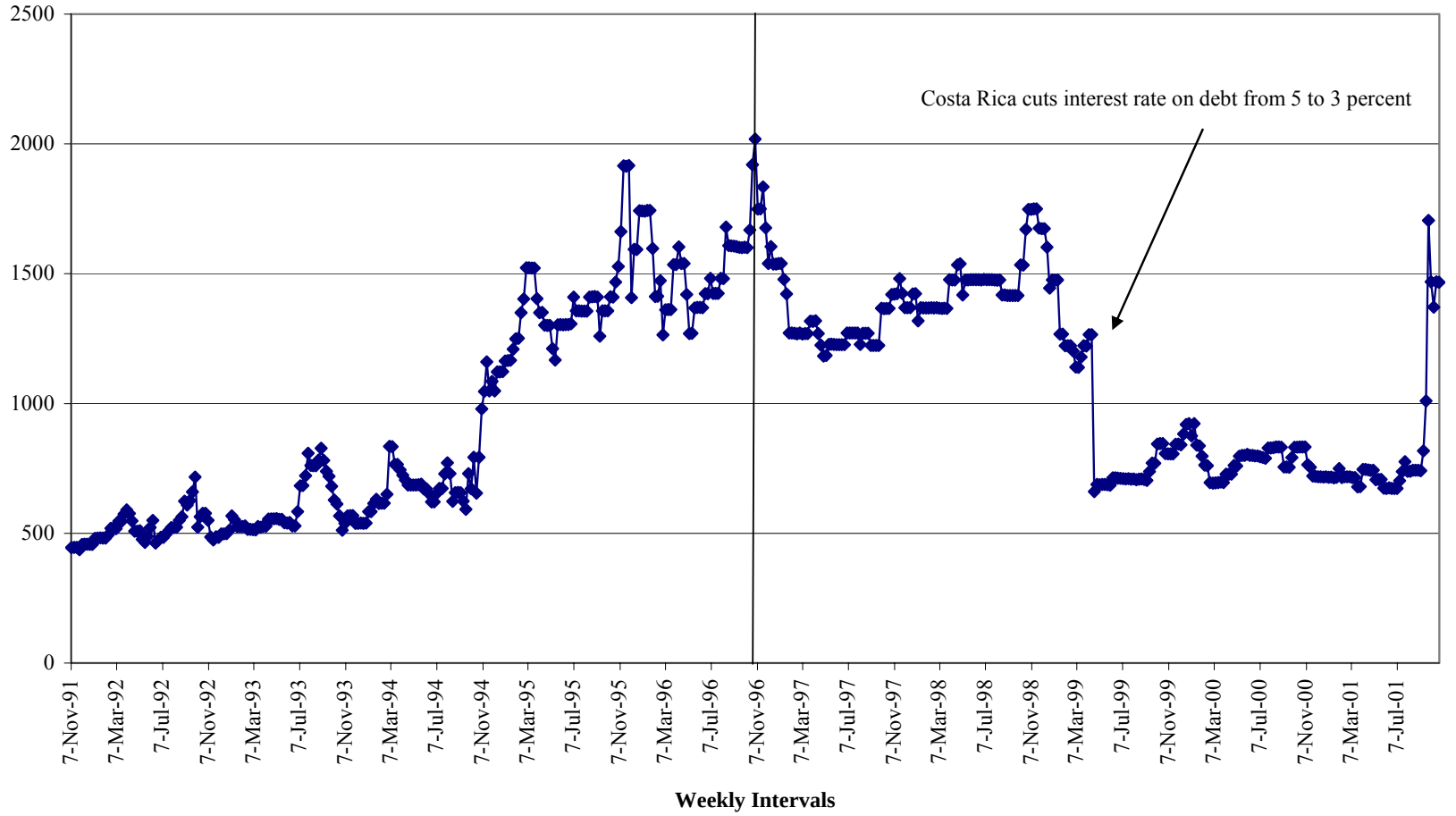


Figure 7
Country Risk Premium for Egypt, May 1881 - May 1889
(Basis Points)

Figure 8
Country Risk Premium for Greece, Mar. 1906 - June 1914
(Basis Points)

Figure 9
Country Risk Premium for India, Jan. 1893 - Dec. 1902
(Basis Points)

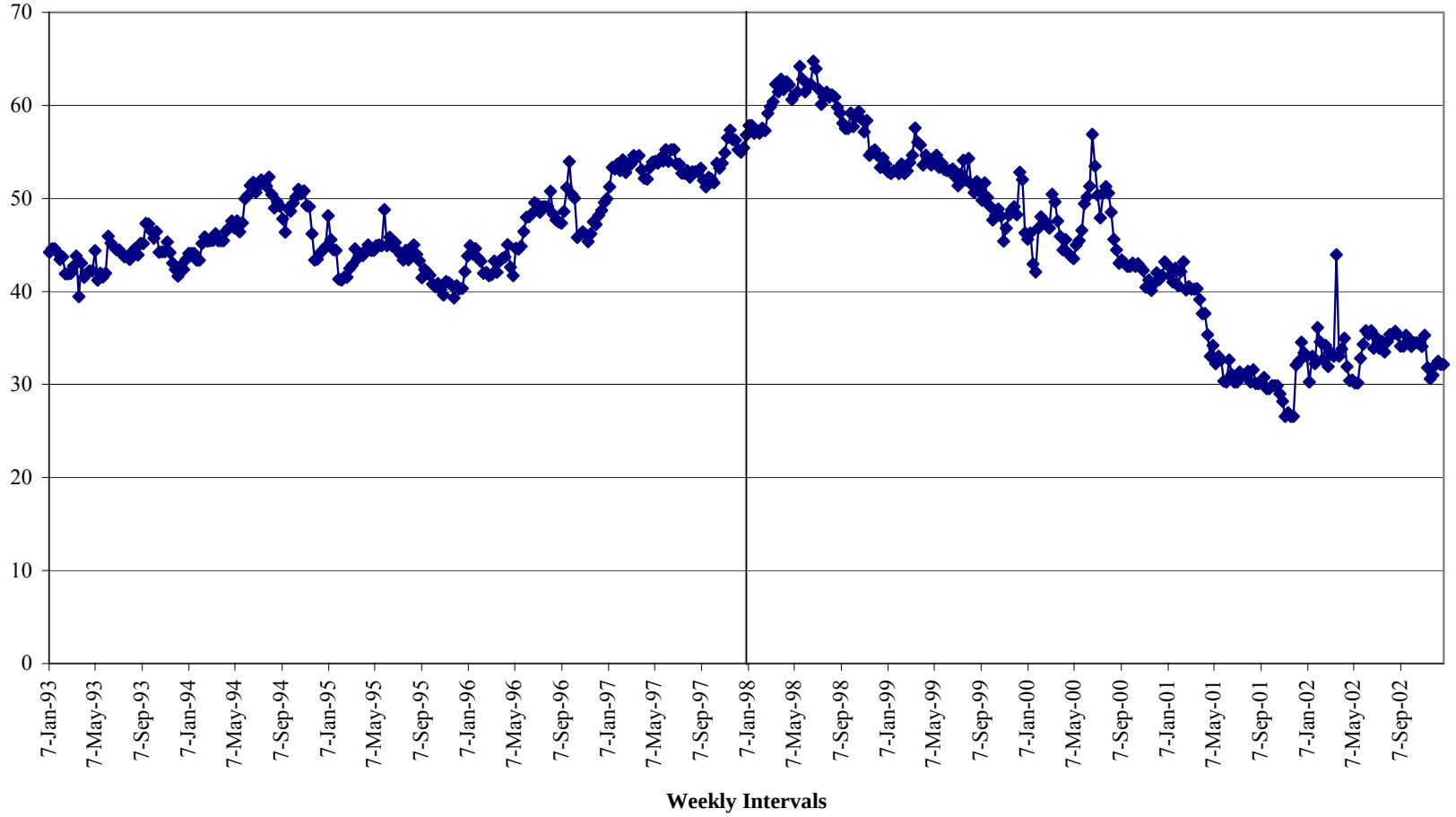


Figure 10
Country Risk Premium for Italy, Mar. 1878 - Feb. 1887
(Basis Points)

Figure 11
Country Risk Premium for Mexico, Mar. 1901 - Mar. 1909
(Basis Points)

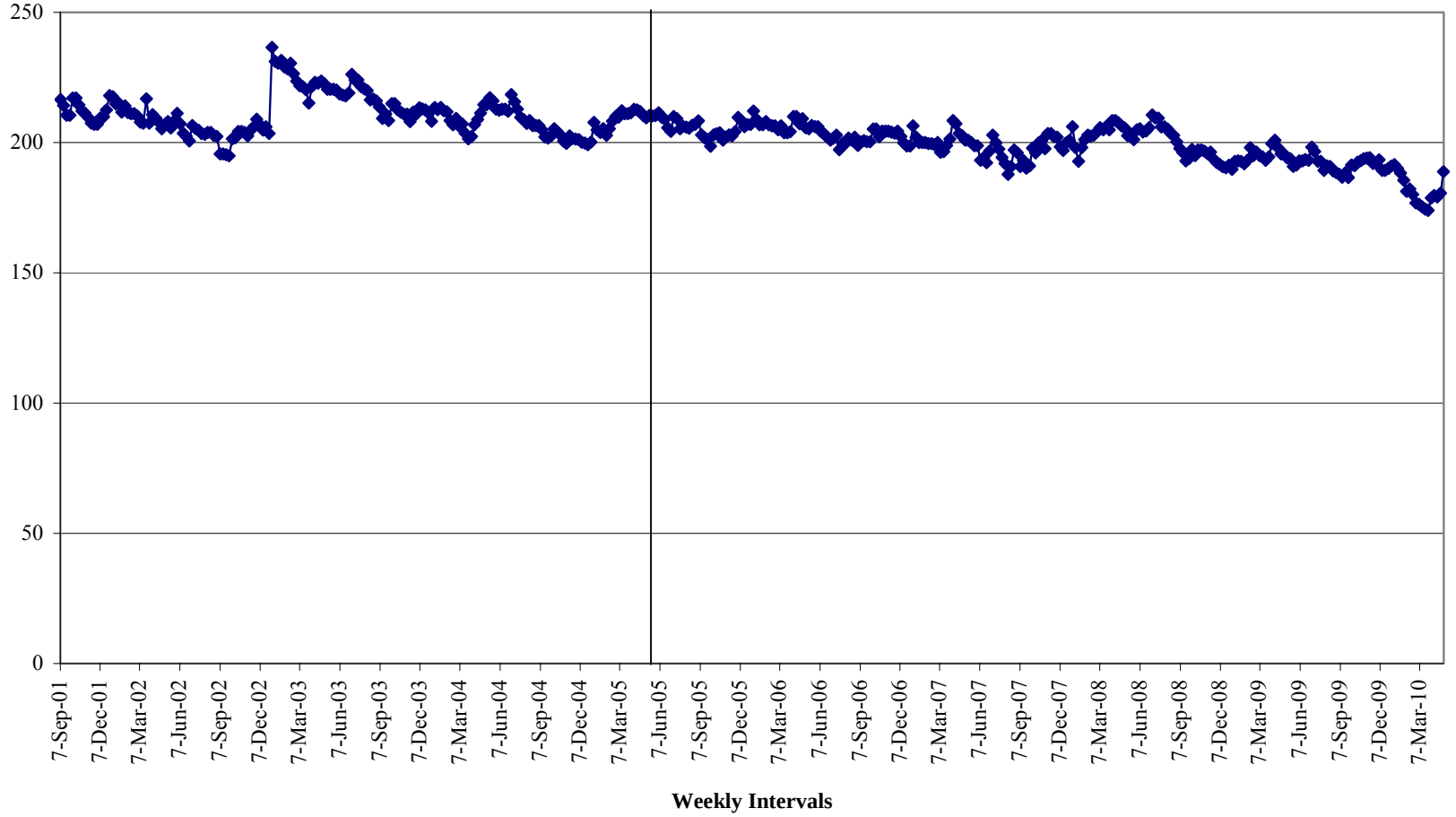


Figure 12
Country Risk Premium for Nicaragua, Mar. 1907 - Dec. 1912
(Basis Points)

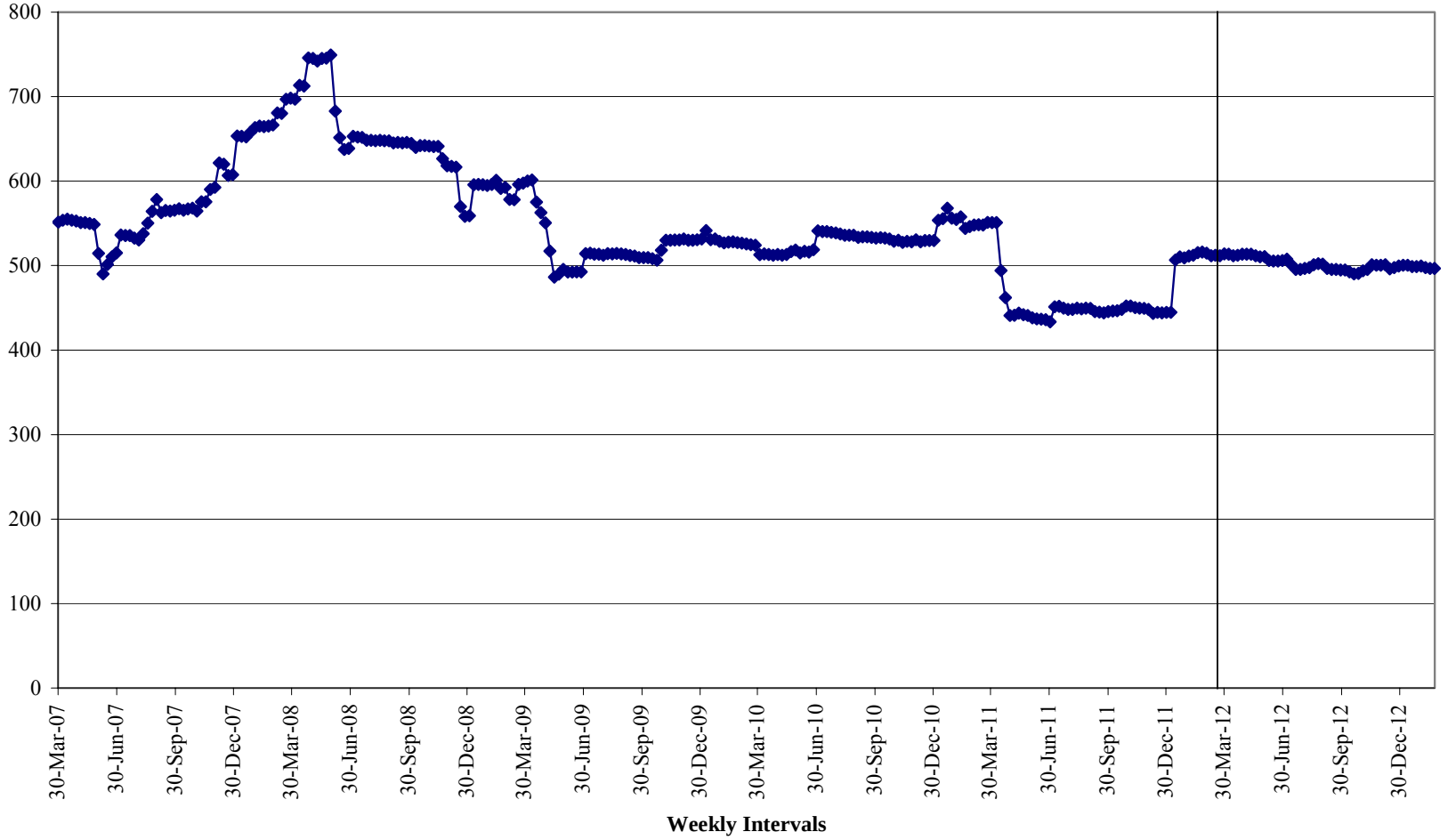


Figure 13
Country Risk Premium for Russia, Jan. 1892 - Dec. 1901
(Basis Points)

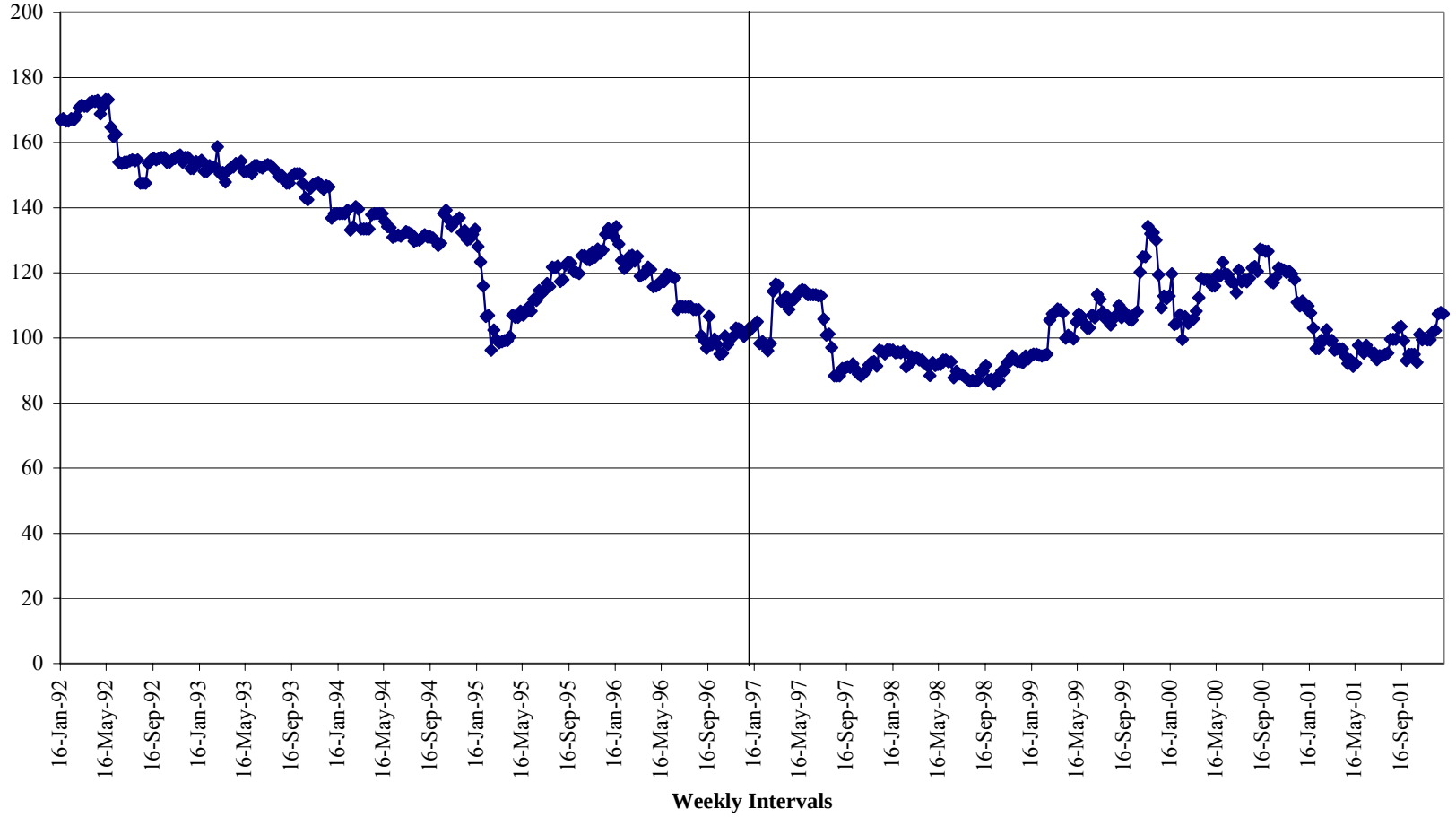


Figure 14
Country Risk Premiun for South Africa (Cape of Good Hope), Feb. 1877 - Nov. 1885
(Basis Points)

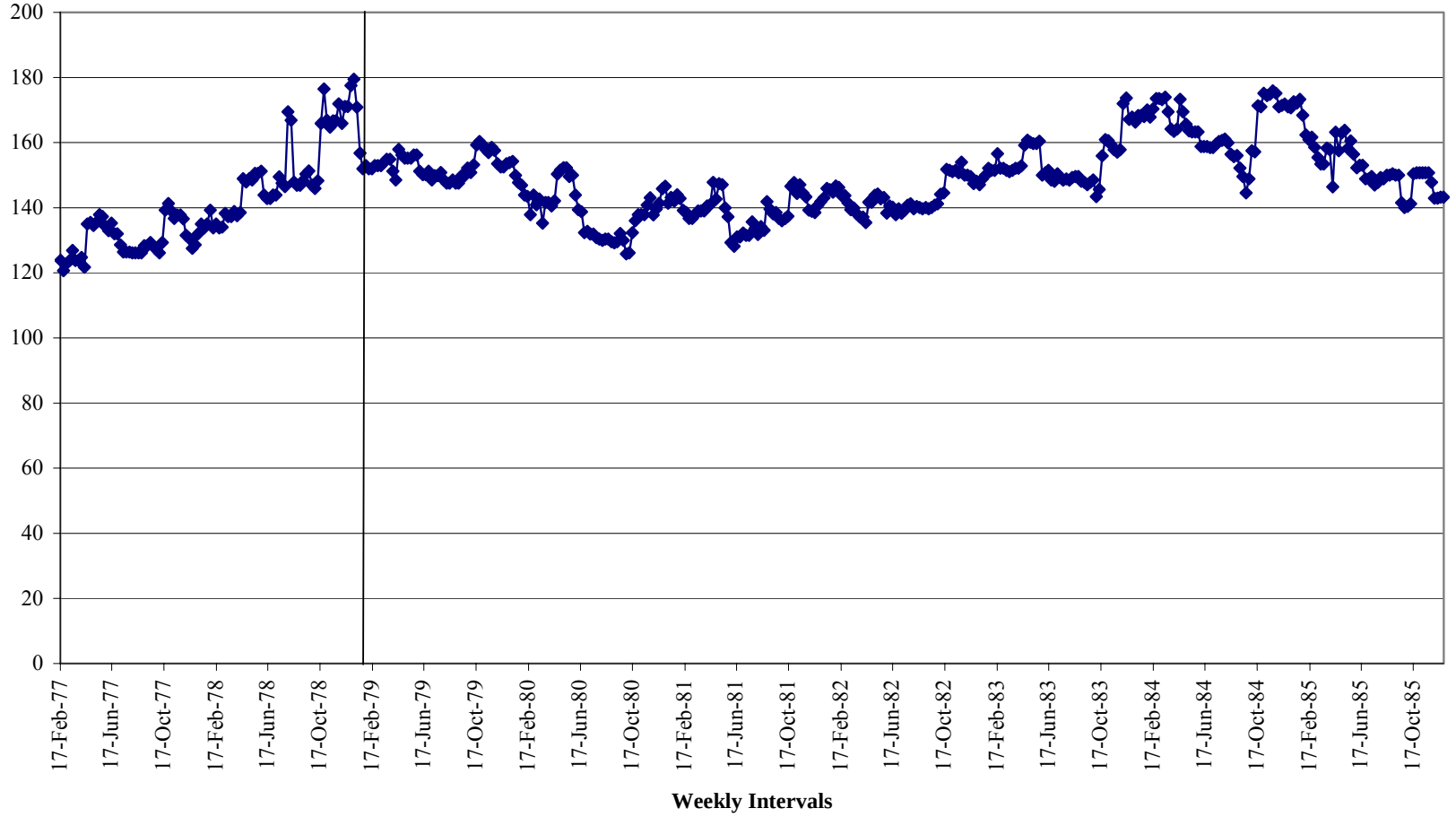


Figure 15
Country Risk Premium for Sweden, Nov. 1870 - May 1878
(Basis Points)

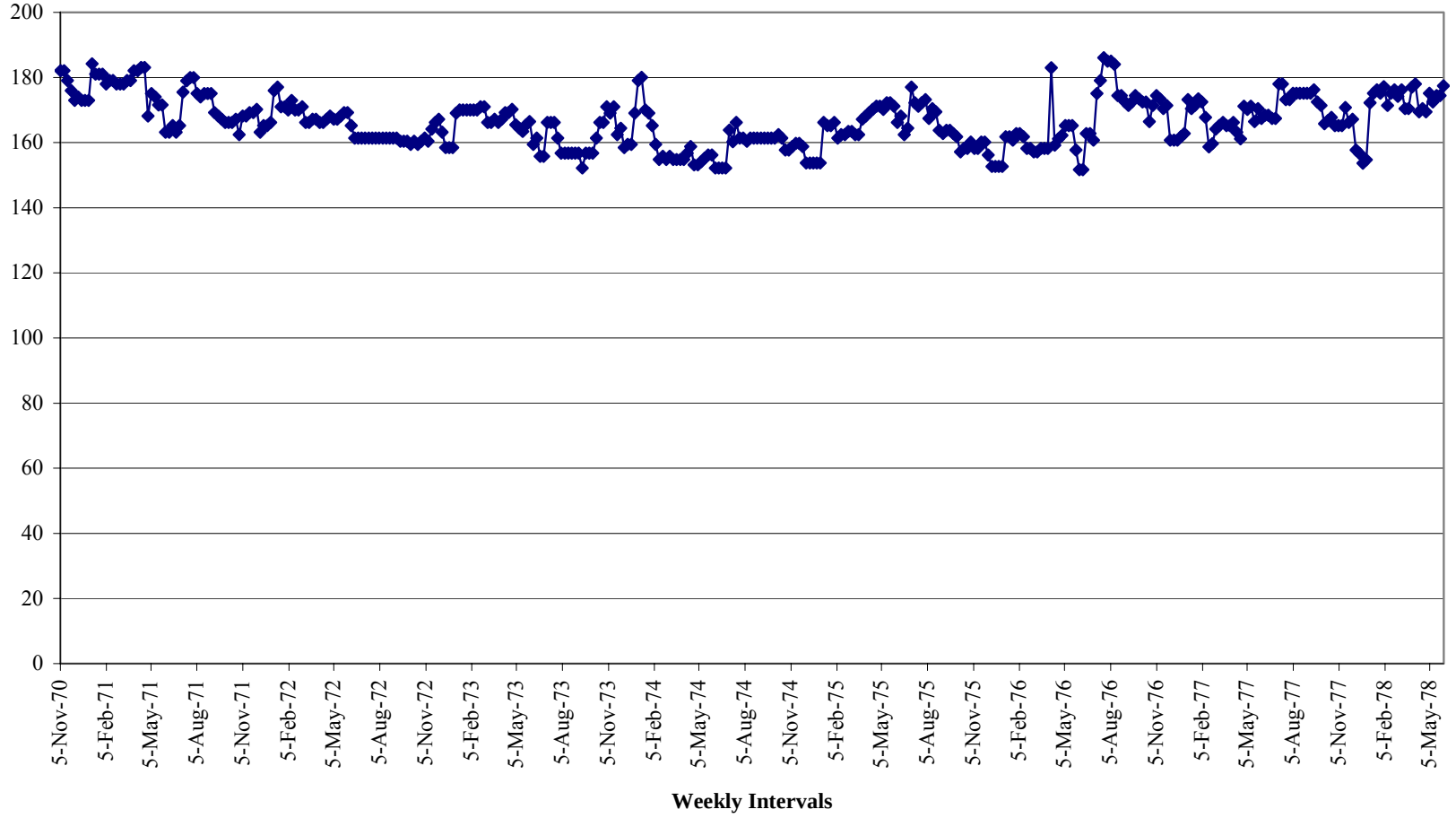


Figure 16
Country Risk Premium for Turkey, Nov. 1877 - Nov. 1885
(Basis Points)

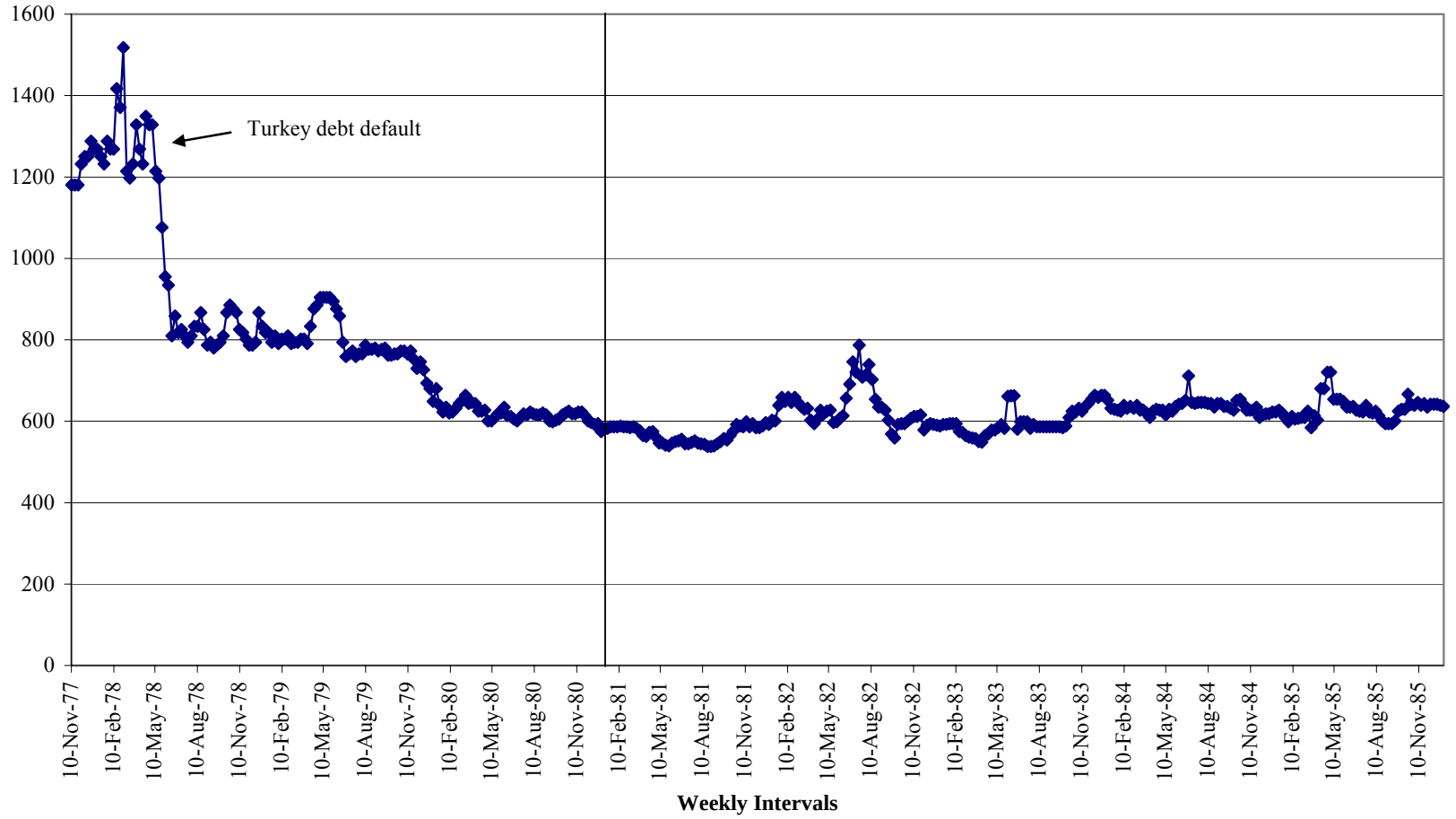


Figure 17
Currency Risk Premium for Argentina, Nov. 1894 - Oct. 1904
(Basis Points)

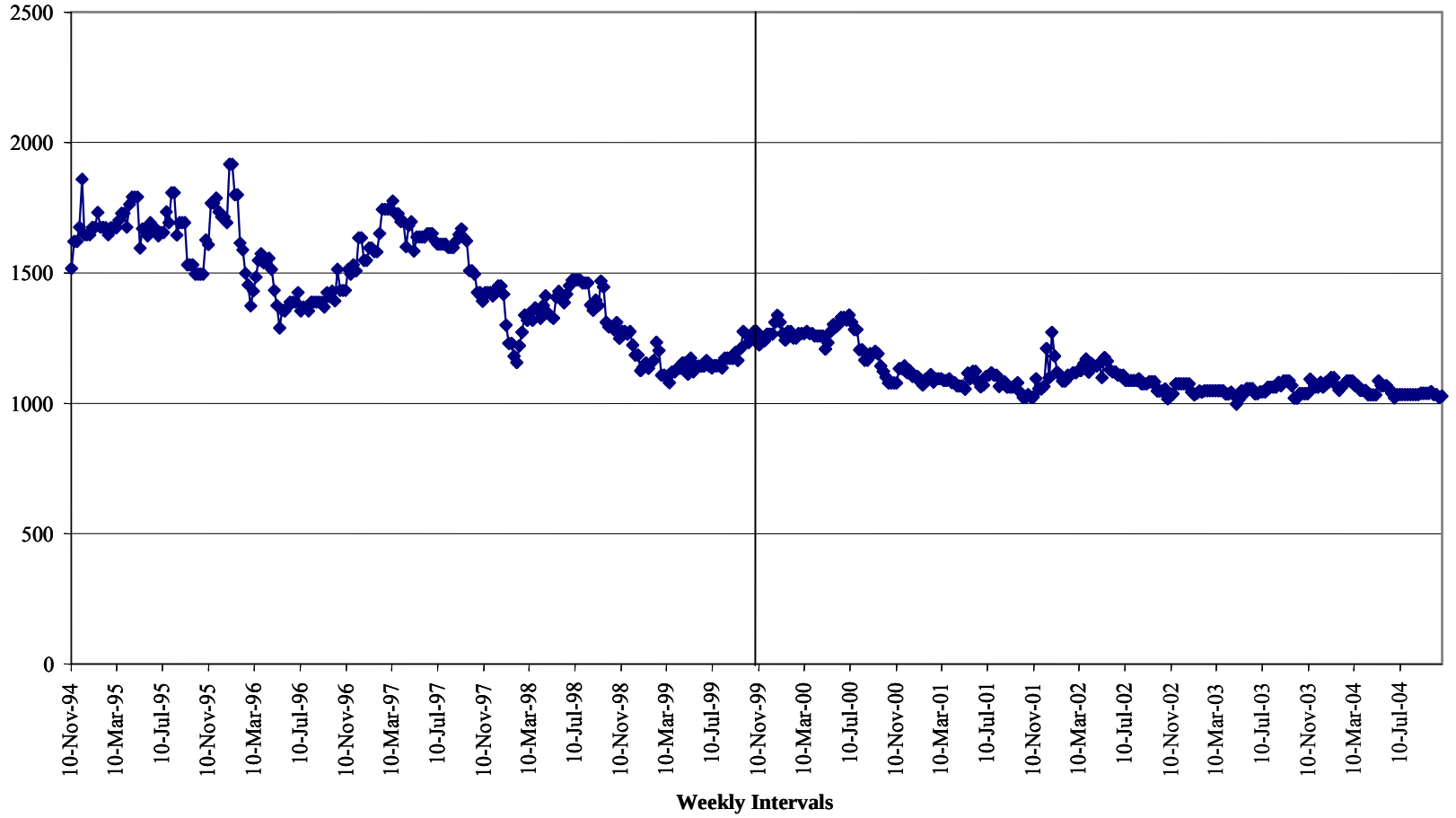


Figure 18
Currency Risk Premium for Austria, 1888-1897
(Basis Points)

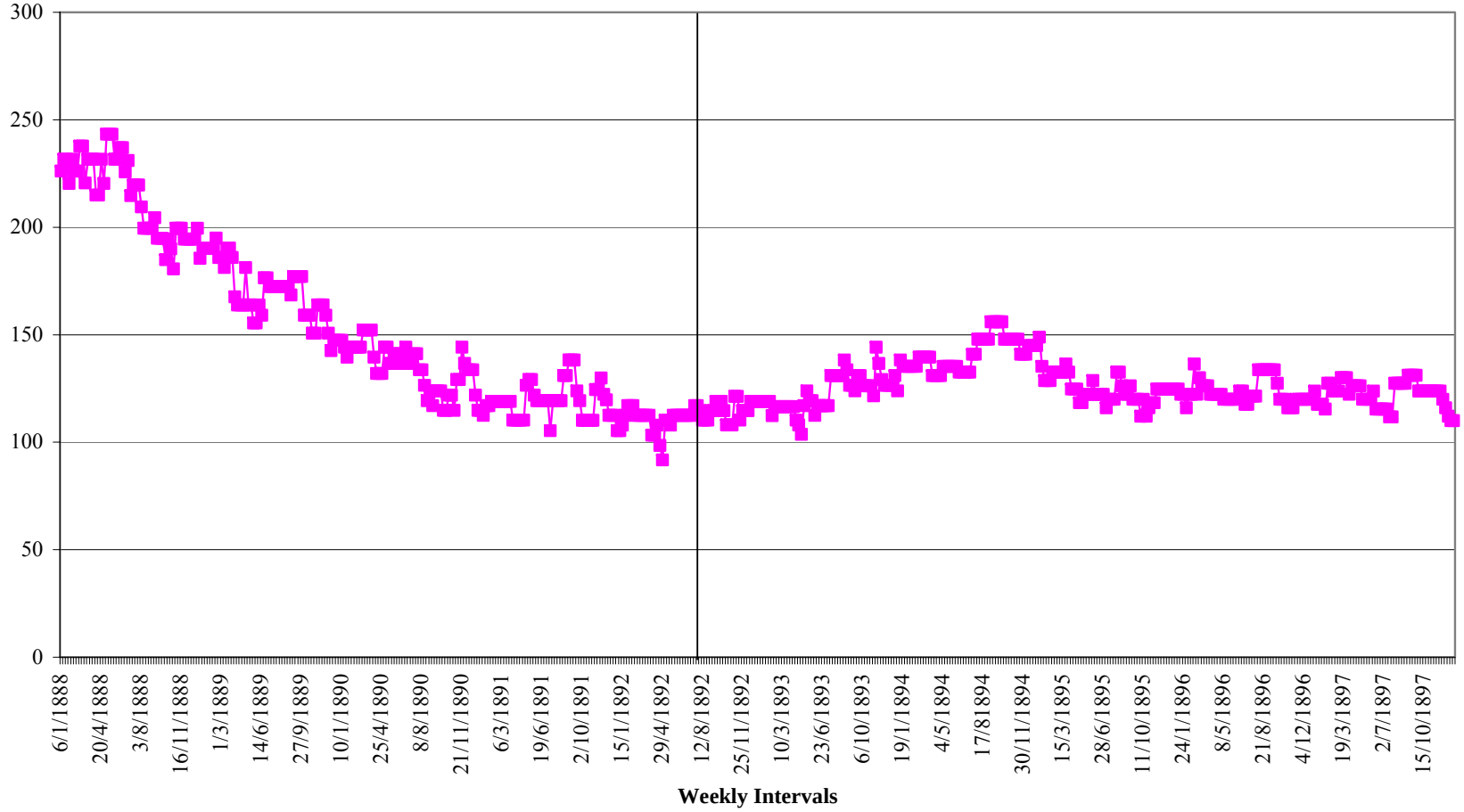


Figure 19
Currency Risk Premium for Brazil, 1902-March 1910
(Basis Points)

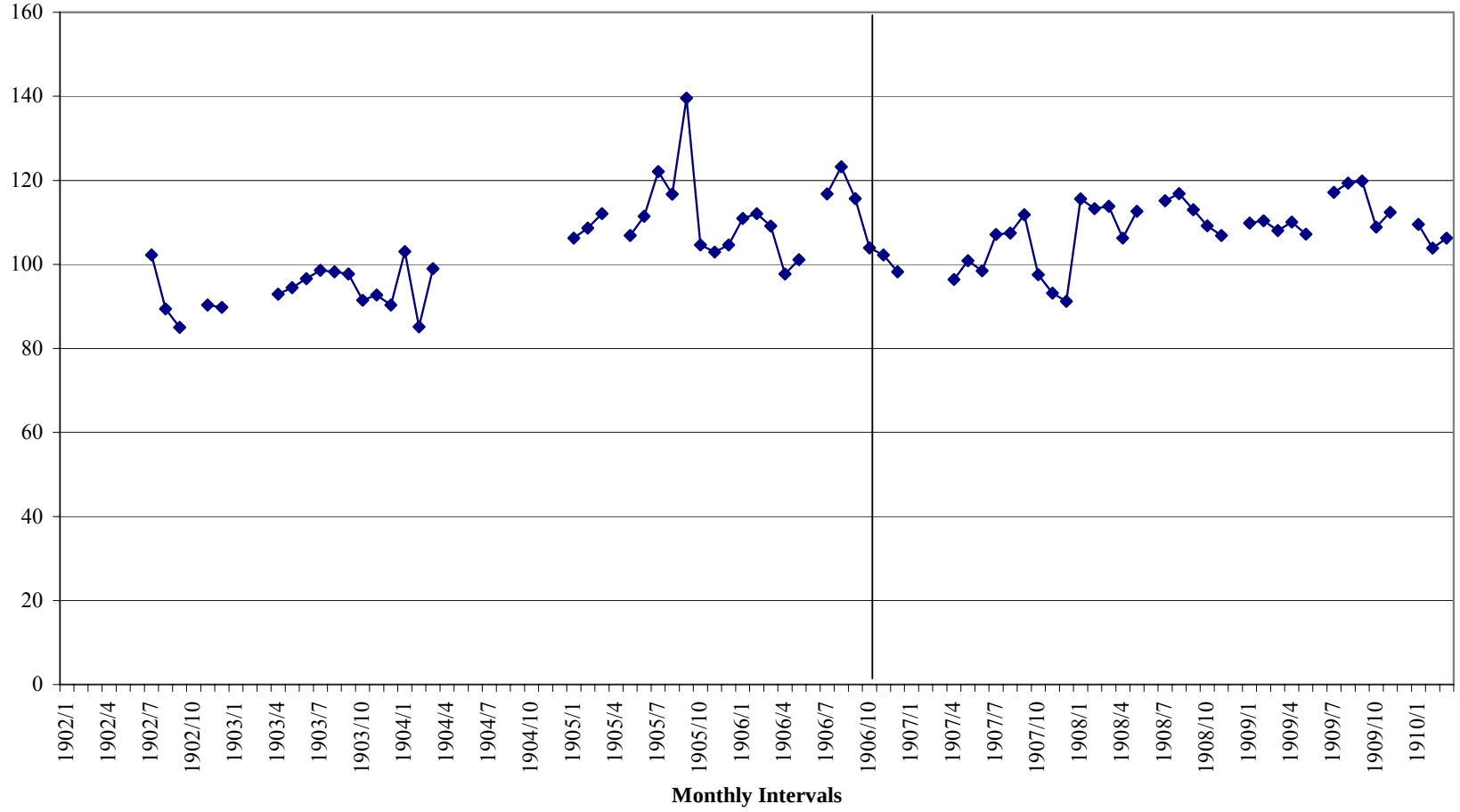


Figure 20
Currency Risk Premium for India, Nov. 1895 - Dec. 1902
(Basis Points)

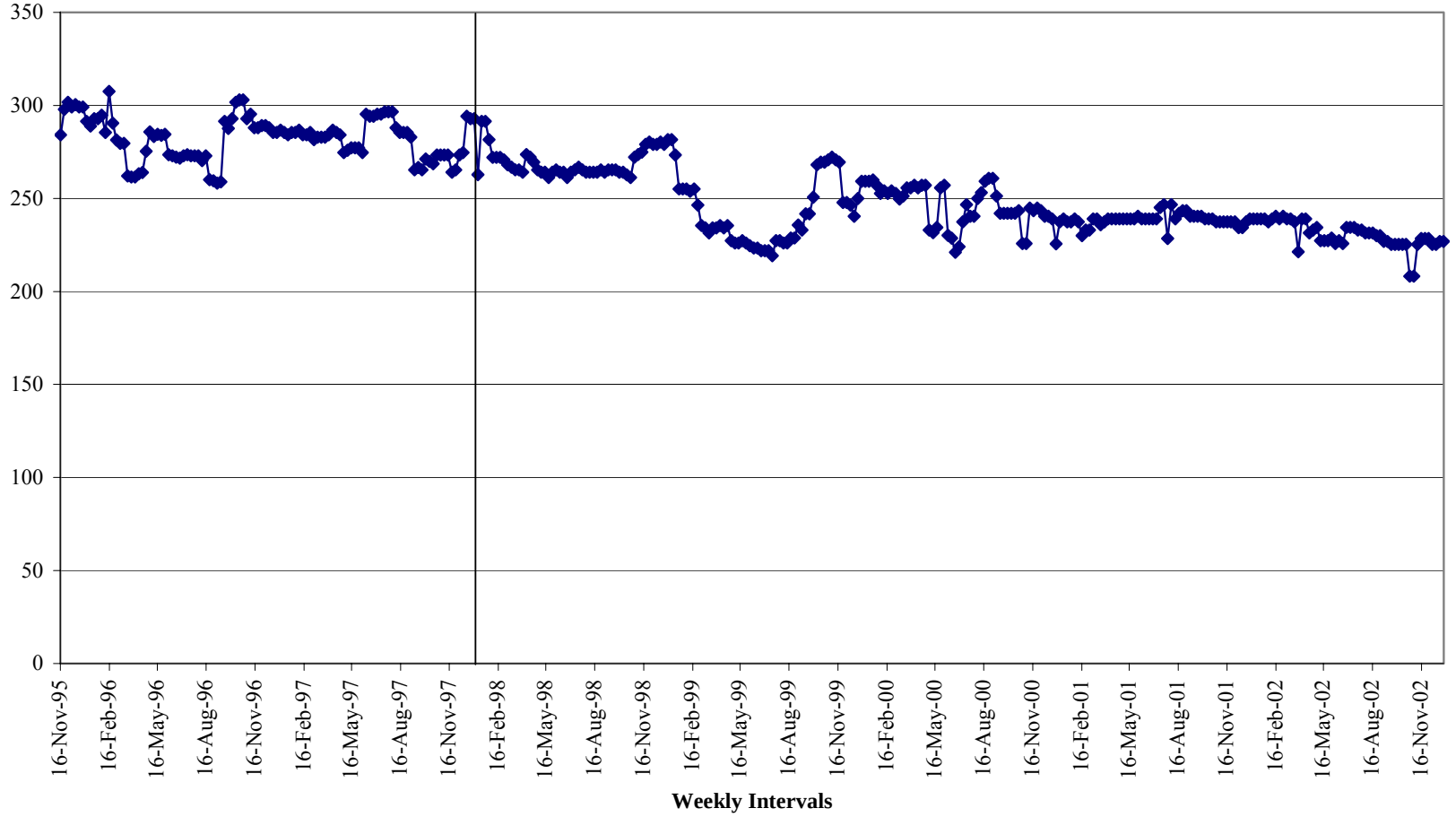


Figure 21
Currency Risk Premium for Mexico, May 1901 - April 1910
(Basis Points)

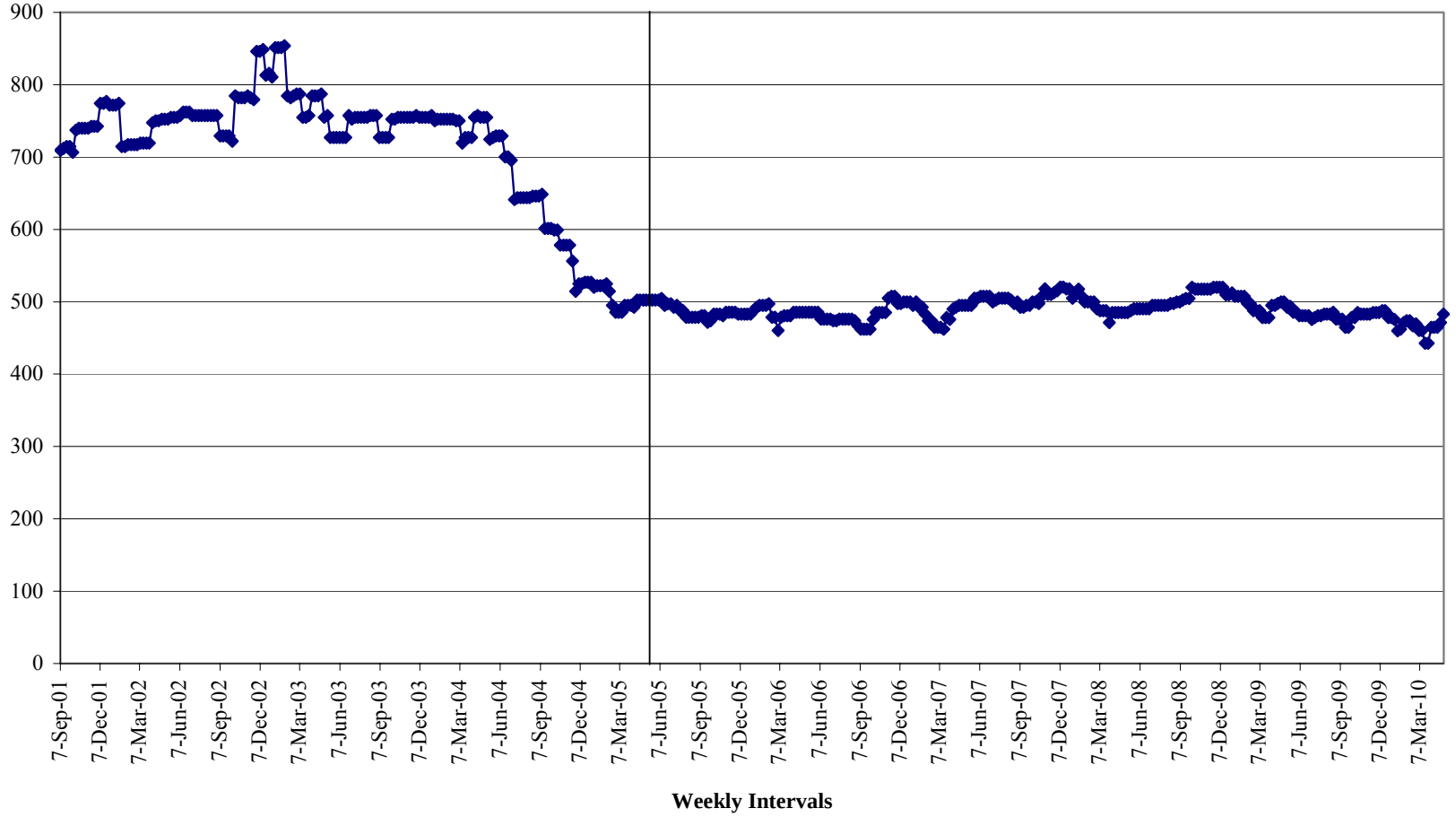


Figure 22
Currency Risk Premium for Russia, 1895-1900
(Basis Points)

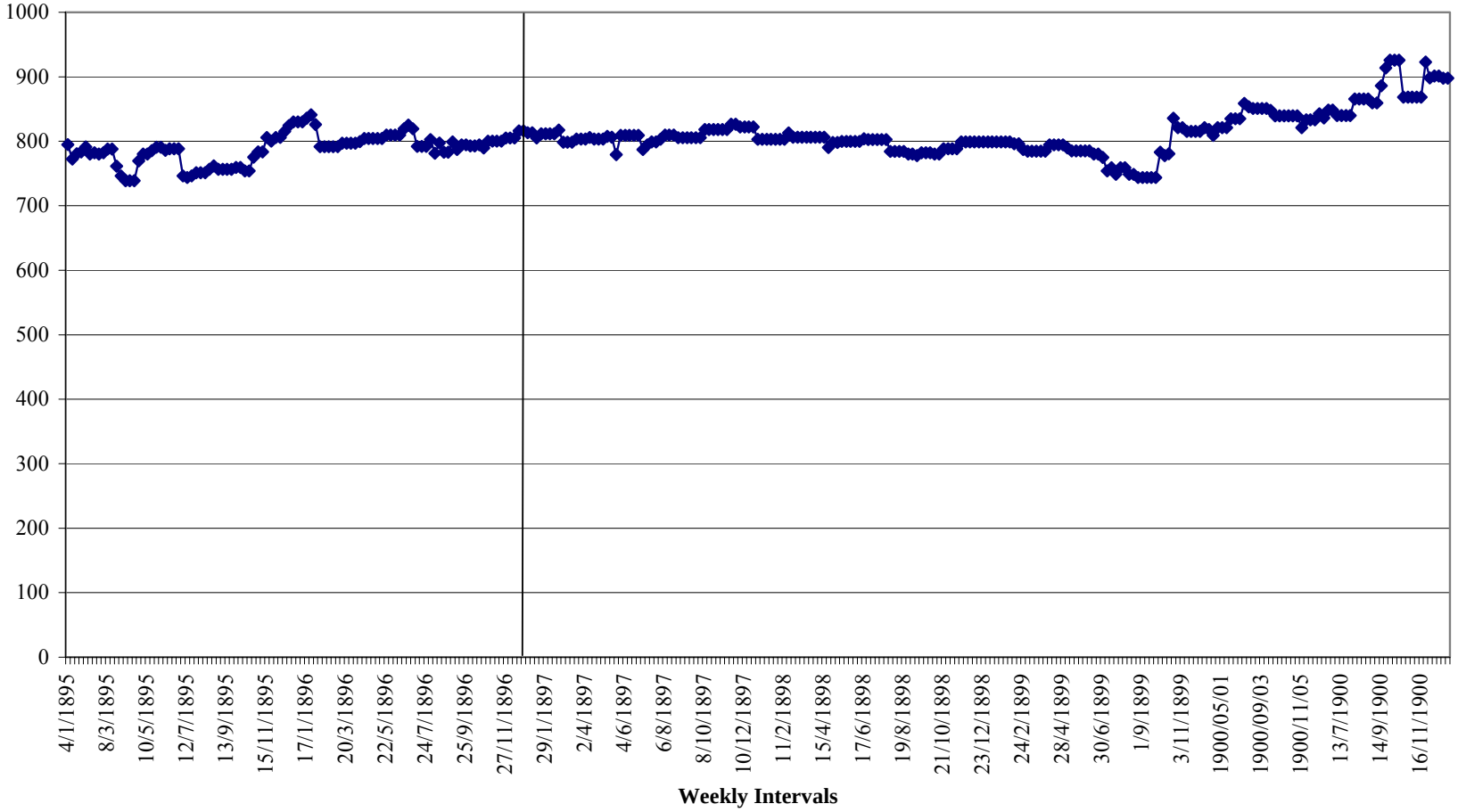
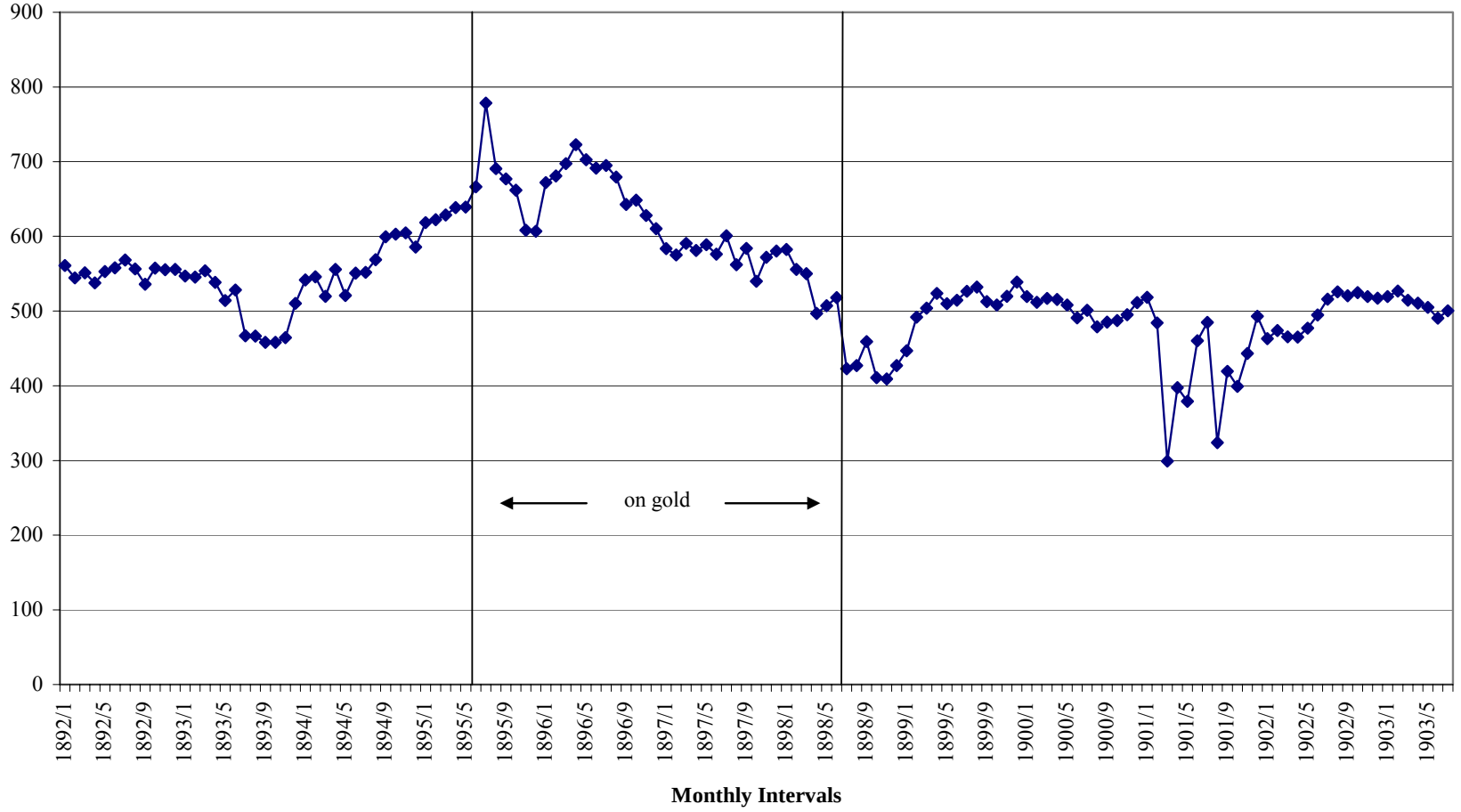


Figure 23
Currency Risk Premium for Chile, Jan. 1892 - July 1904
(Basis Points)



Appendix of Gold Standard Adoption Dates

Gold standard adoption dates for each country are from the following sources.

Argentina – The Law of Conversion was passed on Oct. 31, 1899 restoring convertibility (della Paolera and Taylor, 2001, p. 120).

Brazil – "Under an act which went into effect December 22, 1906, a conversion fund was established by means of import duties collected in gold." ((Monetary Systems of the Principle Countries of the World, p.8).

Ceylon – Adopted in 1901 with the Gold Ordinance Act of 1901 and maintained until 1914 (Gunasekera, p. 137).

Chile – A new conversion law of Feb. 11, 1895 set June 1, 1895 as the day for the redemption of notes. This continued until July of 1898. (Bordo and Kydland, 1995, p. 437-438).

Costa Rica – On July 16, 1900, the bank began redeeming certificates in gold (Young, 1925, p. 196).

France – Adopted the gold standard on Nov 5, 1878 (Pick and Sedillot, 1971, p. 587).

Greece – Adopted the gold standard on March 19, 1910 (Bordo and Kydland, 1995).

India – Adopted the gold standard the week of May 7, 1898. The scheme of Indian Government for establishing a gold standard published and severely criticized (*Investor's Monthly Manual*, December, 1898)

Italy- On April 12, 1884, the country adopted the gold standard. By 1894, it was back on a paper standard (Bordo and Schwartz, 1994, pp. 20-21).

Mexico- The Enabling Act was passed on Dec. 9, 1904 authorizing the establishment of a gold standard. On March 25, 1905, a decree promulgated the new system. The law went into effect on May 1, 1905 (Kemmerer, 1944, p. 524).

Nicaragua - Law of March 1912 embodied recommendations for gold-exchange system. (Young, 1925, Pgs. 147-150). A new currency system began on March 23, 1913 (Young, 1925, p. 159).

Russia – The country adopted the gold standard January 3-15, 1897(Pick and Sedillot, 1971, p. 488).

South Africa(Cape of Good Hope) - On Feb. 10, 1882, silver coins were made clearly tokens, placing the currency firmly on a gold standard (www.dollarization.org).

Sweden – The country signed a convention in December 1872 instituting the gold standard (Bordo and Capie, p. 15).

Turkey - Starting on March 13, 1880, there was in practice a “limping” gold standard, even though the country was officially on a hard peg. This system was maintained until Aug. 3, 1914 (dollarization.org, 2005).

United States – Resumed specie convertibility following the Civil War on January 1, 1879 (Kemmerer 1916, p. 85).

Data Appendix

We collected the data on weekly bonds yields from *The Economist*, and *The Commercial and Financial Chronicle*. In the following table, we list the interest rate stated in the terms of the bond as well as the due date (if known).

Argentina – 4.5 percent, bonds are to be redeemed within 39 years after they were issued in 1889.
Argentina – 7 percent Cedula 'B' currency bonds
Brazil – 4.5 percent sterling bonds, bonds redeemable with a sinking-fund of 1 percent per annum.
Brazil – 5 percent apolocies (paper bonds) taken from *Jornol do Commercio*.
Ceylon – 4 percent debentures, redeemable by 1934.
Costa Rica – 5 percent A Series, interest rate reduced to 3 percent on April 22, 1899.
Chile – 4.5 percent sterling bonds, bonds redeemed when the bonds fall below par or by a sinking-fund provision. 8% Bonos (paper bonds) hand collected from *El Mercurio*.
India – 3.5 percent sterling bonds redeemable on or after 1931.
India – 3.5 1854-1855 rupee bonds, repayable 3-months after notice by the government.
Italy – five percent rentes, perpetuity bonds.
Mexico – 5 percent external bonds redeemable by 1945.
Mexico – 5 percent Internal Silver Bonds, redeemable with a cumulative sinking-fund of .25 percent.
Nicaragua – 1886 six percent bonds.
France – 3 percent rentes, perpetuity bonds.
Russia – 1822 five percent, coupons payable in London
Russia – 6 paper bonds, coupons payable in Amsterdam
South Africa (Cape of Good Hope) – Cape of Good Hope 4.5 percent, due in 1900
Sweden – 5 percent, issued in 1868
Turkey – 4.25 percent external tribute of 1871, redeemable by 1900.
UK – consols 3 percent until, then 2.75 which were redeemable in 1923.
United States - 6 percent currency bonds, due 1895-1899.