

Political Instability and Credible Commitments: The Case of Post-Revolutionary Mexico*

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Abstract

In this paper we study the impact that the Mexican Revolution had on Mexico's economy by looking at the effects of political instability on the public finances and the relationship of the government and its foreign creditors. We sustain that political instability had more than a short run effect on the government finances because it perpetuated the government's incapacity to access foreign funds, which could have helped to control the volatile political atmosphere. We argue that not having access to new debt issues was the penalty that induced Mexico's government to negotiate two agreements to resume payments. We conclude Mexico could not get back to borrowing in international debt markets in the 1920s because political instability hindered its capacity to make regular payments and build a credible commitment with international creditors. This was costly for the country because the government never had the financial capacity to establish law and order, but still ended up diverting resources to fight wars and insurrections, which could have been used to promote growth.

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I. Introduction

Among students of political economy there is an intense debate as to whether political instability leads to lower economic growth or whether there are ways in which actors can devise institutional solutions to achieve rapid growth even under extreme unstable political environments.¹ Within this debate the Mexican Revolution has become one of the most important case studies. In this paper we examine the effects that political

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¹ For a survey of this debate see Haber, Razo, and Maurer, "Politics," Chapter 1.

instability, both during the civil war years of the Mexican Revolution (1910-1916) and in its aftermath (1917-1929), had on the finances of the Mexican government. In particular we focus on the effects that political instability had on investors' perception of country risk and on the incapacity that the Mexican government had to issue new foreign debt. We argue that instability had negative effects for the Mexican economy because the Mexican government had to allocate a larger portion of revenues to finance military expenditures. During the 1920s, every time the government had to fare war against a military uprising, the government budget had to be reallocated to increase expenditures on defense. This lowered the government's capacity to meet debt obligations and increased investors' perception of country risk, which ended up making it more difficult for Mexico to rehabilitate its standing among its foreign creditors.

The literature that studies the impact of the Mexican Revolution on the Mexican economy can be divided into two broad categories. First, there is a large body of work arguing that the instability during the civil war years of the Mexican Revolution (1910-1916) had negative effects on the Mexican economy, but only in the short run. Once the civil war years were over, the economy recovered at a somewhat rapid pace. Second, there is a stream of the literature emphasizing the economic costs of the Mexican Revolution even after the civil war years were over.

Most of the historiography of the Mexican revolution maintains that during the violent years of the Revolution "there could have been nothing but destruction, upheaval, and ruin: a veritable productive disaster." According to Womack (1992) this conclusion was not result of factual analysis but on the Spenserian idea that there can be no "progress" without "order."² After the bloodiest years of the revolution (1910-1916), the literature has two explanations of how growth was resumed. For some, the Revolution destroyed pre-modern institutional arrangements that curtailed Mexico's capacity to grow. Thus, it opened the way for a more prosperous growth path than what Mexico could have achieved under the old regime.³ For others, the Revolution was only an

² See Reynolds (1970), Vernon (1963), Solis (1967, 1970), and John Womack (1992), p.392.

³ Tannenbaum (1933 and 1950); Vernon (1963); Cumberland (1968)

interruption of the previous growth path, which the country simply resumed in the 1920s.⁴

In particular, Haber, Razo, and Maurer (2003) emphasize that many sectors of the Mexican economy grew relatively fast during the 1920s. Using an amazing new compilation of statistics their analysis shows that while some sectors, such as petroleum extraction, prospered in the midst of turmoil, others, such as banking, suffered a hard blow and did not fully recover after several decades.⁵ In their view foreign and domestic investors were able to expand production and investment in certain sectors despite political instability by developing agreements with the government that guaranteed the protection of property rights for specific sectors or companies (an arrangement they call vertical political integration). Therefore, for these authors "there is no necessary connection between political instability and economic stagnation."⁶

In contrast, recent findings on the demographic consequences of the Revolution suggest a gloomier picture. McCaa's analysis shows that in terms of lives lost, the Mexican Revolution was a demographic catastrophe, perhaps the worst since the conquest of Mexico in the sixteenth century and comparable to the Spanish Civil War. In his view the cost of the Mexican Revolution amounted to a reduction in Mexico's population of 2.1 million people, out of which excess mortality accounted for two-thirds of the deaths, while lost births accounted for one-fourth and emigration caused less than one-tenth of the total population losses.⁷ Moreover, Mexico's demographic recovery from Revolution was slow.⁸ Unless Mexico had an amazingly rapid increase in productivity in the 1920s, the population loss must have had a significant cost for the Mexican economy. Thus, this work suggests that the Mexican Revolution took a heavy toll on Mexico's population and probably on its economy. In fact, without the institutional arrangements that Haber et al. (2003) describe, the economic situation in the 1920s could have been even worse.

We contribute to this debate by showing that the political instability of both the civil war years and the post revolutionary period had perverse effects on the finances of

⁴ Although this thesis was not explicitly developed it was suggested in de la Peña (1975); Rosenzweig (1965); Valadés (1948); Gilly (1994); Keesing (1975); Jean Meyer (2004).

⁵ Haber, Razo, and Maurer (2003), p.14.

⁶ Haber, Razo, and Maurer (2003), p.15.

⁷ McCaa (2003), p.396

⁸ McCaa (2000), p.294

the Mexican government. Our argument is that political instability affected the government finances and, thus, its capacity to service its debt. With less money to pay for public goods and with no capacity to build credibility to issue new debt, the Mexican government could not contribute to economic development as much as it would have done it, had the violence of the revolution ended in 1920.

We argue that political instability during the 1920s impacted the government budget in three ways. First, the Mexican government had to divert resources to increase military expenditures to fight rebellions. Second, political instability increased the cost of capital for the government (e.g., the risk premium it had to pay to issue bonds) and thus did not allow it to issue new debt in international markets. Third, because of the first two effects, political instability closed Mexico’s access to foreign loans in the 1920s, a period when other Latin American countries with worse debtor profiles than Mexico were issuing new debt.

Our counterfactual is that even if the civil war years could not have been avoided, without the political instability of the 1920s the Mexican government could have used the resources that went to fight rebellions to service its public debt and would have been able to pay for important public goods necessary for the reconstruction of the country (e.g., roads, waterworks, schools, etc.). More specifically, if it had paid its debt service promptly, the Mexican government could have issued new debt to pay for public goods, just like other Latin American countries did during the 1920s. In this decade, most Latin American countries were able to issue significant amounts of debt even if most countries had a worse debtor profile than Mexico (i.e., a higher debt burden). We argue that without instability Mexico would have been able to issue new bonds to pay for infrastructure investments, just like its peers in the region did.

We show that Mexico was likely to get new loans in the 1920s based on two facts. First, other Latin American countries were able to float new debt issues in this decade, even after difficult renegotiations with their creditors (e.g., Brazil in 1914). Second, Mexico had a lower debt burden than most Latin American countries and would have been a good candidate to borrow money during the boom in lending of the 1920s.⁹

⁹ Marichal (1989), pp. 171-200 describes the lending boom to Latin American countries during the 1920s.

Because our argument is that political instability made it hard for the Mexican government to build a reputation as a good debtor (because it eroded its capacity to pay), a good part of the paper focuses on studying the reactions of international investors to political events in Mexico. We examine the reactions of investors to events in Mexico by studying the structural breaks in the series of London quotations of the 5% Mexican bonds (either using the prices of bonds directly or by using an estimated risk premium). We show that investors had positive and significant reactions when Mexico announced the first debt renegotiation in 1919, but then were extremely disappointed when Mexico suspended payments after the military rebellion of 1923 and religious civil war of 1927 (i.e., the default announcements of 1924 and 1928). That is, investors were disappointed every time the Mexican government had to divert resources to fight a rebellion instead of paying its debt service.

We divide the paper into five sections. In Section II we make a narrative account of the financial situation of the Mexican government after the Revolution, emphasizing the capacity it had to build a credible commitment to pay foreign creditors after every debt renegotiation and the forced defaults after military insurrections. In Section III, we explain the data sources and the statistical methodology followed to test the hypothesis that foreign investors still believed in some of the commitments offered by the Mexican government in their negotiations throughout the 1920s. In section IV, we discuss these findings and build our counterfactual. Section V concludes.

II. Data and Methodology

The Mexican Government Finances

Studying the impact of the Mexican Revolution on the Mexican government finances required us to complete the government budget series existent using primary sources. The revenues and expenditures series of Mexico were incomplete in most official and academic publications. The historical series usually ended in 1910 and started again in 1925 (or 1923 when the reports of Minister of Finance Alberto J. Pani are used). We reconstructed the budget figures using the budgets submitted to Congress and published in the daily *El Demócrata*, and in the *Mexican Year Book* of 1920-21. Data for

the period 1914 to 1918 was not available from these sources given the complicated situation of the public finances during the civil war years (1914-1916) and the initial disorder of the Carranza government in 1917 and 1918. From the detailed budget data (not included here to save space, but available upon request), we separated the expenditures of the Ministry of Defense and Navy, in order to see the toll that the war took on the public finances. We complement this information with data on gun exports from the United States and the United Kingdom to Mexico from 1870 to 1929.¹⁰ Although these data is very inaccurate since sources are faulty and the data available many times indicates proposed rather than actual budgets, it gives us a first point of departure.

We describe the changes in the debt service and built debt service series following the agreements of 1922 and 1925 using the narratives of Turlington (1930), Pani (1926), and Bazant (1995). With these series we are able to show that the Mexican government paid the debt service during most of the 1920s, suspending payments only when it had to use funds to fight unexpected rebellions and internal wars.

Data for our Counterfactual

Our main counterfactual is that Mexico could have issued new debt if it had not been for the political instability of the 1920s. We make this point by showing that if the Mexican government could have build a credible commitment to foreign creditors, it was very likely to get a new loan given that its debt burden after the renegotiations of the early 1920s was relatively low compared to that of other Latin American countries. In order to compare Mexico’s debt burden to that of other countries in the region, we compiled data on population, revenues, expenditures and exports published in the *Investor’s Monthly Manual* every semester. The data is incomplete and imprecise, but we explicitly want to use the data that the average investor in London had at her disposal. We also draw comparisons across countries with data compiled by the League of Nations and from Carlos Marichal’s *A Century of Debt Crises*. From these two sources we

¹⁰ U. S. Department of Commerce (1870-1914), Bureau of Foreign and Domestic Commerce, *The Foreign Commerce and Navigation of the United States* (Washington D.C.: USGPO, annual issues); U. K. Parliamentary Papers (1870-1914), *Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions* (London: HMSO, annual issues)

compile data on debt burden for a group of countries for which the League of Nations had available data for the year 1925 and show that Latin American countries with worse debtor profiles than Mexico got sizable new loans to pay for infrastructure during the 1920s.

Studying the Reactions of Investor's in London

Since we are interested in showing that political instability made it harder for the Mexican government to build a credible commitment to investors, we use both the price series and the yield series to examine what events changed the expectations of investors trading Mexican bonds in London in statistically significant ways. We constructed a monthly series of Mexican bond prices and the implicit risk premium of these bonds from 1900 to 1929. We follow the standard methodology of the literature that studies country risk.¹¹ We define the risk premium implicit in the price of Mexican bonds as the difference between the Mexican bond yield in London and the British Consols yield (the risk-free asset):

$$\text{Risk premium} = \text{Yield}_{\text{MEX}} - \text{Yield}_{\text{UK}},$$

where the yield of the Mexican bonds ($\text{Yield}_{\text{MEX}}$) is defined as the ratio of the coupon payment to the monthly market price (the British Consols bond is estimated in the same way using Consols with a 3% coupon rate). The Mexican bond prices used refer to the *Investor's Monthly Manual* quotations of Mexican gold bonds of 1899 with a 5% coupon rate. This source provided continuous quotations from 1900 to 1929, including the civil war years (1914-1916). The British Consols monthly quotations were taken from the NBER Macroeconomic History database. Since Mexico did not make any coupon payments from 1914 to 1929 (the payments it made usually went to special warrants attached to the bonds), then using the risk premium series for the analysis is problematic because we would have to assume that Mexico paid all coupon payments promptly. Thus, most of our analysis is focused on the study of the bond price series. If investors were reacting in statistically significant ways to the announcements of the Mexican government, then that should be reflected in the bond quotations. In fact, the results of

¹¹ For instance see Sussman and Yafeh (2000) for a discussion.

the event study analysis do not change whether we use bond prices or the risk premium series.

We follow the methodology of Bai and Perron (1998) to look for significant structural changes in the series. The logic is that if investors were reacting in significant ways to the announcements of the Mexican government we would find significant jumps in the bond price series in specific points in time. The basic idea of our empirical approach is that we estimate a simple time series model with no ex-ante knowledge of any structural break. The dates for significant structural breaks should come out endogenously from our tests. In both cases we start up by running a very simple time series model of the following form $Y_t = \beta_0 + \varepsilon_t$, where Y_t is either the price of the Mexican bonds or the estimated risk premium in every month t . Our model only includes a constant parameter because we want to investigate if there were structural breaks in the form of a persistent change in the mean of the risk premium series. In other words, we are interested in finding periods when investor’s perception of risk drove up or down, on average, the risk premium or bond prices, relative to other periods.

As a robustness check, in the appendix we present alternative specifications using different methods (e.g., Hansen’s suggested method using Andrews and Ploberger’s critical values to examine the significance of breaks) and different forms for the dependent variable (e.g., $Y_t - Y_{t-1}$, the log of Y_t , and the differences of the $\ln(Y_t)$). The results are not affected significantly depending on what approach we use. We avoid using the regular Chow test to find breaks because the Chow test is too lenient when looking for many breaks in a series (i.e., many breaks pass the test of significance) and it is not optimal when there is no ex-ante information of the breaks.

First we assume that all points are possible structural breaks in the series and we estimate a series of iterative tests comparing the models before and after every possible break (i.e., we do a Chow test assuming every point is a possible break). With this approach we obtain a sequence of Chi-squared statistics. Since we originally do not have information about where the breaks in the series are, we cannot use the simple Chow F-test, which works well only when we know where the breaks are located and provides an extremely lenient test of significance when we do not have full knowledge of these breaks. Therefore, we follow the methodology of Hansen and check if our possible

structural break passes a tougher test of significance using the Andrews statistic (Andrews, 1993; Andrews and Ploberger, 1993).

Following this methodology, however, we sometimes find observations that are likely candidates for a structural break, but that do not pass the criteria outlined by Hansen, using the Andrews statistic.

Our methodology is relatively simple. In order to find which break is most likely a good candidate to be a structural break, we look for the point that minimizes the variance of squared residuals. Following Bai and Perron (1998) we then create Wald tests to see if β_0 for those points is significant using the critical values that these authors created (i.e., we check if the point that minimizes the variance of the squared residuals is significant).¹² Other economic historians have used this approach recently and have favored it over other alternatives for the simplicity of its interpretation (Waldernstrom and Frey, 2008).¹³

If our candidate date to have a structural break passes the Wald test, we then split the series on that point and we repeat the same methodology using the two new samples. We repeat the same exercise as many times as possible using subsamples of the series (we use a 5 % of trimming in every tail of the sub samples)¹⁴. Our results for this test report the likely candidates according to the first part of the exercise and reports whether these candidate dates are also representative breaks once we use the Wald test critical values. Our tables report only the breaks that pass this last test. We end up with only five or so points in which the jump in the price series passes all the tests.

We believe Mexico is a good case study to examine the changes in investor perceptions because between 1914 and 1929 the country went through many institutional changes that the literature has identified as important to build a credible commitment to repay debtors. Additionally, during this period of time Mexico had rebellions of different

¹² Bai and Perron (1998) construct critical values for this Wald test following some of the criteria used by Andrews (1993).

¹³ We actually conduct a series of tests to look for structural breaks using this methodology. First we test for whether there is one break. If that break passes the Wald test, we then do a test that looks for breaks conditional on the fact we have already found another break. We do this iteratively for as many as 5 breaks. See Bai and Perron (1998).

¹⁴ The exclusion of a percentage of observations at both tails denote the maximum length of observations in our sample that the method uses to compare if a date which is a structural break candidate, is really structural. In our case, the number of observations used range from 1 year to 2 years depending of the sample and the trimming chosen. As a robustness check, we estimate our different specifications with a 10 % and 15 % of trimming. The results are reported in the appendix.

magnitudes that had significant effects on investor perceptions about the country’s capacity to pay. Since wars and institutions, such as constitutions, have been identified as a crucial explanatory factor behind changes in investor risk perceptions we have the chance to test the effects of both of these factors on the bond price series.

In the literature of sovereign risk there is no consensus on what drives investor perceptions of country risk. For Douglass C. North and Barry Weingast, constitutional changes that limit the power of the ruler induce creditors to reduce their perception of sovereign risk given that there is lower probability of default.¹⁵ Michael Bordo and Hugh Rockoff find that adherence to the gold standard worked as a “goodhousekeeping seal of approval” before 1914, because of the discipline governments had to follow when countries were on gold.¹⁶ Yet others like Nathan Sussman and Yishay Yafeh find that wars are more important to change investor expectations than any of these institutional changes.¹⁷ Also Kim Oosterlinck and John Landon-Lane find that investors of Russian bonds adjusted their perception of risk significantly when news about World War I changed their expectations of repayment.¹⁸ Others like Niall Ferguson and Moritz Schularick show that what matters the most to determine the cost of capital for governments is whether they were part of the British Empire, as well as the country’s history of default.¹⁹ Finally, for Marc Flandreau and Frédéric Zumer political and fiscal factors are more important than political institutions or the gold standard

We show that the case of Mexico fits well with the findings of Flandreau and Zumer, who argue that revolutions, political crisis, and wars were some of the main candidates to increase investor’s perceptions of the likelihood of default. For these authors the main factor determining the cost of capital for sovereigns between 1880 and 1913 was their capacity to pay (e.g., interest or debt service over government revenues) and for that reason, “[w]ars were bad financial news and caused violent fluctuations of bond prices.” They find that bond prices had significant jumps as a result of “domestic conflicts such as uprisings or civil wars,” and add that “because investors discounted the

¹⁵ North and Weingast, “Constitutions.”

¹⁶ Bordo and Rockoff, “Gold Standard”

¹⁷ Sussman and Yafeh, “Institutions,” p. 442.

¹⁸ Oosterlinck and Landon-Lane, “Hope,” p. 532.

¹⁹ Ferguson and Schularick, “Empire Effect,” p. 289. See also Ferguson, *Cash Nexus*.

effects of political news on the debt burden, they were bound to factor in the consequences of wars, which always affected the sustainability of public finances.”²⁰

The Mexican case confirms that political instability is an important determinant of the cost of capital for a government. Political instability that leads to an internal armed conflict translates into a fiscal problem that undermines a country’s capacity to pay. This is because in order to fight a rebellion or a widespread internal war the government needs resources to pay its army and buy weapons. In fact, the kind of rebellions that took place in Mexico in the 1920s forced the government to borrow internally at high interest rates and short maturity. This automatically increased the debt burden and changed the investors’ perception of country risk.²¹

III. Findings

The Failed Attempts to Build a Credible Commitment in the 1920s.

The Mexican government carried out many renegotiations and defaults on its foreign debt during the nineteenth century. Mexico declared independence in 1821 and three years later the government issued debt in the London market. However, in October 1827 it could not meet its interest payments and a long period of default started. Many debt renegotiations took place throughout the century, but the short life of most national governments and the continuous wars between Liberals and Conservatives did not allow the different governments to meet the terms of its debt agreements.²²

In 1886, the government of Porfirio Díaz finally reached an agreement with foreign bondholders and resumed payments on the foreign debt. Two years later Mexico had its first successful debt consolidation.²³ By this time, the country was much more stable politically and government sources of revenue had increased. After 1888, the Mexican government was able to consolidate and refund its sovereign debt in better terms at least in 1899 and 1904. Paradoxically or not, foreign investors appreciated the

²⁰ Flandreau and Zumer, “Making,” p. 39.

²¹ Qualitative studies of the 1920s argue that the Mexican government was in constant need of resources to fight rebellions. See, for example, Zebadúa (1994); Aboites (2003); Uthoff (2005).

²² Bazant (1995), pp.15-56.

²³ D’Olwer (1964), pp. 1006-1010; Bazant (1995), pp.134-137.

authoritarian regime of Díaz highly, thus the effective interest rates of the Mexican debt went down from 9.87% in 1893 to 4.41% in 1910.²⁴

The resumption of payments of the foreign debt allowed the government to further the development of domestic credit markets as well. By 1890 the creation of a relatively open internal market for public securities enabled the government to sell bonds both in domestic and international markets.²⁵

In 1910 political strife over Díaz's succession developed into a revolution as several armed groups around the country rebelled against the regime. Díaz left power in May 1911 only six months after the revolution started. Speyer and Co. backed up the new government giving interim president Francisco de la Barra a new loan for 10 million dollars in 1911 at a 4.5% interest rate. After winning an election Francisco I. Madero, became President in November 1911.²⁶ Very soon the public finances deteriorated because income from import taxes (more than 40% of the federal government's budget) decreased by 20%, and military expenditures had to rise in order to fight several rebellions throughout the country. The government contracted a new foreign loan for \$10 million dollars at a 4.5% interest rate. The conditions for these two new loans had not changed much from those that prevailed during the last years of the Díaz regime, showing that, despite the troubles, the confidence in the country's capacity to pay had not deteriorated.

In February 1913, Victoriano Huerta, then chief of the armed forces, backed by the American embassy and many groups that had supported Díaz, organized a successful coup d'état against President Madero. However, many governors, and armed groups around the country did not recognize Huerta as president and rebelled against him under the leadership of the former governor of Coahuila, Venustiano Carranza.

Although we do not have data on government expenditures and revenues from 1914 to 1917 we know that it increasingly ran into deficits. In May 1913, his regime obtained a five-year loan for 16 million pounds (77.9 million dollars), but it could only sell 6 million pounds in bonds (29.22 million dollars). The effective interest rate paid for this loan was 8.33 percent, which represented a huge increase over the rate paid for the

²⁴ Turlington (1930), p.345.

²⁵ Marichal (1989), 127-132.

²⁶ Méndez Reyes (1996).

loans negotiated under presidents De la Barra and Madero. Most of the funds went to pay-off the short-term obligations incurred by these two presidents. In September 1913 Huerta government began to demand forced loans from banks in Mexico and in November he decreed the inconvertibility of bank notes into gold and reduced the metallic reserves required to back them, thus getting the country out of the gold standard.²⁷ The public started to reject bank notes as their purchasing power deteriorated and exchanged them for specie when possible. Therefore, and the government suspended its debt payments in January 1914 and the peso depreciated rapidly from that year and until 1916.²⁸

The revolutionary armies overthrew Huerta in August 1914. However their coalition fell apart after November leading to a war between its two major factions and the most violent and economically disruptive phase of the revolution began. On one side were the armies of Francisco Villa and Emiliano Zapata, and on the other were the armies led by Venustiano Carranza. By June 1915 the Carrancistas won four decisive battles that enabled them to gradually take control of the country. Carranza’s de facto government was recognized by the United States in October. As Figure 1 shows there was a huge spike in the importation of arms and ammunitions during these years.

From 1914 to 1916 the government and the revolutionary armies printed money as a way to finance their expenditures generating a rapid increase in prices. Inflationary pressures turned into hyperinflation in 1916.²⁹ In December the inflation ended when the public ceased to accept paper money. Until 1931 transactions in Mexico were carried out using metallic coins, depriving the government of the possibility of financing its expenses through the use or abuse of the inflationary tax.³⁰ In September 1916 Carranza’s government carried out a bank seizure and assumed control of the banks. In the following months the government expropriated their specie reserves. Although this gave the government immediate resources, it left the Mexican banking system in total disarray, ending any possibility of further government’s financing through internal debt.³¹

²⁷ Lobato (1945), p.258.

²⁸ Bazant (1995), p.186; Maurer (2002), p.142-143. For a detailed series of monthly exchange rates see Gómez-Galvarriato and Musacchio (2000).

²⁹ Gómez-Galvarriato and Recio (2007) pp.6-7; and Gómez-Galvarriato and Musacchio (2000).

³⁰ Paper money did not circulate again in Mexico until 1931.

³¹ Maurer (2002) and Gómez-Galvarriato and Recio (2007)

In 1917, once the government of Venustiano Carranza had achieved some internal stability and a new Constitution had been drafted, the Mexican government had two options. It could default on the foreign debt or it could try to negotiate a foreign loan and resume Mexico’s foreign debt service. They chose the latter without much hesitation. Only this time Mexico’s bargaining position was different.³² The 1917 Constitution had abrogated the property rights of foreigners exploiting mines and oil wells in the country. According to article 27, land was property of the nation, but the new constitution was unclear about whether this article would apply retroactively. The interest of foreign nationals, mostly Americans living in Mexico, was severely threatened and the US State Department took it seriously.

The first negotiations for a new loan for the Carranza government started in New York in early 1917. But the loan did not materialize because the bankers, under pressure from the State Department, ended up asking for a U.S. government guarantee for this loan. The State Department wanted the bankers to pressure Mexico to recognize damages to American citizens caused by the Mexican Revolution and wanted the Mexican government to protect the property rights of foreign nationals, especially of oil companies.³³ Even with the rapid increase in custom revenues from the export of oil and other raw materials to the countries at war (during World War I), the Mexican government was running a deficit. In Table 1, we can see that during the Carranza presidency more than half of the expenditures were going to the Ministries of Defense and Navy.

Figure 2 shows the positive reactions of investors in London to the announcement of the Carranza government that it would resume debt payments. The price of Mexican bonds went up rapidly after these announcements, reaching levels that had prevailed only before the default of 1914. That is, investors believed that the risk of default in Mexico was as low as that of the years between 1910 and 1914, when Mexico was paying regularly, even if there was some political instability in the country.

Table 3 shows that there was a positive jump in prices around July 1917, strong enough to cause a structural break in the bond prices’ series. This positive jump could reflect the fact that investors were glad to see a stable government finally had been

³² Uthoff (1998)

³³ Zebadúa (1994) pp.116-133

established, with a brand new constitution, or were just happy to know the government was interested in resuming debt payments. The confidence interval around the break of the series is so long (from December 1916 to September 1917) that is hard to pin point one specific event driving investors expectations up.

In 1918, Carranza’s government started a negotiation with J.P. Morgan, Speyer and Co., and other banking houses to organize a “refunding of the Mexican debt into a single comprehensive issue of bonds...” (Turlington, 1930, p. 275). In the proposed plan the Mexican government was willing to offer custom revenues as a security for the loan and allowed American envoys to study the public finances in detail.³⁴ But, financiers in New York and London were disappointed to find that the Mexican government did not commit fiscal revenues for the payment of the loan in the budget submitted to Congress. The Mexican government was unable to establish a credible commitment to investors because the government budget had to commit a sizable portion of the resources to pay for military expenditures to keep the armies and generals under control. Figure 2 shows that investors trading Mexican bonds in London did a significant fire sale of these securities at the beginning of 1918.

In February 23, 1919, bankers and representatives of foreign bondholders from the United States, England, and France, created the International Bankers Committee (IBC). The IBC included the most prominent and influential commercial and investment banks of the time. It was designed to be a powerful mediator between bondholders and the Mexican government. No major bank in the world would have been able to build a syndicate to lend to Mexico without having a selection of IBC members. In fact, the IBC, with the support of the State Department, could block any new loans that any competing banks could offer to the Mexican government. Under the IBC agreement, Mexican debt bondholders would adhere to the IBC agreements with the Mexican government voluntarily. At its peak the IBC represented 97% of Mexico’s debt holders (in 1925). Within the IBC, J.P. Morgan took the lead and selected Thomas Lamont as chairman of the committee.³⁵

Between the last months of 1919 and the beginning of 1920, the Mexican government tried to clarify the property rights confusion started by the new Constitution

³⁴ McCaleb (1921) and Lill (1919).

³⁵ For information on the IBC see Turlington (1930), especially p. 276-277.

and promised to resume interest payments on the foreign debt. At the end of 1919, the government unveiled plans to reorganize its financial office in London and to resume interest payments on the foreign debt. Also, in Mexico, the government promised to respect all the vested interests, whether acquired before or after the adoption of the Constitution. These actions sent a very positive signal to creditors.

The Mexican government, however, was not able to resume interest payments because it had to fight a major rebellion. In April 1920 a group of army generals rebelled against the government and the presidential candidate of the incumbency. President Carranza selected the official candidate with the opposition of some of the most powerful army generals, especially the prominent revolutionary general, Alvaro Obregón. General Obregón led a military uprising that crushed the forces that remained loyal to Carranza, killing the president on May 20, 1920 as he was fleeing Mexico City. The expenses of this military campaign were so large that the government had to suspend debt payments temporarily.³⁶ Alvaro Obregón won the elections and became president in December 1920 (Meyer, 1991; Matute, 1980).

During the administration of President Obregón the renegotiation of the debt became a priority. Obregón started his presidency during the prosperous post-World War I years. Demand for Mexican oil and minerals increased rapidly and Mexico’s fiscal revenues reached historical levels. As we can see in Table 1, in 1920 the Mexican government had a fiscal surplus for the first time since the revolution started. Fiscal revenues grew almost 40% in that year alone. Moreover, in July 7, 1921, Minister of Finance Adolfo De la Huerta introduced a new tax on oil exports. The tax was designed to obtain funds for the resumption of payments on the external debt.³⁷ This put Obregón in a comfortable position to resume payments on the foreign debt.

In June 16, 1922, Minister of Finance De la Huerta and Thomas Lamont, from the IBC, signed a new debt agreement. Mexico recognized all principal, amortization, and interest payments overdue for all the sovereign debt issued until 1910 (excluding the debt contracted by the administration of Victoriano Huerta in 1914), some states’ debt, and all the bonds the Porfirio Diaz government had issued to buy the National Railways. All the interest and amortization payments in arrears since 1914 were going to be paid in 40

³⁶ Zebadúa (1994), pp.149-153

³⁷ Bazant (1995), p. 193.

annuities of equal amounts, beginning in January 1, 1928.³⁸ Also, the Mexican government offered to resume the debt service by making annual payments of \$30 million pesos beginning in 1923, adding 5 millions more every year until 1927 (see Table 4).³⁹ To make these payments Mexico committed the total oil export taxes, the 10% tax on railroad profits, and the net earnings of the National Railways. All the sinking fund payments that Mexico was supposed to make were suspended until 1928. After 1928, the debt service was going to be resumed according to the original debt contracts.⁴⁰

Mexico paid about \$15 million dollars (\$30 million pesos) in 1922 for the first annual deposit of the debt agreement. The IBC lent \$350 thousand dollars that Mexico was missing to complete the first payment, which the Mexican government paid back a year later. The Ministry of Finance also sent the IBC \$700,000 dollars at the beginning of 1923 as part of the second payment of the agreement due in 1924, which was going to total about \$18 million dollars (\$35million pesos).

In 1923, Mexico and the United States created a commission to assess material damages done to American nationals during the Revolution and to allow oil companies operating before 1917 to keep their concessions, against the intentions of the 1917 Constitution. Negotiations between the two governments took place between March and August 1923 when the “Bucareli Agreements” were reached.⁴¹ The U.S. gave recognition to Mexico’s government in September and allowed the sale of American firearms to the Mexican government (See Figures 1 and 2).⁴²

Political instability hit hard again at the end of 1923. In mid-1923 President Obregón had settled on General Plutarco Elias Calles to run as the official candidate for the presidential election of 1924. In December of 1923, however, Minister of Finance De la Huerta, who believed he was the next in turn to run the country, rebelled against the president with wide supported from many army generals. Obregón was able to crush the uprising in February 1924, but only after

³⁸ All the interests over those funds were actually waived. Thus interest and amortization funds in arrears amounted \$400 million pesos.

³⁹ The annual payments would be paid part in specie and part in “scripts” payable in 20 years (with no interest for the first five years and an interest rate of 3% for the last 15 years). Turlington (1930), pp. 394–397,

⁴⁰ The complete agreement can be found in Turlington (1930), appendix VIII.

⁴¹ Zebadúa (1994), pp.136-137.

⁴² Meyer (1991), pp. 132-133.

Gomez-Galvarriato, Musacchio and Parral, “Costs of the Mexican Revolution”

spending close to \$60 million pesos in army supplies, arms and ammunitions, almost twice the value of the debt service for the year 1924.⁴³

Right after defeating the De la Huerta rebellion, in February 1924, Mexico started negotiations with IBC for a loan that would help it finance the interest payments for the year of 1924. The loan requested was for \$20 million dollars payable in five years. The government offered all the oil production taxes as guarantee. Alberto J. Pani, who substituted De la Huerta as minister of finance, declared that the government was expecting a “happy ending” to the negotiations of this loan.⁴⁴ The hopes of getting a new loan were erased when the IBC rejected the loan proposal.⁴⁵ The brief but costly rebellion together with sharply declining revenues from the oil production and oil export taxes, and the inability to raise new funds forced Obregón to suspend the Lamont-De la Huerta 1922 accord on June 30, 1924.⁴⁶ By the time the Mexican government cancelled the debt agreement, it had deposited \$1.4 million dollars in the IBC account in New York.⁴⁷ Investors in London reacted and the risk premium on Mexican bonds increased considerably (see Figure 2). As Table 3 shows it is at this moment when we find the most robust structural break in the series.

Even after this setback the Mexican government was still hoping that new loans would come, and continued making efforts to settle its foreign debt. In September of 1924, Minister of Finance Alberto J. Pani, contracted a loan with J.L. Arlitt, of Austin, Texas. The 6% loan of \$50 million dollars was going to be used to resume payments on the foreign debt for 1925 and to reduce the “floating” internal debt. The dominant version in the historiography states that transaction was cancelled because J. L. Arlitt failed to comply with all the legal details of the loan, but it is very likely that the IBC had forced Arlitt to cancel the deal.⁴⁸

In August of 1925, Minister Pani announced the creation of a central bank of issue (Banco de México). Until 1925 the banking system was almost inexistent and any loans the government could obtain came with extremely high interest rates because of the illiquid credit market (and to compensate for the risk of having the government

⁴³ Bazant (1995), p. 200.

⁴⁴ Pani (1926), pp.101-102.

⁴⁵ Bazant (1995), p. 200.

⁴⁶ Bodalya (1982), p.462

⁴⁷ Turlington (1930), p. 201, footnote 122.

⁴⁸ Zebadúa (1994), pp. 261-262.

overthrown). For example, before the creation of the central bank in 1925, "the normal interest rate around the Republic in 1924 was of between 18% and 24% annually."⁴⁹ Still, after the creation of the central bank interest rates fluctuated between 7% for inter-bank loans to 10% for regular loans.⁵⁰ Thus, the possibility of accessing foreign loans became more important for the government since interest rates on foreign country-denominated loans was significantly lower (e.g. 5%-7%).

The IBC complained about the establishment of the Banco de México on the grounds that funds intended for the bondholders under the Lamont-De la Huerta Agreement were being used for the government-controlled new central bank.⁵¹ However, this did not stop the IBC from trying to reach a agreement and negotiations for a resumption of debt payments (and a possible funding loan) started in New York at the beginning of October of 1925.⁵²

The new accord was signed in October 23, 1925 by Minister Pani and Thomas Lamont. The revised pact included three main modifications to the 1922 agreement. First, the funds that the government had failed to deposit in 1924 and 1925, as required by the former agreement, would be deferred and amortized over an eight-year period beginning on January 1, 1928 with a 3% interest rate.⁵³ Second, the government ceased to be directly responsible for the obligations of the railways. The interests in arrears of the railway debt were also deferred to 1928, with annual payments of \$2.5 million pesos for 39 years. Third, the government committed to return the National Railways of Mexico to private management at the end of 1925, a concession the bankers had been seeking for years and to which they were entitled by law, since bankruptcy law in Mexico gave creditors the right to collect collateral or select a management team to run the company following the typical scheme of compositions of the time.⁵⁴ The entire earnings of the railways were going to be used by the IBC to pay interests to the holders of railway debt.

⁴⁹ This is according to declarations of Alberto Mascareñas, director of the Central Bank, in a conference he gave in 1928, as cited in Torres Gaytan (1990), p. 173.

⁵⁰ Torres Gaytan (1990), p. 173

⁵¹ Smith (1969), p.152-153.

⁵² Turlington (1930), p. 306.

⁵³ Bodalya (1982), p.462.

⁵⁴ See Smith (1969), p.154. For details on the rights of the holders of railway debt see Turlington (1930). Compositions were receiverships or trustee-run reorganizations in which the majority of creditors had the right to nominate a new management for the company and approve any reorganization plan.

The agreement was approved by congress in January of 1926 and the railways were returned to private management.⁵⁵

The government added further concessions to the railway debt holders by guaranteeing the service of these debts in the eventual case that the net earnings of the railways were not enough to meet the scheduled payments. This was a binding agreement because most of the debt of the National Railways was in the form of mortgage bonds, therefore a default on these bonds allowed bondholders to file for bankruptcy and to liquidate the assets of the company in order to recover their money. (Bazant, 1995).

The 1925 agreement reduced the debt burden of the Mexican government significantly. From the \$1,561,438,348 pesos assumed in 1922, now the government took responsibility for \$890,201,892 pesos of debt. Also, following this reduction in the principal, the annual obligations of the Mexican government for 1926 and 1927 were reduced from \$45,000,000 and \$50,000,000 pesos to \$21,385,690 and \$22,023,802 respectively.⁵⁶ This allowed the government to make the 1926 payment in its entirety using all the export and oil production taxes, which amounted to about \$20 million pesos. Since the debt payment for that year was exactly \$21, 219,000, the government had to set aside revenues from other sources to meet these obligations.⁵⁷

At the end of 1926, Mexico was paying its debt and had given its creditors a tangible asset to extract cash flows (e.g., the railways). President Plutarco Elías Calles promised in a speech before the Mexican Congress that his government intended to “cover scrupulously the public debt service”, but that this could be done only “so long as the economic capacity of the country does not necessitate that another road be taken.” He revealed that although the Mexican treasury was in a “critical state” and a delay in the payments on the interior debt was necessary, the payments due under terms of the Lamont-Pani accord had been met through June 1927. Two loans from the IBC totaling approximately \$2.7 million had been needed in January and July of 1927 to pay the interest on the National Railways debt for the last half of 1926 and the charges on the foreign debt for the first half of 1927.⁵⁸ Then it was able to borrow \$6 million pesos from

⁵⁵ Turlington (1930), pp. 306-308, Bazant (1995). pp. 201-205

⁵⁶ Pani (1926), pp. 104-105 and Turlington (1930)

⁵⁷ The government also paid \$5.35 million pesos to the bearers of railways bond’s guaranteed by the government. See Turlington (1930), p. 313, footnote 145.

⁵⁸ Murray (1927) pp. 29-30 quoted in Bodalya (1982), p.463.

the IBC to meet the 1927 annual payment, which were paid in arrears during the first six months of 1928.⁵⁹

Figure 2 shows that investors in London bid up the prices of Mexican bonds after the government starting meeting payments in 1926. Yet the price levels were now lower than what they had been before the default of 1924. That is even if investors were more optimistic once Mexico started meeting payments for two years in a row, the environment of political instability had eroded the baseline price level at which they were willing to buy/sell Mexican bonds (in 1926 the average price was £74, roughly £50 less than in 1923). Therefore, even if the Mexico was meeting its debt service and had a lower debt burden than in 1922, by 1926 and 1927 investors had interiorized political instability and the potential for another disruption in payments. Investors had basically raised the risk premium of the Mexican bonds.

Unfortunately for the Mexican government, the political instability and deteriorating economic conditions hurt the country's public finances again. There were three forces that affected Mexico's capacity to pay in 1927 and forced it to suspend payments in 1928. First, Mexico's economic situation worsened in mid 1926 as a consequence of the recession in the United States.⁶⁰ Second, the oil export tax revenues kept falling rapidly as oil production diminished as a consequence of "the controversy between oil companies and the Mexican government, the heavy taxation imposed since 1922, the exhaustion of highly productive wells, the limited results of new drillings, (...), and the rise of competition from similar oil in Venezuela and the huge increase of output in the American southwest."⁶¹ Oil production for the first nine months of 1927 declined 31% from a comparable period in 1926, and the combined revenues from oil production and oil export taxes declined 45% in the same period.⁶²

Political instability hit the government's finances again in 1927. In January Catholic groups organized a widespread rebellion against the Calles administration to

⁵⁹ The amount borrowed was repaid to the IBC in 1928. See Turlington (1930), p. 313.

⁶⁰ Cárdenas (1994), pp. 23-29.

⁶¹ Sterret and Davis (1928), p.103-104. Haber, Maurer, and Razo (2003), chapter 6 defend the exhaustion of wells as the main reason for the oil sector decline.

⁶² Bodalya (1982), p.464. For a narrative explaining the decline of the oil industry in Mexico see Stephen Haber, Noel Maurer, and Armando Razo, "When the Law Does Not Matter: The Rise and Decline of the Mexican Oil Industry," in *Journal of Economic History* 63, no. 1 (March 2003): 1-31.

oppose the drastic measures the government took against the Catholic Church. This uprising, known as the “Cristero War,” gathered around 20,000 men in a few weeks. In spite of major military campaigns to crush it, a peaceful solution was not reached until June 1929.⁶³ To make matters worse in October 1927 there was another—although minor—uprising led by Generals Francisco Serrano and Arnulfo Gómez, who opposed the re-election campaign of General Obregón. These rebellions forced the government to increase military expenditures again and pushed the government budget into deficit for the first time since 1924. Mexico’s international reserves decreased from 39.8 million dollars in May 1926 to 15 million in January 1927.⁶⁴ Thus, in early 1927 it became clear that Mexico was not going to be able to make the full payment of the interests due for that year (see Table 4).

Calles sent representatives to New York in late 1927 to discuss with the IBC the possibility of a new agreement. The committee concluded that any agreement would be futile until Joseph E. Sterrett, of Price, Waterhouse & Company, and Professor Joseph E. Davis, of Stanford University, made a thorough study of Mexico’s financial situation, as well as a realistic estimate of the country’s future capacity to pay.⁶⁵ Sterrett and Davis’s report indicated that Mexico’s present fiscal problems were severe. The Mexican government had liabilities to foreign bondholders, had a considerable internal debt, and faced large number of claims for injury compensation and property damages.⁶⁶

Table 8 reports their estimates of the Mexican public debt as of December 31, 1927, compared to that which prevailed before the Revolution. A significant feature of the 1927 debt was that a large proportion (57% of the total principal of the funded debt) consisted of accrued and unpaid interest.⁶⁷ Another important proportion (around 22% of the whole debt) was a result of the government’s appropriations of funds from Mexican banks, the international claims for damages to foreign property during the civil war years, unpaid bills to suppliers, and overdue payroll payments for government employees. Although the government’s debt increased by 80% from 1911 to 1927 in real terms,

⁶³ Meyer (1991), pp.164-176.

⁶⁴ Cárdenas (1994), p.28.

⁶⁵ Bosalya (1982), p.465

⁶⁶ Sterret and Davis (1928), p.6

⁶⁷ Sterret and Davis (1928) p.235

small fraction of the increase was the result of new loans voluntarily provided by national or foreign creditors.

In Sterret and Davis' view, "if the government enjoyed even fair credit in the money markets it could consolidate its floating debt by borrowing in one form or another and pay off its small creditors so that until actual reductions could be made the debt would be at least in a more manageable condition."⁶⁸ However new loans were difficult to get, making it difficult for the government to break the vicious circle it had gotten into.

According to their study of Mexico's financial condition, the government was capable of allocating only about 30 million pesos for debt purposes within the period of three years, which would just about meet the interest charges upon the now outstanding bonds but would do nothing for the other debts. That sum could increase in the following years if Mexico carried out several reforms. They suggested that the government could diminish its military, since this line of expenditures consumed more than one-third of the government's income (see Table 1).⁶⁹ In order to cut expenditures the government had to reduce political instability first. "One of the urgent problems confronting Mexico" wrote Sterret and Davis "is to diminish the occasions for insurrection and to develop the procedures by which changes in leadership and policies can be effected in orderly fashion and accepted in good spirit by those who are defeated".⁷⁰

The governments' fiscal conditions did not improve as military expenditures continued to increase and export and tax revenues continued to fall. To make matters worse, the president-elected for the 1928-1932 term, once again General Obregon, was assassinated on July 17 1928. Mexico continued to perpetuate the cycle of political instability and violence. The government budget for 1929 had to include an increase in military expenditures to 33% of expenditures (reaching \$90 million pesos per year).

Sterrett and Davis advised that any new debt agreement with Mexico had to be comprehensive and include all Mexico's outstanding debt in order to be effective. Nonetheless, Lamont, representing the IBC, negotiated with Montes de Oca, the Minister of Finance, an accord that did not follow this advice. On January 25, 1929 the Mexican congress authorized the government to consolidate the debts established under the

⁶⁸ Sterret and Davis (1928), p.8

⁶⁹ Sterret and Davis (1928), p.63

⁷⁰ Sterret and Davis (1928), p.230.

agreements of 1922 and 1925, in exchange for new bonds redeemable in not less than 45 years and bearing an annual interest rate of no more than 5%. National Railways obligations would be negotiated separately, but debt negotiations were stuck.⁷¹

Figure 2 and Table 3 shows that in October of 1928 we find the last significant structural break in our bond price series (within a confidence interval that goes from September 1928 to January 1929). This break was the result of the bondholders’ perception that Mexico’s commitment to pay was destroyed after the Cristero War of 1927 had drained the treasury. The announcement of the suspension of payments and the delays to reach a new agreement explain most of the jump in the series (the rapid decline in prices of Mexican bonds).

Further negotiations with foreign creditors were stalled because on March 3, 1929 General Escobar led a rebellion against the government that ended up draining the treasury’s coffers once again.⁷² When negotiations between the IBC and the Mexican government were finally under way the world economic crisis had started. An agreement between both parties was reached in July 25, 1930, but it was never put in practice. The opportunity of the 1920s was lost with the advent of the Great Depression and the contagion of defaults in Latin America. The debt game was never going to be the same for foreign creditors and Latin American countries. Mexico remained in default until 1942 when a new debt agreement was finally reached.⁷³

Our Counterfactual: Mexico’s Public Debt without Instability

According to the experiences of other Latin American economies Mexico should have been getting credit somewhat fast after resuming payments in the 1920s. Debt restructurings were a common occurrence in “emerging economies,” especially in Latin America. Argentina rescheduled payments to its federal and provincial debts after the Barings crisis of 1890. In 1893, in what is known as the “Arreglo Romero,” the Argentine federal government assumed all state debts, got a reduction of almost 30% in annual interest payments for 5 years, and suspended the amortization of the debt until 1898.⁷⁴

⁷¹ Bodayla (1982), p.475

⁷² Bodayla (1982), p.478

⁷³ Bazant (1995), pp. 221-227., Marichal (1989), p.213.

⁷⁴ Abreu (1999), p. 7

Argentina got back to issuing new debt quickly in the 1890s. There is a bond issue as early as 1897.

Brazil also had two major debt restructurings before the Great Depression. In 1898, it got a loan to pay the interests of the next three years. This agreement also suspended the amortization of the debt for 13 years! The second restructuring came in 1914, when it got a loan to pay for the debt service. The deal included a suspension of amortization payments until 1927 and a suspension of interest payments until 1917.⁷⁵ Brazil also got rehabilitated in world debt markets quickly. According to the *Investor's Monthly Manual*, in the 1920s alone, Brazil was the largest issuer of debt of all the Latin American economies (this includes sovereign, state, and municipal debts) (see Table 6). There are loans made to the state of Sao Paulo as early as 1921 and sovereign debt issues in 1927.

Most of the large economies in Latin America were issuing debt in the 1920s. As mentioned, Table 6 shows Brazil was the champion of new issues during the 1920s. This country, including state and municipal debt, issued almost £47 million pounds sterling of new debt between 1920 and 1929. Argentina and Chile placed new issues too, getting £3.5 million and £10.5 million pounds sterling during the decade, respectively.

Mexico would have been a great candidate for a new debt issue in the 1920s. As Table 6 shows, according to the information provided to investors in the *Investor's Monthly Manual*, Mexico was the country with the lowest debt burden per capita in the region. While Argentina and Chile had debt per capita ratios of over £10, Mexico had £4 pounds of debt per head. Brazil with its large population had slightly more than Mexico, with a debt of £5 per capita.

Even though this is the information that investors observed, this data underestimates the debt burden assumed by the government in 1922 and overestimates it after 1925. The total debt assumed by the government, including state bonds and the railway mortgage bonds, amounted over \$1,500 million pesos (£145 million). If the population of Mexico was estimated at 15 million inhabitants, we would get a debt per capita of less than £10. This would put Mexico still below Argentina and Chile, according to Table 6. After 1925 Mexico's debt burden would have been reduced by

⁷⁵ Abreu (1999), pp. 8-14.

almost one half, because the government allowed creditor to take over the National Railways if they accepted to take the company’s debt off the government’s balance sheet. Therefore, between 1925 and 1928 the Mexican government had a lower debt per capita than during the rest of the decade.

In Table 7, we show a comparison of Mexico with a broader cross-section of countries. The data compiled by Turlington (1930) compares Mexico in 1925 with Argentina, Belgium, Brazil, Chile, France, Great Britain, Italy, the Netherlands, Norway, Peru, Spain, and the United States. We included the two scenarios Turlington (1930) works with, one in which Mexico has a debt of \$1 billion pesos and another in which Mexico assumes the payment of reparations to American citizens caused by the Mexican Revolution (amounting \$2 billion pesos). In the first case the debt per capita of Mexico is the lowest of all nations included. Even if we assume Mexico was going to pay reparations to foreigners we would get a debt per capita of about £13 pounds or 133 pesos, an amount that still looks smaller than most countries (except Brazil and Peru).

If we look at the budget deficits reported in the *Investor’s Monthly Manual* we would find Mexico was not the worst borrower. Table 5 shows the budget deficit or surplus reported by this publication between 1917 and 1928. According to this data, Mexico did not look that bad compared to Chile and Argentina. In fact, when we look at the actual data reported by the Ministry of Finance to the IBC (presented in the last column) we see that Mexico was in better shape than Argentina and Chile, with the exception of 1923 and 1924 (when fighting the De la Huerta rebellion put a severe toll on the Mexican government’s finances).

According to the debt agreements Mexico reached, the debt burden to the government did not look high compared to other countries. When we look at the debt service proposed by Mexico in the 1922 agreement and the actual payments made throughout the 1920s, we can see that the debt burden of Mexico was about 15% of revenues for most years, reaching 16% in 1927. The internal debt increased the debt burden, but most of this increase was the product of the short-term debt contracted to fight the De la Huerta rebellion in 1923–24 (see Table 8). In contrast Table 9 shows that a large share of the debt acquired by several Latin American countries during the 20s, went to infrastructure investment.

Mexico’s proposed debt service was not that large compared to data for other countries around 1925. According to the data presented in Table 7, most countries used 30% of their revenues to pay the debt service. In Latin America, only Chile and Peru paid less than 30% of revenues for interests and amortization, and they still had larger debt burdens than Mexico. In Table 4, we can see that the annual payments of Mexico for 1925-1928 were less than 20% of revenues.

In sum, Latin American countries that had debt restructurings like Mexico’s usually got loans to rehabilitate the government finances. Also, many of these countries were able to issue new debt in the 1920s, even if they had recent restructurings. In fact, most of the borrowers had higher debt burdens and higher budget deficits than Mexico. That is why, it is strange to find that Mexico did not get a new loan during this decade and the explanation is simply that during the 1920s bondholders switched their preference for simple debt burden indicators such as debt to exports, budget deficits, or debt per capita to a more complex estimation that took into account political instability. For this reason between 1926 and 1928 when Mexico was meeting payments and was relatively at peace, investors were pricing Mexican bonds at a higher level than say between 1922 and 1924.

In fact, Mexico’s profile as a debtor was tempting for some creditors. The country received money during the 1920s in small amounts and received offers for larger amounts. There was a loan offer in 1925 from J.L. Arlitt, of Austin, Texas and an actual loan of £1.15 million pounds from the Loan Bank.⁷⁶ More loans were not obtained, because they depended on the underwriting of the members of the IBC. So, the game was all about credibility *vis a vis* the IBC and credibility is something Mexico could not build during the 1920s. As we have mentioned before, the IBC represented over 90% of the Mexican debt holders.⁷⁷ The committee included some of the most influential New York Bankers. For instance, the IBC included J.P. Morgan, Kuhn Loen and Co., National City Bank, and Chase National Bank.⁷⁸ If there was a syndicate of banks that could help

⁷⁶ Reported in “Mexico and Foreign Investors” in *Investor’s Monthly Manual*, October, 1925, p. 559.

⁷⁷ Turlington (1930), p. 299. This is the number of bondholders that deposited their titles one the 1922 debt agreement was signed. But Mexico had previously agreed to negotiate external debt issues only with the IBC.

⁷⁸ Turlington (1930), appendix VIII contains the full list of members.

Mexico to get a new loan, it had to be most likely formed from within the members of the IBC.

Instability, then, hindered the capacity of the Mexican government to commit to pay its foreign debt and convince the IBC to provide a new loan. The Mexican government’s difficulty at generating a cash flow to pay the debt service was to a large extent related to the increase in military expenditures that were necessary to deal with instability. During the pre-revolutionary period the debt burden was always close to 20% of revenues and military expenditures were also around 20% of expenditures (see tables 1 and 4). During the 1920s, after the civil war was over, and in spite of the fact that government’s revenues had more than doubled (thanks to the oil and minerals export boom), the share of military expenses increased to around 30% of total expenditures. As figure 1 shows export of arms and ammunitions from the United States to Mexico kept higher throughout the 1920s than they were in the pre-revolutionary period. Mexican military expenditure as a percentage of total expenditure was very high in comparison with that of other Latin American countries as well, even of those like Argentina that had a large and professional army spent around 17% of its annual budget in the military, Colombia only spent 8.2% of its budget in the military.⁷⁹

In Table 4, we can see that had there not been rebellions, such as that of 1923, the money necessary to make foreign debt payments would have been met more regularly. For example, the \$60 million pesos that the government had to spend to fight the 1923 rebellion, would have paid the 1924 interest payments (\$40 million pesos) and would have helped to make the 1925 payment (of \$45 million pesos). Also, if the Mexican government had been able to pacify the country during the 1920s and reduce military expenses to around 15% of the budget, as Minister of Finance Pani intended, then Mexico would have been able to divert at least \$40 million pesos (half of the military expenditures) to make debt payments every year. But, instability did not allow the Mexican government to reduce military expenditures and it had to suspend payments three times during the 1920s.

Mexico’s government inability to comply with its debt payments was extremely costly in terms of economic development not only because it basically closed possibility

⁷⁹ Sherwell (1929), 207-208.

of getting new foreign loans once the oil sector declined in the late 1920s. Moreover it complicated the reconstruction of an internal credit market because instability forced the government to crowd out all private investment in domestic markets. The conditions necessary for the development of financial markets that Mexico took so long to through most of the 19th century, were once again lost.⁸⁰

V. Conclusion

We developed an argument of how political instability affected the capacity of the Mexican government to obtain new loans and regularize its expenditures pattern. After the Revolution the Mexican government had to spend on average more than 30% of total revenues on the Ministry of War and Marine. Moreover, the increases in the expenditures to fight rebellions did not allow Mexico to repay its foreign debt service continuously for more than two years over the whole 1920s. Even when different administrations did an arduous diplomatic work to build credibility in international financial markets, political instability hindered its efforts to repay its foreign debt.

Investors in London were concerned about the effects that political instability had on the Mexican government's finances. For instance, they reacted positively to the government announcements that they would repay the debt in 1919. Yet the most significant events changing investor perceptions in a negative way were the suspension of payments in 1924 and 1928. These disappointments were a direct product of the government's incapacity to sustain debt payments when internal political disagreements became major military conflicts. In those instances the government increased military expenditures in a significant way, using money that could have been used to pay the foreign debt and, thus, build a credible commitment with international creditors.

In sum, revolutions can have long-lasting effects when it comes to reorganizing the government finances and the political life of a country. In the case of the Mexican Revolution, the rapid growth of the demand for mineral products, oil, and other commodities helped Mexico to grow faster in the 1920s and 1930s than in the pre-revolutionary period. However, we hope our argument convinces the reader that if the Mexican government finances had not been affected so severely by the political

⁸⁰ Marichal (1989), 127-132.

instability of the 1920s, Mexico would have achieved higher rates of growth after the Revolution.

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Tables and Figures

**Table 1. Mexican Government Revenues and Expenditures
(Million Current Pesos)**

	Revenues	Expenditures	Surplus or Déficit	As a % of Revenues	Ministry of War and Marine	As a % of Expend.	Taxes paid by the Oil industry	As a % of Revenues
1910	106	95	11	11%	19	20%		
1911	111	101	10	5%	20	20%		
1912	212	202	10	6%			0.49	0.23%
1913	164	153	10	6%	29	19%	0.77	0.47%
...								
1918	146	179	-32	-22%	129	72%	12	8%
1919	131	203	-73	-12%	134	66%	17	13%
1920	251	213	39	15%	132	62%	51	20%
1921	280	271	-5	-2%	153	57%	63	22%
1922	261	384	-122	-47%			88	34%
1923	264	348	-84	-32%	126	36%	62	24%
1924	284	298	-14	-5%	107	36%	54	19%
1925	337	292	45	13%	93	32%	47	14%
1926	329	329	0	0%	97	29%	41	13%
1927	307	310	-3	-1%	99	32%	26	8%
1928	311	287	23	8%	98	34%	18	6%
1929	322	276	47	15%	103	37%	19	6%
1930	289	279	10	3%	86	31%	22	8%
1931	256	226	30	12%	68	30%	22	9%
1932	212	212	1	0%	61	29%	24	11%
1933	223	246	-23	-10%	60	25%	28	13%

Source: Data for 1910-1912 from Mexico. INEGI. *Estadísticas Históricas de México*, INEGI, Mexico, 1991. Data for 1911-1913 from Turlington (1930), Appendix I. The estimates for 1918 revenues and expenditures, 1919 expenditures, 1920 revenues and expenditures, and 1921 expenditures were taken from *The Mexican Year Book 1920-1921* pp.323-326. Data for 1919, 1921 and 1922 revenues and on the taxes paid to the oil industry come from Meyer (1981), p.35. Data on expenditure for 1922 comes from Gilly (1987), p.55. From 1923 to 1925 data from Pani (1926), pp.163-188, 1926 from Sterret and Davis (1928), pp: 50, 60, 255. From 1927 on data from México, Secretaría de la Estadística Nacional, Departamento General de Estadística, *Anuario Estadístico de los Estados Unidos Mexicanos 1938*, México: DAPP, 1934, pp.280-281.

Table 2. Comparison of Break Dates Estimated by Three Methods and Relevant Dates

Date	Event	Structural Change Chow Test	Structural Change Andrews Criterium	Structural Change Bai-Perron Test
Nov-14	Revolutionary coalition falls apart	Yes	No	Yes
Oct-15	United States recognizes Carranza's government	Yes	No	No
Feb-17	New Constitution	No	No	No
Apr-17	Government announces Mexico will pay	No	No	Yes
Apr-19	The International Bankers Committee is established	No	No	No
Aug-20	General Obregon's rebellion	No	No	No
Jun-22	The De la Huerta-Lamont agreement is signed	Yes	No	No
Dec-23	De la Huerta rebellion	Yes	No	No
Jun-24	Default on government's debt	No	No	Yes
Sep-25	The Banco de México is established	Yes	No	No
Oct-25	The Pani-Lamont Agreement is signed	Yes	No	No
Jan-27	Cristero War starts	Yes	No	No
Jan-28	Default on government's debt	Yes	No	No
Mar-28	Sterret and Davis report declares Mexico insolvent	Yes	Yes	No
Jun-28	The 1922 debt agreement is suspended by the Mexican government	Yes	Yes	No
Jul-28	Obregos is assassinated	Yes	Yes	No
Jan-29	New debt agreement is delayed	Yes	Yes	Yes

Note: Chow and Andrews methodology used a OLS estimation run with Risk Premium in Levels. The estimates have heteroskedasticity-consistent errors with no detectable serial correlation. All break dates estimated with 10 % of significance and a 5 % of trimming. The Bai-Perron test break dates estimated using a 5 % of significance and a 5 % of trimming. Bai-Perron results are considered positive if the date falls within the confidence interval (see Table 3).

Table 3. Bai-Perron’s Estimated Break Dates in Base Samples

Serie	Break Dates	Confidence Intervals	Break Effect	Relevant Events
Price (Levels)	Aug 1914	[Jul 1914, Oct 1914]	(-)	Huerta leaves the presidency.
	Jul 1917	[Dec 1916, Sep 1917]	(+)	New Constitution.
	Oct 1919	[Apr 1919, Nov 1920]	(+)	The International Bankers Committee is established; Obregón rebels.
	Apr 1924	[Mar 1924, Aug 1924]	(-)	Default on government’s debt; Obregón defeats De la Huerta
	Nov 1928	[Sep 1928, Jan 1929]	(-)	Mexican Congress approves new plan for debt agreement.
Risk Premium (Levels)	Feb 1911	[Jun 1910, Mar 1911]	(+)	D’az Leaves the Presidency.
	Aug 1913	[May 1913, Sep 1913]	(+)	
	Aug 1914	[Feb 1914, Sep 1914]	(+)	Default on government’s debt.
	May 1924	[Mar 1924, Jul 1924]	(+)	Default on government’s debt; Obregón defeats De la Huerta.
	Dec 1928	[Jul 1928, Jan 1929]	(+)	Obregon is Assassinated; Mexican Congress approves new plan for debt agreement.

Note: The sample used in this analysis went from January 1910 to September 1929. The table shows the break dates selected by the sequential procedure, their 95 % confidence interval, the effect of the break (relative to the previous regime), and relevant events surrounding the break date's confidence interval. The breaks were estimated using a 5 % of trimming. The test for existence of breaks, and the sequential test for the number of breaks are available upon request.

Table 4. Foreign Debt Service of the Mexican Government, 1901-1928

Year	Revenues	Actual Foreign Debt Service Made	Interest Payments in the Government's Budget	Under 1922 agreement	Under 1925 Agreement	External Debt Service	Total Debt Service	As a % of Revenues	
								External Debt Service Under 1922 agreement	External Debt Service Under 1925 agreement
1901	63.28	14.02				22%			
1902	66.47	16.68				25%			
1903	76.62	16.38				21%			
1904	87.00	15.48				18%			
1905	92.67	16.36				18%			
1906	102.75	17.74				17%			
1907	115.03	18.23				16%			
1908	111.81	21.56				19%			
1909	98.78	25.69				26%			
1910	106.33	27.35				26%			
1911	111.00	26.60				24%			
1912	211.84	24.86				12%			
1913	163.50	25.86				16%			
1914-	0.00	0							
1923	264.27	30	41.47	30		11%	16%	11%	
1924	284.48	1.4	72.38	35			25%	12%	
1925	336.72	0	84.17	40			25%	12%	
1926	328.80	21.39	49.97	45	21.385	7%	15%	14%	7%
1927	306.87	22.02	57.40	50	22.023	7%	19%	16%	7%
1928	310.74	0	33.50	140	70		11%	45%	23%

Sources: For Revenues and actual debt service for the 1920s same as Table 1. Debt Service before 1910 from Zabludowski (1984), p. 204. Payments under the 1922 and 1925 agreement are estimates mostly taken from Turlington (1930).

**Table 5. Deficit or Surplus as a Percentage of Revenues in Latin American Countries
(According to the Investor's Monthly Manual)**

	Brazil	Chile	Argentina	Mexico (IMM)	Mexico Actual
1917		10%			
1918		11%	-41%		-22%
1919	53%	-47%	-16%		-12%
1920	39%	-20%	11%	-0.4%	15%
1921	26%	-4%	-13%	-34%	-2%
1922		1%	-9%	4%	
1923		-22%	-4%		-32%
1924	15%	24%	3%		-5%
1925	14%	24%	0.12%	-2%	13.3%
1926	31%	-11%	-0.11%	3%	0.03%
1927	22%	0.4%	-11%	-6%	-1.0%
1928	24%	2%	0.12%		7.56%

Source: *The Investor's Monthly Manual*, 1920-1929 and Table 1.

Table 6. Debt Quoted in London and Debt Per Capita in the Largest Latin American Economies.

	1929	1920	1914	1910
MEXICO				
Total debt quoted	£60,700,000	£60,700,000	£60,700,000	£40,700,000
Population Reported	16,290,000	15,115,612	14,855,000	13,607,259
New issues per period	£0	£0	£20,000,000	
Debt Per capita	£4	£4	£4	£3
ARGENTINA				
Total debt quoted	£105,634,298	£102,118,851	£96,166,107	£89,956,507
Population Reported	10,616,814	8,284,266	7,467,878	6,489,000
New issues per period	£3,515,447	£5,952,744	£6,209,600	
Debt Per capita	£10	£12	£13	£14
BRAZIL				
Total debt quoted	£178,624,020	£131,646,520	£123,646,520	£110,246,520
Population Reported	36,870,962	27,473,579	23,070,969	19,910,646
New issues per period	£46,977,500	£8,000,000	£13,400,000	
Debt Per capita	£5	£5	£5	£6
CHILE				
Total debt quoted	£51,624,092	£41,097,592	£41,097,592	£29,475,492
Population Reported	4,004,014	3,870,022	3,459,951	3,248,224
New issues per period	£10,526,500	£0	£11,622,100	
Debt Per capita	£13	£11	£12	£9

Source: *The Investor's Monthly Manual*, 1920-1929.

Note: Total debt and new issues include sovereign, state and municipal debts (called "foreign corporations" in the *Investor's Monthly Manual*) of these countries.

Table 7. Debt Burden in Selected Countries According to the League of Nations.

Country	Amount of Debt in million pesos	Debt Per Capita	Annual Debt Service in Million Pesos	Debt Service as a % of Normal Revenues
Argentina	2180	218	156	30%
Belgium	4278.5	549	238	41%
Brazil	2681.4	88	96	35%
Chile	831	208	60	24%
France	37742	902	1253	40%
Great Britain	76337	1608	3114	40%
Italy	5172.1	127	308	36%
Netherlands	2405.4	324	106	20%
Norway	730.76	261	40	29%
Peru	224.3	49	18	21%
Spain	5050	230	226	30%
United States	39300	340	1500	19%
Mexico (2 billion)	2000	133		
Mexico (1 billion)	1000	66.7		

Source: Turlington (1930), p. 335. Original data from the League of Nations, converted to Mexican pesos by Turlington at the exchange rate of 10 pesos per pound.

1925 agreement (1 billion pesos) and an estimate of the total debt of Mexico if the country were to pay for reparations on damages to foreign citizens caused by the Mexican Revolution.

Table 8. Debt of the Mexican Government (in Mexican Currency)

	1911	1927
Funded debt		
<i>Government and State debt</i>		
Principal		\$ 529,073,055.24
External	\$ 302,977,625.00	
Internal	\$ 136,630,000.00	
Interest accrued	\$ 96,469.00	\$ 343,840,272.30
Total	\$ 439,704,094.00	\$ 872,913,327.54
<i>Railway debt</i>		
Principal	\$ 138,475,000.00	\$ 137,945,235.33
Interest accrued		\$ 125,480,668.86
Less payments made to the IBC on accounts of interest falling due 1923- 1927		\$ 75,126,099.32
Total	\$ 578,179,094.00	\$ 1,061,213,132.41
Other funded debt (a)		\$ 27,629,420.00
Interest accrued		\$ 2,383,754.51
Sundry bonds and coupons called for redemption (b)		\$ 259,120.31
Total funded debt	\$ 578,179,094.00	\$ 1,091,485,427.23
Floating debt		
<i>Banking debt</i>		
Specie debt		\$ 51,297,650.71
Loans from the Bank of Mexico		\$ 11,568,071.58
Total		\$ 62,865,722.29
Notes payable		\$ 25,077,495.90
Current account with large creditors		\$ 29,934,263.56
<i>Departmental accounts</i>		
Salaries and wages		\$ 2,643,262.21
Supply bills etc.		\$ 24,248,486.02
States and municipalities share of taxes etc.		\$ 5,095,652.63
Guarantee and other deposits and funds		\$ 9,413,417.90
Postal and teleraph current liabilities		\$ 2,341,970.98
Total floating debt		\$ 161,620,271.49
Total funded and floating debt	\$ 578,179,094.00	\$ 1,253,105,698.72
International Claims		\$ 200,000,000.00
Agrarian Claims		\$ 200,000,000.00
Total debt	\$ 578,179,094.00	\$ 1,653,105,698.72
Total debt in pesos of 1900	\$ 378,214,499.11	\$ 676,276,221.31

Sources: Bazant (1995) p.174 based on Turlington (1930)p.246; Sterret and Davis (1928) pp.236 and 244-251. Price index comes from Gómez-Musacchio (2000).

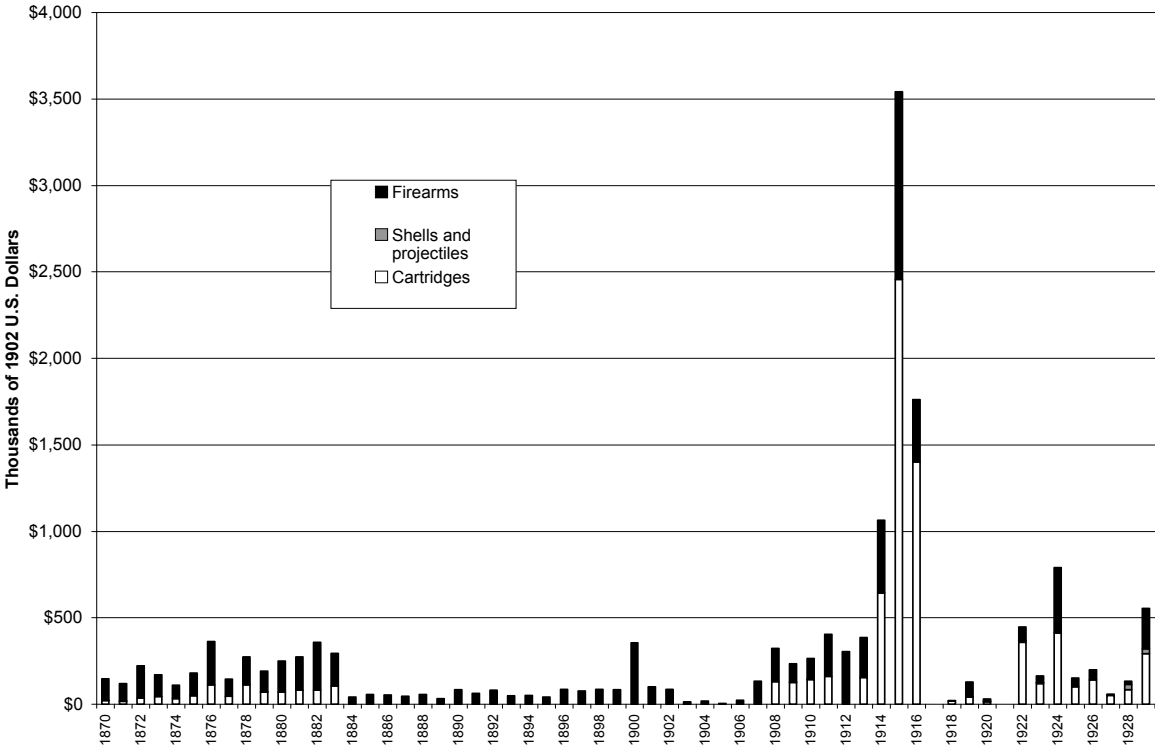
Notes: a) Agrarian Public Debt and bonds for liquidation of Federal employees and of the Tehuantepec Railway; b) Includes Republic of Mexico 5% consolidated external gold loan of 1899, City of Mexico 5% sterling loan of 1889, Mexico 5% internal redeemable bonds of 1895, old internal and external bonds, and Kansas City and Orient Railroad subsidy certificates.

Table 9. Debt Use in Selected Latin American Countries (1920-1930)

Country	Amount Issued (thousand of dollars)	Purpose		
		Infrastructure	Refinance	Other
			%	
Argentina	419,418	28.37	67.07	4.56
Bolivia	66,000	65.15	34.85	0.00
Brazil	641,318	38.59	38.49	22.76
Chile	342,788	58.55	15.20	26.26
Colombia	176,775	82.70	4.95	12.35
Costa Rica	10,990	89.17	10.83	0.00
Cuba	155,973	25.65	50.65	23.70
Dominican Republic	20,000	75.00	25.00	0.00
El Salvador	21,609	0.00	100.00	0.00
Guatemala	9,456	52.35	47.75	0.00
Haiti	18,634	0.00	100.00	0.00
Panama	20,500	21.95	58.54	19.51
Peru	110,314	54.72	45.28	0.00
Uruguay	70,388	100.00	0.00	0.00
Mean	148,869	49.44	42.76	7.80

Sources: Marichal, Carlos (1988). *Historia de la Deuda Externa de América Latina*, Madrid, Alianza Editoria, Table VII, p. 225-26

Figure 1. Arms Exports from the United States to Mexico



Sources: United States, Department of Commerce. Bureau of Foreign and Domestic Commerce (1904-1911 Department of Commerce and Labor, before 1904 Treasury Department, Bureau of Statistics) *The Foreign Commerce and Navigation of the United States*. Washington: GPO, 1870-1929. Note: Deflated using the *Cc126 wholesale price index* in Susan B. Carter [et al.] ed. *Historical statistics of the United States [electronic resource]*. Millennial ed. Cambridge [England] ; New York : Cambridge University Press, 2006.

Figure 2. Monthly Risk Premium, structural breaks Selected by Bai-Perron’s method, and relevant events.

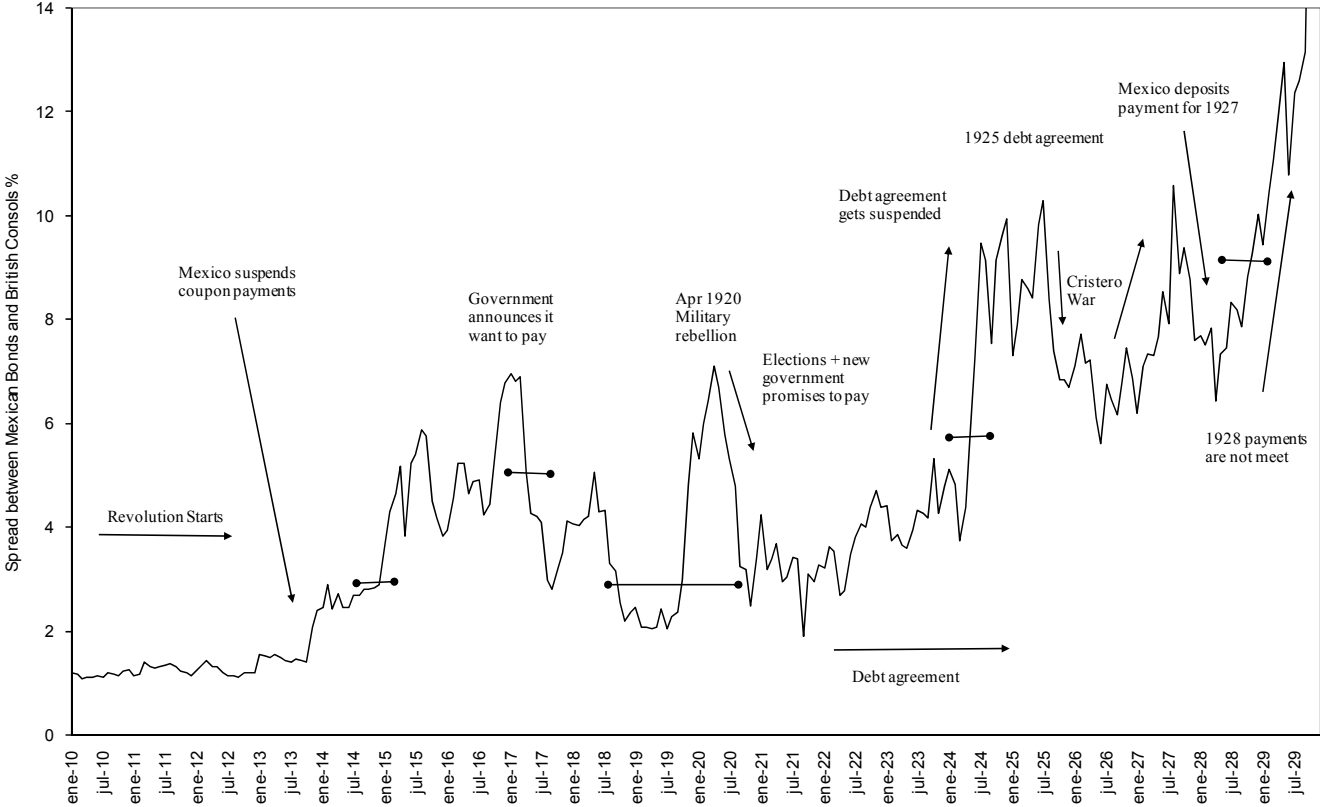


Figure 3. Monthly Risk Premium of the Mexican Bonds and Relevant Events, 1901-1928.

