How was Japan able to stay in the Gold Standard

despite an unsustainable external debt?[1]

Abstract

During the classical Gold Standard most peripheral countries were frequently affected by sudden stops and financial and currency crises. In this context Japan was an outlier. Despite having an unsustainable external debt, it was able to issue a great quantity of government foreign loans to cover its persistent current account deficits and was never hit by currency crises nor forced to suspend convertibility. This paper offers an explanation for this puzzle, hitherto neglected in the literature, within a perspective of international political economy. In particular, we argue that in the years between the late nineteenth century and the period immediately prior to WWI Japan and Britain engaged in a political-economic exchange: Japan offered Britain protection of its economic and political interests in the Far East, in return for which Britain gave the rising Asian power access to financial markets, in particular to the City.

Introduction

In the last decades of the 1800s, a number of less developed countries adopted the Gold Standard. However, as has been true of the most recent phase of financial globalization, also the pre-1914 period was characterized by an increased frequency of financial crises (Reinhart and Reinhart, 2008; Powell and Tavella, 2012). These crises were often associated with currency crises and suspension of convertibility (Bordo and Schwartz, 1999).

In this context, Japan was an outlier. Indeed, although it suffered from persistent current account deficits and an unsustainable external debt, in the pre-1914 period Japan was never hit by a financial crisis nor forced to suspend convertibility. The aim of this paper is to explain the reason for this, and in particular to explain why foreign investors continued to finance on particularly favourable terms a country which, shortly after the adoption of the gold standard, no longer seemed able to repay its mounting external debt.

This puzzle can be explained only by taking into account political as well as economic factors. In particular, we advance the hypothesis that Japan drew economic as well as political benefits from the

[1] We are grateful to Masato Shizume for providing us his data on Japan's primary fiscal surplus and to Lyndon Moore for his monthly yields on Japanese bonds, and to three anonymous referees for their helpful comments.

alliance with Britain that was sealed by the 1902 Treaty, renewed in 1905 and in 1911. This alliance entailed a politico-economic exchange. On the one hand, Japan offered to protect Britain's interests in the Far East by opposing other Great Powers' expansionism in the region, while on the other, it gained easier access to the international financial market, in particular to the City.[2]

At the beginning of the twentieth century, the alliance with Britain enabled Japan to finance a large part of the war with Russia by issuing bonds on the financial markets of London and New York. Moreover, after victory in this war, with the renewal of the Alliance Treaty with Britain and the consolidation of its geo-political role in the Far East, Japan gained access to the Paris market and was able to issue large amounts of government bonds on foreign markets on extremely favourable terms.

This thesis is argued in four sections. Section 1 shows how, after joining the Gold Standard[3] Japan was affected by large and persistent current account deficits. The persistency of these deficits was possible thanks to a massive influx of capital from abroad. Consequently, as is shown using accounting and econometric methods in Section 2, starting from the late nineteenth century Japanese foreign debt became unsustainable. In Section 3, we argue that in certain circumstances a country may continue to obtain credit from another country if this is to the latter's advantage, even when its debt is risky and unsustainable. Both countries derive benefit from this exchange. It can happen, for example, that a debtor country finances the strengthening of its economic-military position by turning to external resources which would otherwise be unavailable or too costly. By delegating the protection of certain of its economic and political interests to the ally, the creditor country, on the other hand, incurs lower costs than would be the case if it sought to protect itself directly.

The historical experience of Japan in the early twentieth century seems to confirm this hypothesis. At the time, Japan offered Britain military protection for its economic and political interests in the Far East in exchange for the latter's financial support. It was this support that allowed Japan to remain on the Gold Standard despite its persistent trade imbalances. In Section 4, in order to assess whether and to what extent the alliance with Britain had an effect on the terms on which Japan issued massive amounts of external debt in the pre-WWI years, we have made use of the event study methodology. In particular, we sought to ascertain whether the Anglo-Japanese treaties had repercussions on the interest rates on Japanese foreign currency bonds. The conclusions provide a summary of the arguments put forward in the paper, highlighting what it adds to the current literature on the topic.

[2] Now as then, political factors can account for forms of financial support given to countries exposed to sovereign debt crises. One need only think of the complex reasons, both political and economic, which led the United States to save Mexico from bankruptcy in 1995 and which currently are prompting the EMU to support Greece although its sovereign debt continues to be difficult to sustain.

[3] On the reasons for this decision, see, among others, Mitchener et al. (2010), Bryan (2010), Mitchener and Voth (2011), Schiltz (2012a) and Bytheway (2014).

1. Japan's current account deficits and external debt

After adopting the Gold Standard, Japan's economy was characterized by increasing external debt accompanied by persistent balance of trade deficits. Japan's trade balance deficits were particularly high during and immediately after the Russo-Japanese war. These current account deficits were due to excessive growth of domestic demand driven by state spending. The ratio of total government expenditure to GDP, which on average was 12.4 per cent in the period 1886-1890, reached 30.5 per cent in the period 1906-1910. A significant contribution to this came from military spending.[4] The huge rise in government spending increased domestic demand and imports, causing persistent trade imbalances (Table 1).

Table 1 – Government expenditure, GNP and trade balance (period average, in percentage)

	Military expenditure / Total government expenditure	Total Government expenditure /GDP	Trade balance / GDP	Change in real GDP
1886-1890	19.5	12.4	+0.3	4.3
1891-1895	32.9	13.1	+0.7	3.2
1896-1900	30.3	17.7	-2.8	2.5
1901-1905	43.6	24.0	-1.7	0.9
1906-1910	22.5	30.5	-0.7	3.7
1911-1913	17.9	25.5	-1.4	3.5

Source: Emi (1963) and Smith et al. (2009).

These imbalances were covered by capital inflows from abroad.[5] Foreign borrowing enabled the Japanese government to maintain an expansive economic policy and a sustained level of domestic demand:[6] between 1904 and 1913, the sum total of current account deficits was 923 million yen and the sum total of capital inflows was 1157 million yen (Table 2).

[4] See Emi (1963).

[5] According to Schiltz (2012a; p. 1163): "This system [the Gold Standard] ultimately led to foreign borrowing in order to uphold the gold standard, not the other way around as Bordo and Rockoff [1996] would have us believe".

[6] See Metzler (2006; p. 80).

Table 2 – Japan's balance of payments, 1904-1913 (millions of yen)

	Trade balance (a)	Invisible balance (b)	Balance of current account (c)=(a)+(b)	Capital movements (d)	Total (c)+(d)	Changes in specie reserves
1904	-52.4	-77.2	-129.6	107.7	-21.9	-21.9
1905	-167.1	-157.3	-324.4	710.7	386.3	386.3
1906	4.0	-27.9	-23.9	45.5	21.6	21.6
1907	-60.1	67.1	7.0	-57.1	-50.1	-50.1
1908	-61.6	-1.3	-62.9	7.2	-55.7	-55.7
1909	6.5	-2.8	3.7	70.1	73.8	73.8
1910	-18.8	-66.5	-85.3	87.9	2.6	2.6
1911	-58.4	-45.6	-104.0	-10.9	-114.9	-114.9
1912	-66.1	-41.9	-108.0	83.8	-24.2	-24.2
1913	-78.6	-17.1	-95.7	112.4	16.7	16.7
Total	-552.6	-370.5	-923.1	1157.3	234.2	234.2

Source: Suzuki (1994; Table 9.1).

These capital inflows came mainly from the issuance of government bonds abroad.[7] Between 1897 and 1913, Japan issued on to international markets debt almost exclusively in the form of government bonds for about 178 million pound sterling.[8] These issues were concentrated largely in the London market (Table 3).

Because of the massive emission of government bonds on the international market, the Japanese government debt-to-GDP ratio rose significantly in the fifteen years before the First World War. Between 1899 and 1913 this ratio rose from 23.1 to 50.8 per cent. In the same period, the share of foreign bonds as a percentage of total government bonds rose from 19.3 to 56.9 per cent.[9]

The above points raise the question as to whether Japan's foreign debt was sustainable despite being so high. If the answer is negative, another question arises: how did Japan, even though its foreign debt was unsustainable, manage in the period prior to WWI to issue on foreign markets ever-increasing amounts of government bonds at favourable rates of interest, which even decreased after the Russo-Japanese war (Table 3)? The first of these two problems – the sustainability of Japan's foreign debt – will be discussed in the next section.

[7] As Suzuki (1994; p. 174) writes: "Japan's trade balance from 1896 to 1913 was in deficit almost every year, with a peak in 1905. The main purpose of the Japanese government foreign loans, therefore, lay in the settlement of these trade deficits".

[8] See Suzuki (1994; p. 198-199).

[9] See Statistic Bureau's Historical Statistics for Japan, www. stat.go.jpn, and Smith et al. (2009).

Table 3 - Foreign emissions of Japanese government bonds, 1870-1913 (millions of pounds sterling)

Year	Nominal interest rate [yield at issue]	Amount of the loan	Duration (years)
1870	9[9.2]	1.0 (London)	13
1873	7[7.6]	2.4 (London)	25
1897	5[4.9]	4.4 (London)	53
1899	4[4.4]	10.0 (London)	55
1902	5[5.0]	5.1 (London)	55
1904	6[6.4]	10.0 (London 5.0; New York 5.0)	7
1904	6[6.6]	12.0 (London 6.0; New York 6.0)	7
1905	4.5[5.0]	30.0 (London 15; New York 15)	25
1905	4.5[5.0]	30.0 (London 10; New York 10; Berlin 10)	25
1905	4[4.4]	25.0 (London 6.5; New York 3.25; Berlin 3.25; Paris 12)	25
1907	5[5,0]	23.0 (London 11.5; Paris 11.5)	40
1910	4[4,2]	17.8 (Paris)	60
1910	4[4,2]	11.0 (London)	60

Source: Suzuki (1994).

2. Was Japan's external government debt sustainable?

The use of indicators deployed by international organizations, primarily the IMF,[10] to assess the eligibility of HIPC countries, shows that in the years following the adoption of the Gold Standard and up until WWI the financial fragility of Japan increased, reaching a critical peak during the Russo-Japanese war. As shown in Table 4, between 1899 and 1913 the foreign debt to GDP ratio and the foreign debt to exports ratio increased, respectively, from 4.45 to 28.90 per cent and from 43.78 to 213.62 per cent.

Table 4 – Indicators of Japan's financial fragility (in percentage)

	1885	1899	1905	1913
Foreign government debt to GDP	0.93	4.45	31.73	28.90
Foreign government debt to exports	21.66	43.78	289.67	213.62

Source: Mitchell (1993), Smith et al. (2009) and Statistics Bureau's historical statistics for Japan, www.stat.go.jp.

[10] See, for example, IMF (2002) and IDA (2004).

In order to ascertain if the worsening of Japan's financial fragility implied the unsustainability of its external debt we resorted to two different types of approach: the accounting approach, based on the concept of "trade balance gap" and the econometric approaches of unit roots and Bohn's methodology. In the acounting approach,[11] a dynamic of the current account that leads to a boundless increase in the foreign debt to GDP ratio is seen as unsustainable. At some point, concerns within financial markets regarding the country's ability to repay foreign debt will lead to financial crisis. In this context, therefore, a non-increasing foreign debt to GDP ratio is seen as a sufficient condition for sustainability. This criterion is related to the concept of "trade balance gap", that is, the difference between the actual trade balance and the trade balance required to stabilize the external debt to GDP ratio ("Required trade balance surplus").[12] The latter will be larger the bigger are the external debt to GDP ratio and the differential between the interest rate and the growth rate of GDP. In the second column in Table 5 we calculated the sustainability condition of the Japanese external debt for the years in which Japan issued government securities on the international markets.[13]

Table 5 – Intertemporal accounting measure of Japanese debt sustainability (in percentage)

Years	Actual foreign debt/GDP	Required trade balance surplus	Actual trade balance	Trade balance gap	Historical trade balance[1]
1899	4.45	+0.03	-0.05	-0.08	-0.89
1902	3.97	+0.02	-0.45	-0.47	-1.20
1904	10.62	+0.06	-1.80	-1.86	-1.53
1905	31.73	+0.19	-5.46	-5.65	-1.68
1907	29.21	+0.18	-1.50	-1.68	-1.93
1910	36.51	+0.22	-0.45	-0.67	-1.47

[1]The historical trade balance is the average of the previous ten years.

[11] See Roubini (2001).

[12] The accounting approach is based on the current account identity $D_{t+1} = (1 + r)D_t - TB_t$, where D_t is foreign debt, r is the interest rate and TB the trade balance. If GDP grows at rate g, for the country to maintain a steady debt-output ratio, foreign debt must also grow at rate g, that is, $D_{t+1} = (1 + g)D_t$. Substituting this equation into the current account identity, and dividing by GDP, we get the required trade surplus, $\frac{TB}{Y_t} = (r - g)\frac{D_t}{Y_t}$ (See Obstfeld and Rogoff, 1996).

[13] Data on nominal debt are taken from the Statistics Bureau's historical statistics for Japan, www.stat.go.jp. Trade balance data are taken from Mitchell (1993). GDP data are taken from Smith et al. (2009). Data for interest rates are taken from various issues of the Investor's Monthly Manuals. The required trade surplus has been calculated using a nominal interest rate of 5 per cent, which is the average yield on foreign issues in the period considered, that is, 1899-1910. The growth rate of nominal GDP was set at 4.4 per cent, the 1899-1910 average growth of nominal GDP.

Table 5 shows that the trade balance gap was always negative in the period 1899-1910. It reached its peak in 1905 at the time of the Russo-Japanese war but also remained negative in the following years. Therefore, in the period just mentioned, the Japanese external debt seems to have been unsustainable.[14]

The plausibility of this conclusion is confirmed by having recourse to econometric tests as opposed to taking an accounting approach. The traditional tests (Hamilton and Flavin, 1986; Trehan and Walsh, 1991) start from the hypothesis that a country's goverment debt is sustainable in the long run if the intertemporal budget constraint holds. The basic idea of these tests is that the balancing of the intertemporal budget imposes some stationarity restrictions on macroeconomic variables, such as the current account or the external debt.[15]

Employing the methodology developed by Trehan and Walsh (1991), we use the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests for unit roots to evaluate whether the change in Japanese government debt held by foreigners in the pre-1914 years was stationary.[16] Trehan and Walsh have shown that this is a sufficient condition for the intertemporal budget constraint to hold, that is, for debt sustainability. A unit root would imply that the Japanese external debt was unsustainable because it would invalidate the intertemporal budget constraint.

The ADF and PP tests refer to several time samples. The period 1885-1913 was considered both as a whole and divided into different sub-periods. As shown in Table 6, the main result of the tests is that Japan's external debt was sustainable up to the adoption of the gold standard and became unsustainable after 1899. According to both tests, in the period 1899-1913 the change in the real value of foreign debt was integrated by degree 1, suggesting the debt was not sustainable.

Table 6 - Trehan-Walsh test for stability of the change in real foreign debt

Period	ADF	PP	result	# obs.
1885-1913	-3.42**	-3.32**	I(0)	29
1885-1896	-9.30***	-13.34***	I(0)	12
1897-1913	-2.73**	-2.70**	I(1)	17
1885-1898	-3.53**	-3.53**	I(0)	14
1899-1913	-2.61***	-2.58***	I(1)	15

[14] Similar results to those just given were obtained by considering foreign debt sustainable if the present value of the trade balance in the following 10 years was higher than the present value of interest payments, and therefore, a fortiori, of the debt service. With perfect foresight, the debt was sustainable only in 1910, due to the fact that in the WWI years Japanese exports rose considerably and Japan accumulated trade balance surpluses. Actually, these surpluses in 1910 were difficult to predict.

[15] For a survey of the different econometric methodologies on debt sustainability, see Burnside (2005).

[16] As in Trehan and Walsh, the test is done on real debt. Price data used to convert nominal into real debt are taken from Mitchell (1993).

In a well-known 1998 article, Bohn argued that debt sustainability cannot be reduced to an examination of the stationarity properties of public debt,[17] and proposed to estimate a government reaction function.

In particular, Bohn (1998; 2005) assessed sustainability on the basis of the response of the primary budget surplus to changes in the debt-to-income ratio. The basic hypothesis underlying this test is that if government improves the primary fiscal balance at times of increases in public debt, the latter is sustainable. Otherwise, a country's public debt is unsustainable.

Applying this method to external debt, we estimated an OLS equation specified as follows for the period 1885-1913:

(1) $$tb_t = a_0 + \rho d_{t-1} + a_1(\pi_{JPN} - \pi_{UK}) + a_2 Du905 + \epsilon_t$$

where *tb* is the ratio of trade balance to GDP, *d* is the ratio of foreign debt to GDP, $(\pi_{JPN} - \pi_{UK})$ is the inflation differential between Britain and Japan, *Du905* is a dummy variable equals to one after 1905, and ε_t is an error term. With the inflation differential we intend to capture the change in the real exchange rate: when Japan's inflation is higher than Britain's, the country loses competitiveness and its trade balance deteriorates. Therefore, the expected sign of this variable is negative. The dummy Du905 picks up the restrictive fiscal policy put in place by the Japanese authorities since 1906 in order to absorb the abnormal trade balance deficit recorded in concomitance of the war with Russia. The expected sign of this variable is positive. The coefficient ρ is the trade balance reaction parameter of the Japanese government.[18] The sign and significance of this coefficient is crucial in order to assess the sustainability of Japanese foreign debt: if $\rho>0$ the debt is sustainable; if $\rho<0$ the debt is unsustainable, indicating that the government neglects the debt problem in its management of trade balance.

[17] Indeed, unit root tests tend to be misleading in the case of the debt-GDP ratio. In particular, they tend to find that this variable is integrated (for the US data, see Trehan and Walsh, 1991; Bohn, 1991; Kremers, 1989; and, for international data, Corsetti and Roubini, 1991). As is known, the regression at the basis of an integration test is consistent only under the null hypothesis of integration and it has low power against autoregressive alternatives when the autoregressive coefficient is close to one; this is the case for the debt-to-GDP ratio. In this context, the unit root regressions are misspecified and inconsistent because they omit variables that explain changes in the debt-GDP ratio (such as war expenditure). For example, wartime government spending tends to drive up the debt-to-GDP ratio and then, for as long as the war continues, triggers high deficits at a time when the debt-to-GDP ratio is already high. The positive co-movement of the variation in debt and in its level during wartime obscure the underlying mean reversion effect.

[18] Inflation data are taken from Mitchell (1993); for the sources of the other variables, see footnote 13. Table A1 in the Appendix gives the main statistics of the variable used in the regression. We did not test for integration of the variables used because, as suggested by Bohn (1998), they tend to be misleading in the case of the debt-GDP ratio (see footnote 17).

Table 7 – OLS estimates of the sustainability of Japan's foreign debt*

	1886-1913	1886-1898	1899-1913
$(\text{Foreign Debt/GDP})_{-1}$	-0.262**	3.849**	-0.247**
	(0.10)	(1.78)	(0.11)
Inflation differential	-0.126**	-0.087	-0.111*
	(0.05)	(0.12)	(0.06)
Constant	0.077	-1.726	-0.330
	(0.66)	(1.55)	(0.61)
Du1905	7.189**		7.107**
	(2.81)		(3.05)
R^2	0.27	0.44	0.59
# obs.	28	13	15

*Robust standard errors in parenthesis.

Table 7 shows our estimates of eq. (1). In Column 1, we give the estimates for the period before WWI, in other words, 1885-1913. All variables are significant and have the expected sign. For our purposes, the most important coefficient is that relating to the lagged debt-to-GDP ratio. This coefficient is negative, suggesting that Japan's foreign debt between 1885 and 1913 was not sustainable.

In order to ascertain whether there was some break in the sustainability of Japan's foreign debt, we tested for structural breaks. The recursive OLS shows that up to the end of the 1890s the coefficient on the lagged debt variable was positive and then turned negative. The Chow test confirms a break in 1898.[19] On the basis of the Chow test, we split the sample into two subsamples: 1885-1898 and 1899-1913. The results of the estimates, given in columns 2 and 3 of Table 7, confirm the hypothesis that Japan's foreign debt was sustainable up to the moment it joined the gold standard (the debt coefficient is positive and significant) but became unsustainable after that date (the coefficient is negative and significant). In particular, between the late 1890s and 1913 increases in debt-to-GDP did not lead to a subsequent adequate correction in the country's trade balance: the adjustment effort pursued by the Japanese authorities turned incomplete.[20]

As we have seen, both the accounting approach and the econometric approach support the conclusion that between the end of the 19th century and immediately prior to the First World War Japan's external

[19] The F-stat of the Chow test for a break in 1898 is 4.76, significant at the 1 per cent level.

[20] This conclusion seems be in variance with Shizume's (2011) view that after the war with Russia, Japan started to pursue a rigorous fiscal policy and consequently avoided its debt becoming unsustainable. However, Shizume was looking at the Japanese debt as a whole, while we are only looking at the sustainability of foreign debt. Also, the subsample considered by Shizume takes in the period from 1906 to 1916, that is, it covers the first three years of WWI. In this war period Japan was able to significantly increase its exports to Europe. Consequently, national savings became largely positive and tax revenue grew significantly, contributing to a significant improvement in the primary balance of the public budget.

debt was unsustainable. After the war with Russia, Japan introduced a very rigorous fiscal policy,[21] which enabled it to contain the expansion of domestic demand and imports; at the same time, the growth of exports continued apace, helped by increases in productivity largely due to public investment.[22] These investments were largely financed using external debt.[23]

Despite the process of adjusting foreign accounts, Japan's trade balance continued to be in deficit until 1913. Consequently, as Bytheway (2014; p. 103) observes, the Japanese government's difficulties in servicing its external debt continued until WWI. The situation Japan found itself in is well illustrated by what the former President of the Yokohama Specie Bank, Inoue Junnosuk, wrote in 1931: "By the end of 1913 this [Japan's struggle to find money abroad] continued and an ever-increasing strain on her resources had very nearly reached breaking-point. She had already borrowed up to the hilt, and in the early part of 1914 she was in circumstances so strained that she was actually facing the prospect of having to borrow yet further, merely in order to raise the money wherewith to pay the interest on her existing loans." The critical situation Japan found itself in led Metzler (2006; p. 91) to write: "By 1914 total foreign [Japanese] debt came to more than one-fourth of national income, and as European lenders became reluctant to extend further loans to Japan, there was talk of an impending financial crisis". And later, "when war broke out in Europe, … there was a real danger that Japan would default on its external debt."[24] If there had been a sudden stop, this would have led inevitably to a sovereign debt default. Japan was saved from the risk of a sudden stop by the outbreak of WWI and by the rapid expansion of Japanese exports to the countries at war.

3. A political-economic exchange between lenders and borrowers in the international market

Between the last decades of the 19th century and the first decade of the twentieth century several peripheral countries with a high external debt were hit by a reversal of capital inflows,[25] that is, by sudden stops.[26] Very often these sudden stops were followed by a financial and currency crisis and in the

[21] See Metzler (2006; p. 82).

[22] Between 1903 and 1911 labour productivity increased by 54.1 per cent. It had gone up by 26.1 per cent in the eight previous years (Kelly and Williamson, 1974; p. 232). The increase in labour productivity was largely attributable to huge government investments in infrastructure and to the process of institutional and technological modernization of the country (Ohkawa and Rosovsky, 1965 and Lockwood, 1968; and, more recently, Nicholas, 2011; Hunter and Storz, 2006 and Bytheway, 2014) made possible by the external debt.

[23] Unlike other countries that were heavily indebted abroad, such as the Ottoman Empire, Japan deployed the resources received from abroad not to cover current spending but for investment in infrastructure. The model given in the Appendix offers an explanation of the reasons for the different spending decisions made by the countries that resorted to foreign debt.

[24] See Metzler (2006; p. 89).

[25] On the general causes of these events, see Calvo (1998) and Calvo et al. (2004).

[26] See Cãtao (2006) and Bordo (2006).

end the country concerned was forced to suspend convertibility and to abandon the gold standard, at least temporarily.[27]

Despite the fact that its foreign debt was, as we have seen, unsustainable, Japan did not suffer any sudden stops, nor was it forced to suspend convertibility.[28] Why was this so?

A reply to this question is only possible if one takes into account both economic and political factors. In particular, one can hypothesize that in certain contexts there can be a political-economic exchange between countries. In particular, on the basis of this exchange one of the two partners cedes to the other the financial resources necessary for military reinforcement and the latter reciprocates by ceding to the former the protection of its economic and political interests made possible by its military build-up. In this way, the creditor country protects its own geo-political interests by incurring costs lower than those it would incur by acting directly. At the same time, the debtor country can bear military costs it would not have been able to sustain by using its domestic resources alone and which it would not have been able to secure on the international financial markets due to its high country risk.

The hypothesis outlined above helps explain the cases of Japan and Russia during the period of the Gold Standard. At the time, both countries enjoyed great military power.[29] They were able to play a role in the international arena by exploiting this power. As is well known, in the early part of the twentieth century, Russia was bound by a close alliance with France, whose banks had supplied it with substantial funding.[30] After defeat by Japan in 1905, Russia was on the verge of default.[31] It was rescued from this fate by additional funding received from France.[32]

Similarly, between the late 1800s and 1913 a convergence of interests came about between Japan and Britain.[33] While Japan's objective was to develop a strong army in order to maintain its independence from the major Western powers, Britain sought to defend the integrity of its empire without further adding to its defence costs, already greatly increased by the Boer War (1899-1902).[34] In the Far East, Britain saw its areas of imperial rule (especially India and southern China) under threat from the

[27] See, among others, Bordo and Kydland (1995) and Bordo and Schwartz (1999). As shown by Mitchener and Weidenmeier (2010), in the nineteenth century the default of peripheral countries was often punished by means of supersanctions, that is, through forms of national sovereignty limitations.

[28] Also Australia and Canada, despite having persistent external deficits (see Bayoumi, 1989), were not affected by currency crises. However, Fergusson and Schularick (2006) have explained how Britain acted as a guarantor of solvency for these countries because they were part of the Commonwealth.

[29] See Kennedy (1987).

[30] In this period, loans to Russia made up about 25 per cent of French foreign investments.

[31] See Gregory (1979).

[32] As Feis (1964; p. 223) writes: "The continued dependence of Russia upon French finance enabled the French government to exercise a measure of control or influence over Russian policy – to restrain its actions in the Near East and sustain its opposition to Germany."

[33] See Davis (2008).

[34] See Friedberg (1988).

expansionist ambitions of Russia, supported by France. Japan, for its part, feared that Russia would extend its influence over neighbouring regions.[35]

In the summer of 1901, negotiations were initiated between Japan and Britain to formalize a defence treaty. This treaty was signed and made public in February 1902. According to the treaty, if one of the parties entered into conflict with another country, the other would go to war alongside its ally if a third country should intervene. The treaty sought to avert the intervention of France in support of Russia should Russia go to war with Japan.

Although the purpose of the treaty was mainly political, it was clear to the Japanese leaders that it would also be economically advantageous. For example, the Minister of Foreign Affairs, Komura, in his speech in favour of signing the treaty, argued that Japan could expect financial benefits from an alliance with Britain.[36] These benefits consisted essentially in having access to London's financial market on reasonable terms. In the words of Lobell (2002; p. 186): "For British investors, the Anglo-Japanese alliance provided a sense of safety of their investment of Japanese loans and for the emerging Anglo-Japanese financial relationship".[37] This point of view is also held by Nish (1966; p. 255-256), who writes: "The alliance created an atmosphere of confidence in Japan and improved the security felt by British investors there. This tended to reduce the interest rates charged on loans."

Given the tensions with Russia, and given that the latter was allied with France and enjoyed the sympathies of the German Kaiser, Japan was denied access to the financial markets of continental Europe.[38] A case in point was the fact that on September 22, 1902, the Banque de Paris et de Pays Bas wrote a letter to Baring Brothers saying: "… it is necessary for them to call Baring Brothers' attention to the fact that [if the Bank were to help the Japanese government to raise capital] they might not encounter a favourable response from their [own] government".[39]

It should be mentioned here that in the pre-1914 period flows of capitals to foreign countries were often influenced by political relations between countries.[40] This was particularly true in the case of France. As Feis (1964; p. 50) wrote: "To retrace the history of French foreign lending would be, as a French writer had said, almost equivalent to writing the history of French political sympathies, rapprochements, vague dreams of influence, alliances in arms." Very similar remarks can be made about Germany, where it was customary for banks to consult the Foreign Office as to whether or not to grant certain foreign loans.[41]

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[35] Japan and Britain forged closer ties not only for geopolitical reasons but also for economic reasons. The British Empire was indeed Japan's most important trading partner. Japan imported capital equipment, especially military equipment, from Britain and raw materials from Australia and India.

[36] See Shinobu (1953; pp. 277-280).

[37] See also Hunter (2003) and Davis (2008).

[38] Germany was also a threat to British interests. The beginning of the so-called "Anglo-German naval race" was a further factor that prompted the British government to share the task of overseeing the Pacific with Japan.

[39] Quoted in Warner (1991; p. 48).

[40] See, among others, Nearing and Freeman (1925; p. 133).

[41] See Feis (1964; p. 167).

Although in Britain banks enjoyed a higher degree of independence in granting foreign loans,[42] especially in the colonies and in areas of marginal strategic interest, such as Latin America,[43] the Foreign Office reserved the right to exert its influence when the balance of power among the Great Powers might be affected. No wonder, then, that there were cases in which flows of capital reflected political relations. In these cases, the Foreign Office expressed, and on occasions even imposed, its preferences.[44] Obviously, these interventions could be in favour or against.

A prime example of intervention 'against' regarded Russia. Given the tensions with Britain in various theatres of war (China, Afghanistan, Persia), in the last decades of the nineteenth century, and up to 1906, Russia was unable to obtain financing from investors and British banks.[45]

Cases of Foreign Office intervention 'in favour' are, for example, those "… called forth by loans to countries where financial transactions formed the channels through which political tides ran – as in Turkey, China, … Persia"[46] … and in a less evident way in Japan.[47] Indeed, after the signing of the Treaty of Alliance of 1902, on several occasions the British government manifested its political sympathies for Japan to the banking community.[48]

When the London Rothschilds asked the Foreign Office if Japan was creditworthy,[49] the Foreign Office, in a letter dated 22 September 1902 and signed by Francis Bertie, answered as follows: "[Lord Lansdowne (the Foreign Secretary)] authorizes me to say that His Majesty's Government regard it as a matter of political necessity that Japan should be able to raise in this country, rather than elsewhere, the money which she requires and they hope that she will obtain a loan in London on reasonable terms."[50] It seems, therefore, undoubtedly that, as pointed out by Nish (1966; p. 253-256) and Bytheway (2014; p. 75-76), the Treaty of Alliance of 1902 also had financial dimensions.

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[42] This attitude is clearly outlined in a 1914 speech to the House of Commons by the Secretary of State for Foreign Affairs, Sir Edward Grey. See Parliamentary Debates, House of Commons, 5th ser., LXIV, 1448-1449, quoted in Feis (1964; p. 85). See also Bytheway (2014; p. 65).

[43] According to Davis and Gallman (1999), most of investments in these areas were in railways and other types of infrastructure.

[44] See, among others, Bryan (2010; p. 152).

[45] See Feis (1964; p. 89).

[46] See Feis (1964; p. 89).

[47] According to Cain and Hopkins (1993; p. 432-446) since the late nineteenth century the British foreign policy was characterized by an increase convergence of politics and finance. This point of view is shared by Bytheway (2014; p. 65) as he writes: "By the 1890s, however, increasing commercial competition threatened Britain's economic presence in East Asia, and the old standards of laissez-faire diplomacy could not be maintained".

[48] Warner writes (1991; p. 53): "Lord Lansdowne (as the architect of the Anglo-Japanese Treaty) and the government to which he belonged, were obviously keen to see their ally receive all the financial support it needed. At the same time, by originating the transactions in London, they hoped to have a unique influence over the Japanese". Lord Landsdowne's sympathies for Japan are also clear from the text of a telegram sent by Baron Von Eckardstein to the German Foreign Office on July 19th 1901: "Lord Lansdowne said nothing as to whether to come to Japan's assistance financially if asked, but I have a decided impression that he personally would do all he could to fulfil any wishes of the Japanese." Quoted in Eckardstein (1921; p. 218).

[49] See F046/560, The London Rothschilds to F. Bertie, 17 September, 1902, quoted in Nish (1966; p. 254).

[50] The Baring Archive 200186, p. 1. Japan, Government of, re 1902 Bond Issue, quoted in Warner (1991; p. 48).

British government support in financing Japan on the London market was not only a matter of moral suasion exerted on the British financial community; in 1902 it also took on the form of an explicit guarantee. Hereby, although it was an unusual procedure, the Hong Kong Shanghai Bank was permitted by the Treasury to inscribe bonds at the Bank of England before their issue on the London market. Generally, the Treasury refused to engage in this procedure, but in this case it was persuaded to do so by the Foreign Office.[51] This inscription was like a certification of Japan's high credit rating.[52] In a letter of thanks to Lord Lansdowne, Viscount Hayashi, a diplomatic representative of Japanese government in London, wrote:[53] "… the success of the recent sale of the Japanese bonds was no doubt greatly due to the announcement that the Bank was prepared for its inscription."

During the Russo-Japanese war, large amounts of capital flowed to Japan from British banks. On the eve of the war, the Japanese government asked the British government for direct financial support. Fearing that an intervention of this type would be regarded as lack of neutrality and that, as a result, India would be exposed to a Russian attack, Britain refused the request.[54] This, however, did not constitute a change in the political sympathies of Britain. Part of the political class[55] and senior military cadres[56] were indeed in favour of greater involvement on behalf of Japan. Eventually, the direct support of the government proved unnecessary since British private investors, and also some American investors, showed themselves willing,[57] between 1904 and 1905, to absorb the bulk of the emissions of Japanese government bonds (Table 3). Almost 40 per cent of these issues were placed on the London market.[58] Foreign loans totalling 107 million pounds sterling covered about half of Japan's military expenditure.[59] There is no doubt that Japan could not sustain the war effort without British funding and, in various forms, its help.[60] In return for the financial support it obtained from Britain, the Japanese government offered military support.

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[51] Balfour papers Add. MSS 49727, Lansdowne to Balfour, 1 October 1902, quoted in Nish (1966; p. 254).

[52] See Nish (1966; p. 254).

[53] FO Japan 558, Hayashi to Lansdowne, 16 October 1902, quoted in Nish (1966; p. 254).

[54] See, among others, Suzuki (1994; pp. 84-88).

[55] The leader of this grouping was Sir Lansdowne. See Warner (1991).

[56] Emblematic of this is the attitude of Sir Nicholson, Director General of Military intelligence. In December, 1903, called upon to speak to the British cabinet on the Russo-Japanese war, he said: "… if we remain neutral until Japan is defeated, and then find ourselves forced to intervene, the task before us will be more difficult than if we support our ally while her naval and military forces are still intact". See Committee of Imperial Defence, 38/3/87, Report submitted by D.G.M.I., 31 December 1903, quoted in Kuhlman (1992).

[57] This result was made possible not only by good Anglo-Japanese relations but also by the diplomatic action of the Vice-President of the Bank of Japan, Takahashi Korekiyo, sent to Britain and the United States to raise funds. For an illustration of how this action was carried out, see Smethurst (2007).

[58] See Suzuki (1994).

[59] See Shinobu (1961; pp. 352-353).

[60] See Hunter (2003).

4. The effects of the Anglo-Japanese alliance on the terms of Japanese borrowing abroad

We have already seen how the alliance with Britain gave Japan access to the City at a time when it was not allowed access to the financial markets of Berlin and Paris. The aim of this section is to establish whether the 1902 Anglo-Japanese Treaty had repercussions on the terms on which bonds where issued and whether similar repercussions occurred when the treaty was renewed after the Russo-Japanese war.[61]

Japan's victory against Russia was the triumph of the Anglo-Japanese alliance signed in the Treaty of 1902.[62] It soon became clear that the Russo-Japanese war and its outcome had had repercussions on the balance of power that were more important than those resulting from any other conflict which had taken place between the Napoleonic Wars and the First World War.[63]

After the Russo-Japanese war, indeed, two focal points emerged in international relations, one of which centred on the Balkans. After the collapse of Russia, Germany was able to develop a more aggressive policy in the European arena. On the one hand, France was more vulnerable to German pressure after Russia had been weakened; on the other, the Balkans became the epicentre of growing competition between the Great Powers. The other focal point of international relations after the Russo-Japanese war was the Far East, where Japan, once the pressure of the European powers had diminished, found itself having to contend with the imperialistic ambitions of the United States. In this context, "the alliance with Britain was 'the main axis of Japanese foreign policy', while the Franco-Japanese and Russo-Japanese understandings [signed in 1907] supplemented this alliance and provided an international guarantee of Japanese imperialistic concessions"[64] Japan, in turn, committed itself to defend European interests, in particular British interests, in the Far East.

The change in the balance of power in the Europen theatre and the closer ties between France and Britain to deal with Germany, which was turning out to be the common enemy, meant that the 1905 alliance treaty brought about a decided improvement in relations between Japan, on the one hand, and France and its historical ally, Russia, on the other.[65] The development of friendly relations with France,

[61] After the war both Japan and Britain had an interest in renewing the alliance treaty. The new treaty was entered into on 12 August 1905 and made public on 27 September. Unlike the 1902 treaty, the new treaty included among its terms the protection of India and the recognition of Japan's position on Korea. The position was that if the territory and interests of one of the two powers were attacked, the other power would step up to defend it. The 1905 treaty was not only different in content from the 1902 treaty, but above all it was part of a context of international relations undergoing profound change.

[62] As Steeds writes (2002; p. 23): "Japan fought its war under the best possible conditions, and Britain was able to maintain its interests, and indeed improve its position, by the agreement with France."

[63] See Kowner (2007; p. 5).

[64] See Teramoto (2008; p. 39).

[65] "The result was a cluster of agreements in 1907, which can be said to follow on from the Alliance of 1905". Steeds (2002; p. 27).

mediated by its ally Britain,[66] opened up the Paris stock exchange,[67] at the time second only to London, enabling Japan to place massive amounts of government bonds (Table 3). However, access to the Paris stock exchange did not represent a loosening of relations with the world of British finance. French loans, indeed, were issued only with the approval of London financiers.[68]

Having established that the alliance between Britain and Japan helped give the latter access to London and Paris financial markets, the question arises whether the alliance treaties of 1902 and 1905 also gained the Asian power access to international financial markets on favourable terms despite its growing country risk.

In order to quantify the effects of these treaties on the interest rate of Japanese government bonds we use the event study methodology. As is well known, this methodology is widely used in finance to examine the behaviour of security prices when, for example, there are changes in regulation, in monetary policy or in accounting rules.

Event studies are based on the efficient market hypothesis, that is, security prices incorporate publicly available information.[69] Following the methodology just mentioned we examine the behaviour of prices of Japanese government bonds at the date when the signature of the treaties was published. As is known, the two treaties were signed, on the 30 January 1902 and on 12 August 1905, respectively, but the dates of publication, in other words, the moment when the information became available to the financial market, were 12 February 1902 and 27 September 1905, respectively; these are what are called event days.

We collected weekly data on the Japan 4 per cent sterling bond issued in 1899, and quoted for the first time in *The Economist* on 8 December 1900, and on the British Consol,[70] and ran the following regression:

(2) $$Jap\ Yield_t = \alpha + \beta Consol\ yield_t + \gamma D_t + \varepsilon_t$$

where Jap Yield is the yield on the 4 per cent sterling bond,[71] Consol yield is the return on the British Consol, and D is a dummy variable referring to the event window.[72]

Table 8 shows the estimation results. Both in the case of the 1902 treaty and its renewal in 1905 the publication of the treaty caused a significant reduction in the yield on Japanese bonds. With reference

[66] "The agreement was the product not only of the discussions between the two principals but also of advice and suggestions solicited at times from the governments of Britain and Russia" (White, 1995; p. 261).

[67] As Bytheway (2014; p. 103) writes: "Following the signing of both the Franco-Japanese Agreement and the Russo-Japanese Convention in 1907, French financiers were released from previous diplomatic constraints and enjoyed a good working relationship with Japan."

[68] See Bytheway (2014; p. 104).

[69] See Fama (1991) for a summary of this hypothesis.

[70] As in Mitchener and Weidenmier (2006), we proxy the market return with the return on the British Consol.

[71] Yields are calculated by dividing a bond's coupon by its price.

[72] The main statistics for these variables are given in the Appendix, Table A2.

to the latter, it is to be noted that the effect of publishing the signing of this new treaty on the interest rates on Japanese government bonds remains significant and substantially unchanged in its intensity if we introduce the dummies relative to the stipulation of the Portsmouth peace treaty (5 September 1905), the Battle of Mukden (10 March 1905) and the Battle of Tsushima (28 May 1905).[73]

Table 8 – Event Study on the effects of the Anglo-Japanese Alliances on Japan's bond's yield

	1902 Alliance	1905 Alliance	
Constant	-1.29***	-17.39***	-17.05***
	(0.50)	(1.76)	(1.88)
Yield Consol	2.21***	8.02***	7.90***
	(0.17)	(0.62)	(0.67)
Dummy for the week of the event	-0.44***	-0.66***	-0.67***
(15 feb 1902; 30 sep 1905)	(0.01)	(0.04)	(0.04)
Battle of Mukden			0.05
			(0.07)
Battle of Tsushima			-0.23***
			(0.05)
Portsmouth Treaty			-0.48***
			(0.05)
R2	0.70	0.54	0.55
N. obs.	63	104	104
Sample	8 Dec 1900 – 15 Feb 1902	3 Oct 1903 – 30 Sep 1905	

The points made in this and the previous section suggest that the alliance between Japan and England entailed a strong interconnection between politics and finance.[74] The same decision of the Bank of Japan to hold gold reserves at the Bank of England if, on the one hand, was a guarantee for the British bankers who bought Japanese bonds, on the other hand it allowed Japan to be part of a form of gold-

[73] The results are similar if we take as a reference the yield on the 5 per cent bond issued in 1897 rather than that on the 4 per cent bond issued in 1899. Moreover, the effects were not transitory but lasted in time; in fact, the results are qualitatively similar when wider event windows are considered (one month and 10 weeks windows around the date of the announcement).

[74] Very aptly, Bryan (2010; p. 150) writes: "This interconnection between currency, finance, and military expansion was not, however, exclusive of Japan and Russia. It was all part of the Great Powers' priorities of the age".

exchange standard based on moneys of different order.[75] Japan could, in this way, promote the circulation of the yen and create a yen monetary bloc[76] in an area that included Korea e Manchuria.[77] This corresponded, on the political side, to the imperialist and expansionist objectives of this country in the Far East.

Conclusions

This paper seeks to account for the fact that while Japan was in the Gold Standard it was, unlike other peripheral countries, not affected by currency crises and was not, therefore, forced to suspend, even temporarily, the convertibility of the yen into gold. This is surprising because, between 1897 and 1913, the Japanese economy was characterized by considerable trade balance deficits.

Instead of being absorbed by means of the price-specie-flow mechanism, these deficits became persistent. This persistence would not have been possible if the account imbalances with other countries had not been compensated for by the influx of capital from abroad, more specifically by issuing government bonds primarily on the London market.

The co-existence of persistent foreign trade deficits and growing foreign debt meant that, as shown in Section 2, from the beginning of the twentieth century Japan's foreign debt was unsustainable. Nevertheless, in the years between 1899 and 1913 Japan was able to acquire further foreign funding, at better conditions than before in terms of interest rate and maturity. This puzzle can be explained only by taking political factors into account, in particular the balance of power between Great Powers in the Far East at the time.

It is well known that at the beginning of the twentieth century Britain was considerably weakened by the Boer War. Moreover, Britain also needed to protect its economic interests and colonies in the Far East. In this context, a convergence of interests arose between Britain and Japan. While Japan's objective was to develop a strong economy in order to maintain its political independence and to become a Great Power, Britain was seeking to defend the integrity of its empire in the Far East which was under threat from the expansionist ambitions of Russia. The convergence of interest between Japan and Britain led these countries to sign a formal alliance in 1902.

[75] "The 'first order' money in this system – gold – was leveraged into a larger supply of gold-based national money, such as the British pound – 'second order' money. This second order money in turn constitutes the monetary base for banks that leveraged it into a much greater volume of money … - 'third order' money, as the yen" (See Metzler, 2006; p. 37).

[76] See Metzler (2006; p. 40-42).

[77] This view is different from that of Bytheway (2014; p. 41 and 82) according to whom the choice of the Japanese authorities to hold the gold reserves at the Bank of England was due to an economic exchange between the central banks of the two countries: the Bank of England favored the placement of Japanese bonds, while the Bank of Japan supported the Bank of England when it had shortages of gold reserves.

The political alliance with Britain gave Japan access to the London market at a time when the other major European financial markets, in particular Paris and Berlin, capital of countries allied to Russia, were closed to it.

By placing securities on the London and New York markets, Japan was able to cover at least half the defence expenditure incurred in the Russo-Japanese war and also to affirm its role as a Great Power in the Far East.

Japan and Britain continued to enjoy friendly relations even after the end of the Russo-Japanese war: the alliance treaty between these two powers was renewed in 1905. Thanks to this alliance, Japan was able to improve its relations with France and to place – not only on the London market, but also in Paris – large amounts of government bonds on favourable terms, even though its foreign debt was extremely high and unsustainable.

Appendix

1. An analytical model to explain the amount and use of foreign debt

To illustrate the effects of the Japanese-British alliance on Japan's foreign debt we use a political economy model à la Besley and Persson (2011) where the incumbent maximizes its welfare. We add the possibility for the country to emit foreign loans and also that its production of the public good, defence, has a positive externality on the lender country.

The economy lasts for two periods, *s*=1,2, and there are two groups of agents, J=A,B. In each period, one of them holds political power and makes taxation and spending decisions; with probability γ the group in power in period 1 will no longer be in power in period 2.

Utility functions are linear in consumption and public goods:

1. $u_s^j = c_s^j + \alpha_s g_s$

where c_s^j is private consumption of a typical group j member in period s, and g_s is the public good, defence. In the first period the value of the public good may be low ($\alpha_1 1 = 0$) or high ($[\![\alpha_1 1 = \alpha]\!]_1 H$). In the second period the value of the public good is always low ($\alpha_1 2 = 0$). We assume $\alpha_H > 2$.

Each individual is endowed with a unit of income in each period. Private consumption depends on disposable income, and transfers received:

2. $c_s^j = (1 - t_s) + r_s^j$

where t_s is the income tax rate and r_s^j is a transfer awarded to group j in period s. Income tax is constrained by existing fiscal capacity, i.e., $t_s < \tau$. Political institutions constrain the incumbent's

allocation of transfers. Whoever is in power looks after the welfare of its own group. However, the incumbent group must give a share σ to the other group in parliament for each unit of transfer awarded to its own group. We assume σ <1. As in Besley and Persson, the parameter $\theta = \frac{\sigma}{1+\sigma}$ is a measure of the cohesiveness of institutions.

Assuming each group is half of the population, which is normalized to one, the government budget constraint is:

3. $$t_s + d_s = g_s + \frac{(1+\sigma)r_s^I}{2} + [(1+i)d_{s-1} - \beta g_{s-1}]$$

where d_s is the amount of debt in period s, *i* is the risk-free interest rate prevailing on the international markets,[78] and β is a measure of the positive externality for the foreign country coming from the production of the public good. Debt repayment and interest payments for the country, therefore, are $(1+i)d_{s-1} - \beta g_{s-1}$. We assume $\beta < 1$.[79]

The incumbent, say group A, maximizes its own group within-period payoff, i.e., eq. (1) subject to the budget constraint, eq. (3), and fiscal capacity constraints. The two within-period choices are the level of taxes in both periods and the level of public expenditure in the second period.

The equilibrium tax rates are set to exhaust fiscal capacity, i.e., taxes are set at their maximum level in both periods, $t_1 = t_2 = \tau$. This is because the gain for the incumbent from a higher tax rate is at least equal to the gain from larger transfers, while the loss is the reduction in private income. Since the transfer is bigger than the reduction in private income, the incumbent sets taxes at the maximum level.

Second-period public spending is devoted to transfers. This comes from the assumption that the second-period value of a public good is zero. Therefore, whoever is in power in the second period uses tax revenues to transfer resources. Using the budget constraint, eq. (3), transfers to the incumbent are equal to $2(1-\theta)[t_2 - (1+i)d_1 + \beta g_1]$, while tranfers to the opponent are equal to $2\theta[t_2 - (1+i)d_1 + \beta g_1]$.

We now consider the intertemporal decisions. After nature has determined the value of α_1, the incumbent in period 1 decides about two variables that have effects also in the following period: the amount of debt, and the amount of public good, because this reduces the level of interest rate on the debt. The incumbent maximizes the sum of its own group first-period utility and its expected period-2 utility, taking into account that, with probability γ, he will no longer be in power. The incumbent maximizes the following expression:

[78] The interest rate used is the risk-free rate because in this model debt is always repaid, so there is no sovereign debt risk.

[79] And $d_0 = d_2 = g_0 = 0$.

4. $\{\alpha_1 g_1 + (1-\tau) + 2(1-\theta)(t_1 + d_1 - g_1)\} + \{(1-\tau) + (1-\gamma)[2(1-\theta)(t_2 - (1+i)d_1 + \beta g_1)] + \gamma 2\theta(t_2 - (1+$

where the first curly brackets represents the first-period utility of the incumbent while the second one represents the expected value of its second-period utility. The first-period utility is given by the value of public good, $\alpha_1 g_1$, the after-tax income, $(1-\tau)$, and the transfer, $2(1-\theta)(t_1 + d_1 - g_1)$. The expected second-period utility is given by after-tax income, $(1-\tau)$, the transfer to incumbent, $2(1-\theta)(t_2 - (1+i)d_1 + \beta g_1)$, multiplied by the probability of being in power, $(1-\gamma)$, and the transfer to opponent, $2\theta(t_2 - (1+i)d_1 + \beta g_1)$, multiplied by the probability of not being in power, γ.

From the incumbent maximization problem we get the following results:

Proposition 1 – A country characterized by political instability and no threat of war will emit foreign debt and use it to finance consumption.

Proof:

Nature has picked $\alpha_1 = 0$. The first-order conditions of eq. (4) relative to public good expenditure is $\frac{\partial}{\partial g_1} = -2(1-\theta) + 2\beta[(1-\gamma)(1-\theta) + \gamma\theta]$, which is negative for any parameter values. Therefore, if there is no threat of war in period one, the incumbent chooses not to spend on defence and to devolve all revenue to transfers.

The first-order condition of eq. (4) relative to the emission of foreign debt is $\frac{\partial}{\partial d_1} = 2(1-\theta) - 2(1+i)[(1-\gamma)(1-\theta) + \gamma\theta]$. Its sign depends on the degree of political instability, γ, the degree of cohesiveness, θ, and the level of the interest rate, *i*. If $\gamma > \gamma_c = \frac{1-\theta}{1-2\theta}\frac{i}{1+i}$ the first-period incumbent chooses to set the foreign debt at its maximum level. This happens when the probability of not being in power in the following period is high (high γ), and when the amount of redistribution is heavily skewed towards the incumbent (low θ).

Proposition 2 – A country characterized by the threat of war will emit foreign debt and use it for the public good.

Proof:

Nature has picked up a value for $\alpha_1 = \alpha_H$. The first order condition of eq. (4) relative to public good is $\frac{\partial}{\partial g_1} = \alpha_H - 2(1-\theta) + 2\beta[(1-\gamma)(1-\theta) + \gamma\theta]$, which is positive for any parameter values. Therefore,

the incumbent chooses to set public good provision at the maximum level, that is, using the budget constraint eq. (3), $g_1 = \tau + d_1$; and to set transfers to zero.

We now discover the optimal level of foreign debt. Substituting the optimal amount of public good and transfers into eq. (4) and simplifying, we get $\alpha_H(\tau + d_1) + 2(1-\tau) + 2[(1-\gamma)(1-\theta) + \gamma\theta][\tau - (1+i)d_1 + \beta(\tau + d_1)]$, whose first-order condition with respect to foreign debt is $\frac{\delta}{\delta d_1} = \alpha_H - 2[(1+i) - \beta][(1-\gamma)(1-\theta) + \gamma\theta]$. As long as $\alpha_H > 2[(1+i) - \beta]$, that is the country gives high value to defence in case of war, the country will choose the maximum level of debt.

Proposition 3 – A country with a foreign threat emits more foreign debt than a country with no threat.

Proof:

In the case of no threat of war ($\alpha_1 1 = 0$), the level of public good provision is zero. The amount of foreign debt is either zero (if γ is low) or equal to the maximum amount (if $\gamma > \gamma_c$). Using the second-period budget constraint eq. (3), the maximum amount of debt is equal to $\frac{\tau}{1+i}$ (since $g_1 = 0$). In the case of threat of war ($\alpha_1 = \alpha_H$), the country uses first-period tax revenue and foreign debt to provide public good provision: $g_1 = \tau + d_1$. The level of foreign debt is at its maximum level, that is, $d_1 = \frac{\tau + \beta g_1}{1+i} = \frac{(1+\beta)}{(1+i+\beta)}\tau$. This amount is bigger than $\frac{\tau}{1+i}$.

2. Main descriptive statistics

Table A1 –Variables used in the Bohn equation (1885-1913)

	Mean	Min	Max	Std. Dev
Trade balance/GDP	-0.83	-5.46	1.96	1.80
Foreign Debt/GDP	10.79	0.00	36.51	13.88
Inflation differential	3.17	-4.96	14.98	4.90

Table A2 – Variables used in the event study (1900 – 1902)

Variable	Mean	Min	Max	Std. Dev.
4 per cent sterling bond yield	0.047	0.042	0.063	0.038
Consol yields	0.029	0.027	0.033	0.0013

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