Sovereign Debt and Supersanctions in Emerging Markets: Evidence from Four Southeast European Countries, 1878-1913

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Abstract

Do emerging markets need to sacrifice economic sovereignty in order to borrow more cheaply on the international capital markets? To explore this, we exploit a natural experiment following the Treaty of Berlin in 1878 when four Balkan states - Bulgaria, Greece, Romania, and Serbia - received full or de facto independence. Using a novel dataset of monthly bond prices from the Berlin and London stock exchanges, we find that a sacrifice of national sovereignty or 'supersanctions' was one way for these emerging markets to receive more favourable borrowing conditions. Romania never submitted to such measures, however, but was usually able to borrow more cheaply than her neighbours.

JEL Codes: E4, E5, G1, N2

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1. Introduction

The 2008 European debt crisis sparked a new wave of research on sovereign debt finance and the measures insisted upon by foreign creditors and institutions to allow defaulting countries to re-enter international capital markets, which have striking historical precedents (see e.g. Esteves and Tuncer 2016, Mitchener and Weidenmier 2010). The perceived loss of sovereignty has often led to political protests[3] and has attracted attention beyond the realm of economics (see e.g. Villaroman 2009). But are such controls necessary for emerging countries to enjoy cheaper access to international credit markets? Although the existing historical literature suggests they often might be, the present work nuances this somewhat using new data on south-eastern Europe in the years before the First World War.

Under the classical gold standard before 1914, a period of highly integrated capital markets, foreign creditors or creditors' governments frequently punished defaulting sovereigns by imposing severe sanctions which affected their national sovereignty[4]. Thus, Mitchener and Weidenmier (2005) find that the threat by the United States to intervene in the affairs of Central American and Caribbean countries that did not pay their debts (ultimately using gunboat diplomacy) led to considerable increases in their bond prices, and enabled debt settlements to be reached. Turning to a larger panel of countries, Mitchener and Weidenmier (2010) have also demonstrated the importance of what they term supersanctions[5] in a wider context. They document twelve cases of such extreme measures under the classical gold standard, and find that fiscal discipline improved and bond traders lowered their assessment of the default risk in countries subject to them.

Our motivation for looking at south-eastern Europe, specifically Bulgaria, Greece, Romania and Serbia, comes partly from the seminal work on the economic history of the Balkans by John R. Lampe (1975, 1982). Importantly, he argues that there are 'common points of reference' (Lampe 1975, p. 56), including first, the centuries of Ottoman domination; second, the presence of

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[3] Reinhart and Trebesch (2015) take up the case of Greek borrowing over the long run (1829-2015) and also find historical parallels with today. Another historical example related to this study is explored by Tooze and Ivanov (2011) with the case of Bulgaria. They show that foreign intervention had a destabilizing effect on domestic politics.
[4] See for example the work of Borchard (1951) and Suter and Stamm (1992).
[5] They define supersanctions as episodes where the defaulting country either lost fiscal sovereignty, or faced actual or threatened military intervention. Supersanctions and financial controls will be used interchangeably in the rest of the paper.

'almost virgin territory for nineteenth-century expansion' (Lampe 1975, p. 57); third, complete or near complete independence in 1878[6]; fourth, no border changes from 1886 to 1912, and a lack of war, except for the brief Greek war with the Ottoman Empire in 1897; and finally, the currencies of the four nations were formally or informally tied to a common nominal unit under the rules of the Latin Monetary Union (Lampe 1975, pp. 57-59). Given this, Lampe asks 'Why did pre-1914 Romania achieve totals of gross industrial output per capita that were well over twice those of Serbia and Bulgaria and probably Greece?' (Lampe 1975, p. 60). We ask a different but related question: why was Romania able to borrow so much more successfully than her neighbours in this period?

The Balkan countries are rather understudied in the economic and financial history literature, and although three of them – Bulgaria, Greece, and Serbia – encountered supersanctions, the Bulgarian episode is not included in the work of Mitchener and Weidenmier (2010), and Serbia is missing from their empirical analysis altogether. Tuncer (2015), however, takes up the cases of Egypt, the Ottoman Empire[7], Serbia and Greece within a similar framework to that in this paper, and finds, similarly to us, that supersanctions[8] played an important role, although a variety of other factors also had importance for each country (see also Tuncer 2020). The present work is the first to analyse the four Balkan countries together, and we are the first to explore in depth the interesting exception of Romania, which borrowed successfully but did not endure supersanctions. As such, we complement recent work on Latin America by Flores Zendejas (2020) and offer a more nuanced story compared to those which consider loss of sovereignty to be a precondition for the ability of emerging economies to borrow on international markets.

Importantly, we contribute with a new dataset based on the Berlin stock exchange, which we have collected from a contemporary German newspaper – the *Berliner Börsen-Zeitung* – as well as existing data from the well-known *Investor's Monthly Manual* for the London market. This new dataset is of more general interest for the analysis of sovereign bond finance issues during the first era of globalization. Then, applying this new data, we contribute with an in-depth analysis of supersanctions, whereby foreign creditors intervened in the fiscal affairs of debtor

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[6] Bulgaria was granted autonomy, and did not proclaim full independence until 1908.
[7] See also Birdal (2010). Turkey was subjected to financial controls in 1881 and again in 1889 (Esteves and Tuncer 2016).
[8] What he terms International Financial Control (IFC).

countries. We investigate the case of the four emerging markets in the Balkans from independence in 1878 until the end of the classical gold standard period. By calculating yields and constructing sovereign bond spreads for each country, we are both able to track the relative creditworthiness of the countries, as well as to test for breaks in the series. We find that financial controls did indeed help countries improve their creditworthiness and lower their capital cost, but that this came at the expense of national sovereignty. In contrast to much of the existing literature, which assumes that supersanctions are the result of default, we also find that Bulgaria, Greece, and Serbia submitted to them in order to gain cheaper access to credit without having defaulted.

Our work relates more generally to the substantial literature on the determinants of creditworthiness, much of which we reference below: for example Flandreau and Zumer (2004) on the importance of economic 'fundamentals', Flandreau et al (1998) on the impact of war, Clemens and Williamson (2004) on the role of supply and demand for capital, Dincecco (2009) on the role of politics, Collet (2012) on the importance of underwriters, and Stasavage (2016) on the importance of distributive politics.[9] More directly, the present work relates to various studies on the impact of loss of sovereignty on the cost of borrowing: see for example Bordo and Rockoff (1996) on the role of the gold standard as a 'good housekeeping seal of approval', Obstfeld and Taylor (2003) and Ferguson and Schularick (2006) on the 'Empire effect', whereby British colonies received favourable borrowing terms from British investors, as well of course to the literature on supersanctions. Importantly in this context, Gardner (2017, 2020) considers three British West African colonies and contrasts their experience with that of independent Liberia, finding that 'supersanctions' were not a complete substitute for colonial rule.

The remainder of this paper proceeds as follows. Section 2 describes our data, documents the debt issued, and illustrates the spreads. In Section 3, we examine the role played by supersanctions in determining the bond spreads of the Balkan countries analysed. In Section 4, we focus on the case of Romania, and ask why she was not subject to foreign interference. Section 5 concludes.

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[9] See Oosterlinck (2018) for a useful survey.

2. The Berlin market and bond spreads for the Balkan countries

Previous studies of sovereign debt have tended to focus on the London market, using data from the *Economist*'s *Investor's Monthly Manual*.[10] In part, this is because the data are easily available thanks to the efforts of the Yale School of Management and the London Stock Exchange Project. More importantly, this was certainly the largest and most liquid market before the First World War, but after 1870, Western Europe was either less in need of British capital, or was considered untrustworthy. There was an ever-greater bias towards bonds from the British Empire, and in general towards markets outside of Europe (Bersch and Kaminsky 2008). For an assessment of the creditworthiness of certain European nations, we are thus forced to look elsewhere: as Daudin et al (2010) note, the 'French and the German cases appear somewhat different and await further investigation'. Paris was the second most important bond market outside London, but France was weakened politically by her defeat by Prussia in 1871 (Feis 1930). Thus, the present work makes use of data collected from the Berlin market. German investment stood in sharp contrast to that from Britain: it mostly went to European countries, and little went to areas of recent settlement.

Reflecting this, the new sovereign nations of south-eastern Europe turned increasingly to Berlin, and in the beginning, at least, German investors were happy to invest. In fact, German foreign investment was focused on nearby states, particularly those to the east. The governments of these countries were seeking friendly alliance with Germany, or were worried about the international power the country demonstrated during the war with France. Moreover, they needed German capital to exploit their resources, and Germany, for its part, was looking for raw materials, and to sell manufactures (Feis 1930, p. 73). German foreign investment was principally in fixed interest-bearing securities, especially the bonds of foreign governments (Feis 1930, p. 78, Bersch and Kaminsky 2008, p. 14), and by 1914 over half of German foreign investment (totalling approximately 13.5 billion marks) went to Europe, of which approximately 1.7 billion went to the Balkan countries.

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[10] A notable exception is the work by Stéphanie Collet, who looks at the Paris market (see for example Collet 2012, 2013).

Our data is collected from the newspaper *Berliner Börsen-Zeitung*[11], and consist of monthly prices of government bonds quoted and traded in the Berlin stock exchange.[12] To build a comprehensive set of bonds for each country we also rely on additional quotations of bonds traded on the London market, from the *Investor's Monthly Manual*. The sample period runs from January 1880 until December 1913, and the dataset includes five bond series for Bulgaria, eleven bond price series for Greece, fifteen for Romania and four Serbian bonds. Table A.1 in the Appendix lists all the bonds in our dataset and specifies where each bond was traded: whether in Berlin, London, or on both capital markets. Furthermore, the table gives an overview of the sources of the quotations used, i.e. *Berliner Börsen-Zeitung* or the *Investor's Monthly Manual*[13]. During the period we look at, the Romanian bonds are not traded at all in London, and almost all of the Serbian securities are quoted only in Berlin. Therefore, for these countries we rely on *Berliner Börsen-Zeitung.* Almost half of the Greek bonds are traded in both markets, whereas in the case of Bulgaria, only one bond is traded on both exchanges, with the rest of its securities being quoted in London only. The rationale for constructing such a broad sample of bonds for each country is to ensure we paint a comprehensive picture of their creditworthiness and thus avoid potential biases by selecting 'representative bonds'.[14]

In order to capture creditworthiness, we calculated bond spreads as the difference between the Bulgarian, Greek, Romanian or Serbian yields and those on British consols. The latter are commonly used in the literature as the benchmark for 'riskless bonds', and make our series comparable to previous work. Thus

$$s = i - i^*$$

where i is the yield to maturity on the bonds[15] of the Balkan government, and i^* is the yield on British consols.[16] In other words, the return on a risky bond equals the risk-free rate of return

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[11] Since we collected our data, this newspaper has been scanned and made available online by the Berlin State Library.

[12] We collected the prices from the last day of each month (or the closest available observation before that).

[13] For the bonds traded in both Berlin and London we selected the quotation series that were longer and with fewer missing observations.

[14] Working with representative bonds is, however, a common approach in the literature on the determinants of sovereign risk during the gold standard period.

[15] The yield to maturity is the internal rate of return earned by an investor, assuming that the bond will be held until maturity.

plus a risk premium, i.e. the spread, which the investor demands in order to be compensated for the risk he faces. This risk can be separated into three components: default risk, currency risk and liquidity risk.

The first, the default risk, is the probability that a government stops honouring its debt obligations by ceasing repayment on the principal or interest. This is the main interpretation of the spread that we have in the present work, since the other two factors are unlikely to be of importance for the bonds we are looking at. Regarding currency risk, this only becomes an issue if a bond is issued in a currency other than that of the investor, and arises due to the possibility of exchange rate fluctuations. To some extent we avoid the exchange rate risk problem because in our sample the bonds are not denominated in national currencies, but in pounds, francs or marks which were fixed against one another through gold, which is typical for the nineteenth century. Moreover, from 1880-1914 the principal currencies, all on the gold standard, fluctuated little against each other (Bordo and Rockoff 1996).[17] Finally, regarding the liquidity risk, which comes from the risk that less liquid assets are sold during poor market conditions, this would only be an issue for bonds which are issued in small volumes and are facing a weak demand. A reflection of the liquidity of the Berlin market is that we found it was extremely rare for a price not to be quoted on the last day of the month (unless it was Sunday or a public holiday).

Figure A.1 in the appendix illustrates the risk premiums by country for all the bonds in our dataset. Within a country, some bonds are riskier than others. Therefore, we next compute country risk by aggregating all the bonds within a country by weighting the yield to maturity of each bond according to the bond's nominal value.[18] The resultant average yield is then used to calculate the country spread. Through this approach we capture the heterogeneity between different bonds, and the resulting country risk is thus more representative than one built on 'representative bonds'. Figure 1 compares the sovereign risks of the four Balkan countries.

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[16] An alternative measure to yields to maturity is computing current yields. We chose to work with yields to maturity because the maturity varies across bonds (see table A.2). However, since all the bonds in our dataset have very long maturities (longer than 33 years) using current yields would not be problematic. For example IMM reported its own yields, which were indeed computed as coupon/price. Therefore the contemporary investors must have primarily relied on current yields. Our analysis is robust to using current yields.

[17] Another indicator that the spread was not capturing the currency risk is that the bonds traded in both London and Berlin (for example the Bulgarian 6% State Mortgage Bond (1892)) have almost identical prices even though they are denominated in pounds on the London stock exchange and in marks (or francs) on the Berlin market.

[18] Table A.2 shows financial characteristics of the government bonds, such as the amount issued and maturity.
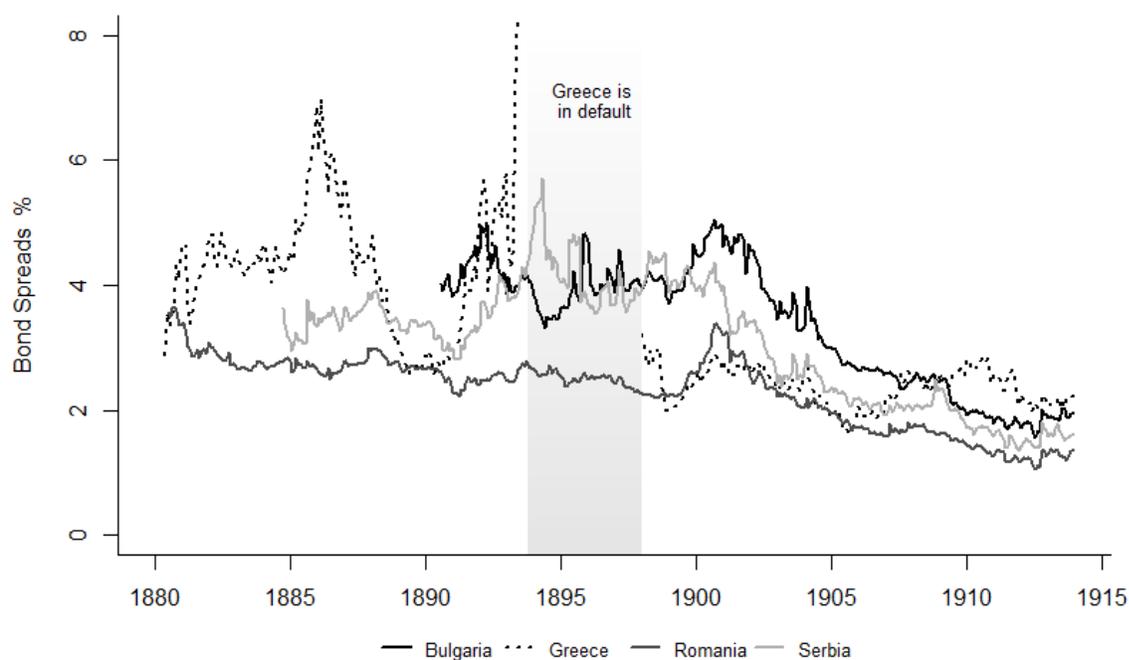
Figure 1: Balkan country spreads over London consols, 1880–1913
Source: *Berliner Börsen-Zeitung* and the *Investor's Monthly Manual*.

We can already note at this stage that Greece experienced very high costs of borrowing before the turn of the century, after which point she at times was able to borrow more cheaply than any of the others. Otherwise, Romania generally experienced relatively favourable costs of borrowing throughout the period. Note also the general decline in spreads towards the end of the period, which is a pattern which has been recognized for many countries, and is not generally understood.

Capital flows to the four Balkan countries began or intensified after their independence. A complete description of all the bonds issued by these countries is given in in Tables A.3-6 in the Appendix. The borrowers looked forward to economic development, and they tried to align themselves with the more developed nations. Thus, many contracted loans in order to finance the construction of railroads, which were key to the integration of markets. They also required foreign capital for other purposes such as the development of state and local institutions, fortifications, bridges, education, military organization, armaments, wars, the buying back of state monopolies, and budget deficit financing (Lampe 1982).

The process of accessing capital markets was similar across the countries, since all resorted to bank intermediation in order to float their loans (see the information in Tables A.3-6). Thus, usually a bank or a syndicate of banks undertook the government loan by buying in advance the sovereign bonds, and subsequently placing them on the capital markets. Often, bonds were also issued with collateral, the necessity or otherwise of which gives some indication of the creditworthiness of the issuers.

In the finance literature it is well known that borrowers can reduce their risks and borrowing costs through the use of collateral. During the classical gold standard period, sovereigns in need would often make use of this. These secured bonds would serve the interest of creditors, since they safeguarded the interest and capital payments, while the issuing governments could benefit from reduced interest rates or otherwise improved conditions for their bond issues. Such collateral could take different forms. One possibility was to use the real estate of sovereigns as a way of guaranteeing the payment, as in the case of Egypt from 1870-77 (Esteves and Tunçer 2016). However, the most common arrangement from the 1880s onwards was to assign particular state revenue streams as a pledge for securing the loan. These revenues could for example be from state monopolies, customs, or railroad revenues. Tobacco, stamp, salt and railroad revenues were those most frequently used by the Balkan countries.

We have documented the collateral used for the Balkan bonds in the Appendix. From this is it apparent that there is much variation within the group. On the one hand is Serbia who contracted all her loans using collateral (Table A.6), while on the other is Romania, who managed to discharge herself of this practice early on (Table A.5). In fact, Romania only offered collateral for her first two loans, which were contracted in 1880. In other words, only 10 per cent of her loans from foreign governments had collateral attached. Bulgaria and Greece resemble more Serbia in this respect since they used revenue 'mortgaging' quite extensively (Tables A.3 and A.4). In Bulgaria, the government had to offer collateral for all her foreign borrowing, with the exception of the last bond, issued in 1909.

Thus already the picture which emerges is that the creditworthiness of all the Balkan governments, bar Romania, was doubtful. Foreign banks found the southeast European borrowers risky, and as a result they demanded guarantees. However, as we demonstrate in Section 3, in many cases even the presence of collateral as a clause in the lending contract was

not considered sufficient by the creditors. Thus, Bulgaria, Greece and Serbia went from using collateral as a contractual feature to granting creditors direct access to the revenues pledged for servicing the debt, i.e. supersanctions. Again, Romania was an exception because the revenues pledged as guaranties for the loans remained under Romanian control and were collected in the ordinary way. We return to the case of Romania in Section 4.

3. Creditworthiness and supersanctions in Bulgaria, Greece, and Serbia

3.1 The history of sovereign debt and the timing of financial controls

For the Balkan countries, in a nutshell, financial controls took the form of debt administration councils whereby the creditors were given a measure of control over the financial revenues pledged to finance interest and amortization payments. Why were such measures imposed? Mitchener and Weidenmier (2010) explain that only defaulting sovereigns suffered from supersanctions, but as we will show in the following, on several occasions countries accepted a sacrifice of economic sovereignty without default in order to contract new loans and/or improve their borrowing conditions. This is the case for Bulgaria, Serbia and Greece. To avoid bankruptcy Bulgaria accessed new funds from the capital markets, but was forced to say 'yes' to foreign intervention in its domestic affairs. Serbia agreed to supervision from creditors for almost every loan contracted on the international markets, while Greece encountered two episodes of supersanctions, with just one due to default. Table 1 summarizes the defaults, the debt arrangements and the international controls implemented.

Table 1: Defaults, debt settlements and financial controls imposed

Country	Default period	Description of default	Debt settlement	Financial Control description	Financial Control period
Bulgaria	-	-	In 1902 Bulgaria was on the edge of bankruptcy. A consolidation loan was contracted with French creditors. The new foreign loan came with strings attached.	The Committee of Financial Control headed by the representatives of the French creditors took control of tobacco revenues; other policy conditions were also imposed	1902-1913
Greece	-	-	In 1887 Greece is in desperate need of new funds. The new loan diffused the debt crisis, but brought Greece under the financial control of the creditors	The foreign creditor banks founded a company, *Societe de Regie de Monoples de Grece*, with the object of controlling the monopolies' revenues in order to ensure the debt repayment	06.1887-12.1893
	12.1893-1898	Suspension of principal payments; repayment in gold of only 30% of the interest	Greece exits the default period in 1898 with a debt settlement that penalized her. No debt reductions.	International Financial Commission was established in 1898, consisting of representatives from Russia, Austria, Italy, the UK, Germany, and France, to control the revenues set aside for debt service, from state monopolies, stamp and tobacco taxes, and from some customs duties; other policy conditions were also imposed	1898–1913
Serbia	-	-	From 1881 until 1888 each international loan was tied to foreign supervision.	For each loan the underwriting banks demanded the establishment of a so called 'treasury' that would manage the pledged revenues and hence secure the debt repayment. The treasury was under the control of creditors' representatives together with government representatives.	1881-1913
	1894-1895	Rescheduling	In June 1895 the Serbian government was authorized by law to issue a conversion loan. Ten previous loans were converted into one new loan with a reduced interest rate.	The new debt administration institution replaced the existing treasuries. A Monopolies Administration controlled all the previously pledged revenues and the monopoly revenues from tobacco, salt and petrol. The managing board consisted of 6 members: two from the Ministry of Finance, two from the Serbian National Bank, and two representatives of foreign bondholders.	

What led to this state of affairs? Starting with Bulgaria, in the 1880s she contracted modest amounts of funds from the international capital markets[19]. However, the government tried to attract foreign capital, which was essential for the modernization of the newly created state. Table A.1 shows the foreign borrowing of Bulgaria from 1889 onwards. Almost all the Bulgarian debt issued went on railroad construction and rearmament (Dimitrova and Ivanov 2013). During the 1890s the public finances were in a precarious situation (see Figure 5 below), then an agricultural crisis struck in 1899, which, together with poor railroad planning, left Bulgaria on the edge of bankruptcy. Debt service reached almost one third of total revenues, which was an unsustainable level, leaving the country in desperate need of a consolidation loan. This was negotiated in 1902 with the French creditor Banque de Paris et Pays Bas, which undertook a large part of it. Under the contractual terms of the credit, the loan service had to be guaranteed by the Bulgarian excise tax on tobacco. The revenues collected from this tax were directly managed by the creditors' representatives, namely by the Committee of Financial Control headed by the French. Furthermore, the government had to commit to repaying all its floating debt to the central bank and to stop minting new silver coins without prior agreement from its debt holder (Dimitrova and Ivanov 2013). Also, the National Bank of Bulgaria had to limit its banknote issuance in order to restore the convertibility of the gold-backed banknotes. In other words, Bulgaria had to commit to introduce the gold standard as part of the deal. The 1902 loan brought the financial crisis to an end, but it came at the cost of foreign supervision.

Subsequent loans in 1904 and 1907 were also contracted under the administration of foreign creditors, and again domestic revenues (stamp revenues) used to service the debt were collected directly by them. The loans were contracted with the same underwriters and the previous control arrangement was extended. For the 1909 loan, however, no special guaranties were granted since the government feared that political control might follow financial control, but this meant turning to Vienna, since the French bankers did not want to give up their supervision (Feis 1930, p.273).

By accepting financial controls it seems that Bulgaria's sovereign risk was reduced in the eyes of investors, enabling the country to borrow at lower interest rates. Figure 2 shows that Bulgarian bond spreads followed a downward trend after the foreign intervention. Moreover, it is also clear

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[19] Bulgaria's early history of borrowing on the international markets is summarized by Tooze and Ivanov (2011), Dimitrova and Ivanov (2013) and Feis (1930)

that the new bonds issued under financial control enjoyed lower spreads. Hence the creditworthiness of the country improved after 1902.
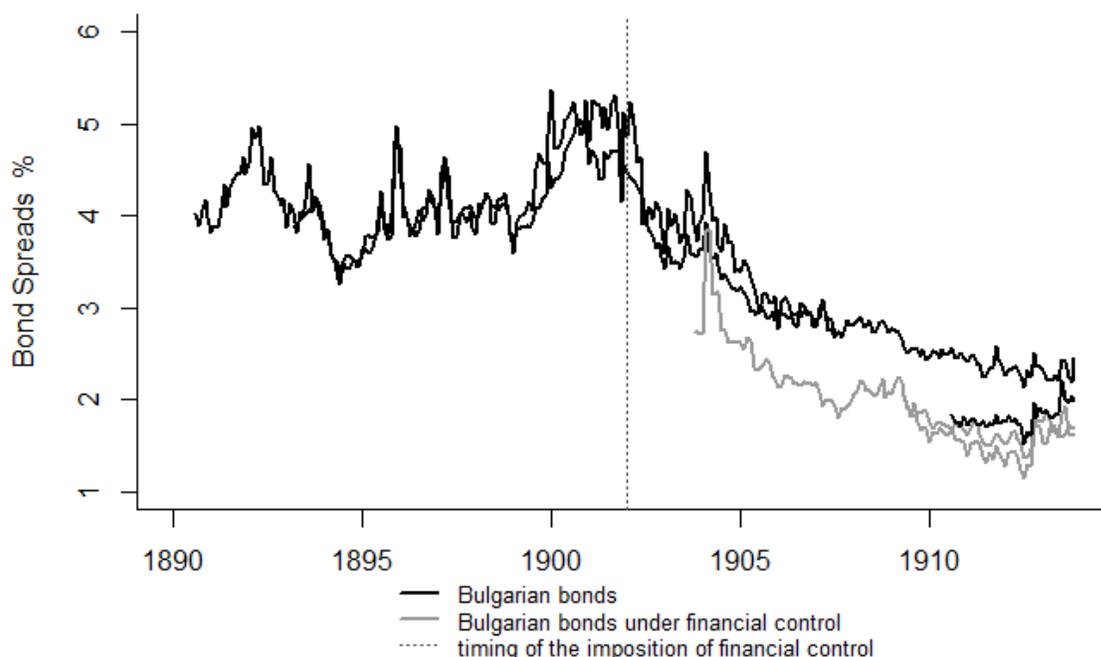

Figure 2: Bulgarian bond spreads and the timing of the imposition of supersanctions
Source: See text.

Turning to Greece, she reappeared on the European capital markets in 1879 after a long period of absence due to default on previously contracted debt. After reaching an agreement with the old creditors first, Greece managed to draw impressive amounts of funds from the financial markets. Table A.2 illustrates Greek foreign borrowing from 1879 until the end of the classical gold standard period. Initially, Greece enjoyed a light foreign debt service[20], but over time it started to weigh more and more heavily on the budget revenues. In fact, the debt increased so rapidly that the tax system was not able to meet the constantly mounting debt charges. As a result, additional loans were contracted to meet the growing debt obligations. Thus, it seemed that only continuous foreign capital inflows could keep the financial system of the country going.

Greece thus often found herself in crisis. For example, at the end of 1884 the country was hit by a recession which aggravated the budget deficits. With a large fiscal deficit and with the prospect

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[20] The debt service in 1880 amounted to approximately 15% of the budgetary receipts, according to Levandis (1944, p. 55)

of war looming, the government was forced to suspend the drachma's convertibility in September 1885 (Lazaretou 2005). Large gold outflows followed and the national currency depreciated. Then, 1886 also ended with a high deficit and the government was in great need of funds to cover the maturing debt obligations. Things settled down in 1887 when a new large foreign loan was contracted. The 4% Monopoly Loan[21] calmed the financial markets and diffused the critical financial difficulty the government found itself in. However, the same loan brought Greece under the financial control of creditors. This international control took the form of a debt administration company which collected, administered, and supervised the revenues assigned for servicing the debt.[22] Whenever the debt charges were higher than the proceeds from the assigned monopolies (salt, petroleum, matches, playing cards, cigarette paper), the state had to supply the extra funds. The company was supposed to be terminated when the entire loan was redeemed.

With all these safeguards plus gold repayments, the loan was considered secure and enhanced the country's creditworthiness. In order to see how investors reacted to the news about the financial control, we illustrate in Figure 3 the bond spreads for Greek securities. The bonds in grey were contracted under foreign financial control.[23] Here it can be seen that the 4% Monopoly Loan (marked in grey) was positively perceived by the capital market. Since the beginning of 1887 investors started to bid up the prices of former debt issues, in expectation of the Monopoly Loan[24]. Between the end of January and the end of May, when the Monopoly Loan was authorized by law, the 5% issues of 1881 and 1884 registered an increase of 22 per cent and the 5% Independence bonds rose approximately 12 per cent. Following the introduction of international control, the prices continued to rise and then stabilized at a level higher than pre-foreign intervention levels. The stability was short lived however, as the country entered new difficulties beginning in 1891.

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[21] The 4% Monopoly Loan of 1887 was authorized by the Law of May 28, 1887. (Levandis 1944, p. 68)

[22] By the Royal Decree of June 10, 1887, the following banks – Comptoir National d'Escompte de Paris, Epiro-Thessalian Bank, Bank of Constantinople, Hambro Bank, and the National Bank of Greece – were authorized to found *La Societe de Regie de Monoples de Grece*, with the purpose of controlling the monopolies' revenues in order to ensure the debt repayment (Levandis 1944, p. 69).

[23] Below we will demonstrate that there are more bonds besides the one from 1887 which enter this special category of loans.
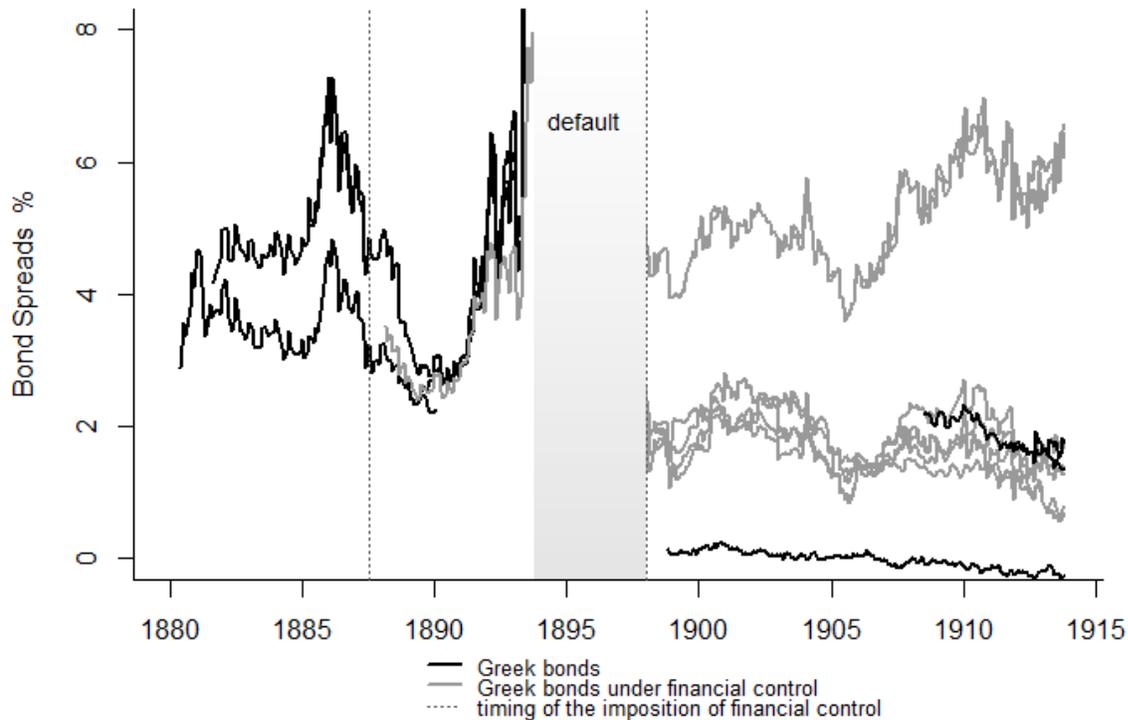
[24] The *Economist*, June 25, 1887.

Figure 3: Greek bond spreads and the timing of the imposition of supersanctions[25]
Source: See text.

Between 1879 and 1891 Greece amassed a debt of approximately 620 million gold francs, out of which insignificant sums went towards railroad construction and public works, while the rest went on the financing of budget deficits, towards servicing outstanding foreign debt, and for buying armament supplies (Levandis 1944, p. 71-72). Thus, the Greek financial structure was overburdened, but as long as it could continue to borrow from abroad, she could keep herself afloat. However, the moment the capital inflows stopped, default could not be avoided. This is what happened in 1893 when it proved impossible to draw more funds from the international money markets and Greece went bankrupt.

By 1893, debt service was consuming 33 per cent of budget revenues (Levandis 1944, p. 75). The government had been trying to increase borrowing since 1892, but had not succeeded. The default of Portugal, the dollar crisis on the other side of the Atlantic, as well as the Baring crisis scared off investors, so the government's attempt to raise funds by floating the 5% Funding Loan

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[25] Following default, Greece reduced the coupons of the bonds. Therefore, we were very careful to incorporate the changes in the interest rates when computing the yields. We use Wynne (1951), p.336 for the coupons' schedule.

in 1893 was a complete failure. Greece succumbed in December 1893 when it announced the suspension of the sinking funds and a 70 per cent reduction in interest payments.

Over the next four years Greece was in default as it could not come to terms with its creditors. The government demanded haircuts on the outstanding debt, while the foreign bondholders' representatives asked for financial supervision. Greece refused any suggestion that creditors might supervise her revenues as this was considered an attack on her fiscal sovereignty and an 'affront to national dignity'. It was only in 1898, after defeat in war with Turkey over Crete, that she was forced to concede.[26] An International Financial Commission (IFC) was established in the same year, consisting of representatives from Russia, Austria, Italy, the UK, Germany, and France, to control the revenues set aside for debt service, from state monopolies, stamp and tobacco taxes, and from some customs duties.[27] In other words, the country had to accept foreign control with direct access to budget revenues in order to ensure the repayment of all her past debt. The collection and administration of revenues were not pursued directly by the Commission, but was placed in the hands of a company called Societe de Regie[28] which was under the absolute control of the Commission (Levandis 1944, p. 108-110). The Regie managed the monopolies (salt, petroleum, matches, playing cards and cigarette paper) and collected the other assigned revenues (Feis 1930, p. 290).

The foreign control committee was endowed with vast and comprehensive powers. For example, it had the right to inspect the institutions besides the Regie that took part in the collection of pledged revenues, like customs houses. Moreover, it could change the established ways and practices regarding the management of revenues: in other words, it could improve tax collection and management systems (Feis 1930, p. 290). Without the Commission's consent, the government was not able to borrow more than ten million drachmae through treasury bills.

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[26] In 1897 the Greece went to war with Turkey over Crete. She emerged defeated and with a much-deteriorated financial position due to inflation and due to the war indemnity she had to pay. In the peace treaty signed on September 8, 1897, the mediating powers had included a clause that obliged her to establish in Athens an International Financial Commission of Control that would protect the rights of existing creditors (Levandis 1944, p. 98).

[27] The International Financial Commission was formally recognized by the Greek Law of Control of February 26, 1898.

[28] Societe de Regie was the same company that formally managed the pledged revenues for the Monopoly Loan in 1887. It was reorganized, however, into a joint stock company.

Furthermore, the foreign control imposed an annual reduction in the monetary base (Lazaretou 2005 p.224).

The debt settlement 'supersanctioned' Greece, because it reduced her fiscal sovereignty. Moreover, it was particularly harsh because the country was not allowed to scale down her outstanding debt. The committee designed a scheme based on increasing interest rates that would eventually compensate bondholders in full (Levandis 1944, p. 107)[29]. However, the imposition of financial controls also brought benefits. Greece was able to borrow more and to access the international capital markets at lower costs than it would otherwise have faced (Feis 1930, p. 292). Furthermore, as Figure 3 reveals, Greek creditworthiness improved as yields fell. Thus, the *Investor's Monthly Manual* wrote on December 31, 1898 that 'the establishment of international control over the finances of Greece has already proved very successful, and the anticipation of benefit to the holders of the bonds of the original debt is shown in a rise […] in the prices of the bonds.'

The first foreign loan after the default was contracted at the very low interest rate of 2.5% in May 1898. The bonds were issued under the guarantee of three Great Powers, England, France and Russia, hence the small borrowing costs.[30] It was contracted under such conditions in order to help Greece re-access the financial markets which were reluctant to advance new funds. It did not enter under the jurisdiction of the International Financial Commission, however, in contrast to that from 1902. The 4% loan from 1902 - destined for railroads - was under the direct contract and control of the IFC (Kimber 1920, p. 234). Greece issued new bonds in 1907 and 1911, which were rapidly absorbed by the international investors. These loans were partly secured by the surplus of the old assigned revenues, but they were not placed under the direct control of the commission (Wynne 1951, p. 347). The success of these loans indicates the importance of the IFC for the fast rehabilitation of Greek credit.

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[29] When Greece defaulted the bond interest rates were reduced from 4%, 5% to 1.75%, 1.6% or 1.3% respectively, depending on the bond. The Law of Control which marked the end of default meant a gradual increase in the interest rates. For the detailed schedule on the interests paid see Wynne (1951), p.336.

[30] It was stipulated in the Preliminaries of Peace (September 8, 1897) and in the Law of Control (February 26, 1898) that the Powers will help Greece to raise a new loan in order to pay for the war indemnity. See Esteves and Tuncer (2016) for a study on collectively guaranteed bonds.

In the case of Serbia, foreign debt came tied to international supervision from the beginning. Besides the normal practice of pledging, creditors asked for access to budget revenues even with the first Railroad Loan in 1881. The underwriting banks demanded the establishment of a so-called 'treasury' which would manage the pledged revenues and hence monitor and directly control the payment of debt annuities (Gnjatovic 2009). If there were revenue shortages, the state would provide the extra funds necessary, and if the pledged revenues were larger than the amount required for the loan service, the surpluses were channelled into the government budget. The treasury was under the control of creditors' representatives together with government representatives. Each loan contracted abroad until 1888[31] entered under the umbrella of a particular treasury and by then there were six in operation.[32]

In 1888 the government wanted to gain back the right to administer and collect the revenues coming from the tobacco monopoly that were given away in 1885 for the armament loan. In order to be able to repurchase the monopoly from the bank governing the treasury, Serbia took the 5% Lottery Loan from Vienna. In this way the government placed the tobacco revenue stream under its budget control and discharged itself from foreign interference. Then, in 1890 Serbia freed herself some more from the control of creditors by repurchasing the railroad and salt monopolies. This came, however, at the cost of increasing foreign debt.

In fact, by 1893 Serbia had accumulated an unsustainable level of debt, with foreign debt repayments consuming approximately 37 per cent of budget revenues (Gnjatovic 2009). In 1894 Serbia defaulted, with the finance minister announcing that his country was not able to meet the contractual debt terms. A preliminary debt compromise was negotiated in December 1894 and in June 1895 the Serbian government was authorized by law to issue the 4% Conversion Loan. The new loan unified ten previous 5% loans.[33] Furthermore, the 3% Lottery Loan from 1881 was converted into a 2% loan (Gnjatovic 2009).

In return for the consolidation loan, Serbia had to accept more financial control, thus providing striking support for the idea that foreign intervention was necessary for the country to enjoy

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[31] See Table A.6 for a list of Serbian foreign borrowing, 1878-1913.
[32] See Gnjatovic (2009) for a list of the treasuries.
[33] The ten loans are the following: Railway Loans (1881, 1885, 1886), Agrarian Loan (1882), Administrative Duties Loan (1884), Tobacco Rent (1885), Turnover Tax Rent (1888), Railways Rent (1890), Loan on 16% Additional Tax (1893) and Loan on the Account of Railways Directorate (1893)

cheap access to credit. The debt agreement called for the establishment of a new debt administration institution to replace the existing treasuries, and to secure the regular debt service of the conversion loan. The new control body was called the Monopolies Administration (Feis 1930, p. 267). Several streams of revenues were removed from flowing to the government treasury and rechannelled towards it. In short, the Monopolies Administration controlled all the previously pledged revenues and the monopoly revenues from tobacco, salt and petrol. It had the power to determine the general policy of the monopolies, their budget, their purchases and sales. The managing board consisted of six members: two from the Ministry of Finance, two from the Serbian National Bank, and two representatives of bondholders (Feis 1930, p.267). This composition of the debt administration council resulted in a less powerful foreign influence compared to Greece and Bulgaria, where the commissions' members were all foreign.
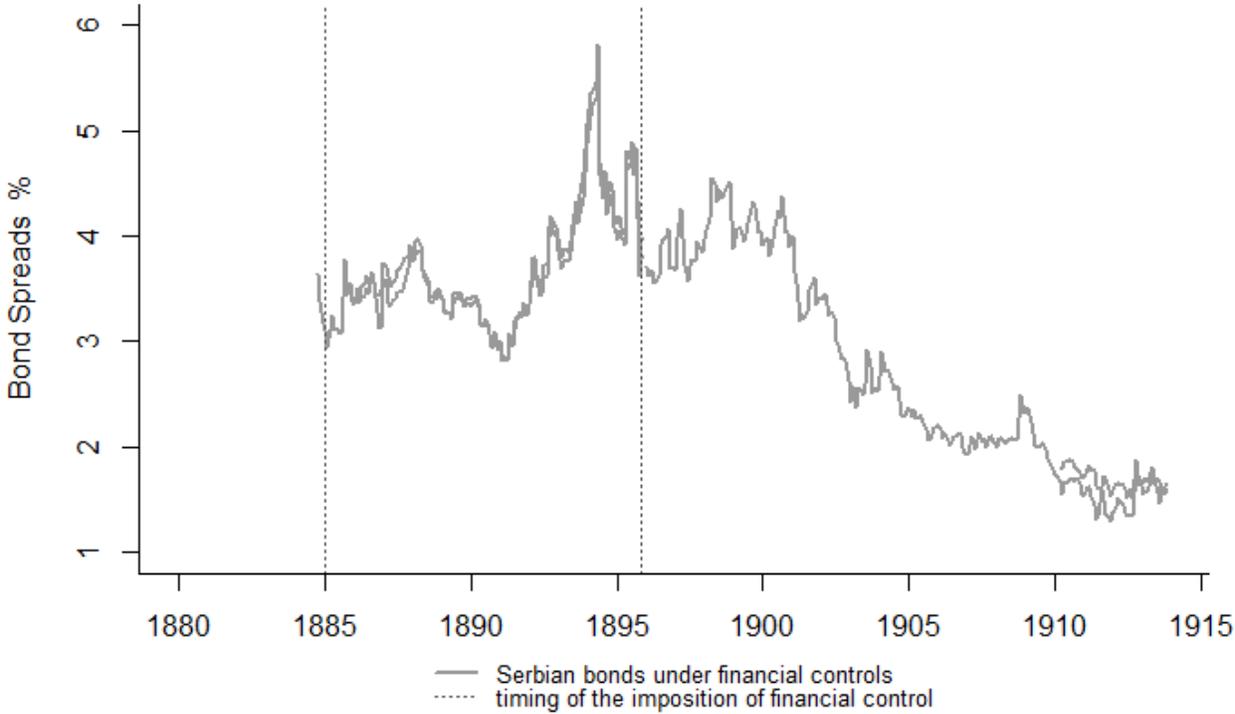

Figure 4: Serbian bond spreads and the timing of the imposition of supersanctions
Source: See text.

Figure 4 illustrates the yield spreads for Serbia. They are all represented in grey because the debt management of each bond was under foreign supervision. The dotted line marks the timing of the Monopolies Administration which centralized all the foreign debt repayments. Subsequently, the bond spreads followed a downward trend which we argue was mostly due to the Monopolies Administration's role in safeguarding the debt service. Feis (1930) further states that this institution 'prevented irregularities in the payment of the debt service' and that 'it was only its existence that enabled Serbia to find purchasers for its later loans.' The loans issued in 1899, 1902, 1906, 1909 and 1913 were all placed under its control (Table A.4 and Gnjatovic 2009). Unfortunately we have quotations only for the 1909 loan, which can be seen in Figure 4. However, these subsequent issues led investors to bid up the prices and hence lower the spreads for the previous bonds (the 4% Conversion loan and the 5% Funds Loan 1886) as in the case of Greece in 1887, with the Monopoly Loan.

Bond spreads did not decline immediately after the introduction of the second round of financial controls in 1895, however. Between 1895 and 1900 the spreads of the 4% Conversion Loan remained at rather high levels, so it seems that the markets needed time to be persuaded of the benefits of foreign interference. Another reason is because the 4% Conversion Loan was met with opposition by investors who were forced to accept the reduction of interest rates when exchanging the previous 5% bonds with the new 4% ones[34].

3.2 The impact of financial controls

The imposition of financial control through the Committee of Financial Control, the International Financial Commission and the Monopolies Administration in Bulgaria, Greece and Serbia respectively, impinged on the fiscal sovereignty of these countries. We see a typical fall of about one percentage point (more for Greece) in the spread over British consols for bonds covered by the financial controls, which interestingly corresponds to the 'Empire effect' identified by Ferguson and Schularick (2006), i.e. the difference in spreads between a British colony and other less developed countries – also a sacrifice of sovereignty.

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[34] Only three banks participated in the debt settlement which led to the 4% Conversion loan. These banks together held only one seventh of the ten 5% Serbian bonds that were converted, hence the majority of the bondholders were dissatisfied and opposed the agreement (Gnjatovic 2009).

In addition, it is of interest to determine whether these measures helped the governments to achieve fiscal discipline. Furthermore it is important to consider the relationship between foreign controls, fiscal performance and country risk because these three variables are interconnected. For example, the international committees could impact on the countries' creditworthiness through the channel of fiscal budgets. If bondholders regarded the presence of foreign experts as a sufficient condition for the government to make credible efforts towards achieving balanced fiscal positions, then they would lower their assessment of the default risk. Mitchener and Weidenmier (2010) do indeed find that 'supersanctions reduced country risk by improving a country's fiscal discipline through increased tax revenue and more efficient tax collection'. For the case of Greece, Lazaretou (2005) argues that the International Financial Commission enabled the country to enjoy fiscally responsible governments. Consistent with this, Gnjatovic (2009) finds that the debt management body helped Serbian state finances.

There are a number of ways the public finances could have benefited from foreign intervention: foreign supervision guarded against inefficiencies and corruption; and governments had an incentive to act more responsibly, to become financially prudent, and to increase the transparency of the state finances. Furthermore, the debt management councils could have pushed for specific economic policies, and in fact Bulgaria and Greece's foreign controls came attached with policy conditions that forced the countries to implement monetary and/or fiscal reforms.

To get an idea of how the financial controls affected the state of the public finances, Figure 5 shows the fiscal deficit as a percentage of the government revenues, with the average bond spreads for comparison.
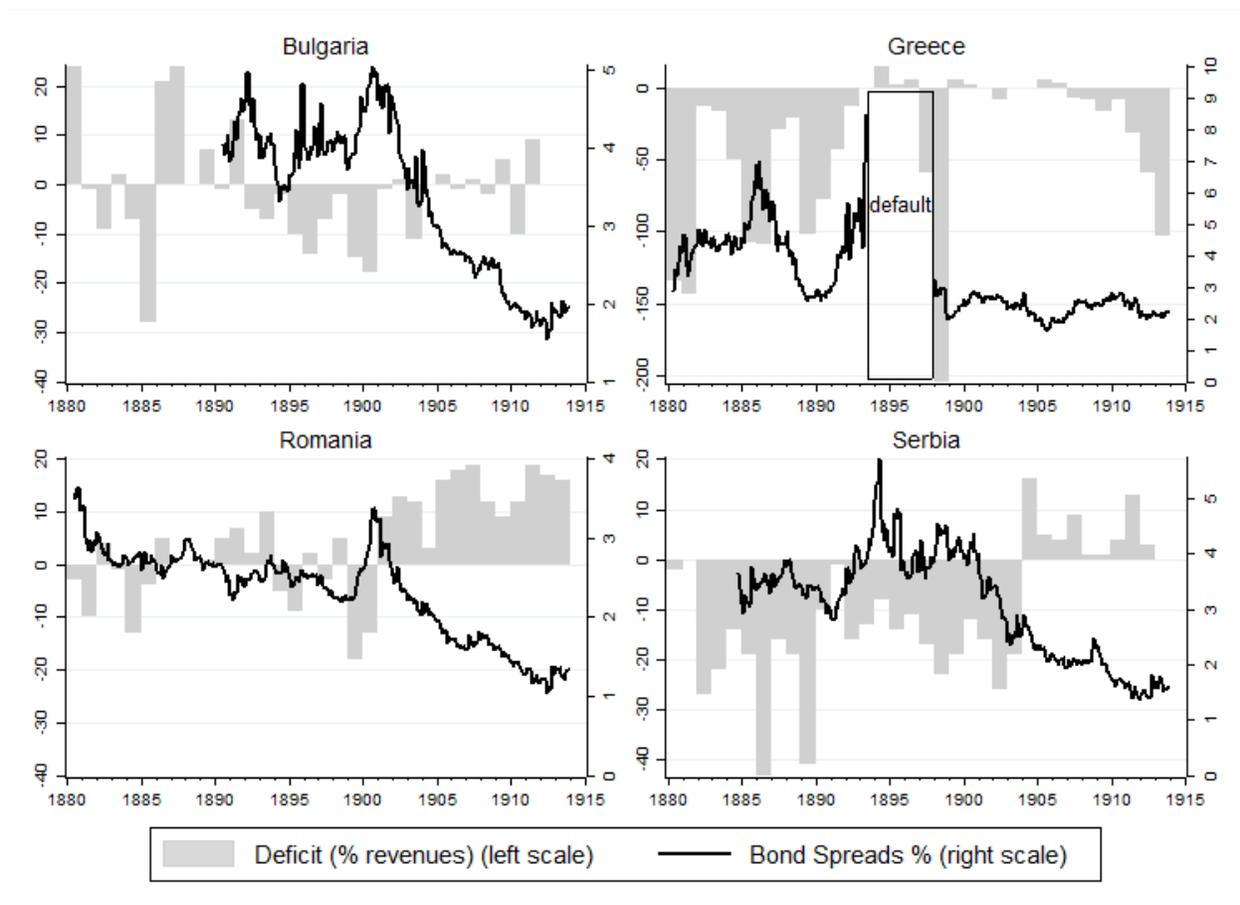
Figure 5: Budget deficit as a percentage of government revenues.

Sources: Accominotti et al (2011), Banu (2012), Dimitrova and Ivanov (2013), Gnjatovic (2009).
Note: For Romania, from 1880 the year represents the fiscal rather than the calendar year, e.g. 1880 corresponds to the fiscal year 1880-1881.

There is some indication the financial controls did have an impact. Thus, Bulgaria had budget deficits for many years, but they are much smaller after 1902. Likewise, Greece ran considerable deficits in almost every year, but her fiscal position improved greatly after 1898 (although towards the end of the period deficits increased again due to spending on military equipment). An exception is Serbia, which ran persistent budget deficits until 1904 (nine years after the second round of financial controls were imposed in 1895). This reflected a backward tax system and unrealistic budget planning, but changed with a tax reform and the appointment of a new finance minister who brought well-planned budgets from 1902 (Gnjatović 2009).

The coincidence of timing of financial controls and balanced government budgets is of course merely suggestive, but it reveals one channel through which foreign intervention might have led to increased creditworthiness. Another is the more direct channel whereby the financial committees were given the authority to collect revenues and make the debt repayments themselves. In order to get an idea of whether financial controls did indeed lead to greater creditworthiness, we employ the structural break methodology developed by Bai and Perron (1998, 2003) and apply it to the bond spreads we have calculated in order to identify the impact of financial controls on the financial market. To do this we construct a series of spreads for each country using the bonds listed in Table 2. The securities are chosen to be representative for their countries and as such differ from the average bonds calculated above. We have done so partly to make our results comparable with previous work, and because we do not wish to identify breaks associated with new bonds entering the sample used to calculate the averages. Nevertheless, our results are fairly robust to using the average bonds, with the notable exception being for Romania, which was not subject to controls – see Figure A.2 in the appendix.

For Bulgaria the bond selected had the longest time span. For Greece we use two bonds: the 5% Independence Loan (1879) starts the earliest in the sample of bonds whereas the second bond, 4% Rentes (1889) is a very big loan compared to the other outstanding loans (£6,200,000). In the case of Romania, two bonds are employed as well. These securities allow us to build a long time series of spreads. The first bond converted into the second one, thus motivating our choice (6% C.F.R. Bonds (1880) and 4% Foreign Loan for 6% C.F.R Bonds Conversion (1890)). Lastly, for Serbia we chose the only available bonds that allowed us construct such a long spread series.[35] For the sake of completeness, we have included Romania, although as mentioned above, she was not subject to financial controls.

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[35] Figure A.1 and tables A.3-6 in appendix can be consulted to check the representativeness of the bonds.

Table 2: The bonds selected for our analysis

Country	Bond Name	Start quotation	End quotation	Market
Bulgaria	6% State Mortgage Bond (1892)	03-1893	12-1913	Berlin
Greece	5% Independence Loan (1879)	06-1880	02-1890	London
	4% Rentes (1889)	06-1889	12-1913	Berlin
Romania	6% C.F.R. Bonds (1880)	07-1880	12-1890	Berlin
	4% Foreign Loan for 6% C.F.R Bonds Conversion (1890)	10-1890	12-1913	
Serbia	5 % Administrative Duties Rent (1884)	10-1884	12-1895	Berlin
	4% Conversion Bond (1895)	01-1896	12-1913	

To detect the number and location of the breakpoints in the bond spreads series we use the following linear regression model:

$$y_t = \alpha + \beta_1 y_{t-1} + \beta_2 t + e,$$

where y_t represents the bond spreads, t is the time trend, e is the disturbance term, and α, β_1, β_2 are the coefficients/parameters. A structural break occurs if at least one of the parameters changes at some date – the break-date – in the sample period. The Bai and Perron (1998, 2003) methodology is able to point out the number of structural breaks as well as the dates for the change. They suggest different tests for estimating simultaneously the unknown regression coefficients and the breakpoints, for example the so called double maximum tests, of the null hypothesis of no structural break against an unknown number of breaks, UD_{max} and WD_{max}. Also, they introduce a test for l versus $l + 1$ breaks.

The logic behind employing this method (which is standard in the literature) is that we thereby can agnostically identify breaks in the series, and subsequently ask whether or not they coincide with events that are consistent with our priors (i.e. the imposition of financial controls). Thus, after employing the Bai and Perron (1998, 2003) algorithm for simultaneous estimation of

multiple breakpoints we get the results presented in Figure 6[36], where dashed lines indicate the breaks and in Table 3.
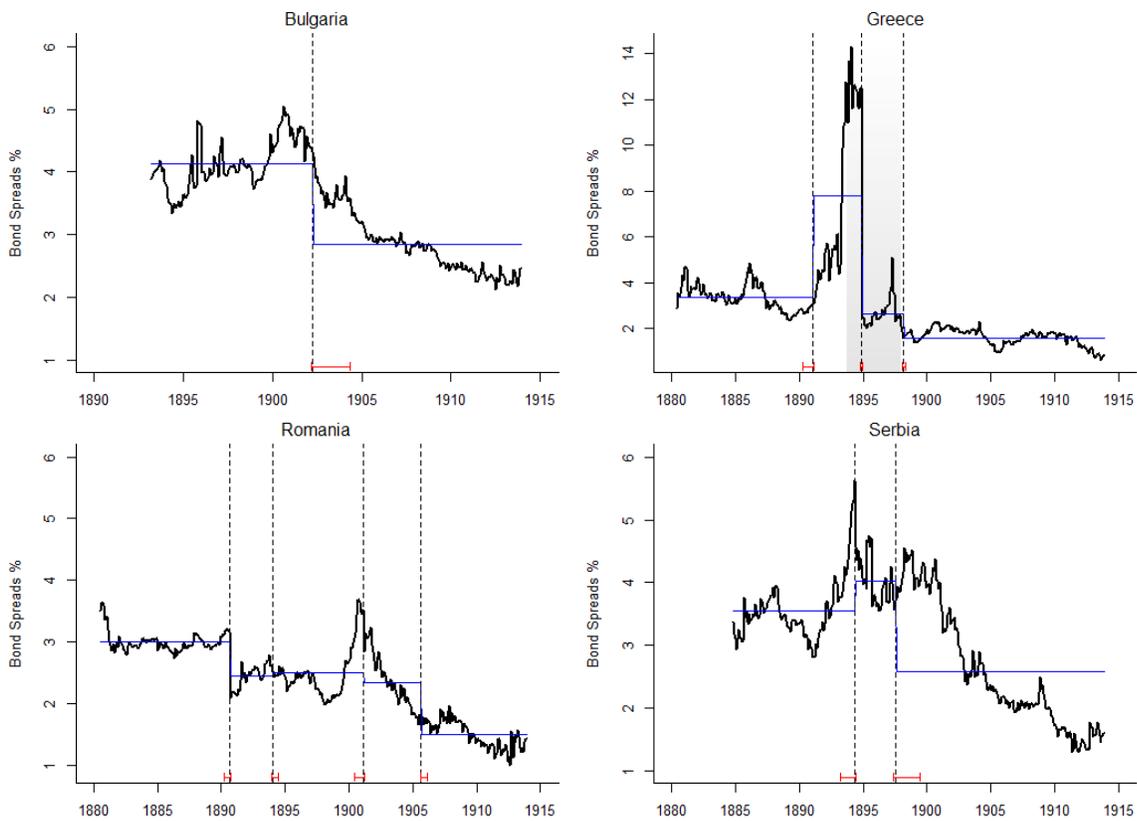
Figure 6: Bond spreads and break tests

Sources: Own calculations; *Berliner Börsen Zeitung* and *Investor's Monthly Manual*.

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[36] The differences between our findings are those of Tuncer (2015) for Greece and Serbia might partly be due to his use of current yields rather than yields to maturity, different 'representative' bonds, as well as differing parameter values in the regressions (although we experimented with several). Nevertheless, the main breaks identified are the same.

Table 3: Breaks and their interpretation

Country	Break dates	95% Confidence intervals	Interpretation
Bulgaria	04.1902	03.1902 – 05.1904	Consolidation loan negotiated with French creditors (institution of financial controls)
Greece	02.1891	04.1890 – 03.1891	Recession leading to default
	11.1894	10.1894 – 12.1894	Default
	03.1898	02.1898 – 05.1898	Foundation of the International Financial Commission
Romania	09.1890	04.1890 – 10.1890	C.F.R. Bonds conversion
	01.1894	12.1893 – 07.1894	Introduction of gold standard
	03.1901	06.1900 – 04.1901	Aftermath of agricultural crisis and dearth of exports in 1899 and privatization of the National Bank in 1901
	09.1905	08.1905 – 03.1906	Monetary and agricultural crisis resulting in an increase of banknote issuing in 1905
Serbia	05.1894	04.1893 – 06.1894	Default
	07.1897	05.1897 – 06.1899	Aftermath of the introduction of financial controls.

We find multiple breaks in almost all cases. The only exception is for Bulgaria, where we identify only one large break around 1902. Importantly however, is that this identified break coincides with the timing of the consolidation loan (see Table 1) which marked the foundation of financial controls in Bulgaria. The identified break indicates that after the imposition of financial controls, the Bulgarian bond spreads decreased on average. For Greece we identify three breaks. The first break indicates an increase in the bond spreads and is consistent with a recession leading to default. The second is likely to identify the Greek default in 1894 and the third break in 1898 coincides with Greece exiting the period of default and the foundation of the International Financial Commission recognized by law in February 1898. The last break is thus evidence that the imposition of financial controls also caused the bond spreads to decrease for Greece. For Romania we find four breaks. Romania was never subject to financial controls and the identified breaks mostly coincides with the aftermath of adverse economic conditions leading to more or less favourable conditions of borrowing. The first break in 1890 is consistent with the conversion of the 6% C.F.R. 1880 bond into the 4% C.F.R. conversion bond. The second break around 1894 is consistent with the introduction of the gold standard in Romania and the break in 1901 is associated with the privatization of the Romanian National Bank on January 1st, 1901.

The privatization was the result of an agricultural crisis and a dearth of exports in 1899, which caused the country to borrow more, and under less favourable conditions. Finally, another agricultural crisis in 1904 resulted in a large increase of circulating banknotes in 1905, which is consistent with the last identified break for Romania. For Serbia we find two structural breaks. The first in 1894 where the bond spread increases on average. This likely represents the Serbian default in 1893 and the subsequent period of instability. The second break in 1897 sees a reduction of the bond spreads and can be associated with the introduction of financial controls in Serbia, which started during 1895 and resulted in yields finally falling from 1897.

The important result from the above analysis is that we do find breaks associated with the 'supersanctions' for both Bulgaria, Greece and Serbia. Combined with the fact that all three countries borrowed more cheaply after the supersanctions, this seems to be strong evidence in favour of the hypothesis that this was the main way that these emerging markets could gain access to cheaper capital. Romania remains in stark contrast, however.

4. The Romanian exception

With the exception of a few years, particularly in the first years of the twentieth century, Romania enjoyed lower costs of borrowing than the other Balkan countries. Moreover, she never seems to have been in danger of supersanctions. Although she was a large and frequent borrower – by 1900 40 per cent of government revenue went on paying back loans – she was considered to be more creditworthy. This is apparent from the low spreads, but also from the fact that, except at the very beginning, she did not need to pledge government revenues when issuing debt.

After 1900 Romanian loans were mostly mediated by Diskonto-Gesellschaft, Bleichroder and Rothchild and Sons, and between 1900 and 1914, Romania secured six loans on the German market, for a sum total of about 1.1 billion lei, conditioned by the purchase of rolling stock and armaments from German companies (Mureşan and Văsioiu 2008, p. 73). Due to favourable agricultural conditions and increasing exports Romania was able to pay off a large part of her debt before the First World War (Mureşan and Văsioiu 2008, p. 73). Until 1913, most borrowing went on 'productive purposes' (especially infrastructure and agricultural credit), and the debt was serviced according to schedule. 52 per cent of Romanian debt of around 1.7 billion francs

was held in Germany in 1914[37], and Berlin had previously been an even more important source of capital, until Romania's increasingly close ties with Russia led to German investors disposing of their securities from around 1912 (Feis 1930, pp. 268-9).

Why was Romania different? For this period, creditworthiness was usually judged by international investors through levels of debt, and the cost of servicing it (Mauro et al 2006). A country with higher levels of debt might be considered to be more risky, and would endure higher borrowing costs. Indeed, as Flandreau and Zumer (2004) demonstrated, in the late nineteenth century, borrowers whose 'governance' was suspect had to face extremely high interest charges and discount rates. To avoid this, they had to demonstrate that their financial 'fundamentals' were sound. However, as Figures 7 and 8 reveal, although Greece stands out as a profligate borrower, there is no indication that Romania was exceptional in this sense. Figure 8 shows total debt service[38], and Figure 9 shows the debt to revenue ratio.
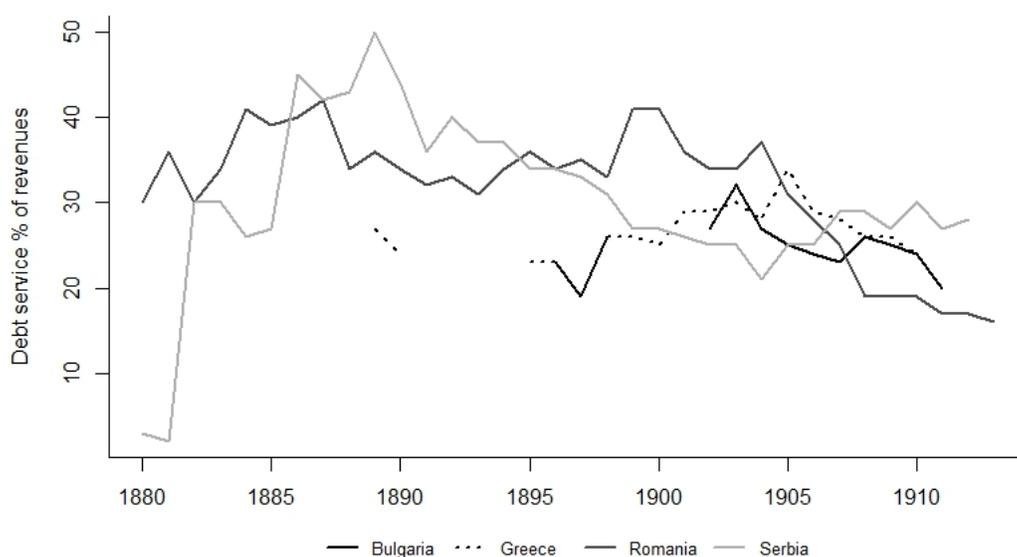
Figure 7: Debt service 1880-1913

Source: Banu (2012), Ferguson and Schularick (2006), Gnjatovic (2009).

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[37] After Germany, the three next most important markets were France with 32 percent, Romania herself with 11 percent, and Belgium with 5 percent (Feis 1930, p. 269).
[38] For Bulgaria, debt service is the public external debt service (Fergusson and Schularick 2006). For Greece it is the interest service on the public debt (Accominotti et al 2011). For Romania it is the principal and interest payments (Banu 2012). For Serbia it is external debt repayments (principal and interest payments) (Gnjatović 2009).
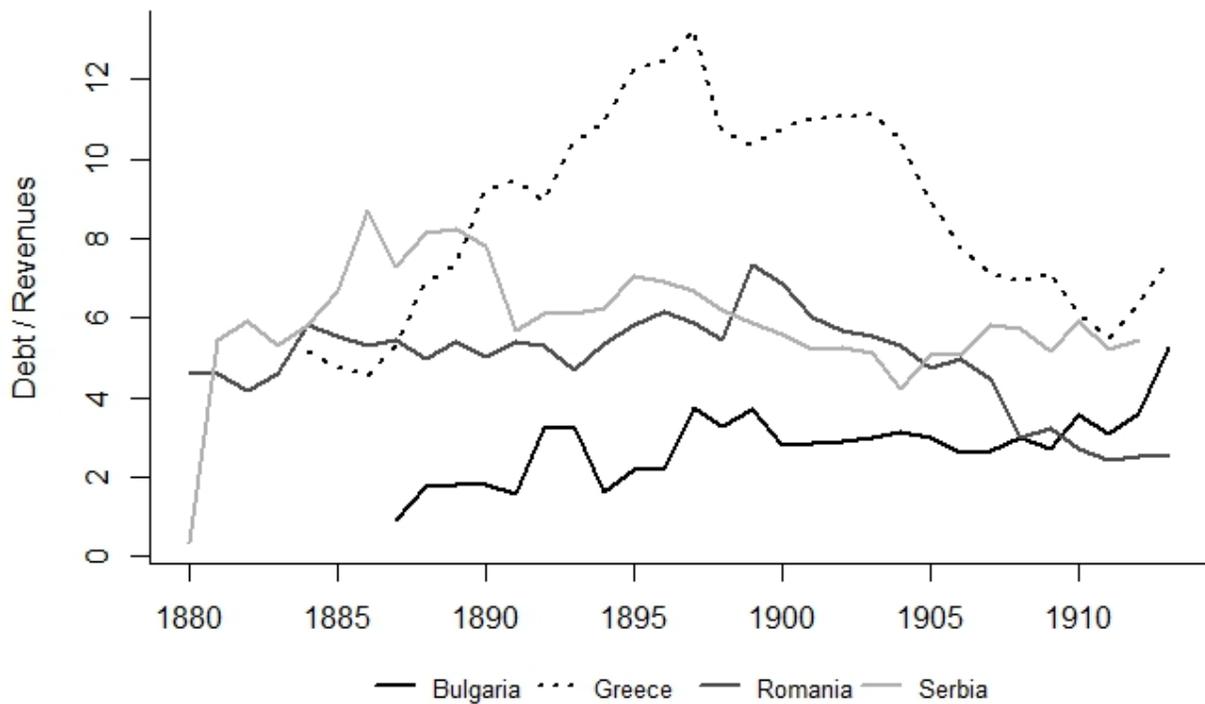
Figure 8: Debt to revenue ratio 1880-1913

Source: Accominotti et al (2011), Ferguson and Schularick (2006), Gnjatovic (2009).

Another focus of investor attention was trade. Ferguson and Schularick (2006) note that, in the absence of GDP per capita statistics to get an idea of the degree of institutional and economic development of a country, exports per capita were used as an alternative measure to proxy for the risk-reducing factors associated with economic development. Thus, countries with a current account surplus were generally regarded as having a greater ability to service their foreign debts. Figure 9 gives an account of exports per capita for the four Balkan countries.
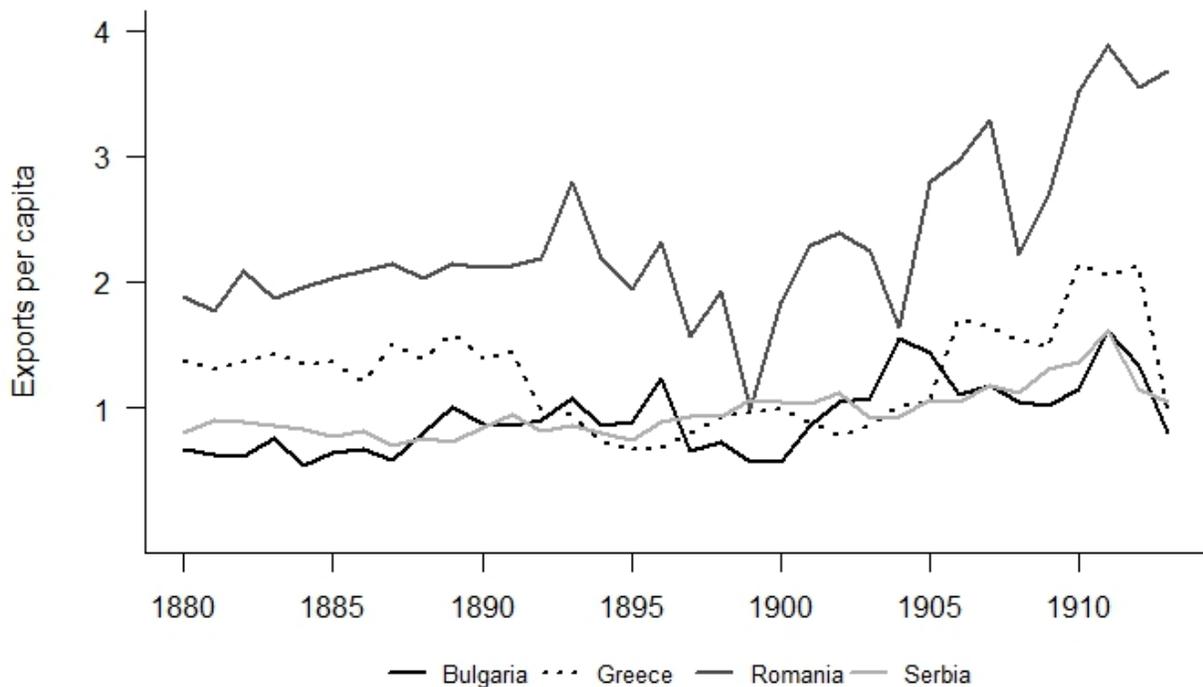
Figure 9: Exports per capita 1880-1913

Source: Ferguson and Schularick (2006).

Clearly, Romania was a more successful exporter. She also enjoyed relatively abundant natural resources, which creditors are likely to have seen as potential collateral in the case of default. This was partly because Romania's agriculture, although traditional, grew rapidly (Constantinescu 1994, p. 179). Agricultural yields were much higher in Romania than in the other Balkan countries, and by 1910 the Romanian wheat export value had overtaken the US to be fourth in the world (Lampe 1975, p. 63).

Also, Romania had plentiful access to raw materials. Indeed, the first oil production in the world was officially recorded in 1857 in Romania and by 1900 she was the third largest oil producer in the world, with an annual production of 1.9 million barrels (Dicea and Enachescu 2000). Clemens and Williamson (2004) stressed the role of supply and demand for capital for British lending patterns, and demonstrate that British capital exports went to countries with abundant natural resources, as well as a supply of labour and human capital to exploit them, that is areas

with plenty of immigrants, and young, educated urban populations.[39] For this to happen, they needed railroads to make them accessible, land needed to be improved, etc., and British capital made this possible. Similar factors might have played a role for Romania's success.

Nevertheless, many studies have demonstrated that spreads could deviate considerably from fundamentals: some countries were able to borrow much more cheaply than others, despite otherwise similar macroeconomic conditions. One reason is that history matters: having a history of financial crises negatively affects the ability of a country to borrow, in a way which is not related to macroeconomic fundamentals. This is what Reinhart et al (2003) have termed 'debt intolerance': some countries with low debt ratios end up defaulting, while others manage despite very large debt ratios. For example, Greece, which was in default from 1826 to 1880 on loans secured with her movement towards autonomy prior to formal independence (Mitchener and Weidenmier 2010), often suffered from punitive borrowing costs.[40]

Large panel data studies have predictably found war and peace to be important determinants of spreads (see Flandreau et al 1998, Obstfeld and Taylor 2003, Ferguson and Taylor 2006, and Mauro et al 2006), and country studies have reached similar conclusions. For example, Sussman and Yafeh (2000), in their analysis of Japanese government bonds traded in London between 1870 and 1914, find an exceptional role for Japan's victory against Russia in 1905. Romania was the only one of the Balkan countries not to be involved in war until the Second Balkan War in 1913.

Dincecco (2009) argues for the importance of the political regime: centralized democracies could be expected to spend more wisely, thus reducing their sovereign credit risk. Here, however, there is little to suggest that Romania was a shining example. Although Serbia only transitioned to democracy after the 'May Overthrow' in 1903, Greece adopted a democratic constitution in 1864, and Bulgaria adopted the democratic 'Tarnovo' constitution soon after independence in 1879. Romania introduced democracy in 1866, but parliament was in reality dominated by

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[39] Earlier, and related to this, Williamson (2002) stressed the role of free migration for allowing capital flows.
[40] This relates to the literature on what determines financial crises, which we do not go into here, although clearly such events impact on creditworthiness and bond spreads. External shocks (such as wars and poor harvests) and unsound policies are important determinants (see Kindleberger and Aliber 2011, Bordo 1991, and Bordo and Schwartz 1996). As the proximate cause of such crises, Manasse et al (2003) stress macroeconomic imbalances and instability, high external debt ratios, illiquidity or refinancing risks as well as policy uncertainty. See also Caballero et al (2005).

landed interests, with little influence given to the vast majority of agricultural peasantry. (Seymour and Frary 1918). Likewise, although the role of the underwriter has been stressed by Collet (2012) for the case of Belgium after independence, emerging markets were in practice always underwritten by an investment banker or a European banking syndicate (Esteves 2013), so there was also little to differentiate the Balkan countries in this respect (see Tables A.1-4).

Another factor which might explain the relative performance of the countries was their institutional setup. As previously stated, all four countries emerged as effectively independent states with the Treaty of Berlin in 1878[41], and they continued a process of nation-building that started prior to independence. In Table 4, we concentrate on two institutions which might be considered relevant as determinants of the bond spread: the establishment of a central bank, and membership of the gold standard. Bordo and Rockoff (1996)[42] argued that membership of the gold standard marked a 'good housekeeping seal of approval'. Although the gold standard necessarily limited domestic policy through the sacrifice of monetary independence, countries which were able and willing to commit must have enjoyed a certain set of institutions, and a commitment to global markets, that signalled to investors that their bonds were relatively safe. In other work, however, Alquist and Chabot (2011), dispute the link between the gold standard and cheap capital, finding no evidence in a large database of 55,000 monthly sovereign bond returns. Moreover, Mitchener and Weidenmier (2009) and Ferguson and Schularick (2012) point out that for developing countries risk premiums did not fall after the adoption of the gold standard.

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[41] Although Bulgaria only received autonomy, and was thus more integrated into the Ottoman Empire than the others. This might potentially explain her perceived uncreditworthiness (Fenn 1883, p. 626).
[42] See also Bordo and Kydland (1996) and Bordo and Flandreau (2003).

Table 4: Timing of Institutional Changes

	Bulgaria	Greece	Romania	Serbia
1841		National Bank of Greece		
1878	Autonomy	Independence	Independence	Independence
1879	Bulgarian National Bank			
1880			National Bank of Romania	
1890				National Bank of Serbia
1892			Gold standard de facto	
1906	Gold standard de facto			
1908	Independence			
1910		Gold standard de facto		

Although, apart from Greece, not formally members, the Balkan countries introduced monetary laws intending to comply with the Latin Monetary Union (LMU) in the late 1860s, and in 1880 for Bulgaria (Einaudi 2007). Since this initially implied a bimetallic standard, they were frequently contending with the problem of *agio*, or fluctuations in the market price of silver relative to gold. The most effective solution to this was to adopt the gold standard, which Austria-Hungary did in 1890, leading to a bandwagon effect. First, Romania joined in 1892 after contending for some years with serious *agio* problems. Bulgaria attempted to join the gold standard in 1897, but was frustrated by a financial crisis, which caused the convertibility of banknotes to be suspended. She then, as described above, promised to introduce the gold standard as part of the package agreed which introduced the financial controls in 1902, although *de facto* membership only came in 1906 with the successful circulation of new gold backed banknotes (Avramov 2006, Dimitrova et al 2010). Similarly, joining the gold standard was a requirement under debt restructuring in 1898 for Greece, but parity was only achieved in 1910. Serbia never joined the gold standard, although it did enjoy success eliminating the *agio*. Dimitrova et al (2010, p. 28) argue that Serbia did not join because Austria-Hungary was the main net exporting destination for Serbian products and they enjoyed favourable terms of trade under the existing exchange rate between the Serbian silver dinar and the Austrian gold forint.

Similar to other recent work, we see little evidence for an independent impact of the gold standard on country risk. Serbia never joined. Greece was unable to maintain it for long. Romania was, and joined in 1892, but her costs of borrowing were relatively low even before

this date. For Bulgaria membership in 1906 was ultimately a demand of creditors in relation to debt restructuring, but we see no convergence of yields with Romania from this point.

Turning to the central banks, the National Bank of Greece (NBG) was founded already before independence in 1841 as a commercial bank with the right to issue notes. The National Bank of Serbia (NBS) was established in 1883 and was given the exclusive privilege to issue banknotes, but they were not trusted by the population and were immediately converted into gold. The monetary system remained bimetallic until the end of the First World War (Sojic and Djurdjevic 2006, Dimitrova et al 2010). The Bulgarian National Bank (BNB) was established immediately upon independence in 1879, but was only granted the privilege of issuing banknotes in 1885. Also, regular attempts to privatize it were thwarted, in contrast to Serbia and Romania (Avramov 2006, Dimitrova et al 2010).

The National Bank of Romania (NBR) was established in 1880 as part of a rapid and ambitious institutional modernization after independence (Constantinescu 1994, p. 168). The NBR was founded as a joint public/private venture with 1/3 of stock held by the state, but became entirely private in 1901 (Constantinescu 1994, p. 208). The NBR was very successful at maintaining exchange rate stability until the First World War (Morys, p. 401), and this is often cited as a reason for the relative success and stability of the Romanian economy (Dimitrova et al 2010, Stoenescu et al 2008, 2011). In fact, contemporaries attributed Romania's success to the quality of her institutions, in particular the National Bank of Romania. For example, the section on Romania in the four volume *History of Banking in all the Leading Nations* from 1896 gives a great deal of credit to Romania's independent central bank which did not purchase government debt:

> 'Although the National Bank of Roumania is the credit establishment of a country less rich and economically advanced than other Latin nations, it is a remarkably well managed institution. Its business is conducted sensibly and sagaciously. … The Roumanian Government deserves praise for the intelligent discretion which it has practised toward the Bank. It exercises all rights of control which are the proper domain of the State wherever banks of issue are concerned; but it has exacted no loans from the Bank. Such demands would have prejudiced the run of affairs and shaken the confidence of the public in the paper circulation. The Government and the country have reaped the benefit of this wise action. Exchange has remained favorable in propitious contrast to the unfortunate conditions of exchange in Servia [Serbia] and Greece.'

5. Conclusion

Through the use of a 'natural experiment' after the independence of four neighbouring countries in 1878, this paper offers support for the work of Mitchener and Weidenmier (2005, 2010) and Tooze and Ivanov (2011): 'supersanctions' seem to have been the prime determinant of the ability of the Balkan countries to borrow cheaply, in particular in connection with the restructuring of debt after a crisis. Thus, a loss of sovereignty was what allowed emerging countries to borrow cheaply, and not good institutions, except in as much as they were imposed by creditors. However, our comparison of four initially similar countries nuances this view, because of the apparent success of Romania, which was more or less consistently able to borrow more cheaply than her Balkan neighbours. We thus also contribute to the wider literature on the determinants of bond spreads, and suggest a particular role for natural resources and good institutions.

In fact, Romania's success on the international credit markets was matched by her overall economic performance: by 1914, Romania enjoyed gross industrial output per capita well over twice those of the other Balkan states (Lampe 1975, p. 6), GDP per capita also in excess of her neighbours, and growth rates twice as high between 1870-1913, approaching levels enjoyed by the Scandinavian countries during their famously rapid catch-up (Lains 2002).[43]

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[43] See Oosterlinck and Ureche-Rangau (2012) on Romanian borrowing during the interwar period.

References

Accominotti, O., M. Flandreau and R. Rezzik (2011). 'The spread of empire: Clio and the measurement of colonial borrowing costs.' *Economic History Review* 64:2, pp. 385-407.

Alquist, R., & Chabot, B. (2011). 'Did gold-standard adherence reduce sovereign capital costs?' *Journal of Monetary Economics* 58:3, pp. 262-272.

Avramov, R. (2006). 'The Bulgarian National Bank in a Historical Perspective: Shaping an Institution, Searching for a Monetary Standard.' Proceedings of the First Annual SEEMHN Conference, Sofia.

Bai, J. and Perron, P. (1998). 'Estimating and testing linear models with multiple structural changes.' *Econometrica* 66, pp. 47-78.

Bai, J. and Perron, P. (2003). 'Computation and analysis of multiple structural change models.' *Journal of Applied Econometrics* 18, pp. 1-22.

Bantekas, I. and C. Lumina (eds.) (2018). *Sovereign debt and human rights.* Oxford: Oxford University Press.

Banu, A. (2012). *Datoria Publica a Romaniei 1864-1949.* Bucharest: Oscar Print

Barreyre, N. and Delalande, N. (2020). *A World of Public Debts*. London: Palgrave Macmillan.

Bersch, J. and Kaminsky, G.L. (2008). *Financial globalization in the 19th century: Germany as a financial center.* Mimeo.

Birdal, M. (2010). *The Political Economy of Ottoman Public Debt: Insolvency and European Financial Control in the Late Nineteenth Century.* New York: Palgrave Macmillan.

Borchard, E. (1951) *State Insolvency and Foreign Bondholders: General Principles*. Yale: Yale University Press.

Bordo, M.D. (1991). *Financial Crises.* Edward Elgar Publishers.

Bordo, M.D. and M. Flandreau (2003). 'Core Periphery, Exchange Rate Regimes and Globalization', in: M.D. Bordo, A. Taylor and J.G. Williamson (Eds.), *Globalization in Historical Perspective.* Chicago: University of Chicago Press, pp. 417-468.

Bordo, M.D. and F.E. Kydland (eds., 1996). 'The gold standard as a commitment mechanism'. Chapter 3 in T. Bayoumi, B. Eichengreen and M.P. Taylor, *Modern Perspectives on the Gold Standard*, Cambridge: Cambridge University Press.

Bordo, M. D. and H. Rockoff (1996). 'The gold standard as a good housekeeping seal of approval.' *NBER Working Paper* No. 5340.

Bordo, M.D. and A. Schwartz (1996). 'Why Currency Clashes Between Internal and External Stability Goals End in Currency Crises, 1797-1994.' *Open Economies Review* 7, pp. 437-468.

Caballero, R. J., Cowan, K., & Kearns, J. (2005). 'Fear of sudden stops: lessons from Australia and Chile'. *The Journal of Policy Reform* 8:4, pp. 313-354.

Clemens, M.A. and J.G. Williamson (2004). 'Wealth Bias in the First Global Capital Market Book, 1870-1913.' *Economic Journal* 114, pp. 304-37.

Collet, S. (2012). *Sovereign Bonds: Odious Debts and State Succession.* Unpublished doctoral thesis, Free University of Brussels.

Collet, S. (2013). 'The financial penalty for "unfair" debt: the case of Cuban bonds at the time of independence.' *European Review of Economic History* 17:3, pp. 364-387.

Constantinescu, N.N. (1994). *Romania's Economic History: From the Beginnings to World War II.* Bucharest: Editura Academiei Romàne.

Daudin, G., M. Morys, and K.H. O'Rourke (2010). 'Globalization, 1870-1914.' In: S. Broadberry and K.H. O'Rourke. *The Cambridge Economic History of Modern Europe Volume 2: 1870 to the Present.* Cambridge: Cambridge University Press.

Dicea, O. and M.E. Enachescu (2000). 'The hydrocarbon past, present, and future of Romania—the world's first oil producer.' *The Leading Edge*, pp. 321-4.

Dimitrova, K., L. Fantacci and C. Tuncer (2010). 'Monetary policy in Southeast Europe in the transition from bimetallism to the gold standard.' In *Monetary Policy During Economic Crises: A Comparative and Historical Perspective.* Proceedings of the Fifth Annual SEEMHN Conference, Istanbul.

Dimitrova, K. and M. Ivanov (2013). 'Bulgaria from 1879 to 1947'. Mimeo.

Dincecco, M. (2009). 'Political regimes and sovereign credit risk in Europe, 1750–1913.' *European Review of Economic History* 13, pp. 31-63.

Dobrovici M.Gh. (1934). *Istoricul desvoltării economice şi financiare a României şi împrumuturile contractate 1823-1933.* Bucharest: Universul Print.

Einaudi, L. (2007). 'Monetary Separation and European Convergence in the Balkans in the 19th Century.' Proceedings of the Second Annual SEEMHN Conference, Vienna.

Esteves, R.P. (2013). 'The bondholder, the sovereign, and the banker: sovereign debt and bondholders' protection before 1914.' *European Review of Economic History* 17, pp. 389-407.

Esteves, R. P., and Tunçer, A. C. (2016). 'Feeling the blues Moral hazard and debt dilution in Eurobonds before 1914'. *Journal of International Money and Finance* 65, pp. 46-68.

Feis, H. (1930). *Europe: The World's Banker, 1870-1914.* New Haven: Yale University Press.

Fenn, C. (1883). *Fenn's Compendium of the English and Foreign Funds, Debts and Revenues of All Nations.* London.

Ferguson, N. and M. Schularick (2006). 'The empire effect: the determinants of country risk in the first age of globalization, 1880–1913.' *Journal of Economic History* 66, pp. 283–312.

Ferguson, N. and M. Schularick (2012). 'The "Thin film of gold": monetary rules and policy credibility.' *European Review of Economic History* 16, pp. 384-407.

Flandreau, M., J. Le Cacheux and F. Zumer (1998). 'Stability without a pact? Lessons from the European gold standard, 1880–1913.' *Economic Policy* 13:26, pp. 117–62.

Flandreau, M. and F. Zumer (2004). *The making of global finance 1880–1913.* Paris.

Flores Zendejas, J.H. (2020). 'The Entanglements of Domestic Polities: Public Debt and European Interventions in Latin America'. Ch. 5 in Barreyre and Delalande (2020), pp. 111-134.

Gardner, L. (2017). 'Colonialism or supersanctions: sovereignty and debt in West Africa, 1871–1914.' *European Review of Economic History* 21:2, pp. 236-257.

Gardner, L. (2020). 'Trading Sovereignty for Capital? Public Debt in West Africa, 1871–1914'. Ch. 8 in Barreyre and Delalande (2020), pp. 175-199.

Gnjatović, D. (2009). 'Foreign Long Term Government Loans of Serbia 1862-1914.' Proceedings of the Fourth Annual SEEMHN Conference, Belgrade.

Kimber, A. (1920). *Kimber's Record of Government Debts*, New York.

Kindleberger, C., Aliber, R.Z. (2011). *Manias, Panics and Crashes: A History of Financial Crashes.* New York: Palgrave Macmillan.

Lains, P. (2002). 'Southern European Economic Backwardness Revisited: The Role of Open Economy Forces in Portugal and the Balkans, 1870-1913.' *Scandinavian Economic History Review* 50:1, pp. 24-43.

Lampe, J.R. (1975). 'Varieties of Unsuccessful Industrialization: The Balkan States Before 1914'. *The Journal of Economic History* 35:1, pp.56-85.

Lampe, J.R. (1982). *Balkan Economic History, 1550-1950.* Bloomington: Indiana University Press.

Lampe, J.R. and M.R. Jackson (1982). *Balkan Economic History, 1550-1950: From Imperial Borderlands to Developing Nations.* Bloomington: Indiana University Press.

Lazaretou, S (2005). 'The drachma, foreign creditors, and the international monetary system: tales of a currency during the 19th and the early 20th centuries.' *Explorations in Economic History 42, pp. 202-236.*

Levandis, J.A. (1944). *The Greek Foreign Debt and the Great Powers, 1821-1898.* New York: Columbia University Press.

Manasse, P., N. Roubini and A. Schimmelpfennig (2003). 'Predicting Sovereign Debt Crises.' *IMF Working Paper* WP03/221.

Mauro, P., N. Sussman and Y. Yafeh (2006). *Emerging Markets and Financial Globalization: Sovereign Bond Spreads in 1870-1913 and Today.* Oxford: Oxford University Press.

Mitchener, K.J. and M. Weidenmier (2005). 'Empire, Public Goods, and the Roosevelt Corollary.' *Journal of Economic History* 65:3, pp. 658-692.

Mitchener, K.J. and M. Weidenmier (2009). 'Are Hard Pegs Ever Credible in Emerging Markets? Evidence from the Classical Gold Standard', *NBER Working Paper* No. 15401

Mitchener, K.J. and M. Weidenmier (2010). 'Supersanctions and sovereign debt repayment.' *Journal of International Money and Finance* 29, pp. 19-36.

Mureşan, M. and O.M. Văsioiu (2008). 'Appreciations Regarding External Capital in Romanian Economy in the Second Half of the 19th Century and the First Two Decades of the 20th Century.' *The Annals of The "Ştefan cel Mare" University Suceava* No. 8.

Obstfeld, M. and A.M. Taylor (2003). 'Sovereign risk, credibility and the gold standard: 1870–1913 versus 1925–31.' *Economic Journal* 113:487, pp. 241–75.

Oosterlinck, K. and L. Ureche-Rangau (2012). 'Interwar Romanian sovereign bonds: the impact of diplomacy, politics and the economy.' *Financial History Review* 19:2, pp. 219-44.

Oosterlinck, K. (2018). 'The Historical Context of Sovereign Debt'. In Bantekas, I. and C. Lumina (eds.) (2018). *Sovereign Debt and Human Rights*. Oxford: Oxford University Press, pp. 13-27.

Reinhart C., K. Rogoff and M. Savastano (2003). 'Debt Intolerance.' *Brookings Papers on Economic Activity* 1, pp. 1-74.

Reinhart, C.M. and Trebesch, C. (2015). 'The Pitfalls of External Dependence: Greece, 1829-2015'. *Brookings Papers on Economic Activity*, Fall 2015, pp. 307-328.

Seymour, C. and D.P. Frary (1918). *How the World Votes: The Story of Democratic Development in Elections.* (Two volumes). Springfield, MA: C.A. Nichols Company.

Sojic, M. and L. Djurdjevic (2006). 'National Bank of Serbia 1884 – 2006. Establishment and Beginning of Operation.' Proceedings of the First Annual SEEMHN Conference, Sofia.

Stasavage, D. (2016). 'What we can learn from the early history of sovereign debt?' *Explorations in Economic History* 59, pp. 1-16.

Stoenescu, G.V., E. Blejan, and B. Costache (2008). 'The National Bank of Romania and its Issue of Banknotes between Necessity and Possibility, 1880-1914.' Proceedings of the Third Annual SEEMHN Conference, Athens.

Stoenescu, G.V., E. Blejan, and B. Costache (2011). 'Modern Romania's Monetary System: From the Bimetallism of the Latin Monetary Union to Gold Monometallism.' Proceedings of the Sixth Annual SEEMHN Conference, Bucharest.

Sussman, N. and Y. Yafeh (2000). 'Institutions, Reforms, and Country Risk: Lessons from Japanese Government Debt in the Meiji Era.' *Journal of Economic History* 60:2 pp. 442-467.

Suter C. and H. Stamm (1992). 'Coping with Global Debt Crises Debt Settlements, 1820 to 1986'. *Comparative Studies in Society and History* 34:2, pp. 645-678.

Tooze, A. and M. Ivanov (2011). 'Disciplining the 'black sheep of the Balkans': financial supervision and sovereignty in Bulgaria, 1902–38.' *Economic History Review* 64:1, pp. 30-51.

Tuncer, A.C. (2015). *Sovereign Debt and International Financial Control: The Middle East and the Balkans, 1870-1914.* Basingstoke, UK: Palgrave Macmillan.

Tuncer, A.C. (2020). 'Leveraging Foreign Control: Reform in the Ottoman Empire'. Ch. 6 in Barreyre and Delalande (2020), pp. 135-154.

Villaroman, N. G. (2009). 'The Loss of Sovereignty: How International Debt Relief Mechanisms Undermine Economic Self-Determination?.' *Journal of Politics and Law* 2:4

Williamson, J.G. (2002). 'Winners and Losers Over Two Centuries of Globalization.' *National Bureau of Economic Research*.

Wynne, W. (1951). *State Insolvency and Foreign Bondholders. Vol. II Selected Case Histories of Governmental Foreign Bond Defaults and Debt Readjustments*, Yale: Yale University Press.

Appendix

Table A.1: Bonds in the dataset

Country	Bond	Source used	Market
Bulgaria	6% State Railways Mortgage Bond (1889)	IMM	London
	6% State Mortgage Bond (1892)	Berliner Börsen-Zeitung	Berlin; London
	5% Tobacco Bond (1902)	IMM	London
	4.5% Gold Bond (1907)	IMM	London
	4.5% Gold Bond (1909)	IMM	London
Greece	5% Independence Loan (1879)	IMM	London
	5% Loan (1881)	IMM	Berlin ; London
	5% Loan (1884)	IMM	Berlin ; London
	4% Monopoly Loan (1887)	Berliner Börsen-Zeitung	Berlin ; London
	4% Rentes (1889)	Berliner Börsen-Zeitung	Berlin ; London
	5% Loan (1890)	Berliner Börsen-Zeitung	Berlin ; London
	5% Funding Loan (1893)	IMM	London
	2.5% Guaranteed Gold Loan (1898)	IMM	London
	4% Railway Loan (1902)	IMM	London
	5% National Loan (1907) (London)	IMM	London
	4% Bonds (1911) (London)	IMM	London
Romania	C.F.R 6% Bonds (1880)	Berliner Börsen-Zeitung	Berlin
	5% Rente (1881)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1889)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan for 6% C.F.R Bonds Conversion (1890)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1891)	Berliner Börsen-Zeitung	Berlin
	5% Foreign Loan (1892)	Berliner Börsen-Zeitung	Berlin
	5% Foreign Loan (1893)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1894)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1896)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan and Debt Conversion (1898)	Berliner Börsen-Zeitung	Berlin
	5% Foreign Loan (1903)	Berliner Börsen-Zeitung	Berlin
	4% Conversion Rente (1905)	Berliner Börsen-Zeitung	Berlin
	4% Rente (1905)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1908)	Berliner Börsen-Zeitung	Berlin
	4% Foreign Loan (1910)	Berliner Börsen-Zeitung	Berlin
Serbia	5% Administrative Duties Rent (1884)	Berliner Börsen-Zeitung	Berlin
	5% Tobacco Rent (1885)	Berliner Börsen-Zeitung	Berlin
	4% Conversion Bond (1895)	Berliner Börsen-Zeitung	Berlin ; London
	4.5% Railroad Construction and Army Modernization (1909)	Berliner Börsen-Zeitung	Berlin

Note: For the bonds traded on both Berlin stock exchange and London market we decided to work with the quotation series that were longer and with fewer missing observations.

Table A.2

Country	Bonds in the dataset	Value	Maturity
Bulgaria	6% State Railways Mortgage Bond (1889)	30,000,000 Leva	33
	6% State Mortgage Bond (1892)	142,780,000 Leva	33
	5% Tobacco Bond (1902)	106,000,000 Leva	50
	4.5% Gold Bond (1907)	145,000,000 Gold Leva	60
	4.5% Gold Bond (1909)	100,000,000 Gold Leva	50
Greece	5% Independence Loan (1879)	1,200,000 £	33
	5% Loan (1881)	4,800,000 £	40
	5% Loan (1884)	4,288,600 £	37.5
	4% Monopoly Loan (1887)	5,400,000 £	75
	4% Rentes (1889)	6,200,000 £	
	5% Loan (1890)	2,400,000 £	99
	5% Funding Loan (1893)	389,560 £	
	2.5% Guaranteed Gold Loan (1898)	6,023,700 £	
	4% Railway Loan (1902)	2,250,000 £	98
	5% National Loan (1907)	800,000 £	36
	4% Bonds (1911)	4,367,000 £	50
Romania	C.F.R 6% Bonds (1880)	237,500,000 Lei	44
	5% Rente (1881)	436,525,000 Lei	50
	4% Foreign Loan (1889)	50,000,000 Lei	44
	4% Foreign Loan for 6% C.F.R Bonds Conversion (1890)	274,375,000 Lei	33
	4% Foreign Loan (1891)	45,000,000 Lei	44
	5% Foreign Loan (1892)	75,000,000 Lei	44
	5% Foreign Loan (1893)	50,000,000 Lei	44
	4% Foreign Loan (1894)	120,000,000 Lei	45
	4% Foreign Loan (1896)	90,000,000 Lei	44
	4% Foreign Loan and Debt Conversion (1898)	180,000,000 Lei	60
	5% Foreign Loan (1903)	185,000,000 Lei	40
	4% Conversion Rente (1905)	424,613,000 Lei	41
	4% Rente (1905)	100,000,000 Lei	41
	4% Foreign Loan (1908)	70,000,000 Lei	32
	4% Foreign Loan (1910)	128,000,000 Lei	40
Serbia	5% Administrative Duties Rent (1884)	40,270,000 Dinars	70
	5% Tobacco Rent (1885)	40,000,000 Dinars	49
	4% Conversion Bond (1895)	355,292,000 Dinars	72
	4.5% Railroad Construction and Army Modernization (1909)	150,000,000 Dinars	50

Table A.3: Bulgarian Foreign Borrowing, 1889-1913

ID	Year of issue	Bond name	Coupon	Value -Leva-	Maturity -years-	Underwriter	Collateral
1	1889	6% State Railways Mortgage Bond (1889)	6%	30,000,000	Converted in Gold Bond (1907)	Unknown	mortgage on railways
2	1892	6% State Mortgage Bond (1892)	6%	142,780,000	33	Imperial Ottoman Bank	mortgage on state railways and harbors, harbors revenues
3	1902	5% Tobacco Bond (1902)	5%	106,000,000	50	Banque de Paris et des Pays Bas, Imperial Ottoman Bank, Stern Brothers	tobacco excise tax revenues
4	1904	5% Loan (1904)	5%	Unknown	Unknown	Banque de Paris et des Pays Bas, Imperial Ottoman Bank, Stern Brothers	stamp duty and surplus of tobacco excise label
5	1907	4.5% Gold Bond (1907)	4.5%	145,000,000	60	Banque de Paris et des Pays Bas, Imperial Ottoman Bank, Stern Brothers	surplus stamp revenues
6	1909	4.5% Gold Bond (1909)	4.5%	100,000,000	50	Wiener Bank-Verein, Henry Schroder & Co,	-

Sources: Kimber (1920), Dimitrova and Ivanov (2013), Feis (1930).
Note: Our dataset has quotations for all these bonds, except the ID 4 bond. Note that 1 leva = 1 French franc.

Table A.4: Greek Foreign Borrowing, 1878-1914

ID	Year of issue	Loan Name	Coupon	Value -£-	Maturity -years-	Underwriter	Collateral	Purpose
1	1879	5% Independence Loan (1879)	5%	1,200,000	33	no underwriter was involved as the bonds issued replaced the defaulted claims from 1824-1825 debt	revenues of the Custom House of Corfu, stamp revenues	conversion of the 1824 and 1825 defaulted debt into a new 5% loan
2	1879	6% Loan (1879)	6%	2,400,000	redeemed in 1889	Comptoir National d'Escompte de Paris, Banque Nationale de Greece	stamp duties proceeds	currency retirement, financing budget deficit
3	1881	5% Loan (1881)	5%	4,800,000	40	Comptoir National d'Escompte de Paris, C.I Hambro and Son in London, Banque Nationale de Greece, Banque de Constantinople, Banque de Credit Industriel de Greece	tobacco monopolies, revenues from National lands and plantations, import duties	military supplies, financing budget deficit
4	1884	5% Loan (1884)	5%	4,288,600	37.5	Comptoir National d'Escompte de Paris, Societe Generale, Bank of Egypt, Banque de Paris et des Pays-Bas, Epiro-Thessalian Bank, Banque Nationale de Greece	custom proceeds	debt repayment, railways construction, currency retirement
5	1887	4% Monopoly Loan (1887)	4%	5,400,000	75	Comptoir National d'Escompte de Paris, Bank of Constantinople, Hambro Bank, Epiro-Thessalian Bank, National Bank of Greece	monopolies revenues: salt, petroleum, matches, playing cards, cigarette paper	debt repayment, military supplies, three iron clads construction
6	1889	4% Rentes (1889)	4%	6,200,000		C.I Hambro and Son in London, Anthony Gibbs and Sons in London, S. Bleichroder in Berlin, Bank of Constantinople, Banque Nationale de Greece	-	repayment of floating debt, redemption of 6% Loan of 1879
7	1890	5% Railway Loan (1890)	5%	2,400,000	99	Deutschland Bank, C.I Hambro and Son in London, Banque Nationale de Greece	mortgage on railways, railways revenues	railways construction, financing budget deficit
8	1893	5% Funding Loan (1893)	5%	389,560		C.I Hambro and Son, Bank of Constantinople, Banque Nationale de Greece	unknown	
9	1898	2.5% Guaranteed Gold Loan (1898)	2.5%	6,023,700		Rothschild Bank, Banque de Paris et des Pays-Bas, Comptoir National d'Escompte de Paris, La Banque Internationale de Paris, Credit Lyonnais, Russian State Bank, Russo-Chinese Bank, International Bank of Commerce, Discount Bank, Bank of England	guaranteed by Russia, England and France	paying the war indemnity to Turkey

10	1902	4% Railway Loan (1902)	4%	2,250,000	98	Comptoir National d'Escompte de Paris, C.I Hambro and Son in London, Banque Nationale de Greece, Bank of Egypt	loan under direct control of International Financial Commission	railways construction
11	1907	5% National Loan (1907)	5%	800,000	36	C.I Hambro and Son in London, Banque Nationale de Greece	revenues and taxes established under Law F.K.Z from 1904, surplus of the revenues assigned to the International Financial Commision.	
12	1911	4% Bonds (1911)	4%	4,367,000	50	C.I Hambro and Son in London and others	surplus of revenues ceded to the International Financial Commission	financing military expenditures in the face of Balkan War

Source: Fenn (1883), Kimber (1920), Lazaretou (2005), Levandis (1944).

Note: All the securities are present in our dataset, except ID 2. The underwriters for IDs 10, 11, and 12 are educated guesses based on the usual underwriters for issues on London.

Table A.5: Romanian Foreign Borrowing, 1878-1913

ID	Year of issue	Loan Name	Coupon	Value - Lei -	Maturity -years -	Underwriter	Collateral	Purpose
1	1880	6% C.F.R Bonds (1880)	6%	237,500,000	Converted in 1890		railways mortgage and state tobacco revenues	buying back Roman-Varcioara railways; covering Roman-Varcioara Railway Loan
2	1880	6% Bonds (Schuldverschrei bungen)	6%	47,532,000	Converted in 1881		railways mortgage	
3	1881	5% Loan for Bond Conversion (1881)	5%	47,948,000	18		-	converting 6% Bonds (Schuldverschrei bungen)
4	1881	5% Rente (1881)	5%	436,525,000	Part of it was converted in 4% Foreign Loan and Debt Conversion (1898); the other part was converted in 4% Conversion Rente from 1905	Disconto-Gessellschaft, S. Bleichroeder, M.A. Rothschild	-	investments in education, army, fortifications, railways Danube bridge
5	1889	4% Foreign Loan (1889)	4%	50,000,000	44	Dresdner Bank and Deutsche Bank	-	investments in wagons, local railways, fortifications; covering old debts
6	1890	4% Foreign Loan for 6% C.F.R Bonds Conversion (1890)	4%	274,375,000	33	Disconto-Gessellschaft, S. Bleichroder, M.A. Rothschild, Banque de Paris et des Pays Bas, Societe generale pour favoriser le developement du Commerce et de l'Industrie en France, Societe generale de Credit Industriel et commercial, Banque imperiale Otomane, Credit Lyonais, Comptoir National d'Escompte de Paris	-	converting C.F.R 6% Bonds
7	1891	4% Foreign Loan (1891)	4%	45,000,000	44	Disconto-Gessellschaft	-	covering investments costs for 1890 and 1891
8	1892	5% Foreign Loan (1892)	5%	75,000,000	Converted in 4% Rente (1905)	Disconto-Gessellschaft	-	paying treasury bills issued to finance investments; covering infrastructure investments costs for 1892

#	Year	Name	Rate	Amount		Banks		Purpose
9	1893	5% Foreign Loan (1893)	5%	50,000,000	Converted in 4% Rente (1905)	Disconto-Gessellschaft, Banque de Paris et des Pays Bas	-	investments in infrastructure
10	1894	4% Foreign Loan (1894)	4%	120,000,000	45	Disconto-Gessellschaft	-	investments in infrastructure
11	1896	4% Foreign Loan (1896)	4%	90,000,000	44	Disconto-Gessellschaft	-	investments in infrastructure for 1895 and 1896
12	1898	4% Foreign Loan and Debt Conversion (1898)	4%	180,000,000	60	Disconto-Gessellschaft	-	converting 5% Perpetuity; converting part of the 5% Rente; investments in infrastructure
13	1899	5% Treasury Bills (1899)	5%	175,000,000	Converted in 5% Foreign Loan (1903)	Disconto Berlin, S Bleischroder, Rothschild & Sohne, Comptoir National d'Escompte de Paris, Banque de Paris et des Pays Bas, Societe Generale, National Bank of Romania, Banca Generala Romana	-	covering past infrastructure investments
14	1903	5% Foreign Loan (1903)	5%	185,000,000	40	Disconto Gessellschaft from Berlin, S. Bleischroder, Disconto Gessellschaft from Frankfurt, Comptoir National d'Escompte de Paris, Banque de Paris et des Pays Bas, Societe Generale, National Bank of Romania, Banca Generala Romana	-	converting 5% Treasury Bills
15	1905	4% Conversion Rente from 1905	4%	424,613,000	41	Bankers Union from Berlin represented by Disconto-Gessellschaft from Berlin	-	converting remaining 5% Rente; converting 5% Foreign Loan from 1892 and Foreign Loan from 1893
16	1905	4% Rente from 1905	4%	100,000,000	41	Bankers Union from Berlin represented by Disconto-Gessellschaft from Berlin	-	buying war materials from Germany; covering the conversion expenses
17	1908	4% Foreign Loan (1908)	4%	70,000,000	32	Disconto Gessellschaft from Berlin, S. Bleischroder, Disconto Gessellschaft from Frankfurt, Comptoir National d'Escompte de Paris, Paribas Paris, Societe Generale, National Bank of Romania, Banca Generala Romana	-	investments in railways, Constanta hub, army

18	1910	4% Foreign Loan (1910)	4%	128,000,000	40	Disconto Gessellschaft from Berlin, S. Bleischroder, Disconto Gessellschaft from Frankfurt, Comptoir National d'Escompte de Paris, Paribas Paris, Societe Generale Paris, National Bank of Romania, Banca Generala Romana	-	investments in railways, army
19	1913	4.5% Foreign Loan Through Treasury Bills (1913)	4.5%	70,000,000	paid back in the same year	Disconto Gessellschaft from Berlin, S. Bleischroder, Disconto Gessellschaft from Frankfurt, National Bank of Romania, Banca Generala Romana	-	public investments
20	1913	4.5% Foreign Loan (1913)	4.5%	250,000,000	41	Disconto Gessellschaft from Berlin, S. Bleischroder, Disconto Gessellschaft from Frankfurt, National Bank of Romania, Banca Generala Romana	-	converting 1913 treasury bills, repaying floating debt, covering cost with military campaign in Bulgaria in 1913

Source: Banu (2012), Dobrovici (1934).

Note: 1 lei = 1 French franc.

Note: All the securities are present in our dataset, except the ones with the following IDs: 2, 19 & 20. From our analysis we further exclude bonds 3 and 13 due

to their short maturities.

Table A.6: Serbian Foreign Borrowing, 1878-1913

ID	Year of issue	Loan Name	Coupon	Value - Dinars-	Maturity -years-	Underwriter	Collateral
1	1881	Railways Loan A (1881)	5%	100,000,000	50	Länderbank, Viena	Import duties, personal tax, future revenues from railways, mortgage on railways
2	1881	3% Lottery Loan (1881)	3%	33,000,000	50	Länderbank, Viena	Import duties, personal tax, future revenues from railways, mortgage on railways
3	1882	Salt Loan (1882) for armament modernization	5%	5,600,000	15	Anglo-Austrian Bank	State monopoly on imports of salt
4	1882	Agrarian Loan (1882)	5%	6,000,000	25	Comptoir d'Escompte de Paris, Länderbank	Mortgage on lands of former Ispahis
5	1884	Administrative duties Rent (1884) for government budget deficit financing	5%	40,270,000	70	Comptoir d'Escompte de Paris, Länderbank	Administrative duties
6	1885	Tobacco Rent (1885) for Serb - Bulgarian War	5%	40,000,000	49	Comptoir d'Escompte de Paris, Länderbank	State monopoly on imports of tobacco
7	1885	Railways Loan B (1885)	5%	3,000,000	50	Comptoir d'Escompte de Paris	Import duties, personal tax, future revenues from railways, mortgage on railways
8	1886	Railways Loan C (1886)	5%	12,500,000	50	Comptoir d'Escompte de Paris	Import duties, personal tax, future revenues from railways, mortgage on railways
9	1886	Funds Loan (1886) for government budget deficit financing	5%	12,000,000	37.5	Berlin Merchant Society	Mortgage bonds of Uprava fondova
10	1888	Turnover Tax Rent (1888) for government budget deficit financing	5%	24,000,000	50	Comptoir d'Escompte de Paris, Länderbank, Berlin Merchant Society	Turnover tax
11	1888	5% Lottery Loan (1888) for repurchase of revenues from tobacco monopoly	5%	10,000,000	65	Viener Bankverein	State monopoly on imports of tobacco
12	1890	Railways Rent (1890) for Repurchase of Railways	5%	26,666,500	60	French banking syndicate, Paris	Revenue from Railways

| 13 | 1890 | Salt loan from (1890) for repurchase of revenues from salt monopoly | 6% | 6,000,000 | 10 | French banking syndicate, Paris; Länderbank; Berlin Merchant Society | State monopoly on imports of salt |
14	1893	Loan on 16% additional tax (1893) for government budget deficit financing	5%	18,000,000	50	Länderbank; Berlin Merchant Company; Ottoman Bank, Paris	Additional tax for military needs, surplus from revenues of State monopoly of imports of salt
15	1893	Loan on account of Railway Directorate (1893) for government budget deficit financing	5%	8,000,000	50	French banking syndicate, Paris	Revenues of Railway Directorate
16	1895	Conversion Loan (1895)	4%	355,292,000	72	Länderbank; Berlin Merchant Company; Ottoman Bank, Paris	Net revenue from Serbian Railways, administrative taxes, revenues from tobacco, salt and petroleum monopoly, import duties, revenues from turnover tax
17	1899	Exploitation Loan (1899) for government budget deficit financing	5%	11,500,000	15	Union Bank, Vienna	Revenues from Serbian Railways
18	1902	Monopoly Loan (1902) for government budget deficit financing	5%	60,000,000	50	French banking syndicate, Paris	Revenue surpluses of Independent Monopoly Directorate
19	1906	Railroad Construction and Army modernization (1906)	4.5%	95,000,000	50	Syndicate of French and Swiss Banks led by Franco-Ottoman Bank	Revenue surpluses of Independent Monopoly Directorate
20	1909	Railroad Construction and Army modernization (1909)	4.5%	150,000,000	50	Syndicate of French and Swiss Banks led by Franco-Ottoman Bank	Revenue surpluses of Independent Monopoly Directorate
21	1910	Loan of Uprava Fondova (1910)	4.5%	30,000,000	50	French Bank for Trade and Industry	Mortgage Bonds of Uprava Fondova
22	1911	Communal Loan of Uprava Fondova (1911)	4.5%	30,000,000	50	French Bank for Trade and Industry Franco-Serbian Bank, Paris	Mortgage Bonds of Uprava Fondova
23	1913	Loan for Balkan Wars (1913)	5%	250,000,000	50	French Banking Syndicate led by Franco-Serbian Bank, Paris	Revenue surpluses of Independent Monopoly Directorate

Source: Gnjatovic (2009).
Note: Our dataset includes only the following bonds: 5, 6, 16 & 20. Note that 1 dinar = 1 French franc.

Figure A.1: Bond spreads by country
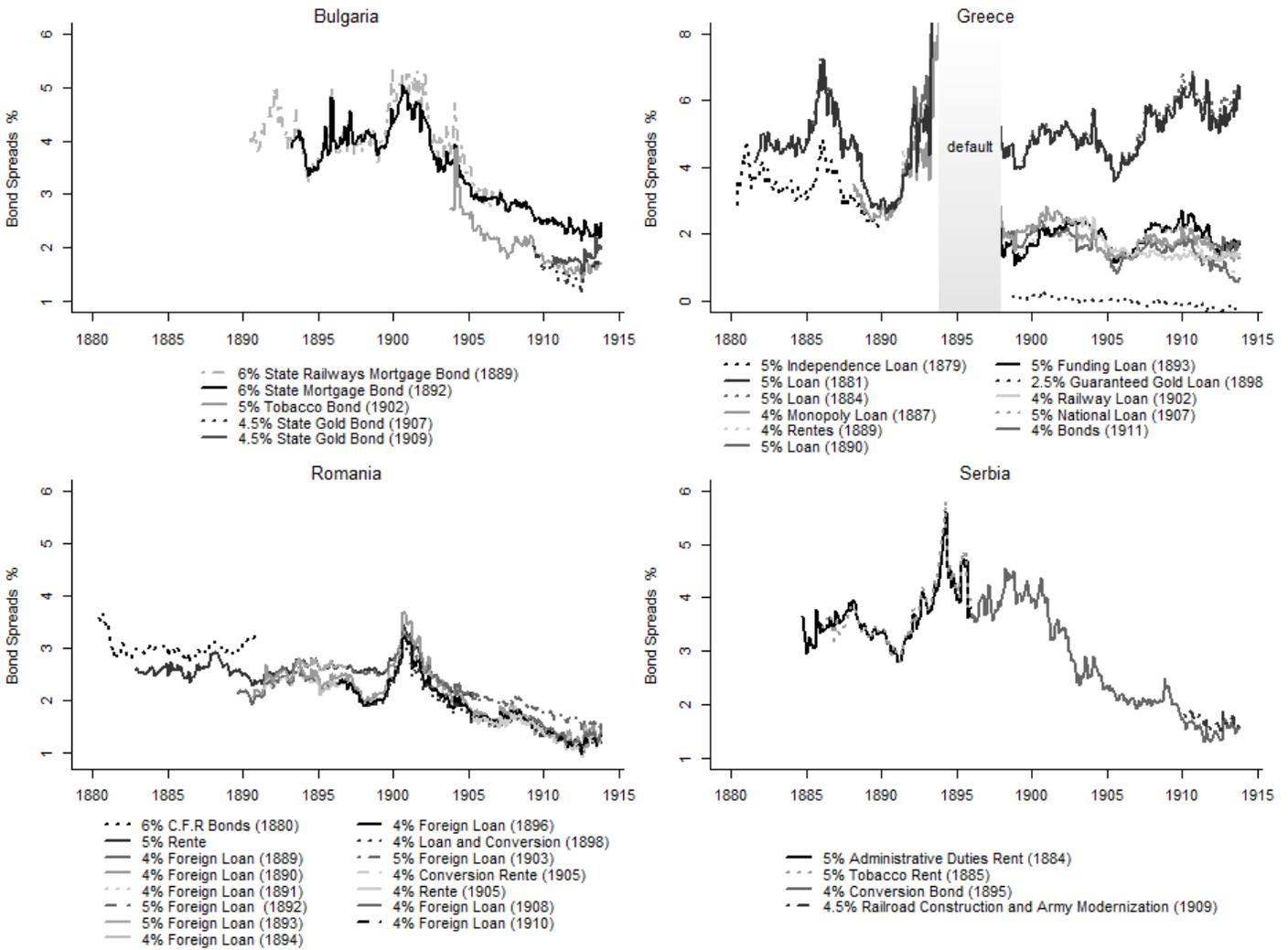
Note: We use Wynne (1951), p.336 coupons' schedule for computing the Greek bonds' spreads following the default.

Figure A.2: Break test analysis on average bonds
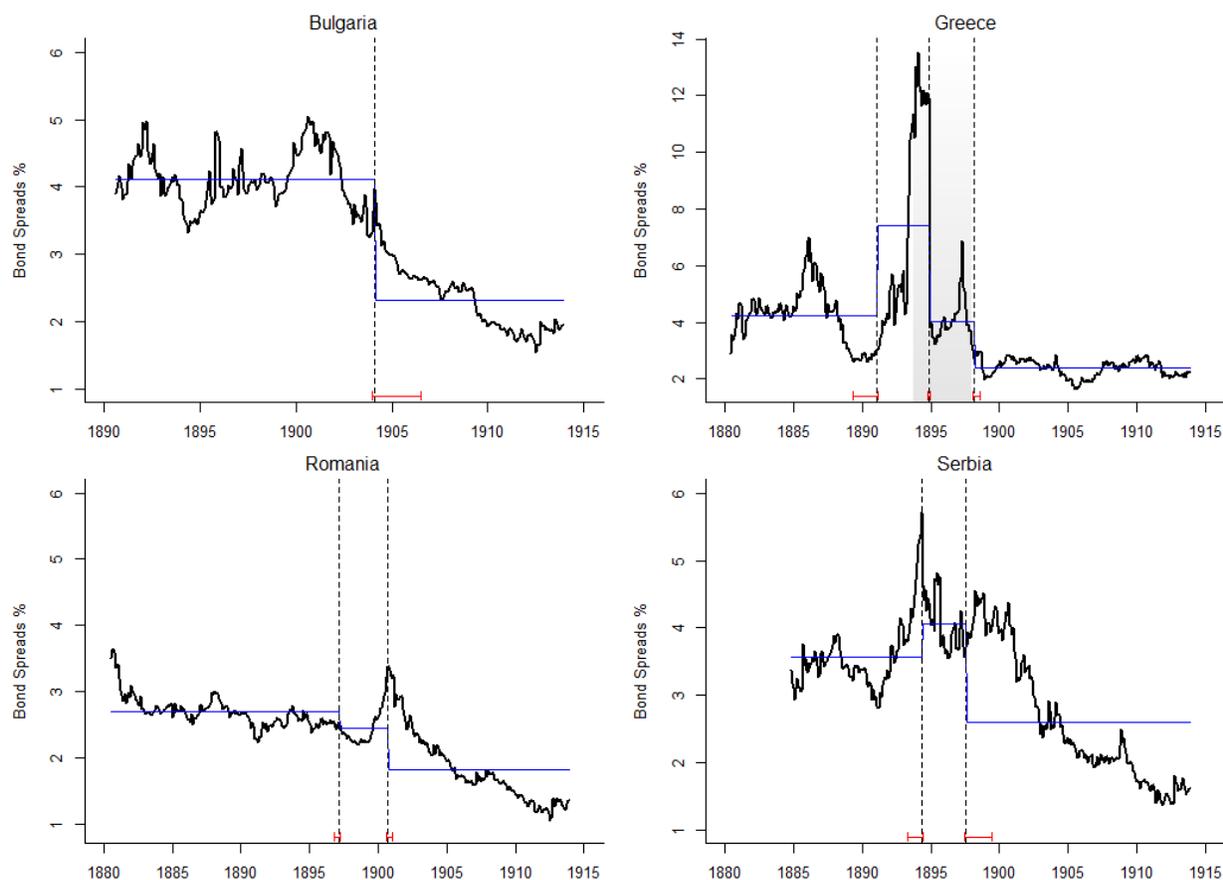
Sources: Own calculations; *Berliner Börsen Zeitung* and *Investor's Monthly Manual*.

Notes: The exact breaks identified are given in the following table:

Country	Break dates	Confidence intervals
Bulgaria	02.1904	01.1904 – 07.1906
Greece	02.1891	05.1889 – 03.1891
	11.1894	10.1894 – 12.1894
	03.1898	02.1898 – 08.1898
Romania	03.1897	11.1896 – 04.1897
	09.1900	08.1900 – 01.1901
Serbia	05.1894	05.1893 – 06.1894
	07.1897	06.1897 – 06.1899

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