The Empire Effect: The Determinants of Country Risk in the First Age of Globalization, 1880-1913

Niall Ferguson*

Moritz Schularick**

* Herzog Professor of Financial History, New York University, Leonard N. Stern School of Business, Henry Kaufman Management Center, 44 West Fourth Street, New York, NY 10012, tel.: +1 212 998 0062, nferguso@stern.nyu.edu

** Free University Berlin and Deutsche Bank Research; John-F.-Kennedy-Institute, Lansstr.7, 14195 Berlin, Germany, tel.: +49 30 8385 3603, moritz.schularick@db.com

ABSTRACT

This paper reassesses the importance of colonial status to investors before 1914 by means of multivariable regression analysis of the data available to contemporaries. We show that British colonies were able to borrow in London at significantly lower rates of interest than non-colonies precisely because of their colonial status, which mattered more than either gold convertibility or a balanced budget. Allowing for differences not only in monetary and fiscal policy but also in economic development and location, the "Empire effect" was a discount of around 100 basis points. We conclude that investors saw colonial status as a no-default guarantee.

It was obvious to contemporaries that membership of the British Empire gave poor countries access to the British capital market at lower interest rates than these countries would have paid had they been politically independent.[1] For liberal critics of the Empire, this "Empire effect" seemed detrimental to the economic health of the British Isles, which might otherwise have attracted a higher proportion of aggregate investment. Later historians agreed that this was one of the ways in which, by the later nineteenth century, the Empire had become a drain on British resources. From the point of the view of the colonies, on the other hand, the ability to raise funds in London at relatively low interest rates must surely have been a benefit – a point seldom acknowledged by critics of imperialism. It seems implausible that the Empire effect was simultaneously bad for Britain and bad for her colonies.

But did the Empire effect actually exist other than in contemporary imaginations? Recent econometric studies of financial markets before the First World War have pointed instead to the gold standard as conferring a "good housekeeping seal of approval", which lowered the borrowing costs of poorer countries regardless of whether they were colonies or not.
An alternative hypothesis that has been advanced is that it was a country's fiscal policy, in the context of global monetary conditions, that was the prime determinant of market assessments of creditworthiness. Were institutions and investors in the City of London more interested in a country's commitment to a pegged exchange rate – or to a prudent fiscal policy – than in its degree of political dependence? It will be seen at once that these things are not easily disentangled. Nevertheless, this paper seeks to reassess the importance of colonial status in

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the eyes of investors before the First World War by means of multivariable regression analysis. We make two contributions. First, we use a new and substantially larger sample than previous scholars have used to address this question. Secondly, we give priority to variables that we know were available to and were heeded by contemporary investors. This approach allows us to reinstate the "Empire effect" as a key determinant of interest rates in the pre-1914 bond market. While previous studies merely asserted that colonial bond yields were lower than those of independent borrowers, we demonstrate this by controlling for other relevant economic factors such as monetary and fiscal policy as well as exports and geographical location.

Financial globalization before 1914

Although this paper is concerned principally with bond *prices*, these cannot be discussed without at least some reference to flows of capital – though the relationship between prices and flows is very far from being a straightforward one. Between 1865 and 1914 more than £4 billion flowed from Britain to the rest of the world, giving the country a historically unprecedented and since unequalled position as a global net creditor – "the world's banker" indeed; or, to be exact, the world's bond market. By 1914 total British assets overseas amounted to somewhere between £3.1 and £4.5 billion, as against British GDP of £2.5 billion.[2] This portfolio was authentically global: around 45 percent of British investment went to the United States and the colonies of white settlement, 20 percent to Latin America, 16 percent to Asia and 13 percent to Africa, compared with just 6 percent to the rest of Europe.[3] Adding together all British capital raised through public issues of securities, as much went to Africa, Asia and Latin America between 1865 and 1914 as to the United Kingdom itself.[4] As

[2] Cain and Hopkins, *British Imperialism*, pp. 161-63.

[3] Maddison, *World Economy*, Table 2-26a.

[4] Davis and Huttenback, *Mammon*, p. 46.

is well known, British investment in developing economies principally took the form of portfolio investment in infrastructure, especially railways and port facilities. But British investors also sank considerable (and not easily calculable) sums directly into plantations to produce new cash crops like tea, cotton, indigo and rubber.

It has been claimed that there was something of a "Lucas effect" in the first period between 1880 and 1914, in other words that British capital tended to gravitate towards relative wealthy countries rather than relatively poor countries.[5] Yet the bias in favor of rich countries was much less pronounced than it is today. In 1997 only around 5 percent of the world's stock of capital was invested in countries with per capita incomes of a fifth or less of US per capita GDP. In 1913, according to Maurice Obstfeld and Alan Taylor, the proportion was 25 percent.[6] Very nearly half of all international capital stocks in 1914 were invested in countries with per capita incomes a third or less of Britain's,[7] and Britain accounted for nearly two fifths of the total sum invested in these poor economies. The contrast between the past and the present is striking. Whereas today's rich economies prefer to "swap" capital with one another, largely bypassing poor countries, a century ago the rich economies had very large, positive net balances with the less well-off countries of the world.

How important was the Empire as a destination for British capital? According to the best available estimates, more than two fifths (42 percent) of the cumulative flows of portfolio

[5] According to Clemens and Williamson, "about two-thirds of [British capital exports] went to the labor-scarce New World where only a tenth of the world's population lived, and only about a quarter of it went to labor-abundant Asia and Africa where almost two-thirds of the world's population lived": Clemens and Williamson, "British Foreign Capital", p.1.

[6] Obstfeld and Taylor, "Globalization and Capital Markets", p. 60, figure 10.

[7] Schularick, "International Investment", table 1.

investment from Britain to the rest of the world went to British possessions. An alternative measure – the imperial proportion of stocks of overseas investment on the eve of the First World War – was even higher: 46 percent.[8] An obvious hypothesis would therefore be that investors a century ago were more willing to invest money in relatively poor countries because a high proportion of these countries were not sovereign states but were under the political control of the investors' own country.

Public borrowing and risk premia

Investing money in faraway places is always risky: what economists call "informational asymmetries" are generally greater, the further the lender is from the borrower.[9] Less developed economies also tend to be rather more susceptible to economic, social and political crises. Why then were pre-1914 British investors willing to risk such a high proportion of their savings by purchasing securities or other assets overseas? What were the criteria that determined their overseas investment decisions? One way to answer such questions is to consider the risk premia the London capital market charged to different borrowers. In order to do this we constructed the largest possible database of bond yields for the period 1880–1913.

Price data for government bonds quoted and traded in the London market were copied by hand from the leading financial publication of the time, the *Investor's Monthly Manual*. Some additional quotations were taken from the *London Stock Exchange Weekly Intelligence*, the London Stock Exchange's official weekly gazette. The bonds chosen had to pass three strict criteria to qualify as benchmark issues. First, they had to be payable in London in either sterling or gold. This means that we were able to focus exclusively on country risk, ignoring the currency risk inherent in bonds denominated in French francs or German marks (though

[8] Ibid., table 2.

[9] Drazen, "Political-Economic Theory of Domestic Debt".

this was probably rather insignificant in this period).[10] Secondly, the selected bonds had to be issued in large volumes and actively traded. Finally, the bonds needed to be long-term, typically of a maturity of over ten years, and to have quotations for at least three consecutive years.

The resulting dataset includes securities from sixty independent countries, colonies and self-governing parts of the British Empire:[11] in other words, almost the entire universe of foreign borrowing in the London market, reaching not only "from the Cape to Cairo" but also from Boston to Buenos Aires and from Budapest to Beijing.[12] The rationale for constructing such a broad sample was to avoid the regional biases that characterized previous studies. One well-known study on the impact of gold standard adherence on country risk by Michael Bordo and Hugh Rockoff used observations for just ten countries, all either European or American.[13] The two most recent investigations of pre-1914 bond yields by Maurice Obstfeld and Alan Taylor and by Marc Flandreau and Frédéric Zumer were based on samples of around twenty

[10] This forced us to eliminate France and Germany as well as some smaller European economies that issued debt in domestic currency only. For the U.S. we followed Bordo and Rockoff, "Gold Standard", by using gold equivalent yields instead of dollar yields. The terms of repayment of US government debt were in doubt: after 1879, all government debt was to be payable in coin – technically silver or gold, but in practice gold. It was not until 1910 that gold was legally declared the only medium of repayment in the US.

[11] The complete list of countries and colonies can be found in the data appendix.

[12] The countries that were excluded despite the availability of loan quotations fulfilling our criteria were Bolivia, Costa Rica, Paraguay, Honduras, Salvador, and Cuba as well as some small island Empire borrowers such as Barbados and Trinidad, mostly for lack of economic control variables. The ability of countries to borrow internationally in domestic currency has been explored in detail in the "original sin" literature; see Bordo, Meissner and Redish, "Original Sin".

[13] Bordo and Rockoff, "Gold Standard".

countries.[14] The samples in both cases were predominantly European and American. Quite clearly it is impossible to form robust conclusions about the significance of colonial status without including data for at least some Asian and African countries.

While it is relatively easy to read both the annual coupon and the price of a bond from the sources, it is important not to overlook other properties that were relevant to investors. In the words of Lance Davis and Robert Huttenback:

> For the majority [of bonds] the creativity of the issuing agencies appears limitless. There were consols – never to mature; there were bonds that could be redeemed at any time at the discretion of the borrower (sometimes with a minimum period, sometimes with a maximum, and sometimes with neither); there were issues with a set fraction redeemed each year by lottery; there were some with a fixed minimum and a fixed maximum maturity, but with the additional provision that a portion be redeemed by lottery in each intervening year. Not is this list exhaustive; there were other permutations too numerous to mention.[15]

Given these complexities, it is understandable that recent research has nearly always opted for simple price-coupon ratios (or current yields), which are also available in a commercially produced database.[16] However, current yields and "true" yields to maturity can differ in the presence of deep discounts and short maturities. In constructing our dataset, we sought to calculate yields to maturity but found it impossible for many countries because of the limited information given in the *Investor's Monthly Manual*. Instead, we opted for a second-best solution, namely a robustness check based on the "yields to investors" that the editors of the

[14] Obstfeld and Taylor, "Sovereign Risk"; Flandreau and Zumer, *Making of Global Finance.*

[15] Davis and Huttenback, *Mammon*, p. 171.

[16] For application and further discussion of these data see Obstfeld and Taylor, "Sovereign Risk"; Clemens and Williamson, "British Foreign Capital".

IMM calculated and printed alongside the bond prices.[17] While it seems likely that those figures were used by contemporary investors, it is impossible to be sure that these yields are identical to yields to maturity in the absence of more detailed information about terms and maturities.[18] As a consequence, we concentrated our analysis on current yields, but used the "yield to investors" data from the *IMM* to double-check our findings.

Table 1 shows the summary statistics for our current yield series.[19] In total, we count about 1,450 observations, roughly 900 for independent countries from Europe, America, Asia and Africa and about 550 for issuers from the British Empire, drawn from these four continents as well as Australasia. The sheer geographical extent of the market in itself confirms rather impressively the degree of financial globalization before 1913. Immediately obvious from the yield data is the significantly lower average yield of Empire borrowers (3.89 percent) compared with the yields of independent countries (6.30 percent). *Prima facie*, these figures would seem to confirm Michael Edelstein's earlier conclusion "that the British capital market treated empire borrowers differently from foreign borrowers".[20]

Table 1 about here

[17] Each double page of the IMM contains a column called "Yield to investor at latest price".

[18] Current yields and the yields calculated by the IMM editors are very close most of the time, but sometimes differed by more than 10 percent without an obvious reason.

[19] We decided to exclude about 20 observations with yields of more than 20 percent, virtually all these refer to Latin American loans that had been in full default for many years. The *Annual Reports* of the Corporation of Foreign Bondholders indicated that investors reckoned that full repayment was most unlikely in these cases. Since we are interested in country risk under the condition of a positive probability of repayment – and in order to ensure that these extremely volatile outliers did not bias the overall regression estimates – it seemed best to omit those extreme observations.

[20] Edelstein, "Imperialism", p.205.

The obvious explanation for the "imperial discount" on bonds issued by British colonies is that they were in some way guaranteed by the British government and therefore in a legal sense indistinguishable from British bonds in terms of default risk. Edelstein writes that "Indian government bonds carried the full backing of the British government. … Before 1900 debt issued by government of the dependent Empire nearly always came with some sort of London guarantee."[21] However, not all bonds had such an explicit guarantee. As Edelstein also acknowledged:

> Even when London backing and oversight were absent from colonial government issues … the British capital market charged lower interest rates than comparable securities from independent nations at similar levels of economic development. … The strong inference is that colonial status, apart from the direct guarantees, lowered whatever risk there was in an overseas investment and that investors were therefore willing to accept a lower return.[22]

Writing in 1924, John Maynard Keynes noted that "Southern Rhodesia – a place in the middle of Africa with a few thousand white inhabitants and less than a million black ones – can place an unguaranteed loan on terms not very different from our own [British] War Loan." It seemed equally "strange" to him that "there should be investors who prefer[ed] … Nigeria stock (which has no British Government guarantee) [to] … London and North-Eastern Railway debentures".[23]

[21] Ibid,, p.206.

[22] Ibid., pp.206-07.

[23] J. M. Keynes, "Advice to Trustee Investors", pp. 204f.

A second explanation may lie in the effect of legislation specifically calculated to encourage investors to buy colonial bonds. At the turn of the century, two laws were passed, the Colonial Loans Act (1899) and the Colonial Stock Act (1900), which gave colonial bonds the same "trustee status" as the benchmark British government perpetual bond, the "consol".[24] At a time when a rising proportion of the national debt was being held by Trustee Savings Banks, this was an important stimulus to the market for colonial securities.[25] However, the importance of this legislation should not be exaggerated. The average difference between colonial and non-colonial yields was about 250 basis points between 1880 and 1898 and about 180 basis points between 1899 and 1913 – in other words the premium on colonial bonds was actually lower before the Colonial Loans Act and Colonial Stock Act came into force. Prior to the First World War, these acts were the only formal encouragements to investors to favor colonial bonds. It was only after the war that the Treasury and the Bank of England began systematically to give preference to new bond issues by British possessions over new issues by independent foreign states.[26]

There were other, less formal reasons why pre-war investors may have incorporated an imperial discount when pricing bonds. The British imposed a distinctive set of institutions on their colonies that was very likely to enhance their appeal to investors. Among these were economic openness (free trade as well as free capital movements) and balanced budgets – to say nothing of the rule of law (specifically, British style property rights) and relatively non-

[24] Cain and Hopkins, *British Imperialism*, pp. 439, 570. See for a detailed discussion, J. M. Keynes, "Foreign Investment" pp. 275-84.

[25] MacDonald, *Free Nation Deep in Debt*, p. 380.

[26] Atkin, "Official Regulation", pp. 324-35.

corrupt administration.[27] In other words, investors who put their cash in colonies could count on the full range of Victorian "public goods". It would therefore be rather puzzling if investors had regarded Australia as no more creditworthy than Argentina, or Canada as no more creditworthy than Chile. Even colonial constitutions had been drafted with at least one eye on creditor preferences.[28] It was inconceivable, declared one colonial governor in 1933, that the interest due on Gold Coast bonds should be compulsorily reduced: why should British investors "accept yet another burden for the relief of persons in another country who have enjoyed all the benefits but will not accept their obligation"?[29] When the self-governing dominion of Newfoundland came to the brink of default in the early 1930s, a royal commission under Lord Amulree recommended that its parliament be dissolved, its government be entrusted to a six-man commission and a royal Governor be appointed from London. Amulree's report made it clear that he and his committee regarded the end of representative government as a lesser evil than default.[30]

The imposition of direct British rule thus amounted to an unconditional "no default" guarantee; the only uncertainty investors had to face concerned the expected duration of British rule. Before 1914, despite the growth of nationalist movements in colonies from Ireland to India, political independence still seemed a distinctly remote prospect; even the

[27] Ferguson, *Empire*, esp. ch. 4. A modern survey of 49 countries concluded that common-law countries offered "the strongest legal protections of investors". The fact that eighteen of the countries in the sample have the common law system is, of course, almost entirely due to their having been at one time or another under British rule: La Porta et al., "Law and Finance".

[28] Writing in the 1950s, the Canadian historian Harold Innis declared: "The constitution of Canada, as it appears on the statute book of the British Parliament, has been designed to secure capital for the improvement of navigation and transport": Cain and Hopkins, *British Imperialism*, p. 233.

[29] Ibid., pp. 584f.

[30] Hale, "British Empire".

major colonies of white settlement had been granted only a limited political autonomy. In the words of Cain and Hopkins: "One of the key reasons why the colonies could borrow cheaply [was that] they offered almost complete safety."[31]

Determinants of bond spreads: alternative hypotheses

The possibility exists, however, that other considerations mattered more to investors than the extent to which a country's sovereignty had been reduced by imperialism. An alternative explanation that has been advanced for differentials in pre-1914 yields relates to monetary policy rather than colonial status. Bordo and Rockoff argued that adherence to the gold standard worked as a credible "commitment mechanism", reassuring investors that governments would not pursue time-inconsistent fiscal and monetary policies.[32] Investors rewarded this binding policy commitment by charging – *ceteris paribus* – lower risk premia. The gold standard worked in this respect as a "good housekeeping seal of approval". A commitment to gold convertibility, they calculate, reduced the yield on a country's bonds by around 40 basis points.[33] Using a somewhat larger sample, Obstfeld and Taylor confirmed that gold standard membership lowered spreads.[34] In this analysis, therefore, it was the expansion of the gold standard rather than the expansion of the British Empire that lowered the yields paid by some emerging markets.[35] As Obstfeld and Taylor conclude, "Membership

[31] Cain and Hopkins, *British Imperialism*, p. 240.

[32] Bordo and Kydland, "Commitment Mechanism", p. 56; Bordo and Schwartz, "Monetary Policy Regimes", p. 10.

[33] Bordo and Rockoff, "Gold Standard"', pp. 327f.

[34] Obstfeld and Taylor, "Sovereign Risk", p.253.

[35] Eichengreen and Flandreau, "Geography", table 2.

in the British was neither a necessary nor sufficient condition for preferential access to London's capital market before 1914."[36]

As a *contingent* commitment, however, membership of the gold standard was nothing more than a promise of self-restraint under certain circumstances. Independent countries on gold were not members of some kind of monetary union. They retained the right to suspend convertibility in the event of an emergency such as a war, revolution or a sudden deterioration in the terms of trade. Such emergencies were in fact quite common before 1914. Argentina, Brazil and Chile all experienced serious financial and monetary crises between 1880 and 1914. By 1895 the currencies of all three had depreciated by around 60 percent against sterling. This had serious implications for their ability to service their external debt, which was denominated in hard currency (usually sterling) rather than domestic currency. Argentina defaulted in 1888–1893, and Brazil in both 1898 and 1914. In other words, investors who pinned their faith in a country's adoption of the gold standard had no guarantee that a country would not default. Indeed, some countries made default more likely by going onto gold during the years of relative gold shortage between the mid 1870s and the mid 1890s, since falling commodity prices made it harder for them to earn from exports the hard currency they needed to service their external gold-denominated debts.

Another alternate hypothesis is that investors were primarily interested in the fiscal policies of borrowing countries. Flandreau and Zumer have recently suggested that the most important risk factors were public debts, the corresponding amount of debt service, and their relation to tax revenues.[37] They find that, once differences in indebtedness are taken account of, gold standard adherence was insignificant. In addition, they present convincing evidence that

[36] Obstfeld and Taylor, Sovereign Risk, p.265.

[37] Flandreau and Zumer, *Making of Global Finance*; see also Flandreau et al., "Stability Without a Pact".

contemporary economic thinking about default risk centered on debt sustainability and the soundness of public finances.[38] A third determinant of risk premia may simply have been political events. According to Ferguson, revolutions, governmental crises and wars were regarded by nineteenth-century investors as increasing the likelihood of defaults by the countries affected.[39] Finally, Clemens and Williamson have integrated geographic variables in their analyses of spreads and found them to be significant determinants[40].

To determine whether or not membership of the British Empire genuinely lowered borrowing costs, it is therefore imperative to control for these and other factors. Older research on financial investment in the age of high imperialism looked only at raw yield data, thus leaving open the possibility that lower colonial spreads were a function of better economic "fundamentals" rather than the explicit or implicit guarantees to investors stemming from Empire membership.[41] In other words, British colonies may simply have been able to borrow at lower rates than other foreign countries because they were members of the gold standard, had more sustainable fiscal policies, were less susceptible to political crises or were simply better situated relative to trade routes and temperate climatic zones. After all, the British may have chosen to colonize certain countries precisely because their macroeconomic fundamentals were relatively strong. The only way to say for sure that there was an "Empire effect" is therefore to regress yield spreads for the largest possible sample of sovereign and colonial borrowers against an appropriate range of additional variables.

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[38] Unfortunately, it cannot be excluded that different gold coding is responsible for the different results. Flandreau and Zumer, *Making of Global Finance*, used a *de facto* criterion, i.e. exchange rate stability over a couple of years, while Obstfeld and Taylor, "Sovereign Risk", looked both at de jure and de facto criteria following Meissner, "New World Order".

[39] See Ferguson, *Cash Nexus*, and Ferguson, "Political Risk".

[40] Clemens and Williamson, "Wealth Bias", table 4, p. 41.

[41] See Davis and Huttenback, *Mammon*; Edelstein, *Overseas Investment*; Edelstein, "Imperialism".

Economic control variables

The obvious question is which variables to include. In our view, there are powerful methodological objections to the inclusion of anachronistic indicators such as debt to GDP ratios.[42] Self-evidently, people usually do not base their actions upon concepts that have not yet been invented or upon figures nobody yet calculates.[43] Rather, if we want to determine how nineteenth-century investors made their decisions, we need to model their behavior deductively on the basis of the data that was available to them at that time.[44]

As anyone familiar with the financial press of these days knows, there was a plethora of publications available to investors. Standard reference publications such as *Fenn's Compendium*, the *Investor's Monthly Manual* (henceforth *IMM*), the *Stock Exchange Weekly Intelligence* and the *Corporation of Foreign Bondholders Annual Reports* collected and analyzed statistical data on government borrowers not unlike the handbooks on equity investments pioneered by Moody's in the United States. In addition to this dedicated financial press, there was a rapidly growing number of more general statistical publications. The *Statesmen's Yearbook* is certainly the best example for Britain, but there were numerous continental equivalents from the 1870s onwards.[45] The subtitle of the 1898 edition of "Fenn

[42] Bordo and Rockoff, "Gold Standard"; Obstfeld and Taylor, "Sovereign Risk".

[43] See Flandreau and Zumer, *Making of Global Finance;* Ferguson, "City of London".

[44] This is a practical as well as methodological issue. A lot of financial investment went to countries for which no modern GDP reconstructions exist, so that research would be restricted to countries for which such data were reconstructed. A more practical problem discussed in greater detail in Schularick, "International Investment", is the often inconsistent methodology and thus limited comparability of modern GDP reconstructions.

[45] In Germany and Austria-Hungary similar series were edited by Juraschek, *Geographisch-Statistische Tabellen;* von Brachelli, *Statistische Skizzen.*

on the Funds",[46] the self-proclaimed "doyen of all financial books of reference", neatly summarizes what economic figures the City of London had access to: it was, proclaimed its publishers, "a handbook of public debts containing details and histories of debts, budgets and foreign trade of all nations, together with statistics elucidating the financial and economic progress and position of various countries". These, then, were the core data investors could look up: public finances, foreign trade and general indicators of economic development. In many respects, the main problem for contemporaries was not so much the raw data in the numerator – for example, exports, tax revenues or public debts – but the denominator. In the absence of a direct measure of a nation's wealth such as gross national product, a concept then its infancy, it was far from easy to compare the fundamental resources of different countries. Population was generally acknowledged to be an unreliable choice, though it had the advantage of being readily available, thanks to fairly regular and accurate censuses, and was often used to denominate export capacity. However, in more sophisticated analyses of fiscal sustainability, the debt burden tended to be related to public revenues or to export earnings.[47] The same was true of budget and trade balances.

The lion's share of our core data on public debt was collected from *Fenn's Compendium*, the *Statesmen's Yearbook* and the *Annual Reports* of the Corporation of Foreign Bondholders.[48]

[46] Probably the best overall source for country-risk indicators. Revised editions of *Fenn's Compendium* were published in 1883, 1889, 1893, and 1898. Unfortunately, the series was then discontinued, apparently because the main contributor, Robert Nash, emigrated to Australia. The publication history and authorship is therefore slightly complicated. The 13th edition from 1883 is Nash and Fenn, *Fenn's Compendium*; the 14th edition from 1889 is Nash, *Fenn's Compendium*; in 1893 it is Fenn, *Fenn's Compendium*; the last publication is Oss, *Fenn on the Funds,* from 1898.

[47] For a further discussion of contemporary risk perception see Flandreau and Zumer, *Making of Global Finance.*

[48]The *Annual Reports* of the Corporation of Foreign Bondholders were directly exploited, but many data were previously collected by Trish Kelly who generously shared the dataset from Kelly, "Ability and Willingness".

Additional information was gathered from the *IMM* and other sources as specified in the data appendix. Drawing on the records of the *Service d'Etudes Financières* of the Crédit Lyonnais, Flandreau and Zumer have suggested that debt *service* to revenue was the contemporary indicator that best measured the creditworthiness of borrowers.[49] However, for a number of reasons we chose to stick to the more traditional debt to revenue ratio. First, information on debt service obligations was not as readily available to investors. An investor who wanted to compare the debt burdens of more than a handful of large European and American countries would have struggled to find appropriate debt service ratios. Such debt service figures as did exist were, in any case, frequently subject to revisions. Secondly, in view of the diversity of repayment arrangements described above, it was far from easy for an investor to calculate debt service ratios for himself. In attempting such calculations, the Crédit Lyonnais's country risk department was not typical; indeed, it was the first dedicated economic research department of its kind. Finally, in an era of relatively low and non-volatile long-term interest rates, debt to revenue and debt service to revenue ratios were highly correlated, by a factor of close to 0.8 for the common observations (960) in our database.

Another potentially important indicator for the health of public finances is the deficit to revenue ratio. As is the case today, comments on the health of governmental budgets could be found quite regularly in the financial press. More often than not, it was disapprovingly noted that the public finances of a country had suffered from "persistent deficits for many years" and *a priori* we would expect this to be a risk factor in its own right. As Cain and Hopkins have argued, the principles of "Gladstonian finance" – which aimed at budget surpluses in order to repay existing public debt – were all but sacrosanct in the eyes of the "gentlemanly capitalists" of the City of London.[50] In addition, we collected information on those countries

[49] Flandreau and Zumer, *Making of Global Finance*, p. 35.

[50] Cains and Hopkins, "Gentlemanly capitalism", p. 7.

that breached the "London consensus" on good housekeeping by defaulting on their obligations; the *Annual Reports* of the Corporation of Foreign Bondholders contain detailed information on defaulters. Since default damages reputation, we also constructed a control variable for past default within the preceding ten years.

Apart from public debt data, the second class of economic statistics readily available to late-nineteenth-century investors were those arising from foreign trade. That there was a link between trade and creditworthiness was obvious to contemporaries since countries needed to earn foreign exchange in order to service their external debts. Typical of the way contemporaries related exports to debt is the comment about Honduras in *Fenn's Compendium* of 1889: "When we see that the annual export trade of Honduras is probably not above one twenty-fifth part of the capital of the debt, we have the type of an impossible burden."[51] Export capacity was also seen as a proxy for wealth and the state of economic development: in the words of *Fenn's Compendium*, "though no very accurate measure of National wealth can be supplied, the 'trade test', with due allowance for artificial restrictions, is found to be fairly effective".[52] Since we wanted to capture the risks stemming from both large external deficits and low levels of international trade, we therefore collected data for both the trade deficit and the sterling value of exports per capita. Modern studies of country risk tend to use GDP per capita as a proxy for risk-reducing factors such as more stable politics or better institutions. The City of London had to settle for something less than that before the First World War, but it was looking for analogous information.[53]

[51] Nash, *Fenn's Compendium,* , p. xviii.

[52] Ibid, p. xx.

[53] Another possible indicator is the density of the rail track. This variable captures an idea very close to the minds of contemporary bondholders: foreign borrowing for the purpose of reproductive investment. See below for further discussion as well as Kelly, "Ability and Willingness", and Fishlow, "Lessons from the Past".

Given the importance attributed by some scholars to gold standard adherence, we also wished to control for the positive effects of being on gold. The question of whether or not a country's currency was – *de facto* and/or *de jure* – convertible into gold is in itself a difficult and somewhat subjective issue. For example, it is far from clear cut even for well-researched economies such as Austria and Italy, both of which "shadowed" the gold standard without officially having fully convertible currencies.[54] It is even harder to be sure for smaller economies for which there is less readily accessible evidence about convertibility clauses and exchange rates.[55] The very fact that such difficulties exist is in itself significant, however. One of the reasons why it is difficult today to identify adherence to the gold standard is that nineteenth-century financial publications were not very informative on the subject of monetary rules. Indeed, convertibility clauses were hardly ever mentioned in the sources we used. We cannot help noting that if the City had been as interested in currency clauses as some have claimed, this would not have been the case. There is therefore a subjective element to retrospective identifications of "on gold" and "off gold" countries, especially when these are based on inferred *ex post* from exchange rates. In many cases, it is not at all clear in which direction the causation runs. Adoption of gold convertibility by a country was often associated with much broader programs of economic, institutional and political reform, so that gold standard adherence may have been a consequence rather than a cause of "sound" policies.[56] Moreover, investors may have been insulated from the danger of a country's going off gold if – as was very often the case – loan contracts specified that interest and amortization would be

[54] A more detailed account of the problems involved can be found in Bordo and Kydland, "Gold Standard as a Rule"; Obstfeld and Taylor, "Sovereign Risk"; Meissner, "New World Order".

[55] But compare the rich if still incomplete information in the various volumes of Schneider et al., eds., *Währungen der Welt.*

[56] See Flandreau and Zumer, *Making of Global Finance*.

in specified gold (or sterling) terms. Nonetheless, since considerable attention has been paid to the role of gold adherence in reducing country risk, our estimations include two dummies for gold standard adherence. Following Meissner as well as Obstfeld and Taylor, we use the "strict" gold coding, in preference to Flandreau's broader observed gold peg, which classified countries as having been on gold if in practice their exchange rate remained within a narrow band vis-à-vis the gold currencies.[57] We also take account of Obstfeld and Taylor's point that "the market's view of gold standard adherence [ought] to depend on whether a country [was] in full compliance with its debt contracts."[58] In order to obtain comparable results, we followed their example by including two gold dummy variables, one for non-defaulters and one for defaulters.

Finally, we also took the idea seriously that internal or external political conflicts may have been important determinants of yield fluctuations. The financial press regularly attributed sharp changes in bond prices to political developments.[59] However, it could also be argued that the inclusion of variables for internal and external political conflict amounts to a further test of our "empire effect" hypothesis. If membership in the British Empire meant benefiting from the *pax britannica*, then the absence of war could be interpreted as a direct effect of empire membership.

[57] See Meissner, "New World Order"; Obstfeld and Taylor, "Sovereign Risk": essentially, a combination of "de jure and de facto" criteria, as opposed to the somewhat more flexible "de facto" test employed by Flandreau and Zumer, *The Making of Global Finance.* For the countries not classified in prior studies, we coded only those countries on gold which passed both de facto and de jure test (see data appendix). Empire borrowers without own currencies, thus being in a currency union with the UK, were also coded on gold.

[58] Obstfeld and Taylor, "Sovereign Risk", p. 249.

[59] Ferguson, "Political Risk", p. 23.

Table 2 summarizes the core economic control variables used in the statistical analyses. Average debt to revenue ratios were relatively high – almost five times the amount of yearly revenues. Empire issuers were only slightly less indebted than independent countries. Finally, there is a marked difference in exports per capita, confirming conventional wisdom about the relative openness of the British Empire's trade regime. The dominions and colonies exported about four times more per head than independent countries.

Table 2 about here

Before proceeding further, however, a few general remarks on the data seem necessary. It is an essential, though sometimes overlooked element of quantitative analysis to inspect the data closely and to be realistic about their properties. Having spent considerable time on the collection of late nineteenth and early twentieth century economic data, we found the quantity of indicators available to contemporary investors to be less of a problem than their mixed quality. Indeed, for most countries we found more than one series for the same indicator. While it was relatively rare that two series turned out to be completely incompatible, differences of the order of 10 percent were not uncommon. It is not difficult to trace the causes of such discrepancies. The compilers of statistical information in those days faced a number of difficulties. For example, the editors of financial publications had to keep track of debt issues in various markets and denominated in various currencies; to disentangle the total amount of debt guaranteed by the central government as opposed to unsecured provincial debt; to separate paper currency debt from gold debt; to value the amount of internal debt at fluctuating exchange rates; and take into account the reduction of debt through complicated sinking fund payments or debt restructuring schemes. And all this had to be done long before

the notion of "transparent government". As a consequence, breaks in the series or silent revisions were not rare.

It is also important for our understanding of the pre-1914 bond market to be aware of the time-lags with which new data became available. At least in this respect, the "first age of globalization" was very different from our own. Today's financial markets wait eagerly for economic data releases that follow a pre-announced schedule, and bond prices "react" immediately to the new information. Yet despite the well-known communications revolution of the nineteenth century, "fresh" data on basic indicators such as debt, budgets and exports remained unavailable for years rather than for months. The story the sources tell is that of a market driven not so much by short-term economic information, but by knowledge of long-term structural trends supplemented by short-term political news from which investors apparently inferred fiscal and monetary policy changes. There is also ample evidence that well-connected investors had access to "inside" sources of information about the prospects of a country's public finances.[60] This should not be taken to mean that investors were indifferent to published fiscal or monetary data. But it does mean that there are limits to what modern researchers can do with such data. From an econometric perspective, it is especially doubtful that estimations relying only on the time-series (within countries) dimension of the data can yield good results. For all these reasons, we are inclined to believe that quibbling over a few basis points is pointless. Nevertheless, it should be possible to identify the broad determinants of investors' perceptions of creditworthiness by watching out for coefficients that are not only highly significant, but also of meaningful magnitude in different specifications.

[60] See in general Ferguson, *World's Banker*, on the Rothschilds.

Estimating the "Empire effect"

In order to gauge the size of the "Empire effect" on country risk premia, we first investigated the relationship between the spread over consols, i.e. the difference between the yield on a country's bond and the yield on consols, and the economic control variables discussed above. We look to the coefficient of the Empire dummy (coded 1 if a borrower was a British possession) for an estimate of the "Empire effect". Since no country left the Empire during our sample period and colonial borrowers typically tapped the market only after they had become part of the Empire, this dummy is time-invariant, raising a couple of technical questions for panel estimations which are discussed in turn.

The estimation of panel or time-series cross-section data has become a standard method of exploring large datasets in economic history. Pooling enables us to increase the amount of informative data, through combining variation across countries with variation over time. It also makes it possible to control for exogenous events affecting all units at a point in time, thus to control for time effects – a crucial advantage here since we need to take account of global interest rate shocks affecting all countries in a specific year.[61] But progress usually comes at a cost. Observations in time-series cross-section pools are usually not independent, and the presence of temporally and spatially correlated errors as well as of heteroskedasticity makes estimation via ordinary least squares impossible.[62] We therefore borrow an estimation method that has become the standard for datasets like ours in quantitative research in

[61] We opted for time-dummies instead of controlling for a constructed "world average spread" (see Obstfeld and Taylor, "Sovereign Risk"). Since both methods yielded almost identical results for our sample, we kept it simple.

[62] A solution in such situations is to use feasible generalized least squares (FGLS). However, FGLS produces overconfident standard errors of the estimated coefficients unless there are substantially more time points (T) than units (N). The unbalanced panel investigated here displays observations on 62 units over 35 years which clearly makes the use of FGLS impossible.

comparative political economy: OLS with panel corrected standard errors (PCSE).[63]Practically speaking, this method allows for the inclusion of a unit-specific AR1 specification to correct for serial correlation, while retaining the OLS coefficient estimates and calculating reliable "panel-corrected standard errors".

As noted above, our research agenda is complicated by the fact that we are interested in coefficient estimates for a time-invariant variable. The main implication for the estimation approach is that a standard fixed-effects model (or a least square dummy variables regression) is problematic, because the "within estimator" on the time-varying variables "sweeps away" all time-invariant variables. While it is possible to derive illustrative insights from the estimated fixed-unit effects of such models – for example, by seeing whether Empire issuers had on average lower overall spread levels than independent borrowers – this is not satisfactory for our purpose as all time-invariant variables (not only Empire membership) are included in the fixed effects.[64] A random-effects model would technically work with time-invariant variables, but random-unit effects are not a plausible assumption in our context. The remaining alternative is pooled OLS. Yet this procedure could suffer from omitted variable bias as cross-sectional heterogeneity is no longer captured by different intercepts.[65] Haussmann and Taylor have therefore proposed to identify and consistently estimate the coefficients of the time-invariant variables through a two-stage procedure.[66] However, if the

[63] This method was made popular by Nathaniel Beck and Jonathan Katz: see Beck and Katz, "What to do (and not to do) with time-series". In a different article the same authors have shown that the PCSE method is also superior to Kmenta's "cross-sectionally heteroskedastic and timewise autocorrelated model" in research applications such as ours; Beck and Katz, "Nuisance vs. Substance".

[64] This is what Obstfeld and Taylor, "Sovereign Risk", do in their Empire test. The main problem with their approach is thus not methodological, but the limited sample of Empire borrowers.

[65] For a detailed discussion see Wooldridge, *Econometric Analysis.*

[66] Haussmann and Taylor, "Panel Data".

unit effects are spanned (or completely accounted for) by a linear combination of the time-invariant regressors, then pooled OLS would be the estimator of choice as it yields equivalent results to the two-stage procedure.[67] Additionally, if it can be correctly assumed that the omitted regressors that explain the fixed effects are not correlated with any of the other regressors, then pooled OLS will still yield unbiased and consistent results. To test the proposition that the unit effects are accounted for by a linear combination of the time-invariant regressors, we first ran a fixed effects model and regressed the estimated unit effects on the time-invariant variables including the Empire dummy, practically a variant of the Haussmann and Taylor method. We found that about 75 percent of the variance of the fixed effects is accounted for by the time-invariant variables, the remaining 25 percent being relatively unimportant. Secondly, we tested whether or not the coefficient of the time-variant variables from the fixed-effects model changes once the unit effects are taken as regressors in an identical specification without fixed effects. Since the coefficients on the exogenous variables hardly changed, we obtained an indication that potentially omitted variables (captured in the unit effects) are not only of limited significance, but also not correlated with the other regressors. In brief, we found no evidence that a specification without fixed effects would yield biased results.

The evidence

The results of our benchmark regression (1) lend overwhelming support to the idea of an Empire effect. All other things being equal, the yield on a bond would be 100 basis points lower if the issuer came from the British Empire. The finding is backed by the number of observations (1282), which is more than twice as high as in previous investigations with a comparable number of controls. Regression (2) repeats the specification, but uses the yields calculated by the *IMM* instead of price-coupon ratios as the dependent variable. There is no

[67] Oaxaca and Geisler, "Fixed Effect Models".

substantial change in the Empire variable, which is again highly significant and lowers spreads by about 1 percentage point. Regressions (3) and (4) restrict the sample to spread observations below 10 and 5 percentage points over consols to test whether the "Empire effect" withers once very high country risks are excluded. However, Empire membership remains worth about 100 basis points no matter what restrictions on country risk levels we impose. The only effect is that the explanatory power of our model (r-squared) rises from 0.65 to above 0.75.

What about the macroeconomic control variables? Our regressions clearly strengthen the "public finance" school of thought on determinants of pre-1914 bond spreads: the debt to revenue ratio is correctly signed and significant at the 1 percent level (and below) in all regressions. Nor is the elasticity negligible. At mean regressor values, a 30 percent increase of the debt to revenue ratio raises spreads by 10 percent. As for gold standard adherence, our results provide mixed evidence and point to the need for further dedicated analysis.[68] While the gold standard variable (conditional on no default) is correctly signed throughout, gold adherence passes a strong significance test only in regression (3) and is again insignificant in regression (4). In these two regressions, gold standard adherence has the expected effect of a 10 to 25 basis points reduction of spreads. However, we found that, unlike the debt to revenue ratio, the gold standard dummy is rather sensitive to changes in the estimation specification and to even slight differences in the coding criteria.

As expected, both defaulters and previous defaulters were heavily penalized by the City, but the budget deficit seems to have had no effect on spreads. One possible explanation is that investors did not regularly follow the budget balances of various countries, but concentrated on debt indicators instead since an excess of expenditure over revenues would show up in the

[68] We plan to exploit our dataset for this purpose in a forthcoming article.

debt figures. The picture is different for the external trade indicators. The trade balance is correctly signed and significant throughout. Other things being equal, if countries ran an export surplus they would have lower borrowing costs, but the magnitude of this effect is rather small. The reason may be that large sample sizes such as ours can give rise to coefficients with low standard errors, so that coefficients of almost trivial magnitude may test different from zero.[69] Contrary to our expectations, we find exports per capita positively signed throughout the regressions, implying higher borrowing costs for more open economies.[70] This can be rationalized if the market viewed export dependence as a source of vulnerability, but again the magnitude of the effect is rather small. Our estimations also lend some support to the argument that political factors were important spread determinants: any incidence of internal political conflict raises spreads by as much as 80 basis points. We find no evidence, however, that international conflicts – of which there were, of course, relatively few in the period – had much influence.

The inclusion of regional dummy variables or other geographical controls has become standard in quantitative explorations of cross-country spreads in order to account for the various economic effects associated with geography: not only information asymmetries and transport costs, but also indirect effects of regional proximity such as common shocks, records of regional political stability or culture.[71] As part of our sensitivity checks (regressions 5-8), we tested different geographic variables as well as one specification without any geographic controls (7). None of these changed our main finding.

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[69] Kennedy, *Guide to Econometrics*, p. 395.

[70] Flandreau and Zumer, *Making of Global Finance*, p. 49, also report a wrong sign on the export per capita variable for their full sample.

[71] See Eichengreen and Mody, "Changing Spreads"; Clemens and Williamson, "British Foreign Capital", Kamin and Kleist, "Credit Spreads"; Cline and Barnes, "Spreads and Risk".

Table 3 about here

A number of other sensitivity checks are reported in the next table.[72] Regression (5) substitutes the regional dummies of the first regressions for a geographic constant used in comparable studies – the pre-Panama canal shipping distance from London. By this measure, the Empire effect is even stronger, at more than 150 basis points. It is also noteworthy that exports per capita turn insignificant, while the effect of gold standard adherence grows. Regression (6) adds an additional control variable, perhaps the best (albeit still crude) indicator available to nineteenth-century investors of the level of a country's economic development: the density of the rail network. Its inclusion increases the "Empire effect" to more than 150 basis points. In contrast, regression (7) does not include any geographical control. Of all specifications we tried, this is the one with the smallest – though still statistically highly significant – "Empire effect". Without controlling for geography, Empire membership was worth slightly less than 90 basis points. This would seem to imply that Empire membership was particularly important for the geographically most remote regions. In regression (8) we repeat regression (7) but limit our sample to "developing countries", in other words relatively poor countries.[73] Here, the Empire effect reaches 140 basis points, suggesting that being part of the British Empire was crucial for the country risk of less-developed African and Asian colonies.

Table 4 about here

[72] In all these sensitivity checks we report only the regressions based on current yield spreads to save space. The results obtained by regressing the yields calculated directly by the Investors Monthly Manual were comparable.

[73] See data appendix for the countries included.

Further sensitivity tests involved the inclusion of debt and revenues per capita, debt to exports, the growth rate of exports and of the population, lagged independent variables, dummy variables for natural resource exporters, for capital-poor and capital-rich economies and the regression of end-of-period spreads, in other words, spreads calculated at December closing prices. We also ran pure cross-sections for period averages. None of this changed our main finding on the size and significance of Empire membership, which was worth about 100 basis points.

Bond spreads within the British Empire

The next part of our analysis of spread determinants is devoted to an equally old question in the study of the British Empire: who profited most from preferential access to the London capital market – the dependent Empire, the Dominions or India? *Ceteris paribus*, which did investors see as a safer place to put their money? Davis and Huttenback have given the following answer to this question: "The colonies with responsible government borrowed on terms that, although perhaps not quite as favorable as those received by India and the dependent colonies, were still far below the rates charged even to the most advanced nations."[74] Looking in detail at loan issues in the period under investigation, they conclude that "within the British Empire, India consistently paid less for capital than either the dependent colonies or those with responsible government."[75] Does this finding – based on groupings of yield data without further controls – stand up to the inclusion of economic controls for the level of debt, the external position and the state of development?

Regressions 9 to 11 exploit our dataset to give a more comprehensive answer. They essentially confirm the conclusions of Davis and Huttenback: Indian bonds had a distinctly

[74] Davis and Huttenback, *Mammon*, p. 170.

[75] Ibid., p. 174.

lower risk premium than either dependent or self-governing borrowers within the Empire. We estimate India's financing advantage to have been between 20 to 30 basis points. This result is not surprising since, unlike some other colonial bonds, "Indian government bonds carried the backing of the British government and were listed in the official rosters of the London stock exchange with 'British funds'."[76] However, contrary to conventional wisdom we do not find evidence that the self-governing borrowers were seen as more risky places, even if London's oversight over their fiscal policies was much weaker. Both the Dominions and the dependent Empire could borrow at terms distinctly more favorable than comparable independent nations. But within the Empire the prime beneficiary was clearly India.

Table 5 about here

Country risk and capital flows

The City of London viewed borrowers from the British Empire as safe places to invest. As a result, distant colonies gained access to the London capital market at cheaper rates than comparable sovereign states. But what implications did this have for the *amounts* of capital that flowed from Britain to her Empire? In other words, did the "Empire effect" mean more capital as well as lower interest rates? Any answer to this question depends both on counterfactual argumentation and *ceteris paribus* assumptions and must therefore remain highly speculative. Nevertheless, such questions have been raised before and played an important role in the debate on the costs and benefits of British imperialism, and we therefore cannot ignore them.[77] Edelstein, for example, estimated that the dependent Empire would have received only as much capital per head as other comparably developed but independent countries at about twice the actual interest rate, and concluded on that basis "that the non-

[76] Edelstein, "Imperialism", p. 206.

[77] See Davis and Huttenback, *Mammon*, p. 174; Edelstein, "Imperialism", pp.207-10.

white-settler colonies would have had British investments one fifth their actual £140 and £480 million levels in 1870 and 1913".[78] By the same token, the self-governing parts of the Empire would have received about 30 percent less capital.

Figure 1 allows a first visual impression of the patterns of international borrowing in the London capital market, and underlines the risk aversion of British financial investors. More than 60 percent of aggregate public borrowing in the boom years between 1900 and 1913 was concentrated in the low-risk segment of the market (spreads of less than 100 basis points), while another 30 percent went to public borrowers whose spreads were less than 200 basis points above the British consol. This tendency looks even more pronounced if borrowing is denominated by population. It therefore seems reasonable to assume that, if the colonies had suddenly had independence thrust upon them, capital flows would have fallen rather substantially.

Figure 1 about here

From a theoretical point of view, the interaction between yields and quantities in the international portfolio investment market is far from simple. As the interest rate itself has a strong influence on the risk of default, a higher price does not necessarily translate into a higher expected return. Technically speaking, the supply curve of capital will have a backward bending part since higher interest rates decrease the probability of repayment, hence the expected yield.[79] Moreover, sovereign risk and moral hazard are likely to give rise to

[78] Edelstein, "Imperialism", p.209.

[79] See Aizenman, "Investment", p.88.

market segmentation and ceilings on indebtedness.[80] There are thus good reasons to expect that rising risk premia will tend to reduce capital flows since investors will wish to limit their exposure to high-risk assets.[81] However, while risk premia are certainly a key determinant of capital flows, comparably important roles are played by investment opportunities, the institutional environment and country fundamentals. Following contemporary research on capital flows we take a simple deductive approach, and estimate the determinants of financial flows in a linear cross-sectional model accounting for country-specific pull factors and global push factors.[82]

First, we look at the determinants of capital flows to independent countries, since we assume that British colonies and dominions were subject to the same patterns of interaction between price and quantity. Second, we use five-year averages to level out cyclical effects, reduce the impact of outliers, and get a reliable picture of the underlying factors. Third, we control for a number of other plausible determinants, regressing the yearly average capital inflows per capita not only on spreads, but also on population (to control for market size), average population and export growth (for demographic and growth trends), and on the ratio of rail miles in operation to country size (as a proxy for opportunities for "reproductive investment"). Finally, we include UK interest rates as a push factor.

Table 6 about here

[80] For theoretical aspects of international lending and sovereign risk see Sachs, "Theoretical Issues"; Eaton et. al., "Theory of Country Risk"; Hermalin and Rose, "Risks to Lenders"; Mody and Taylor, "International Capital Crunches".

[81] This is also in line with contemporary research, which has found higher risk to be associated with lower capital flows, see Taylor and Sarno, "Capital Flows".

[82] Such detailed analysis of British financial investment is possible since the publication of the flow data in Stone, *Global Export*.

Regression (12) includes the full sample of British non-colonial investment, while regression (13) limits the sample to the developed countries and regression (14) to the less developed countries outside Western Europe and North America. The main finding of interest is that higher risk premia were indeed associated with lower flows. The elasticity, about 0.25 at mean regressor values, is also substantial. In view of the exploratory character of the estimation, we are inclined not too read too much evidence into these results. However, the significance of market size and the positive impact of population growth in less developed countries are at least suggestive. That the development of the rail network is negatively signed is also in line with previous findings that countries with unexploited opportunities for "reproductive" investment received relatively more capital.[83] At the very least, it seems legitimate to conclude that the higher country risks that would have been consequent on an "Edwardian decolonization" would have decreased capital flows to Britain's former possessions. For British investors did not place voluminous bets on risky governments; they extended relatively more credit to the low-risk segment of the market. Given this preference, the appeal of investing in the Empire is obvious. Colonial loans were comparatively safe, but offered returns that were still significantly higher than those on British consols.

Conclusions

Our findings indicate that the "Empire effect" observed by so many contemporaries a century ago was no optical illusion. Even when – using information that was available to contemporaries – we allow for differences of monetary and fiscal policy, openness to trade, political stability, geographical location and level of economic development, we find that a

[83] Clemens and Williamson,"Wealth Bias", p. 16. See also Kelly, "Ability and Willingness", and Fishlow, "Lessons From the Past".

country that was a part of the British Empire was still able to borrow at significantly lower interest rates than one which was not.

As it turned out, the inter-war period confirmed what pre-1914 investors had rightly suspected: it was indeed riskier to invest in sovereign foreign states than to lend to comparable colonial economies. There were defaults by numerous independent debtor countries including Argentina, Brazil, Chile, Mexico, Japan, Russia and Turkey.[84] By contrast, all British colonial governments weathered the storms and stresses of the inter-war period without resorting to default. The imperial relationship was thus based on a virtuous circle. Colonial administrators tended to favor sound money, balanced budgets and openness to trade – precisely the things that reassured investors. In turn, the low risk premium paid by British colonies when they raised capital in London made it less likely that they would fall into the kind of debt traps that claimed other emerging markets, whose interest payments out to foreign creditors exceeded the amounts of money flowing in from new loans and being generated by the foreign-financed investments. Small wonder, then, that an increasing share of British overseas investment ended up going to the empire after the First World War. In the period before 1914, as we have seen, slightly less than half of British overseas investment went to the Empire. But after the First World War, the balance shifted. In the 1920s the Empire accounted for around two-thirds of all new issues on the London market.[85]

Was this a good or a bad thing? When Keynes criticized the low yields on colonial loans in the 1920s, his point was that this state of affairs was not in the economic interests of Britain herself. With unemployment stubbornly stuck above pre-war levels and mounting evidence of industrial stagnation, capital export seemed like a misallocation of resources. But Keynes did

[84] Lindert and Morton, "Sovereign Debt".

[85] Cain and Hopkins, *British Imperialism*, p. 439.

not consider the benefits reaped by colonial economies from cheap access to British savings. From an imperial rather than a narrowly national point of view, it was highly desirable that savings from the wealthy metropolis be encouraged to flow to the developing periphery. Besides ensuring that British investors got their interest paid regularly and their principal paid back, the imperial system was conducive to *global* economic growth – more so, certainly, than an alternative policy of the sort Keynes had in mind, which would have prioritized the industrial production and employment of the United Kingdom.

This conclusion has wider implications for modern debates about imperialism and economic development. Whatever the impact on Britain of large-scale overseas investment, it can hardly have been disadvantageous to British colonies that they could raise capital in London at rates around 100 basis points less than comparably endowed sovereign states. The "Empire effect" may well have meant more capital as well as cheaper capital. To be sure, indigenous peoples had little say over the ways in which the capital so raised was invested. Conceivably, independent governments might have invested it in ways better calculated to foster economic growth. Yet the record of most post-colonial governments, especially in sub-Saharan Africa, strongly suggests otherwise. The inability of so many former colonies today to attract foreign investment – other than in the form of credits or aid from non-commercial lenders and donors – suggests the existence of a trade-off for poor countries between political sovereignty and creditworthiness. The "Empire effect" encapsulated that trade-off in ways we should not overlook. For many poor countries struggling today to attract foreign investment, the answer mat not be a currency peg or even structural fiscal reform, but nothing less than a diminution of sovereignty.[86]

[86] See Krasner, *Organized Hypocrisy*.

Data appendix

The database constructed for the this study comprises the years 1880 to 1913 at annual frequency. The data were collected from primary and secondary sources in Berlin (Staatsbibliothek), London (British Library, London School of Economics), and New York City (New York University). Special gratitude is due to Nitin Malla for research assistance and Wolfgang Hielscher (Staatsbibliothek Berlin) for greatly facilitating the work with numerous statistical volumes. The following financial and statistical publications were systematically exploited (abbreviations appear in brackets): *Investor's Monthly Manual (IMM); London Stock Exchange Weekly Intelligence (LSE)*; *The Statesmen's Yearbook (Yearbook)*; *The Annual General Reports of the Council of the Corporation of Foreign Bondholders (Annual Reports); Fenn's Compendium and Fenn on the Funds (Fenn); Statistical Abstracts for the Several Colonial and Other Possessions of the United Kingdom (Abstracts)*.

Special gratitude is due to Trish Kelly, Peabody College, Vanderbilt University in Nashville, Tennessee, for sharing unpublished data collected from the Corporation of Foreign Bondholders' *Annual Reports*. Additional data were gathered from historical collections, mainly from the three volumes by Mitchell, *Historical Statistics*, if the figures were also available to historical investors. For some indicators, we made use of Arthur Banks' *Cross-National Time Series Database,* which is a rich source, but unfortunately not very well documented. Prof. Banks confirmed to us in mail correspondence that all pre-1913 indicators we used for our study were originally collected from *The Statesmen's Yearbook*. Prof. Banks and his collaborators converted the original series in British pounds to US dollars at an exchange rate of $5 per pound. We brought the series back to British pounds at the same conversion rate. For some countries, we were happy to rely on material collected by Michael Bordo, Marc Flandreau, Chris Meissner, Maurice Obstfeld, Hugh Rockoff, and Alan Taylor.

We are glad to acknowledge their support. Despite this collective effort, some gaps in the dataset nevertheless remained.

The appendix is divided in two parts. The first part contains in tabular form the complete country sample, the short description of bonds and the sources of the annual yield data. In the second part, the data sources are arranged by variable.

Appendix 1: country sample and sources of yield data

British Empire

	Source	*Bond*
Ceylon	IMM	4%s of 1880
Hong Kong	IMM	4% debentures (1890-93), 3.5%s (1894-1913)
India	IMM	4%s (1880-84), 3.5% (1885-1913)
Straits Settlements	IMM	4.5% of 1877 (1880-90), 3.5% (1907-13)
Canada	IMM	5%s (1880-84), 3.5% (1884-89), 3% loan 1938 (1890-1913)
British Guyana	IMM	4% (1889-1913)
Jamaica	IMM	4.5% of 1879 (1880-89), 4% (1890-1913)
New South Wales	IMM	4% bonds
New Zealand	IMM	5%s (1880-85), 4% (1886-94), 3%s (1895-1913)
Queensland	IMM	4%s
South Australia	IMM	4% '74
Tasmania	IMM	4% of 1878-83
Victoria	IMM	4.5% of 1879 (1880-95), 4%s (1896-1913)
Western Australia	IMM	4.5% of 1879 (1880-90), W. Austr. 4% 1881 (1891-1913)

Gold Coast/Ghana	IMM	3% (1902-13)
Mauritius	IMM	4.5% of 1876 (1880-89), 4%s (1890-13)
Nigeria (Lagos)	IMM	3.5% (1904-13)
Sierra Leone	IMM	4% conv. bonds (1904-13)
Cape	IMM	4.5% of 1873 (1880-89), 4% Cons. (1890-1913)
Natal	IMM	4.5% of 1876 (1880-89), 4%s (1890-1913)
Orange (from 1900)	IMM	6% bonds of 1884 (1885-94)
Transvaal (from 1900)	IMM	5% scrip. (1892-99), 3% loan (1903-13)
Egypt (from 1882)	IMM	4% unified debt

Independent countries

	source	*Bond*
Austria	IMM	4% gold rentes
Belgium	IMM	3% of 1874 (1880-97)
Denmark	IMM	4% of 1861 (1880-84), 3% gold loan of 1894 (1895-1913)
Hungary	IMM	4% gold rentes
Italy	IMM	5% Marem. railw. 1862
Norway	IMM	4% of 1880 (1880-89), 3%s of 1888 (1890-1913)
Sweden	IMM	4% (1880-89), 3%s (1891-99), 3.5% of 1879 (1900-13)
Bulgaria	IMM	6% of 1880 (1890-1902), 6% gold loan (1902-13)
Greece	IMM	5% independence (1880-84), 5% of 1884 (1885-99), 5% of 1881 (1900-13)
Montenegro	LSE	5% loan (1910-13)
Portugal	IMM	3% of 1853 (1880-99), 3% ser. (1900-13)

Rumania	IMM	8% loan (1880-89)
Russia	IMM	4% Nicolas Railway 1867
Serbia	IMM	4% unified (1898-1913)
Spain	IMM	3% ext. (1880-82), 4% ext. (1883-1913)
Turkey	IMM	4.25% of 1871 (1880-84), 5% priority (1885-89), 5% customs (1889-99), 4% of 1891 (1900-13)
Liberia	IMM	5% ext. (1902-13)
China	IMM	8% of 1874 (1880-84), 6% (1885-94), 6% gold loan (1895-99), 4.5% gold bonds (1900-13)
Japan	IMM	7% of 1873 (1880-96), 4% Sterling loan (1899-1913)
Persia	IMM	5% loan (1911-13)
Siam	LSE	4.5% Sterling loan (1905-13)
United States		Source: Calomiris' gold equivalent yields from Obstfeld and Taylor, "Sovereign Risk".
Argentina	IMM	6% of 1867 (1880-88), 5% of 1886 (1889-1913)
Brazil	IMM	4.5% gold loan (1880-1909), 5%s (1910-13)
Chile	IMM	5% of 1873 (1880-86), 4.5% of 1886 (1887-1913)
Colombia	IMM	4.75% of 1873 (1880-96), 3% ext. (1897-99), 3%s ext. (1900-13)
Ecuador	LSE	1% new cons. (1880-90), 1% new ext. (1891-93), 4.5% new ext. (1894-96), 1% ext. (1897-99), 4% salt bonds (1911-13)
Guatemala	IMM	6% Sterling (1880-88), 4%s (1889-1913)
Mexico	IMM	3% of 1851 (1880-87), 6% (1888-99), 5% cons. Ext. (1900-1913)
Nicaragua	IMM	6% bonds (1887-99), 4% (1900-10), 6% Sterling loan (1911-13)
Peru	IMM	5% cons. (1880-89), 5.5% loan (1911-13)
Salvador	LSE	6% bonds (1891-99), 6% Sterling (1908-1913)

Uruguay	IMM	6% 1871 (1880-83), 5% unified 1883 (1884-92), 3.5% (1893-1913)
Venezuela	IMM	3% new cons. (1882-1905), 3% diplomatic debt (1906-13)

Appendix 2: control variables

A discussion of the choice and calculation of the economic control variables used in the regressions can be found in the main text. The "raw" data behind these variables were collected from the sources listed below. More than one source is listed if several were needed to get continuous time-series. This presentational choice is dictated by the size of the dataset – we count about 25,000 data points for the "raw" series alone. Additional information is available from the authors on request.

Public debt

For all countries data on total government debt come from the *Yearbook*, except as follows:

New Zealand, Uruguay: sources are *Fenn* and the *Annual Reports*;

Belgium, Denmark, Norway, Sweden, USA: from Obstfeld and Taylor, "Sovereign Risk";

Argentina and Chile: *Yearbook*, *Annual Reports,* and Obstfeld and Taylor, "Sovereign Risk";

Brazil: *Yearbook*, *Annual Reports* and Levy, "Brazilian Public Debt";

Egypt, Portugal, Colombia, Guatemala, Peru, Venezuela: *Yearbook* and *Annual Reports*;

Mexico: *Yearbook*, *Annual Reports,* and Siller, "Deuda y consolidacion";

Ecuador, Nicaragua, Salvador: from *Annual Reports*;

Japan: *Yearbook* and Juraschek, *Geographisch-Statistische Tabellen*;

Liberia: Corporation of Foreign Bondholders *Annual Reports*;

Greece, Turkey: *Yearbook* and *Annual Reports*;

China: *Yearbook* and *IMM*.

Public revenues and expenditures

Budget figures were taken from all three volumes of Mitchell, *Historical Statistics*, except as follows:

Orange, Transvaal, China, Siam: *Yearbook*;

Portugal, Rumania, Serbia, Colombia, Uruguay: Mitchell, *Historical Statistics*, and Banks, *Cross-National Time Series*;

Montenegro, Liberia, Turkey, Persia, Ecuador, Nicaragua, Peru, Salvador from Banks, *Cross-National Time Series*.

Exports and imports

Trade data were copied from Mitchell, *Historical Statistics*, except for:

Transvaal, New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia: *Yearbook*;

Turkey: Mitchell, *Historical Statistics*, and *Yearbook*;

China, Siam: *Yearbook* and Banks, *Cross-National Time Series*;

Liberia: *Annual Reports*;

Guatemala, Peru: from *Annual Reports*;

Persia, Ecuador, Nicaragua, Salvador: from Banks, *Cross-National Time Series*.

Default and previous default

All information on default come from Kelly, "Ability and Willingness", and the summary tables in the *Annual Reports* of the Corporation of Foreign Bondholders. After a debt rearrangement countries were coded as previous defaulters for the next ten years.

Gold standard

The main difficulties with respect to gold coding are treated in the text. Whenever possible we followed the coding used by Meissner, "New World Order" (information on additional countries was kindly shared by Christopher Meissner) by looking both at formal gold clauses *and* subsequent exchange rate stability. For Serbia, Salvador, and Venezuela we found contradictory information and opted for the more reliable sources given below. However, we tested the sensitivity of our regressions to a change in the gold coding for these countries and found the effect minimal. British colonies without own currencies and thus effectively in a currency union with the UK were coded on gold. The West African colonies with a different legal tender besides Sterling (Nigeria and the Gold Coast) were coded on gold after the introduction of the Colonial Sterling Exchange Standard and the establishment of the West African Currency Board in 1912, an account of which can be found in Fieldhouse, *West and Third World*, p. 111. Coding both countries on gold throughout which could be justified in view of the dominant role of Sterling in international transactions did not change our results.

As stated above, for the majority of economies Christopher Meissner kindly provided exchange rate regimes for 1880-1913. His data were supplemented as follows:

India, Ceylon, Mauritius: on gold 1897-1913 from Schneider and Denzel, eds, *Währungen der Welt*;

Straits Settlements: on gold after 1906 from Schneider and Denzel, eds, *Währungen der Welt*;

British Guyana: colonial gold dollar pegged to Sterling according to *Yearbook*;

Bulgaria: on gold 1909-1911 from Avramov, *Bulgarian National Bank*;

Serbia: on gold throughout inferred from Juraschek, *Geographisch-Statistische Tabellen*, and Sédillot, *Toutes les monnaies*;

Montenegro: off gold throughout from Sédillot, *Toutes les monnaies*;

Liberia: off gold throughout inferred from information in various issues of the *Yearbook*;

Siam: on gold 1908-1913 from Schneider and Denzel, eds, *Währungen der Welt*, also in Sédillot, *Toutes les monnaies*;

Colombia: on gold 1880-1885 found in Denzel, "Finanzplätze";

Peru: on gold 1902-1913 from Denzel, "Finanzplätze";

Salvador: on gold 1897-1912 according to Sédillot, *Toutes les monnaies*;

Venezuela: on gold 1896-1913 from Kelly, "Ability and Willingness" and Sédillot, *Toutes les monnaies*.

Exchange rates

If necessary, annual average exchange rates were used to convert data in local currency to British pounds. Due attention was paid to differences between paper currency and gold rates. All series come from the various tomes of Schneider and Denzel, eds, *Währungen der Welt*, supplemented as follows:

Austria-Hungary, Belgium, Denmark, Norway, Sweden, Greece, Portugal, Spain, Japan, United States: from Obstfeld and Taylor, "Sovereign Risk";

Colombia, Peru, Guatemala: from Denzel, "Finanzplätze";

Venezuela: from Kelly, "Ability and Willingness";

Bulgaria, Rumania, Serbia: from Juraschek, *Geographisch-Statistische Tabellen*, and gold parities from Sédillot, *Toutes les monnaies*.

Rail track

The length of the rail track in operation was taken from Banks, *Cross-National Time Series,* and from Mitchell, *Historical Statistics*. Data for New South Wales, Queensland, Victoria, South Australia, Western Australia, Tasmania, Straits Settlements, and for the Hungarian part of Austria-Hungary come from the *Yearbook*.

Population

Population data for independent countries are from Mitchell, *Historical Statistics*, and Arthur Banks, *Cross-National Time Series*. Census data for the individual Australian territories, the Cape Colony, Ceylon, Egypt, the Gold Coast, Mauritius, Natal, the Orange Free State/Orange River Colony, the Straits Settlements, British Guyana, Jamaica, New Zealand, Transvaal and Hungary were found in the *Yearbook* and the *Abstracts*. Gaps between census dates were closed by linear interpolation.

Regional dummies and developing countries

The coding of regional dummies for the European periphery, Africa, Asia, and Latin America followed the usual geographic classification. Central America and the Caribbean were included in "Latin America". Greece, Spain, Portugal, Russia, Bulgaria, Serbia, Romania, Montenegro, and Turkey in "European periphery". All countries included in one of these regional groups were coded as "developing" countries in regression (8).

Shipping distance

Pre-Panama Canal shipping distance from London to the principal harbour of a country (in nautical miles) was found in Couper, ed., *Atlas of the Oceans*, and Philip, ed., *Philip's Mercantile Marine Atlas*.

Political conflict

Data for involvement in international and civil war were taken from Sarkees, "Correlates of War". The latest version of the correlates of war database can be found online at: http://cow2.la.psu.edu.

Capital flows

Data on issues of securities at the London Stock Exchange between 1880 and 1913 all come from Stone, *Global Export of Capital*. Additional data from Irving Stone's database were kindly shared by Michael Clemens and Jeffrey Williamson. The regressions use capital flow data for 31 economies: Argentina, Australia (total), Austria-Hungary, Brazil, Canada, Ceylon, Chile, China, Colombia, Germany, Denmark, Egypt, Spain, France, Greece, India, Italy, Japan, Mexico, Norway, New Zealand, Portugal, Peru, South Africa (total), Russia, Serbia, Siam, Sweden, Uruguay, Turkey, United States.

Determinants of capital flows

Population and rail miles come from the sources given above. The British real interest rate was obtained by subtracting consumer price inflation, found in Obstfeld and Taylor, "Sovereign Risk", from the consol yield. Population and export growth refer to the average yearly growth rate over the period. The land area (in square miles) at historical boundaries can be found in the *Yearbook.* The United States and all Western European economies (excluding the European periphery as described above) were coded as advanced economies..

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Table 1: Summary statistics of yield data

	Observations	Mean	StDev	Min	Max
All borrowers					
yield % p.a.	1461	5.39	2.86	2.86	22.33
Independent countries					
yield % p.a.	909	6.30	3.30	2.97	22.33
Empire borrowers					
yield % p.a.	552	3.89	0.43	2.86	6.35

Sources: See data appendix.

Table 2: Summary statistics of economic controls

	Mean	StDev	Min	Max
All borrowers				
Debt/Revenue	4.95	3.45	0.05	23.70
Budget deficit	0.12	0.36	-0.59	9.60
Trade balance	-0.14	0.81	-14.12	0.79
Exports/Population	4.72	7.34	0.05	66.64
Independent countries				
Debt/Revenue	4.98	3.62	0.16	23.70
Budget deficit	0.10	0.40	-0.49	9.60
Trade balance	-0.05	0.39	-2.51	0.79
Exports/Population	2.38	2.27	0.05	12.43
Empire borrowers				
Debt/Revenue	4.92	3.16	0.05	20.48
Budget deficit	0.14	0.26	-0.59	2.00
Trade balance	-0.26	1.15	-14.12	0.69
Exports/Population	8.63	10.56	0.16	66.64

Sources: See data appendix.

Table 3: Determinants of sovereign bond spreads				
Regression	1	2	3	4
Dependent variable:			(<1000)	(<500)
spread over UK consols	current yields	IMM yields	current yields	current yields
Observations	1282	1171	1246	1171
Groups	57	54	57	56
R-squared	0.645	0.693	0.751	0.775
Estimator: pooled OLS (PCSE)				
Empire	-108.10	-97.19	-106.40	-98.13
	(-6.23)***	(-7.33)***	(-9.61)***	(-12.32)***
Debt/Revenue	15.71	7.36	9.53	10.05
	(5.45)***	(5.77)***	(5.88)***	(10.84)***
Budget balance	-11.03	-4.79	-4.88	-0.45
	(-0.67)	(-1.4)	(-1.03)	(-0.13)
Trade balance	-2.99	-2.58	-2.00	-2.24
	(-3.59)***	(-3.64)***	(-2.5)**	(-2.5)**
Exports/Population	5.47	3.79	3.86	2.48
	(5.68)***	(5.62)***	(6.37)***	(5.49)***
Default	352.55	79.88	204.27	17.53
	(6.88)***	(3.53)***	(7.77)***	(0.86)
Previous default	172.51	42.50	84.66	37.64
	(4.31)***	(2.22)**	(4.04)***	(2.76)***
GS x no default	-21.57	1.99	-23.27	-9.73
	(-1.15)	(0.25)	(-2.37)**	(-1.49)
GS x default	-13.82	163.66	0.41	42.63
	(-0.17)	(1.93)*	(0.01)	(0.89)
International conflict	-5.04	16.31	2.01	11.58
	(-0.21)	(1.56)	(0.16)	(1.75)*
Civil conflict	77.15	11.42	31.42	8.82
	(2.25)**	(0.79)	(2.13)**	(0.97)
European periphery dummy	157.58	130.50	146.17	146.09
	(5.72)***	(5.98)***	(6.71)***	(7.89)***
Latin America periphery dummy	319.64	253.79	300.83	190.80
	(8.69)***	(10.41)***	(11.61)***	(13.97)***
Africa periphery dummy	166.08	101.32	118.61	102.21
	(9.84)***	(7.54)***	(12.13)***	(13.28)***
Asia periphery dummy	174.45	126.87	114.35	98.06
	(7.48)***	(9.65)***	(8.12)***	(7.81)***

* = Significant at the 10 percent level
** = Significant at the 5 percent level
*** = Significant at the 1 percent level

Notes: Linear regression, correlated panels and corrected standard errors (PCSE). Coefficients on time-dummies and country-specific rhos not reported. Figures in parentheses are z-statistics.

Sources: See data appendix.

Table 4: Determinants of sovereign bond spreads - sensitivity checks				
Regression	5	6	7	8
Dependent variable:				*developing countries*
spread over UK consols (current yields)				
Observations	1282	1282	1282	831
Groups	57	57	57	40
R-squared	0.63	0.63	0.61	0.72
Estimator: pooled OLS (PCSE)				
Empire	-171.73	-171.34	-86.85	-138.22
	(-6.89)***	(-6.86)***	(-4.76)***	(-8.85)***
Debt/Revenue	16.59	17.40	14.21	7.14
	(6.11)***	(6.56)***	(5.03)***	(3.29)***
Budget balance	-8.69	-8.72	-5.02	-5.51
	(-0.49)	(-0.50)	(-0.27)	(-1.00)
Trade balance	-2.09	-2.05	-1.83	-0.99
	(-2.05)**	(-2.05)**	(-1.79)*	(-1.09)
Exports/Population	-0.31	0.04	0.71	1.19
	(-0.68)	(0.01)	(3.96)***	(3.97)***
Default	412.34	408.66	444.51	280.25
	(8.77)***	(8.80)***	(9.35)***	(10.52)***
Previous default	226.09	224.14	252.21	146.15
	(5.98)***	(5.96)***	(6.75)***	(6.57)***
Gold standard	-41.10	-33.94	-37.96	-16.90
	(-2.46)**	(-1.96)**	(-2.27)**	(-1.55)
International conflict	-11.85	-13.56	-9.73	0.92
	(-0.45)	(-0.52)	(-0.38)	(0.04)
Civil conflict	107.29	107.78	116.59	54.78
	(2.85)***	(2.86)***	(3.08)***	(2.97)***
Shipping distance	0.03	0.03		
	(4.99)***	(4.98)***		
Railmiles/capita		-17931.02		
		(-2.85)***		
* = Significant at the 10 percent level				
** = Significant at the 5 percent level				
*** = Significant at the 1 percent level				
Notes: Linear regression, correlated panels corrected standard errors (PCSE). Coefficients on time-dummies and country-specific rhos not reported. Figures in parentheses are z-statistics.				
Sources: See data appendix.				

Table 5: Bond spreads within the British Empire			
Regression	9	10	11
Dependent variable:			
spread over UK consols (current yields)			
Observations	517	517	517
Groups	22	22	22
R-squared	0.769	0.788	0.784
Estimator: pooled OLS (PCSE)			
India	-20.37	-29.48	-29.56
	(-1.89)*	(-2.88)***	(-2.90)***
Self governing parts	4.95	-4.01	-7.08
	(1.08)	(-0.92)	-(1.28)
Debt/Revenue	3.57	1.84	1.59
	(3.49)***	(1.82)*	(1.58)
Budget balance	4.72	4.55	3.97
	(1.18)	(1.22)	(1.01)
Trade balance	-1.40	-1.16	-1.15
	(-1.38)	(-1.13)	(-1.13)
Exports/Population	0.78	-0.28	-0.33
	(2.91)***	(-1.78)*	(-2.16)**
Shipping distance		0.01	0.01
		(8.19)***	(7.97)***
Railmiles/capita			617.23
			(0.4)

* = Significant at the 10 percent level

** = Significant at the 5 percent level

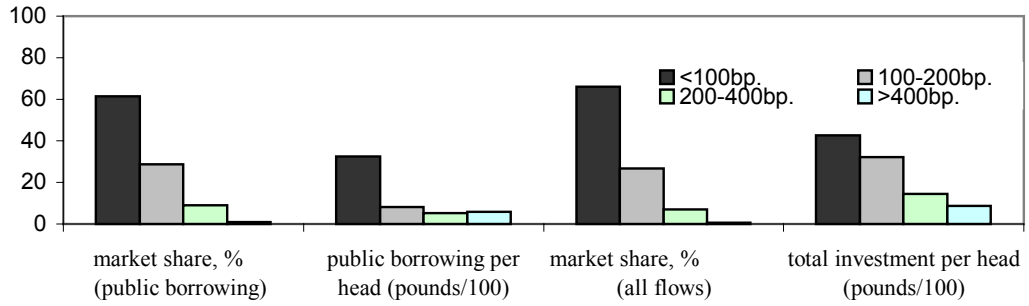
*** = Significant at the 1 percent level

Notes: Linear regression, correlated panels and corrected standard errors (PCSE). Coefficients on time-dummies and country-specific rhos not reported. Figures in parentheses are z-statistics.

Sources: See data appendix.

Table 6: Determinants of capital flows			
Regression	12	13	14
Dependent variable:			
annual average capital inflow per head, 1880-1913	*all*	*developed*	*less-developed*
Observations	152	52	100
R-square	0.12	0.43	0.12
Estimator: Least Squares			
Spread	-0.000107	-0.000220	-0.000171
	(-1.97)**	(-1.54)	(-2.14)**
Population	-1.01	-4.69	-1.35
	(-4.01)***	(-0.05)	(-3.73)***
Population growth	0.06	0.09	0.05
	(1.41)	(4.01)***	(1.40)
Export growth	0.000004	0.007701	-0.001387
	(0.00)	(1.19)	(-0.33)
Rail miles / land area	-2.38	-1.20	-6.90
	(-3.63)***	(-2.37)***	(-2.87)***
UK real interest rate	0.02	-0.01	0.05
	(0.56)	(-0.68)	(0.80)
Constant	0.25	0.12	0.33
	(2.34)**	(1.86)*	(2.24)**
* = Significant at the 10 percent level			
** = Significant at the 5 percent level			
*** = Significant at the 1 percent level			
Notes: Observations were averaged over five year periods (1880-84, 1885-89...) and one four year period (1910-13). Estimation via least squares with White heteroskedasticity consistent standard errors. The figures in parentheses are t-statistics.			
Sources: See data appendix.			

Figure 1: Distribution of British portfolio investment by risk level, 1900-1913



Sources: See data appendix.