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WEALTH BIAS IN THE FIRST GLOBAL CAPITAL MARKET BOOM, 1870–1913*

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Why do rich countries receive the lion's share of international investment flows? Although this *wealth bias* is strong today, it was even stronger during the first global capital market boom before 1913. Very little of British capital exports went to poor countries, whether colonies or not. This paper constructs panel data for 34 countries that as a group received 92% of British capital. It concludes that international capital market failure had only second-order effects on the geographical distribution of British capital. The three local fundamentals that mattered most were schooling, natural resources and demography.

Rich countries receive the lion's share of cross-border investment. A large literature has proposed theoretical explanations for this *wealth bias* (Gertler and Rogoff, 1990; Lucas, 1990; Barro, 1991; King and Rebelo, 1993) and others since, but exploration of the wealth bias during the *first* great global capital boom, after 1870, has only just begun (Lane and Milesi-Ferretti, 2001; Obstfeld and Taylor, 2003). It appears, in fact, that no study has yet investigated the determinants of the geographic distribution of international investment before World War I.

Table 1 summarises the destination of European foreign investment just prior to World War I, and very little of it went to poor, capital-scarce and labour-abundant countries.[1] Indeed, about two-thirds of British foreign investment went to the labour-scarce New World where only a tenth of the world's population lived, and only about a quarter of it went to labour-abundant Asia and Africa where almost two-thirds of the world's population lived. The simplest explanation of this bias is that British capital chased after European emigrants and that both were seeking cheap land and other natural resources (O'Rourke and Williamson 1999, Ch. 12), although Table 1 shows that French and German capital did not chase after the emigrants heading to the New World anywhere near as much as did the British.

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[1] Almost thirty years ago one economic historian used some of the same data used here (only for five New World countries: Argentina, Australia, Canada, New Zealand, United States) and concluded that GDP was the only variable that consistently predicted British capital distribution (Richardson, 1972, p. 109).

Table 1

Distribution of European Foreign Investment 1913–4 (in %)

Destination	Britain	France	Germany
Eastern Europe	3.6	35.5	27.7
Western Europe	1.7	14.9	12.7
Europe (not specified)	0.5	3.3	5.1
Total Europe	*5.8*	*53.8*	*45.5*
Latin America	20.1	13.3	16.2
North America and Australasia	44.8	4.4	15.7
Other New World (not specified)	2.8	0.0	2.1
Total New World	*67.7*	*17.7*	*34.0*
Asia and Africa	*26.5*	*28.4*	*20.5*
Total	*100.0*	*100.0*	*100.0*

Sources and Notes: O'Rourke and Williamson (1999, p. 229), taken from Feis (1930). Columns may not add up due to rounding. Turkey is allocated to Asia.

While French and German capital preferred European to New World opportunities, the same small capital export shares went to Asia and Africa.[2] Table 2 suggests that the wealth bias was even stronger before World War I than it is today since the elasticity of foreign capital received with respect to GDP *per capita* was almost twice as big then as now.[3]

The venerable capital-chased-after-labour explanation argues that there must have been an omitted variable at work and most economic observers of the late

Table 2

Wealth Bias During the Two Great Capital Export Booms

Time period	1907–13	1992–8
Dependent variable	Annual average gross British capital received (flow, in 1990 US$)	Annual average change in stock of private capital liabilities (flow, in 1990 US$)
GDP, 1990 US$	0.000208	0.00467
	(3.32)***	(8.68)***
	[0.534]	[0.624]
GDP per capita, 1990 US$	10,700	97,900
	(2.43)**	(2.20)**
	[0.965]	[0.410]
Constant	−11,100,000	−44,700,000
	(1.06)	(0.11)
Estimator	OLS	OLS
N	34	155
R^2	0.414	0.463

Absolute values of t-statistics are in parentheses. Elasticities (at average regressor values) are in square brackets. ***Significant at the 1% level. **Significant at the 5% level. Source for 1992–8 data: Capital flows from International Monetary Fund (2000) *International Financial Statistics* CD-ROM, rest from World Bank (2000) *World Development Indicators* CD-ROM.

[2] We have not been able to secure the same kind of panel data for France and Germany in the four decades prior to World War I. Too bad, since we would like to know whether French and German investors obeyed the same laws of motion that characterised British investors, even though the latter favoured the New World over Europe.

[3] Also note that the elasticity on market size (e.g. GDP) was smaller in 1907–13 than it is today.

19th century would say that it was natural resources. In contrast, most economic observers of the late 20th century would say it was human capital. But surely the phenomenon deserves more serious attention than that offered by some monocausal natural resource or human capital endowment explanation. Furthermore, we want to sort out what role policy and institutions played in the process – like the Gold Standard – after we have controlled for the economic, demographic and political fundamentals.

The debate over the cause of the wealth bias breaks down into two camps: those who believe that capital is in fact highly productive in poor countries but does not flow there due to failures in the global financial capital market or in the global capital goods market, and those who believe that capital would not be very productive in poor countries even with perfect capital markets and thus has no reason to flow there. We refer to the first claim as the *global capital market failure* view, and the second as the *unproductive domestic capital* view.

1. Potential Explanations for the Wealth Bias: A Review of the Literature

1.1. *The Global Capital Market Failure*[4] *View*

Studies positing that the wealth bias can be explained by failure in a competitive international capital market invite the following organisation. The demand for foreign savings can be choked off by domestic tariffs, distance from source, and other distortions that yield wide user cost differentials between countries even where financial costs are equalised. The supply of foreign savings can be deflected by other global capital market failures, like adverse selection, herding, the absence of a stable monetary standard, and colonial intervention through the application of force. Each will be discussed in turn.

1.1.1. *Tariffs, distance from London and other distortions*

Higgins (1993), summarised in Taylor (1998), demonstrates that after correcting for higher prices of capital goods, much of the incentive to invest in many contemporary less developed countries (LDCs) evaporates. Empirical work by Jones (1994) on the years following 1950, and Collins and Williamson (2001) on the years before 1950, extend the work of DeLong and Summers (1991) to show that distortions in equipment prices significantly depress domestic investment as well as growth. What distortion might prevent the capital market from sending enough financial capital to poor countries where the marginal product of capital is high? The idea that tariffs on manufactures early in industrial development could deter foreign capital inflows is as old as List (1856, pp. 227, 314).[5] Citing the example of Argentina after 1930s, Taylor (1998) shows how import substitution policies – and their accompanying price distortions – stifled capital flows

[4] We define 'market failure' as that which occurs 'when the allocations achieved with markets are not efficient' (Eatwell *et al.*, 1987), for any reason. Thus what some refer to as 'government failure', we call 'market failure'.

[5] O'Rourke (2000) provides evidence that protective tariffs raised TFP before WW1 in ten economies more advanced in their industrialisation, just as List said it would.

(and accumulation) even when the undistorted marginal product of capital was high. High transportation costs or distance from London might do the same.

1.1.2. *Adverse selection and costly state verification*

Applying asymmetric information theories, several authors have argued that the international credit market is rationed by adverse selection and costly state verification (Boyd and Smith, 1992; Gordon and Bovenberg, 1996; Razin *et al.*, 2001; Hanson, 1999). That is, wealthy investors will not accept the high returns to capital available in developing countries because the presence of that capital may attract high-risk borrowers, creating potential losses which exceed the gains due to otherwise outstanding investment opportunities.

1.1.3. *Herding and the foreign bias*

One of the older hypotheses used to explain Victorian and Edwardian Britain's economic slowdown was that the City of London had an irrational foreign bias, systematically discriminated against domestic borrowers, starved the home industry for funds and contributed to an accumulation slowdown. According to this thesis, market failure at home accounted for the huge capital export from Britain (O'Rourke and Williamson 1999, p. 226). Evidence offered by Edelstein (1976, 1982) certainly did grave damage to the thesis but it may still have power in accounting for the heavy preference for New World investment. After all, this foreign capital export boom seems to be characterised by the same attributes theorists assign to herding behaviour in financial capital markets today (Cont and Bouchaud, 2000).

1.1.4. *Stable monetary systems*

The global economy was dominated by the Gold Standard after 1870s, and many observers argue that it promoted international capital mobility by eliminating exchange risk (Eichengreen, 1996). Others argue that the Gold Standard commitment provided an investor guarantee that the country in question would pursue conservative fiscal and monetary policies (Bordo and Kydland, 1995; Bordo and Rockoff, 1996), policies that would make potential investors more willing to risk their capital overseas. While the argument certainly seems plausible, it is, of course, possible that the Gold Standard policy choice and the foreign capital inflow were both determined by more fundamental influences. Eichengreen (1992) has persuasively argued the case for these political and economic fundamentals, a position taken some time ago by Polanyi (1944) and restated in modern economic language recently by Obstfeld and Taylor (1998).

1.1.5. *Colonial intervention*

Late 19th century colonial intervention (plus gunboat diplomacy) created a friendly environment for international lending, or so says a very large literature. After controlling for other things that mattered to investors, did British foreign capital follow the flag or follow the market?

1.2. *The Unproductive Domestic Capital View*

The alternative view of the wealth bias is to explain it by appealing to absent third factors. This *unproductive domestic capital* view actually assumes perfect financial capital markets, although it stresses that there may be failures in other markets that might impact on this one. The *supply* of foreign capital may be cut back by positive correlations of business cycles between developed and developing countries, since wealthy-country investors seek both high average returns and insurance against financial disaster that a diversified portfolio offers. The *demand* for international investment can be choked off by limitations on internationally immobile third factors such as schooling, skills, natural resources, demographic factors, unenforceable property rights and, what has come to be called, social capital.

1.2.1. *Business cycle and long swing correlations*

Several economists (Cox *et al.*, 1985; Tobin, 1996; Bohn and Tesar, 1996) have sought to explain gross (rather than net) capital flows by the increased supply of foreign capital available to countries with business cycles uncorrelated or, even better, inversely correlated with that of the host country, allowing portfolio diversification for investors in the latter. This theoretical view will find a comfortable haven in history since the inverse pre-1913 correlation between British domestic investment and capital exports have long been appreciated by economic historians (Cairncross, 1953; Thomas, 1954). Perhaps this correlation also played a role in influencing the direction taken by British foreign capital.

1.2.2. *Third factors: natural resources, skills and schooling*

Consider a neoclassical production function $Y = AK^{\alpha}L^{\beta}S^{\gamma}$, where S is some third factor and there are constant returns ($\alpha + \beta + \gamma = 1$). The marginal product of capital Y_K and the marginal product of labour Y_L are

$$Y_K = A\alpha K^{\alpha-1}L^{\beta}S^{\gamma}$$
$$Y_L = A\beta L^{\beta-1}K^{\alpha}S^{\gamma}.$$

It is easy to see that low marginal products of capital and low marginal products of labour can coexist – provided the country is sufficiently poor in S.

Economic historians would be quick to offer a candidate for this immobile third factor role – natural resources – and Bloom and Sachs (1998) have argued the same case when looking for explanations of African performance more recently. It has a venerable tradition in economic history,[6] and we will give that tradition plenty of scope to influence the empirical results later in this paper.

Lucas (1990) took the view that the immobile third factor was human capital – skills and schooling. While there are reasons to suppose that human capital was much less central to the growth process in the 19th than in the 20th century, Tortella (1994) has effectively argued the contrary to help account for Iberian backwardness. O'Rourke (1992) has done the same for Ireland: if Irish workers

[6] The literature is large. See, for example (Cairncross, 1953; DiTella, 1982; Green and Urquhart, 1976; O'Rourke and Williamson, 1999, Ch. 12).

with the greatest human capital endowments self-selected for emigration, capital's marginal product would have fallen in 19th century Ireland, thus choking off capital flows from Britain. Similarly, the work of Clark (1987) shows enormous differences in the profitability of cotton textile mills across the globe just before World War I, and cheap labour did not help poor countries much since labour was not very productive. However, Clark thinks that cultural forces reduced worker productivity in poor countries, not the absence of skills and schooling.

1.2.3. *Third factors: demography*

The dependency ratio, defined as the percentage of the population not engaged in productive activities (whether remunerated or not), is typically viewed as an immobile characteristic of a country's labour force. It increases in response to baby booms, improved child survival rates and adult longevity, although the latter was a minor event in the 19th century. It decreases in response to an inflow of working-age immigrants. Assuming that dependents affect a household's ability to save and that labour force participation affects productivity and therefore investment, dependency rates have the potential to impact capital flows. Demographic models like those of Higgins and Williamson (1997) and Bloom and Williamson (1998) show how changes in the demographic structure can matter. As the country develops, the demographic transition to a lower youth dependency burden and a more mature adult population increases the productivity of both the population and the labour force. Further development, of course, can reverse the effect as the elderly dependency burden rises.

In order for the demographic structure to affect capital flows, it must have differential effects on investment and savings. Its effect on investment is clear from the simple third factor equations above: lower youth dependency and higher adult participation rates mean a higher marginal product of capital, which, in turn, implies more investment demand. And more investment demand implies more demand for foreign capital unless domestic savings increase. The domestic saving response to a change in the dependency burden is, however, less clear as those who have followed the life cycle debate will appreciate. Guided by previous work using late 19th century evidence (Taylor and Williamson, 1994), we expect the dependency rate to play a role in determining capital flows, young populations being more dependent on foreign capital.[7]

1.2.4. *Third factors: unenforceable property rights*

Even if an investor can easily prove non-compliance to an investment contract, this information is of little use if the enforcement mechanism is inadequate or, even worse, non-existent. Thus, foreign investment will not take place in potential-borrowing countries where contract enforcement and property rights are absent, and wide differences in the marginal product of capital can exist. Contracts may be unenforceable due to the absence of needed judiciary and executive public institutions, both at the national and international level.

[7] This prediction has been confirmed with late 20th century evidence (Higgins and Williamson, 1997).

Tornell and Velasco (1992) proposed just such an explanation for low capital flows to poor countries. Sometimes these capital flows can even be negative, as in Cecil Rhodes' Africa, when rents from mines underwent capital flight to rich countries where returns were low but property rights were enforced by law rather than by gunpowder and steel. Faini (1996) offers another example: labour mobility out of countries with low capital stocks toward those with high capital stocks (and thus high wages) can by depopulation keep the marginal product of capital low even in countries with low capital. Since labour cannot be used as collateral for loans, these countries cannot borrow against their labour force to build sufficient physical capital stocks to prevent the emigration.

1.2.5. *Third factors: geography and others*

There are other candidates for the third factor role. In their recent effort to reclaim the importance of geography on recent economic performance, Bloom and Sachs (1998) stress distance from periphery to core, a factor which is likely to have been even more important in the 19th century when distance had a bigger impact on cost. Reisen (1994) has explicitly pointed to the potential role of geographic distance to neighbouring markets and urban agglomerations on capital flows. Scale effects, managerial knowledge, distribution networks, product cycles and other firm-specific intangibles embedded in the industrial organisation literature can be all modelled as immobile third factors affecting the marginal product of capital. Others have explored yet another immobile third factor – specialised, nontraded intermediate inputs.

It is very clear that there is no shortage of theoretical assertions to motivate empirical analysis. What is missing in the wealth bias literature, however, is empirical analysis. In this regard, economic history has much to offer.

2. Testable Predictions of the Two Views

Lucas (1990) proposes his puzzle using a simple growth model, which assumes two factors and no capital market imperfections. Like Lucas, we begin with a growth model and show that relaxing either of these two assumptions can explain wealth bias. We then discuss how a portfolio choice model – an idiom more familiar to the international finance literature – suggests a similar dichotomy of potential explanations for wealth bias.

2.1. *Wealth Bias in a Growth Model*

Let Y_i represent the output of country i, K_i represent the stock of capital in country i, and L_i represent the population of country i. The lower case y_i and k_i signify *per capita* output and *per capita* capital stock, respectively, and $y_i = f(k_i)$. The function f is neoclassical (i.e. $f(0) = 0$, $f' > 0$, and $f'' < 0$). For the simplest illustrative case, let there be three countries such that $k_1 > k_2 > k_3$. For concreteness, take country 1 to be UK and countries 2 and 3 to be alternative hosts for British investment.

2.1.1. *Autarky*

Let r_i be the return to a capital investment in country i. If firms maximise profits, then in the absence of international capital flows $r_i = f'(k_i)\ \forall i$. As in the standard Ramsey model, utility-maximising consumers and the preceding equation uniquely determine the level of capital intensity in each country as $k_i = f'^{-1}(\rho_i + \theta_i x_i)$ where ρ_i is the pure rate of time preference, θ_i is the intertemporal elasticity of substitution, and x_i is the growth rate of the level of technology in country i. For the present purpose all that matters is that under autarky, each country achieves a unique capital intensity k_i.

2.1.2. *Open economy*

Let $K_i =$ the capital stock in country i under autarky, and $K_i^* =$ the capital stock in country i under free-flowing capital. When capital flows freely across borders,

$$r_1 = r_2 = r_3 \Rightarrow k_1^* = k_2^* = k_3^*. \tag{1}$$

In the adjustment from autarky to open economies, capital flows instantaneously to the country where it can earn the highest return and is invested there costlessly. The volume of this flow into country i is therefore $\Delta K_i = K_i^* - K_i$.

Let $\sigma_j = \Delta K_j/(\Delta K_2 + \Delta K_3)$ represent the share of capital flows out of country 1 that is received by country $j \in \{2, 3\}$. As long as both countries 2 and 3 receive any capital, we have $\partial\sigma_j/\partial K_j < 0$, which together with $\partial y_j/\partial k_j > 0$ gives $\partial\sigma_j/\partial y_j < 0$. Countries with lower income *per capita* should receive greater shares of international capital flows. In fact, the large majority of these flows go to the highest-income countries.[8] This is the wealth bias.

2.2. *The Global Capital Market Failure View*

We can explain this apparent contradiction between theory and observation by relaxing the assumption of perfect international capital markets. Assume now that country i can only borrow up to a fraction ϕ_i of its capital stock K_i. That is, $\phi_i = \infty$ if country i faces no borrowing constraint,[9] and $\phi_i = 0$ if country i is totally blocked from world capital markets. If country j is not credit-constrained (i.e. $\Delta K_j \leq \phi_j K_j$), then the above analysis remains unchanged.

Now say the credit constraint binds for country j. If we assume that, for any reason, richer countries are more creditworthy (i.e. $\partial\phi_j/\partial K_j > 0$) then $\partial\sigma_j/\partial y_j > 0$. That is, if rich countries are more creditworthy and country j faces a binding credit constraint, then richer countries should receive a larger share of international capital flows. Imperfections in the international capital market have explained the wealth bias. Note that $\partial\sigma_j/\partial\phi_j > 0$; anything that increases the creditworthiness of

[8] Note also that countries whose population represents a larger fraction of the aggregate populations of capital recipients get a larger share of the flows: i.e., $\partial\sigma_2/\partial[L_2/(L_2 + L_3)] > 0$, a result to which we return later.

[9] Even if $\phi_i > 1$, country i still faces a potentially binding credit constraint unless $\phi_i = \infty$. Nothing in (2) prevents a totally unconstrained borrower from receiving loans whose value exceeds the initial capital stock. A reputation mechanism could allow countries to borrow more than their collateral.

country j will increase the share of international capital flows received by country j. Note also that[10] $\partial\sigma_j/\partial(r_j^* - r_1^*) < 0$. That is, *ceteris paribus*, countries whose bonds exhibit a higher 'spread' above those of Great Britain will receive a smaller share of international capital flows.

Now suppose country j is involved in a war and the government of j issues bonds to pay for fighting; the demand curve for capital has shifted to the right.[11] The supply curve for foreign capital is infinitely elastic until the country has borrowed $\phi_j K_j$, and is thereafter inelastic. The supply curve for domestic capital is upward sloping. If the credit constraint binds due to the demand shift then j's interest rate will rise above r^*, inducing more domestic creditors to lend more to the government but not affecting foreign willingness to lend. Foreign capital inflows, the difference between equilibrium domestic supply and foreign supply, necessarily decline. If the constraint was already binding before the demand shift, domestic creditors must purchase the war bonds and capital inflows are unaffected. Either way, capital inflows do not increase.

2.3. *The Unproductive Domestic Capital View*

We now reinstate the assumption of unconstrained international borrowing and relax the assumption that there are only two factors of production. There is an immobile third factor Z such that $Y_i = K_i^{\alpha} L_i^{\beta} Z_i^{\gamma}$ (where $\alpha + \beta + \gamma = 1$) and thus $y_i = k_i^{\alpha} z_i^{\gamma}$. The factor Z could represent human capital, the endowment of land and other natural resources, or may simply be labelled as international differences in 'total factor productivity' of the kind identified and investigated for this period by Broadberry (1997).

2.3.1. *Autarky*

In the absence of cross-border capital flows, $r_i = f_k(k_i, z_i)$, where f_k represents the partial derivative of f with respect to its first argument. Each country, as before, develops a unique equilibrium capital intensity k_i.

2.3.2. *Open economy*

With international capital flows uninhibited, $r_1^* = r_2^* = r_3^*$ and $\partial\sigma_j/\partial z_j > 0$. If for any reason there is a positive correlation between countries' stocks of K and Z, that is $\partial z_j/\partial k_j > 0$, without loss of generality we can define the units of our variables such that $\partial\sigma_j/\partial K_j > 0$ always holds, we have $\partial\sigma_j/\partial y_j > 0$. Different endowments of the immobile third factor Z have explained wealth bias. In wartime, the outward shift in the domestic capital demand curve – faced with a perfectly elastic supply of foreign capital and upward-sloping supply of domestic capital – will lead *ceteris paribus* to increased capital inflows.

[10] Since $r_j^* = f'\left[(1 + \phi_j)k_j\right] + \delta_j$ and $\partial\left(r_j^* - r_1^*\right)/\partial\phi_j = \partial r_j^*/\partial\phi_j = f''\left[(1 + \phi_j)k_j\right]k_j < 0$.

[11] Debt finance of warfare goes back to antiquity and the finance of war by foreign private capital dates at least to the 13th century, when Britain's King Edward financed his Welsh campaigns with the help of banks in Siena (Kaeuper 1973, p. 202). International bond issues financed parts of the American Civil, Franco-Prussian, Boer, and Russo-Japanese wars, to name a few.

2.4. *Wealth Bias in a Portfolio Choice Model*

The international finance literature does not lean heavily on simple growth models, however, so it is useful to view our predictions also through the lens of portfolio choice. Decades of work on the international capital market, surveyed in Dumas (1994), have built largely upon the Capital Asset Pricing Model (CAPM),

$$\mathrm{E}_{t-1}\left(r_{i,t}^{A}\right) = \lambda_{t-1}\mathrm{cov}_{t-1}\left(r_{i,t}^{A}, r_{w,t}\right),$$

where $\mathrm{E}_{t-1}\left(r_{i,t}^{A}\right)$ is the conditionally expected return on security A's equity in country i over and above the world portfolio, r_w is the return on a value-weighted world portfolio, and λ_{t-1} is the world price of covariance risk for time t expected at time $t-1$. The risk-free return is predetermined at t and thus has zero conditional variance. The interest rate premium for country i decreases to the extent that it moves against, and thus can serve to hedge against, fluctuations in the world portfolio return.

The CAPM without market imperfections posits two explanations for wealth bias that fall under the Unproductive Domestic Capital view. First, total factor productivity in rich countries is higher (perhaps due to initial endowments of immobile third factors): thus, all else equal, larger capital inflows are required to satisfy the CAPM equality. Second, the returns to capital in poor countries exhibit a greater covariance with the return of the world portfolio than do returns in rich countries: thus, and again, a larger inflow of capital to rich countries is required to satisfy the CAPM inequality.

Market imperfections can also explain wealth bias. Bekaert and Harvey (1995) propose a version of the international CAPM allowing the degree of market integration to change through time. They note that in completely segmented markets,

$$\mathrm{E}_{t-1}\left(r_{i,t}^{A}\right) = \lambda_{i,t-1}\mathrm{cov}_{t-1}\left(r_{i,t}^{A}, r_{i,t}\right).$$

Security A is now priced with respect to its covariance with the return on the market portfolio in country i, r_i, and $\lambda_{i,t-1}$ is the local price of risk, a measure of the representative investor's relative risk aversion. Aggregating at the national level,

$$\mathrm{E}_{t-1}\left(r_{i,t}\right) = \lambda_{i,t-1}\mathrm{var}_{t-1}\left(r_{i,t}\right).$$

There is an unobserved regime switch from total market segmentation to total market integration, with $\phi_{i,t-1}$ as the econometrician's time-varying assessment of the likelihood that the market is integrated. The conditional mean return is

$$\mathrm{E}_{t-1}\left(r_{i,t}\right) = \phi_{i,t-1}\lambda_{t-1}\mathrm{cov}_{t-1}\left(r_{i,t}, r_{w,t}\right) + \left(1-\phi_{i,t-1}\right)\lambda_{i,t-1}\mathrm{var}_{t-1}\left(r_{i,t}\right).$$

Rather than the outcome of a regime-switching model, this could be seen as an imperfect approximation of expected returns in partially segmented markets.

Black (1974) models barriers to international investment as a tax, representing 'the possibility of expropriation of foreign holdings, direct controls on the import or export of capital … It is even intended to represent the barriers created by the unfamiliarity that residents of one country have with other countries'. Thus,

$$\mathrm{E}_{t-1}\left(r_{i,t}\right) - \bar{R} - \bar{\tau}_i = \beta_i\left[\mathrm{E}_{t-1}\left(r_{w,t}\right) - \bar{R} - \bar{\tau}_m\right]$$

where $\bar{R}$ is the riskless return, $\beta_i \equiv \mathrm{cov}_{t-1}(r_{i,t}, r_{w,t})$, and $\bar{\tau}_i$ is the tax paid by foreigners on their holding of security i. [12]

Adler and Dumas (1983) model currency risk in the international CAPM with

$$\mathrm{E}_{t-1}\left(r_{i,t}\right) = \delta_{w,t-1}\mathrm{cov}_{t-1}(r_{i,t}, r_{w,t}) + \sum_{c=1}^{L} \delta_{c,t-1}\mathrm{cov}_{t-1}(r_{i,t}, \pi_{ct})$$

where π_{ct} is the inflation of country c measured in the reference currency, that is, it is the appreciation of the real exchange rate between the reference currency and that of country c. This is used in analyses of the currency risk premium including Dumas and Solnik (1995) and De Santis and Gérard (1998).

These models could be used to build a Global Capital Market Failure view of wealth bias. Any trait of country i that tends to segment its capital market from the global market, whether modelled as ϕ or τ, will affect $r_{i,t}$ and thus – through investors expectations – affect the level of capital flows necessary to satisfy the CAPM. Market segmentation could be greater for poorer borrowers if distance makes poor borrowers more difficult to monitor; if lack of colonial affiliation makes contracts more difficult to enforce; if terms of trade fluctuations in poor countries keep *ex ante* information on project profitability of low quality; and if protectionist policies in poor countries drive deliberate wedges between local and global markets. Likewise, in the Adler and Dumas model, suppose that poor countries' real exchange rates are more appreciated or more difficult to predict *ex ante*. This could happen if they shun the Gold Standard, affecting the pattern of global capital flows necessary to satisfy the CAPM condition.

We relate our predictions to the CAPM model, not because the theory itself provides fresh insight into wealth bias but merely as an expository tool to discuss our predictions in the language of the most important strain of literature on the topic. To the extent that wealth is plausibly associated with any of the terms in the above CAPM conditions – initial total factor productivity, market segmentation, or currency policy – therein lie potential explanations for wealth bias.

In summary, then, the Global Capital Market Failure view predicts that wealth bias can be explained by market segmentation (international borrowing constraints) or departures from purchasing power parity (exchange rate movements), and borrowing does not increase in wartime. The Unproductive Domestic Capital view predicts that wealth bias can be explained by endowments of immobile third factors, and borrowing increases in wartime.

[12] Much work has subsequently built on Black's model. For example, Stulz (1981) presents a modified version of the Black model imposing costs not on net holdings of risky foreign assets but on gross holdings, to accommodate the possibility that sophisticated investors facing Black barriers would react not by holding few foreign securities, but by holding large amounts of foreign securities short. We abstract away from such analysis in the relatively thin derivative markets before 1914.

3. Testing the Theory: What Explains the Wealth Bias in British Capital Exports?

To the degree that return-maximising international investors were attracted to or deterred from countries with fundamental national characteristics which affected in equal measure the returns to national or international investors, we can reject the *capital market failure* view.[13] To be precise, we say that the market for British capital exports exhibits the wealth bias when countries with higher GDP *per capita* – controlling *only* for log GDP – receive a significantly larger share of total British capital exports than do countries with lower GDP *per capita*. We say that we 'explain' the wealth bias when variables representing country fundamentals and market failure have a statistically significant effect on British capital inflows and, controlling for these effects, countries with higher GDP *per capita* receive a *smaller* share of British capital.

We turn now to the behaviour of British overseas investors during the first great globalisation boom between 1870 and 1913.[14] British foreign investment is selected for two reasons. First, the British evidence is available and it is not for other capital exporters. Second, Britain was then the world's leading capital exporter, far exceeding the combined capital exports of its nearest competitors, France and Germany (Feis, 1930, pp. xix–xxi, 71). The keystone of our analysis is the data on gross British capital exports collected by Jenks (1927) and Simon (1968), as reported by Stone (1999), broken down annually by destination and type.

We have assembled a large database documenting 34 of the countries which received most of the British capital during this period. In 1914, our 34 countries held approximately 86% of the world's population, produced 97% of the world's GDP, and received 92% of British capital exports.[15] We break down the recipient countries into 10 'more developed countries' and 24 'less developed countries' (LDC) according to GDP *per capita* at the turn of the century (Figure 1).

The database contains a range of variables related to market failure and capital productivity. On the capital market failure side, it includes import duties as a fraction of total import value, colonial affiliation, monetary regime, exchange rate variance against the pound sterling, changes in the terms of trade and an index combining shipping costs and distance from London. On the capital productivity

[13] Remember that this view posits international capital market failure rather than domestic capital market failure; the latter implies unproductive capital for investors of all flags. Note also that the converse of our test is not true. That is, while the determination of flows by fundamental national characteristics is sufficient to reject the capital market failure view, lack of such determination is merely a necessary condition to reject the unproductive capital view.

[14] Certainly Britain (and others) exported capital before this period, as studied by Neal (1990) and others. But such international investment did not approach the levels attained in the years preceding World War 1, which at times exceeded 10% of British GDP.

[15] The countries are Argentina, Australia, Austria-Hungary, Brazil, Burma, Canada, Ceylon, Chile, China, Colombia, Cuba, Denmark, Egypt, France, Germany, Greece, India, Indonesia (Dutch East Indies), Italy, Japan, Mexico, New Zealand, Norway, Peru, the Philippines, Portugal, Russia, Serbia, Spain, Sweden, Thailand (Siam), Turkey (Ottoman Empire without Egypt and European territories), the US, and Uruguay. They are distributed: Europe 12; North America and Australasia 4; Latin America 8; Middle East 2; and Asia 8. See Data Appendix, available from the authors on request.

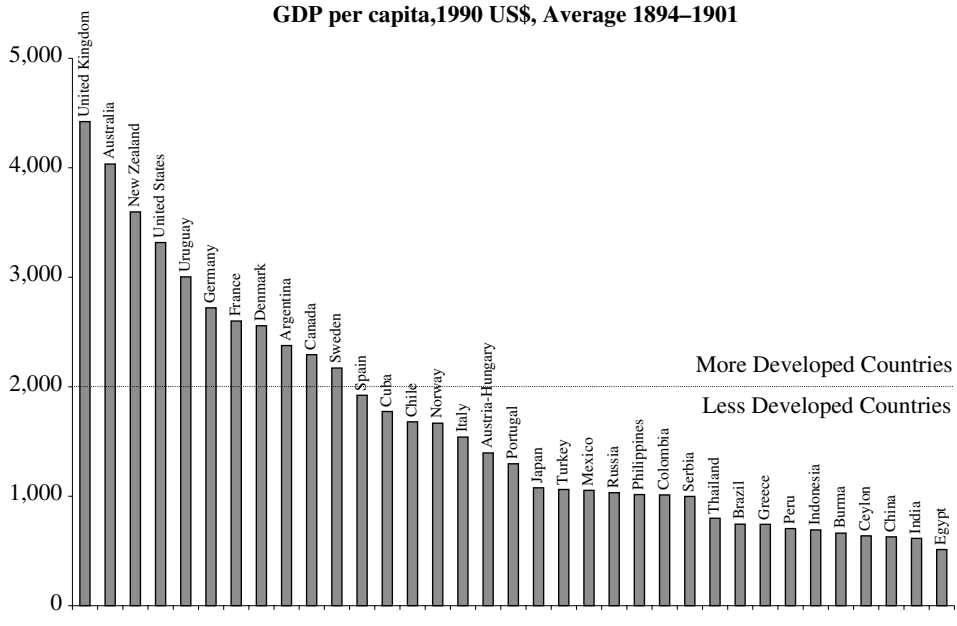

Fig. 1. *Definition of 'Less Developed Country' (LDC).* For the purposes of this study, it is assumed that any country with a GDP/capita in 1990 US$ below $2,000 in Period IV – that is, 1894–1901, or roughly the middle of the period under investigation – is an LDC
Sources: See Data Appendix

side, it includes the youth dependency ratio, net immigration rates, primary school enrolment rates,[16] urbanisation, and indices of natural resource abundance made popular by Sachs and Warner (2000). The data are summarised in Table 3.

Each data point represents one country in one year. For the purposes of tracking changes in the determinants of flows over time, the observations are sometimes classified as belonging to one of six time periods delineated in Figure 2. Six periods were chosen to utilise local minima as divisions between successive waves of outflows. Economists since Hobson (1914, pp. 142–9) have divided pre-war British capital exports into three periods, separated by two large troughs. The first corresponds to a depression in the aftermath of the Franco-Prussian war and a series of defaults in 1874, and the second to economic collapse in Argentina, Australia, and elsewhere in 1890–1. We exploit minor local minima to achieve a slightly higher resolution. We discard the first five years of Stone's flow data (1865–9) due to limitations in the availability of regressor data before 1870.

Unlike most studies of British capital exports,[17] ours focuses exclusively on what pulled British capital into some countries versus others, rather than what pushed it out of Great Britain. Our dependent variable is therefore the value of total British

[16] Estimates of the educational attainment of the work force is unavailable for almost all of the countries in our sample but we use enrollment rates among the school-aged fifteen years previously as a proxy for the current schooling stock per capita.
[17] Such as Edelstein (1982) and Davis and Huttenback (1988).

Table 3

Summarising the Data

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Share of all British capital	1,700	0.0294	0.0607	0	0.501
Share to governments	1,700	0.0294	0.0769	0	0.725
Share to private sector	1,700	0.0294	0.0757	0	0.686
ln GDP	1,700	23.2	1.54	19.7	27.0
LDC dummy	1,700	0.706	0.456	0	1
Warfare dummy	1,700	0.0494	0.217	0	1
Bond spread over Consol	1,161	0.0344	0.0560	−0.000345	0.484
British colony dummy	1,700	0.217	0.412	0	1
Gold Standard dummy	1,495	0.483	0.500	0	1
Import duties over imports	1,700	0.158	0.110	0.0250	0.582
Lagged change in Terms of Trade	1,666	−0.00231	0.156	−1.93	1.23
Effective distance to London	1,700	0.372	0.295	0.0102	1.41
Population growth	1,666	1.44	1.25	−5.39	13.0
Lagged net immigration	1,700	0.504	1.92	−3	3
Primary product exports	1,700	0.876	0.177	0.240	1.00
Lagged schooling	1,700	0.184	0.162	0.00113	0.579
Urbanisation	1,700	0.0903	0.0738	0	0.444

'ln GDP' is in 1990 US$. 'Warfare' takes the value of 1 if the country is involved in an interstate war in which Great Britain was not a combatant in that year. 'Bond spread' is the difference between the yield on sovereign bonds in that country and the yield on British Consols, in units of percent divided by 100. 'Import duties over imports' ('tariffs') are all import duties collected divided by the value of all imports (dutiable or otherwise). 'Lagged change in Terms of Trade' is the once-lagged year-on-year percent change in a Terms of Trade index, divided by 100. 'Effective distance' is the pre-Panama Canal, post-Suez Canal shipping distance in tens of thousands of nautical miles between London and the principal port of the destination country multiplied by a world-wide time-series index of shipping costs where the year 1869 = 1.00. 'Population growth' is the year-on-year change in total population, in percent. 'Lagged net immigration' is an index of net immigration relative to recipient country population, where 3 represents heavy immigration and −3 represents heavy emigration, lagged by 10 years. 'Primary product exports' is the fraction of total exports falling into categories 0, 1, 2, 3, 4, and 68 of the United Nations Standard International Trade Classification (SITC) Revision 1. 'Lagged schooling' is the fraction of the population below the age of 15 that is currently attending primary school, lagged by 15 years. Urbanisation is the fraction of the population living in agglomerations of 100,000 or more.

capital exported to a given country during a given period as a fraction of all British capital exported during that period. Push effects are thus entirely eliminated. Scale effects from market size are eliminated by the inclusion of log GDP on the right hand side.[18]

3.1. *The Determinants of Capital Destination*

Our central result, presented in Tables 4 to 7, is that the wealth bias was alive and well during the latter half of the period 1870–1913, and that it can be explained in a way that is sufficient to reject the global capital market failure view. We stress that

[18] Arguably it is more correct to include share of world GDP rather than simply GDP. To the degree that period-to-period change in world GDP is small, however, this would not be substantially different from simply changing the units on GDP. Making this adjustment to Table 4 (results not reported) does not materially alter its conclusions.

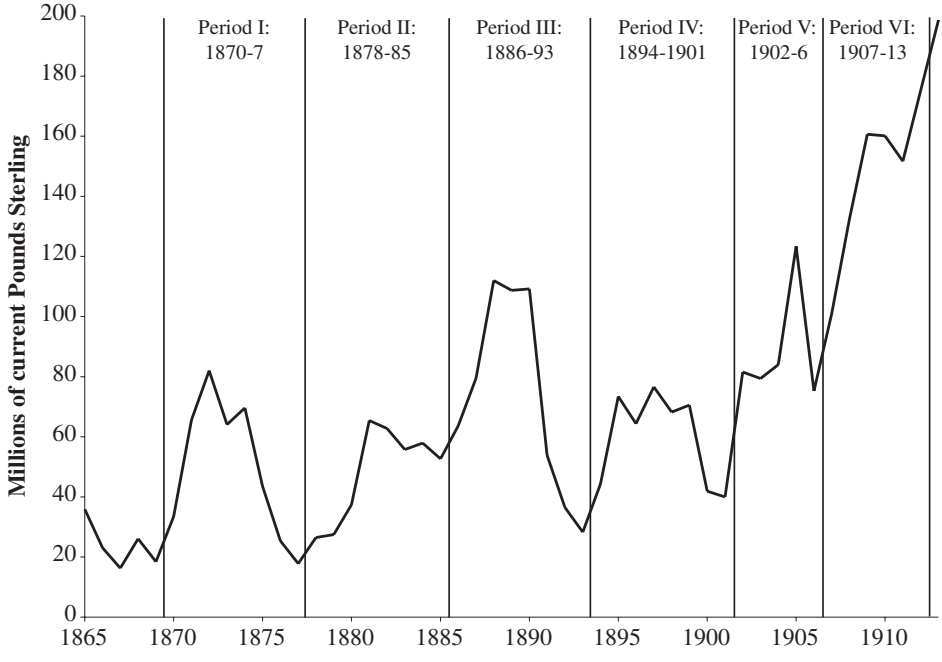

Fig. 2. *Division of Pre-WW1 British Capital Exports into Six Time Periods*
Source: Stone (1999)

we are *not* asking, as many others have,[19] whether perfect global capital markets existed during this period. Instead, we are asking whether global capital market failure can be viewed as a primary explanation for the wealth bias.

3.1.1. *Identifying the fundamentals that mattered*

In Table 4, note the significant, negative effect of the LDC dummy on flows when that variable is accompanied only by log GDP in regression (1) to (4). This is one manifestation of the wealth bias. Regression (2) uses a tobit specification to account for the fact that gross capital flows were censored at zero in 14.5% of the country-years in question. Regressions (3) and (4) retain the specification of (2) but hold the sample constant with respect the regressions directly below each.

The inclusion of proxies for global market failure and for fundamental national characteristics in regression (5) and (6) reverses the sign on the LDC indicator variable. In other words, after accounting for the effects of other variables, poor countries received a *larger* share of British capital than did rich countries in the years leading up to World War 1.

Which country characteristics are responsible for the change in sign of the LDC dummy? Regression (7) includes the British colony dummy, the Gold Standard dummy, tariffs, terms of trade and effective distance. The sign on the LDC dummy is negative once again, suggesting that the included variables cannot explain

[19] Including Bordo *et al.* (1999), among many.

Table 4

Explaining Wealth Bias, 1870–1913

Dependent variable: Gross British capital flow to country in question in year in question as a fraction of total gross British capital flows in that year. All regressions include time period dummy variables for periods I–V as well as a constant term

Regression number	(1) OLS	(2) Tobit	(3) Tobit	(4) Tobit
ln GDP	0.014	0.016	0.016	0.016
	(8.74)***	(11.08)***	(11.08)***	(11.58)***
LDC dummy	−0.040	−0.043	−0.043	−0.037
	(9.08)***	(9.70)***	(9.70)***	(8.44)***
Adjusted R^2	0.170			
Regression number	(5) OLS	(6) Tobit	(7) Tobit	(8) Tobit
ln GDP	0.025	0.027	0.023	0.027
	(12.96)***	(18.26)***	(14.49)***	(19.08)***
LDC dummy	0.041	0.049	−0.028	0.038
	(6.24)***	(6.54)***	(5.74)***	(5.25)**
Warfare	0.007	0.004	−0.007	−0.002
	(0.85)	(0.50)	(0.69)	(0.28)
Bond spread	0.057	−0.006	−0.157	−0.096
	(2.14)**	(0.14)	(3.40)***	(2.46)**
British colony dummy	0.015	0.020	0.037	
	(2.64)***	(3.32)***	(6.13)***	
Gold standard dummy	0.016	0.019	0.018	
	(3.73)***	(4.18)***	(3.40)***	
Import duties over imports	0.033	0.042	0.224	
	(2.06)**	(1.92)*	(10.80)***	
Lagged change in terms of trade	0.019	0.020	0.020	
	(1.42)	(1.15)	(1.00)	
Effective distance from London	−0.027	−0.035	0.036	
	(2.77)***	(3.48)***	(3.86)***	
Population growth rate	0.013	0.015		0.014
	(4.89)***	(6.63)***		(6.82)***
Lagged net immigration	0.011	0.014		0.012
	(8.87)***	(9.82)***		(9.64)***
Primary product exports	0.153	0.144		0.160
	(11.15)***	(9.70)***		(11.32)***
Lagged schooling	0.203	0.203		0.198
	(8.61)***	(10.01)***		(9.53)***
Urbanisation	0.157	0.158		0.141
	(3.86)***	(4.36)***		(3.99)***
Observations (of which censored)	1,054	1,054 (153)	1,054 (153)	1,138 (163)
Adjusted R^2	0.466			

Absolute values of t statistics in parentheses (robust in column (1)). *significant at 10%; **significant at 5%; ***significant at 1%.

wealth bias. Regression (8) includes population growth, immigration, natural resource endowment, schooling, and urbanisation. Now the sign on the LDC dummy is positive, suggesting that these variables are able to explain wealth bias.

Table 5 asks which of the various country characteristics mattered most. The aim of the Table is to calculate standardised coefficients for regression (2) and (6) in Table 4, allowing us to compare the magnitudes of the effects across different regressors. The exercise is complicated, however, by a few factors. First, as

Table 5

Comparing the Magnitudes of Different Effects in Table 4, Regressions (2) and (6)

	(1)	(2)	(3)	(4)			(7)	(8)
	Marginal effects decomposition						Standardised coefficients	
	$\partial E(\hat{y}\|\hat{y} > 0)/\partial x$		$\partial P(\hat{y} > 0)/\partial x$		(5) Std. Dev. Conditional on $\hat{y} > 0$	(6) Std. Dev. unconditional		
Dummies treated as:	*Continuous*	[*Discrete*]†	*Continuous*	[*Discrete*]†			from (1)	from (3)
Dependent variable					0.072	0.069		
Regression (2) from Table 4								
ln GDP***	0.008		0.082		1.576	1.567	0.165	0.128
LDC dummy***	−0.021	[−0.021]	−0.221	[−0.213]	0.494	0.493	−0.140	−0.109
Regression (6) from Table 4								
ln GDP***	0.014		0.166		1.576	1.567	0.305	0.260
LDC dummy***	0.025	[0.024]	0.300	[0.307]	0.494	0.493	0.173	0.148
Warfare	0.002	[0.002]	0.026	[0.026]	0.196	0.207	0.006	0.005
Bond spread	−0.003		−0.035		0.048	0.058	−0.002	−0.002
British colony***	0.010	[0.011]	0.120	[0.112]	0.429	0.412	0.060	0.049
Gold standard***	0.010	[0.010]	0.117	[0.118]	0.491	0.493	0.067	0.057
Tariffs*	0.022		0.258		0.115	0.116	0.035	0.030
Terms of Trade	0.010		0.122		0.097	0.102	0.014	0.012
Effective Distance***	−0.018		−0.212		0.275	0.282	−0.068	−0.060
Population growth***	0.008		0.089		1.111	1.079	0.115	0.096
Net immigration***	0.007		0.083		1.976	1.977	0.191	0.164
Primary prod. exports***	0.075		0.883		0.200	0.195	0.206	0.173
Schooling***	0.105		1.243		0.173	0.168	0.250	0.208
Urbanisation***	0.081		0.964		0.075	0.073	0.085	0.071

Sample is held constant throughout Table. In original regression: *significant at 10%; **significant at 5%; ***significant at 1%. †For dummy variables, the discrete marginal effect shown in column (2) and (4) represents change associated with a discrete change from 0 to 1 in the independent variable. Column (7) is the coefficient from column (1) multiplied by the conditional standard deviation of the independent variable in column (5) divided by the conditional standard deviation of the dependent variable at the top of column (5). This represents the number of standard deviations of change in the dependent variable associated with a one standard deviation change in the independent variable. Column (8) is the coefficient from column (3) multiplied by the unconditional standard deviation of the independent variable in column (6). This represents the numerical change in the probability of being uncensored due to a one standard deviation change in the independent variable.

Table 6

Decomposing Table 4, Regressions (2) and (6) Across Time Estimator: Tobit. Dependent variable: Gross British capital flow to country in question in year in question as a fraction of total gross British capital flows in that year

	(1) All periods	(2) Period I	(3) Period II	(4) Period III	(5) Period IV	(6) Period V	(7) Period VI
ln GDP	0.016	0.017	0.013	0.011	0.020	0.020	0.017
	(11.08)***	(5.07)***	(3.57)***	(3.29)***	(6.24)***	(4.26)***	(5.32)***
LDC dummy	−0.043	−0.026	−0.059	−0.053	−0.035	−0.036	−0.044
	(9.70)***	(2.42)**	(5.25)***	(5.09)***	(3.62)***	(2.59)**	(4.65)***
	(8) All periods	(9) Period I	(10) Period II	(11) Period III	(12) Period IV	(13) Period V	(14) Period VI
ln GDP	0.027	0.028	0.027	0.025	0.035	0.036	0.033
	(18.26)***	(4.77)***	(6.99)***	(8.29)***	(11.24)***	(8.26)***	(14.17)***
LDC dummy	0.049	−0.005	0.080	0.032	0.068	0.124	0.076
	(6.54)***	(0.21)	(4.23)***	(2.23)**	(4.53)***	(4.95)***	(5.29)***
Warfare	0.004	0.012	−0.002	−0.018	−0.043	0.033	0.016
	(0.50)	(0.54)	(0.12)	(0.38)	(2.35)**	(1.08)	(1.32)
Bond spread	−0.006	−0.071	−0.039	0.085	0.360	0.718	0.858
	(0.14)	(0.82)	(0.50)	(1.09)	(2.73)***	(2.75)***	(3.06)***
British colony dummy	0.020	0.045	0.019	0.001	0.030	−0.039	0.002
	(3.32)***	(2.23)**	(1.29)	(0.09)	(2.46)**	(2.12)**	(0.20)
Gold standard dummy	0.019	0.002	0.042	−0.000	0.032	0.061	0.023
	(4.18)***	(0.16)	(3.43)***	(0.02)	(2.95)***	(4.20)***	(2.76)***
Import duties over imports	0.042	0.212	−0.037	−0.065	−0.129	−0.162	−0.081
	(1.92)*	(3.50)***	(0.63)	(1.47)	(2.40)**	(2.15)**	(1.75)*
Lagged change in Terms of trade	0.020	0.019	−0.034	0.031	0.011	−0.001	0.045
	(1.15)	(0.39)	(0.67)	(0.94)	(0.38)	(0.02)	(1.58)
Effective distance from London	−0.035	−0.017	−0.043	−0.038	−0.049	−0.057	−0.144
	(3.48)***	(0.80)	(1.74)*	(1.36)	(1.84)*	(1.33)	(7.90)***
Population growth rate	0.015	−0.002	0.042	0.026	0.011	0.024	0.017
	(6.63)***	(0.36)	(6.12)***	(5.15)***	(1.87)*	(2.80)***	(3.73)***
Lagged net immigration	0.014	0.012	0.014	0.020	0.012	0.021	0.018
	(9.82)***	(2.59)**	(3.28)***	(6.40)***	(4.36)***	(5.05)***	(8.68)***
Primary product exports	0.144	0.059	0.149	0.173	0.208	0.261	0.244
	(9.70)***	(1.42)	(4.56)***	(5.61)***	(6.27)***	(5.30)***	(9.50)***
Lagged schooling	0.203	0.054	0.275	0.235	0.191	0.382	0.294
	(10.01)***	(0.73)	(4.85)***	(5.42)***	(4.72)***	(6.74)***	(8.89)***
Urbanisation	0.158	−0.132	0.160	0.072	0.373	0.091	0.112
	(4.36)***	(0.89)	(1.87)*	(0.94)	(4.85)***	(0.72)	(1.88)*
Observations (of which censored)	1,054 (153)	172 (32)	191 (29)	196 (33)	196 (32)	129 (18)	170 (9)

Absolute value of t statistics in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include a constant term (not reported).

Table 7

Determinants of Bond Yield Spreads and of Lending to the Public versus Private Sector

Dependent variable		(2) Tobit Public sector†	(4) Tobit Private sector‡
ln GDP		0.012	0.022
		(2.96)***	(12.30)***
LDC dummy		−0.052	−0.060
		(4.07)***	(10.62)***
Dependent variable	(1) OLS Bond spread	(3) Tobit Public sector†	(5) Tobit Private sector‡
ln GDP		0.018	0.040
		(3.73)***	(22.04)***
LDC dummy		0.060	0.059
		(2.35)**	(6.45)***
Warfare		0.041	−0.014
		(1.43)	(1.28)
Bond spread		−0.975	0.056
		(3.80)***	(1.14)
British colony dummy	−0.031	0.074	0.003
	(6.18)***	(4.00)***	(0.42)
Gold standard dummy	−0.012	0.036	0.018
	(4.23)***	(2.37)**	(3.24)***
Tariffs	0.124	−0.113	0.094
	(4.58)***	(1.43)	(3.54)***
Lagged change in Terms of Trade	−0.013	0.086	0.006
	(0.84)	(1.53)	(0.27)
Effective distance	0.069	0.011	−0.069
	(5.53)***	(0.35)	(5.60)***
Population growth rate	−0.006	0.011	0.021
	(4.00)***	(1.67)*	(7.89)***
Lagged net immigration	−0.002	0.021	0.019
	(2.39)**	(4.47)***	(11.57)***
Primary product exports	0.009	0.153	0.218
	(1.10)	(2.94)***	(12.12)***
Lagged schooling	−0.021	0.027	0.320
	(2.54)**	(0.41)	(13.17)***
Urbanisation	−0.093	0.335	0.082
	(4.22)***	(2.96)***	(1.89)*
Observations (of which censored)	1,054	1,054 (405)	1,054 (196)
R^2	0.297		

Absolute value of t statistics in parentheses (robust in column (1)). *significant at 10%; **significant at 5%; ***significant at 1%. †'Public sector' signifies that the dependent variable is the gross flow of British capital to government borrowers in the country and year in question as a share of all British capital going to government borrowers in that year. ‡'Private sector' signifies that the dependent variable is the gross flow of British capital to private sector borrowers in the country and year in question as a share of all British capital going to private sector borrowers in that year.

McDonald and Moffit (1980) point out, the tobit coefficients reported in Table 4 represent an amalgam of two effects: the marginal effect of a change in the regressor on the value of the regressand conditional on the latter being uncensored and the marginal effect on the probability that the observation is censored. Both of these may be of interest. Second, we must treat dummy variables as continuous in order to make a meaningful comparison of standardised marginal

effects across regressors but the marginal effects of discrete changes in the dummy variables may also be of interest and are therefore reported in the Table.

Columns (1) and (2) of Table 5 show the marginal effect of a unit change in the underlying regressor on the dependent variable (share of all British capital exports in each year received by the country in question) conditional on the observation being uncensored. That is, this is the effect of the regressor on capital flows in those countries that received strictly positive flows. Column (3) and (4) show the marginal effect of a unit change in the underlying regressor on the censoring probability, the probability that a country received no British capital in a given year. Column (5) and (6) report the standard deviation of the underlying regressors, conditional on uncensored and unconditional, respectively. Columns (7) and (8) report standardised coefficients from columns (1) and (3). Column (7) reports the number of standard deviations of change in the dependent variable that are associated with a one standard deviation change in the regressor, all conditional on the observation being uncensored. Column (8) reports the numeric change in censoring probability associated with a one standard deviation change in the regressor (unconditional).

Table 5 contains two key lessons. The first is the exact degree of wealth bias and the degree to which it is explained in this analysis. Column (2) shows that among those countries that received positive capital flows, controlling only for the size of the economy the typical less developed country received a share of British capital that was smaller by 2.1% of total capital exports than the share received by a typical rich country – an enormous difference in a world where the average share was 2.9% of total capital exports.[20] After controlling for country characteristics, however, the typical LDC received a share of British capital that was 2.4% *larger* than the typical rich-country share. Column (4) shows that controlling only for size of the economy, LDCs were 21.3% more likely to receive zero British capital. After controlling for country characteristics, LDCs were 30.7% *less* likely to receive zero capital.

The second lesson is that certain country characteristics mattered much more than others in determining capital flows. The standardised coefficients of column (7) show that schooling, natural resource endowment, demographic structure, immigration and urbanisation dominate the explanatory power of British colony, Gold Standard, tariffs, terms of trade shocks and effective distance.[21] Capital flows are almost eight times as sensitive to the former group of variables as a whole as they were to the latter group as a whole.

Table 6 shows that these findings are robust to disaggregation across time periods. The Table decomposes regression (2) and (6) from Table 4 into six subsamples according to the time periods delineated in Figure 2. Regression (1) and (8) in Table 6 simply replicate regression (2) and (6) from Table 4. Regres-

[20] The share of a typical country in any year when there are 34 recipient countries is 1/34, or 2.94%. This must always be true given how our share variable is constructed, and is the reason why very different types of capital flow share variables have the same mean in Table 3.

[21] Effective distance from London is calculated as the physical distance of the shortest available shipping route between London and the closest principal port of the country in question (pre-Panama Canal, post-Suez Canal) multiplied by an index of transoceanic shipping costs. See Data Appendix for details, available from the authors on request.

sions (2) to (7) in Table 6 show that wealth bias was quite consistent across time, and regressions (9) to (14) show that the added regressors can explain wealth bias in every period except period I. In general, schooling, natural resource endowment, demographic structure, immigration, and urbanisation matter more in each period and matter more consistently across periods. The positive effect of tariffs appears confined to the first period. The sample is held constant between vertically-paired regressions.

3.1.2. *Rejecting the global capital market failure view of the wealth bias*

The evidence in Tables 4 to 6 is consistent with the predictions of the unproductive domestic capital view of the wealth bias but not with those of the global capital market failure view. The global capital market failure view predicts that involvement in warfare should have choked off British capital inflows, that countries with a higher sovereign bond spread should have received a smaller share of British capital and that country fundamentals unrelated to creditworthiness should not have affected inflows. In fact, country fundamentals were the best determinants of flows and overpower the effects of warfare and bond spreads. It cannot be said that the global capital market failure view is totally without merit; after all, bond spread, British colony, the Gold Standard, terms of trade shocks and effective distance from London all have the predicted signs. However, the market failure view pales in importance compared with the competing unproductive domestic capital view.

How can we be sure that the 'fundamentals' are not proxies for creditworthiness? Could natural resource endowment or education have made a recipient country more creditworthy in the eyes of British investors, rather than directly affecting the return to capital? Regression (1) in Table 7 explores this issue. The dependent variable is the spread between the yield on sovereign bonds in 27 countries and the yield on the riskless British Consol. The results are consistent with the premise that the bond spread captures investment risk: British colonies and those on the Gold Standard had lower spreads, while highly protected countries far from London had higher spreads. Natural resource endowment did not affect bond spread in a statistically significant way, although schooling, population growth and immigration were statistically significant predictors of lower bond spreads. Recall from Table 4, however, that even after accounting for the effect of these latter three variables on creditworthiness (by including bond spread as a regressor), they remain some of the top determinants of capital flows. It is for this reason that we describe them along with natural resource endowment as 'fundamentals', or factors that affect capital flows through their effect on the return to domestic capital.

Just because the predictors of bond spread have the 'right' sign does not, of course, prove unambiguously that bond spreads capture creditworthiness. In the transition from autarky (around 1870) to integrated world capital markets (around 1913), bond spreads would have had very different meaning: bond spreads would have attracted capital at the start, while at the end they should have been an indicator of risk, thus deterring foreign capital. Figure 3 reveals a massive global convergence in bond spreads in the years leading up to World

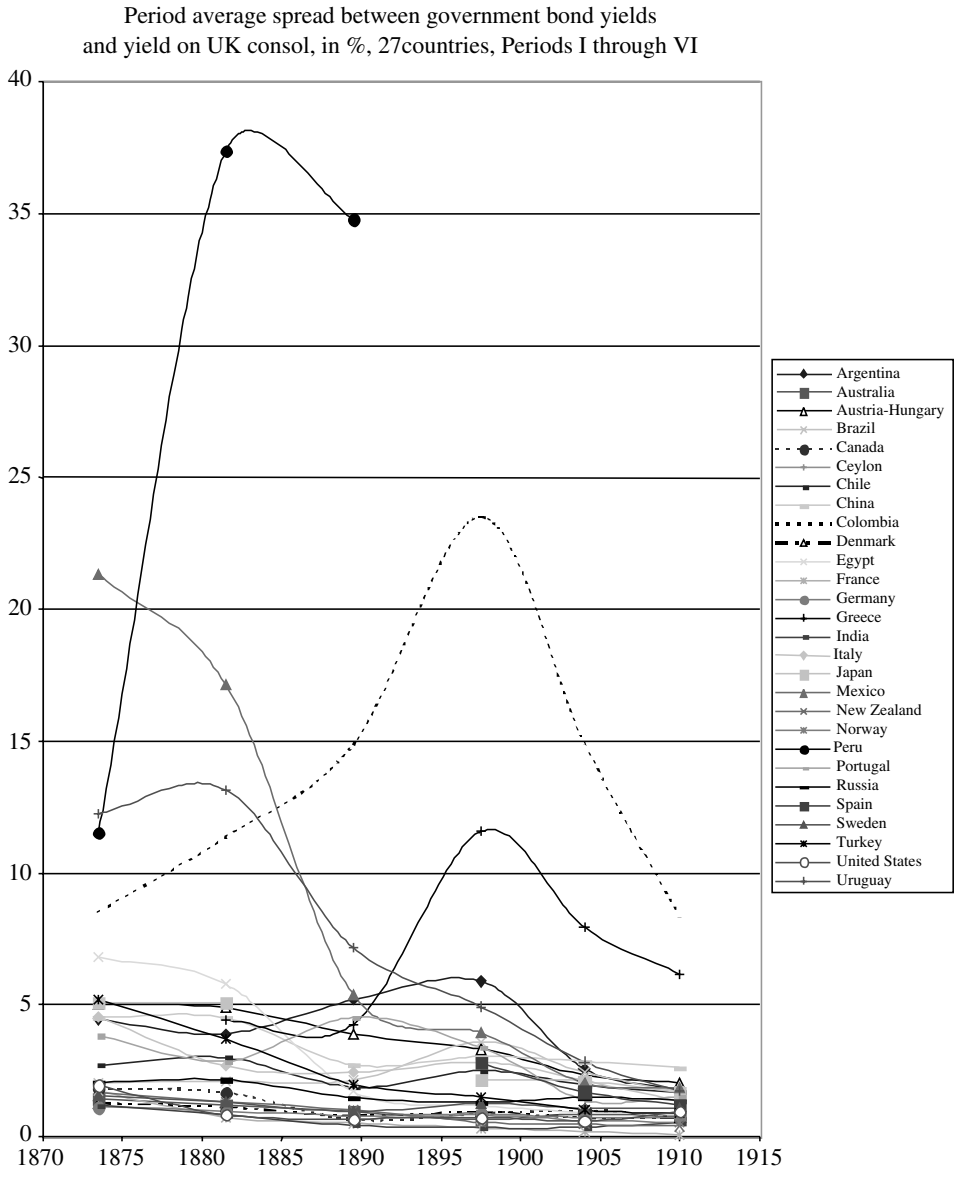

Fig. 3. *Convergence in Sovereign Bond Yields During the First Global Capital Export Boom*
Source: Taylor (2000)

War 1, a phenomenon discussed elsewhere (Mauro *et al.*, 2002). Not only does the mean of these spreads fall from 4.07% to 1.65% between periods III and VI but the coefficient of variation also falls from 1.75 to 1.07. We interpret this evidence as support for the view that bond spreads were increasingly an indicator of creditworthiness.

3.1.3. *Specification*

Our conclusions are robust to several changes of regression specification. Regressions (7) and (8) in Table 4 show that the sign change on LDC between regressions (2) and (6) does not spring from a paucity in degrees of freedom. Inclusion of just a few of the variables associated with the unproductive domestic capital view largely reproduces the results of regression (6), while inclusion of the same number of variables related to the global capital market failure view cannot explain the wealth bias.[22]

3.1.4. *Endogeneity bias*

We have treated immigration as exogenous to capital flows and to the other fundamentals of the right-hand side. That certainly would have been so if European 'push' conditions dominated. But a rich literature makes it clear that the mass migrations were also determined by 'pull' in receiving regions (Hatton and Williamson, 1998). Since we are uncertain about whether push or pull dominated, we run all regressions using lagged immigration, defined as average net immigration lagged by ten years.

We have also treated education and natural resource endowment as exogenous. We are sympathetic to any argument suggesting that British investment may have raised the returns to education in recipient countries. Note, however, that our education regressor is lagged by 15 years. We also agree that British investment contributed to the development of natural resources in the recipient countries. But regressing period VI capital flows on period I natural resource endowment does not alter the status of this variable as a primary determinant of capital flows. This is not a surprise, since less than 10% of British capital exports were invested directly in projects to extract natural resources such as metals, nitrates, oil, tea, coffee, and rubber (Stone, 1999). The vast majority of British capital went to railroads and other transportation infrastructure, financial institutions, factories and communications infrastructure.

3.1.5. *Influential observations*

Major recipients of British capital included the US, Argentina, Australia, and Canada. Was one of these countries largely responsible for the results in Tables 4 to 7? Additionally, it is not known how much British investment in 'China' was actually investment in resource-poor Hong Kong. Would the elimination of China alter the results? The following are the standardised marginal effects on British capital share with respect to the LDC dummy from column (7) of Table 5 when various countries are omitted from the sample: Argentina, 0.240; Australia, 0.144; Canada, 0.175; China 0.141; US, 0.120 (whole sample: 0.173). The standardised

[22] Neither do several other changes of specification, not reported here, alter our results. OLS cross section regressions on averages across each of the six periods retain the ability of fundamentals to explain wealth bias. A version of Table 6 that includes country random effects and a correction for serial correlation retains the ability of country fundamentals to explain wealth bias in all but one of the periods where it is explained by Table 6 (period III). Including exchange rate variance or an indicator of Gold, Silver or Bimetallic standard instead of just the Gold Standard; including variance in Terms of Trade instead of cumulative change in Terms of Trade; or defining 'LDC' according to relative PPP-adjusted real wage levels do not materially alter the results.

coefficient on natural resource endowment when China is omitted is 0.235 (whole sample: 0.206). In all cases the underlying coefficient estimates remain statistically significant at the 1% level. In short, none of these countries by itself can be driving the ability of fundamentals to explain wealth bias.

3.1.6. *Selection bias*

We have implicitly assumed that if borrowing countries have some preference for the nationality of their creditors, it is uncorrelated with the borrower traits we have included as regressors. For example, it could be that the reason we observe more British capital going to better-educated countries is because less-educated countries tended to borrow in Berlin or Paris. While we are not aware of comparable data on German and French capital flows to test this hypothesis directly, we are highly sceptical of its relevance. First, the most natural dimension for self-selection, colonial affiliation, has far less importance than other determinants of flows. Second, Table 1 shows that the fraction of French and German capital going to Western Europe – where schooling and urbanisation were high – was much greater than the corresponding figure for Britain. Third, Britain provided roughly half the world supply of international capital during the period in question (Obstfeld and Taylor, 2003), a dominance capable of constraining borrower self-selection. Fourth, while it is reasonable that resource-poor or human capital-poor countries might require more sophisticated financial instruments to hedge against risk, no country competed successfully with British financial technology at this time.

3.1.7. *Global capital market deepening and transitions through time*

Table 6 documents an upward drift in the share of British capital flows explained, and, furthermore, that the fundamentals exhibit a stronger impact as the decades unfold.[23] What made flows respond to fundamentals after 1890s more than they had previously? Figures 2 and 3 suggest that the international capital market was simply deeper than it had been before[24] as British capital spread to a wider area than ever before – including major movements to Brazil, Mexico, Chile, Egypt, South Africa, India, Russia, and the Far East (Hobson, 1914, pp. 157–8). Feis (1930, pp. 12–3) puts it thus:

> Changing political relations took British capital into countries from which it had previously abstained – Japan [Alliance of 1902], Russia [Anglo-Russian agreement, 1907], and Turkey. But more important than these causes in

[23] This shift is statistically significant. We include a dummy variable for periods IV, V and VI, as well as interaction terms between this dummy and the explanatory variables from British colony to urbanisation. A positive and significant interaction term is interpreted as signifying an increase in the coefficient value between periods I–III and periods IV–VI. Omitting period I, a Chow test fails to reject that all the interaction terms are jointly equal to zero for British colony, Gold Standard, tariffs, terms of trade, and effective distance ($F(5, 856) = 0.56$, p-value 0.731). A similar Chow test rejects the hypothesis that the interaction terms are jointly zero for 'fundamentals' population growth, immigration, primary product exports, schooling and urbanisation ($F(5, 856) = 6.02$, p-value < 0.0005). Including period I, the respective statistics are $F(5, 1028) = 2.22$ (p-value 0.0503) and $F(5, 1028) = 2.17$ (p-value 0.0549). In other words, from periods II and III (1878–93) to periods IV–VI (1894–1913) there was a statistically significant increase in the explanatory power of the 'fundamentals' but not in the other regressors.

[24] Only about 40% of British capital exports that occurred during 1870–1914 flowed overseas before 1895.

> producing a great growth in foreign investment was the fact that during the 1900–1914 period those distant lands to which the capital had been going in earlier periods, seemed to have overcome the risks and crashes of their first growth. Now in the greater stability and greater order of their development, they needed still more capital than before and offered surer return. Or – the idea presents itself in alternative form – it was as though many regions of the world in which British capital had invested itself had come to fit themselves better for the investment, learning from pioneer failures.

Gallman and Davis (2001, Ch. 7) provide extensive evidence of 'financial deepening' in British capital recipient countries during this period, including rising measures of total financial assets and assets of financial intermediaries as a fraction of GNP.

There may, of course, be other reasons why the fundamentals exhibit an increasingly powerful influence through time. Economic historians have long argued that conventional physical capital accumulation mattered far more in the 19th century, while human capital accumulation mattered far more in the 20th century, the changing mode of accumulation driven by the evolution of technologies on the demand side and/or by the release of constraints on schooling investment on the supply side. Perhaps the somewhat increasing importance of human capital endowment as a determinant of British capital inflows simply reflects this transition.

One explanation for the increasing importance of fundamentals over time can be easily ruled out. If the data on British capital exports included re-investment in debt that was periodically 'rolled over', one might expect that a country with fundamentals that attracted capital would build up a larger and larger stock of debt over time, thus experiencing ever larger 'rollover' inflows of capital. The flows explored here do not, however, include debt rollover. Rather, they were compiled to include only 'new issues', and only reflect actual financial transfers rather than accounting changes (Stone, 1999; Jenks, 1927). Furthermore, a necessary condition for this 'rollover' explanation would be to observe long-term persistence in the geographical distribution of flows. Table 8 shows Spearman's correlation coefficient between the rankings of British capital recipients in the six periods; there is very little persistence in the evidence.

3.2. *Capital Flows to Governments and to the Private Sector*

Disaggregating capital flows by recipient sector allows us to learn even more about how they were determined. Table 9 shows that during most of the pre-war years, British capital exports were primarily invested in the private sector of the destination country. What drove flows to governments and how did these interact with flows to the private sector? Regressions (2) and (3) in Table 7 explore the determinants of flows to governments, while regressions (4) and (5) do the same for capital flows to private sector borrowers. The first item to note is that the wealth bias is alive and well for both types of flows, as is the ability of the included covariates to explain it and change the sign on the LDC dummy.

Table 8

Spearman's Correlation Coefficient for the Rank Order of the 34 British Capital Recipients in Six Periods, by Share of British Capital Received

	Period I	Period II	Period III	Period IV	Period V	Period VI
Period I	1.000	0.039	0.053	−0.024	−0.005	−0.061
Period II	–	1.000	0.263	0.342	0.099	0.300
Period III	–	–	1.000	0.268	0.108	0.206
Period IV	–	–	–	1.000	0.285	0.397
Period V	–	–	–	–	1.000	0.272
Period VI	–	–	–	–	–	1.000

In each period, all countries were ranked from 1 to 34 according to the share of total British capital exports in that period received by each country, in descending order. The numbers in the Table represent Spearman's (equivalently Pearson's) correlation coefficient between rank orderings in different periods. They are intended as an indicator of period-to-period persistence in the geographic distribution of British capital exports. Periods are defined in Figure 2.

Also noteworthy are certain broad differences between government and private sector flows. Government flows were more closely associated with British colonies, low bond spreads, Gold Standard participants and highly urbanised countries. Private sector flows were more closely associated with large natural resource endowments, growing populations and educated populations. That British colonial status mattered for government flows is to be expected in light of the highly unreliable contract enforcement efforts by the British government on behalf of British investors in foreign governments documented by Feis (1930, pp. 98–117). Such interventions were often guided more by British political or territorial aspirations than by a sense of duty to its investors and those investors suffered the many defaults catalogued by Lindert and Morton (1989).

Abundant anecdotal evidence suggests that warfare was an important determinant of demand for sovereign borrowing, which in itself would make capital flows to governments unrelated to recipient country characteristics, even without international market failure. There were massive loans to the French and German governments during the Franco-Prussian War in the 1870s, to the South African government at the time of the Boer War in the 1890s and to the Japanese government to finance its war with Russia just after 1900. In each of these cases, total

Table 9

Percentage of British Capital Exports to 34 Countries, by Recipient Sector

		Public Sector	Private Sector
Period I	1870–1877	55.4	44.6
Period II	1878–1885	42.3	57.7
Period III	1886–1893	33.0	67.0
Period IV	1894–1901	39.0	61.0
Period V	1902–1906	29.6	70.4
Period VI	1907–1913	28.1	71.9

Source: Stone (1999).

wartime sovereign borrowing dramatically exceeded the cumulative total of all peacetime borrowing during the five decades that preceded the First World War. Contemporary observers likewise identified warfare as the primary determinant of sovereign borrowing.

Although warfare is not statistically significant in Table 7, the magnitude of the coefficient is much larger than in the corresponding regressions with total capital flows as the dependent variable. Upon decomposing the results of regression (3) in the fashion of Table 5, we observe that the effect of a discrete change in the warfare dummy on the government flows (conditional on uncensored) was 0.0121, or six times larger than for total capital flows. The effect on probability uncensored is 0.104, or about four times larger than for total capital flows. The analysis of Section 2 showed that the global-capital-market-failure view predicts a *negative* coefficient on warfare, which we do not observe.

We must be cautious, of course, in drawing a hard and clear line between flows to governments and flows to the private sector, as Simon, Jenks and Stone defined them. For one thing, government involvement in many of these 'private sector' loans tended to be heavy – especially in the case of railroads, the largest category of private sector borrowing. Whether through land grants, subsidies, or loan guarantees, governments were indirect partners to many private sector investments (Nurkse, 1954, p. 749). Furthermore, when analysing these flows from the perspective of the 21st century, we must remember that most of these private-sector flows went to investments in what Simon (1968, p. 23) calls 'social overhead capital'. These included projects with significant positive externalities – like railroads and public utilities – projects often undertaken today by government borrowers.

3.3. *Investment in Governments Crowded-in Private Investment*

Table 10 suggests that previous investment in governments 'crowded in' subsequent private sector investment. Capital flow data in this Table were divided into

Table 10

Evidence that Investment in the Public Sector 'Crowded In' Investment in the Private Sector but not the Other Way Around

Regressand:	Current investment in private sector		Current Investment in public sector	
Estimator:	Panel Fixed Effects	Anderson-Hsiao	Panel Fixed Effects	Anderson-Hsiao
Regressor:				
Lagged investment in private sector	−0.2393	−0.6698	0.05996	0.05299
	(3.670)***	(4.415)***	(1.465)	(1.023)
Lagged investment in public sector	0.1587	0.4817	−0.3661	0.01493
	(1.721)*	(3.852)***	(6.320)***	(0.100)
Observations	272	238	272	238

Absolute values of t-statistics are in parentheses. *Significant at the 10% level. ***Significant at the 1% level. Data have been divided into ten periods of five years each. Variable values are averages over each period. See text for a description of the particular Anderson-Hsiao estimator used.

ten periods of five years each, over which annual variable values are averaged, and 'lagged' refers to the five-year period preceding the one in question. Because two lags were necessary for the panel fixed-effects model, the number of observations is (34 countries × 10 periods) − (34 countries × 2 lags) = 272. Similarly, the Anderson-Hsiao estimator, which uses 3 lags, lowers the number of observations to 238.

The panel fixed-effect estimates reveal a positive effect of lagged public sector investment on current private sector investment (significant at 9%), while the effect of lagged private sector investment on current public sector investment is much smaller and insignificant. It is well known, however, that inclusion of a lagged dependent variable in a fixed-effects panel regression can produce severely biased coefficients, especially for small panels like this one (Nickell, 1981). Anderson and Hsiao (1981) offer a solution by instrumenting for the once-differenced dependent variable with the twice-differenced dependent variable.[25] The results of this Anderson-Hsiao estimation are also reported in Table 10. The crowding-in effect of public sector investment on private is confirmed and again no such causation is seen from private sector investment to public. Note the negative coefficient for past private investment regressed on current private investment, likely reflecting the fact that in each period private investment was expanding into countries that had never received it before. This again illustrates the deepening of the global capital market over time. Furthermore, it argues against geographic persistence of public (and thus total) investment flows: public investment tended to grow in wartime and shrink in peacetime; it did not progressively expand.

Why did crowding-in take place? One explanation might be that loaning to public entities contributed to financial deepening: for example, investment in the government debt of South Africa during the Boer War may have opened investors' eyes to private sector opportunities subsequently. Alternatively, private investment followed investment in governments because governments borrowed to make war, and the private sector subsequently borrowed to rebuild the country or to make good on foregone private accumulation.

4. Discussion and Historiography

The question of whether pre-WWI British capital exports were driven by domestic capital productivity or by global market failure has been around at least since Hobson, who was writing at the capital export peak. Hobson raised the question and then offered as an explanation the declining importance of global market failure and thus, presumably, the rising importance of capital productivity fundamentals (Hobson, 1914, p. xii). Were Hobson alive today, he probably would want to leave his explanation unchanged. After all, the evidence we have presented suggests that the largest capital exporter in history was indeed sending its money where it could earn the highest return and that was where the fundamentals served to raise capital's productivity.

[25] Judson and Owen (1999) use a Monte Carlo approach to demonstrate that the Anderson-Hsiao estimator essentially eliminates this bias, though it is not as efficient as other methods for small panels.

As Edelstein (1982, p. 7) points out, the idea that third factors like land could allow for increasing returns to British capital exports in newly-settled regions goes back at least to Adam Smith (1776, pp. 89–93). Feis (1930, pp. 25, 31) also favoured third-factor fundamentals by asserting that the 'British investor was sending his capital where there was the growth of youth, and where the land was yielding riches to the initial application of human labour and technical skill', undeterred by '[s]trong risks, bad climates' and 'isolation'. After clearly identifying the wealth bias by stating that 'income per head in the principal debtor countries of the nineteenth century – the newly settled regions – can never have been far below European levels', Nurkse (1954, p. 757) also concludes that capital was attracted 'not to the neediest countries with their ''teeming millions''', but rather chased the 'great migration' to the 'spacious, fertile, and virtually empty plains' of certain countries (pp. 745, 750). Thus, our answer to Hobson's question is not new.

4.1. *Second-Order Determinants of Flows*

This paper provides empirical confirmation of the views of pioneer analysts of the global capital market and shows that they are superior to competitors. We now consider several popular competing explanations of British capital flows which we find to be of only secondary importance.

4.1.1. *Terms of trade*

We can find no evidence supporting the view that capital flows were primarily driven by recent terms of trade shocks. Thomas (1968, pp. 49–50) felt that 'movements in the terms of trade are to be looked upon more as consequences than as causal forces' of capital flows. 'Cairncross [1953]', he writes, 'has to go out of his way to find reasons why heavy British capital exports in the eighties should have coincided with a *deterioration* in the terms of trade of the borrowing countries, for the link seemed to work so well in the nineties and the 1900s'. In defence of his critique, Thomas expounds a plausible model of causation from capital flows to terms of trade. Our results support his critique (but not necessarily his model).

4.1.2. *Colonial status*

Many historians have viewed British capital exports as part and parcel of British colonial expansion. This view appears reasonable in light of such developments as the 1900 revision of the Colonial Stocks Act, which promoted Empire investment by allowing registered securities in British colonies and dominions to be purchased by trust bodies and large institutional investors previously banned from foreign investment (Feis, 1930, pp. 92–5). Yet, many have criticised this view by simply citing counter-examples like non-Empire capital flows to Argentina and the US (Simon, 1968, p. 24; Platt, 1986, p. 25). What we add here is multivariate, quantitative support their univariate, qualitative analysis. Our results leave no doubt whatsoever that markets mattered far more than flag for private-sector British investment heading abroad. British colonies did get a larger share of capital flows to government recipients, but market concern was the first-order determinant of destination.

4.1.3. *The Gold Standard*

Eichengreen (1996, p. 18) has stated unequivocally that in the 1870s, '[i]ndustrialisation rendered the one country already on gold, Great Britain, the world's leading economic power and the main source of foreign finance. This encouraged other countries seeking to trade with and import capital from Britain to follow its example'. While we also detect a positive and statistically significant effect of participation in the Gold Standard, the magnitude of this effect on investment flows is much lower than the effects of natural resources, education, demographic structure and capital scarcity, and somewhat lower than urbanisation.

There are many possible explanations for our finding but the prominent one is that the effects of economic, demographic and geographic fundamentals simply outweighed the effects of the Gold Standard. Bordo and Schwartz (1996, p. 41) find anecdotal evidence that 'adherence to the rule by Argentina may have had some marginal influence on capital calls … before 1890 … but that the key determinant was the opening up of the country's vast resources to economic development once unification and a modicum of political stability were achieved'. We confirm the Bordo and Schwartz Argentina finding on a global scale: if the fundamentals were not satisfied, going on gold did not bring in the capital. Based on a sample of nine capital-importing countries, Bordo and Rockoff (1996) argue that adopting the Gold Standard lowered the costs of borrowing in world capital markets and that it served as a 'good housekeeping seal of approval'.[26] However, Bordo and Rockoff do not control for any economic, demographic or geographic fundamentals. Flandreau *et al.* (1998) and Obstfeld and Taylor (2003) also find an association between lower interest rate spreads and going on gold, but again without controlling for a range of determinants of capital productivity. We do not dispute these findings – indeed the coefficient on gold in Table 4 confirms them – but we do suggest that gold was nowhere near the most important determinant of flows.

5. Conclusion

During the first globalisation boom prior to World War I, British capital did not go to poor, labour abundant economies. We call this the wealth bias. The evidence rejects the global-capital-market-failure explanation of the wealth bias. British foreign investment went where it was most profitable – chasing natural resources, educated populations, migrants, and young, urban populations. Flows to private sector investment opportunities abroad were also encouraged by previous investments in government-financed projects.

We should stress what our results do *not* imply. They do *not* suggest that global capital market failure was absent in the years leading up to the First World War. Rather, they suggest that the observed wealth bias was not explained by global capital market failure. It is surely possible to imagine capital flows that – although unobservable because global capital market failure stopped them cold – would

[26] While recently exploring the determinants of the gold standard, Meissner (2002, p. 33) also lent his support to good-housekeeping-seal-of-approval view.

have gone primarily to capital-poor countries. One candidate for such flows is investment in manufacturing, which accounted for less than 4% of British capital exports (Simon, 1968, p. 23). Edelstein (1982, pp. 41–2) points to market failure as the cause of this tiny figure, citing insuperable informational advantages of local manufacturers in local input and output markets. He also mentions the increasing importance of tariff barriers abroad in keeping British manufacturing investment at home. Feis (1930, p.31) agrees, calling foreign industrial investment 'risky [and] difficult to manage well from a distance'. We do not have the evidence to assert that such imaginary flows would also have chased resources, education, migrants, urbanisation and youth.

British capital flows to sub-Saharan Africa were modest but we certainly do not claim that this region lacked natural resources. Perhaps there is an extremely low GDP *per capita* threshold below which capital market failure is the primary determinant of capital flows. Since this level lies below the lowest GDP *per capita* in our data, we cannot test this hypothesis. We can only reiterate that our data cover about nine tenths of the world population and almost all of the global economy of that time, as well as an extremely wide range of GDP *per capita* levels from the very wealthy to the very poor.

Global capital market failure did not determine how large a slice of the British-capital-export pie was received by a given capital-importing country at the height of the boom. Furthermore, the major fundamentals that determined where capital went were, in order of importance, schooling, natural resource endowment, and demographic attributes. Whether the fundamentals driving capital exports in the late 19th century were the same as those driving capital exports in the late 20th century is a question that could certainly be answered, but it must await future research.

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