NBER WORKING PAPER SERIES

FOREIGN CAPITAL AND ECONOMIC GROWTH IN THE FIRST ERA OF GLOBALIZATION

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Working Paper 13577
http://www.nber.org/papers/w13577

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 2007

Comments from Olivier Jeanne, Paolo Mauro, Brian Pinto, Moritz Schularick and conference participants at the World Bank, Strasbourg Cliometrics, the World Economy and Global Finance Conference at Warwick and the Conference on Globalization and Democracy at Princeton University were very helpful. Seminar audiences at Carlos III, Manchester University, Nova University Lisbon, Paris School of Economics, and Trinity College Dublin also provided generous feedback on an earlier version. Antonio David and Wagner Dada provided excellent research assistance for early data collection. We thank Michael Clemens, David Leblang, Moritz Schularick, Alan Taylor, and Jeff Williamson for help with or use of their data. The financial assistance from the UK's ESRC helped build some of the data set that underlies this paper and supported this research. We acknowledge this with pleasure. Errors remain our responsibility. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 13577
November 2007
JEL No. E22,F21,F32,F43,N1,N20

ABSTRACT

We explore the association between economic growth and participation in the international capital market. In standard growth regressions, we find mixed evidence of any association between economic growth and foreign capital inflows. If there is an impact, it comes with a long lag and it is transitory having no impact on either the steady state or the short run growth rate. This suggests a view that there were long gestation lags of large fixed investments and it is also consistent with a neoclassical growth model. We also argue for a negative indirect channel via financial crises. These followed on the heels of large inflows and sudden stops of capital inflows often erasing the equivalent of several years of growth. We then take a balance sheet perspective on crises and explore other determinants of debt crises and currency crises including the currency composition of debt, debt intolerance and the role of political institutions. We argue that the set of countries that gained the least from capital flows in terms of growth outcomes in this period were those that had currency crises, foreign currency exposure on their national balance sheets, poorly developed financial markets and presidential political systems. Countries with credible commitments and sound fiscal and financial policies avoided major financial crises and achieved higher per capita incomes by the end of the period despite the potential of facing sudden stops of capital inflows, major current account reversals and currency crises that accompanied international capital markets free of capital controls.

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1. Introduction

The period from 1880-1913 was a period of globalization in both goods and financial markets comparable to the present era of globalization. Growth of international trade surged. The average ratio of merchandise exports to GDP doubled between 1870 and 1913. Transportation costs fell, and tariffs stayed low compared to their levels after 1913. It was also an age of mass migration with few impediments to the flow of people across borders. Financial globalization burgeoned; current account deficits persisted for long periods; and several nations imported foreign capital to the tune of at least three to five percent of GDP each year. In 1913 Obstfeld and Taylor (2004) estimate that the ratio of net foreign liabilities to global GDP was on the order of 25 percent. Of great importance, capital controls were non-existent.

Today, opponents and supporters of "globalization" argue vigorously about the benefits of such a process. With respect to financial globalization, optimists suggest that opening up to global capital markets can make crucial investment funds available at a lower cost, enhance risk sharing, transfer technology and reign in errant policy makers. Pessimists suggest that global capital flows are fickle and move for reasons unrelated to fundamentals causing financial disruption and economic volatility. Decoupling from the global capital market through the use of capital controls can help protect a country from temperamental financial markets.

Optimists might cite as evidence for their view the late nineteenth century when many countries seem to have benefited from the free movement of capital. The areas of recent European settlement such as Australia, Canada, the United States, and even parts of Argentina and Brazil had high standards of living and witnessed rapid economic growth. Inward investment to these areas, coming largely from Great Britain, was massive prior to 1913. Much of this financing went into fixed interest rate long-term bonds that national governments and local companies issued in London to fund infrastructure and railroads. The standard view in economic history holds that funds were essential in building productive capacity and improving the infrastructure that would

allow goods to reach ever larger international markets. But countries often squandered these inflows on frivolous military campaigns, excessive public consumption or poorly engineered projects. In addition, many countries built up large negative net foreign asset positions and were perilously unprepared for the rapid cessation of capital inflows that periodically afflicted such exposed countries. These sudden stops and reversals often culminated in financial crises particularly in financially vulnerable countries. Currency crises, banking crises and twin crises were not an uncommon feature of the period. A number of nations also faced debt crises that led to economic catastrophe and debilitated nascent domestic financial systems.

This leads us to ask several questions:

- Was reliance on the global capital market associated with faster economic growth?

- Did foreign capital contribute to the probability of having financial crises and sudden stops? If so did these reduce the growth benefits of international financial integration?

- What were the determinants of financial crises? Why were some countries able to borrow so heavily and have so few financial crises while others borrowed relatively little and still suffered from financial meltdowns?

We find no evidence of a *direct* positive association in the very short run between economic growth and reliance on foreign capital. We also find no evidence supporting a link between foreign capital and long-run or steady state growth rates. However, in the medium run, over five or ten year periods, surges in foreign capital do seem to have been positively associated with stronger growth. Some evidence suggests these growth blips occurred with a ten to fifteen year lag. This is consistent with the fact that much of the private foreign capital of the period went into large infrastructure investments. Economic historians have pointed to several cases where such investment took a decade or more to

yield significant benefits to the domestic economies. We provide comparative evidence that this may have indeed been the case.

Moreover, we find an indirect link from capital market integration to temporarily lower economic growth via financial crises. Nations that borrowed abroad heavily were more likely to have faced a sharp turn around in their current accounts. These were associated with currency crises when credibility and financial development were weak.[1] Currency fluctuations in turn deteriorated the 'balance sheets' of these nations and led to debt servicing problems. In nations where executive decisions ruled over democratic consensus, debt default and further economic losses ensued.

Our assessment of the growth benefits of capital market integration prior to World War I is thus mixed. If there is a positive impact on growth, it is most likely transitory and it took at least a decade to be realized due to the nature of the investment at the time. Moreover, crises seem to be associated with *temporarily* slower growth leading to lower levels of output per capita in any subsequent year. Countries that faced perennial crises were significantly less wealthy than they might have otherwise been in the absence of international capital market integration. On the other hand, some nations with sound fundamentals avoided crises and the negative effects on growth. It is an open question as to whether other ancillary benefits from capital flows like improved risk sharing mattered.

2. International Capital Markets and Economic Growth, 1880 - 1913

2.1 Measuring Integration prior to World War I

The period between 1880 and 1913 was one of deep integration in international capital markets.[2] Capital moved across borders free of government controls. Cross border market-based financing for projects in both the developed and the less-developed regions played an important role in shaping the flow of capital out of London.

[1] Sylla and Rousseau (2003) claim that a well developed financial system has five key components. They are (1) sound public finances and public debt management (2) stable monetary arrangements (3) a variety of banks that operate both internationally and nationally (4) a central bank to stabilize domestic finances and manage international financial relations, and (5) well functioning securities markets.
[2] Cottrell (1975) provides an overview of British capital exports during the nineteenth century.

At the core of this global financial system was Great Britain with a vast surplus of savings. This surplus was channelled through the City of London to borrowers from all over the world. Gross (and net) inflows were large even by contemporary standards. Figure 1 shows the within group average ratio of new capital issues in London (as measured by Stone 1999) to GDP in the economically lagging but institutionally advanced core, the economically advanced capital importing British offshoots and the United States, and the poorer regions of the world.[3] The offshoots received the lion's share of British capital during the period. The periphery also received large amounts at certain points and the less developed countries of Europe relied less heavily on British capital imports. Current account data, which should also account for the less sizeable inflows from other markets tell a similar story. On average the current account deficit in countries such as Australia, Canada, New Zealand and the US (although in the latter this was mainly prior to 1860), was on the order of three percent and much higher in many years. In the periphery, the levels were somewhat lower in absolute value but still significant in certain years. Foreign investment often accounted for about 20 percent of total capital formation in the typical developing country of the time and up to 50 percent in Australia, Canada, Argentina and Brazil (cf. Fishlow, 1986 and Williamson, 1964 on the USA).

Great Britain exported the majority of capital flows while France, Germany and Holland provided smaller amounts. In Great Britain the current account surplus never fell below one percent of GDP and averaged over four percent of GDP the entire period. France was the second largest capital exporter. The volumes exported were about half those of Britain.

Schularick (2006) estimates that gross world assets divided by global GDP, a global measure of capital market integration, reached about 20 percent in 1913 while he estimates it at roughly 75 percent today. Similar numbers are reported in Obstfeld and Taylor (2004).

[3] We define the core countries to include Belgium, Denmark, Norway, Sweden and Switzerland. We place Australia, Canada, New Zealand and the United States into the "offshoots" category. These regions were extensive capital importers and also had a special institutional heritage being members (or once having been members) of the British Empire. The periphery is defined to include Argentina, Austria-Hungary, Brazil, Chile, Egypt, Finland, Greece, India, Italy, Japan, Mexico, Portugal, Russia, Spain, Turkey, Uruguay

Capital exports from Britain took the form of bond finance, private bank loans and direct investment. Early in the period, portfolio investment dominated, but by 1913 Svedberg (1978) argued that direct investment accounted for over 60 percent of all foreign investment. The type of inflow varied by country and by period. Marketable bonds were typically placed by London investment banks and sovereign bonds were actively traded on the London Stock Exchange. Daily quotes were available in the *London Times*. Obstfeld and Taylor (2004), Mauro, Sussman and Yafeh (2006) and Flandreau and Zúmer (2004) all contain interesting discussions on the details of high finance in this first era of globalization. Obstfeld and Taylor (2004) emphasize that covered interest parity held tightly for a number of core countries. Mauro, Sussman and Yafeh (2006) study the efficiency of the London bond market and pay particular attention to the reactions of bond yields to political information. They argue that markets moved on news of domestic political turmoil and that comovement amongst bond prices was much lower than it has been in the past twenty to thirty years.

2.2 Where Did the Capital Go?

A large amount of British lending went to the British Empire and, of this portion, the bulk ended up in Canada and Australasia. Ferguson and Schularick (2006) argue that lending within the Empire demanded a lower risk premium than other similar countries outside of the empire. This was natural because property rights were hard to enforce outside the empire, political ties were stronger, and other institutions, such as the Joint Stock Acts, increased demand for colonial assets. Membership in the empire would reassure investors that debts would be repaid. And as a matter of fact *no* British colony ever defaulted in this period.

Clemens and Williamson (2004) take issue with this market failure view and suggest that factor endowments mattered more for the direction of these flows. They note that key recipients of capital such as Canada, the various colonies of Australasia and other new world regions were richly endowed in natural resources, high in human capital and scarce in labor and physical capital. Such a combination apparently made for a high rate of return on investment relative to the domestic opportunities and those available in

labor abundant resource poor Europe. After controlling for these factors, they find that the British empire did not receive greater inflows from Britain (i.e., quantities) than other comparable regions.

Previous work by Edelstein (1982) has shown that ex post returns on British foreign investments were not extremely high compared to the alternatives at home and that debenture return differentials converged by 1910. Figure 2 shows that between 1870 and 1913 nominal bond yields (the coupon yield divided by the price) converged dramatically. This evidence would be consistent with the idea that default risk fell over the period as development proceeded and projects and countries matured. Meissner and Taylor (2006) also show that the British yield on foreign investments relative to the yield paid on liabilities outstanding fell over the period. One reading of this is that international capital markets became more integrated and competitive. Two other interpretations are that the marginal product of capital outside of the advanced industrial nations fell over time as capital stocks were built up or that projects became less risky as emerging economies converged towards core levels of per capita GDP.

2.3 What Happened to the Capital Inflows?

On the receiving side, contemporaries mostly viewed foreign inward investment as something to be coveted. Policy makers of the period cited the need to attract greater foreign capital as one of the reasons to join the gold standard and fix their exchange rates to the British pound. Foreign capital was viewed as an essential ingredient for savings constrained economies outside of northwest Europe. Without it, these countries argued that further development of their economic potential would have been limited.

Fishlow (1986) characterized countries as revenue borrowers or development borrowers. It is possible to verify this dichotomy quite easily from *Fenn on the Funds* which recorded parts of sovereign bond prospectuses.[4] The colonies of Australasia, the

[4] It is difficult to sort out whether the listed prospectuses for new issues with unspecified projects were simple consolidations of old productive debt, whether war finance should be classified as productive spending or not (since the vanquished often paid large war indemnities or suffered economic repression), and to know the actual share for each country of sovereign borrowing versus private borrowing. Therefore we have not been able to systematically assess whether countries were revenue or development borrowers for each and every year of the period. Future work could attempt to delineate more clearly each kind of

future South Africa, and Canada and its provinces borrowed almost exclusively to fund railroads, harbors, sewage systems, and other infrastructure. For these places, *Fenn*'s manual would often state something to the effect that 'the vast majority of funds have been for internal improvement'.

Other countries like Russia (an issue to strengthen the specie [reserve] fund), Japan (to pay charges on pensions), Egypt (Pasha loan for re-payment of existing debt), and Austria (an issue in 1851 to improve upon the value of the paper florin) borrowed to plug revenue gaps or to fund offensive, defensive and civil wars.[5] Many of these same countries had considerable amounts of issues dedicated to unspecified ends. Of course the prospect of unsound investment was often greeted coolly by the market with a low price at its initial public offerings making foreign financing more difficult. Nevertheless this is just the type of dynamic that leads to adverse selection and moral hazard in credit markets. And some of these countries ended up in a downward spiral of debt unsustainability. Egypt and Turkey are two key borrowers that fit the mould here. Both had debt defaults in the mid-1870s and both had over-borrowed relative to their capacity to generate revenue to re-pay.

To roughly gauge how much the market penalized poor prospects in terms of the cost of capital, we totalled the face value of each bond listed in Fenn's 1874 edition that clearly stated in the abstracted prospectus whether the bond was issued for infrastructure

borrower and to correlate this variable with subsequent economic growth. Another problem is that it is not clear whether this source and the productive/revenue dichotomy could adequately characterize countries' prospects. For 1874 we catalogued the issues for the entire set of economically important countries. We found that for countries like the US (federal financing of the Civil War we know), and even Canada (which the very same source reported as being a sound infrastructure borrower), a majority of their issues were listed but with unspecified ends. Compounding the difficulties would be judging between the quality and management of the projects such as railroads that actually seem on paper to be for productive purposes. For example in Bolivia one issue was for the construction of a canal to the Atlantic. This project failed to prove technically feasible and the market value of the issue sank.

[5] In 1876 Egypt defaulted on its sovereign debts leading to foreign administration of taxation and spending. See Mitchener and Weidenmier (2005) for a recent summary of the episode. Information about the use to which Egypt put its borrowing was sketchy at best during the run up to default. *Fenn's Compendium* does not list a single bond prospectus for Egypt thus leaving the reader unaware of how the funds would have been invested. The Cave Report (quoted in Issawi 1982) which summarized Egypt's finances after the default claimed "…[Egypt] suffers from the ignorance, dishonesty, waste and extravagance of the East, such as have brought her Suzerin [Pasha] to the verge of ruin…caused by hasty and inconsiderate endeavours to adopt the civilization of the West". Even after default, British auditors found it difficult to evaluate the ultimate destination of borrowed funds.

or other productive investment.[6] We then divided this value by the total face value of bonds outstanding. We then plotted the sovereign long-term bond yield minus the British consol yield against this development/revenue measure.[7] The yield spread roughly captures this distinction. The spread is calculated for a long-term issue listed in London and payable in gold minus the British consol yield. The correlation between the spread and the ratio of bonds issued for productive purposes to total bonds is -0.25. Figure 3 plots the spread versus the ratio and reveals a negative correlation. The coefficient on the spread in a regression is -0.03 and has a robust t-statistic of -1.96 (p-value = 0.06). Thus the bond spread can be considered a more continuous measure of development versus revenue financing. Figure 3 reveals that both types of countries were able to issue at least some debt on international markets during this period of open capital flows. However, it is clear from the evidence on capital flows presented in Clemens and Williamson (2004) that the development borrowers received the bulk of these funds.

Moreover, the calculation is not perfect. The Ottoman Empire was a fiscal disaster and had a high spread, but Brazil and the US have equivalent (low) measures of productive spending and low spreads. The latter two had sound finances and solid reputations (see Summerhill 2006 on Brazil). It is likely that markets had the belief that repayment was not an issue due to previously established credibility.

In sum, a sort of proto-Washington Consensus of free trade, fixed exchange rates, and fairly liberal economies more or less reigned between 1880 and 1913. Capital markets became strongly integrated and many different types of nations relied on foreign and domestic capital to finance new projects aimed at meeting the demand of ever-larger and wealthier global markets. But a long-run, cross country comparative perspective on the growth impact of this epoch of integration is still needed.

3. Economic Growth and Foreign Capital: Some Testable Hypotheses

3.1 The Direct Impact of Foreign Capital on Economic Growth

[6] The real cost of capital is only roughly related to the risk premium as we measured it. Other factors include the underwriting fees, price at initial public offering, loan specific contractual factors determining the maturity and so forth.

[7] Sovereign yields come from the annual average of all weekly observations on London as compiled by Kris Mitchener and Marc Weidenmier.

The most general theoretical case for capital market integration is nearly the same as that for free trade. Opening to foreign capital allows for resources to be efficiently allocated. In addition, risk sharing is also enhanced with globally integrated capital markets. It is also argued that policy is improved since footloose capital harnesses errant policy makers.

Recent empirical research on these direct benefits has not been as unambiguous about the salutary effects of globalized capital. Edison, Levine, Ricci and Slok (2002), Prasad, Rajan and Subramanian (2006) and a team from the International Monetary Fund (2007) find little evidence that greater reliance on foreign capital during the last 30 years has been accompanied by higher growth rates.[8] Schularick and Steger (2006) apply the Edison et. al. methodology as closely as possible to the years between 1880 and 1913 and do find evidence of a positive link between capital inflows and growth.[9] Fishlow (1986), Foreman-Peck (1994) and Collins and Williamson (2001) all argued that a lower cost of capital and greater inflows should have been associated with higher growth in this period.

In a standard neo-classical, Ramsey-style growth model, Gourinchas and Jeanne (2006) argue that the long-run growth and welfare effects of capital market liberalization are surprisingly small. Sizeable effects are naturally transitory in a neoclassical growth model. Long run growth rates depend on the rate of technological advance.

Gourinchas and Jeanne study a move from autarky to full integration with the international capital markets. This move has the effect of lowering the interest rate from high autarky levels to a low international level. The international rate equals the interest rate all economies will achieve in the long-run in their steady states. Therefore in the medium term, say at the five year horizon, the impact depends on the distance from the steady state capital-labor ratio. A country that has an initial capital-labor ratio of one-half its steady state value will grow temporarily about 2.7 percentage points faster than it would have in autarky.[10] After ten years or more, the growth rate is not much higher than it would have been in the absence of liberalization. The reason is that opening up simply

[8] Also see Kose et al (2006) for a survey of these issues.
[9] Schularick and Steger (2006) do not look include financial crises as we do. This fact and the slightly different country sample they use may explain the difference between our findings.
[10] Bekaert, Harvey and Lundblad (2005) find that growth increases by one percent after a liberalization in the modern period.

accelerates a country towards its steady state. Since in a standard growth model convergence towards the steady state is quite quick (11.49 percent of the output gap is eliminated each year in the Gourinchas and Jeanne calibration), most countries are on average very near their steady state already. The growth impact is small. To achieve a larger and longer lasting impact, one would have to argue that capital market liberalization *changes* the steady state potential of a country.

We would expect a much smaller impact in the historical period than Gourinchas and Jeanne illustrate. There were no discrete liberalizations in the period we study between 1880 and 1913. Most countries had been able to borrow fairly continuously from Britain and other surplus countries since the early part of the nineteenth century.[11]

Therefore we might expect the growth impact of surges in capital inflows to be transitory at best if the standard neo-classical growth model holds. The counterfactual of closed international capital markets might have implied savings constrained economies financing their development at a higher interest rate than otherwise. But these interest rate differentials would have been eliminated over the long-run, so that countries would end up at their steady state levels of per capita GDP and growing at the world rate of technological advance.

In addition there is the possibility that there were long and variable lags in the impact of foreign capital on economic growth. Since foreign capital in this period often funded large infrastructure projects like railroads, it may have taken considerable time for the growth to show itself in the data. Williamson (1964), Cottrell (1975) and Eichengreen (1995, p. 79) suggest there were long lags of ten to fifteen years between capital inflows and the real impact on the domestic economies of Canada and the USA but made no systematic cross-country comparison.

We also have the argument put forward by Fishlow and many others that many countries simply mismanaged these inflows. This would suggest that the unconditional relationship between foreign capital and economic growth might be very slight.

[11] China and Japan are perhaps obvious and important exceptions. Foreign issues in Europe did not start in earnest until the 1870s and later. See Sussman and Yafeh (2000) on Japan and Goetzmann, Ukhov and Zhu (2007) for the Chinese case. Other countries also gained better access after 1870 when the supply of funds from European lenders increased and competition between lenders strengthened.

Finally some countries suffered financial crises, which arose directly due to their connection with foreign capital markets. It is quite possible that these crises brought growth down for significant periods of time.

3.2 Financial Crises: The Indirect Association between Growth and Capital Flows

Balance of payments problems, sudden stops and crises are, and have been, part and parcel of international financial markets over the last 200 years. Crises are known to be costly events in terms of output losses (Bordo, Eichengreen, Klingebiel and Martínez-Peria, 2001), and they most likely reduce welfare due to market coordination failures.[12] Moreover crises were not rare events in this period.

Recently Sebastian Edwards (2007) has argued that Latin American economic growth in the late twentieth century had significantly slower performance due to financial crises, sudden stops and current account reversals.[13] Eichengreen and Leblang (2003) study the period 1880-1913 together with the subsequent 100 years. They concluded that capital controls are associated with higher growth, crises are associated with lower growth, and controls limit the probability of a crisis. Since no country had such controls in the pre-World War I period, we take a different tack and use information on gross inflows as in Edison et. al. (2003) and Schularick and Steger (2005). Ranciere, Tornell and Westermann (2006) also investigate the impact of capital market liberalization (1980-2002) on annual growth in GDP per capita and an indirect channel going from liberalization to crises and back into (lower) growth. They find a direct positive effect of liberalization on growth and a negative indirect effect on growth. Countries have higher growth rates (on the order of one percentage point faster) after liberalization but the average country that liberalized had its growth brought down by 0.15 percentage points

[12] Allen and Gale (2000) analyze theoretically the possibility that banking and currency crises can be optimal. Crisis periods allow for optimal risk sharing. Marion (2000) argued that the assumptions of their model are unlikely to be fulfilled in practice. What one needs is that countries can issue large of amounts of debt in their own currency abroad and lend in equally large amounts to other countries in foreign currency. Since original sin was a fact of life even in this period it is unlikely that financial crises were optimal in the sense of Allen and Gale. More generally crises could be beneficial in purging the system of inefficient over-investment as in older models of the business cycle.

[13] Edwards does not study the direct impact of international capital market integration on growth.

due to increased exposure to crises.[14] Were similar forces at play in the period prior to 1913?

3.2.1 A Framework Linking Integration to Crises and Crises to Growth

Our framework for thinking about financial crises follows Mishkin (2003) and Jeanne and Zettlemeyer (2005).[15] This view is inspired by an open-economy approach to the balance sheet view of the credit channel transmission mechanism. Balance sheets, net worth and informational asymmetries are key ingredients in this type of a model. Moreover the development of the financial system is crucial. We present a diagram in Figure 4 that follows our chain of logic described below.

In our view, initial trouble might begin in the banking sector for a number of reasons. One possibility is that a credit boom occurs which inevitably leads to a rise in the proportion of banks' balance sheets represented by risky investments. Moreover foreign capital inflows usually accelerated in the later stages of these credit booms (see for instance Williamson, 1964). Often it only takes a rise in international interest rates or a little bad news to spark an initial slowdown in foreign capital inflows.

Research on the determinants of sudden stops during the last 30 years suggests that they are much more likely to occur in countries that run large and persistent current account deficits. When interest rates rise, this worsens the balance sheets of non-financial firms and banks alike. A decline in lending can occur. Net inflows of capital may also slow to a trickle perhaps culminating in a sudden stop.

At this point, reserves, if any are held, may be used as a first line of defense as internationally mobile capital takes a pessimistic view. Such self-insurance can help avoid abrupt adjustment in the trade balance (entailing a possible recession or a fall in output) that might have to accompany a sudden stop. Alternatively, if there is a developed financial system, countries can pull through the turbulence and avoid further economic fallout. Such a system is one where any or all of the following obtain: there is a lender of

[14] Conditional on having a twin banking and currency crisis, the output loss is on the order of 10 percent of GDP. The value of 0.15 is the increased likelihood of having a crisis due to liberalization times the output loss of having a crises. This is roughly the expected loss from liberalization.

[15] Mishkin's informal analysis follows a stream of literature from the late 1990s on the links between net worth, exchange rate depreciation, and crises.

last resort; deep and liquid financial markets exist; the quality of private lending has been high; the fiscal position is sound. These factors help generate credibility and confidence and assure markets that the exchange rate will not move too much, hence countries can avoid a balance sheet crisis. Speculative capital is stabilizing.

On the other hand, if the financial sector is weak or underdeveloped, there could be increased stress for both financial and non-financial firms if they are forced to cut investment due to a lack of financing. Coupled with nominal rigidities, an economic downturn might be expected.

Low investment could drive down demand for nontradeable goods or decrease the supply of tradeables contributing to a real depreciation. If policy makers wanted to maintain economic activity, this could lead to an expectation of easy future monetary policy, inflation, and an expected exchange rate depreciation.[16] Governments may also have trouble making interest payments on debt coming due as capital markets become unwilling to continue rolling debt over and monetization and depreciation could be expected. The abandonment of an exchange rate peg, as reserves are depleted, is a possibility and floating regimes could also see large depreciation (expected and/or actual) occurring under such a scenario.

The impact of an exchange rate depreciation, sudden stop and current account reversal may be contractionary.[17] Since the majority of obligations for nearly all countries are in foreign currency or, in the late nineteenth century, denominated in terms of a fixed amount of gold, depreciation vis-à-vis creditor countries or breaking the link between gold and the domestic currency could lead to snap increases in the real value of debt. This is a redistribution of wealth from domestic borrowers to their creditors who are expecting a certain amount of gold or foreign currency.[18] This decline in the net worth of debtors

[16] Many countries cut the link to the gold standard in times of financial distress or never had a formal link to the gold standard even in this hey day of the classical gold standard. Such countries typically ended up with accelerated money supply growth, inflation and nominal depreciations. Countries that adhered strictly to the gold standard were supposed to "play by the rules of the game" or implement a procyclical monetary policy. In the short run, they did not necessarily do so. Nevertheless, countries that credibly adhered to the gold standard would often see stabilizing speculation and markets often expected tighter policy and/or deflation in countries running balance of payments deficits. These types of countries, because of their credibility, could avoid the third generation fallout which we describe in the next few paragraphs.

[17] Theoretical work by Céspedes, Chang and Velasco (2004) emphasizes this point.

[18] Eichengreen, Hausmann and Panizza (2003) argue that what matters is the aggregate external mismatch and if all debt is domestic, that one sector's losses are the others' gains. Our view however is that net worth matters. When a debtor's net worth deteriorates, borrowing capacity falls, and the capital markets seize up.

can lead to another round of "disintermediation" because net worth matters for lending decisions.

Financial development and original sin are not the same. Russia was relatively undeveloped (financially and economically) but had low original sin. In such a country, the negative impact of depreciation on domestic balance sheets is less likely.

But also as Goldstein and Turner (2003) have argued, often countries insure themselves or are naturally hedged against adverse exchange rate movements. Hard currency debt can be, and often is, backed up by hard currency assets. Alternatively, countries could have enough export capacity (or capability) to offset changes in liabilities due to exchange rate swings. To gauge the actual effect of original sin one must take account of the ***mismatch*** position or the entire balance sheet position of an economy.

There is also an interaction between depreciation and the financial system. When financial frictions are smaller, capital can get to most of the projects that are worthwhile Net worth and collateral constraints play less of a role in lending decisions in such an economy perhaps due to better monitoring technologies or better property rights systems. The impact of depreciation and the loss of international capital could be less crucial. Lending dries up more slowly when there is a lender of last resort or a large liquid domestic asset market. When finances are sound in the first place, a liquidity problem has a high chance of being resolved and massive losses can be stemmed before they occur. Jeanne and Zettlemeyer (2005) emphasize that international crisis lending (into the official budget) from multilateral institutions can forestall crises if the government's finances would be sound in the absence of the "bad" no financing equilibrium.[19] This underscores the importance of fiscal probity in the definition of financial development.

In addition to the capital markets' decisions, we must also consider the political decision making mechanisms that determine a sovereign's actions. Reinhart, Rogoff and Savastano (2003) have argued that original sin is a proxy for a weak financial system, poor fiscal control and recurrent debt default. They call this *debt intolerance.* We control for this possibility below. But we might also emphasize a *political channel* that interacts

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This is one reason why we focus on domestic and external hard currency debt rather than just foreign holdings (or issues) of hard currency debt.

[19] In this period it would have been more likely to see "cooperation" between central banks and governments and private actors as highlighted by Eichengreen (1992).

with an unfortunate financial hand of cards or that itself is a cause of the poor financial fundamentals.

Emanuel Kohlscheen (2006) demonstrates theoretically that presidential democracies are much more likely to default than parliamentary democracies. A presidential executive can hand the costs of a default to an interest group that is out of favor. Presidents do not face votes of confidence as the executive does in a parliamentary democracy. Empirically Kohlscheen (2006) finds that between 1970 and 2000 presidential democracies were more likely to default on sovereign debt than parliamentary democracies. Bordo and Oosterlinck (2005) also find preliminary evidence that debt defaults were more likely amongst presidential democracies in the late nineteenth century.

Another hypothesis compatible with the revenue/development borrowers dichotomy is also possible. Perhaps countries that were coded as 'presidential' but were in reality more authoritarian, simply applied foreign funds to unprofitable projects while countries with more democratic institutions found it easier to monitor project quality. This could also give rise to a higher propensity to default by less democratic regimes. Finally countries with 'presidential' systems may have fundamentally weak institutions and property rights limiting financial development and creating a financially fragile economic environment

The point of this chain of logic is to highlight a number of other underlying factors which can exacerbate the potential for a crisis. Some countries borrowed for productive purposes and only prudently ran up large negative net foreign asset positions. They also maintained strong reserve positions, were open to international trade, had sound financial development, and political institutions geared towards adhering to contractual obligations. On the other hand, other countries were extremely vulnerable to the capricious international capital market and its expectations that accompanied the free movement of capital. Their outcomes differed from the first group because they borrowed for revenue purposes often in heavy spurts when global interest rates were low and the risk appetite was large.

In the next section, we attempt to gauge the direct growth benefits of capital market integration and the indirect, and possibly negative effects, via financial crises.

After that we proceed to isolate the determinants of financial crises and hence to ascertain how some countries were able to avoid crises and the indirect side effects of integration in the earlier period of unfettered capital flows.

4. Growth and International Capital Market Integration: The Empirical Evidence

We present a series of cross-country growth regressions which include as key explanatory variables a measure of international financial integration and episodes of financial crisis. We explore growth over the long-run by looking at average growth between 1880 and 1913, over non-overlapping five-year and ten-year periods and also at the annual level. The reason we analyze these different frequencies is that the variables of interest are predicted to have impacts over different horizons. Crises are usually short-lived phenomena, and so we expect the majority of the impact to occur within one or two years. Surges in investment arising from injections of foreign capital are bound to have an impact in the medium term in the neoclassical growth model discussed above. Finally we assess whether foreign capital had any impact on the long-run growth rate consistent with the idea that foreign capital may bring technological spillovers.

Our measure of international capital market integration is Stone's (1999) total capital calls on London which includes public and private issues of debt purged of any refinancing issues.[20] The conventional wisdom for the period is that these gross flows were roughly equal to net flows for the capital importers (cf. Obstfeld and Taylor 2004).[21]

Graphical Evidence from the Short, Medium and Long Run

Figure 5 presents an unconditional scatter plot of **annual** growth of GDP per capita against the five-year moving average of these inflows relative to GDP.[22] There is

[20] We also carried out tests (which are left unreported), using the current account relative to GDP as a measure of the net inflow or outflow of capital.
[21] The correlation between Stone's flows and the current account data from Jones and Obstfeld is -0.69.
[22] Separating flows to the private sector and flows to the public sector does not change the look of our scatter plots.

no obvious relationship between inflows and annual rates of economic growth for this sample of 19 countries.[23]

In Figure 6 we present evidence for the long-run. This is an 'added variable' plot showing the **conditional** relationship between the average growth rate of real GDP per capita between 1880 and 1913 and the average ratio of Stone's inflow variable relative to GDP between 1880 and 1913. This plot shows the slope coefficient on the average ratio of capital inflows to GDP in a standard growth regression. The conditioning variables in the growth regression are conventional: the average population growth rate; the average percentage of the population enrolled in primary school; the average level of exports divided by GDP; and GDP per capita at the beginning of the period. We also include the number of years spent in a crisis divided by the total number of years. The coefficient on the capital inflows is small, positive and not statistically distinguishable from zero at any reasonable level of confidence. In addition the coefficient on the crisis variable is 0.004 with a standard error of 0.03 and a t-statistic of 0.19. This suggests there was no long-run difference in growth rates for more crisis prone countries.

In the three panels of Figure 7 we look at the unconditional relationship between growth and foreign capital in the **medium run**. We break the period into three parts (1880-1889, 1890-1899, and 1900-1913). We average the growth rates and the ratio of inflows to GDP within each period. In the first period, there is no obvious simple correlation. In the second period, a period of financial turmoil beginning with the Baring crisis, a default in Portugal, American currency speculation (i.e., free silver problems) and a further debt default in Greece, there appears to be a negative relationship. The third period suggests a positive relationship.

Multivariate Short and Medium Run Growth Regressions

Tables 1 and 2 explore these correlations further with multivariate regression analysis for a set of twelve countries and then a set of the same twelve plus the seven

[23] The sample includes: Argentina, Australia, Austria, Brazil, Canada, Chile, Denmark, France, Germany, India, Italy, Japan, New Zealand, Norway, Portugal, Spain, Sweden, United States, Uruguay.

other countries between 1880 and 1913.[24] Since savings ratios are only available for a restricted sample of 12 countries, we also report regressions without this variable. In Table 1 we pool the data and use annual observations. The justification for the annual regressions is that financial crises are discrete events that have immediate short-run impacts. Here we are interested in looking at deviations of growth from within country long-run average growth rates associated with financial crisis years and also at the short-run impact on growth of surges in capital inflows.

The list of auxiliary explanatory variables is mainly standard and based on Mankiw, Romer and Weil (1992) and later papers in the empirics of economic growth. We include the following controls in Table 1: the logarithm of GDP per capita in 1880, the lagged five year moving average of the population growth rate, the lagged five year moving average of the percentage of the population enrolled in primary school, and the lagged level of exports divided by GDP.

To capture the direct impact of global capital market integration in year *t* we use the (lagged) five year moving average of the ratio of the Stone inflows to GDP. Of course, in an open economy, investment is the sum of two components: foreign savings (i.e., foreign borrowing—negative in the case of outflows), and national savings. Hence we also include the five year moving average of the ratio of domestic savings to GDP.[25] Finally we control for the impact of crises by including a dummy if there was any type of currency, banking, twin or debt crisis in the previous year. This variable is one in years of ongoing currency and banking crises. We also only code the first year of a debt crisis to avoid long periods without negotiated settlement. Later we will argue that foreign capital inflows increased the likelihood of crises and hence this is an indirect channel of impact for foreign capital flows.[26] Regressions are of the form

[24] The set of twelve countries includes: Argentina, Australia, Canada, Denmark, France, Germany, Italy, Japan, Norway, Spain, Sweden, United States. See the previous footnote for the full sample of 19 countries.
[25] Where we do include savings, we do not adjust the savings variable downward for countries with capital outflows because the main capital suppliers are already excluded form the data set. Also the current account data is not directly comparable with the Stone data which would make a proper adjustment difficult. This savings data is from Taylor (2002) who calculated the ratio of savings to GDP as the current account surplus divided by GDP plus the ratio of investment to GDP. We also substituted both savings measures with the investment ratio and found that the investment ratio was not statistically significant in the growth regressions.
[26] Our use of the word direct channel is a bit misleading. The coefficient on capital inflows would pick up a direct relationship plus any other possible indirect channels not controlled for in the list of included explanatory variables.

$$Growth_{it} = \alpha_0 + \alpha_1 \left\{ \overline{\left(\frac{ForeignK}{GDP} \right)_{it-1,t-5}} \right\} + \alpha_2 Crisis_{it-1} + \alpha_3 \left\{ \overline{\left(\frac{Savings}{GDP} \right)_{it-1,t-5}} \right\} + \alpha_4 \ln(\overline{Enrol_{it-1,t-5}}) +$$
$$\alpha_5 \left(\frac{Exports}{GDP} \right)_{it-1} + \alpha_6 \left(\Delta \ln(Population_{it-1,t-5}) \right) + \alpha_7 \ln\left(\frac{GDP}{population} \right)_{i1880} + d_t + \mu_i + \varepsilon_{it}$$

where *Growth* is the annual growth of real per capita output, *d* is a set of annual time dummies, μ_i is either a country dummy or a mean zero country "random effect" and ε is an idiosyncratic error term.[27]

The Short Run: Annual Growth Regressions

Columns 1 and 1a in Table 1 are random effects and then fixed effects specifications respectively. Both columns display a negative, economically small and statistically insignificant relationship between economic growth and capital market integration. Growth in a year following a financial crisis episode appears to be significantly lower by two and a half percentage points. In column 1, the initial level of GDP is negatively related to growth implying conditional convergence.

In columns 2 and 2a we include seven more countries and 213 more country-years than were available in the first samples. This comes at the cost of excluding the domestic savings ratio as a variable. Here we find a coefficient on foreign capital inflows which is not statistically different form zero in both the fixed effects and random effects regressions. We still find that the crisis variable is statistically significant. In this sample the average financial crisis could be expected to decrease growth relative to its within country long-run average by one and a half percentage points for one year. This is a loss of a little over one year of growth since the median rate of growth was 1.2 percent per year. The education and initial GDP variables have similar signs to those reported in columns 1 and 1a. The conclusion from these annual regressions is that there is no clear

[27] We correct the standard errors for heteroscedasticity by using robust standard errors. We also cluster these at the country level.

evidence that international capital flows were directly associated with stronger economic growth in the short-run prior to World War I. However, there is some evidence, of a negative indirect channel from flows to crises and on to output losses or temporary deviations of growth from the within country long-run trend.

The Medium Run: Growth over Five-Year Periods

In Table 2 we average the growth of GDP per capita over non-overlapping five-year periods. Explanatory variables are averaged within the five year period. This specification measures the relationship between medium run growth and our explanatory variables. If the neoclassical model holds, or the Gourinchas and Jeanne model is right, we might expect to find a positive coefficient on capital inflows in these regressions. In these specifications, the crisis control becomes more imprecisely measured since the dummy indicator must be averaged over the five years.

In column 1 of Table 2, we present a random effects specification which includes all the controls from Table 1 including domestic savings. Column 2 leaves out national savings. Once again there is no clear association between international capital market integration and growth. In column 1 the coefficient is positive and just statistically significant at the ten percent level, but it is not significant in column 2.

The point estimate on the average number of years in the five year period spent in some sort of crisis has roughly the same magnitude as in Table 1 but is only statistically significant in column 2. Finally the results on the standard growth controls (especially initial GDP and schooling) are in line with expectations from the rest of the empirical growth literature. Domestic savings is positive (though again not statistically significant), school enrolment and trade exposure are positive, and initial GDP is negative and statistically significant implying conditional convergence.

The Long Lag Between Foreign Investment and Growth

Columns 3, 4 and 5 of Table 2 check whether there are long lags in the impact of foreign capital. We use average investment flows from 10 to 15 years prior to the current

five year period. Here we find positive coefficients on foreign investment in all three specifications. Column 3 looks at a smaller sample than column 4 since it includes the domestic savings variable. Here lagged capital flows have a positive coefficient but are not statistically significant.

However, in columns 4 and 5, the point estimates on foreign capital inflows are statistically significant. In column 4 the point estimate implies that a two standard deviation increase of inflows (roughly .075) one decade prior to the current period would produce an increase in the growth rate of almost one percentage point during the five year period. The average unconditional growth rate is 1.3, so this is an economically significant figure.

Column 5 replaces the lagged national savings rate with the current five year period's saving rate. Here we see some evidence that national savings matter differently from foreign funding. Foreign capital inflows a decade earlier continue to have a positive and statistically significant coefficient. But only current domestic savings has a positive and statistically significant association with growth while savings made a decade ago are not statistically significant. One possibility, consistent with Cottrell's (1975) exposition of the typical credit cycle, is that foreign funds were being used to fund infrastructure and projects that had long-term payoffs. More speculatively, this could also be a sign that domestic savings were being channelled to firm-level investment projects where local information was better and had more immediate payoffs.

Un-reported regressions tested the robustness of this finding by using various lag structures and other measures of integration including the current account deficit or the trade balance. Repeatedly we found that measures of capital market integration lagged by ten to fifteen years provided evidence of a statistically significant and positive association between foreign capital and growth over five-year periods. This suggests to us, consistent with the views of economic historians, that foreign capital flows did stimulate growth. However, the impact could take quite a long time to surface. Perhaps this is because these flows were more likely to be associated with large infrastructure projects.

Overall then our comparative data exercise suggests that the association between growth and foreign capital appears only to be transitory rather than having a long-run impact. We find evidence that higher flows in a given fiver year period are associated

with higher growth in a five year period. However, countries that on average had higher ratios of inflows to GDP over the long run between 1880 and 1913 do not appear to have had higher average growth rates throughout this period. This is consistent with a neoclassical model of growth. Higher investment may have a level effect on GDP per capita but it does not affect the long-run rate of growth. This is determined by the rate of progress of the technological frontier. Assuming the neoclassical model holds, the corollary to our finding is that foreign capital inflows do not seem to have raised the pace of technological advance in recipient countries.

Discussion of the Direct Impact of Capital Inflows

The positive point estimates from Table 2, which are not always highly statistically significant, are suggestive of a medium term impact on economic growth that occurred with a substantial lag. Foreign capital was often associated with the development of fundamental infrastructure projects. The classic case is that of British funds going into a railway line. Here it would take time to develop the productive capacity along the line let alone the railroad itself. In the settler colonies, immigrants needed to be attracted, and in most areas receiving a new connection to outside markets, new productive capacity took time to build. As this process worked itself through, the economies receiving foreign capital inflows would experience a burst of growth in the transition to their new steady state capital labor ratio. Ultimately they would all obtain a long-run growth rate dependent upon the pace of technological advance.

An interesting question concerns a counterfactual. Would countries have been able to develop their infrastructure without the help of foreign capital? It is quite possible that foreign capital simply catalyzed an ongoing process, but it is extremely difficult to venture any guesses at this point due to the complex interactions between foreign funding and structural change.

Finally, while we have called this the direct association between foreign capital and economic growth, we are actually discussing a direct association together with any impact coming through variables for which we have not controlled. We now investigate

whether integration *indirectly* worsened economic growth by contributing to the probability of suffering a financial crisis.

5. The Determinants of Financial Crises

The goal of this section is to see whether the chain of logic proposed in Figure 4 represents a reasonable approximation to the globalized capital markets of the late nineteenth century. We seek to substantiate a link from capital flows to sudden stops and current account reversals and from these events to financial crises. Since we found crises decrease growth in the short term, this would imply that foreign capital has a negative indirect effect on growth by making countries more financially fragile. Along the way, we will explore what other fundamentals heightened the chances that international integration could lead to a financial crisis.

In Figure 8 we present the frequency of various types of financial crises (banking, currency, twin, debt, "third generation" crises and all types of crisis together) for the period 1880 to 1913. The frequency is measured as the number of years a country was in crisis divided by total possible years of observation. We use the country-year as the unit of observation and eliminate all country-years that witness ongoing crises to come up with a total number for years of observation.[28] The predominant form of crises before 1914 was banking crises, followed by currency crises, and then debt crises.[29] Mitchener and Weidenmier (2006), in a more inclusive sample, document 46 debt defaults by 25 different countries (out of roughly 40 to 50 sovereign countries) between 1870 and 1913. Overall, the average country could expect to be in crisis once a decade prior to 1913.

The scenario portrayed in Figure 4 starts with real shocks and banking trouble leading to reserve losses, a currency crisis and eventually a halt to fresh capital inflows from abroad. There is a vast literature on American banking crises that suggests a major determinant of banking trouble was the 'inelasticity' of the local currency under the national banking system and the gold standard. Shocks to the market rate of interest due

[28] For third generation crises we do not eliminate ongoing banking and currency crises and in the sudden stop plus crisis measure we allow ongoing banking, currency or debt crises to enter the set of country-year observations.
[29] Debt crises were not studied by Bordo et al. (2001)

to unusually high demand for funds (for example, seasonal demands combined with cyclical financial stress) often led to banking failures and suspension of payments. But tracking the determinants of banking crises in a large sample of countries with standard macroeconomic controls is difficult as our previous work shows (Bordo and Meissner 2007). This suggests that one trigger for banking crises, which may end up cascading into other types of crises, are idiosyncratic real shocks. The major banking meltdown of the early 1890s in Australia was due to poor regulation and over lending to the real estate sector which contributed to something of a bubble (Adalet and Eichengreen 2006). The roots of the famous 1890 Baring crisis in Argentina and London have been attributed by Flores (2007) to intensified competition amongst lenders.

One transmission mechanism to further financial stress at the international level is the sudden stop of capital inflows which are often related to crises. Based on work with Alberto Cavallo (Bordo, Cavallo and Meissner, 2007) we find evidence that sudden stops are preceded by large foreign capital inflows or large and persistent current account deficits.[30] This provides a link from integration to crises.

The spark that ignites the slowdown in capital flows in this story could be idiosyncratic or it could be a rise in international interest rates. But countries also become more prone to sudden stops when they take on large international liabilities as our work with Cavallo shows. The larger literature on sudden stops, based on modern evidence, also finds that lagged current account deficits are a key predictor of sudden stops.

In Figure 8 we also give the incidence of sudden stops and the incidence of sudden stops accompanied by some sort of a financial crisis. Our data suggest that slightly less than a half of the sudden stops of the period were accompanied by some sort of a financial crisis.[31] So there appear to be mitigating factors that determine whether sudden stops and reversals turned into financial crises and output losses. Such factors could be financial development, credibility in the financial markets, low currency mismatch positions, and sound political institutions. Calvo and Talvi (2005) show how

[30] Also see Bordo (2006).

[31] We consider a country as having a sudden stop during a given year if there is an annual drop in net capital inflows of at least two standard deviations below the mean of the year-to-year changes for the period, and/or it is the first year of a drop in net capital inflows that exceeds three percent of nominal GDP over a period shorter than four years, and there is a drop in real GDP (any magnitude) during that year or the year immediately after

Argentina and Chile both suffered a sudden stop in the late 1990s and first decade of the 21st century. Financially fragile Argentina was hit by an "excruciating collapse" but Chile was hit by a growth slowdown. Adalet and Eichengreen (2005) and Meissner and Taylor (2006) also note that current account reversals or sudden stops do not always come along with slower economic growth and financial crises and argue for the mitigating factors described above.

We next move on to the determinants of currency crises. In column 1 of Table 3, we use a probit model where the dependent variable is one if there was a currency crisis and zero otherwise. We control for international and year-specific factors using the rate of interest on long-term consol bonds in London. We condition on the change in the ratio of the current account to GDP (large changes in this variable give rise to the indicator of a sudden stop used in Bordo, Cavallo and Meissner, 2007), a gold standard dummy, and the presence of a banking crisis in the current or previous year. We also include the currency mismatch and the level of original sin.[32] The idea here is that higher levels of either variable could lead to an expectation of deeper trouble. The long-term interest rate, debt to revenue ratio, growth of the money supply and the ratio of gold reserves to outstanding bank liabilities roughly control for the level of financial development of an economy. The long-term interest rate also proxies for the quality of investment as per our discussion above.

Column 1 of Table 3 shows that a large positive change in the current account to GDP ratio, and a lower level of reserves to notes outstanding are both associated with higher probabilities of a currency crash.[33] Table 3 suggests that currency crises are driven in part by current account reversals and sudden stops. As argued above, these arise from large current account deficits. In this way, international capital flows appear to have an indirect impact on financial crises and hence lower economic growth.

Other variables in this regression are not highly statistically significant. As mentioned above, the indicator for lagged banking crises is positive but not highly statistically significant. The original sin, mismatch variable, exchange rate regime, money

[32] These variables are defined in the Appendix.
[33] The results are robust if we use the percentage change in the ratio of the current account to GDP. We follow Edwards (2004) and the current account literature that looks at the change in percentage points rather than in percent.

supply growth and London long-term interest rates are also not highly statistically significant.

The next link in our framework in Figure 4 relates currency depreciation, liability dollarization and balance sheets to further trouble including debt default. A probit regression (column 2 Table 3) uses the first year in which a country defaulted (partially or in whole) on its sovereign debt obligations as a dependent variable and finds evidence consistent with our previous arguments.

First we see that a higher ratio of hard currency debt to total debt outstanding is associated with a higher probability of having a debt crisis. In column 3 of Table 3, we interact our original sin variable with an indicator variable equal to one if there was a currency crisis in the same year. This variable is positive and statistically significant. It implies that the marginal impact of a given level of hard currency debt relative to the total debt on the probability of having a debt crisis would be more than doubled from 0.03 to 0.07 in the face of a large depreciation or a speculative attack on the currency.

We also find that a larger mismatch would lead to a higher risk of having a debt crisis. We include a squared term on this variable too and find that as the mismatch becomes very high the marginal impact becomes slightly smaller. It is possible that at very high levels of mismatch other policies are implemented to mitigate the impact but we are not controlling for these and venture few guesses as to what these policies might be.

As for the debt intolerance and political variables, we find that constitutions matter while default history does not (column 2, Table 3). We find that presidential regimes raise the probability of having a debt crisis by 0.10 compared to parliamentary regimes.[34] The partial effect associated with having a presidential regime is substantive. It is also highly statistically significant. One possibility is that political institutions become crucial at the point that default is being considered. Presidential systems seem much less likely to find other ways of resolving their financial troubles besides default. We cannot rule out the possibility that presidential systems are a proxy for weaker policies and institutions which leave such countries prone to crises in the first place. Most British Empire observations in our sample are counted as parliamentary democracies,

[34] There are no countries classified as dictatorships in our sample.

while Latin American countries in our sample were presidential. Finally, another explanation could be that less democratic political regimes took less care in allocating their capital inflows to productive projects and hence ended up in unsustainable positions more often.

Previous default history does not make sustaining any given level of debt to revenue ratio more difficult. The notion that debt intolerance existed in the nineteenth century and manifested itself simply by the default record does not stand up. It appears more likely that institutional or structural factors and their interactions could have been at work in creating the phenomenon of serial default.

We also find that a large surplus in the current account (or a smaller deficit) is related to fewer debt crises. This result is robust to swapping the current account measure with our inflow measure directly so it appears that lower international capital market integration is associated with fewer debt crises. Also higher interest rates at home and abroad are associated with a greater risk of a crisis, and there is only weak evidence that contemporaneous banking crises are associated with debt crises. Overall then we find strong support that original sin and balance sheets matter, but we also find evidence that financial development and deeper institutions are important for explaining the incidence of major financial meltdowns.

The Bottom Line: The Net Expected Growth Benefits of Foreign Capital flows

We have argued that foreign capital flows heighten the chances of a sudden stop, that these increase the chance of having a currency crash which in turn can help bring on a debt crisis when combined with heavy original sin. This is a lengthy, non-linear chain of logic, and it is difficult to gauge exactly how much a one standard deviation increase in capital flows might have increased the likelihood of having a financial crisis thereby lowering growth versus the positive direct impact on growth. This is because the probit functions that determine whether a country has a sudden stop or a crisis depend not only on capital flows but also on the levels of the other explanatory variables.

We can however construct a first approximation to the total ‘expected’ effect on growth of capital inflows. First note that if the indirect effects were absent, the coefficient

on capital inflows in the linear regression from Table 2 would give the change in the expected growth rate for any value of the other covariates. Assume then that the ratio of capital inflows relative to GDP goes up by a little over a standard deviation to 0.05. The impact of the direct effect is the product of the coefficient on capital flows (0.125--see column 4 of Table 2) and 0.05. This is 0.00625 or almost **two-thirds of a percentage point** in a given five year period.

Now consider the (negative) indirect effects arising from the higher likelihood of having a crisis. The values presented in Table 3 give the average (over all observations) of the partial effects. Instead, consider the change in the predicted probability of a crisis when all variables are evaluated at their means and we allow for different values of the change in the current account. When the change in the current account is at zero, the predicted probability of having a currency crisis is 0.02. Now suppose there is a current account reversal following on the heels of a sudden stop. Let the ratio of the current account relative to GDP increase by five percentage points or 0.05 and keep all other variables at their sample means. This raises the predicted probability of having a currency crisis to 0.04, so the increase in the probability is 0.02. Hence the marginal expected impact on growth from this current account reversal would have been to lower the growth rate by roughly 0.0005 or five one-hundredths of a percentage point (i.e., 0.02*[-0.024], where -0.024 is the coefficient on crises from column 1 of Table 1). This is not an economically significant impact.

Using the sum of the direct and indirect effects found above to calculate the net expected change in growth from a one standard deviation increase in capital flows shows an overall positive effect. This is calculated as the sum of the positive direct effect and the negative expected indirect effect. Its magnitude is roughly equal to the two-thirds of a percentage point reported above. The net positive effect is economically significant. The direct positive effects of a large rise in foreign capital flows far outweighed the negative effects for the average country and raised growth in the medium term by almost two-thirds of a percentage point.

Nevertheless there are some types of countries that were very vulnerable to crises. In these countries, a much larger negative impact in the indirect channel could arise if the explanatory variables that contributed to crises were high, the country received large

amounts of foreign capital and the country experienced a sudden stop. To illustrate, re-do the calculation of the indirect effect above, but evaluate the increase in the likelihood of having a crisis with values of certain variables that are hypothesized to make a country financially fragile. In particular focus on the levels of the crucial variables highlighted in our framework for financial crises. Let the ratio of hard currency debt to total debt equal 0.75, the level of total public debt to revenue equal 5, the level of mismatch equal 1, the ratio of gold reserves to bank notes in circulation equal to 0, and allow for a banking crisis in the previous year. Here the predicted probability of having a currency crisis is 0.19 when there is no change in the current account. Having a reversal or an increase in the ratio of the current account to GDP of 0.07 increases the predicted probability of having a currency crisis to 0.38. The marginal effect of the reversal is then to increase the probability of a crisis by 0.19. Using the losses predicted from the models in Table 1 again, we see the indirect impact is now -0.0045 or almost one half of a percentage point. If a crisis were to persist for two to three years, our model suggests that much of the predicted positive direct gains from capital inflows would be wiped out due to the negative impact of crises.

The numbers picked above for this financially fragile economy are not picked at random. They are the values Argentina had in 1890-91 during the famous Baring crisis. This crisis followed heavy foreign inflows in the 1880s. Argentina, thought to be a good risk at the time by London investors (see Flores 2007), turned out to have poor fundamentals. Argentina had large amounts of foreign liabilities denominated in gold, a presidential/authoritarian system, fiscal excesses in the provinces, low reserves and so forth. When a sudden stop came to Argentina in 1891, a full blown crisis was very likely. The capital inflows mattered in this context both in building vulnerabilities and also in interacting with the deeper institutional and political fundamentals. Had Argentina not lived through a decade long 'fiesta financiera,' its net external asset position might have been stronger and the potential for sudden stops and currency crises might not have been so high. The foreign capital inflows in such countries may have entailed much more risk than for other more soundly managed countries with strong backing for their currencies, low debt ratios and better fiscal systems.

7. International Capital Markets and the Net Benefits of Laissez Faire Financial Globalization: Some Tentative Conclusions

We began by highlighting the fact that there were basic features of the first era of globalization in capital markets quite similar to those today. We then proceeded to look at the stylized facts of globalization between 1880 and 1913. Cross border capital flows were often large. Asset trade was unencumbered by capital controls. British and European capital scoured the planet in search of high returns going to where natural resources were abundant and capital and labor were scarce. Coincidentally, growth in many countries was strong. Canada, the settler colonies and the United States prior to the Civil War come to mind as beneficiaries of such foreign finance. Many nations had trouble accessing capital markets however and largely missed out on the first era of financial globalization.

A third group of nations had trouble dealing with their foreign capital market connections. When funds dried up after a borrowing spree and the fundamentals were weak, this combined to generate economically pernicious financial crises. Growth was substantially lower around the time of financial crises.

Particular fundamentals exacerbated the likelihood these sudden stops would turn into enveloping financial crises. We have outlined the role that hard currency debt, currency mismatches and financial development played in interacting with sudden stops of capital flows from the core countries. We also highlighted that political issues mattered. Much like today, presidential constitutional systems seem to be strongly associated with whether countries default or not.

Our assessment of the net growth benefits of market-based accumulation of capital via international integration for the average country is positive yet we are cautious to make generalizations. First, continued integration does not seem to prove crucial for long-run economic growth though it may raise the standard of living by raising the capital labor ratio. But in the past foreign capital went to infrastructure and it may take time for these fundamental infrastructure investments to achieve fruition. Such investment may end up taking countries more quickly to a higher standard of living and providing a

transitory rise in the growth rate, but their long-run growth prospects will usually be determined by the rate of advance of TFP growth, not the rate of investment.

On top of this, foreign borrowing binges can lead to crises in the interim. Poor governance and weak credibility combined with 'original sin' and skittish capital markets exacerbated the likelihood of crises and large economic downturns associated with such events. The route to higher income per capita in these cases may be quite volatile and the payoffs may never arrive if crises are bad enough.

However, our look at the quantitative historical record shows that some exceptional countries accumulated their domestic capital stock through the judicious application of foreign capital and also avoided crises. They had already become relatively financially developed and had earned credibility in the eyes of international capital markets.

Foreign financing may also have conferred other benefits such as enhanced risk-sharing and consumption smoothing opportunities. We leave these dimensions of integration to further research. Further investigation into how countries transition from being crisis prone to having credibility, along the lines of Hoffman, Postel-Vinay and Rosenthal (2007), will also be fruitful for understanding the long run evolution of the benefits and costs of participating in a financial system with global reach.

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Data Appendix

Most of the data underlying this paper was used in our previous work (Bordo and Meissner 2007 and Bordo and Meissner 2006) and is explained thoroughly in those sources. The bulk of the macro historical data set is that used in Bordo et. al. (2001). Even more expansive data descriptions and sources are listed in the working paper versions of our work on crises in NBER working papers 11173 and 11897.

Country Sample:

The countries in our regressions include two sets. The first is constrained by availability of savings data. Countries in this set include: Argentina, Australia, Canada, Denmark, France, Germany, Italy, Japan, Norway, Spain, Sweden, USA. The second set includes the following additional countries: Austria, Brazil, Chile, India, New Zealand, Portugal, and Uruguay.

Constitutional Rules: Data kindly supplied from David Leblang.

Crisis Dating:

As in Bordo et. al (2001) we date currency and banking crises using both qualitative and quantitative evidence. For all countries besides Austria-Hungary, Russia, New Zealand, South Africa, Mexico, Turkey, Egypt, Uruguay and India we have relied on the dates of Bordo et. al. in both periods. We have tried to date currency crises, when possible, by using an approach based on the exchange market pressure (EMP) methodology which looks at changes in reserves, the exchange rate and the interest rate.

Debt crisis dates are based on Beim and Calomiris (2001). Only private lending to sovereign nations is considered when building those default dates. Not every instance of technical default is included in the chronology, the authors identified periods (six months or more) where all or part of interest/principal payments were suspended, reduced or rescheduled. Some of those episodes are outright debt repudiations, while others were reschedulings agreed upon mutually by lenders and borrowers. Also data is taken from a spreadsheet underlying Reinhart, Rogoff and Savastano (2003).

Mismatch

We focus on the public sector mismatch due to severe data constraints. We believe this is a relatively good proxy for the economy-wide mismatch. The functional form we choose is different from Goldstein and Turner and slightly closer to that found in Eichengreen, Hausmann and Panizza (2003).[35] For country *i* we have

$$\text{Mismatch}_i = \frac{\text{total hard currency debt outstanding - international reserves}}{\text{exports}}.$$

Our measure of reserves usually only includes gold reserves held at the central bank, in the banking system or held by the government treasury. The sources are listed in the appendix to our previous papers (cf. Bordo and Meissner 2007 and 2006). Total hard currency debt (domestic and international issues) is calculated directly if the data are available or by multiplying the total debt outstanding by the percentage of total debt that is payable in gold or foreign currencies.

Original Sin

We collected data from various national sources on hard currency debt (cf. Bordo and Meissner**,** 2007) and augmented and compared this with data made available by Flandreau and Zúmer (2004). What we refer to as hard currency debt (or original sin) is

[35] Eichengreen Hausmann and Panizza (2003) report that the correlation between their measure of mismatch and the Goldstein and Turner measure is 0.82.

debt that carried a gold clause or was made payable at a fixed rate in a foreign currency.[36] Our measure of original sin, *OS*, is the ratio of this quantity to total public debt outstanding:

$$OS_i = \max\left(1 - \frac{\text{Securities issued in currency i by country i}}{\text{Securities issued by country i}}, 0\right).$$

[36] The data appendices and the text in our previous work on crises has more to say about the structure of this debt.

Figure 1 Average Levels of the Ratio of Capital Inflows to GDP for Different Types of Capital Importers, 1880-1913

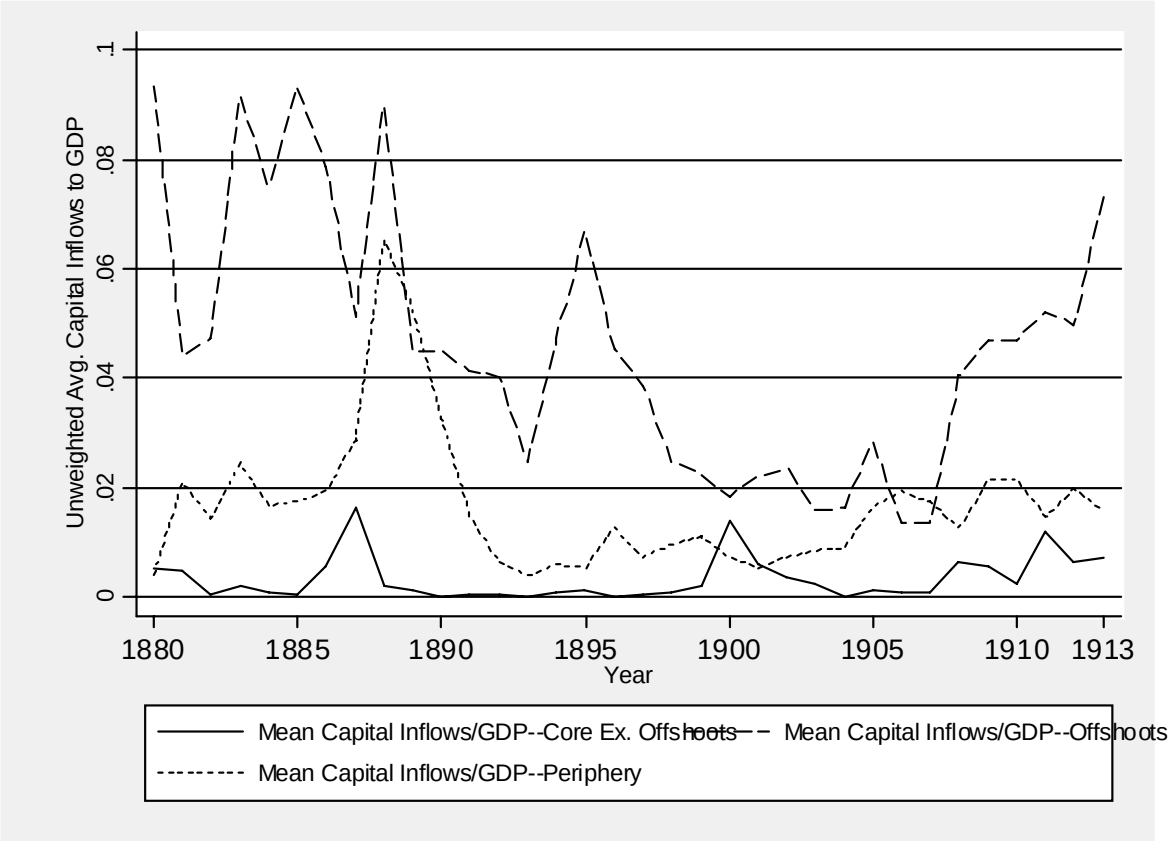
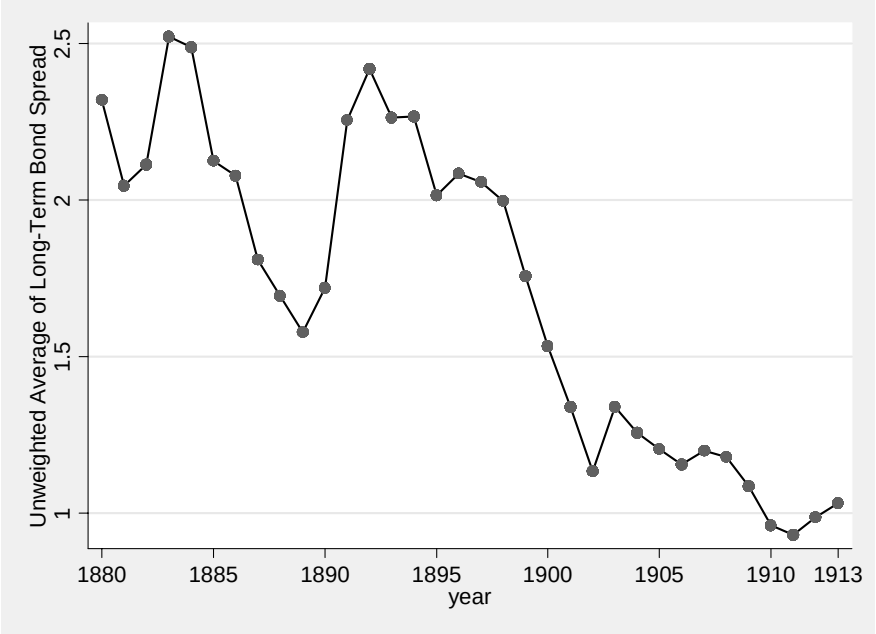


Figure 2 Average Bond Spreads, 1880-1913



Notes: Averages exclude bonds in default with spreads greater than 1200 basis points.

Figure 3 Bond Spreads versus a Measure of Productive Investment, 1874

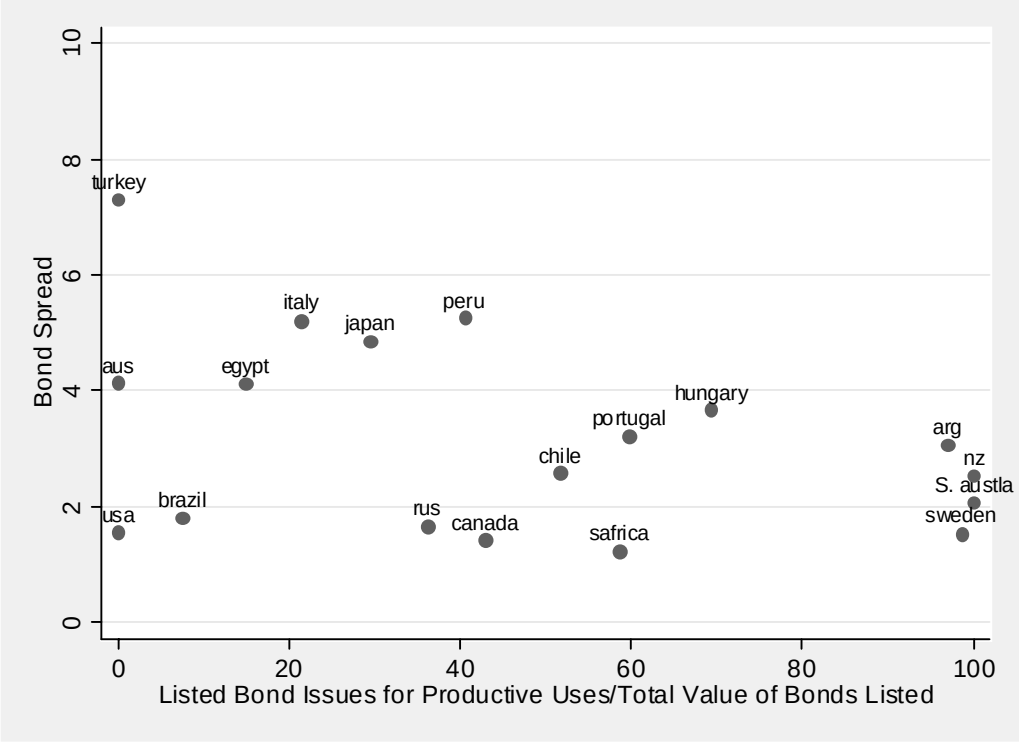


Figure 4 Framework for Balance Sheet Crises

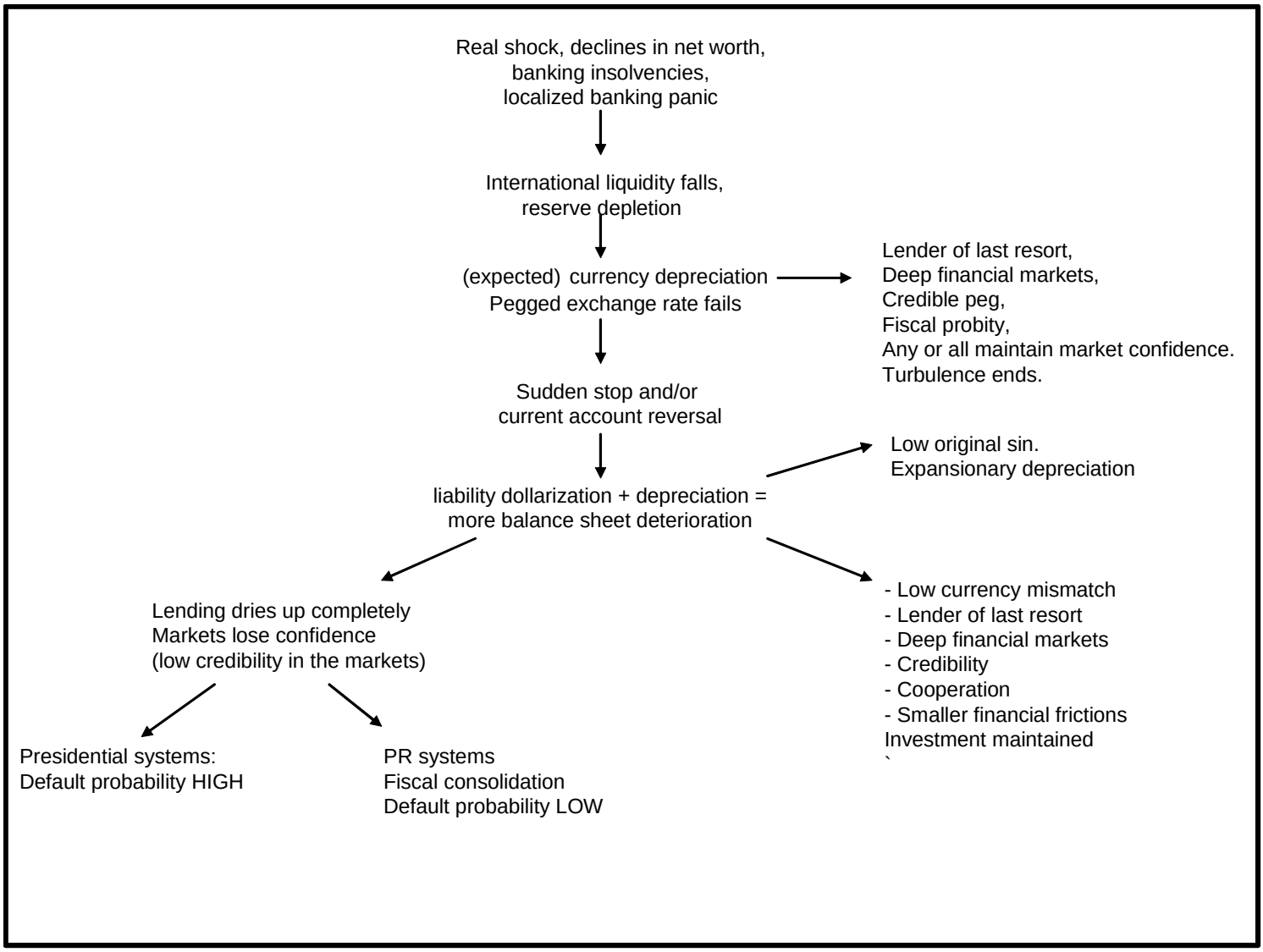


Figure 5 Annual Growth in Per Capita GDP versus International Capital Market Integration, 1880-1913

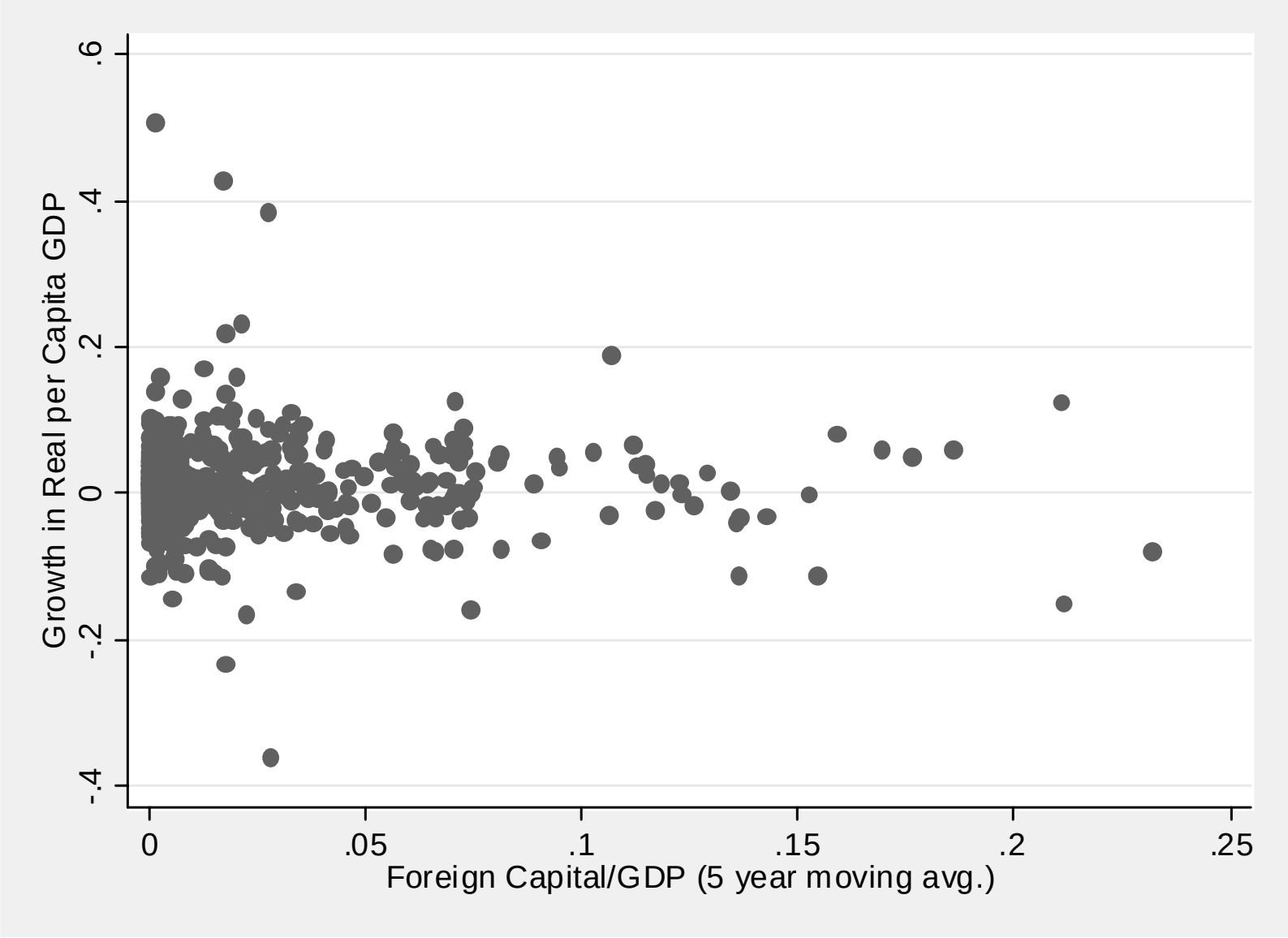


Figure 6 The Conditional Relation Between the Average Growth Rate of Real GDP per capita and the Average Ratio of Capital Inflows to GDP, 1880-1913.

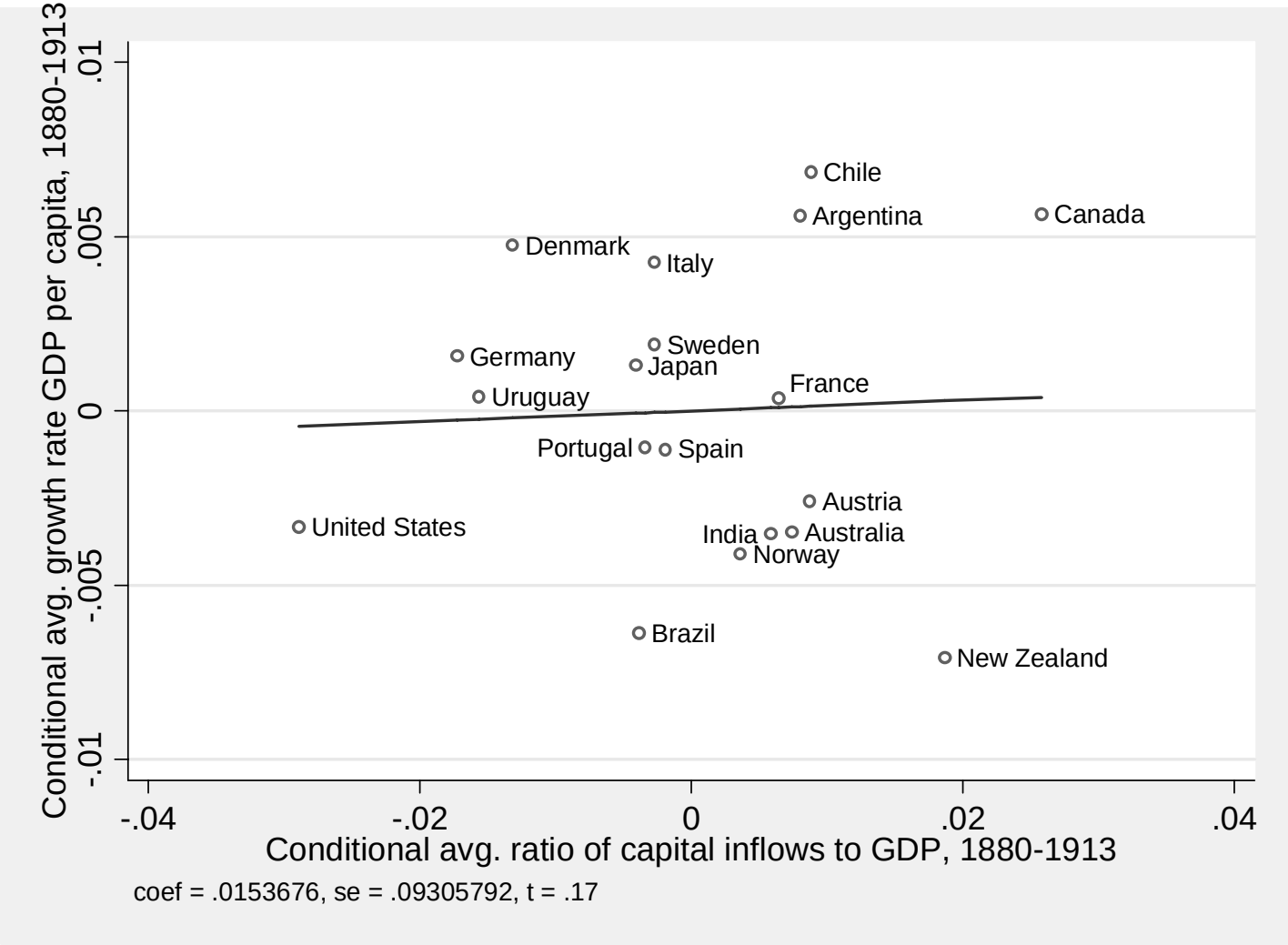
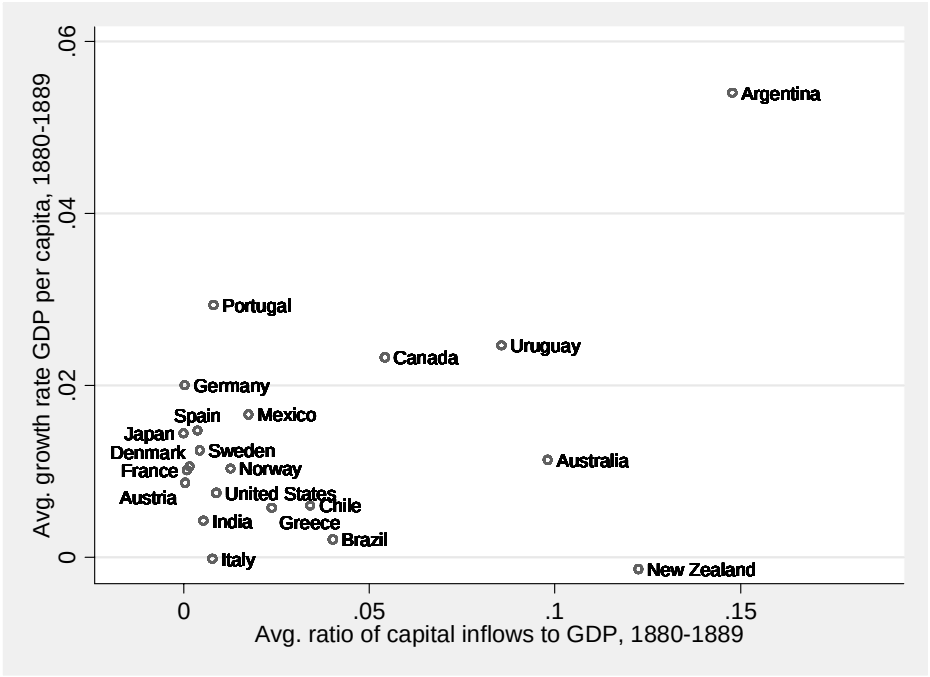
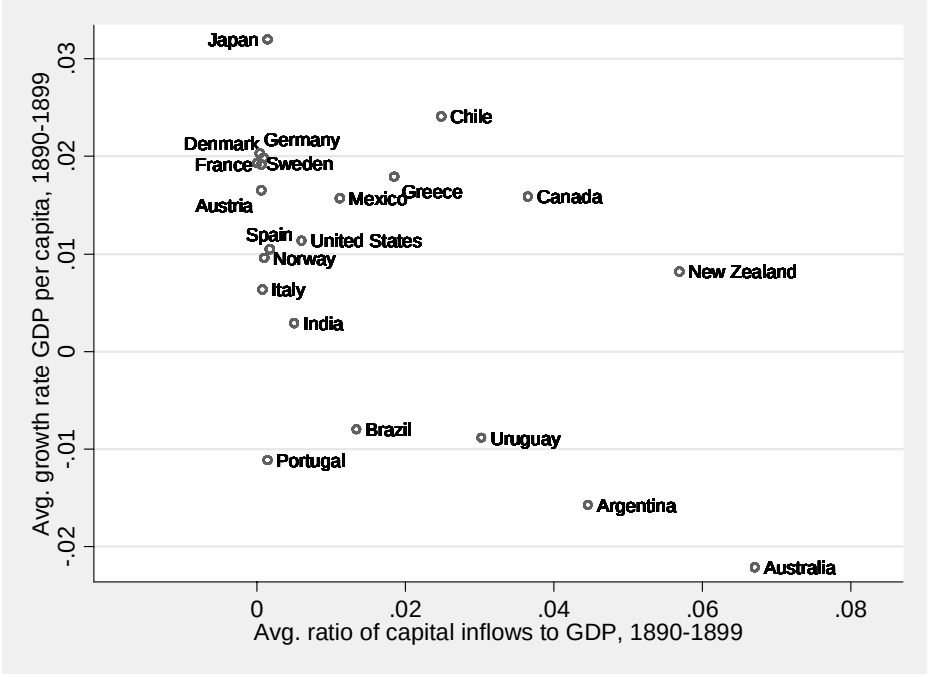


Figure 7 Growth in Per Capita GDP for three Sub-Periods versus Gross Inflows of Capital





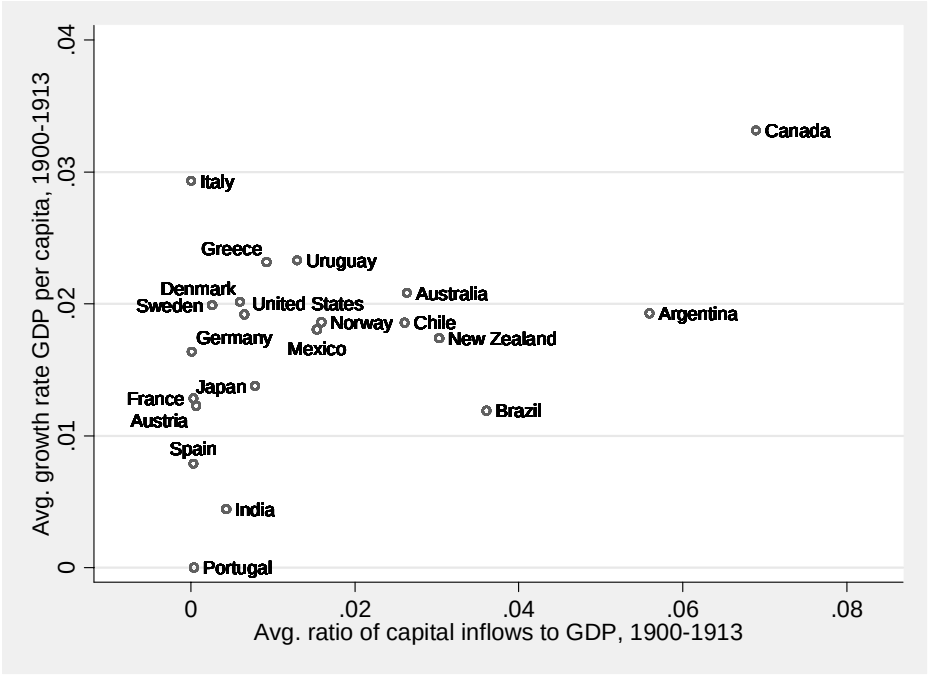


Figure 8 Crisis Incidence, 1880-1913

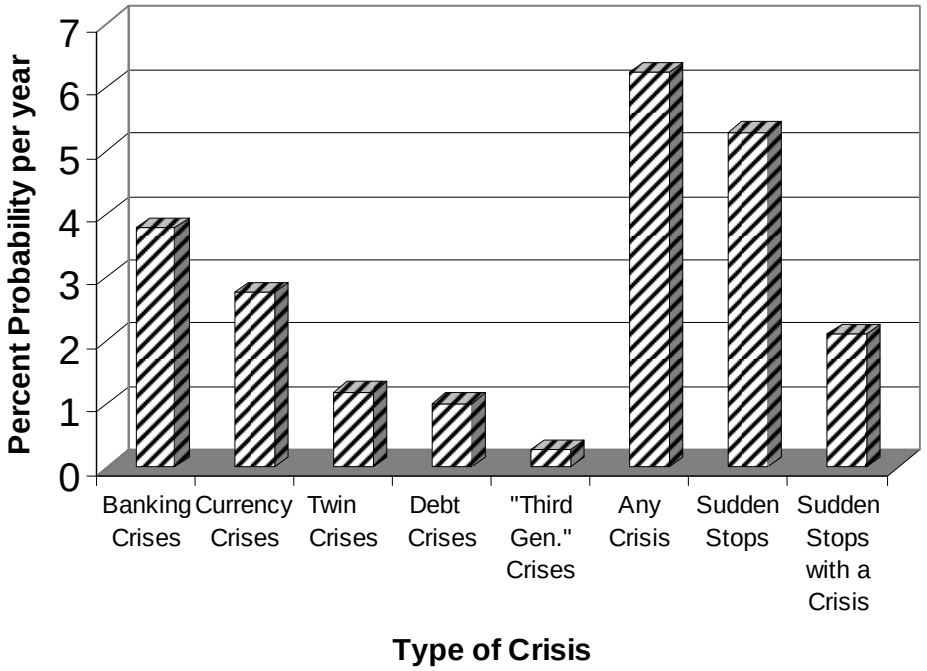


Table 1 Growth, Capital Market Integration and Financial Crises

Regressors	*(1)*	*(1a)*	*(2)*	*(2a)*
Avg Gross Capital Inflows/GDP *t*-1, *t - 5*	-0.036	-0.058	0.013	-0.016
	[0.030]	[0.063]	[0.027]	[0.036]
Financial Crisis *t* - 1	-0.024	-0.026	-0.016	-0.017
	[0.014]*	[0.014]*	[0.009]*	[0.008]*
Avg. Savings /GDP *t* - 1, *t* - 5	0.003	-0.019	---	---
	[0.037]	[0.073]		
Avg. Percentage of the Population	0.07	0.01	0.085	0.056
Enrolled in School *t*-1, t-5	[0.050]	[0.216]	[0.033]***	[0.097]
Exports/GDP *t -1*	0.025	0.009	-0.003	-0.039
	[0.029]	[0.141]	[0.008]	[0.027]
Avg. Growth Rate of Population *t* - 1, t-5	0.09	-0.509	-0.042	-0.527
	[0.160]	[0.561]	[0.173]	[0.257]*
ln {GDP per capita 1880}	-0.007	0	-0.003	0
	[0.003]**	[0.000]	[0.003]	[0.000]
Constant	0.039	0.018	0.028	0.018
	[0.022]*	[0.032]	[0.020]	[0.016]
Number of obs	346	346	550	550
Country Fixed Effects	no	yes	no	yes
R-squared	0.15	0.14	0.08	0.05

Notes: Dependent variable is the annual growth rate of GDP per capita. Hetreoscedasticity robust standard errors clustered at the country level are in parentheses. See the text for precise definitions of variables.

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

Table 2 International Integration and Growth, Five Year Periods, 1880-1910

Regressors	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Avg Gross Capital Inflows/GDP	0.16	0.055	---	---	---
	[0.099]*	[0.086]			
Avg Gross Capital Inflows/GDP *t*-11, *t*-16	---	---	0.089	0.124	0.156
			[0.061]	[0.054]**	[0.026]***
Avg. years in crisis	-0.012	-0.013	0.015	0.003	0.017
	[0.013]	[0.008]*	[0.017]	[0.009]	[0.012]
Avg. Savings /GDP	0.032	---	---	---	0.071
	[0.021]				[0.039]*
Avg. Savings /GDP *t* -11, *t*-16	---	----	-0.019	---	---
			[0.025]		
Avg. Percentage of the Population	0.111	0.122	0.138	0.141	0.125
Enrolled in School	[0.054]**	[0.041]***	[0.062]**	[0.046]***	[0.067]*
Exports/GDP *t -1*	0.031	0.006	-0.004	-0.021	0.023
	[0.029]	[0.006]	[0.030]	[0.011]*	[0.020]
Avg. Growth Rate of Population	-0.176	0.021	-0.115	-0.025	-0.28
	[0.184]	[0.194]	[0.189]	[0.150]	[0.227]
ln {Initial GDP per Capita}	-0.011	-0.008	-0.002	-0.005	-0.001
	[0.007]*	[0.005]*	[0.004]	[0.005]	[0.005]
Constant	0.082	0.064	0.017	0.042	0.001
	[0.044]*	[0.031]**	[0.030]	[0.030]	0.03
Number of obs	82	136	46	80	48
R-squared	0.28	0.17	0.22	0.30	0.26

Notes: Dependent variable is the average growth rate of GDP per capita within non-overlapping five year periods. See the text.

Hetreoscedasticity robust standard errors clustered at the country level are in parentheses. See text for precise definitions of variables.

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

Table 3 The Determinants of Currency and Debt Crises

Regressors	*Currency Crises*	*Debt crises I*	*Debt Crises II*
	(1)	*(2)*	*(3)*
Original Sin	0.001	0.070**	0.031**
	(0.019)	(0.032)	(0.014)
Original Sin x currency crisis	---	---	0.043*
			(0.023)
Original Sin x gold standard indicator	---	-0.051	---
		(0.033)	
Mismatch	0.003	0.011**	0.013**
	(0.003)	(0.004)	(0.006)
Square of mismatch	---	-0.002***	-0.002***
		(0.001)	(0.001)
Debt/Revenue	-0.002	0.002	0.003*
	(0.003)	(0.002)	(0.001)
Debt/Revenue x Pre-1880 Default	---	0.003*	0.001
		(0.002)	(0.001)
Pre-1880 Default	---	-0.064*	-0.017
		(0.035)	(0.015)
Presidential System	---	0.10	0.11
		(0.02)***	(0.02)***
Change in the Current Account/GDP	0.004	---	---
	(0.002)**		
Current Account/GDP	---	-0.003***	-0.004***
		(0.001)	(0.001)
Long-term interest rate	0.0001	0.009**	0.009***
	(0.003)	(0.003)	(0.003)
Consol interest rate	-0.006	0.033**	0.038**
	(0.021)	(0.016)	(0.017)
Gold standard dummy	0.023	0.044	0.004
	(0.018)	(0.030)	(0.004)
Percentage Change in the money supply	-0.053	---	---
	(0.098)		
Gold reserves/notes in circulation	-0.055**	---	---
	(0.025)		
Currency crisis in *t*	---	0.061***	-0.003
		(0.023)	(0.008)
Currency crisis in *t*-1	---	-0.007*	-0.007*
		(0.004)	(0.004)
Banking crisis in *t*	0.022	0.016	0.016
	(0.040)	(0.011)	(0.010)
Banking crisis in *t*-1	0.082	0.004	0.012
	(0.075)	(0.006)	(0.011)
constant	-1.46	-27.77	-26.36
	(1.16)	(9.73)	(11.7)
Number of obs	596	604	604
Pseudo R-squared	0.103	0.71	0.69

Notes: Dependent variable in column (1) is currency crises. Dependent variable in columns (2) and (3) is a debt default. Robust clustered standard errors are in parentheses. See the text for precise definitions of variables.

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01