

# The great reversals: the politics of financial development in the twentieth century<sup>☆</sup>

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## Abstract

The state of development of the financial sector does not change monotonically over time. In particular, by most measures, countries were more financially developed in 1913 than in 1980 and only recently have they surpassed their 1913 levels. To explain these changes, we propose an interest group theory of financial development where incumbents oppose financial development because it breeds competition. The theory predicts that incumbents' opposition will be weaker when an economy allows both cross-border trade and capital flows. This theory can go some way in accounting for the cross-country differences in, and the time-series variation of, financial development.

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*JEL classification:* G100; G180; G200; G380; O160; P000

*Keywords:* Financial markets; Growth; Politics; Financial development; Reversals; Trade; Capital flows

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<sup>☆</sup>This paper is a development of some ideas in a previous working paper entitled “The Politics of Financial Development.” We thank the Bradley Foundation, the George J. Stigler Center for the Study of the Economy and the State, the Center for Research in Securities Prices, the Kauffman Foundation, and the World Bank for funding support. Rajan also thanks the National Science Foundation and M.I.T. for research support. Claudio Callegari, Henrik Cronqvist, Shola Fafunso, Isidro Ferrer, Jorg Kukies, Roger Laeven, Jamers Mello, Galina Ovtcharova, Nahid Rahman, Sofia Ramos, Ruy Ribeiro, Amir Sasson, and Elfani Wen provided excellent research assistantship and Arnoud Boot, Pratip Kar, Claus Parum, Kristian Rydqvist, and Elu Von Thadden provided invaluable help. We benefited from comments by Lucian Bebchuk, Stijn Claessens, Peter Hogfeldt, Louis Kaplow, Colin Mayer, Mark Ramseyer, Eric Rasmussen, Mark Roe, Andrei Shleifer, Richard Sylla, and an anonymous referee.

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## 1. Introduction

There is a growing body of evidence indicating that the development of a country's financial sector greatly facilitates its economic growth (e.g., Demircuc-Kunt and Maksimovic, 1998; King and Levine, 1993; Jayaratne and Strahan, 1996; Rajan and Zingales, 1998a). Why then do so many countries still have underdeveloped financial sectors?

The simple answer, and one favored by many economists, is the absence of demand. Certainly demand is a prime driver of financial development, but it cannot be the only explanation. Demand (as proxied for by level of industrialization or economic development) cannot explain why countries at similar levels of economic development differ so much in the level of their financial development. For instance, why was France's stock market much bigger as a fraction of its gross domestic product (GDP) than markets in the United States in 1913, even though the per capita GDP in the United States was not any lower than France's? It is hard to imagine that the demand for financing in the United States at that time was inadequate. At the time, the demand for more, and cheaper, credit was a recurrent theme in political debates in the United States, and it was among the most industrialized countries in the world even then.

An alternative explanation is that there are structural impediments to supply rising to meet demand. Perhaps a country does not have the necessary levels of social capital (Guiso et al., 2000) or "savoir faire" to create a viable financial sector (e.g., Bencivenga and Smith, 1991; Greenwood and Jovanovic, 1990). Or perhaps it has not inherited the right legal, cultural, or political system. In particular, the seminal work of La Porta et al. (1997, 1998) shows that countries with a Common Law origin seem to have better minority investor protection, and furthermore, these countries have more highly developed equity markets. There has been some debate as to the precise channel through which a country's institutional inheritance affects its financial development (e.g., Berglof and Von Thadden, 1999; Coffee, 2000; Holmen and Hogfeldt, 2000; La Porta, et al., 1999a, 1999b; Rajan and Zingales, 1999; Stulz and Williamson, 2001). Some question whether the influence of certain forms of Civil Law heritage can be distinguished from the influence of a Common Law heritage (e.g., Beck et al., 1999). Yet, there is a burgeoning literature suggesting that a country's "structure" matters.

There are other implications, however, of structural theories of financial development. For instance, once a country has overcome the structural impediments, the supply of finance should rise to meet demand. In other words, we should not see measures of financial development waxing and waning independent of demand. Similarly, conditional on demand, the relative position of different countries should not change dramatically over time. If some countries have a system that is pre-disposed towards finance, that pre-disposition should continue to be relatively strong since structural factors are relatively time-invariant.

To test these implications, we collect various indicators of financial development for developed countries over the twentieth century. By most measures, countries were more financially developed in 1913 than in 1980 and only recently have they

surpassed their 1913 levels. Furthermore, even after controlling for the different levels of industrialization, the pattern across countries is quite different from the 1990s. In 1913, France's stock market capitalization (as a fraction of GDP) was almost twice that of the United States (0.78 vs. 0.39) even though the French Civil Code has never been friendly to investors (La Porta et al., 1998). By 1980, roles had reversed dramatically. France's capitalization was now barely one-fourth the capitalization in the United States (0.09 vs. 0.46). And in 1999, the two countries seem to be converging (1.17 vs. 1.52). More generally, in 1913, the main countries of continental Europe were more developed financially than the United States. What is especially interesting is that indicators of financial development fell in all countries after 1929, reaching their nadir around 1980. Since then, there has been a revival of financial markets.

In fact, in contrast to the findings of La Porta et al. (1997) for the 1990s, we find that countries with Common Law systems were not more financially developed in 1913. There is some indication that these differences had to do with differences in financial infrastructure. Tilly (1992) indicates that corporate share issues in Germany in the beginning of the Twentieth Century were greater than in England. He suggests this is because of the "paucity of information and relatively weak financial controls on the operations of company founders and insiders" (p. 103) in England. The common wisdom today is the reverse, that German corporations are much less transparent than corporations in the United Kingdom, as reflected by their lower scores on accounting standards.

The disruption in demand caused by the Great Depression and World War II are not sufficient to explain the reversal in financial markets. The economies of the hardest-hit countries recovered within a decade or two. Why did it take financial markets until the late 1980s to stage a recovery? Moreover, such a delay was not seen after the World War I.

All this is not to suggest that structural theories are incorrect, but that they are incomplete. A theory with a more variable factor is needed to explain both the time-series variation in financial development as well as the cross-sectional differences. In our view, the strength of political forces in favor of financial development is a major variable factor. The challenge for such a theory is to identify who is opposed to something as economically beneficial as financial development. We believe that incumbents, in the financial sector and in industry, can be hostile to arm's length markets. This is because arm's length financial markets do not respect the value of incumbency and instead can give birth to competition. There are occasions, however, when the incentives, or the ability, of incumbents to oppose development is muted. In particular, we argue that when a country's borders are open to both trade and capital flows, we see the opposition to financial development will be most muted and development will flourish.

Of course, the decision to open to trade and capital flows is also partly political. This raises two questions. First, why do some countries become more open than others, or open up at some times rather than at others—do the incumbents not oppose opening up? And second, how can we provide evidence of a causal link rather than simply a correlation: How can we argue that the link between openness and

financial development should be interpreted as one causing the other rather than simply as evidence that incumbents who favor openness also favor financial development?

Let us answer the first question first. Some countries have no choice. Because they are small, or because they are close to other countries, they are likely to have more trade. Therefore, these countries are likely open for reasons that are not political. Also, even if the decision is political, countries' decisions whether to open up are likely strategic complements. If important parts of the world are open, then natural leakages across borders (the gray trade, smuggling, under-invoicing, over-invoicing, etc.) are likely to be high and make it hard for a country to remain closed. Moreover, groups that are in favor of openness (for example, exporters) are likely to gain in prospective profitability and strength relative to those who rely on controls, and they are likely to have more success in pressing for openness (e.g., Becker, 1983). The economic importance of other countries that are open can be thought of as largely exogenous to a country's domestic politics.

These observations suggest ways to test whether openness has a causal effect. First, in examining the link between trade openness and financial development, we instrument trade openness with a measure of natural openness (largely based on a country's distance from its trading partners) developed by Frankel and Romer (1999). We thus focus on the exogenous component of a country's trade. Because distance matters less for capital, we do not have a similar instrument for cross-border capital flows. But precisely because capital is more mobile, the strategic complementarities in cross-border capital flows are likely to be stronger. So we can use world-wide cross-border capital flows over time as an exogenous measure of whether countries are more open to capital flows. International capital mobility is high both in the beginning and towards the end of the twentieth century for most countries. Thus, we test in the cross-section of countries if financial development is positively correlated with the exogenous component of a country's openness to trade (correcting for the demand for finance), both in the beginning of the century and towards the end of the century, and it is.

By contrast, in the intermediate periods (from the 1930s to the 1970s) when cross-border capital flows had dwindled to a trickle for a variety of reasons, we find that trade openness did not have as strong a positive correlation (if at all) with financial development. These findings suggest that it takes the combination of openness in product and financial markets to mute incumbent incentives to oppose financial development. They also suggest a rationale for why indicators of financial development fell between the 1930s and the 1970s. Cross-border flows, especially of capital, were relatively small, so incumbents could oppose financial development without constraints.

We are, of course, not the first to point to the influence of private interests on financial development, though our focus is quite different from previous work. Jensen (1991) argues that legislation motivated by potential targets crimped the market for corporate control even while it was having salutary effects on US industry. Kroszner and Strahan (1999) explain the timing of financial liberalization across states in the United States in the 1970s and 1980s with variables that relate to

the power of private interest groups. Morck et al. (2000) find that the share prices of heir-controlled Canadian firms fell on news that the Canada–US free-trade agreement would be ratified. One reason they suggest is that the treaty had a provision for greater capital market openness, which would reduce the advantage heir-controlled firms had from access to capital. Bebchuk and Roe (1999) argue that corporate governance regimes will be strongly influenced by the initial positions of owners. Our paper is related to all these in that we also emphasize the role of private interests in retarding financial development, but we differ in that we attempt to find general patterns across countries.

We will postpone a discussion of the other related literature until we present the theoretical reasoning and tests. The rest of the paper is as follows. Section 2 describes how we collect the data and presents measures of financial-sector development in different countries at various points in the twentieth century. Section 3 presents our interest group theory of why some countries develop their financial systems (and others not) and argues why this could explain the reversals in the data. Section 4 tests both the time-series and cross-sectional implications of this theory. Section 5 concludes.

## 2. Evolution of financial development over the twentieth century

We are faced with two problems in analyzing the historical evolution of financial development over the twentieth century. First, it is difficult to obtain reliable sources for historical information about financial markets. In Appendix A, we describe how we deal with this problem. The second problem is how to measure financial development.

### 2.1. *What do we mean by financial development?*

The right measure would capture the ease with which any entrepreneur or company with a sound project can obtain finance, and the confidence with which investors anticipate an adequate return. Presumably, also, a developed financial sector can gauge, subdivide, and spread difficult risks, letting them rest where they can best be borne. Finally, it should do all this at low cost.

In our view, the most important word in the above definition is “any.” In a perfect financial system, it will be the quality of the underlying assets or ideas that will determine whether finance is forthcoming, and the identity of the owner (to the extent it is orthogonal to the owner’s capability of carrying out the project) will be irrelevant. Because our focus is on how easy it is to raise finance without prior connections or wealth, our measures of financial development will emphasize the availability of arm’s length market finance (and if the data were available, the availability of non-relationship-based bank finance).

This choice is not innocuous. In some financial systems, capital is easily available for anyone within a circle of firms and financiers, but it does not percolate outside (e.g., Hellwig, 2000; Rajan and Zingales, 1998b). Most investment opportunities

originate within this closed group, and this group can undertake more daring investment than would be possible in an economy with more widespread access. We would not deem this economy to be financially developed. In a sense, we adopt the Schumpeterian view that a critical role of finance is creative destruction, and this is possible only if there is a constant flow of capital into new firms and out of old firms.

Our definition of development then suggests different ratios of the size of arm's length markets to the size of the economy as our measures of financial development. For example, measures include ratios such as equity market capitalization to GDP, volume of equity issues to gross fixed-capital formation, or number of listed firms to population in millions. While they are no doubt crude proxies, these ratios broadly capture a country's level of financial sophistication and they are standard in the literature. For the sake of comparison, we will also report a measure of the development of the banking sector.

## 2.2. *Various measures of financial development*

Let us now describe the various indicators of financial development we use.

### 2.2.1. *Banking sector*

We use the ratio of deposits (commercial banks plus savings banks) to GDP as a measure of the development of the banking sector. One shortcoming is that this measure captures only the liability side of banks, ignoring differences in the composition of the banks' assets. Another shortcoming is that this measure cannot indicate if banks operate as a cartel, forming a closed shop to new industrial entrants. Despite this shortcoming, the measure has the virtue that it is available for a long time-series and for a large cross-section of countries. In more recent periods, we have domestic credit from the private sector to GDP, which will be our measure of banking-sector development.

### 2.2.2. *Equity issues*

One measure of the importance of equity markets is the fraction of investments that are funded through equity issues. The proxy we use is the ratio of equity issues by domestic corporations to gross fixed capital formation (GFCF) during the year. Ideally, we would have liked to normalize corporate equity issues by the amount of corporate investments, but this datum is not consistently available. In interpreting the results, therefore, it is important to realize that our measure will tend to underestimate the level of financial development of countries where agriculture (which does not enter in corporate investments but does enter in total investments) is more significant. It will also tend to underestimate the level of financial development in the earlier part of the century, when corporate investments were a smaller fraction of total investments.

Another drawback of this measure stems from the well-known cyclicity of equity issues. A disproportionate amount of equity issues are concentrated during boom years (Choe et al., 1993). This can bias cross-country comparisons to the extent stock market booms are not contemporaneous across economies. It also biases the

time-series comparisons if one of the reference years is a boom year. To minimize the problem, we average issues over a number of years when we have easy access to annual data.

### 2.2.3. *Capitalization*

A more stable measure of the importance of the equity market is the total stock market capitalization. A drawback is this measure captures the amount of equity listed, not the amount of equity raised. Thus, the presence of few companies that have greatly appreciated in value can give the impression of an important equity market even when the amount of funds raised in the market is tiny. On the positive side, however, this measure is less cyclical than the previous one and thus is better for making comparisons across countries and across time periods.

In measuring both equity issues and stock market capitalization we restrict ourselves whenever possible to domestic companies. At the beginning of the twentieth century, London and Paris attracted foreign listings. More recently, New York attracts many foreign listings. We are especially interested, however, in how a country's financial and legal institutions help domestic industries raise funds, and as some have argued (e.g., Kennedy, 1989), the financial sector's ability to fund foreigners may not imply an ability to fund domestic firms. Moreover, our focus reduces the possibility of mechanical correlations in our tests. This is why we limit ourselves to domestic companies.

### 2.2.4. *Number of companies listed*

A final indicator of the importance of equity markets is the number of publicly traded domestic companies per million of population. This is a measure that is not tainted by fluctuations in stock market valuations and possible mismeasurement of the level of GDP. This also suggests a drawback. It could be too slow-moving a measure to fully capture high frequency changes in the environment. Also, the measure will be affected by the process of consolidation as well as by the fragmentation of the industrial structure. Countries with a more concentrated industrial structure will have fewer, but larger, companies and thus might score low according to this measure. Since concentration will reflect, only in part, limited access to finance, this measure will be a noisy proxy for what we want to capture.

One indicator that is missing from our list is the volume of securities traded. Unfortunately, the way volume is recorded (even today) is quite controversial. The Federation Internationale Bourses Valeurs (FIBV) classifies data on volume traded into two groups: trading system view (TSV) and regulated environment view (REV). The TSV system counts as volume only those transactions which pass through the exchange's trading floor, or which take place on the exchange's trading floor. The REV system includes in volume all the transactions subject to supervision by the market authority, with no distinction between on- and off-market transactions. As the FIBV warns, comparisons are not valid between stock exchanges belonging to different groups, because the numbers differ substantially depending on method used. For example, in Paris, according to the TSV method the volume of equity traded in 1999 was \$770,076 million, while the REV method suggests a volume four

times greater (\$2,892,301 million). Given the magnitude of the difference and the impossibility of obtaining consistent data both across countries and over time, we chose to disregard this indicator.

In sum, any indicator has its own drawbacks. This is the reason why they should be looked at together to get a better sense of the development of a country's financial structure.

### 2.3. *Stylized facts*

In [Table 1](#), we report the average value of our four indicators of financial development for the period 1913–1999. The countries in our sample are those for which we could get pre-World War II financial market data. Since the availability of data on financial development has exploded recently, we include all the countries whose data we can get in our tests for the most recent years. For every indicator we report both the average across all available observations and the average for the countries with observations throughout the sample period. In [Tables 2–5](#) we report the value of each indicator for each country. An examination of these tables suggests the following facts.

#### 2.3.1. *Financial systems were highly developed in 1913*

Regardless of the way we measure, the average level of financial development in 1913 is quite high, comparable to that in 1980 or 1990. The average ratio of deposits to GDP in 1913 is very similar to that in 1980 (see [Table 1](#)). The absence of an upward trend reflects the fact that countries depend less on banks and more on financial markets as they develop economically. But the data on the capitalization of the stock market ([Tables 1 and 3](#)) suggest that in most countries equity markets were bigger relative to GDP in 1913 than in 1980. Only by the end of the 1990s do they seem to exceed their 1913 level.

Equity issues also an important source of funds for corporate investments than 1980 (and even 1990) for most countries whose data we have (see [Tables 1 and 4](#)). This is particularly noteworthy when we recognize that the 1913 figures are biased downwards relative to the 1990 ones, because we normalize by Gross Fixed Capital Formation, and corporate investments represent a much smaller proportion of GFCF in 1913 than in 1990.

Most countries have the same number of listed companies per million people in 1913 as in 1980 (see [Tables 1 and 5](#)). In some countries, even with the explosion of financial markets during the late 1990s, the 1913 level has not been surpassed.

While, in general, the richest countries had highly developed financial sectors in 1913, the degree of development does vary widely. The level of economic development explains only 14% of the cross-country variation in the deposit-to-GDP ratio and it is not even statistically significant in explaining the level of equity market capitalization. For example, in 1913 Argentina shows about the same per capita GDP as Germany and France, but its level of deposits is only about two-thirds that of France and Germany. Similarly, our data show that in 1913

**Table 1**  
 Evolution of the different indicators of financial development  
 Whole sample indicates an average across all the countries we have data for. Constant sample indicates an average across countries for which we have data every year. Deposits to GDP is the ratio of commercial and savings bank deposits to GDP. Stock market cap to GDP is the ratio of the aggregate market value of equity of domestic companies divided by GDP. Number of companies to population is the ratio of number of domestic companies whose equity is publicly traded in a domestic stock exchange to the country's population in millions. Equity issues to GFCF is the ratio of funds raised through public equity offerings (both initial public offerings and seasoned equity issues) by domestic companies to gross fixed capital formation. N is the number of observations. Sources are in the Data Appendix, which is available on request from the authors.

Year	Deposits to GDP			Stock market cap to GDP			No. of companies to population			Equity issues to GFCF		
	Whole	N	Constant sample (N=20)	Whole	N	Constant sample	Whole	N	Constant sample	Whole	N	Constant sample (N=7)
1913	0.38	22	0.40	0.57	22	0.40	28.68	22	24.00	0.12	12	0.13
1929	0.49	21	0.51	0.60	11	0.53	33.80	14	27.75	0.35	15	0.34
1938	0.45	21	0.46	0.58	13	0.57	30.12	13	27.69	0.13	12	0.10
1950	0.33	22	0.34	0.30	14	0.27	38.63	16	23.80	0.06	11	0.03
1960	0.31	22	0.33	0.47	18	0.44	31.85	19	22.38	0.07	16	0.05
1970	0.31	22	0.33	0.49	19	0.42	23.66	19	21.22	0.06	16	0.02
1980	0.34	22	0.35	0.26	22	0.25	26.70	21	23.71	0.03	18	0.03
1990	0.41	21	0.40	0.57	21	0.51	22.18	22	23.21	0.05	20	0.05
1999	0.46	21	0.45	1.02	23	1.08	26.30	22	24.46	0.13	20	0.18

Table 2

## Evolution of the ratio of deposits to GDP

Deposits to GDP is the ratio of commercial and savings deposits divided by GDP. Until 1990 the source is Mitchell (1995). We extrapolate the 1999 data from the 1994 data in Mitchell using the rate of growth of deposits as reported in *International Financial Statistics* published by the International Monetary Fund.

Country	Year								
	1913	1929	1938	1950	1960	1970	1980	1990	1999
Argentina	0.29	0.36	0.36	0.30	0.22	0.19	0.28	0.07	0.24
Australia	0.37	0.45	0.45	0.69	0.43	0.38	0.29	0.42	0.49
Austria	1.12	0.37	0.33	0.21	0.28	0.31	0.62	0.73	0.70
Belgium	0.68	0.48	0.69	0.44	0.35	0.40	0.39	0.38	0.85
Brazil	0.12	0.16	0.21	0.20	0.15	0.12	0.17		
Canada	0.22	0.13	0.16	0.17	0.13	0.37	0.47	0.49	0.61
Chile	0.16	0.15	0.09	0.10	0.06	0.07	0.07	0.12	0.19
Cuba									
Denmark	0.76	0.46	0.39	0.32	0.27	0.25	0.28	0.55	0.54
Egypt				0.17	0.17	0.14	0.31	0.67	0.51
France	0.42	0.44	0.36	0.24	0.30	0.33	0.45	0.42	0.47
Germany	0.53	0.27	0.25	0.15	0.23	0.29	0.30	0.32	0.35
India	0.04	0.09	0.12	0.08	0.08	0.09	0.08	0.09	0.09
Italy	0.23	0.21	0.31	0.23	0.81	0.54	0.59	0.40	0.28
Japan	0.13	0.22	0.52	0.14	0.21	0.33	0.48	0.51	0.53
Netherlands	0.22	0.32	0.52	0.28	0.28	0.26	0.25	0.73	0.69
Norway	0.65	0.89	0.56	0.52	0.43	0.49	0.30	0.50	0.49
Russia	0.21								
South Africa	0.09	0.09	0.16	0.18	0.18	0.16	0.12	0.16	0.21
Spain	0.07	0.24	0.24	0.33	0.37	0.53	0.44	0.66	0.71
Sweden	0.69	0.69	0.73	0.59	0.54	0.50	0.48	0.40	0.39
Switzerland	0.93	1.08	1.13	0.79	0.78	0.69	0.69	0.54	0.66
UK	0.10	2.88	1.34	0.67	0.32	0.22	0.14	0.33	0.39
US	0.33	0.33	0.44	0.40	0.30	0.25	0.18	0.19	0.17

Argentina's per capita GDP was three times as big as Japan's, but the relative size of its equity market was only one-third of Japan's.

### 2.3.2. Countries most advanced in 1913 do not necessarily stay advanced

By our measures, countries that were financially developed in 1913 do not necessarily continue to be so. In 1913, equity issues appear more important in France, Belgium, and Russia than in the United States. Thus, by this measure, some continental European markets seem at least as developed as the US market at that time. The data on market capitalization in Table 3 confirm this impression. While the UK had a high capitalization in 1913, Belgium, France, Germany, and Sweden were all ahead of the United States. Recent studies highlight the distinction between Civil Law continental European economies and Common Law Anglo-American economies, but the early data do not confirm this. In fact, this distinction seems to be a post-World War II phenomenon implying financial markets in Civil Law countries

Table 3

## Evolution of stock market capitalization over GDP

Stock market capitalization to GDP is the ratio of the aggregate market value of equity of domestic companies to GDP. Sources are in the Data Appendix, which is available on request from the authors.

Country	Year								
	1913	1929	1938	1950	1960	1970	1980	1990	1999
Argentina	0.17				0.05	0.03	0.11		0.15
Australia	0.39	0.50	0.91	0.75	0.94	0.76	0.38	0.37	1.13
Austria	0.76					0.09	0.03	0.17	0.17
Belgium	0.99	1.31			0.32	0.23	0.09	0.31	0.82
Brazil	0.25						0.05	0.08	0.45
Canada	0.74		1.00	0.57	1.59	1.75	0.46	1.22	1.22
Chile	0.17				0.12	0.00	0.34	0.50	1.05
Cuba	2.19								
Denmark	0.36	0.17	0.25	0.10	0.14	0.17	0.09	0.67	0.67
Egypt	1.09				0.16		0.01	0.06	0.29
France	0.78		0.19	0.08	0.28	0.16	0.09	0.24	1.17
Germany	0.44	0.35	0.18	0.15	0.35	0.16	0.09	0.20	0.67
India	0.02	0.07	0.07	0.07	0.07	0.06	0.05	0.16	0.46
Italy	0.17	0.23	0.26	0.07	0.42	0.14	0.07	0.13	0.68
Japan	0.49	1.20	1.81	0.05	0.36	0.23	0.33	1.64	0.95
Netherlands	0.56		0.74	0.25	0.67	0.42	0.19	0.50	2.03
Norway	0.16	0.22	0.18	0.21	0.26	0.23	0.54	0.23	0.70
Russia	0.18								0.11
South Africa				0.68	0.91	1.97	1.23	1.33	1.20
Spain							0.17	0.41	0.69
Sweden	0.47	0.41	0.30	0.18	0.24	0.14	0.11	0.39	1.77
Switzerland	0.58					0.50	0.44	1.93	3.23
UK	1.09	1.38	1.14	0.77	1.06	1.63	0.38	0.81	2.25
US	0.39	0.75	0.56	0.33	0.61	0.66	0.46	0.54	1.52

appear to have declined more between 1913 and the early 1990s (though the gap has narrowed since).

Another way of seeing the change in patterns is to compute the correlation between indicators of financial development at different points in time. Using the Spearman rank correlation test, we find a correlation of 0.4 between capitalization to GDP in 1913 and capitalization to GDP in 1999. We reject the hypothesis that the two distributions across countries are independent at the 10% level (21 observations). The cross-country pattern of financial development in 1999 is positively correlated with that in 1913. However, this is not true a decade earlier. The correlation of the 1913 data with 1990 and 1980 data is lower (0.21 in 1990,  $-0.07$  in 1980), and we cannot reject the hypothesis that the distributions are independent.

By way of comparison, consider the cross-country correlation of per-capita GDP measured at two different points in time. Using the Spearman rank correlation test, we find a correlation of 0.55 between per-capita GDP in 1913 and per-capita GDP in 1999 (independence rejected at the 1% level with 22 observations). The correlation of the 1913 data with 1990 and 1980 data is equally high (0.62 for 1990, 0.73 for 1980).

Table 4

Evolution of fraction of gross fixed-capital formation raised via equity  
 Amount of funds raised through public equity offerings (both initial public offerings and seasoned equity issues) by domestic companies divided by gross fixed capital formation. Sources are in the Data Appendix, which is available on request from the authors.

Country	Year								
	1913	1929	1938	1950	1960	1970	1980	1990	1999
Argentina					0.01		0.01	0.10	0.02
Australia		0.13		0.19	0.09	0.05	0.05	0.09	0.24
Austria		0.07			0.04	0.07	0.00	0.07	0.03
Belgium	0.23	0.85	0.03		0.09	0.08	0.03	0.01	0.06
Brazil				0.20	0.19	0.19	0.06	0.01	0.07
Canada		1.34	0.02	0.03	0.03	0.01	0.04	0.01	0.07
Chile									
Cuba									
Denmark		0.03	0.01				0.01	0.08	0.09
Egypt									0.31
France	0.14	0.26	0.03	0.02	0.04	0.04	0.06	0.02	0.09
Germany	0.07	0.17	0.06	0.00	0.04	0.02	0.01	0.04	0.06
India						0.00	0.00	0.00	0.08
Italy	0.07	0.26	0.03	0.02	0.08	0.02	0.04	0.04	0.12
Japan	0.08	0.13	0.75		0.15	0.03	0.01	0.02	0.08
Netherlands	0.38	0.61	0.45	0.02	0.02	0.00	0.01	0.10	0.67
Norway		0.05	0.01					0.04	0.06
Russia	0.17								
South Africa						0.33	0.08	0.10	0.14
Spain	0.01	0.33		0.08	0.11	0.07	0.03	0.06	0.10
Sweden	0.08	0.34	0.06	0.01	0.03	0.00	0.00	0.03	0.10
Switzerland	0.03				0.02			0.02	
UK	0.14	0.35	0.09	0.08	0.09	0.01	0.04	0.06	0.09
US	0.04	0.38	0.01	0.04	0.02	0.07	0.04	0.04	0.12

Thus over long periods, the relative ranking of countries according to financial development seems more volatile than ranking according to economic development.

### 2.3.3. Indicators of financial development fall then rise between 1913 and 1999

The most striking fact that emerges from Table 1 is that indicators of financial development fall considerably and then rise again. It is not easy to define precisely where the indicators start falling, but the data suggest that the turning point is somewhere in the 1930s or 1940s.

It is worth noting that the decline in indicators is not limited to the countries that lost the war, although it is more pronounced for such countries. It is not even seen only in countries involved in the war, since we see it in Sweden, Argentina, and Brazil. Finally, it cannot be attributed to a decline in the standard of living, since during the period (from 1938 to 1950) the average per-capita GDP in 1990 dollars increased from \$4,036 to \$4,644.

Table 5

Evolution of number of listed companies per million people

The number of listed companies per million people is the number of domestic companies whose equity is publicly traded in a domestic stock exchange divided by the population in millions. Sources are in the Data Appendix, which is available on request from the authors.

Country	Year								
	1913	1929	1938	1950	1960	1970	1980	1990	1999
Argentina	15.29				26.78	15.58	9.85	5.54	3.63
Australia	61.74	76.92	84.88	122.05	93.72		68.53	63.89	64.91
Austria	38.72	42.62	30.06	16.29	13.34	12.05	8.74	12.57	12.02
Belgium	108.7			55.09	42.60	38.39	22.85	18.50	14.33
Brazil	12.43	9.85	5.17	41.02		4.32	4.06	3.86	3.18
Canada	14.65			66.61	62.43	55.20	50.52	42.99	130.13
Chile	20.62				44.52	38.72	23.78	16.32	19.03
Cuba	12.69								
Denmark	38.22	54.86	85.25	81.28	75.75	52.14	42.54	50.18	44.80
Egypt	16.58	13.44			10.58	1.76		11.01	13.71
France	13.29		24.64	26.20	18.34	15.98	13.99	15.05	
Germany	27.96	19.73	10.91	13.22	11.33	9.07	7.46	6.53	12.74
India	0.82	1.81	2.59	3.13	0.00	0.00	3.11	7.31	6.48
Italy	6.32	6.40	3.11	2.70	2.79	2.46	2.36	3.82	4.54
Japan	7.53	16.65	19.48	9.15	8.35	15.19	14.80	16.76	20.00
Netherlands	65.87	95.48			21.42	15.95	15.12	17.39	15.14
Norway	33.51	41.50	45.98	37.98	37.10	37.90	44.53	44.80	49.62
Russia	2.02								0.81
South Africa				69.05	60.93	51.39	42.48	20.75	15.86
Spain							25.20	10.96	22.25
Sweden	20.64	16.36	14.93	12.83	14.04	13.18	12.39	14.14	31.46
Switzerland	61.53	67.80	55.46	52.47	51.74	58.72	78.03	49.61	34.01
UK	47.06						47.22	29.63	31.11
US	4.75	9.72	9.16	8.94	9.33	11.48	23.11	26.41	28.88

While we cannot also date the recovery in indicators precisely, the turning point lies somewhere in the 1970s or 1980s. Over the 1980s and 1990s, for the countries reporting throughout, the average ratio of deposits to GDP increased by 35%, the average ratio of stock market capitalization to GDP increased four times, as did the fraction of GFCF raised via equity. The number of listed domestic companies shows a more modest increase (30%).

### 3. An interest group theory of financial development

We now describe a parsimonious theory to explain broad patterns in the data. In essence, our theory suggests why financial development can differ so much between countries at similar levels of economic and industrial development. It also suggests a reason for reversals. No doubt, the specifics of each country will differ and the theory, on occasion, can seem a caricature, but this is the price we have to pay for parsimony.

### 3.1. *The necessity for government intervention*

The essential ingredients of a developed financial system include the following: (1) respect for property rights, (2) an accounting and disclosure system that promotes transparency, (3) a legal system that enforces arm's length contracts cheaply, and (4) a regulatory infrastructure that protects consumers, promotes competition, and controls egregious risk-taking.

No doubt, private arrangements could go some way in achieving all this. But the government has the ability to coordinate standards and enforce non-monetary punishments such as jail terms. Such power gives it some advantage in laying out and policing the ducts in which financial plumbing will go. For instance, a number of studies suggest that the mandatory disclosures required by the Securities Act of 1933 did improve the accuracy of pricing of securities (e.g., [Simon, 1989](#)). Given that government action is needed for financial development, the focus of our inquiry then shifts to when there is a political will to undertake these actions.

### 3.2. *The political economy of financial development*

Financial development is so beneficial that it seems strange that anyone would oppose it. However, financial development is not always win-win. It could pose a threat to some.

Consider, for instance, established large industrial firms in an economy, a group we will call industrial incumbents. In normal times, these incumbents do not require a developed financial system. They can finance new projects out of earnings (as most established firms do) without accessing external capital markets. Even when their business does not generate sufficient cash to fund desired investments, they can use the collateral from existing projects and their prior reputation to borrow. Such borrowing does not require much sophistication from the financial system. Even a primitive system will provide funds willingly against collateral. Because of their privileged access to finance in underdeveloped financial systems, incumbents enjoy a positional rent. Anybody else who starts a promising business has to sell it to the incumbents or get them to fund it. Thus, not only do incumbents enjoy some rents in the markets they operate in, but they also end up appropriating most of the returns from new ventures.

These rents will be impaired by financial development. Better disclosure rules and enforcement in a developed financial market will reduce the relative importance of incumbents' collateral and reputation, while permitting newcomers to enter and compete away profits.

Similar arguments apply to incumbent financiers. While financial development provides them with an opportunity to expand their activities, it also strikes at their very source of comparative advantage. In the absence of good disclosure and proper enforcement, financing is typically relationship-based. The financier uses connections to obtain information to monitor loans, and uses various informal levers of power to cajole repayment. The key, therefore, to the ability to lend is relationships with those who have influence over the firm (managers, other lenders, suppliers, politicians, etc.)

and the ability to monopolize the provision of finance to a client (either through a monopoly over firm-specific information, or through a friendly cartel amongst financiers). Disclosure and impartial enforcement tend to level the playing field and reduce barriers to an entrance into the financial sector. The incumbent financier's old skills become redundant, while new ones of credit evaluation and risk management become necessary. Financial development not only introduces competition, which destroys the financial institution's rents and relationships (e.g., Petersen and Rajan, 1995), it also destroys the financier's human capital.<sup>1</sup>

In sum, a more efficient financial system facilitates entry, and thus leads to lower profits for incumbent firms and financial institutions. From the perspective of incumbents, the competition-enhancing effects of financial development can offset the other undoubted benefits that financial development brings. Moreover, markets tend to be democratic, and they particularly jeopardize ways of doing business that rely on unequal access. Thus, not only are incumbents likely to benefit less from financial development, they can actually lose. This would imply that as a collective, incumbents have a vested interest in preventing financial development. They may also be small enough (e.g., Olson, 1965; Stigler, 1971) to organize successfully against financial development. In doing so, they will rely on other incumbent groups (such as organized labor). Previous studies show such groups benefit from an economy with limited competition. For example, Salinger (1984) and Rose (1987) provide evidence that unions share in rents from industrial concentration.

Critical to the above arguments is that financial development aids the entrance of new firms, thus enhancing competition. There is some evidence for this. In a comparative study of the textile industry in Mexico and Brazil around the beginning of the twentieth century, Haber (1997) shows that Brazil, following its political revolution, liberalized finance, and saw the textile industry grow faster and become less concentrated than the Mexican textile industry. Porfirio Diaz, the Mexican dictator during this period, was much more a prisoner of incumbent interests. Mexico's financial markets remained underdeveloped during his regime, with the consequence that Mexico's textile industry, while starting out larger and relatively more competitive, had less opportunities for entry, and ended up smaller and more concentrated than Brazil's.

Studies of larger samples of countries support the idea that financial development facilitates the entry of newcomers. Rajan and Zingales (1998a) find that the growth in the number of new establishments is significantly higher in industries dependent on external finance when the economy is financially developed. In a study of trade credit in transitional economies, Johnson et al. (2000) find that an important consequence of an effective legal system is that a firm offers more trade credit to new trading partners. Firms that believe in the effectiveness of the legal system are also more likely to seek out new trading partners.

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<sup>1</sup>One could also argue for the existence of political incumbents. The relationship between financial development and political incumbency is less clear-cut.

### 3.3. Financial repression is not the only way to protect incumbent rents

Financial underdevelopment is not the only barrier to newcomers. Incumbents with political influence could restrict or prevent entry into their industry directly through some kind of licensing scheme. There are, however, reasons why some prefer financial underdevelopment to more direct barriers.

First, direct-entry restrictions often require very costly enforcement. Enforcement becomes particularly difficult, if not impossible, when innovation can create substitutes for the product whose market is restricted. Each new threatening innovation has to be identified, categorized, and then banned. Second, the active enforcement of restrictions on entry is very public and, therefore, politically transparent. Citizens are unlikely to remain rationally ignorant when confronted with such blatant opportunism, especially when they face the poor service and extortionate prices of the local monopoly. By contrast, the malign neglect that leads to financial underdevelopment is less noticeable (it goes with the grain to have comatose bureaucrats who do not act rather than have overly active ones) and can be disguised under more noble motives such as protecting citizens from charlatans. Leaving finance underdeveloped is an act of omission with few of the costs entailed by an act of commission such as the use of the apparatus of the state to stamp out entry.

In general, however, we would expect direct entry restrictions and financial underdevelopment to be used as complementary tools. In Fig. 1, we graph the Djankov et al. (2002) measure of the number of procedures in different countries to start a business (a measure of the direct barriers to entry) against the size of equity

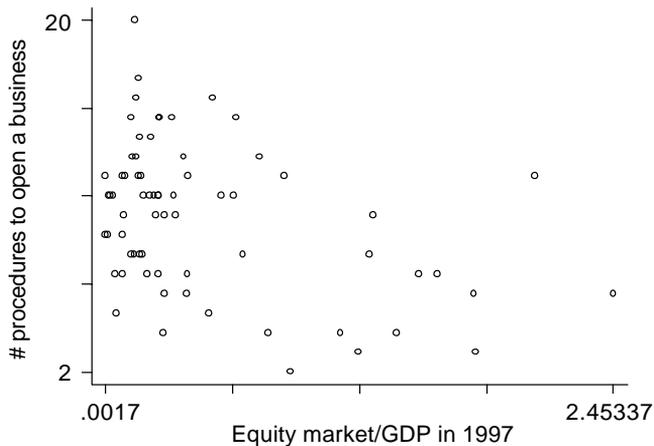


Fig. 1. Regulation of entry and financial development. On the  $x$ -axis we report a measure of financial development: the ratio of equity market capitalization to GDP in 1997 (average 1996–1998, from the World Bank's World Development Indicators). On the  $y$ -axis we report a measure of direct regulation of entry. As a measure of direct regulation we use the number of procedures necessary to open a business, as computed by Djankov et al. (2002). As the graph shows there is a clear negative correlation between the two. Countries that regulate entry more tend also to be less financially developed.

markets relative to GDP in that country. The correlation is significantly negative, and regression estimates (not reported) show that it persists after correcting for the level of GDP. Financial underdevelopment does seem present along with other bureaucratic barriers, and this suggests a common purpose.

### 3.4. *What determines outcomes?*

In an industrialized economy, incumbent industrialists and financiers ordinarily would have enough political power, because of their large economic weight and small numbers, to collectively decide the development of the economy's financial sector. In earlier times, the landed gentry could have been more powerful in many developed countries than the "commercial" interests. How their power waned is a matter beyond the scope of this paper (though see [Rajan and Zingales \(2003\)](#) for one account). So financial development will take place only when the country's political structure changes dramatically, or when the incumbents want development to take place.

By creating a fresh power structure, political change can foster anti-incumbent institutions, one of which is financial infrastructure. For example, a number of new mortgage banks and institutions like the Credit Mobilier were supported by the government of Louis Napoleon after its coming to power in 1848. They were meant as a counter to the Bank of France and the Rothschilds who were thought to be sympathetic to the deposed monarchy (e.g., [Cameron, 1961](#)). More recently, [Weber and Davis \(2000\)](#) find that a country's transition to a multi-party democracy increases its estimated rate of creation of a stock exchange by 134% during the subsequent 3 years.

If, however, we examine a period of relatively little structural political change, we should see finance develop faster when both financial and industrial incumbents will it to do so and slower when both are against it. When one of these powerful groups is for development and the other is against, predictions are more ambiguous.

Incumbent incentives are powerfully affected by competition, especially that emanating from outside their political borders, which they cannot control. The degree to which a country's borders are open to both the flow of trade and capital is thus likely to matter. Of course, an important question is what causes a country to be open. We will address this shortly. But first let us examine how incumbent incentives can be altered by cross-border competition.

### 3.5. *Financial development and openness*

Consider a country that is open to trade. While foreign markets bring opportunity, openness also brings foreign competitors to domestic markets. Foreign entry drives down domestic rents. Lower profits means established firms have lower internal cash flow, making them more dependent on external finance. At the same time, outside opportunities (or the need to defend domestic markets against superior foreign technologies) increase the need for incumbents to invest more.

Unfortunately, the need for external finance need not translate into reforms that improve transparency and access in the financial system. In fact, given their greater need for finance, industrial incumbents can press for greater financial repression so that the available finance flows their way. Financial incumbents can also be unwilling to accept the increased competition in the financial sector (from greater transparency and access) in exchange for the additional industrial clientele that reforms generate. It may be far more profitable to support the existing relationships with industrial incumbents and ply them with greater amounts of capital they now need.

Industrial incumbents can also petition the government for loan subsidies in the face of foreign competition, instead of improving the quality of the domestic financial system. Selective government intervention can further reduce the transparency of, and the access to, the financial system. Thus openness to trade flows (i.e., industrial sector openness) alone may not be enough to convince either, or both, dominant interest groups to support financial development.

Consider next the possibility of cross-border capital flows (or financial openness) alone. Free access to international capital markets will allow the largest and best-known domestic firms to tap foreign markets for funds. But in the absence of domestic or foreign competition in product markets, these firms will have little need to access external funds. And given the state of information asymmetries across markets, it is unlikely that small domestic firms are financed directly by foreign investors. If potential domestic entrants are not financed by foreigners, industrial incumbents will still retain an incentive to keep entrants at bay by opposing financial development. The domestic financial sector will see its sizeable profits from providing finance and services to the largest industrial firms diminish as these firms threaten to tap foreign financial markets and institutions. It will face the opposition of domestic industrial incumbents if it tries to liberalize access and improve transparency. So cross-border capital flows alone are unlikely to convince both our interest groups to push for financial development.

It is when both cross-border trade flows and capital flows are unimpeded that industrial and financial incumbents will have convergent incentives to push for financial development. Industrial incumbents, with depleted profits and the need for new investment, will need funds to meet foreign challenges. But with free cross-border capital flows, the government's role in directing credit to incumbents will become more circumscribed. As product markets become more competitive, the risks in, and information requirements for, lending will increase. The potential for large errors from the centralized direction of credit will increase. Moreover, the ability of the government to provide large subsidized loans to favored firms will decrease as mobile capital forces governments to maintain macro-economic prudence. For example, [Loriaux \(1997\)](#), provides a description of the constraints on French intervention in domestic credit in the 1980s. The government's role in the financial sector will diminish.

The healthiest industrial incumbents will tap the now open foreign markets for finance. These firms, able to compete in international markets, may not be much worried, or affected, by domestic entry, and thus may not oppose domestic financial development. While the not-so-healthy industrial incumbents can be the hardest hit

by foreign product market competition, there are reasons why they, too, will not oppose financial development and in fact support it. They will need finance. And their existing financiers will be reluctant to lend to them on the old cozy terms. Because of product market competition, these firms will now be much less profitable, while needing much more investment. Moreover, competition in financial markets will make long-term relationships, through which the traditional financier could have hoped to recover investments, more difficult. Both factors would combine to make finance more difficult. Difficulty in financing will lead these firms to push for greater transparency and access so that their own access to finance improves. Unlike the case when the country is only open to capital flows, industrial incumbents now will also push for financial development. The accompanying threat of domestic industrial entry will now seem relatively minor, given the competitive state of product markets.

Moreover, as the domestic financial sector loses some of its best clients, domestic financial institutions will want to seek new clients among the unborn or younger industrial firms that hitherto did not have the relationships to obtain finance. Since these clients will be riskier, and less well known, financial institutions will have no alternative but to press for improved disclosure and better contract enforcement. In turn, this leveling of the playing field will create the conditions for more entry and competition in the financial sector.

An example of such a virtuous circle is provided by [Rosenbluth \(1989\)](#). As the most reputable Japanese exporters escaped their financial system in the 1980s to raise arm's length finance from the Euromarkets, Japanese banks were forced to change their practices. One beneficial outcome is that access to the Japanese corporate bond markets, that hitherto had been tightly controlled by the banks, is now liberalized.

Other influences will kick in over time. As the domestic financial incumbents improve their skills, they will seek to compete abroad. As they look for new clients outside, they will be forced as a quid pro quo to increase access for foreigners and dismantle domestic regulations that give them their privileged competitive positions. For example, the German government banned lead underwriting of Deutschmark bonds by Japanese financial institutions until Japan agreed in 1985 to allow foreign securities firms to act as lead underwriters for Euroyen bonds (e.g., [Rosenbluth, 1989](#)). Foreign financial firms that enter the domestic market are another powerful constituency for financial development. Since they are not part of the domestic social and political networks, they would prefer transparent arm's length contracts and enforcement procedures to opaque negotiated arrangements. It is not a coincidence that these are the very requirements of would-be domestic entrepreneurs who are also outsiders to the domestic clubs.

#### **4. A test of the private interest theory of financial development**

Direct measures of the political power of interest groups and their ability to influence outcomes are controversial at best. The following example should illustrate the problems. French financial liberalization was kicked off in 1983 by a Socialist government. Socialists do not seem to be an interest group that would push for

liberalization. A more detailed examination of the facts (e.g., Helleiner, 1994) suggests that there was a liberalizing faction in the French Socialist party, led by Prime Minister Pierre Mauroy and Finance Minister Jacques Delors, whose hand was strengthened by France's increased trade integration into the European Community. This faction argued that liberalization was necessary to preserve trade and won the day. How could one ever hope to capture the strength of such factions in a large sample cross-country study without a subjective country-by-country exercise?

Our theory, however, does lead to some indirect, but more objective, tests. According to it, incumbent interests are least able to coordinate to obstruct or reverse financial development when a country is open to both trade and capital flows. When a country is open to neither, they coordinate to keep finance under heel. Matters are unlikely to be much better when a country is open only to capital flows or only to trade. In the former case, incumbent industrial interests can hold back financial development, fearful of the domestic competition that might be financed. In the latter case, both industrial and financial incumbents want to strengthen existing financial relationships to combat the foreign threat. Free access and transparency are likely to get short shrift at such times.

#### 4.1. *A test*

To test the theory, we need a measure of financial development. The amount of funds raised from arm's length financial markets or the amount of credit offered by competitive banking systems could be measures (albeit crude) of financial development. Unfortunately, we do not know how competitive the banking system is. Instead, we only have measures of the quantity of deposits. The banking system could be concentrated and captive to incumbent interests, dominated by state owned banks, or just plain inefficient. Therefore, we prefer to use the size of the arm's length financial markets as our measure of development. This also accords well with the view that arm's length markets will emerge only when financial infrastructure such as disclosure requirements (e.g., Sylla and Smith, 1995) and investor protection are reasonably developed (e.g., La Porta et al., 1998). Meanwhile banks can exist even when infrastructure is primitive (e.g., Rajan and Zingales, 1998b).

The obvious test would be to regress measures of financial development against measures of openness. But we are immediately faced with another issue. A country's openness to trade and capital flows is also a matter of government policy, liable to influence by different interest groups. A large literature (e.g., Gourevitch, 1986; Rogowski, 1989; O'Rourke and Williamson, 1999) suggests that the decision to open up or close down an economy to trade is a political one, based on the relative strengths of the sectors that stand to gain or lose from openness. This creates a potential problem. A country may open to trade when it sees opportunity, yet is also likely to be a time that financial markets expand. A correlation between trade openness and the size of financial markets can simply reflect a common driving force (opportunity) rather than a causal relationship. In independent work Svaleryd and Vlachos (2002) explore the Granger causality between openness and financial

development. While they find evidence that openness can cause financial development, they do not find evidence in the opposite direction.

We have a way to deal with this problem when we consider openness to trade as the explanatory variable. For we can instrument trade openness with measures of a country's natural propensity to trade—because of its small size or its proximity to trading partners. If the exogenous component of trade correlates with financial development, we can be more confident that openness indeed causes financial development.

Openness to capital flows is more problematic. First, the extent to which capital flows into a particular country may directly reflect the sophistication of its financial system. Moreover, unlike with trade, no obvious instruments present themselves. The mobility of capital, however, suggests a way out.

The decision to open up to capital flows is likely to be a strategic complement. When the rest of the world is open, it is both more difficult for a country to prevent cross-border capital movement and less attractive for it to do so. It is more difficult to prevent capital movements because the openness of the rest of the world makes it easier for domestic agents to expatriate funds to a safe haven or borrow funds from it, despite domestic controls. These leakages are especially likely for countries that are more open to trade. In open countries, funds can be transferred through underinvoicing or overinvoicing of trade, transfer pricing between units of a multinational, etc. A country can also find controlling capital flows unattractive when others are open. Its domestic financial institutions can find themselves at a comparative disadvantage. For example, a domestic exchange may not be able to provide as much liquidity as exchanges in other countries that are open to capital movements. In fact, competition between New York, London, and Tokyo to become global financial centers was responsible for the rapid demise of capital controls in these countries after the collapse of Bretton Woods (e.g., [Helleiner, 1994](#)).

Given all this, for each individual country the decision to allow capital to flow across its borders is strongly influenced by overall global conditions, which can be regarded as exogenous to specific domestic political considerations. And there is considerable variation in the flow of capital across borders during the twentieth century. Consider the mean absolute value of current account over GDP over five-year intervals for a sample of fourteen developed countries as calculated by [Taylor \(1998\)](#) and extended by us until 1999. This indicator suggests international capital mobility remained high only up to 1930s (3.8% before World War I and 3.2% in the 1920s, dropping to 1.6% in the 1930s). Following the Depression and the Bretton Woods agreement, capital movement remained severely curtailed till the 1980s (oscillating around 1.4%). The United States opened up in the mid 1970s, United Kingdom and Japan in 1980, while the countries of Continental Europe only in the late 1980s. As a result, the indicator rose to 2.1% in the 1980s and 2.6% in the 1990s.

In what follows, we will instrument openness to trade to get an exogenous measure, while we will use the variation in global capital flows over time as an exogenous measure of a country's variation in openness to capital flows. Let us now frame the hypothesis. In periods of high capital mobility, countries that conduct a lot of foreign trade are also likely to have well-developed capital markets. Countries that

conduct little trade are unlikely to have developed capital markets (they are open on only one dimension). So

- (1) *For any given level of demand for financing, a country's domestic financial development should be positively correlated with trade openness at a time when the world is open to cross-border capital flows.*

Changes in capital mobility over time give us the data to test the other dimension of our theory:

- (2) *The positive correlation between a country's trade openness and financial development should be weaker when worldwide cross-border capital flows are low.*

We will need a proxy for the demand for financing. Bairoch (1982) computes an index of industrialization across a group of countries for a number of years. The index number in a year reflects a country's absolute level of industrialization in that year, with England in 1900 set at one hundred. The index is calculated on the basis of data on per-capita consumption of manufactured goods and from the sectoral distribution of labor. The index is computed in two stages, with the data for the UK calculated in the first stage and the relative importance, sector by sector, of other countries calculated in the second stage. There are measurement issues with any index, but this one seems well accepted among economic historians. Bairoch's index is our preferred control for the demand for financing whenever it is available. This is because GDP is a poorer proxy for the demand for financing in earlier years, when much of GDP was generated by agriculture. We will use per-capita GDP when Bairoch's numbers are not available, though sectoral differences between countries at very different levels of development will add noise.

To test the first hypothesis, we examine the correlation between openness and financial development in 1913, the earliest date for which we have data for a sizeable number of countries, and 1996–1998, the last period for which we have data. Capital flows are relatively free in both periods.

#### 4.2. Financial development in 1913

Consider first financial development in 1913, a period of relatively free capital flows and varying degrees of openness to trade. We present summary statistics and pairwise correlations in Table 6 Panels A and B. Equity market capitalization to GDP is positively correlated with Bairoch's index of industrialization (0.58,  $p=0.01$ ), with openness (0.33,  $p=0.19$ ), and negatively correlated with tariffs on manufacturing ( $-0.37$ ,  $p=0.15$ ). Its correlation with the interaction (between the index of industrialization and openness) is both high and very significant (0.67,  $p=0.002$ ).

In Table 7, Panel A, the ratio of stock market capitalization to GDP is our measure of financial development. As the estimates in Column (i) show, more industrialized countries have more developed financial markets. More relevant to our hypothesis, more open countries have more developed financial markets, but due to the small number of observations, this effect is not statistically significant at

Table 6

## Summary statistics

Equity market cap./GDP is the equity market capitalization of domestic companies to GDP in 1913. Issues to GDP is the sum of equity and bond issues by domestic firms in 1912 to GDP in 1913. Per Capita Industrialization is the index of industrialization for that country in 1913 as computed by Bairoch (1982). Openness is the sum of exports and imports of goods in 1913 (obtained from the League of Nations Yearbook) divided by GDP in 1913. Tariffs are import duties as a percentage of special total imports (1909–1913) obtained from Bairoch (1989).

	Mean	Standard deviation	Minimum	Maximum	Observations
<i>Panel A. Summary statistics</i>					
Equity market capital/GDP	0.490	0.294	0.02	1.09	18
Issues to GDP in 1912	0.022	0.015	0.002	0.055	17
Per capita industrialization	49.5	37.08	2	126	18
Openness (trade volume/GDP)	0.59	0.51	0.11	2.32	18
Tariffs	13.0	9.5	0.4	37.4	17
Interaction of per capita industrialization and openness	29.1	31.1	0.36	118.67	18
<i>Panel B. Pairwise correlations between variables (significance in parentheses)</i>					
	Equity market cap to GDP	Per capita industrialization	Openness (trade volume/GDP)	Tariffs	
Per capita industrialization	0.58 (0.01)				
Openness (trade volume/GDP)	0.33 (0.19)	0.01 (0.98)			
Tariffs	-0.37 (0.15)	-0.24 (0.35)	-0.37 (0.15)		
Interaction of per capita industrialization and openness	0.67 (0.00)	0.55 (0.02)	0.69 (0.00)	-0.37 (0.15)	

conventional level. Our hypothesis, however, is that for any given level, more openness should lead to more financial development. Therefore, in column (ii) we include the interaction between openness and the index of industrialization, which is our proxy for the demand for finance. The coefficient estimate for the interaction term is highly statistically significant ( $p = 0.034$ ). The magnitude of the effect is also large. A one standard deviation increase in the interaction term increases the ratio of stock market capitalization to GDP by 50% of its standard deviation. Since we have so few observations, we plot the data in Fig. 2 to show the result is not driven by outliers.

We can try to tell the effect of openness (apart from the effect of openness working through demand) by including both the level of openness and the interaction term in Column (iii). It turns out that only the interaction has a positive coefficient estimate, and the explanatory power of the specification in Column (ii) is not enhanced by including openness. The magnitude of the interaction coefficient is higher than in Column (ii) but its standard error also goes up. The problem is that openness and the interaction are highly correlated ( $= 0.69$ ), so it is hard to tell their effects apart with

Table 7

## Financial development and openness in 1913

In Panel A the dependent variable is equity market capitalization of domestic companies to GDP in 1913, in Panel B it is the number of listed companies per million of population in 1913, and in Panel C it is the total amount of securities issued to GDP, which is the sum of equity and bond issues by domestic firms in 1912 to GDP. Per Capita Industrialization is the index of industrialization for that country in 1913 as computed by Bairoch (1982). Openness is the sum of exports and imports of goods in 1913 (obtained from the League of Nations Yearbook) divided by GDP in 1913. Tariffs are import duties as a percentage of special total imports (1909–1913) obtained from Bairoch (1989). Coefficient estimates for per capita industrialization, its interaction with openness, and the corresponding standard errors are multiplied by one thousand. Columns (iv)–(v) report instrumental variable estimates, where the instrument for openness is population size. All the regressions include a constant, whose coefficient is not reported. Standard errors are in parentheses. (\*) indicates significance at the 10% level, (\*\*) at the 5% level, (\*\*\*) at the 1% level.

Dependent variable	Equity market capitalization/GDP				
	(i)	(ii)	(iii)	(iv)	(v)
<i>Panel A. Equity market capitalization/GDP</i>					
Per capita industrialization	4.61*** (1.52)	2.42 (1.71)	2.11 (2.25)	1.55 (2.05)	8.77** (3.18)
Openness	0.18 (0.11)		−0.04 (0.19)		
Interaction of per-capita industrialization and openness		4.76** (2.03)	5.44 (3.69)	6.62** (3.08)	
Interaction of per-capita industrialization and tariffs					−0.38* (0.22)
Adjusted R <sup>2</sup>	0.37	0.45	0.42		
Observations	18	18	18	18	17
<i>Panel B. Number of domestic companies listed/million population</i>					
Dependent variable	No. of companies/million population				
	(i)	(ii)	(iii)	(iv)	(v)
Per-capita industrialization	215.8 (133.6)	−210.6 (116.0)	−199.5 (152.8)	−252.0* (137.0)	927.7** (442.3)
Openness	38.8*** (9.6)		−1.5 (12.7)		
Interaction of per-capita industrialization and openness		924.1*** (138.1)	899.8*** (250.8)	1012.8*** (206.0)	
Interaction of per-capita industrialization and tariffs					−60.9** (29.9)
Adjusted R <sup>2</sup>	0.50	0.74	0.72		
Observations	18	18	18	18	17
<i>Panel C. Total securities issued/GDP</i>					
Dependent variable	Securities issued/GDP				
	(i)	(ii)	(iii)	(iv)	(v)
Per-capita industrialization	0.17 (0.10)	0.02 (0.10)	−0.09 (0.12)	−0.02 (0.11)	0.52** (0.22)
Openness	0.01 (0.01)		−0.01 (0.01)		
Interaction of per-capita industrialization and openness		0.33** (0.11)	0.56** (0.19)	0.41** (0.17)	
Interaction of per-capita industrialization and tariffs					−0.03* (0.01)
Adjusted R <sup>2</sup>	0.14	0.39	0.44		
Observations	17	17	17	17	17

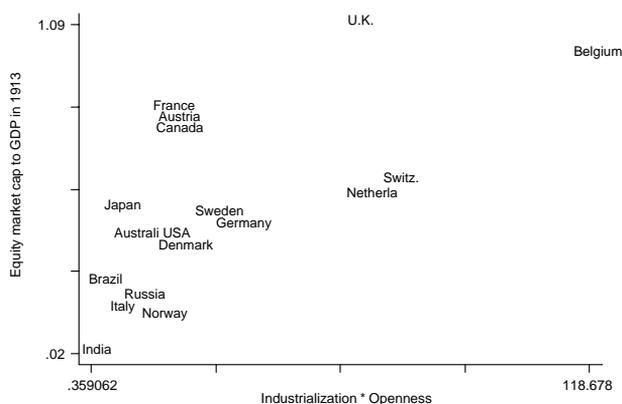


Fig. 2. Market capitalization versus interaction between industrialization and openness. On the  $x$ -axis we report the product between the level of per capita industrialization of a country and its level of openness. Per capita industrialization is the index of industrialization for that country in 1913 as computed by Bairoch (1982). Openness is the sum of exports and imports of goods in 1913 (obtained from the League of Nations Yearbook) divided by GDP in 1913. On the  $y$ -axis we report a measure of financial development: the equity market capitalization to GDP ratio in 1923. As the graph shows there is a clear positive correlation between the two, which is not driven by any particular outlier.

so few observations. Since the correct specification could be debated, in what follows we present estimates for both the effect of openness and the effect of the interaction. Our claim is that openness matters, not that we can separate a direct effect of openness from an interaction between openness and our proxy for the demand for finance. Between the two we expect the interaction to be more important, because it is more directly linked to what the theory predicts.

The results thus far indicate that in more open countries, a given demand for finance is correlated with more financial development. Because openness and financial development could be simultaneously determined by some omitted variable, we instrument openness with the size of a country's population in Column (iv). Small countries typically have to be more open since it is difficult to manufacture everything internally (e.g., Katzenstein, 1985). The point estimate of the effect of openness interacted with industrialization increases by 50% and, in spite of an inevitable increase of the standard error, remains statistically significant at the 5% level.

Another concern is that we proxy for openness with the volume of goods traded, and there can be a disguised link between the volume of trade and the volume of financing. One measure of openness that is not directly a measure of volume is the tariff on manufactured goods. We use this as a proxy for the extent of openness in Column (v), and the two-stage least-squares estimate (using the same instrument as in the previous column) is negative and significant.

As discussed before, the ratio of equity market capitalization to GDP is a very imperfect measure of financial development. It is sensitive to fluctuations in relative valuations and to mistakes in the computation of the GDP (national accounts

statistics were widely calculated only after WWII, all previous numbers are estimates computed in recent years). An alternative measure, which is immune to both these criticisms, is the ratio of the number of publicly listed companies to population. In Panel B of Table 7, we re-estimate the specifications in Table 7's Panel with this alternative dependent variable. The correlations are even stronger. Openness has a positive and significant correlation with development even when included alone. When both openness and openness interacted are included, the latter remains statistically significant at the 5% level.

Finally, our measure of financial development captures only the size of the equity market, even though the bond market plays an important role in some of these countries. Unfortunately, we were unable to obtain data for the size of the corporate bond market for the same set of countries. We did obtain data, however, from the 1915 Bulletin of the International Institute of Statistics (IIS) in Vienna on the total issues of public corporate securities (both equity and corporate bonds) by domestic firms in a set of countries in 1912. The IIS sample is slightly different from our 1913 sample (which we have put together from different sources for each country). We have checked that the data in the IIS sample seem accurate by comparing with independent sources, and they do seem to represent net rather than gross issues.

In Panel C of Table 7, we re-estimate the same specifications using total issues to GDP in 1912 as dependent variable. As a denominator we use GDP rather than GFCF to maximize the number of observations available. Here again, the interaction between industrialization and openness has a positive and statistically significant coefficient. A one-standard deviation increase in the interaction term increases the ratio of total issues to GDP by 68% of its standard deviation.

#### 4.3. *Financial development in the late 1990s*

Regardless of the measure used, openness seems to have facilitated financial development in 1913. The paucity of observations, however, is worrisome. But our hypothesis suggests the results should also be present in recent times, when cross-border capital flows have regained the levels they had reached in the early part of the twentieth century.

In Table 8, we re-estimate the specifications in Table 7 using the largest cross-section of data available today. We obtain data for market capitalization from the World Bank's World Development Indicators, data on the number of domestic listed companies from the Emerging Market Factbook, and data on security issues from Beck et al. (1999). Since Bairoch's index of industrialization is not available, we use instead the log of per-capital GDP in PPP dollar, also from the World Bank's World Development Indicators.

To smooth the effects of the East Asian financial crisis we averaged the dependent variable across three years (1996–1998). As Table 8's Panel A (with dependent variable equity market capitalization to GDP) shows, the results are very similar to those in 1913. Openness has a positive and statistically significant effect on financial development. This is true both if we use openness directly (see Column (i)) and if we

Table 8

Financial development and openness in the late 1990s

In Panel A the dependent variable is the ratio of equity market capitalization to gross domestic product averaged over 1996 to 1998 from the World Development Indicators (World Bank). In Panel B the dependent variable is the number of domestic companies listed over million inhabitants in 1997 from the Emerging Market Factbook. In Panel C the dependent variable is the sum of equity and long-term private debt issues to GDP averaged over the 1990s from Beck et al. (1999). Log per-capita gross domestic product is the logarithm of the per-capita GDP in PPP dollars as reported in the World Development Indicators. Openness is the average of the sum of exports and imports of goods divided by GDP across 1996–1998 (source: World Bank). In Column (iii) the interaction between logarithm of the per-capita GDP and openness is instrumented by the interaction between logarithm of the per-capita GDP and constructed trade share in Frankel and Romer (1999). All the regressions include a constant, whose coefficient is not reported. The standard errors are in parentheses. (\*) indicates significance at the 10% level, (\*\*) at the 5% level, (\*\*\*) at the 1% level.

	(i)	(ii)	(iii)
<i>Panel A. Equity market capitalization/GDP</i>			
Log per-capita GDP	0.264*** (0.044)	0.243*** (0.046)	0.198*** (0.063)
Openness	0.214*** (0.082)		
Interaction of log per-capita GDP and openness		0.025*** (0.009)	0.048*** (0.024)
Adjusted $R^2$	0.34	0.34	
Observations	96	96	82
<i>Panel B. Number of domestic companies listed/million population</i>			
	(i)	(ii)	(iii)
Log per-capita GDP	10.96*** (3.83)	8.86** (3.98)	4.26 (4.71)
Openness	25.10*** (7.11)		
Interaction of log per-capita GDP and openness		2.69*** (0.76)	5.35*** (1.78)
Adjusted $R^2$	0.20	0.20	
Observations	91	91	81
<i>Panel C. Security issues/GDP</i>			
	(i)	(ii)	(iii)
Log per-capita GDP	0.026*** (0.007)	0.025*** (0.007)	0.018* (0.009)
Openness	0.022** (0.011)		
Interaction of log per-capita GDP and openness		0.002* (0.001)	0.006** (0.003)
Adjusted $R^2$	0.39	0.38	
Observations	34	34	34

interact it with our proxy for the demand for finance, the log of per capita GDP (see Column (ii)). A one-standard deviation increase in the interaction term corresponds to an increase in the ratio of stock market capitalization to GDP by 25% of its standard deviation. In spite of the very high correlation between openness and the interaction between openness and log per-capita income, the larger cross-section allows us to distinguish the two, and it is the interaction that is positively significantly correlated (estimates not reported).

Frankel and Romer (1999) predict bilateral trade between two countries using an expanded version of the gravity model of trade (where trade is a function of the distance between the countries, their size, and whether they have a common border). Their constructed trade share, then, is simply the sum of these fitted values across all possible trading partners and is a good instrument for trade (perhaps better than population) which is all that we have in 1913. When we use this instrument, the estimated coefficient almost doubles (see Column (iii)) and remains statistically significant at the 1% level.

We show these results hold for other measures of financial development. In Panel B the dependent variable is the number of domestic companies listed per million inhabitants in 1997, while in Panel C it is the sum of equity and long-term private debt issues to GDP. To deal with the cyclicity of equity and debt issues, we use an average across all the years during the 1990s that are available in Beck et al. (1999). These panels confirm the finding that financial development is higher for any level of demand when a country is more open.

#### 4.3.1. Robustness

The greater availability of data at the end of 1990s allows us to explore the robustness of our results. La Porta et al. (1997) suggest that a better measure of financial development than market capitalization is the amount of equity held by outsiders. Using this measure of development, openness or openness interacted with GDP per-capita have a positive and statistically significant correlation with equity held by outsiders (estimates not reported). Similarly, a good indicator of the ability to raise external funds, and thus a measure of the development of a financial market, is the quality of the accounting standards, as measured by the Center for International Financial Analysis and Research. This measure is available only for 39 countries, nevertheless openness alone and openness interacted with GDP per-capita are positively and statistically significantly correlated with it (estimates not reported).

One might worry that there is a mechanical link between openness and financial market development. We know that financial liberalization leads to an increase in stock prices (e.g., Henry, 2000) and, thus, at least temporarily to an increase in the ratio of stock market capitalization to GDP, which is one of our measures of financial development. For example, a large trade deficit has to be financed through capital inflows. If domestic government assets are insufficient, and if foreign direct investment is small, the inflows will be reflected in a larger private market for financial assets. Is the link we have found merely the flip side of a trade deficit? We re-estimate the basic specification using the ratio of trade surplus to GDP as a

substitute for openness (estimates not reported). Trade surplus does not seem to be correlated with domestic financial development. When we include the interaction of openness with log per-capita GDP, trade surplus loses statistical significance, while the interaction term remains positive and statistically significant.

Another way of getting at this is to look at a form of financing that may not be arm's length (domestic bank credit) and is therefore less likely to be influenced by openness. Openness does not seem to be statistically significantly correlated with the ratio of domestic credit to the private sector to GDP (obtained from Beck et al., 1999). Thus there does not seem to be a mechanical link between openness and financing. Instead the link is to arm's length financing (or we conjecture, if we could measure it, competitive private credit).

#### 4.4. *Financial development over time*

Our results thus far indicate that both before World War I and in the late 1990s, measures of financial development were higher in countries more open to trade. Of course, many good institutions are associated with more trade. For example, Wei (2000) finds lower corruption in countries that trade more. But our second hypothesis suggests that trade openness is particularly effective when it is accompanied by capital mobility and offers a way of distinguishing our theory from the more general observation that trade is good for institutions. We hypothesize the correlation between trade openness and financial development to be stronger in periods of high international capital mobility than in periods of low mobility.

To begin with, we estimate our basic regression (specification (ii) in Table 7, Panel A) year by year. Unfortunately, we do not have Bairoch's measure of per-capita industrialization over the entire period. Thus, the first seven cross-sections (for the years 1913, 1929, 1938, 1950, 1960, 1970, and 1980) use Bairoch's index as a proxy for demand, while the last two use the logarithm of per capita GDP adjusted for difference in the purchasing power parity (as computed by the World Bank). Consequently, the magnitude of the coefficient before 1980 and after 1981 are not directly comparable.

As Table 9 shows, the interaction between openness and demand for finance has a reliable and statistically significant positive correlation with financial development both at the beginning and at the end of the sample (1913, 1929, and 1997), which correspond to the periods of high international capital mobility. During the period of low capital mobility, the effect is statistically insignificant or even negative when we measure financial development by the ratio of equity market capitalization to GDP.

To formally test whether the effect of openness is smaller during periods of low capital mobility, we pool the different cross-sections. We first report the results for the panel 1913–1980 in Table 10, Column (i), where Bairoch's index is our measure of demand. The specification is the same as Column (iv) of Table 7, with the inclusion of an additional slope term for the years of low capital mobility and year indicators. As an instrument for openness, we use the constructed trade shares

**Table 9**  
**Financial development and openness over time**  
 The dependent variable in each regression is a measure of financial development (equity market capital to GDP and number of companies per million inhabitants). The explanatory variables are a constant (coefficient not reported), a measure of industrialization (coefficients not reported), and the interaction between this measure of industrialization and openness (the only coefficient reported). For the period 1913–1980 the measure of industrialization is Bairoch (1982)'s index of industrialization, for the period 1981–1997 it is the logarithm of the per capita GDP in PPP dollars as reported in the World Development Indicators. Coefficient estimates for the interaction of the per capita industrialization index with openness and the corresponding standard errors are multiplied by 1000. Standard errors are in parentheses. Coefficients in bold are statistically different from zero at the 10% level.

Dependent variable	Year									
	1913	1929	1938	1950	1960	1970	1980	1981	1997	
Equity market capitalization to GDP	<b>4.76</b> (2.03)	7.02 (4.94)	5.53 (14.25)	1.76 (3.19)	-1.90 (2.85)	-1.39 (2.28)	-0.65 (0.89)	0.036 (0.05)	<b>0.046</b> (0.01)	
Adjusted R <sup>2</sup>	0.45	0.13	-0.14	-0.07	-0.14	-0.13	-0.09	0.56	0.46	
N	18	10	12	13	13	16	18	45	45	
Number of Companies per Million	<b>924.1</b> (138.1)	<b>1741.7</b> (531.6)	<b>1627.5</b> (675.8)	552.3 (388.5)	190.6 (181.9)	<b>128.5</b> (63.8)	35.7 (68.3)	<b>1.78</b> (0.72)	<b>2.71</b> (0.53)	
Adjusted R <sup>2</sup>	0.74	0.45	0.26	0.00	-0.07	0.17	-0.06	0.21	0.53	
N	18	12	12	15	14	15	18	49	49	

Table 10

## Financial development and variation in capital flows

The dependent variable is the ratio of equity market capitalization to gross domestic product measure in a year. In Column (i), we pool the cross-sections from the following years: 1913, 1929, 1938, 1950, 1960, 1970, and 1980. In Column (ii), we pool the data averaged over 1980–1982 with the data averaged over 1996–1998. In Columns (iii) and (iv) we pool data for 1990 and 1999 with the data used for the estimates in Column (i). All estimates are obtained by instrumental variables, where openness is instrumented by constructed trade share in Frankel and Romer (1999). In the first column the proxy for demand for finance is the index of industrialization for that country in that year as computed by Bairoch (1982) divided by one thousand. In the other columns it is the logarithm of the per-capita GDP. Openness is the ratio of the sum of exports and imports of goods to GDP that year. The indicator for low international capital mobility equals one in the years from 1938–1980 and zero otherwise. The level of capital mobility is the mean absolute level of current account to GDP in 14 countries as computed by Taylor (1998) and extended by us to 1999. All regressions include a calendar year dummy. The standard errors, which are corrected for possible clustering of the residual at a country level, are in parentheses. (\*) indicates significance at the 10% level, (\*\*) at the 5% level, (\*\*\*) at the 1% level.

Sample period:	1913–1980 (i)	1981–1997 (ii)	1913–1999 (iii)	1913–1999 (iv)
Demand for finance	1.201 (1.220)	0.127** (0.054)	0.143 (0.106)	0.145 (0.108)
Interaction of demand for finance and openness	6.549*** (0.976)	0.062** (0.024)	0.037 (0.036)	–0.162 (0.097)
Interaction of demand for finance and openness * dummy = 1 if period of low international capital mobility	–10.420*** (0.222)	–0.034** (0.015)	–0.077* (0.040)	
Interaction of demand for finance and openness * level of international capital mobility				6.695** (3.038)
Observations	100	90	151	151

computed by Frankel and Romer (1999). While this instrument will be weaker as we go back in time because it is constructed based on country borders in the 1990s, all we care about is that it be correlated with trade and not with financial development. We use population in Table 7 as an instrument because it is available contemporaneously in 1913, but we check that the results hold even when we use the Frankel and Romer instrument. The interaction term is significantly positive, and the additional effect in periods of low capital mobility is significantly negative as predicted.

In Table 10, Column (ii), we report the results for the panel 1981–1997, where the log of per-capita GDP is our measure of demand. The specification is the same as Column (iii) of Table 8, with the inclusion of an additional slope term for the years of low capital mobility. Again, the interaction term is significantly positive, and the additional effect in periods of low capital mobility is significantly negative as predicted.

As discussed earlier, Bairoch's index is probably a better measure of demand for finance in the early years than per-capita industrialization. Since we do not have it

for later years, the only panel we can estimate for all the years is one with log of per-capita GDP as a measure of demand. This is what we report in Column (iii). The interaction effect is positive (though not statistically significant) and it is significantly lower in years of low capital mobility.

Finally, perhaps we should let the data define periods of low and high capital mobility. In Column (iv), instead of multiplying by a dummy indicating periods of low capital mobility, we multiply the interaction by the ratio of cross border flows to GDP in that year (obtained from Taylor, 1998). The coefficient estimates indicate, as predicted, that the interaction is significantly higher in periods of high capital mobility.

We obtain qualitatively similar results to those in Table 10 (not reported) when we use the ratio of number of domestic firms listed to million inhabitants as a measure of financial development or when we use openness rather than openness interacted with demand.

Overall, these results suggest that the positive correlation between openness and financial development re-emerged, and became stronger, in the last two decades of the Twentieth Century, in concert with the increased cross-border capital mobility.

#### 4.5. *Summary of results*

Overall, the results suggest that financial development is positively correlated with trade openness in periods when cross-border capital flows are high, but less so, or not at all, when cross-border capital flows are low. This is consistent with our theory that incumbents are most able to coordinate opposition to financial development when cross-border capital and trade flows ebb but not when they are vibrant. Of course, other theories could be consistent with our evidence. Nevertheless, when viewed in conjunction with the descriptive histories of financial development in the twentieth century (see below for examples), our theory seems to be an important part of the explanation.

The reversal in financial development in the data is then explained by the diminution of cross-border capital flows that started during the Depression and continued post-World War II until the breakdown of the Bretton Woods agreement. Of course, this raises the question of why most countries collectively shut their borders in the 1930s and 1940s and fully opened up again only recently. While a complete explanation is beyond the scope of this paper, in what follows we try to sketch our main arguments.

#### 4.6. *Shutting and re-opening borders*

In the 1930s openness fell victim to the Great Depression. The extremely high level of unemployment created by the Great Depression increased the demand for government intervention, which could not take place within the narrow margins of discretion allowed by the Gold Standard. The Gold Standard simply did not allow governments to dislocate their budgets to provide social security and welfare support

to the needy (e.g., [Eichengreen, 1996](#)) even if they wanted to. When the political demand for some form of support became irresistible, country after country abandoned the Gold Standard and devalued its currency. This reaction triggered a round of competitive devaluations between trade partners. To minimize the economic consequences of these competitive devaluations most governments introduced tariffs. Hence, the Great Depression ignited a chain reaction beyond the control of any single country, which almost inevitably led to protectionism. To better understand why this took place in the 1930s, however, we have to analyze the changed political and social conditions after WWI.

#### *4.6.1. The rising political demand for insurance*

In the open developed economies in the beginning of the twentieth century, the role of the government was relatively small. Government expenditure as a fraction of GDP was only 12.7% in 1913 for a sample of 17 developed countries, compared to 45.6% in 1996 (e.g., [Tanzi and Schuknecht, 2000](#)). Part of the reason for the relatively small role played by the government was that it did not provide insurance to the people to the extent it now does. Only 20% of the labor force in western Europe had some form of pension insurance in 1910, and only 22% had health insurance (vs. 93% and 90% respectively in 1975).

Before World War I, there were a number of reasons why the government played such a small role in social insurance. The prevailing liberal belief in the relentless logic of the market suggested it was unwise for governments to interfere. Intervention, it was thought, would only prolong the pain. The rigidity of the Gold Standard system prevented governments from running large deficits. Last but not least, the poorer sections of society (the workers, the small farmers, and the unemployed) were not organized and had little political voice (e.g., [Maier, 1987](#); [Eichengreen, 1996](#)).

World War I and the Great Depression, which followed a decade after, were huge consecutive political and economic shocks, which combined to create an organized demand for insurance and triggered a coordinated response by governments.

Labor was organized by the war. The senseless carnage of a war that left all its main protagonists worse off led many to doubt the caliber and motives of their political leaders and discredited the pre-war free-market consensus. The trenches during the war served as classrooms where the working class absorbed radical ideas. Labor, with its newly found ideas and organization, gave notice even in the 1920s that it would no longer continue unquestioningly to absorb the costs of adjustment to the rigors of the Gold Standard.

The onset of the Depression immensely increased the size of economic adjustments countries would have to undergo to stay on the Gold Standard. Classical liberal economics indicated the cure to falling output was a steep fall in wages. This was simply not acceptable to labor. Faced with increasing resistance from labor, politicians saw little reward in paying a political price to adhere to the Gold Standard. With little thought for the collective consequences, they also started erecting barriers to imports in an attempt to trade their way out of depression. As everyone attempted to beggar their neighbors, trade and capital flows ceased.

Clearly, incumbents were not idle in the policy debates in the 1930s. Equally clearly, many of them welcomed the descent into autarky, for it strengthened their positions. But it would be incorrect to claim that broad policy was shaped primarily, or even largely, by these interests. The Depression had affected too many people for business as usual to prevail. For example, in Sweden, labor and agrarian interests came together in 1932 in what has been termed the “cow trade.” Labor accepted higher food prices and price supports in return for stable wages, policies for full employment, and social services. The business interests opposed this coalition at first, but became more accommodating when the party representing labor, the Social Democrats, became stronger in the election of 1936.

Economic policy in the developed democracies was thus broadly a response to the large, across-the-board, adverse shock affecting the uninsured masses. Autarky allowed the governments to implement various insurance schemes that may have been more difficult had the economies been open and the Gold Standard in place. The increase in insurance coverage was significant. Over 56% of the workforce in western Europe was covered by pension insurance by 1935 and 47% had health insurance coverage. Unemployment insurance was introduced for the first time in a number of countries, including the United States, during the Depression.

Incumbents used the protection afforded by autarky to mould policies in their own favor. Thus, Japan, for example, moved from an economy with a flourishing financial market, and a competitive banking system, to an economy with small financial markets and a concentrated banking system. These moves had the support of the government, which felt it could better control resource allocation if funds were channeled largely through the banks. The reversal in openness provided the conditions under which financial markets could be, and indeed were, repressed (see Rajan and Zingales (2003) for a more detailed account).

#### 4.6.2. *Why did financial markets take so long to recover?*

The disruption to international trade caused by the two wars and the Great Depression was significant. While the average degree of export openness (merchandise exports as a percentage of GDP) was 8.2 in 1913, it was just 5.2 in 1950 (e.g., O’Rourke and Williamson, 1999, p. 30). In contrast to much of the developed world, the United States emerged from World War II with its industries largely intact and highly competitive. Clearly, it had a strong incentive to press for open trade since its markets were likely to expand. Meanwhile, its wartime role as the “Arsenal of Democracy” gave it the political clout to press its agenda. But in return for agreeing to free trade, other developed countries wanted some restrictions on cross-border capital flows.

The rationale was clear. If capital were allowed to flow freely, it would hamper the ability of governments to provide the various kinds of insurance that was increasingly being expected of them by their citizens, especially given the terrible state of post-war government finances. Thus the argument for controlling capital flows and the second-class status accorded to finance in the post-war economic order. As Keynes was one of the architects of the Bretton Woods agreement, which set the stage for the post-war international order. He said (cited in Helleiner, 1994,

p. 164): “Not merely as a feature of the transition but as a permanent arrangement, the plan accords every member government the explicit right to control all capital movements. What used to be heresy is now endorsed as orthodoxy.”

This should be contrasted with the general desire of countries after World War I to return to the Gold Standard and thus reduce barriers to capital flow. If openness to trade is, by itself, insufficient to force financial development, then the restrictions on capital movements after WWII can explain why financial markets did not take off even though trade expanded. After all, they recovered rapidly after WWI. Even though the toll taken by the wars was admittedly very different, an important part of the explanation must be that there was no Bretton Woods after World War I endorsing capital controls.

#### *4.6.3. The end of capital controls*

The breakdown of the Bretton Woods system (e.g., [Eichengreen, 1996](#), for a lucid exposition of the causes), led to the dismantling of capital controls, and could have been the precipitating factor for financial development across the world. Starting with the Euromarkets, spreading to the United States, and then moving to Europe and Japan, cross-border capital flows went from a trickle to a torrent. Accounts of the process by which this happened suggest that the cross-border flows increased despite, rather than because of, the efforts of domestic interest groups (e.g., [Helleiner, 1994](#)). Given the growing volume of trade, it was simply too difficult to control the potential leakage of capital, especially when there were countries abroad where the money could be deposited.

By the end of the 1980s, controls had effectively been removed throughout western Europe, Scandinavia, and Japan. The competition generated by trade and free international capital movements forced a modernization of the financial system and a progressive withdrawal of the State from the economy, through privatization in the industrial and banking sectors. This then would explain the other leg of the reversal. Before we go further, let us take a look at two case studies.

#### *4.7. The case of Japan*

Japan, as our data suggest, was making rapid strides to developing a strong financial sector before World War I. Until 1918, there were no restrictions on entry into banking, provided minimum capital requirements were met. There were over 2,000 banks in 1920. The five large *Zaibatsu* (translated as financial cliques) banks accounted for only 20.5% of the deposits before the war, and there were many small banks. ([Aoki et al., 1994](#); [Hoshi and Kashyap, 2001](#)).

As a result of increased competition in the post-World War I years and the Great Tokyo Earthquake in 1923, which caused damage estimated at an incredible 38% of GDP, more and more banks became troubled. This gave the government the excuse to enact regulations promoting mergers in the name of stability. By 1945, there were only 65 banks, and the share of *Zaibatsu* banks in total deposits had increased to 45.7%. ([Aoki et al., 1994](#)).

At the same time as the banking system was becoming more concentrated, the government's control over it was increasing. This became especially pronounced as the government sought to direct funds towards supplying the war against China in 1937. With the Temporary Fund Adjustment Act in 1937 and the Corporate Profits Distribution and Fund Raising Act in 1939, the government, through the Industrial Bank of Japan, assumed control of financing. All security issuances and lending decisions above a certain amount had to be approved by the government, and those that were not related to the war effort were typically not approved. Further Acts simply strengthened the government's control and this culminated in the designated lending system by which each munitions company was designated a major bank which would take care of all its credit needs. By the end of the war, the banking system was not only concentrated, but well and truly under the control of the government.

The accompanying demise of the arm's length financial markets was aided and abetted by the banks. In 1929, 26% of the liability side of large Japanese firm balance sheets consisted of bonds while only 17% was bank debt (see [Teranishi, 1994](#)). As bond defaults increased as a result of the earlier crisis and depression, a group of banks together with trust and insurance companies seized on the poor economic conditions to agree in 1931 to make all subsequent bond issues secured in principle. This immediately made it harder for their clients to issue public debt. With the acquiescence of the Ministry of Finance, the agreement was formalized in 1933 through the formation of a Bond Committee. The Committee determined which firms could issue bonds, on what terms, and when. All bonds were required to be collateralized, and banks were to serve as trustees for the collateral in exchange for a substantial fee. Giving banks the responsibility for determining firms' right to access the public bond markets was like giving a fox who resided in a chicken coop the right to determine which chickens could leave. [Hoshi and Kashyap \(2001\)](#) add further support to the claim that this was a cartel by the observation that security houses that were not part of the 1931 agreement started competing fiercely for underwriting business and continued to underwrite unsecured bonds. Thus the market itself did not appear to develop a distaste for unsecured bonds. The obvious outcome was that a flourishing bond market was killed off. By 1936, bonds were down to 14% while bank debt was up to 24% of the liability side. By 1943, 47 percent of liabilities were bank debt while only 6% were bonds.

Japan illustrates yet another point. Entrenched hierarchies have the power to defend themselves. For example, despite their best efforts to break up bank-firm established during the period of militarization, the post-war American occupying forces could not prevent them re-emerging as the Keiretsu or main bank system (e.g., [Hoshi and Kashyap \(2001\)](#), though see [Miwa and Ramseyer \(2002\)](#) who suggest a contrary view that Keiretsus are fiction). Similarly, the Bond Committee, set up ostensibly to improve the quality of bond issuance during the Depression, survived until the 1980s. Even as Japanese industrial firms invaded the rest of the world in the 1970s, their bond markets remained miniscule, and Hitachi, an AA credit, was denied the ability to issue unsecured bonds. It was only in the early 1980s, as Japanese firms decided to borrow abroad in the Euromarkets rather than depend on

their antiquated financial system that Japanese banks had to loosen their stranglehold. The powers of the bond committee were eventually curtailed, not by a far-seeing government, but by the forces of outside competition.

#### 4.8. *Why not the United States?*

As with any large sample study, there are exceptions. The United States undertook a variety of market-friendly actions including passing legislation requiring greater disclosure in financial markets, setting up the Securities and Exchange Commission, and passing the Glass Steagall Act, which brought more competition among financial institutions by breaking up the universal banks. Was the United States an exception to the trend at this time?

First, it is possible to overstate the extent to which the legislation was market friendly. The National Recovery Administration, which was set up under the New Deal, sought to fix prices in industry in order to eliminate “ruinous” competition, while Regulation Q attempted to do the same thing in the banking sector. The US government defaulted on the Gold Clause to the detriment of creditors, and the sanctity of contracts (e.g., Kroszner, 1999). Markets and competition were not seriously affected in the long run. This was not for the want of effort by the New Deal politicians. But legislative zeal in the United States was also tempered by checks imposed by the judiciary, a characteristic of Common Law countries (though it was the independent judiciary rather than Common Law that was the source of the check). Roosevelt’s primary method of intervention, the National Recovery Administration, was declared unconstitutional by the Supreme Court (Kennedy, 1999, p. 328). When the Supreme Court eventually became more pliant after threats to pack its bench with government supporters, Congress became more nervous about growing executive powers, and growing threats to property, and became the main obstacle to proposed New Deal legislation (Kennedy, 1999, p. 341).

Checks and balances are not sufficient to explain the pro-market legislation. Of course, the legislation was not as pro-market as it is often made out to be. Mahoney (2001) argues that the ostensibly pro-market and pro-competitive Securities Act of 1933 and the Glass Steagall Act, were really protection in disguise for established investment bankers. Various aspects of the Securities Act reduced price competition among investment bankers, while the Glass Steagall Act forced commercial banks out of the underwriting business. Mahoney provides evidence that the Securities Act increased concentration in the underwriting business.

Nevertheless, even if private interests were at work, the United States did not go the way of Japan. In part, the private interests were more fragmented. Investment banks did not see eye to eye with commercial banks, nor did large banks form common cause with small banks. The variety of conflicting private interests and the variety of political support they could count on at both the state and national level, more than any other factor, could have been the reason why outcomes in the United States were not more anti-competitive. There was no way markets could be closed down without hurting some powerful faction in the financial sector.

So this then leaves us with the final question. Why were there so many different groups within the financial sector? Roe (1994) suggests an answer. He claims that there has always been an undercurrent of opposition in the United States to anyone getting overly powerful in the financial sector. Whether it be the setting up of the Federal Reserve to undercut the power of JP Morgan, the Glass Steagall Act to curtail the power of large universal banks, or the refusal of the Federal Reserve to act to save Drexel Burnham, the United States has managed to cut powerful financiers down to size. Perhaps it was its ability to ensure even in normal times that no small group of incumbents ever became really powerful that enabled the United States to pass through crisis relatively unscathed.

#### 4.9. *How does structure matter?*

Since the work of La Porta et al. (1997, 1998), there has been some debate over why the legal origin of a country appears to matter so much for financial markets. Some suggest it reflects the inherent superiority of Common Law over Civil Law for financial transactions and investor protection. Others argue it matters because it reflects something about a country's culture, religion, or politics (e.g., Acemoglu et al., 2001; Beck et al., 1999; Berglof and Von Thadden, 1999; La Porta et al., 1999; Rajan and Zingales, 1999; Stulz and Williamson, 2001).

Our finding that financial markets in countries with a Civil Law system were not less developed than those in countries with Common Law in 1913 and in 1929 but only after World War II suggests a deeper look at the underlying mechanism for why legal origin seems to matter.

Rajan and Zingales (1999) argue that many complex legal constructs that first emerged in Common Law, such as limited liability, were readily imitated by Civil Law countries. In fact, they argue, when the government has a will, Civil Law countries have a greater ability to translate governmental policy into law because laws emanate from the center rather than evolving through judicial decisions. Private interests therefore have a greater chance of seeing their agenda enacted in a Civil Law country.

One reason is simply that if the governance system is more centralized, it is easier for small private interests to capture it. If, in addition, the legal system is important for validating and enforcing new policy, the Civil Law system is again easier to capture. The focus of influence activity in a Civil Law country only has to be the legislator. By contrast, the judiciary in a Common Law country can restrain a new political climate, and because it is dispersed and subject to local influences, is less easy to capture.

A second reason is that Common Law evolves at the periphery, and innovates around legislative or administrative roadblocks set up by the center. In England, for instance, after the Bubble Act placed constraints on the incorporation of limited liability companies in 1720 (primarily to bolster the position of companies that were already incorporated), Common Law courts continuously evolved their own interpretation of which companies did not contravene the spirit of that law. It was precisely to overcome this ability of the judiciary to defy the will of the center that

Napoleon introduced the Civil Code as a way to prevail over judges still loyal to the *Ancien Regime*.

In summary, in a Civil Law country, it is easier for a small group representing private interests, such as large incumbent industrialists and financiers to influence the implementation of friendly policies. This need not be all bad. When these private interests are aligned with the national interests, good policy can also be implemented quickly. But when interests are misaligned, matters can become much worse. Empirically, this would suggest that Civil Law countries went further in repressing financial markets when borders closed down (explaining the La Porta et al. findings in the mid-1990s), but have also begun developing them again as borders have opened up again in recent years (explaining the convergence seen in the most recent data). In summary, structure might matter, not so much in directly favoring or disfavoring financial development, but in filtering the impact of interest groups and the forces that affect their incentives.

The data seem to support this view. In Table 11 Columns (i) and (ii) regress the change in the stock market capitalization for a country between 1913 and the breakdown of Bretton Woods (1970) against the changes in its per-capita income in constant dollars and an indicator for Civil Law. Both when we compute change as a change in level and as a change in percentage, the coefficient estimate for the Civil Law indicator is strongly negative, suggesting that stock markets in Civil Law countries did indeed fall by more over the period of the reversal. In Columns (iii) and (iv), the dependent variable is the change in stock market capitalization for a country between the beginning of Bretton Woods's breakdown (1970) and the end of our sample period (1999). In this case, the coefficient estimate for the Civil Law indicator is strongly positive, suggesting that stock markets in Civil Law countries did indeed recover by more in recent times.

While certainly not a test, this evidence suggests that structure may have been found to matter for financial development in recent papers because Civil Law systems can have more exaggerated reactions to changes in private interests. A related finding is that a country's cultural heritage plays the strongest role when the country is shielded from foreign competition and private interests can reign unhindered. Stulz and Williamson (2001) find that the correlation between creditor rights and religion weakens when a country is more open to trade. If we compare systems at a time of transition, we come away with the impression that structure has a strong influence on levels of development even though it has more of an influence on rates of change.

#### 4.10. *Related literature*

Our view that institutional differences between countries serve to modify the impact of private interests offers a different view of convergence across countries than Coffee (2000). In his view, financial development will take place through changes in practices when a constituency emerges that demands it. Much later, the formal legal system will adapt to reflect these demands. Thus he attributes the convergence to Anglo-Saxon norms of corporate governance practices in continental

Table 11

## Openness and legal system over time

In the first two columns the dependent variable is the change in the ratio of equity market capitalization to gross domestic product between 1913 and 1970 (in the first column, it is the absolute change, in the second, the % change). In the next two columns the dependent variable is the change in the ratio of equity market capitalization to gross domestic product between 1970 and 1999 (in the third column, it is the absolute change, in the fourth the % change). In the first two columns the proxy for the change in the demand for finance is the change in the index of industrialization for that country in that year as computed by Bairoch (1982) divided by 1000. In the next two columns the proxy for the change in demand for finance is the change in the logarithm of the per-capita GDP in PPP dollars as reported in the World Development Indicators. The indicator for Civil Law is one in countries with Civil Law and is zero otherwise. All regressions include calendar year indicators. The standard errors, which are corrected for possible clustering of the residual at a country level, are in parentheses. (\*) indicates significance at the 10% level, (\*\*) at the 5% level, (\*\*\*) at the 1% level.

	Change in stock market capitalization/GDP over the 1913–1970 period		Change in stock market capitalization/GDP over the 1970–1999 period	
	Changes in level	Percent change	Changes in level	Percent change
Change in demand for finance	0.655 (0.792)	–2.270** (1.063)	–0.398 (1.014)	–3.650 (3.687)
Civil law indicator	–0.745*** (0.165)	–1.551*** (0.221)	0.762* (0.393)	3.207** (1.428)
$R^2$	0.57	0.77	0.10	0.16
Observations	16	16	18	18

Europe to the privatization in the 1980s, which created a constituency of minority shareholders. We differ primarily in that we attribute a strong role to private interests (not just for, but also against, development) and potentially, a role for structure in modifying the influence of private interests.

Before concluding this section, we must note two other explanations for the reversals. Roe (1999) suggests that corporations in continental Europe became more closely held because of the potential for higher agency costs there as a result of pro-labor legislation passed in the 1920s and 1930s. This diminished the size of public markets. While we do believe that the shrinkage of public equity markets and the passage of pro-labor legislation were coincident in some countries, his theory does not account for the greater government intervention and cartelization witnessed in many countries, or for the demise of corporate bond markets in some.

Pagano and Volpin (2000) develop a model in which entrepreneurs, who have already raised finance, want low investor protection (so as to indulge in private benefits) and get the support of workers by promising them high employment protection. This model of incumbent interests (entrepreneurs who already have finance) is similar to ours. It suggests a different explanation for the correlation Roe finds by saying that incumbent industrialists bribed workers with pro-worker legislation to go along with anti-finance legislation. Our emphasis on openness as a modifying influence is different, and it helps us explain both pro-market and anti-market legislation.

## 5. Conclusion

We see four contributions of this work. The first is to show the reversal in financial markets, a finding inconsistent with pure structural theories of financial market development. The second is to add a new fact, which is that trade openness is correlated with financial market development, especially when cross-border capital flows are free. The third is to argue that these findings are consistent with interest group politics being an important factor in financial development across countries. The last is to suggest that a country's institutions might slow or speed-up interest group activities. This might indicate that institutions matter, though the way they matter might primarily be in tempering interest group activities.

If our understanding of the impediments to financial development is correct, then it suggests that the exhortations by international development institutions to countries to develop institutions to aid economic growth are not enough. It is not that the cognoscenti in developing countries are not aware that the country needs good institutions, it is simply that too many interests will lose out if the institutions are developed (e.g., Olson, 1982). More emphasis needs to be placed on establishing political pre-conditions for institutions.

More thought has to be given then to how interest groups can be reined in. Openness clearly will help. Policies that tend to promote efficient, competitive industries rather than inefficient, rent-seeking ones will also tend to pave the way for institutional development, as will public awareness of the hidden costs of policies that ostensibly promote economic stability. Finally, insurance schemes that will soften the impact of economic adversity on individuals will help ward off an anti-market reaction. How such policies fit together clearly requires more thought and suggests ample scope for further research. In further work, Rajan and Zingales (2003) provide a preliminary effort.

## Appendix A. Important notes on data collection

### *A.1. Historical differences in reporting data*

A formidable challenge, specific to the historical nature of our analysis, is the difficulty in obtaining reliable sources for historical information about financial markets. Primary sources are often lost or inaccessible, while secondary sources are contradictory or repeat uncritically the same primary sources. To further complicate our task, the type of information statisticians and governing bodies of stock exchanges were interested in at the beginning of the twentieth century seems quite different from the ones we are interested in today (this seems a topic worthy of a separate study). We discuss some of these differences because they help shed some light on the different perceptions of the nature and role of financial instruments at that time.

A number that is often reported is the total nominal value of securities outstanding in a country. This joins together not only stocks and corporate bonds,

but also Government bonds, making the number difficult to interpret. The clubbing of information on corporate bonds and stocks, which is pervasive even in the United Kingdom, probably the most sophisticated financial market at that time, reflects the similarity of these two instruments at that time. The use of preferred stock paying a fixed dividend was widespread. Also, common stock paid very high dividends, making them more similar to bonds. One consequence of the high dividend payout ratio was that most stocks traded fairly closely to their nominal value. In fact, stock prices in many countries were quoted as a percentage of their nominal value. Thus, even from an investor's point of view, bonds and stocks were perceived as very close substitutes.

A second problem is that the official statistics at the beginning of the twentieth century report the total universe of corporations existing at that time, rather than the subset of those that are publicly traded. To make the numbers more comparable across time, we classify companies as publicly traded only if the firm is quoted during the year. Even with this requirement, we may still have very infrequently traded stock.

A final problem comes from the existence of regional exchanges. At the beginning of the century, not only was trading more fragmented across exchanges, but so was listing. For example, the Banco do Brazil is listed in the Rio Stock Exchange but not in San Paulo. Companies listed only in Osaka represent a considerable portion of the total companies listed in Japan. Most extreme is Germany, probably as a consequence of the delayed political reunification. In 1913 Germany had nine major stock exchanges and Berlin represented only about 50% of the total capitalization.

Data for regional (or secondary) stock exchanges are especially challenging. Since many have disappeared or have been absorbed by the main exchange, they tend not to be well documented. We try, as best as possible, to reconstruct a measure that includes all the major stock exchanges, eliminating double listing. When this is not possible for the date of interest, we compute the ratio of the capitalization of the secondary exchanges to main exchange at the earliest date available and then use this ratio to extrapolate backwards the value of these exchanges. Since the importance of regional exchanges has gone down over time, this procedure clearly biases downwards the estimate of the total stock market capitalization in countries with fragmented stock markets. This should be kept in mind in the analysis.

#### *A.2. Stock market capitalization and number of companies listed*

Our starting point was the official publication of the stock exchanges as well as those of the Federation Internationale des Bourses Valeurs (FIBV). These provide extensive information only starting in 1980. Official publications of individual stock exchanges often go back only to WWII. When these are not available, we use information contained in private guides to stock exchanges. Only for Japan and the United States did we find official publications before WWII.

To assess the importance of the equity market in 1913 we rely on two approaches. Whenever possible we secure a copy of a stock exchange handbook in 1913 (or the

closest year before 1913). Using the handbook we identify the number of domestic companies listed, the number of shares of each company, and the price per share. We then compute the total stock market capitalization as the sum of the product of price times the number of shares. We were able to do this for Australia, Brazil, Canada, Cuba, Denmark, Germany, Italy, Netherlands, Russia, Sweden, Switzerland, the United Kingdom, and the United States.

A second source was various issues of the *Bulletin of the International Institute of Statistics (IIS)*. Starting in the late nineteenth century, statisticians from all over the world met every year for a conference. This association formed a special group to compute the importance of security markets in different countries. Unfortunately, many of the reports club together stocks and bonds but we do obtain some disaggregate information for some countries.

### A.3. *Data on equity issues*

Data on equity issues are relatively easier to get for the pre-WWII period than for the period immediately after the war. For example, the *League of Nations* statistics include this information, even though it is not contained in more modern publications like the *United Nations Statistics* or the *Financial Statistics of the International Monetary Fund*. This could reflect the greater importance attributed to this information before World War II. When not available from official statistics, we gather this information from financial newspapers of that time such as the *Economist*, *Commercial and Financial Chronicle*, *Deutsche Oekonomiste*, etc.

### A.4. *Data on deposits and national accounts data*

Data on deposits, national income, and gross fixed-capital formation come from Mitchell (various issues). Mitchell's data are available until the mid-1990s. We extrapolate this to 1999 for deposits by using the growth rate of deposits from the IMF's *International Financial Statistics*. For national accounts, we use the data from the NBER website whenever available. Post WWII national accounts data come from the IMF's *International Financial Statistics*. We indicate whenever data come from a different source. A comprehensive data appendix is available on request.

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