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HISTORICAL EVIDENCE ON THE FINANCE-TRADE-GROWTH NEXUS

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ABSTRACT

We study linkages between financial development, international trade, and long-run growth using data since 1880 for seventeen now-developed "Atlantic" economies and a set of cross-country and dynamic panel data models. We find that finance and trade reinforced each other before 1930, but that these effects did not persist after the Second World War. Financial development has positive effects on growth throughout the sample period, while trade affects growth strongly and independently after 1945. We attribute the rising importance of trade in explaining growth to major post-World War II changes in tariffs and quantity restrictions associated with the GATT, the establishment of the European Common Market, and the gradual elimination of capital controls after 1973. The findings are robust to the use of 'deep' fundamentals such as legal origin and indicators of the political environment as instruments for financial development and trade. Financial development, however, is more closely linked to these fundamentals than trade.

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1. Introduction

The relationship between financial development and economic growth is now well established in studies using both recent data (e.g., King and Levine, 1993; Levine, Loayza and Beck, 2000) and historical data (e.g., Rousseau and Sylla, 2003).[1] Another rich literature shows a positive role for trade openness and export orientation in long-run growth (e.g., Dollar, 1992; Ben-David, 1993; Sachs and Warner, 1995; Edwards, 1998). Yet intersections among these two strands of the growth literature have been rare and fleeting, particularly when it comes to interactions between trade and financial development.[2]

Rajan and Zingales (2003a, b) contribute to the discussion with a framework in which a country's opening to trade spurs financial development, international integration and growth by weakening the power of economic and political incumbencies that may block financial liberalization. In this paper we emphasize that their channel can be particularly potent as an economy modernizes if developments in the financial and commercial sectors are mutually reinforcing, and present evidence that the channel might have operated during the first wave of economic globalization among the rapidly-developing economies of Europe and the Americas that occurred between 1870 and the start of the First World War. Specifically, we find that financial development and trade reinforced each other from 1880 to 1930, which is consistent with the Rajan and Zingales interpretation, but that these linkages broke down after the Second World War, with both finance and trade continuing to have independent influences on growth after 1945.

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[1] Levine (2005) offers a thorough survey of the vast empirical literature on finance and growth that has burgeoned over the past two decades.

[2] Recent exceptions are Baltagi et al. (2009) and Demetriades and Rousseau (2010), which pursue the nexus between finance and trade with recent data for a wider range of countries.

Our starting point is a classic regression from King and Levine (1993, Table 8, p. 731) in which international trade and liquid liabilities enter together as percentages of gross domestic product on the right hand side of an otherwise standard cross-country growth specification using data for 57 developed and developing countries from 1960 to 1989. They find that financial development is linked to growth but that trade is not, and interpret a small effect of trade's inclusion in the model on the coefficient for financial development as supportive of their main hypothesis that finance has an independent influence on growth.

Regressions such as this, however, do not control explicitly for the possibility that trade and openness influence growth indirectly through the financial sector and that these effects vary with the stages of a country's development. By considering continuous data for seventeen "Atlantic" economies over the period from 1880 through 2004, we seek to understand the evolving role of trade in growth as financial systems emerge and mature.[3]

We also consider whether the roles of financial development and trade in promoting growth can be encompassed by "deeper" fundamentals. These could include a nation's legal origin, which presumably reflects its willingness and ability to protect individual property rights (e.g., La Porta et al., 1997, 1998; Beck, Demirgü□-Kunt and Levine, 2002; Beck and Levine, 2005), and indicators of the political environment, including those related to democratic principles (e.g., Barro, 1991; Barro and Lee, 1994; Alesina and Perotti, 1994; and Alesina et al., 1996; Haber, 2003; Bordo and Rousseau, 2006). We believe that the political environment may be particularly interesting because, unlike legal origin, it can and does evolve over time.

[3] The seventeen countries that we consider are Argentina, Australia, Brazil, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom, and the United States. Though not all lie on the Atlantic coast, all were important parts of the late-nineteenth century trading community than spanned the Atlantic and beyond.

Our results suggest that the component of financial development directly related to legal origin and the political environment is strongly related to growth throughout our 125-year sample, while the similar component of trade does not share such a persistent linkage. We interpret this as suggesting that financial development is "primal" to growth and that trade generally follows finance in affecting growth later in the development process. At the same time, the role of trade in post-World War II growth is very strong in these economies.

2. Data and methodology

The analysis is based upon seventeen countries for which we have continuous data since 1880. The macroeconomic data, including population, M2, imports, exports, growth in real gross domestic product (GDP) per capita, and the GDP deflator are from the World Bank's *World Development Indicators* for the post-1960 period and from worksheets underlying Obstfeld and Taylor (2000), Bordo and Jonung (1987), Rousseau and Wachtel (1998), and Rousseau (1999) for earlier years. The levels of GDP per capita are from Maddison (2003) and expressed in constant 1990 international Geary-Khamis dollars. We measure financial development as the ratio of broad money (M2) to GDP, which primarily reflects the size of a country's banking system. Ideally we would like an additional measure of financial development such as the ratio of stock market capitalization to GDP, but this is not available over the full period of our study.[4] We work with the ratio of the sum of exports and imports to GDP as our measure of trade and openness, which is something of a standard in empirical growth studies.

[4] Beck, Demirgü□-Kunt and Levine (2002, p. 40) report a correlation coefficient of 0.664 for averages of bank and market-based measures of financial development from 1990 to 1995 in a cross-section of 115 countries, and so the ratio of broad money to GDP should reflect the size of a more broadly-defined capital market reasonably well.

We begin the analysis with a cross-country growth regression based on the framework developed in Barro (1991) and extended to the study of financial development and growth by King and Levine (1993). It has the form

$$Growth\ Y_{it} = \alpha_0 + \alpha\ Y_{it} + \beta FD_{it} + \gamma TRD_{it} + \Phi_t + \mu_{it,} \qquad (1)$$

where the dependent variable is the average percentage growth rate of real per capita income over period *t*, which can be five or ten years in length, Y_{it} is the logarithm of its level at the start of period *t*, FD_{it} and TRD_{it} are measures of financial development and trade respectively, the Φ_t are dummy variables for each five or ten-year period, and μ_{it} is the error term. We expect a negative coefficient on the log of initial real per capita GDP due to the tendency for growth rates to converge across countries and over time.

We estimate equation (1) over five different time spans using four techniques. The first time span considers ten-year averages of the dependent variable for each of the twelve decades from 1880 to 1999. Our sub-samples use five-year averages of the dependent variable.[5] The first covers the pre-World War I (1880-1914) era, while the second continues this period to the start of the Great Depression (1880-1929). We work with two post-World War II samples, one commencing immediately in 1945 and running through 2004, and another starting in 1960 for comparability with empirical growth studies using more recent data.

The first estimation is by ordinary least squares using initial values of all explanatory variables in each five or ten-year period to reduce simultaneity biases that could arise from the

[5] Since the data from 1880 to 1999 span a lengthy time period, we are able to focus on longer-term growth effects with ten-year averages while keeping the sample size reasonably large. The sub-periods capture more medium term effects, but the five-year averaging should still adequately smooth out high frequency business cycle fluctuations in the data.

influence of growth on the financial and trading sectors. The second estimation uses the five or ten-year averages of financial development and trade as regressors with their initial values as instrumental variables. We also report results obtained with the system generalized method of moments (GMM) estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998).[6] In these specifications the ratios of broad money and trade to GDP enter as lagged averages from the previous period.

Our next set of regressions considers the ratios of broad money and trade to GDP as dependent variables and takes the form

$$TRD_{it} = \alpha_0 + \alpha Y_{it} + \beta FD_{it} + \gamma INFL_{it} + \delta t + \mu_{it,} \quad \text{and} \qquad (2)$$

$$FD_{it} = \alpha_0 + \alpha Y_{it} + \beta TRD_{it} + \gamma INFL_{it} + \delta t + \mu_{it,} \qquad (3)$$

with variables defined as in equation (1). We include annual growth of the GDP deflator (INFL) as a control variable because a growing literature (e.g., Boyd, Levine, and Smith, 2001; Rousseau and Wachtel, 2002) suggests that high inflation, which is usually related to variable inflation, can lead to difficulties in nominal contracting and in turn dampen or even reverse financial development. Inflation is likely to hinder trade for much the same reason. We also include initial per capita real income on the right-hand side because higher incomes are likely to be associated with more economic activity and a greater than proportionate increase in the demand for financial assets and services. Once again we estimate these systems by ordinary least squares with initial values on the right hand side, by two-stage least squares with period averages of financial development or trade instrumented by their initial values, and as a dynamic panel.

[6] Our use of the "System GMM" estimator parallels that introduced to the study of finance and growth by Levine, Loayza, and Beck (2000).

Our final estimation of the growth model in equation (1) considers the role of deep fundamentals related to legal origin and the political environment in providing the identifying variation in financial development and trade that influences growth. In other words, we estimate the growth specification in equation (1) using a host of legal and political variables as instruments for the five or ten-year averages of financial development and trade.

Following La Porta et al. (1997), Australia, Canada, the United Kingdom, and the United States have English legal origin, Argentina, Brazil, France, Italy, the Netherlands, Portugal and Spain have French legal origin, Germany and Japan have German legal origin, and Denmark, Finland, Norway, and Sweden have Scandinavian legal origin. We denote the legal origin of each country with dummy variables. The variables reflecting the political environment are those found by Bordo and Rousseau (2006) to be related robustly to financial development. Starting with the wide variety of political indicators collected by LeBlang (2004), we found that the average numbers of elections per year, the average number of revolutions or coups per year, and whether or not the electoral system is based on proportional representation had the greatest explanatory power.

3. Empirical findings

3a. Growth regressions

Table 1 presents growth regressions that include financial development, trade, the log of initial real per capita income, and a full set of dummy variables for time periods on the right hand side. Estimation in panel (a) is by ordinary least squares, with financial development and trade entering the model as initial values in each five or ten-year period. In all subsamples the coefficient on the log of the initial per capita income is negative as expected, and is statistically

Table 1
Growth regressions with financial development and trade[a]

(a) *Initial value OLS*	1880-1999	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP	-1.074**	-0.100	-0.838**	-1.704**	-1.635**
	(0.284)	(0.392)	(0.421)	(0.324)	(0.353)
Initial ratio broad money to GDP	1.499**	1.823	2.756**	1.106**	1.296**
	(0.590)	(1.136)	(1.116)	(0.463)	(0.415)
Initial ratio trade to GDP	0.331	0.044	0.222	1.144*	1.677**
	(0.345)	(0.351)	(0.415)	(0.609)	(0.574)
R^2	.333	.092	.120	.363	.436
(No. observations)	(195)	(117)	(164)	(190)	(144)
(b) *Two-stage least squares*					
Log of initial real per capita GDP	-1.075**	-0.109	-0.843**	-1.734**	-1.703**
	(0.282)	(0.395)	(0.422)	(0.329)	(0.363)
Ratio broad money to GDP (instrumented by initial value)	1.474**	1.754*	2.658**	1.148**	1.371**
	(0.583)	(1.096)	(1.086)	(0.470)	(0.422)
Ratio trade to GDP (instrumented by initial value)	0.412	0.070	0.258	1.282*	1.923**
	(0.405)	(0.350)	(0.441)	(0.677)	(0.660)
R^2	.349	.087	.120	.369	.437
(No. observations)	(194)	(117)	(164)	(190)	(144)
(c) *Dynamic system GMM*					
Log of initial real per capita GDP	-2.267**	-0.807	-0.291	-3.706**	-2.217**
	(0.577)	(1.132)	(0.979)	(0.959)	(0.891)
Lag of ratio broad money to GDP	1.875**	2.252*	3.387**	1.780**	1.384**
	(0.699)	(1.265)	(1.249)	(0.598)	(0.511)
Lag of ratio trade to GDP	0.927**	0.283	0.324	2.880**	2.391**
	(0.429)	(0.369)	(0.458)	(0.886)	(0.796)
P-value J-test	1.00	0.89	1.00	1.00	0.99
(No. observations)	(177)	(100)	(146)	(182)	(133)

[a] Standard errors are in parentheses. When used, variable averages are computed over each decade for 1880-1999 and every five years for the 1880-1914, 1880-1929, 1945-2004, and 1960-2004 sub-periods. Initial values are taken from the first year of each five or ten-year period. Lag values are averages from the previous period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

significant in all but one (1880-1914).[7] More interestingly, the coefficients on financial development are positive and statistically significant at the ten percent level or less with the exception of the coefficient for 1880-1914, which just misses the ten percent cutoff. The coefficients on financial development are also meaningful in an economic sense. For example, the coefficient of 1.499 from the first column of panel (a) suggests that increasing the ratio of broad money to GDP from, say, 0.5 to 1.0 would raise the annual growth rate by about 0.75 percent. The implied growth effects for the 1880-1914 and 1880-1929 sub-periods are even larger. The coefficients on the initial value of trade to GDP are also positive for each sub-period in panel (a), but are statistically significant only for 1945-2004 and 1960-2004.

The results in panel (b) of Table 1 are similar to those in panel (a) and show robustness to estimation with averages of financial development and trade instrumented by their own initial values. The system GMM results in panel (c) show even larger effects of financial development and trade on growth, with the coefficient on trade positive and statistically significant over the full 1880-1999 period as well as the two post-World War II sub-samples. The dynamic nature of the GMM model may be driving these stronger results, though the dynamics also require losing the first five or ten-year observation for each country in each sub-period.

Overall, the growth regressions in Table 1 send a clear message: financial development is strongly linked to growth for these seventeen economies throughout the 1880-2004 period, while trade appears to have a strong relation with growth after 1945. This could mean that trade became growth-promoting only at later stages of these countries' economic development and in a manner unrelated to financial development, but economic history tells us that this is probably not

[7] We exclude inflation from the growth regressions because a number of studies (e.g., Bruno and Easterly, 1998; Rousseau and Wachtel, 2002) show that negative relationships between inflation and growth in cross-country data are driven by extreme observations such as hyper-inflations.

the case. Rather, finance and trading arrangements are normally thought to have co-evolved in the early stages of market emergence (e.g., Cassis, 2007). Though we lack sufficient data for enough of these countries going back to the earliest stages of organized trade and commerce, we can examine these cross-relationships since 1880, which includes the period leading up to World War I that is generally agreed to represent the "golden" era of globalization.

3b. Trade and financial development regressions

Table 2 presents estimates of regression equation (2) with the ratio of international trade to GDP as the dependent variable. The log of initial real GDP per capita enters with the positive sign that we expect throughout and is statistically significant for all but one specification (i.e., the dynamic model in panel (c) for 1880-1914), and inflation has the expected negative relationship with trade but is not statistically significant for two of the dynamic regressions. The main result of interest in Table 2 is that the coefficient on financial development is positive and statistically significant in the 1880-1914 and 1880-1929 sub-samples for all three model specifications and estimation techniques, and that this relationship appears to break down after 1945.

Table 3 reverses the specification in Table 2, placing financial development on the left hand side and international trade on the right as in equation (3). The log of initial GDP per capita once again enters with a positive sign that is now statistically significant in all cases. Inflation, when statistically significant, enters the financial development equations with the expected negative sign. It is also clear that trade is related to financial development in the pre-1930 subsamples, but not for the post-World War II periods.

The results in Table 3 suggest that the possibility of a role for trade in economic growth in the early stages of market emergence should not be so readily dismissed. Trade and financial

Table 2
Trade regressions[a]

(a) *Initial value OLS*	1880-1999	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP (1990 $)	0.136**	0.228**	0.182**	0.149**	0.188**
	(0.054)	(0.107)	(0.077)	(0.037)	(0.050)
Initial inflation rate	-0.121*	-0.448**	-0.390**	-0.102**	-0.097**
	(0.071)	(0.199)	(0.166)	(0.035)	(0.038)
Initial ratio broad money to GDP	0.153	0.792**	0.542**	-0.029	-0.088
	(0.115)	(0.296)	(0.202)	(0.049)	(0.059)
R^2	.144	.152	.130	.249	.257
(No. observations)	(195)	(117)	(164)	(192)	(144)
(b) *Two-stage least squares*					
Log of initial real per capita GDP (1990 $)	0.137**	0.226**	0.181**	0.150**	0.187**
	(0.054)	(0.107)	(0.078)	(0.037)	(0.050)
Initial inflation rate	-0.121*	-0.444**	-0.380**	-0.102**	-0.097**
	(0.072)	(0.201)	(0.167)	(0.036)	(0.038)
Ratio broad money to GDP (instrumented by initial value)	0.153	0.771**	0.527**	-0.035	-0.089
	(0.116)	(0.291)	(0.198)	(0.058)	(0.060)
R^2	.141	.133	.118	.251	.255
(No. observations)	(194)	(117)	(164)	(192)	(144)
(c) *Dynamic panel*					
Log of initial real per capita GDP (1990 $)	0.136**	0.192	0.161*	0.177**	0.198**
	(0.057)	(0.124)	(0.088)	(0.042)	(0.058)
Lag of inflation rate	-0.030	-0.445**	-0.043	-0.027**	-0.027**
	(0.039)	(1.538)	(0.752)	(0.013)	(0.014)
Lag ratio broad money to GDP	0.192*	0.776**	0.507**	0.017	-0.075
	(0.119)	(0.352)	(0.220)	(0.062)	(0.068)
R^2	.144	.101	.090	.251	.253
(No. observations)	(177)	(100)	(146)	(182)	(133)

[a] Standard errors are in parentheses. When used, variable averages are computed over each decade for 1880-1999 and every five years for the 1880-1914, 1880-1929, 1945-2004, and 1960-2004 sub-periods. Initial values are taken from the first year of each five or ten-year period. Lag values are averages from the previous period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

Table 3
Financial development regressions[a]

(a) *Initial value OLS*	1880-1999	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP (1990 $)	0.096** (0.037)	0.080** (0.036)	0.086** (0.032)	0.139** (0.052)	0.161** (0.075)
Initial inflation rate	-0.130** (0.049)	0.005 (0.068)	-0.016 (0.071)	-0.148** (0.048)	-0.140** (0.056)
Initial ratio trade to GDP	0.037 (0.046)	0.068** (0.031)	0.068** (0.032)	-0.081 (0.099)	-0.112 (0.120)
R^2	.217	.200	.193	.188	.172
(No. observations)	(195)	(117)	(164)	(190)	(144)
(b) *Two-stage least squares*					
Log of initial real per capita GDP (1990 $)	0.096** (0.037)	0.078** (0.036)	0.085** (0.032)	0.141** (0.052)	0.165** (0.076)
Initial inflation rate	-0.129** (0.049)	0.007 (0.068)	-0.014 (0.071)	-0.149** (0.048)	-0.141** (0.056)
Ratio trade to GDP (instrumented by initial value)	0.044 (0.055)	0.068** (0.031)	0.073** (0.034)	-0.090 (0.110)	-0.129 (0.138)
R^2	.219	.202	.196	.191	.178
(No. observations)	(195)	(117)	(164)	(190)	(144)
(c) *Dynamic panel*					
Log of initial real per capita GDP (1990 $)	0.093** (0.041)	0.086** (0.040)	0.090** (0.036)	0.144** (0.059)	0.204** (0.090)
Lag of inflation rate	-0.076** (0.028)	-0.219 (0.502)	-0.047 (0.309)	-0.050** (0.017)	-0.045** (0.020)
Lag ratio trade to GDP	0.046 (0.053)	0.072** (0.036)	0.072** (0.034)	-0.147 (0.112)	-0.213 (0.144)
R^2	.195	.166	.165	.181	.170
(No. observations)	(176)	(100)	(146)	(176)	(127)

[a] Standard errors are in parentheses. When used, variable averages are computed over each decade for 1880-1999 and every five years for the 1880-1914, 1880-1929, 1945-2004, and 1960-2004 sub-periods. Initial values are taken from the first year of each five or ten-year period. Lag values are averages from the previous period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

development seem to reinforce each other prior to 1929. The finding that trade is dynamically linked to financial development in Table 3 while finance is dynamically linked to growth in Table 1 also suggests that trade and openness had indirect effects on growth that operated through finance. The results for both of the post-World War II sub-samples, however, show that these relationships did not persist as the financial sectors of the countries in our sample matured. The result for the earlier periods tends to confirm the central and bi-directional role of the emergence of commerce in the development of financing arrangements emphasized by economic historians. Rajan and Zingales (2003a, b) also treat openness to trade as a key element to financial development working through the political economy of incumbency.

3c. 'Deep' fundamentals in the finance-trade-growth nexus

We now explore how well the components of finance and trade that are determined by our legal and political indicators explain growth, and compare our findings to those obtained with the more typical instrumental variables regressions in panel (b) of Table 1 where initial values of financial development and trade serve as instruments. Table 4 reports on growth regressions with our legal origin and political variables as instruments for the contemporaneous five or ten-year averages of financial development and trade. The two-stage instrumental variables technique is equivalent to running a pair of first stage regressions of financial development and trade on initial income, time dummies, legal origin, and the political variables, and then inserting the fitted values into the second-stage growth regression that we report in the table. Overall, the coefficients on financial development and trade are similar to those obtained in the standard instrumental variables regression reported in panel (b) of Table 1, though they are somewhat larger in all of the sub-periods and considerably larger for 1880-1999. This suggests

Table 4
Two-stage instrumental variables growth regression with deep fundamentals[a]

	1880-1999	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP (1990 $)	-1.154** (0.401)	0.071 (0.460)	-0.847* (0.513)	-3.150** (0.546)	-1.768** (0.433)
Ratio broad money to GDP	4.880** (1.460)	1.878 (1.346)	2.796** (1.367)	4.259** (1.306)	1.617** (0.747)
Ratio trade to GDP	-1.321 (1.341)	-0.702 (0.835)	0.361 (1.252)	3.563** (0.350)	1.977** (0.969)
R^2	.182	.057	.117	.302	.435
(No. observations)	(196)	(117)	(165)	(193)	(144)

[a] Standard errors are in parentheses. When used, variable averages are computed over each decade for 1880-1999 and every five years for the 1880-1914, 1880-1929, 1945-2004, and 1960-2004 sub-periods. Initial values are taken from the first year of each five or ten-year period. Lag values are averages from the previous period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

that the indicator variables for legal origin and the political environment are perhaps better instruments for financial development than the initial level of finance.[8] It may also be that the deeper fundamentals are "cutting through" the noise in standard measures of financial development to isolate the portion that matters for growth.[9]

[8] Hansen tests for the over-identified specifications in Table 4 do not reject the validity of the political and legal variables as instruments for financial development and trade at conventional significance levels.

[9] We also estimate a set of instrumental variables regressions for equations (2) and (3) that are similar to those in panel (b) of Tables 2 and 3, except that we use our legal and political variables as instruments for the contemporaneous averages of financial development or trade. We find that neither trade nor financial development is driven by the components of the other that are determined by these instruments. This indicates that the legal and political indicators isolate identifying variation in financial development and trade that are pertinent to growth, but that there are other reasons, addressed below, why financial development and trade had reinforcing effects prior to the First World War and the Great Depression.

Table 5
OLS regressions of financial development on legal origin and political variables, 17 countries.

	1880-2000	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP	0.113**	0.094**	0.107**	0.257**	0.314**
	(0.045)	(0.028)	(0.026)	(0.060)	(0.082)
Initial inflation rate	-0.089*	0.096**	0.052	-0.096**	-0.094**
	(0.046)	(0.045)	(0.047)	(0.045)	(0.049)
French legal origin	0.046	0.002	-0.019	0.185**	0.255**
	(0.052)	(0.035)	(0.033)	(0.063)	(0.076)
German legal origin	0.212**	0.098**	0.112**	0.388**	0.541**
	(0.066)	(0.045)	(0.044)	(0.077)	(0.089)
Scandinavian legal origin	0.120**	0.330**	0.330**	-0.041	-0.000
	(0.051)	(0.037)	(0.035)	(0.059)	(0.071)
Proportional representation electoral system	0.065*	0.091**	0.048*	0.074	0.006
	(0.040)	(0.029)	(0.025)	(0.050)	(0.064)
Number of elections	0.018	-0.013	-0.001	0.005	0.013
	(0.013)	(0.013)	(0.013)	(0.026)	(0.031)
Number of revolutions or coups	-0.068*	-0.050	-0.072*	-0.100	-0.112
	(0.036)	(0.049)	(0.044)	(0.072)	(0.097)
R^2	.344	.711	.678	.373	.426
(No. observations)	(195)	(118)	(164)	(198)	(144)

Notes: Standard errors are in parentheses. The dependent variable is averaged over each decade for 1880-2000 and every five years for 1880-1914, 1880-1929, 1945-2004, and 1960-2004. The initial values of real per capita GDP are taken from the first year of each period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

countries in our sample with French legal origin did not seem to be at a disadvantage to those with English legal origin in the pre-1930 sub-periods, but have significantly higher levels of financial development after the Second World War. Further, countries with German legal origin outperform both English and French systems with our measure of financial development in all

periods.[10] Countries with Scandinavian legal systems have more financial development in the 1880-1914 and 1880-1929 periods, and this linkage is strong enough to affect the results for the full 1880-1999 period. We also note that the switch of the dummy variable for Scandinavian legal origin to statistical significance in the post-1945 sample and the loss of statistical significance for the French systems are difficult to square with the "law and finance" hypothesis, which proposes that legal origin affects institutional development consistently whenever measured.

Turning to the political variables, having a proportional representation system (as opposed to a majoritarian system) is associated with significantly higher levels of financial development in the pre-1930 samples and over the full period, but not in the post-World War II samples, while the number of revolutions and coups always has the expected negative sign but is statistically significant only over the full period and 1880-1929. The frequency of elections seems unrelated to financial development in our multivariate specification. The R^2 statistics for the first stage are reasonably large for all sub-periods, indicating that a good deal of the variability in financial development can be explained by our legal and political factors.

We examine the first stage regression for trade in Table 6. In contrast to Table 5, we now find both French and Scandinavian legal origin strongly associated with trade throughout our sub-periods, while countries with proportional representation systems seem to have more trade than those with majoritarian systems after 1945.

The results in Table 5 and Table 6 indicate that links from deeper fundamentals to trade are weaker than the links to finance. Trade seems to matter for growth, especially more recently, but seems to have more of an independent influence than one driven by deeper fundamentals.

[10] Beck and Levine (2005) find that countries with German legal origin have the highest average levels of financial development from 1990-1995 with both bank and market-based measures, but that this result is strongest for bank-based measures.

Table 6
OLS regressions of trade on legal origin and political variables, 17 countries.

	1880-2000	1880-1914	1880-1929	1945-2004	1960-2004
Log of initial real per capita GDP	0.248	0.565**	0.418**	0.146**	0.179**
	(0.067)	(0.130)	(0.096)	(0.039)	(0.052)
Initial inflation rate	-0.125*	-0.348*	-0.305*	-0.055*	-0.047
	(0.069)	(0.213)	(0.170)	(0.029)	(0.031)
French legal origin	0.241**	0.566**	0.421**	0.093**	0.116**
	(0.076)	(0.167)	(0.121)	(0.040)	(0.048)
German legal origin	0.008	0.127	0.073	-0.154	-0.143**
	(0.098)	(0.212)	(0.159)	(0.051)	(0.058)
Scandinavian legal origin	0.214**	0.371**	0.309**	0.127**	0.165**
	(0.076)	(0.173)	(0.127)	(0.038)	(0.045)
Proportional representation electoral system	0.013	-0.227*	-0.123	0.192**	0.167**
	(0.060)	(0.135)	(0.091)	(0.032)	(0.041)
Number of elections	-0.003	-0.008	-0.007	-0.005	-0.018
	(0.020)	(0.062)	(0.046)	(0.017)	(0.020)
Number of revolutions or coups	-0.040	0.043	0.033	-0.039	-0.079
	(0.055)	(0.232)	(0.160)	(0.047)	(0.063)
R^2	.227	.237	.189	.543	.550
(No. observations)	(196)	(118)	(164)	(198)	(150)

Notes: Standard errors are in parentheses. The dependent variable is averaged over each decade for 1880-2000 and every five years for 1880-1914, 1880-1929, 1945-2004, and 1960-2004. The initial values of real per capita GDP are taken from the first year of each period. Dummy variables for each five- or ten-year period are included in the regressions but not reported. * and ** denote statistical significance at the 10 percent and 5 percent levels respectively.

4. Conclusion

We study linkages between financial development and trade and their role in promoting economic growth using historical data for a group of now-developed "Atlantic" economies since 1880. Our main findings are that finance and trade reinforced each other during the 1880-1914 and 1880-1929 periods, but that these links vanished after the Second World War. Financial development is also strongly related to growth throughout our sample period, while trade matters

for growth only after 1945. The growth findings are robust to using as explanatory variables only those components of financial development and trade that are determined by fundamentals related to legal origin and the political environment. Finally, we find financial development to be more closely related to these fundamentals before 1930 than later, while trade is more closely related to fundamentals after the Second World War.

The openings to trade that occurred among many countries in our sample late in the nineteenth century may have promoted financial development prior to the First World War by breaking down the power of incumbencies that had been able to generate rents by controlling the provision of finance. Rajan and Zingales (2003a, b) make this point, while Haber (2003), in a study of the economy of Mexico from 1876 to 1929, argues that the political instability that often accompanies the fall of incumbencies need not affect growth negatively as freer markets emerge.

Another example of a declining incumbency around the time of the First World War involved the United States and the development of a domestic market in bankers' acceptances (i.e., two-name paper). Before this, importers and exporters would be required to finance international trade with sterling bills (i.e., bankers' acceptances) issued in London by British merchant banks. This allowed British merchant banks to dominate international commerce (with a supplementary role for banks in Paris and Berlin issuing bills in francs and marks). Indeed, the U.S. National Banking laws in effect from 1864 until the founding of the Federal Reserve in 1914 did not allow national banks (with a very few exceptions) to issue bankers' acceptances. A market in less-liquid single-name paper (i.e., commercial bills) which financed domestic trade developed instead. This state of affairs reflected the ability of the national banks in the interior (i.e., the "incumbents") to prevent the New York City banks from creating a market for bankers' acceptances that would have increased their profitability (Broz, 1997). When the Federal Reserve Act finally allowed national banks to deal in acceptances and the Federal Reserve Bank of New

York helped to create an acceptance market through a wide variety of banks, mainly in New York City, it opened the door for U.S. firms to finance international trade using less costly dollar bills of exchange rather than sterling bills, thereby promoting international trade (Bordo and Wheelock, 2011, pp. 9-10).

The rise of the dollar as a competitor to sterling in the 1920s also helped to break down the dominance of London, which was the "incumbent" of the time, as the main provider of global trade finance (Eichengreen, 2011, Ch. 2). The eventual rise to dominance of the dollar as an international currency after World War I increased competition in the market for trade finance and may have contributed to the strong link between trade and finance that we find prior to 1929.

An explanation for why the linkage between trade and finance weakened after 1945 is also related to the Rajan and Zingales view of incumbencies. In particular, as trade barriers are lifted and economies opened, financial sectors surge to fund the wave of new economic activity. This surge in finance is essential as economies transition from a state of lower growth to a new higher-growth environment. Once the transition is complete, however, trade and finance may settle into a new equilibrium relationship where the interplay among them is driven more by real factors than mutually reinforcing effects.

We also posit that the growing importance of trade for growth after 1945 is closely related to the signing of the General Agreement on Tariffs and Trade (GATT) by twenty-three countries in 1947 and its expansion in later rounds leading up to the establishment of the World Trade Organization in 1995. With the GATT came rapid relaxations of tariffs and quantity restrictions on a wide range of traded commodities that began to re-establish international linkages that had been severed by the First World War and the high tariff barriers that followed it (Irwin, 1995; Bordo, Eichengreen and Irwin, 1999). Another factor has been the growth and expansion of the European Economic Community (i.e., the "common market") from its

beginning in 1957. With the EEC has come a new, second era of enhanced integration among the member nations, and this has continued with the establishment of the European Union. The gradual elimination of capital controls after 1973 complemented the opening up of international trade.

Despite our finding that indicators of legal origin and the political environment explain much of the cross-sectional variation in financial development and to a lesser extent in trade, we were surprised that financial development mattered for growth and that trade mattered for financial development even at times when direct links from the deeper fundamentals to finance and trade seemed less operable. Consistent with Haber (2003) and Bordo and Rousseau (2006), we consider this as evidence that having a deep and well-developed financial sector and strong trading arrangements offers benefits for long-term growth even when institutional underpinnings are less robust. This is not to say that sound institutions are an unimportant ingredient in growth-enhancing financial and commercial sectors, but it does suggest that the study of traditional channels such as capital accumulation and the overcoming of indivisibilities in investment along with institutional origins will in the end help us to understand more fully how and why finance and trade matter for growth.

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