

# **GOVERNMENT, TRADE OPENNESS AND FINANCIAL DEVELOPMENT<sup>1</sup>**

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## **Abstract**

We explore the role of government in the nexus of finance and trade starting from the earliest days of organized finance in England and then broadening the analysis to 84 countries from 1960 to the present. The evidence from 18<sup>th</sup> century England suggests that while short-run government spending and financial development tend to crowd each other out in the short run, the opposite is true in the long run. Trade openness, which is weakly exogenous in this system, exhibits a positive and stable long-run relationship with financial development. We observe similar patterns in the more recent data set for middle income countries. For low income countries, we find that neither government expenditure nor trade openness promote financial development while government expenditure and financial development are important drivers for openness.

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## 1. Introduction

Economic historians have long recognized that governments are central to the development of organized finance and the smooth operation of trading arrangements (e.g., North and Weingast, 1989). Indeed the experiences of the 17th-century Dutch Republic, 18th-century England, and the 19th-century United States offer powerful narratives in support of this view.<sup>2</sup> Yet the role of governments in fostering growth through improved institutions has received less attention in modern macroeconomic and development studies that use more recent data. That is not to say, however, that economists have ignored the role of institutions themselves in promoting growth over the post-World War II period. For example, a battery of empirical studies published over the past two decades point to a first-order importance of financial development in promoting long-run economic growth, and have elevated the proposition to something of a stylized fact (see Levine 1997; 2005). At the same time, a largely independent literature suggests a positive role for trade openness and export orientation in long-run growth, especially when tested over the latter half of the twentieth century with a wide range of cross-country data (e.g., Dollar, 1992; Ben-David, 1993; Sachs and Warner, 1995; Edwards, 1998).

Much of the research on financial development in recent years, however, has shifted from measuring the growth effects of finance to learning more about what determines financial development itself. It is in this area that the link between finance and trade has received some attention.<sup>3</sup> In this paper, we extend this line of inquiry by making a first

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<sup>2</sup> See, for example, de Vries (1976) and de Vries and van der Woude (1997) on the Dutch Republic, Dickson (1967) and Brewer (1989) on England, Neal (1990) on integration of the London and Amsterdam markets, and Sylla (1999) on the United States. More recent comparative studies of these countries and others include Rousseau (2003), Rousseau and Sylla (2003) and Andrianova *et al* (2008).

<sup>3</sup> See, for example, Baltagi *et al* (2009) and Svaleryd and Vlachos (2002).

empirical attempt to bring governments into the nexus of finance and trade, starting from the earliest days of organized finance in England and then broadening the analysis to 84 countries from 1960 to the present.

The starting point of our story is a historical one. In the early stages of economic and financial development, countries may find themselves caught in an under-development trap. The absence of financial markets, both domestic and international, combined with an under-developed tax base and inefficiencies in tax administration can result in governments that are cash constrained. Without sufficient funds, governments are unable to undertake much needed public investment in hard and soft infrastructure, education and health. Inadequate transport networks, rudimentary law and order systems, and ill and/or illiterate populations can create insurmountable obstacles for industrial take-off.<sup>4</sup> In such circumstances, opportunities for profitable private investment are rare. Where present, they can be very risky. And without insurance markets, the risks are likely to be unacceptably high for entrepreneurs. As a result the demand for private finance may be negligible or non-existent. In such a bad equilibrium, financial and economic under-development are two sides of the same coin.

Trade offers a way to break out of the under-development trap. However, history has shown that this requires a high degree of co-ordination between private and public sectors. Trade can be highly profitable if it is secure yet the profits can easily be competed away. As Andrianova *et al* (2008) and others have argued, the emergence of London as a financial market in the latter part of the 17th century owes a lot to the monopoly rights granted by government to all the leading joint stock companies. These

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<sup>4</sup>The critical role of infrastructure in promoting industrial take-off is documented by Easterly and Rebelo (1993). There is also a very large literature on the positive effects of infrastructure on private investment, trade and economic growth. See for example, Bougheas *et al* (2009) or Bougheas *et al* (2000).

rights guaranteed high returns to investors and helped to mobilise saving (the East India Company's share issues were typically over-subscribed). The monopoly rights were granted at a price: the joint stock companies made very significant long-term loans to government, which were so large that they transformed the state of the public finances. As Rousseau (2003) shows empirically, the rise in real incomes that followed the expansion of trade set in motion a virtuous finance-trade-growth cycle which helped to propel England from a weak state in the early part of the 17th century to Europe's foremost military power by the beginning of the 18th century and the world's clear financial leader by its end.

Similar events were realized a century earlier in Amsterdam. The United Dutch East India Company, which had very close links to the Dutch state, was formed in 1602 by royal charter following demands by its predecessors who saw their profits eroded by competition. The emergence of the stock market in Amsterdam is firmly linked to the Company's establishment.

The experiences of London and Amsterdam paint a picture in which government played an important, if not pivotal, role in kick starting a finance-trade-growth cycle. Could we expect to see similar patterns today in developing countries? We think that the answer is yes, although the picture can be more complex because developing countries today have greater (yet still varying degrees of) access to world capital markets and foreign aid. For the poorest developing countries, foreign aid is an important mechanism for financing trade-promoting infrastructure and public investment in health and education. As a result, the link between government spending and domestic financial development may be weaker than it is likely to have been in 18th century England, where governments tapped much if not all of their finance domestically. For the same reason, we

expect a stronger link between government and domestic financial development in middle income countries.

The paper is structured as follows. Section 2 provides the results on 18th century England. Section 3 presents the evidence from the panel of 84 countries. Section 4 summarises and concludes.

## **2. 18th century England**

To examine the effects of government consumption expenditures on finance and trade in a historical setting, we conduct a time series analysis for 18th century England. The time coverage of 1720 to 1799 represents a period for which reliable data on financial development are continuously available on an annual basis. At the same time, the historical focus limits the richness of the data items that can be brought to bear on the relationships of interest.

### *2.1. Historical overview*

Modern studies of the role of the state in 18th century British growth tend to focus on the extent to which wartime expenditures led to crowding out of private sector investments, thereby slowing overall economic growth (e.g., Williamson, 1984; Crafts, 1987; Mokyr, 1987). But if expenditure by the exchequer is a weak proxy for output of the government, as Jackson (1990) has argued, the output multiplier of actual government expenditure may have been larger, meaning that crowding out was less severe.

Total government expenditure from 1720, shown in Figure 1 along with total trade (i.e., the sum of imports, exports, and re-exports), all in per capita 1740 sterling, includes four large spikes corresponding with the War of Austrian Succession (1740-48), the Seven Years War (1754-63), the American Revolutionary War (1775-83), and the Wars

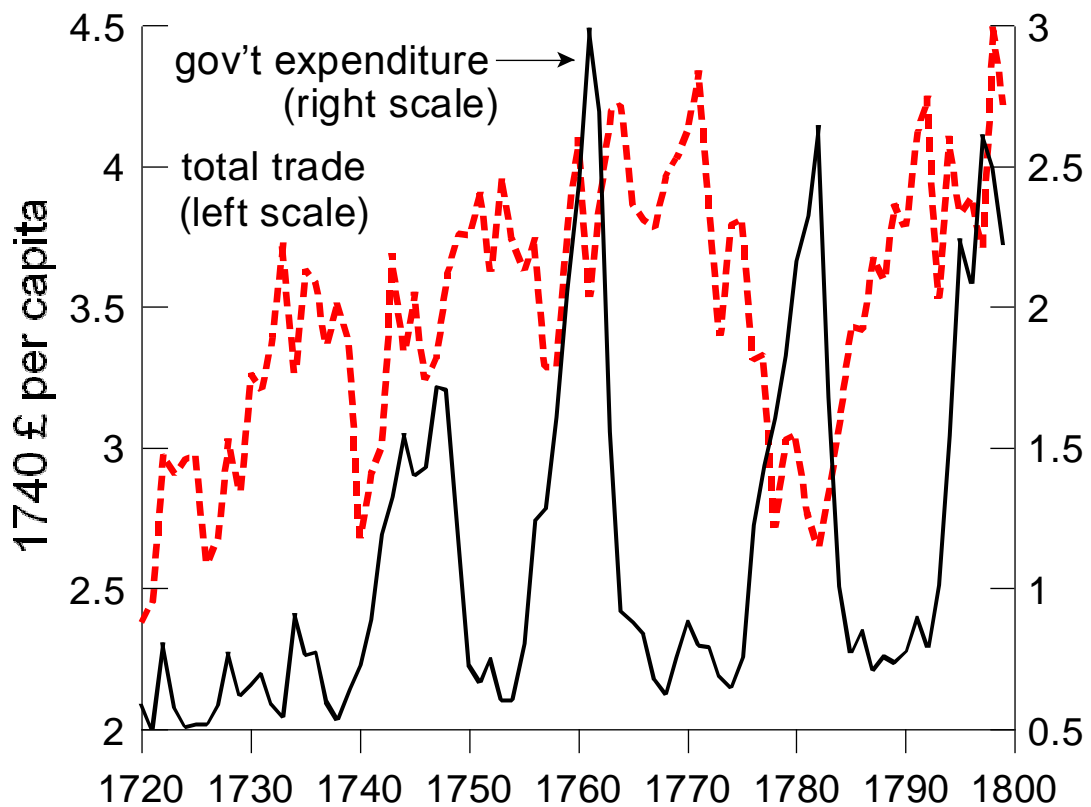


Fig. 1. Real per capita British government expenditure (including military) and total trade (imports, exports, and re-exports), 1720-1799.

of the First and Second Coalitions (1793-1802).<sup>5</sup> It would seem that large lumpy expenditures such as these could not have been conducive to an industrial take-off. Yet total trade, a rough proxy for activity in the modern sector of the economy, with the exception of the American Revolutionary period, does not fluctuate sharply and negatively with government expenditure. Rather, the two series have a positive correlation coefficient of 0.49, with total trade rising by 50 percent between 1720 and 1760, and by another 50 percent between 1760 and 1805.

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<sup>5</sup> Our sample period was immediately preceded by the War of Spanish Succession (1700-14) and the Nine Years War (1688-97), the latter commencing with the Glorious Revolution of 1688.

At the same time that trading activity was rising dramatically, England was undergoing a commercial and industrial revolution. Indeed, when the trade figures are considered in light of earlier data for the East India Company that indicate a more than six-fold increase in Asian exports between 1660 and 1710, the rapid commercialization of the British economy comes into clear focus. It is interesting to note that Hoffman's index of industrial production (Mitchell, 1988, Table 8.21.A, pp. 431-432, including building), progresses less rapidly than the trade series at first, but accelerates after 1780, and thus seems to share the rhythm of the later part of the trade boom.

The positive relation between government expenditure and modern sector activity thus requires explanation. Was crowding out just a short-run phenomenon while state interventions promoted growth through a less direct channel? We argue here that the financial sector provided a conduit through which the government and modern sector, as measured by the extent of trading activity, could interact in a virtuous manner.

A positive interaction between the government and banking began as Parliament strove to raise finance for the Nine-Years War against France in 1688. A key problem for the government at the time was the illiquidity of its own bonds, and the government formed the Bank of England in 1694 to hold this debt while the capitalization of the Bank itself could trade with greater liquidity on the newly-formed stock market.<sup>6</sup> Over the next fifty years, the Bank would become, to quote R. D. Richards (1934, p. 272), "a credit institution, an organ of State Finance, a discount and issuing house, a bullion warehouse, and a safe repository." Shortly after its founding, the Bank re-coined the nation's metallic

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<sup>6</sup> The stock exchange facilitated transactions in public debt securities and shares of the large trading companies, including the British East and West India Companies, the South Sea Company, and the Royal African Company.

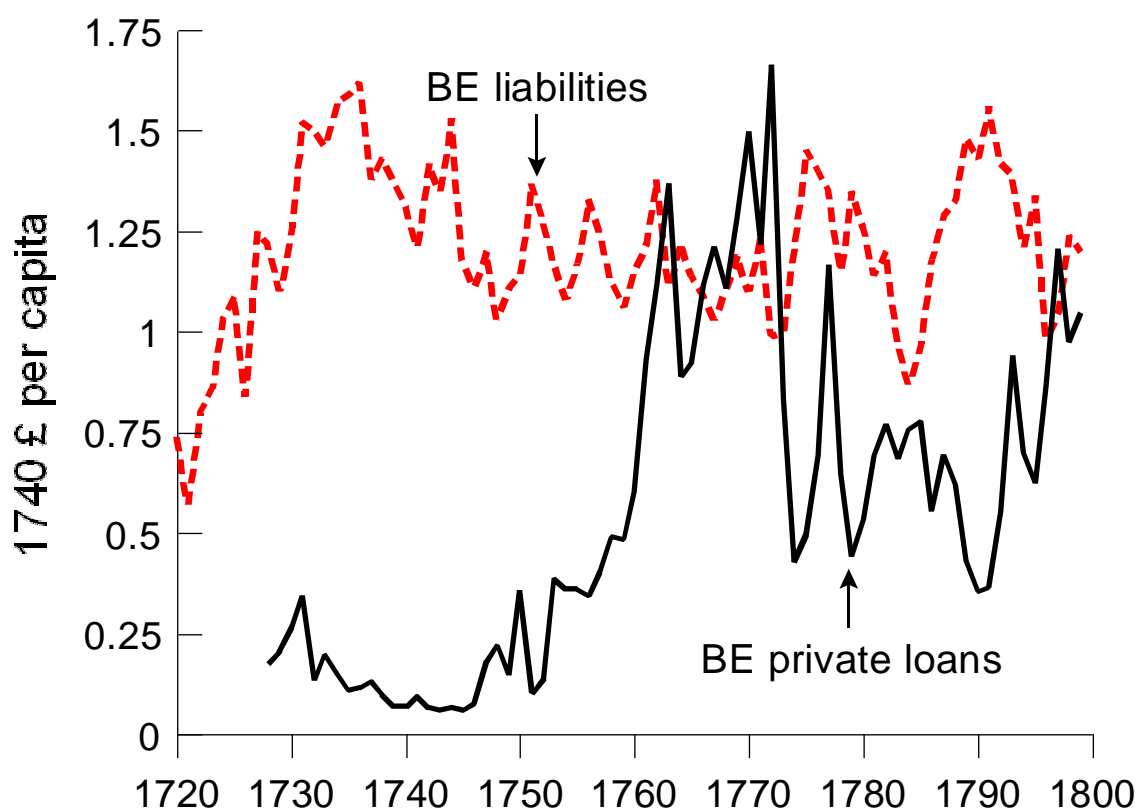


Fig. 2. Real per capita liabilities and private loans for the Bank of England, 1720-1799.

currency and engaged in various note-issuing experiments, both of which promoted monetization and brought some degree of order to the monetary system. The dashed line in Figure 2 shows how the real per capita liabilities of the Bank (i.e., the sum of its circulation and deposits) increased rapidly through the early 1730s before declining slightly and then levelling off for the remainder of the century. The ability of the Bank to bring about growth in ordinary deposits proved essential to its role of supporting the government expenditures that would become necessary in the 1740s and 1750s.

Thus, the need for government funding brought about the start of organized finance, which in turn provided further future benefits to the government. And while the Bank's relationship with the State has received the most attention among scholars, the Bank



offered considerable support to London's merchant and trading communities through its clearing and discounting facilities (see Clapham, 1941). The solid line in Figure 2 shows the extent of the Bank of England's private loan business. Much of this activity was accomplished through the Bank's "drawing accounts", though not all those with accounts were entitled to advances. The Bank also made over ninety loans to the East India Company between 1709 and 1744, but these direct loans, though exceeding bill and note discounts in the Bank's early days, did not become an important component of the asset portfolio until the 1750's. The Bank's private operations grew rapidly after that, and even approached the size of its deposit and circulation liabilities during the 1760's and again around 1800. Evidence from the Bank archives show that loans and discounts were spread across a wide range of commercial activities, and that discounts below the statutory limit of £50 were not unusual. Since advances were also used to facilitate trade, fluctuations in their availability may have also affected the course of trade. This is among the possibilities that we examine.

Before 1750, the Bank of England co-existed in the provision of banking services with only a group of private bankers in London who dealt primarily in deposits and bills of exchange. This gave rise to an active money market to finance trade and working capital for the fledgling manufacturing sector, and the Bank played a key role in its smooth operation. England was slow to develop private banks compared to the speed with which they would grow in the United States only 50 years later. Country banks did not begin to spring up until the second half of the 18th century, but made up for lost time by multiplying rapidly, issuing their own notes to facilitate transactions outside of London, and fostering correspondent relationships with London's private bankers.<sup>7</sup>

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<sup>7</sup> Relatively little is known about the extent of country banking in 18th century England and its contribution to the money supply. These banks were generally small, but grew

## *2.2. Data and measurement*

Did England's financial system promote the co-evolution of trade? And did the government help to foster financial deepening? To address these questions quantitatively and in a macroeconomic sense, it is necessary to construct a measure of financial depth. This is easier for the period before 1775 because London's private bankers had stopped issuing notes, which had always been a small part of their business, years earlier due to competition from the Bank of England (Cameron, 1967, p. 22). It is thus fair to say that coin and Bank of England notes made up the circulating medium used in London before 1750 and a large part of what circulated outside of the city as well. This is useful because time series for the circulation and deposit liabilities of the Bank are available almost from its inception. The rise of deposit banking in the countryside after 1775 and a lack of reliable information about net specie imports, however, make it not possible to build a continuous series for an M2 aggregate. Nevertheless, there is a strong long-term relationship between the Bank of England's deposit and circulation liabilities and Cameron's (1967, p. 42) sporadic estimates of the broad money supply. This offers reason to believe that the Bank of England's deposit and circulation liabilities are a usable proxy for long-term fluctuations in narrowly-defined money, and perhaps even as a more general measure of monetization.

Thus, we measure financial development two ways, neither of which captures all of the activity that would have occurred in England's financial markets at the time but which can serve as proxies for the extent of intermediating activity. The first is sum of the circulation and deposit liabilities of the Bank of England. The data are from Mitchell

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rapidly in number. Cameron (1967, pp. 23-24) reports that "about a dozen" existed in 1750, more than 100 in the early 1780's, more than 300 by 1800, and 783 in 1810.

(1988, Table 12.2.A, pp. 655-58). We also construct a series for the Bank's private advances as the income from discounting bills and notes and making private loans (Clapham, 1945, Vol. 1, Appendix E, pp. 301-2 and Vol. II, Appendix C, p. 433) divided by the Bank rate over the previous year (Clapham, 1945, Vol. I, Appendix D, p. 299, discount rates for inland bills, and Vol. II, Appendix B, pp. 429. This assumes that the Bank of England's loans were primarily short term, which is consistent with Clapham's reading of the loan records.

Our openness measure is the sum of imports and exports (including re-exports), and comes from Mitchell (1988, Table 10.1.A, pp. 448-9 for England and Wales for 1720-91, and Table 10.1.B, p. 450 for Great Britain 1792-99). We ratio splice the broader aggregate for Great Britain to the narrower series for England and Wales to form a single series for trade openness.

Government expenditures are measured as the sum of civil and military spending from Mitchell (1988, Table 11.2, pp. 578-80).

We deflate all of our data to reflect 1740 prices using the Schumpeter-Gilboy price index for consumer goods (Mitchell, 1988, Table 14.1.B, pp. 719-20) and convert them into per capita terms using population data for England (excluding Monmouthshire) from Mitchell (1988, Table 1.1.A, pp. 7-8). Finally, we apply the natural log transformation to all data series prior to using them in the econometric analysis.

### *2.3. Time series analysis*

Table 1 provides time-series evidence of the relationship between government expenditure, openness and financial development in 18<sup>th</sup> century England. Following Rousseau (2003), we measure financial development by the volume of private loans. We note that both trade and government expenditure Granger-cause private loans at the five

percent level or less with the regression coefficients for each variable summing to positive value. This suggests that both of these variables are drivers of this measure of financial development.

The Johansen (1991) tests for cointegration reported in center panel of Table 1 suggest the presence of a single cointegrating relationship among the three variables, with both the trace and maximum eigenvalue statistics rejecting the null of no cointegrating vectors and failing to reject the null of one cointegrating vector. The cointegrating vector itself, which is normalised on Bank of England private loans, suggests that trade and government expenditure exhibit a positive long run relationship with financial development.

The error correction system reported in Table 1 confirms the exogeneity of trade suggested by the levels VAR. They also confirm that financial development is not weakly exogenous to the system with an estimated coefficient of -0.1134. The negative and significant coefficients on government expenditure and trade in the private loans equation suggest that both crowd out Bank of England private loans in the short-run. On the other hand, the negative sign on the ECT in the private loans equation, when viewed with the negative loadings on government expenditure and trade, are consistent with a positive long-run relationship from government expenditure and openness to financial development, just as the levels VAR indicated. Turning to the error correction model for government expenditure, we find that the latter is not weakly exogenous, once again providing confirmation for the block exogeneity test results obtained in the levels VAR.

Taken together with the cointegration analysis, these results suggest that in the short-run private loans and government expenditure crowd each other out, but in the long run the opposite is true. This is not implausible. Shocks to government expenditure could result in more loans to the government from the Bank of England, leaving less

TABLE 1. GOVERNMENT, TRADE AND PRIVATE LOANS ISSUED BY THE BANK OF ENGLAND  
1728-1799

**Levels VAR results and block exogeneity tests**

Dependent variable	Regressors			R <sup>2</sup> /DW
	Bank of England private loans	Trade	Government expenditure	
Bank of England private loans	0.8377 (0.000) [0.000]	1.4701 (0.019) [0.039]	0.6522 (0.000) [0.001]	0.921 (1.97)
Trade	0.0040 (0.817) [0.928]	0.7476 (0.000) [0.000]	0.0226 (0.905) [0.799]	0.558 (2.01)
Government expenditure	0.0110 (0.820) [0.931]	0.1285 (0.485) [0.599]	0.6977 (0.000) [0.000]	0.867 (2.11)

**Vector error correction analysis**

	Cointegration tests			
	r = 0	r ≤ 1	r ≤ 2	
<b>Trace statistic</b>	45.65	10.59	1.17	
5% critical value	29.68	15.41	3.76	
10% critical value	26.79	13.33	2.69	
<b>Max. eigenvalue statistic</b>	35.05	9.42	1.17	
5% critical value	20.97	14.07	3.76	
10% critical value	18.60	12.07	2.69	
Cointegrating vector (ECM)				
	Bank of England private loans	Trade	Government expenditure	
Beta	1.000	-7.875	-5.726	
Total short run effect of				
<b>Error Correction models for</b>	Bank of England private loans	Trade	Government expenditure	Disequilibrium Adjustment (ECT)
BE private loans	-0.9442 (0.006)	-1.4590 (0.183)	-1.1950 (0.008)	-0.1134 (0.000)
Trade	0.0562 (0.805)	-0.7261 (0.216)	-0.0608 (0.765)	-0.0048 (0.527)
Government expenditure	-0.0583 (0.816)	0.3460 (0.249)	0.9691 (0.001)	0.0534 (0.002)

Note: All variables are in log real per capita terms. The VAR includes 5 lags. The table reports the sum of the lag coefficients for each variable block in the VAR and VECM models, with p-values for block Granger causality in parentheses. Figures in square brackets are p-values for the modified Wald tests developed by Toda and Yamamoto (1995). Critical values of the Johansen (1991) tests for cointegration tests are from Table 1 in Osterwald-Lenum (1992).

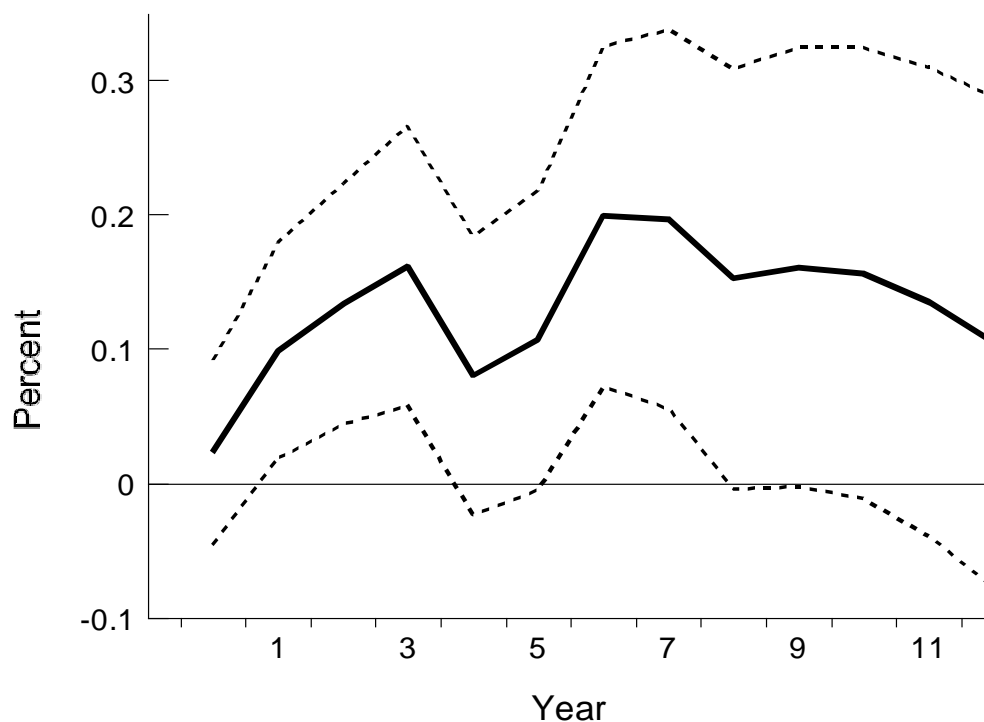


Fig. 3. Effect of government expenditure on private loans issued by the Bank of England, 1728-99.

Note: The impulse response corresponds to the levels VAR system reported in Table 1. The plot traces the percent change in Bank of England drawing accounts over a 12-year horizon from a 1% change in the orthogonalized innovation to government consumption expenditure. The variable ordering places government expenditure first, trade second and private loans at the Bank of England. Using Monte Carlo integration, the thick solid line plots the mean impulse response that results from 10,000 random draws from the posterior distribution of the estimated VAR coefficients. The dotted lines are two standard error bands.

resources available for making private loans. At the same time, if government expenditures help to grow the balance sheet of the Bank, more money could be created than the initial injection, which can allow for an expansion of loans to the private sector.

The impulse responses depicted in Figure 3 confirm the positive long run effect of government expenditure on private loans. They also show a much smaller effect, which could even be negative in the first period.

TABLE 2. GOVERNMENT, TRADE AND BANK OF ENGLAND LIABILITIES, 1720-1799

**Levels VAR results and block exogeneity tests**

Dependent variable	Regressors			R <sup>2</sup>
	Bank of England liabilities	Trade	Government expenditure	
Bank of England liabilities	0.6404 (0.000) [0.004]	-0.0388 (0.567) [0.393]	-0.0982 (0.127) [0.123]	0.470 (1.94)
Trade	-0.0313 (0.368) [0.208]	0.8201 (0.000) [0.000]	0.0306 (0.951) [0.816]	0.639 (1.97)
Government expenditure	-0.0008 (0.702) [0.769]	0.2918 (0.216) [0.500]	0.7232 (0.000) [0.000]	0.874 (2.10)

**Vector error correction analysis**

	Cointegration tests				
	r=0	r≤1	r≤2		
<b>Trace statistic</b>	33.83	14.62	3.24		
5% critical value	29.68	15.41	3.76		
10% critical value	26.79	13.33	2.69		
<b>Max. eigenvalue statistic</b>	19.20	12.38	3.24		
5% critical value	20.97	14.07	3.76		
10% critical value	18.60	12.07	2.69		
<b>Cointegrating vector (ECM)</b>					
	Bank of England liabilities	Trade	Government expenditure		
Beta	1.0000	-0.8758	1.0505		
<b>Total short run effect of</b>					
<b>Error Correction models for</b>	Bank of England liabilities	Trade	Government expenditure		Disequilibrium Adjustment (ECT)
Bank England liabilities	-0.8973 (0.073)	0.2678 (0.576)	0.0845 (0.691)		-0.0998 (0.042)
Trade	-0.0794 (0.277)	-0.6318 (0.250)	-0.0673 (0.902)		0.0325 (0.301)
Government expenditure	-0.3563 (0.722)	-0.7356 (0.282)	0.8987 (0.000)		-0.2549 (0.000)

See note for Table 1.

Table 2 provides the results using Bank of England deposits as the financial development indicator. These results are less clear-cut than those obtained with private loans as the financial variable. The levels VAR results show that all three variables to be seemingly unrelated, though government expenditure just misses statistical significance at the ten percent level in the liabilities equation with a negative sum of the regression coefficients. If anything, then, government expenditure might have crowded out growth of liabilities at the Bank of England. This effect is confirmed in the liabilities equation of the VECM system in the lower panel of Table 2, where the negative and significant coefficient on the disequilibrium adjustment term suggests that perturbations in government expenditure are met by long-run declines in liability creation.<sup>8</sup>

Perhaps it is not surprising that government expenditure and the Bank of England's total liabilities do not exhibit the type of virtuous nexus seen between expenditure and the Bank's private loans. After all, Figure 2 shows that the Bank's circulation and deposits were essentially flat after 1730, and it was in this period that Figure 1 shows four large waves in government expenditures. Rather, the Bank's re-coining and note-issuing experiments that followed its establishment in 1694 propelled a rapid rise in circulation over the Bank's first 35 years, of which we see only the tail end in Figure 2. This early rise in liabilities coincided with another spike in government expenditures at the time of the War of Spanish Succession (1700-14). Thus, the period immediately preceding the start of our financial data was probably one where the government and finance did interact positively.

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<sup>8</sup> The Johansen (1991) tests for cointegration in Table 2 indicate that the VAR system can be characterized by a single cointegrating vector.



Monetization, however, just kept pace with population growth as the 18th century progressed, while the Bank's use of capital and deposits became increasingly important in supporting trade through the issuance of private loans. With the large trading companies making loans to the government through the Bank of England, and these military expenditures ultimately making their way back into the deposit liabilities of the Bank, private loans became an important source of commercial and industrial finance. The rapid rise of the Bank of England's private loans after 1760 supports the view its lending activity, as well as that of a growing number of private banks in the countryside, fuelled the start of the Industrial Revolution.

### **3. Evidence from a panel of countries: 1960-2004**

To examine interactions between government expenditure, financial development, and trade openness using modern data, we obtained cross sectional and panel data on financial and macroeconomic indicators for 82 countries over the period from 1960 to 2004 from the 2009 edition of the World Bank's *World Development Indicators* database.<sup>9</sup> The selection of countries is based on data availability from this source.

As before, we measure trade openness as the ratio of imports plus exports to GDP.

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<sup>9</sup> The 84 countries are Algeria, Argentina, Australia, Austria, Bangladesh, Barbados, Belgium, Bolivia, Brazil, Cameroon, Canada, Central African Republic, Chile, Colombia, Costa Rica, Cote d'Ivoire, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, Finland, France, Gambia, Ghana, Greece, Guatemala, Guyana, Haiti, Honduras, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Republic of Korea, Lesotho, Luxembourg, Malawi, Malaysia, Malta, Mauritius, Mexico, Morocco, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Rwanda, Senegal, Sierra Leone, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Trinidad and Tobago, Togo, Turkey, United Kingdom, United States, Uruguay, Venezuela, and Zimbabwe.

Government is measured as the ratio of final expenditure to GDP. For comparability with other studies, we use three familiar measures of financial development, namely the ratios to GDP of liquid liabilities (M3), liquid liabilities less narrow money (M3 less M1), and credit allocated to the private sector. M3 as a percent of GDP has become a standard measure of financial depth and an indicator of the overall size of financial intermediary activity in cross-country studies. M3 less M1 removes the pure transactions asset and the credit measure isolates intermediation to the private sector from credit allocated to government or state enterprises. We average all data over five-year periods to build a maximum of 9 time series observations for each country starting with 1960-64 and ending with 2000-2004.

To assist in formulating an appropriate economic model for exploring the government-finance-openness nexus, Table 3 provides panel VAR results for the 82 countries in our sample from 1960-2004. Given the dynamic nature of the model, we use the Arellano-Bond (1991) two-step system estimator with GMM instruments for each of the three variables. As variables are averaged out over a five year period, we only include one lag of each variable in the VAR. The table reports the Hansen J-statistic, which is a robust test of the overidentifying restrictions, although it can be weakened by many instruments.

In Panel A where financial development is measured by liquid liabilities, the results suggest that it is Granger-caused by trade openness. Trade openness and government expenditure appear weakly exogenous in that they are not Granger caused by anything other than their own lagged values. At the 5% level, the Hansen test does not reject the overidentifying restrictions, although it rejects marginally at the 10% level in the first two regressions. In Panel B where financial development is measured by M3-M1, financial development appears to be Granger caused by both trade openness and government

TABLE 3  
GOVERNMENT, TRADE AND FINANCIAL DEVELOPMENT 1960-2004:  
PANEL VAR RESULTS FOR THREE FINANCIAL INDICATORS

Dependent variable	Lagged regressors			Hansen test (p-value)
	Financial Development indicator	Trade openness (% of GDP)	Government expenditure (% of GDP)	
<i>Panel A: VAR results with liquid liabilities</i>				
Liquid liabilities (% of GDP)	1.0079*** (0.0568)	0.0562 (0.231)	-0.0425 (0.199)	70.94 (0.10)
Trade openness (% of GDP)	0.0735 (0.801)	0.9259*** (0.048)	0.3932 (0.250)	71.30 (0.10)
Government expenditure (% of GDP)	-0.0078 (0.011)	0.0139 (0.009)	0.8514*** (0.107)	67.47 (0.16)
<i>Panel B: VAR results with M3-M1</i>				
M3-M1 (% of GDP)	0.9901*** (0.050)	0.0699*** (0.024)	-0.1950** (0.096)	60.87 (0.34)
Trade openness (% of GDP)	0.0700 (0.081)	0.9289*** (0.049)	0.2926 (0.204)	69.16 (0.13)
Government expenditure (% of GDP)	-0.0113 (0.015)	0.0158 (0.010)	0.8499*** (0.095)	67.91 (0.15)
<i>Panel C: VAR results with private credit</i>				
Private credit (% of GDP)	1.0635*** (0.032)	0.0349 (0.0437)	-0.2863 (0.216)	67.31 (0.165)
Trade openness (% of GDP)	0.0515 (0.037)	0.9637*** (0.0354)	0.2582 (0.188)	65.58 (0.204)
Government expenditure (% of GDP)	-0.0010 (0.005)	0.0076 (0.008)	0.8854*** (0.095)	70.34 (0.110)

Notes: Figures in parentheses are robust standard errors. All regressions include a full set of time dummies. The symbols \*\*\* \*\* and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

expenditure, although the effect of the latter is only at the 10% level and negative. Once again, trade openness and government expenditure appear weakly exogenous. The Hansen test does not reject the overidentifying restrictions even at the 10% level. In Panel C, where financial development is measured by private credit all three variables appear weakly exogenous.

In light of the VAR Granger tests, it would appear that financial development, at the very least, and perhaps also trade openness, would be reasonable choices as dependent variables in a more standard cross-country regression specification that allow a number of other standard growth determinants. The starting point, then, is a set of cross-country regression of the form

$$FD_{it} = \alpha_0 + \alpha GOV_{it} + \beta TRD_{it} + \delta X_{it} + u_{it}, \quad (1)$$

where  $FD_{it}$  is a measure of financial sector development,  $GOV_{it}$  is government expenditure,  $TRD_{it}$  is trade openness, and  $X_{it}$  is a set of baseline explanatory variables that have been shown empirically to be robust determinants of growth. We use instrumental variables in both sets of regressions to ameliorate problems of simultaneity. Specifically, we attempt to extract the predetermined component of the financial variable by using its initial value (in each 5-year average) along with the initial values of government expenditure and trade as percentages of GDP as instruments in each regression equation. All panel estimates include time period fixed effects.

We then estimate a second set of regressions that reverse the positions of trade openness and financial development

$$TRD_{it} = \alpha_0 + \alpha GOV_{it} + \beta FD_{it} + \delta X_{it} + u_{it}. \quad (2)$$

Table 4 presents estimates of the regressions specified in (1) and (2) using the full set of five-year observations for the 82 countries included in the exploratory GMM analysis. Specifically, it reports IV regressions that aim to test whether government expenditure is a significant driver of financial development and trade openness, but conditions on a range of other variables (i.e., the  $X_{it}$ ) as suggested by earlier empirical studies. The financial development regressions condition on trade openness, per capita income and CPI inflation, in accord with empirical literature on the determinants of financial development (e.g. Baltagi et al, 2009; Rousseau and Wachtel (2002)). The trade openness regressions additionally condition on aggregate GDP to capture the effects of economic size on trade. We anticipate that size matters in a negative way when it comes to trade openness in that, all other things equal, larger countries need to trade less than smaller countries, as consumers and firms are able to source a greater range of products domestically at lower cost. In all regressions, we utilise initial values of income to avoid reverse causality or simultaneity and deploy a full set of time dummies to capture time effects.

The results reported in Table 4 suggest that trade openness but not government expenditure is an important determinant of financial development. Trade openness is highly significant in all three financial development regressions and so is initial GDP per capita. However, government expenditure is not significant, and neither is CPI inflation. The trade openness regressions, on the other hand, suggest that government expenditure has a positive and highly significant impact on trade and so does financial development. Per capita GDP has a positive effect on trade openness – suggesting that richer citizens like to trade more, but aggregate GDP has a negative effect, capturing the negative size effect we alluded to above. Both the income effects are significant at the 1% level in all

TABLE 4  
FINANCIAL DEVELOPMENT AND TRADE OPENNESS IN A PANEL OF COUNTRIES 1960-2004  
Instrumental Variable Regressions with 5-Year Panel Data

Regressors	Dependent variable					
	M3 % of GDP	M3-M1 % of GDP	Private credit % of GDP	Trade openness % of GDP	Trade openness % of GDP	Trade openness % of GDP
Government expenditure (% of GDP)	0.168 (0.228)	-0.128 (0.144)	0.154 (0.222)	1.193*** (0.204)	1.326*** (0.205)	1.180*** (0.226)
Trade openness (% of GDP)	0.237*** (0.034)	0.186*** (0.021)	0.065*** (0.030)	---	---	---
Liquid liabilities (M3) (% of GDP)	---	---	---	0.386*** (0.037)	---	---
M3-M1 (% of GDP)	---	---	---	---	0.619*** (0.058)	---
Private credit (% of GDP)	---	---	---	---	---	0.289*** (0.044)
Initial real GDP per capita (in 2000 US\$)	10.476*** (0.716)	7.627*** (0.452)	14.797*** (0.695)	7.701*** (0.992)	6.748*** (1.051)	10.965*** (1.130)
Initial aggregate GDP (in 2000 US\$)	---	---	---	-12.352*** (0.633)	-11.739*** (0.640)	-14.440*** (0.706)
CPI Inflation	-0.005 (0.005)	-0.004 (0.003)	-0.007 (0.005)	-0.012** (0.005)	-0.011** (0.005)	-0.013*** (0.005)
R <sup>2</sup>	0.401	0.469	0.529	0.55	0.55	0.51
No. of observations	630	626	653	630	626	653

**Notes:** Instruments include initial values of all regressors other than CPI inflation. Figures in parentheses are standard errors. All regressions include a full set of five-year time dummies. The symbols \*\*\* \*\* and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

three regressions. CPI inflation is negative and significant at the 5% level, suggesting that high domestic inflation has a negative effect on trade.

Tables 5 and 6 examine the extent to which the results reported in Table 4 vary in accordance to income. To this end we report IV quartile regressions for trade openness in Table 5 and for financial development in Table 6. The estimates reported in both tables suggest that both relationships vary considerably according to country income levels, hence relying on the aggregate results in Table 4 can be misleading.

The estimates reported in Table 5 show that government expenditure impacts positively on trade openness at low and high income levels, but has no significant influence at intermediate levels of income. At low income levels, this may reflect the developmental nature of government expenditures – infrastructure projects for example are likely to have high import content. As countries develop, their capacity to undertake such projects domestically is likely to improve, which can explain the insignificant coefficient at the intermediate income levels. On the other hand, the positive and larger in magnitude coefficient of government expenditure at high income levels is somewhat puzzling. It clearly suggests that high government expenditures at these levels are trade promoting, which is not obvious why. The effects of financial development on trade openness are interesting and much less surprising. It appears that they tend to decline with income, being at their highest at low income levels, suggesting that financial development may have some if not all of its growth promoting effects by supporting trade. For the 4<sup>th</sup> income quartile the effects of financial development are small and significant only at the 10% level. In the intermediate region the effects taper off but are still sizeable and significant, suggesting that financial development continues to be important in promoting economic openness in such countries. Interestingly, the effects of

TABLE 5  
TRADE OPENNESS IN A PANEL OF COUNTRIES 1960-2004  
Instrumental Variable Quartile Regressions with 5-Year Panel Data

Regressors	Dependent variable: Trade Openness			
	1 <sup>st</sup> Quartile	2 <sup>nd</sup> Quartile	3 <sup>rd</sup> Quartile	4 <sup>th</sup> Quartile
Government expenditure (% of GDP)	1.343 <sup>***</sup> (0.436)	0.273 (0.361)	-0.596 (0.799)	2.026 <sup>***</sup> (0.429)
Liquid liabilities (M3) (% of GDP)	0.819 <sup>***</sup> (0.213)	0.505 <sup>***</sup> (0.083)	0.613 <sup>***</sup> (0.072)	0.121 <sup>*</sup> (0.072)
Initial real GDP per capita (in 2000 US\$)	26.576 <sup>***</sup> (5.352)	5.521 <sup>**</sup> (2.750)	-0.979 (3.904)	4.402 (5.554)
Initial aggregate GDP (in 2000 US\$)	-12.273 <sup>***</sup> (1.315)	-6.814 <sup>***</sup> (1.252)	-13.771 <sup>***</sup> (1.450)	-10.447 <sup>***</sup> (1.274)
CPI Inflation	0.013 (0.132)	-0.005 (0.004)	-0.015 (0.013)	-0.227 <sup>*</sup> (0.127)
R <sup>2</sup>	0.65	0.52	0.73	0.47
No. of observations	133	172	163	159

**Notes:**

1. Quartiles are defined in accordance to US\$ income levels in 1990. The 1<sup>st</sup> quartile includes countries with GDP per capita of up to \$660, while the upper cut-offs for the second, third and fourth quartiles are \$1,659, \$8,947 and \$33,297 respectively.
2. Instruments include initial values of government expenditure and liquid liabilities.
3. Figures in parentheses are standard errors.
4. All regressions include a full set of five-year time dummies.
5. The symbols <sup>\*\*\*</sup>, <sup>\*\*</sup> and <sup>\*</sup> denote statistical significance at the 1%, 5% and 10% levels, respectively.



TABLE 6  
FINANCIAL DEVELOPMENT IN A PANEL OF COUNTRIES 1960-2004  
Instrumental Variable Quartile Regressions with 5-Year Panel Data

Dependent variable: Liquid Liabilities (M3 as % of GDP)				
Regressors	1 <sup>st</sup> Quartile	2 <sup>nd</sup> Quartile	3 <sup>rd</sup> Quartile	4 <sup>th</sup> Quartile
Government expenditure (% of GDP)	-0.076 (0.249)	2.031 <sup>***</sup> (0.307)	2.423 <sup>***</sup> (0.703)	-2.246 <sup>***</sup> (0.551)
Trade Openness (% of GDP)	0.057 (0.036)	0.283 <sup>***</sup> (0.076)	0.459 <sup>***</sup> (0.050)	-0.196 <sup>**</sup> (0.091)
Initial real GDP per capita (in 2000 US\$)	14.22 <sup>***</sup> (2.612)	5.953 <sup>**</sup> (2.800)	12.279 <sup>***</sup> (3.498)	23.243 <sup>***</sup> (7.134)
CPI Inflation	-0.075 (0.073)	-0.011 <sup>***</sup> (0.004)	0.316 <sup>**</sup> (0.162)	-0.039 <sup>**</sup> (0.016)
R <sup>2</sup>	0.40	0.55	0.56	0.33
No. of observations	136	172	163	159

**Notes:**

1. Quartiles are defined in accordance to US\$ income levels in 1990. The 1<sup>st</sup> quartile includes countries with GDP per capita of up to \$660, while the upper cut-offs for the second, third and fourth quartiles are \$1,659, \$8,947 and \$33,297 respectively.
2. Instruments include initial values of government expenditure and trade openness.
3. Figures in parentheses are standard errors.
4. All regressions include a full set of time dummies.
5. The symbols <sup>\*\*\*</sup> and <sup>\*</sup> denote statistical significance at the 1%, 5% and 10% levels, respectively.

per capita income on trade openness are significant only in the first and second quartiles while the negative-size effect remains highly significant at all quartiles.

The results in Table 6 reveal that government expenditure has a positive and highly significant effect on financial development in the second and third income quartiles. Its effect in the first quartile is small and insignificant while it is large, negative and highly significant in the fourth quartile. These results suggest that at very low income levels, government spending does not seem to promote banking development, reflecting perhaps government's reliance on foreign aid and soft international loans at early stages of development. At intermediate levels of income, governments' financing requirements will need to be at least partially satisfied from domestic sources, which may explain why government spending impacts positively on the development of the domestic financial system. The reversal of this effect at high levels of income indicates that high public sector borrowing requirements in developed economies impact negatively on the size of the banking system. This may be because in developed economies, the growth of the public sector may crowd out rather than crowd in the private sector. If the private sector relies more on the banking system than the public sector, crowding out of the former by the latter is likely to result in a smaller banking system.

Trade openness is another variable that has a positive and highly significant effect on financial development in the second and third quartiles, a negative one in the fourth and an insignificant one in the first. The positive effect of trade openness on financial development is consistent with existing empirical literature (e.g. Baltagi et al, 1999) as well as with the great reversals hypothesis of Rajan and Zingales (2003). The positive and insignificant effect of trade openness on financial development in poor countries is perhaps not very surprising as it may to some extent be a reflection of more noisy data and a smaller number of observations. What is perhaps harder to explain is the negative

and significant effect found for the fourth quartile. A plausible explanation for this finding needs perhaps to recognise the role that money and capital markets can play in promoting trade in developed economies. If, for example, firms can obtain cheaper trade finance from money and capital markets than from banks, greater trade openness could well be associated with lower levels of banking system development.

The results in Tables 5 and 6 confirm that the aggregate results mask important variation that exists among different groups of countries. Different policy recommendations may therefore be appropriate for different stages of development. At low income levels, economic development is the only variable that appears to drive financial development, since both trade openness and government spending have positive and insignificant coefficients at conventional levels. At intermediate income levels, both government expenditure and trade openness are significant drivers of banking system development. At high levels of income both these effects are reversed, reflecting perhaps the increased role played by money and capital markets and crowding out of the private sector by the government.

At the very initial stages of development, government spending relies on foreign aid and soft international loans which do not promote domestic financial development but does seem to support trade. It is only later, when the commercial sector is more developed, that government expenditure would be spent on trade-promoting infrastructure such as ports, railroads, and roads, which ultimately create income that feeds back into the financial sector. As economic development progresses, government expenditure begins to facilitate the emergence of domestic finance, because governments begin to borrow from domestic banks, which are then encouraged to mobilize more savings.

#### **4. Concluding Remarks**

We make a first attempt to examine the interactions between government expenditure, trade openness and financial development utilising data from 18th century England and a panel of 82 countries from 1960-2004. For England, we find that the government did have a positive long-run effect on financial development when measured as the value of private loans issued by the Bank of England. For the wide panel of countries and more recent data, we find that government expenditure seems to have positive effects on financial development for countries that are in the middle ranges of economic development as measured by per capita income, but has little effect for poor countries and a strongly negative effect for the wealthiest ones.

The historical and more modern analyses both seem consistent with a virtuous government-trade-finance nexus that reaches its peak of effectiveness once an economy begins to modernize. England, for example, had shown signs of modernizing prior to the Glorious Revolution of 1688, but military conflicts and the rise of a stronger Parliamentary state allowed the Bank of England to form and evolve along with a host of other financial institutions, setting the nexus into motion. Indeed, with a per capita income of more than \$1,000 (1990 US) by 1770, England in 1770 would have been firmly in the second quartile of our broad cross-section of economies measured in 1990.

Our paper takes exception to the usual view that government expenditure in general has a crowding-out effect on private investment, and suggests that the government itself is essential to the development of sound financial arrangements. The effects of such a nexus, with the emergence of a modern sector reflected in the extent of international trade, are most emphatic as economies begin to experience robust growth. This has strong implications for the staging of development policies today.

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