



Centre for Dynamic Macroeconomic Analysis
at the University of St Andrews

Policy Note 1/06

Finance Causes Growth: Is it True?

Summary

We note that the finance-growth debate is, in some policy circles, beginning to be thought of as a resolved one. There are a number of reasons for not coming to this conclusion.

First, the absence of a detailed historical context detracts from our understanding of the finance and growth mechanism. Second, empirical estimations are prone to selection bias. Third, common theoretical mechanisms linking the financial sector to the rate of economic growth typically omit the dynamic and disaggregated elements which appear, in the historical literatures, to be so important. Fourth, the extent of calibration of the theory to data has not, as yet, contributed significantly to the shape of policy analysis.

We detail each of these four aspects of the finance-growth nexus and introduce work that seeks to address these omissions.

Overview

The recent, thought-provoking survey by Levine (2005) argued that there exists a causal link running from the financial development of an economy to its level of sustained economic growth. This view has been broadly accepted by policy makers such as the World Bank. Beck and de la Torre (2006, p. 1) in an introduction to the World Bank's current research priority, access to finance, remark that the "causal link running from financial depth to growth has been rather convincingly established." Demirgüç-Kunt (2006) is more circumspect, but nonetheless looks to lay-out the policies that hasten financial development in the pursuit of higher economic growth. There might be a perception emerging that the finance-growth nexus is close to being resolved.

This note will argue two things of relevance to policy:

- i. We cannot be sure that the causal link exists; and,
- ii. the understanding of any link does not aid policy aimed at alleviating poverty.

Finance and Growth in Context

The question of the connection between financial matters and economic growth is an old one. Robinson and Schumpeter broadly represent the oft-cited competing schools of thought. Robinson (1952, p.86) famously wrote, "...where enterprise leads, finance follows." Schumpeter (1934) put stress upon the importance of finance in *determining* the rate of economic growth, not in simply emerging as an albeit necessary sideshow to technologically-driven growth.

However, perhaps these quotes exaggerate the differences of opinion. If we look at historical evidence we find a surprisingly consistent story: Finance *did not* directly constrain industrial take-off. In Trew (2007) we go through a good deal of the historical research that argues this. The use of profit-ploughback as a means of industrial expansion typically prevailed. Take Hudson (2002, p. 67): "It has long been accepted that internal self-finance was *the* dominant form of industrial finance during the industrial revolution in England." The pecking-order theory of finance would suggest that internal finance was not constrained, but *optimal* financing behaviour. Further, it is argued that constraints on the ability of industry to raise bank finance were limited.

This observation can, in large part, be put down to an understanding of fixed costs in investments. A large part of entrepreneur-driven industrial expansion can be piecemeal; the extent of fixed costs cannot be considered to be generally very great. Even what we might think of to be a large fixed cost in manufacturing, the factory premises constructed to house workers and machines, were often rented in arrears from more wealthy individuals, with multiple tenancy, subletting and power-sharing prevalent.

But by looking at investments where fixed costs were a large part of the investment, we can understand the mechanism through which financial constraints can impact on industrial takeoff. Large-scale infrastructure projects are just such examples. Using, among other secondary sources, the primary data in Shea (2007), we study in Trew

(2007) the nature of the financing of these sorts of investments. We demonstrate that financial constraints are significant, and that they arise as a result of information problems and the institutional environment. A highly disaggregated and evolving picture of financial coalitions through the industrial revolution is developed. We analyse the role of institutions in the formation and efficiency of these coalitions. So while we find that financial constraints can have an impact on industrial development, this is largely an *indirect* effect, via their impact on investment projects that have high fixed costs.

The current empirical and theoretical literatures must be viewed in the context of these finance-growth channels.

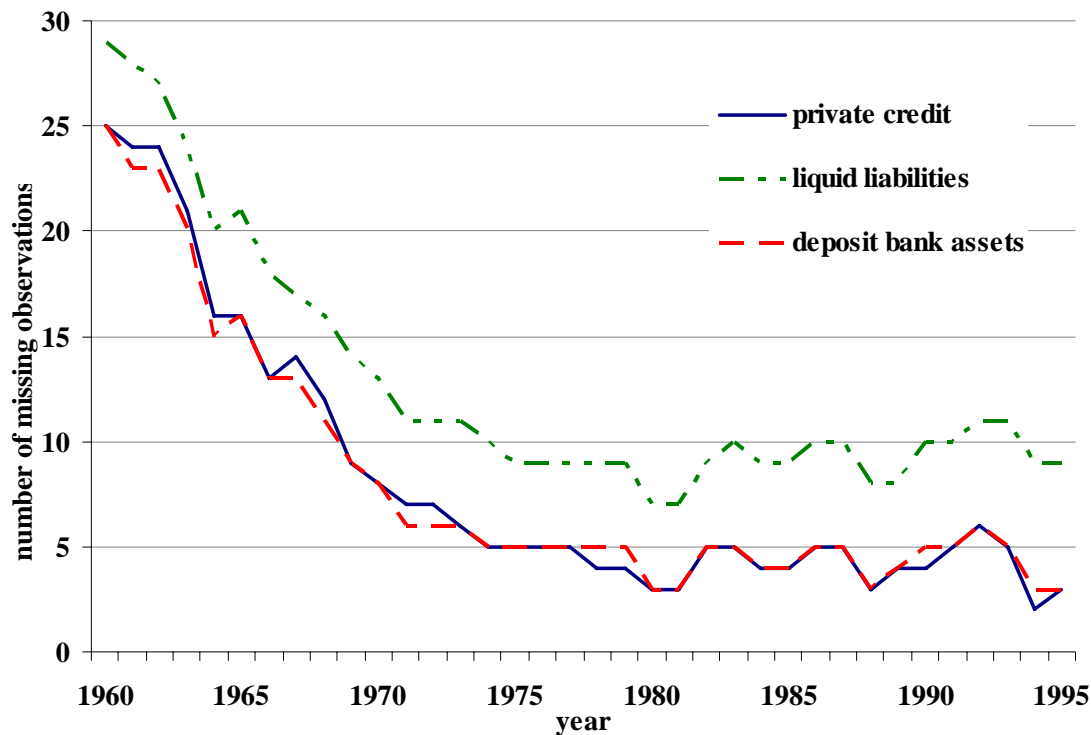
Empirics of Finance and Growth

Central to supporting the hypothesis that finance causes growth is a body of cross-section and panel estimations coming out of the World Bank dataset in Beck et al. (1999). This important and influential dataset includes data on financial depth for a large number of countries. Its impact on the quality of finance and growth research has been very great. Further to that dataset, a number of firm-level and industry-wide econometrics have also suggested a causal link running from finance to growth. However, the cross-sectional results have been at the forefront of the argument that, in some sense, finance causes growth.

Work based on the World Bank database has been subject to criticism, however, and these criticisms are not often acknowledged. Driffill (2003) points out that a number of results are quantitatively unrealistic, and are prone to the effects of outliers. Trew (2006) develops this analysis, and demonstrates that an underlying selection bias can lead us to accepting the finance-causes-growth hypothesis on spurious grounds. Naturally, the database is not complete for all countries and so long averages are often used in estimations. Further, there is an upward trend in some of the financial series used. This has consequence because countries that were poor at the beginning of the sample typically had little data for the early years, and more for the later years. This is shown, for one of the most popular indices of financial depth, in Figure 1. Together, we show that this means that the average of countries that have converged are biased towards having had a higher average level of reported financial depth.

Additionally, the existence of outliers, specifically the Asian Tigers identified in Driffill (2003), can have a large effect. The Asian financial crisis of 1998 saw, across a very large region, a period of massive increase in financial depth followed by a large *decrease* in economic growth. Trew (2006) goes through the statistics. Aghion, et al. (2005) is one prominent example of finance and growth econometrics that neglects to consider the impact of this period on finance-growth estimations.

Figure 1: Distribution of Missing Observations for Finance to GDP ratios



Sources: Beck, et al., (1999); Trew (2006).

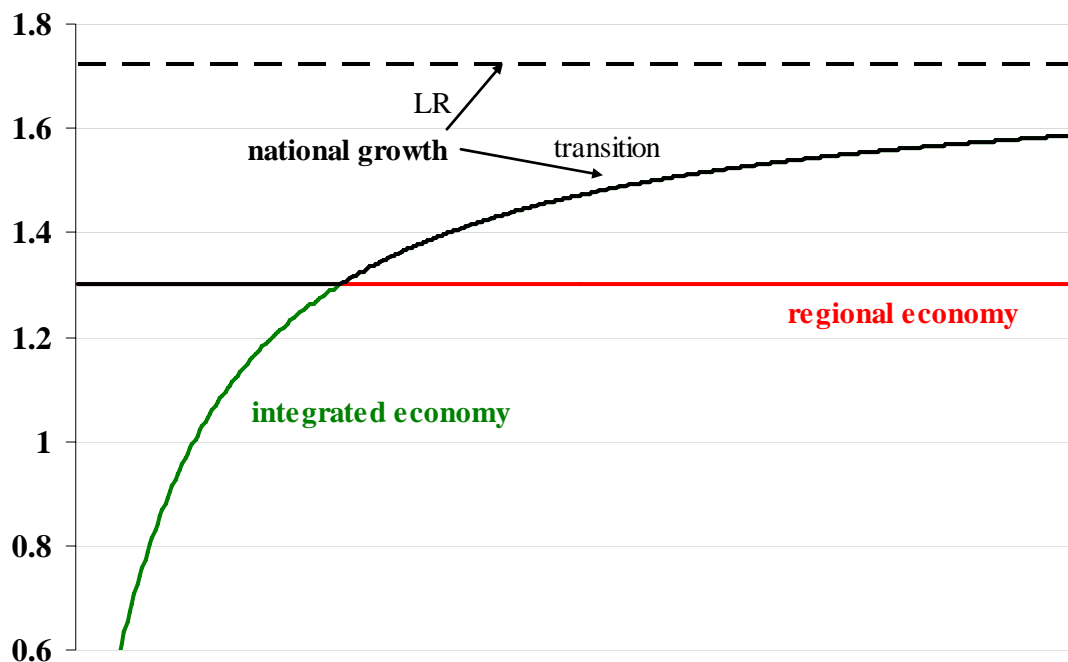
Theories of Finance and Growth

The theoretical understanding of finance and growth has developed over the same period as the development of the World Bank dataset. Much of the theory is surveyed in Levine (2005) and Trew (2006). We wish to draw attention here to two things: First, the theory typically does not relate in any meaningful way to the empirical results discussed above; second, theoretical mechanisms of finance and growth do not take account of the disaggregated and dynamic elements with attention to the importance of fixed costs.

Most theoretical analyses of finance and growth are based on the existence of a wedge between savings and investments in an economy. Such frictions are motivated by, among other things, the existence of credit constraints and/or asymmetric information. The implications for changing financial *depth* in these models is limited. In models where the financial intermediation condition is static, balanced endogenous growth *implies* a constant level of financial depth. So there is a disconnection between empirical results based on financial depth and theoretical results with changing financial efficiency at their core. It is difficult, then, for theoretical (empirical) results to support the findings of empirical (theoretical) work. Townsend and Ueda (2006) is a path-breaking example of a theory of finance and growth that is appropriately calibrated to rich time-series data. Contemporary macroeconomics is based on the interaction between theory and data. The interplay is something missing from most of growth theory, and detracts from our ability to understand both the mechanisms and importance of the finance-growth nexus.

Further to the disconnection between empirical and theoretical work, the prevailing theoretical mechanisms do not account for the disaggregated and dynamic elements outlined above. Trew (2007) makes a first attempt at reconciling a simple model of finance and growth with the factors identified as so important in the historical literature. We demonstrate there that industrial take-off, the movement towards higher balanced growth paths, can be understood in the context of evolving financial conditions and spatially disaggregated financial coalitions. We extend the conclusions numerically, and show that this simple model can account for historical growth paths. Figure 2 gives an example growth path that can be generated as a result of endogenously changing conditions of financial intermediation that and endogenous decisions over economic integration. Such growth paths can be calibrated to historical data with some success.

Figure 2: Example Growth Paths in Trew (2007) Model



Source: Trew (2007).

The Microeconomics of Finance and Growth

The above discussion has raised a number of reasons for not proclaiming an end to the finance and growth debate. They can be summarised as follows:

- Empirical cross-section results are strongly biased toward accepting the finance-causes-growth hypothesis.
- Much of theory and econometrics considers the question in only its comparative sense; an understanding of transitional issues is commonly omitted. This must have implications for policy in regard to the implementation of any finance-led growth strategy within a country.

- The connection between theoretical mechanisms and empirical results in finance and growth has, largely, been neglected. Specifically, the former typically looks at financial efficiency; the latter at financial depth. How are efficiency and depth related, and what might a theory calibrated to data tell us about the quantitative effect of finance on growth?
- Aggregation issues play a highly significant role in the relationship between transitional growth paths and financial matters. Where does the literature on endogenous financial coalitions and growth impact on contemporary finance and growth theory?
- A dynamic financial intermediation story can be relevant; can a finance-causes-growth hypothesis be wholly context-independent?

These problems boil down to a lack of understanding of the microeconomics of finance and growth. Even the work of Townsend and Ueda (2006) is based on the exogenous existence of exchange costs. But where do the financial constraints come from? How do they change over the course of an industrial revolution? What role can institutions play in mitigating the financial constraints that do exist? Nolan and Trew (2007) begins to look at the endogenous significance of exchange costs, coalitions and the role for institutions given current levels of wealth. The development of a fully dynamic theory of finance and growth based on this work is a major task for future research.

We have attempted to introduce a number of important questions that can have a central role to play in policy formation. We do not wish to detract from the important role that finance and growth research has played in contributing to our understanding of the determinants of international growth levels. We simply wish to engender a greater degree of scepticism in current thinking. We do not believe that the finance and growth debate is anywhere near approaching a resolution.

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Centre for Dynamic Macroeconomic Analysis

Castlecliffe, The Scores
School of Economics and Finance
University of St Andrews
Fife, UK
KY16 9AL

Email cdma@st-and.ac.uk
Telephone +44(0) 1334 462420
Fax +44(0) 1334 462444

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