

6 Financial intermediation and economic development

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1 Introduction

How important are financial markets to the construction of a European economic system which fosters growth, development and international trade? The traditional view is that financial markets are simply the 'handmaiden of industry', but recent economic research suggests otherwise. In this new view, financial markets play a central role in determining a country's patterns of trade and growth.

The emerging new view of the links between financial markets and growth results from two of the most dynamic subfields of economic research. Economists now have an essentially new perspective on what financial intermediaries do and how the economic growth process works. When combined, as is taking place in ongoing research, these two new views lead us to the conclusion that financial markets can play an important role in the growth process. There is also evidence that cross-country differences in growth rates have reliable linkages to measures of the size and efficiency of the financial intermediation sector.

The traditional view of financial intermediaries was that these organizations passively funnel household saving to business investment.¹ The 'new view of financial intermediation' has a much richer vision of the nature and economic function of these organizations. Indeed, financial intermediaries are viewed as playing an active, perhaps dominant, role in the organization of industry. With their actions, they determine which economic organizations will survive and which will perish, which entrepreneurs will control organizations and which will not, which types of investment can be made and which cannot, and which new economic products can be introduced by firms and which cannot.

On the growth side, the traditional view is that for which Solow won the Nobel prize in economics and is reflected in two classic articles. First, in his theoretical work, Solow (1956) identified differences in paths of

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physical capital accumulation as the central endogenous determinant of differences in economic growth experiences for different countries; his theoretical work also identified the resulting differences as temporary. Second, in his empirical work (1957), Solow showed that capital accumulation did not explain much of observed US growth; this finding was shown by Maddison and others to be generally true for many countries and time periods. Overall, many economists saw these two findings as producing important limits on the extent to which government policies – including financial market policies – could be potential determinants of the economic growth process. For those economists working closely with actual development experiences, this view of the relative unimportance of policy determinants of growth was essentially impossible to believe, so that development economics increasingly became a separate part of economics from the theoretical modelling of economic growth. By the end of the 1970s, each field had distinct participants and standards; there was relatively little communication between the two fields.

The new economics of growth and development of the 1980s – initiated by Romer (1986) and Lucas (1988) – is sharply different in this regard. First, the new theoretical literature suggests that a range of economic policies can have important effects on a country's growth rate over lengthy periods. In fact, within some 'endogenous growth' models, policies – particularly those that influence the private costs and benefits of investing in human capital and productivity enhancement – can *permanently* influence the growth rate of an economy. Second, the new empirical growth literature of the 1980s is closely linked to theoretical work. For example, this is very evident in the sociology of research conferences: it is common for the same economists to participate in both empirical and theoretical work. More importantly, theoretical models are used as organizing principles and sources of hypotheses in empirical investigations; empirical evidence is used to circumscribe theoretical models and to evaluate their qualitative implications.

In this paper, our objectives are threefold. To begin, we provide a detailed exposition of ongoing theoretical work that provides links between financial intermediation and economic growth. Next, we provide some empirical evidence that suggests that measures of the extent and quality of financial intermediation are reliably linked to historical differences in growth during the post World War II period. Lastly, we link our study to the monumental policy choices facing the formerly socialist economies of Europe. Our theoretical and empirical analyses suggest that financial sector reform can importantly promote economic growth in these countries by improving the efficient allocation of resources and the effectiveness of other public policies.

While theoretical and empirical research on financial intermediation and economic development is in its early stages, we think that there are now good reasons to suspect that the links may be very important. First, the independent theoretical developments in the two research areas suggest important interactions, even though developing the ties between financial intermediation and growth was not the initial objective of either research area. Second, the accumulating empirical evidence – reviewed in this paper – suggests that there has been an important historical relationship between financial intermediation and economic development. Countries with larger and more efficient financial intermediation sectors systematically outperformed other countries during the post World War II period.

2 Theoretical perspective

In this section, we first summarize why we think that there are intrinsic links between financial intermediation and the productivity of an economy, which is based on our ongoing research in this area (King and Levine, 1992b). We then discuss how variations in productivity lead to implications for (i) the long-run level of economic development or (ii) the long-term rate of growth, within some recent growth models. Lastly, we return to our working model and ask what general implications it has for (i) which types of public policy countries might have to pursue to accomplish given objectives; and (ii) which types of public policy packages would be growth promoting. The key point, which we plan to pursue further in additional work, is that there are typically important interactions across policy effects implied by our working model.

2.1 Our working model²

Sustained economic development originates, we believe, in a nexus that involves (i) entrepreneurship, (ii) intangible capital investment, and (iii) financial intermediation. Our working model thus involves a blending of ideas due to Frank Knight (1951) and Joseph Schumpeter (1911). In this paper, we also adopt Knight's and Schumpeter's research style by outlining the key theoretical interactions in verbal form.

At the centre of our theory is an entrepreneur contemplating an innovation, i.e. the undertaking of an economic activity in a way that is new in some dimension. From Schumpeter, we take that it is the accumulation of such innovations that is at the heart of growth. From Knight, we take the concept of entrepreneurship, which is that certain individuals have the requisite skills to turn abstract ideas into marketable products.

2.1.1 Defining innovation

From our standpoint, we want to define innovation broadly. First, it could involve the development of a new product, such as the microcomputer. Second, it could consist of adopting technology to an existing product, such as the introduction of microcomputers into wordprocessing in Taiwanese. Third, it could consist of creating a new technology, such as creating a new product using altered business processes. Fourth, it could consist of using a costly modification of a technology to produce the most important of these modifications. Finally, it could consist of the most important of these modifications being the human capital of the firm's workers.

2.1.2 Core elements of our model

The key aspects of our working model are:

- (1) There is an entrepreneur who generates ideas which requires finance of some kind.
- (2) Entrepreneurs are heterogeneous. Some ideas for society to undertake, which are feasible at some point, but their evaluation not reveal their true character of the ideas. Other ideas are not feasible. Of these ideas, some are competitors.
- (3) Much of productivity-enhancing capital is intangible and difficult for a third party to invest in. It serves as pool of capital for an entrepreneur and a team of workers.
- (4) The returns to intangible capital are determined by (i) the size of the market; (ii) the number of competitors; and (iii) the quality of the ideas.

In this setting, financial intermediation is the market mechanism for the screening of ideas. It is the intangible, productivity-enhancing capital that entrepreneurs invest in.

2.1.3 Linkages between financial systems and entrepreneurs

Our working model implies that financial systems will be correspondingly developed. Thus, countries with well-developed financial systems will have more entrepreneurs. Thus, countries with well-developed financial systems will have more entrepreneurs.

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2.1.1 Defining innovation

From our standpoint, we want to interpret the idea of 'newness' very broadly. First, it could involve the literal invention of a new product, such as a microcomputer. Second, it could involve the enhancement of an existing product, such as the introduction of the 486 chip. Third, it could consist of adopting technology produced elsewhere, such as the production of microcomputers in Taiwan. Fourth, it could involve adapting technologies, such as creating a keyboard that could be readily used to do wordprocessing in Taiwanese. Fifth, it could involve producing an existing product using altered business methods, such as making a keyboard using a costly modification of a firm's organization of production. Among the most important of these modifications are specific investments in the human capital of the firm's workers.

2.1.2 Core elements of our model

The key aspects of our view are as follows:

- (1) There is an entrepreneur who seeks to undertake an innovation, which requires finance of investment.
- (2) Entrepreneurs are heterogeneous: some have ideas that are efficient for society to undertake, others do not. Evaluating the desirability of ideas is feasible at some cost, but it is essential that the process of evaluation not reveal too much information about the nature and character of the ideas. Otherwise the ideas might be appropriated by competitors.
- (3) Much of productivity-enhancing investment involves construction of an intangible capital good. By the nature of this asset, (i) it is difficult for a third party to evaluate the efficacy of the investments; and (ii) it serves as poor collateral, because it is embodied in an entrepreneur and a team of managers and production workers.
- (4) The returns to intangible capital good are quasi rents that are determined by (i) the size of the market; (ii) the rates of innovation of competitors; and (iii) taxation and public regulation.

In this setting, financial intermediaries will arise endogenously as part of a market mechanism for the screening of entrepreneurs and the financing of intangible, productivity-enhancing investment by creditworthy entrepreneurs.

2.1.3 Linkages between financial intermediation and productivity

Our working model implies that countries with better-functioning financial systems will be correspondingly better at evaluating innovations and entrepreneurs. Thus, countries with superior financial systems will, *ceteris*

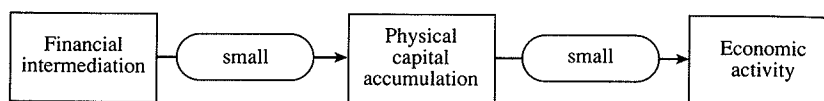


Figure 6.1 The traditional view

paribus, allocate savings to more efficient and productive endeavours than will countries with less effective financial systems. In our model, more efficient resource allocation translates into increased productivity and growth through physical capital accumulation, improvements in the types of intangible capital described above, and human capital development.

2.2 Financial intermediation and the development process

With financial intermediation linked to productivity, there can thus be different implications from the standard received viewpoint on the role of financial intermediaries in the economic growth process. In order to understand reasons for these differences, we begin by summarizing the traditional viewpoint and then turn to contrasting our viewpoint.

2.2.1 The traditional view

The traditional view of economic growth and its relationship to financial intermediation contains two main propositions. First, for reasons that we will detail later, the growth effects of changes in intermediation are small. Second, the effects of the level of development on a country's demand for various forms of financial services are large. Thus, the traditional view makes the prediction that most of the observed correlations would involve a causal link from development to finance: it is a corollary of the more general view that finance is the handmaiden to industry.

We begin by considering the reasons that the conventional view suggests that there are small effects of financial intermediation on the level of economic development and, even more so, on sustained economic growth. Figure 6.1 shows the linkages visually: financial intermediation was thought to have only minor effects on investment in physical capital, and investment was viewed as relatively unimportant for determining economic activity. To be more precise, it is necessary to follow Solow's analytical route and to discuss the implications of using a Cobb–Douglas production function, $y = Ak^a$, with y being per capita GDP, k being the per capita stock of physical capital, and A being omitted residual elements such as general human capital and other productivity-enhancing factors. Within this type of production function, conventional estimates are that a is about 0.3, with an absolute upper bound being 0.5. This restriction

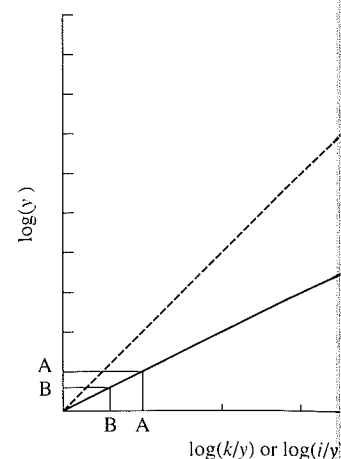
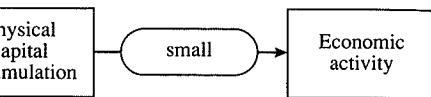


Figure 6.2 Accumulation and economic growth model

embodies the idea that – at a given level of development – the investment process is subject to sharply diminishing returns. The Solow model predicts a steady state level of economic development that cross-country differences in the capital–output ratio (k/y) or the investment–output ratio (i/y) are small. Figure 6.2 graphs the investment function, $y = A/(1-a)(R/y)^a$. Consequently, a small increase in the capital–output ratio of country B, θ , leads to a large increase in the output level, since θ is at the upper bound of the investment function. Differences in asset stocks and financial intermediaries – can lead to large differences in economic growth.³ Second, looking at the level of development in a single country, changes in the level of development over a sample period can lead to only small changes in the level of output. For example, an increase in the level of output of 0.22 – an increase of 10 per cent over a thirty-year period – no portion of which is being incorporated into the annual average growth rate.



efficient and productive endeavours than financial systems. In our model, more capital accumulation leads into increased productivity and economic growth, improvements in the types of investment, and human capital development.

The development process

related to productivity, there can thus be a standard received viewpoint on the role of financial intermediation in the economic growth process. In order to compare different views, we begin by summarizing the conventional view, and then contrast our viewpoint.

growth and its relationship to financial intermediation. First, for reasons that we will discuss, changes in intermediation are small. Second, the impact of changes in intermediation on a country's demand for capital is small. Thus, the traditional view of the observed correlations would be that the impact of financial intermediation on economic growth is small: it is a corollary of the idea that the handmaiden is to industry.

It is clear that the conventional view suggests a limited role for financial intermediation on the level of economic growth. In more so, on sustained economic growth, financial intermediation affects investment in physical capital, but this is relatively unimportant for determining the rate of growth. In short, to be precise, it is necessary to follow Solow's lead. The implications of using a Cobb-Douglas production function, with y being per capita GDP, k being the capital stock, and A being omitted residual elements representing other productivity-enhancing factors. In the conventional estimates are that θ is at most 0.5. This restriction

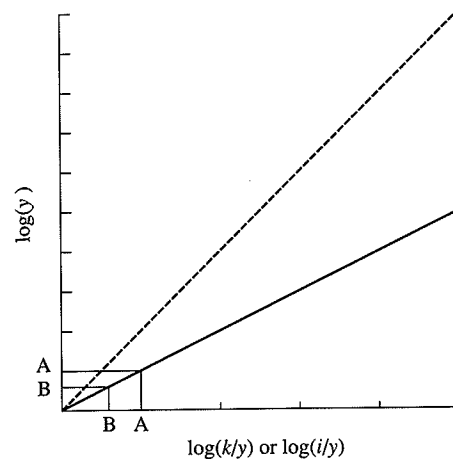


Figure 6.2 Accumulation and economic development in the physical capital (Solow) model

embodies the idea that – at a given level of exogenous technical progress – the investment process is subject to sharply diminishing returns.

Sharply diminishing returns to capital formation substantially limit the ability of the Solow model to explain cross-national differences in the level of economic development and the rate of growth. First, it implies that cross-country differences in long-run levels of the capital/output ratio (k/y) or the investment rate (i/y) can have limited effects on the level of output. Figure 6.2 graphs the long-run relationship between $\log(y)$ and $\log(k/y)$, which is a line with slope $\theta = a/(1-a)$, such that $y = A/(1-a)(R/y)^{\theta}$. Consequently, if country A had twice the capital/output ratio of country B, then it could have no more than twice the output level, since θ is at most $0.5/(1-0.5) = 1$. Hence, there is an important upper bound placed on the extent to which cross-country differences in asset stocks – including those maintained by financial intermediaries – can lead to differences in the level of economic development.³ Second, looking at the time series of growth observations for a single country, changes in the rate of investment (i/y) within a specific sample period can lead to only relatively minor variations in growth rates. For example, an increase in (i/y) from an initial value of 0.20 to a value of 0.22 – an increase of 10 per cent – would lead to at most a 10 per cent increase in the level of output in the long run. If all of this occurred within a thirty-year period – no portion being present in the initial level of GDP and no portion being incomplete at the end – then the impact on the annual average growth rate would be at most 0.33 per cent. Third, as

shown in Solow (1956), the Cobb–Douglas production function implies that physical investment and capital formation can account for only a small portion of US economic development; as may be seen from Maddison's survey (1987), this finding was strikingly confirmed for many other countries and time periods.

In addition, the traditional view circumscribed the channels through which financial intermediation could affect the level of development and the rate of growth. In particular, financial intermediaries were viewed mainly as passive conduits of funds from savers to firms undertaking physical capital investments; intermediation was important, then, only as it affected physical investment, bounding its effects. Further, a variety of evidence suggested small interest elasticities of savings rates – via financial intermediaries and in other forms – and investment so that distortions in the financial sector were viewed as relatively unimportant for investment. Consequences for the level of development and the rate of growth were thus taken to be a result of combining two empirically minor channels of influence: multiplying two small effects together produces very little.

None the less, in Goldsmith's (1969) seminal study of thirty-six countries over the period 1860–1963, he shows that there is a strong positive relationship between the ratio of financial institutions' assets to GNP and output per capita. Goldsmith also shows that periods of rapid economic growth tend to be associated with above-average rates of financial development. Goldsmith is quick to note, however, that his analysis does not establish a causal link from financial intermediary services to growth, nor does his analysis identify the channels – capital accumulation or productivity enhancements – through which growth and financial development are linked.

2.2.2 The new view

The emerging new view suggests quite a different perspective on the potential influence of financial intermediaries on the level of economic development and the rate of economic growth. This involves challenges to both the role of intermediation and the nature of the development process.

The precise nature of the links between financial intermediation and economic development will depend on which of a range of recent growth models is employed. While these models differ on the exact nature of the 'long-run' opportunities for an individual country, they all agree on some core elements. In particular, all view the relevant process of capital accumulation as much richer than that highlighted theoretically and measured empirically by Solow. In addition to physical investment, Lucas (1988) has stressed investment in general human capital, Romer (1990)

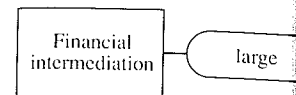


Figure 6.3 The new view

has stressed investments in human capital, and Prescott (1992) has stressed investments in firm-specific human capital. The new view also stresses investment in intangible capital, discussed above as 'innovations'.

Models of bounded growth. A characteristic of these models is that the world's scientific knowledge grows at a constant rate. At any given time, there is a fixed amount of knowledge, and how much any individual country can benefit from it depends on the extent to which the country has accumulated it, and others well. Rich countries have accumulated more types of capital: production capital and general human capital. As the cost of accumulating capital decreases in the cost of accumulating capital, such investments in physical capital and human capital are more profitable, and motion the transition to a steady state where all factors of production are accumulated. In the standard model of Solow, the aggregate of all social investments is bounded, leading to diminishing returns.

Models of perpetual growth. A country is not constrained to stop growing forever at a rate determined by the country; instead, it can grow forever at a rate determined by the country, as discussed earlier. A range of models has been discussed by Rebelo (1991), and they all suggest that lower the growth rate of the country, the higher the growth rate of the world.

2.2.3 A summary of the new view

There is a much larger potential for economic growth in the 'new view' than in the 'old view'. The new view suggests that the potential for financial intermediation is much larger than in the old growth models, new and old.

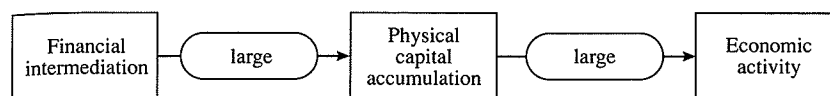


Figure 6.3 The new view

has stressed investments that extend the menu of products produced by an economy, and Prescott and Boyd (1987) have stressed investments in firm-specific human capital. Each of these latter ideas is an example of the investment in intangible, productivity-enhancing investments that we discussed above as 'innovation'.

Models of bounded growth. One class of models stresses the following characteristic: there is a technological frontier that is determined by the world's scientific knowledge, which it is useful to think of as growing at a constant rate. At any given level of such knowledge, there are limits to how much any individual country can achieve. Individual countries differ in the extent to which they exploit this knowledge: some utilize it poorly and others well. Rich countries are those that have high levels of three types of capital: productivity-enhancing intangible capital, physical capital and general human capital. Thus, in these models, a permanent decrease in the cost of accumulating productivity-enhancing capital increases such investments, which raises the rewards to investments in physical capital and human capital. Thus, in turn, the models set in motion the transition to a new higher growth path at which the stocks of all factors of production are higher. Models of this form work much like the standard model of Solow but with a comprehensive capital stock – an aggregate of all social investments – that is subject only to mildly diminishing returns.

Models of perpetual growth. Another class of models views an individual country as not constrained by world scientific developments but capable of growing forever at rates that depend only on the extent of investments made by the country; investments in all of the types of capital that we discussed earlier. A range of examples of these types of model is provided by Rebelo (1991), and demonstrates that economic policies can raise or lower the growth rate of the economy forever.

2.2.3 A summary of the new view

There is a much larger potential impact of financial intermediation on economic growth in the 'new view' summarized in Figure 6.3. First, the new view suggests that there may be important connections between financial intermediation and productivity, and a range of economic growth models, new and old, indicate that productivity will have an

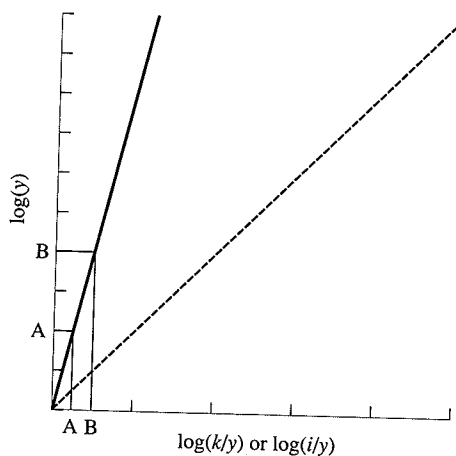


Figure 6.4 Accumulation and development in the comprehensive model

important effect on economic activity. These linkages from financial intermediation activities to productivity enhancement to economic development are the focus of our work in King and Levine (1992b). Second, in new growth models, a larger role is assigned to influences on investment – essentially by viewing more of economic activity as capitalist in nature – including physical capital accumulation, general human capital accumulation, and investment in other intangible productivity-enhancing capital goods. This suggests writing an aggregate production function of the form $y = \underline{a}(K)^{\underline{a}}$, where K is a comprehensive capital aggregate and \underline{a} is the associated share parameter. Then, we can represent examples of these two new models of economic development very simply. First, the basic bounded growth model has \underline{a} much larger than in the traditional view, but continues to have $\underline{a} < 1$. Second, the basic unbounded growth model has $\underline{a} = 1$.

Bounded growth models. Figure 6.4 shows some important implications of the bounded growth model with a comprehensive capital aggregate. First, relative to the comparable diagram in Figure 6.2, it follows that the effects of cross-national differences in k/y or i/y are much larger. For example, if we adopt the value of $\underline{a} = 0.8$ that is suggested by the work of Barro and Sala-i-Martin (1992) and Mankiw, Romer and Weil (1992), then it follows that cross-national differences in output levels are related to cross-national differences in k/y or i/y levels by $\theta = 0.8/(1 - 0.8) = 4$. Thus, for example, a country with a capital/output ratio twice as high as another had double the income per capita in Figure 6.2 and $2^4 = 16$ times the income per capita in Figure 6.4. Second, the comprehensive view of

capital formation implies that for more sustained growth.⁴ Revision of the traditional view, at least in part, is that a change in the level of its base level sets off a permanent change in growth. If all of this increase occurred in the Solow model, the impact on growth would average out in the Solow model.⁵

Unbounded growth models. Very much like Figure 6.4 since which the economy converges to a higher rate of growth that depends on the comprehensive capital aggregate. Our working model suggests that a change in \underline{a} affects 'A' and thus permanent

Implications for our empirical work. In the work presented below, we use specific unbounded growth models. We will consider the relationship between development; this permits us to compare the conventional view. Second, we will use financial indicators and growth

2.3 Interactions between public

From our standpoint, one of the most important views is that it suggests important policy actions designed to promote growth. Since the IMF and the World Bank have emphasized national trade as a growth-promoting activity, the interactions in this area.

Consider a country – many countries – that has international trade, in the form of exports and imports. We think it is important to be aware of the fact that we have put trade restrictions in place to protect the domestic monopoly and specialized workers – in other words, then there are other implications of this. One of the things we have in mind: protecting the domestic monopoly requires not only that it be protected, but there be a restriction on the entry of new firms. This may be accomplished by public provision of the extensive licensing require

capital formation implies that changes in investment rates also account for more sustained growth.⁴ Reworking the example used in our discussion of the traditional view, an increase in the investment rate by 10 per cent of its base level sets off a 40 per cent increase in GDP (with $\underline{a} = 0.8$). If all of this increase occurred over a thirty-year time period, then the impact on growth would average 1.33 per cent; this is four times the effect in the Solow model.⁵

Unbounded growth models. With perpetual growth ($\underline{a} = 1$), there is no analogue to Figure 6.4 since there is no technological frontier toward which the economy converges. Instead, there is simply a shift to a new higher rate of growth that depends positively on the productivity of the comprehensive capital aggregate, i.e. on the value of \underline{A} in the production function. Our working model suggests financial intermediation positively affects 'A' and thus permanently increases the rate of economic growth.

Implications for our empirical work. In the empirical analysis summarized below, we use specifications suggested by both the bounded and unbounded growth models. We organize our discussion as follows. First, we consider the relationship between our financial indicators and the level of development; this permits us also to provide a detailed critique of the conventional view. Second, we explore empirical linkages between the financial indicators and growth rates.

2.3 Interactions between public policies

From our standpoint, one of the most important implications of the new view is that it suggests important interaction effects among the public policy actions designed to promote long-term growth and development. Since the IMF and the World Bank have stressed openness to international trade as a growth-promoting strategy, we focus on elaborating the interactions in this area.

Consider a country – many come to mind – with substantial barriers to international trade, in the form of import/export restrictions and tariffs. We think it is important to begin by asking why such a country might have put trade restrictions in place. It seems most plausible that this is to protect the domestic monopoly position of producers – both capitalist and specialized workers – in import-competing industries. If this is so, then there are other implications of this hypothesis within the model that we have in mind: protecting the position of an existing domestic monopoly requires not only that it be isolated from international trade but that there be a restriction on the entry of potential domestic rivals. In part, this may be accomplished by public regulation of new enterprises, for example the extensive licensing requirements that include disclosure of key

concepts and ideas to entrenched rivals. But, from our perspective, it also probably requires the regulation of domestic and international banking. Regulation of banking limits the ability of potential rivals to enter the protected market. Regulation of domestic banking is important, but not sufficient; there must also be an exclusion of foreign lending – either explicitly or via the threat of confiscation of returns – from domestic markets. Otherwise, domestic entrepreneurs that sought to be rivals to the domestic monopoly would have ready access to sources of venture capital. Thus, our model of finance and growth predicts that international finance restrictions would accompany trade restrictions.

Now, we want to consider what will happen if a country alters certain economic policies, specifically engaging in policies that promote exports, based on the observation that other high-export countries are high-growth countries. Inefficient domestic monopolies will not be able to compete in international markets without major government subsidies, so that changes in export policy may be of little consequence with existing capabilities. Instead, producers must adopt new technologies and products that are viable in world markets. In this regard, society must reallocate resources to a new group of producers. Consequently, the success of international trade policies may well depend on the extent to which domestic and international financial markets operate effectively.

3 Financial development and economic activity

It is useful to begin our discussion of the links between financial and economic development by asking how financial intermediation and the level of real economic activity are related when we look across a wide range of countries.

3.1 Some cross-country evidence

To measure the level of real economic activity, we use gross domestic product (GDP) per capita in 1987 dollars for each country in two different years, 1970 and 1985.⁶ In some companion research (King and Levine, 1992a), we construct a number of measures of the extent of financial intermediation within a country and study their links to economic growth. Table 6.1 defines these measures in more detail, but the crucial types of indicators are as follows.

Money demand indicators. One of our financial indicators captures the scale of domestic currency funds held by individuals and corporations principally for transactions. The indicator MIY is the ratio of a country's currency and demand deposits to its GDP. This indicator captures the

Table 6.1. *Financial development*

Indicators	Very rich	Rich
MIY	0.19	0.20
LLY	0.48	0.38
LLY-MIY	0.31	0.18
CBY	0.06	0.07
BY	0.43	0.25
PRIVY	0.35	0.23
BANK	0.86	0.77
PRIVATE	0.72	0.71
NON-MBY	0.19	0.10
RGDP70	10385	1813
N =	28	28

Key:

Very rich:	RGDP70 > 3506
Rich:	RGDP70 > 799 and
Poor:	RGDP70 > 362 and
Very poor:	RGDP70 < 362
MIY	= M1 to GDP
LLY	= Liquid liabilities to C
QLLY	= LLY-MIY
CBY	= Central bank domest
BY	= Deposit money bank
PRIVY	= Gross claims on priv
BANK	= Deposit money bank bank + central bank
PRIVATE	= Claims on the non-fi credit
NON-MBY	= Claims on the private divided by GDP
RGDP70	= Real per capita GDP

fraction of a year's income held average level is 0.18 across the S corresponding value is 0.19. Ther cial indicator to be correlated international cross-section. In fac correlation is consistent with the s income elasticity in the demand f hold transactions balances rough expenditure flows.⁷

Table 6.1. *Financial development and real per capita GDP in 1970*

Indicators	Very rich	Rich	Poor	Very poor	Correlation with RGDP70	(P-value)
M1Y	0.19	0.20	0.15	0.14	0.16	(0.11)
LLY	0.48	0.38	0.21	0.19	0.43	(0.0001)
LLY-M1Y	0.31	0.18	0.06	0.05	0.56	(0.0001)
CBY	0.06	0.07	0.10	0.10	-0.20	(0.06)
BY	0.43	0.25	0.17	0.12	0.72	(0.0001)
PRIVY	0.35	0.23	0.14	0.09	0.53	(0.0001)
BANK	0.86	0.77	0.71	0.62	0.43	(0.0001)
PRIVATE	0.72	0.71	0.56	0.48	0.42	(0.0002)
NON-MBY	0.19	0.10	0.04	0.02	0.70	(0.0001)
RGDP70	10385	1813	596	219		
N =	28	28	28	27		

Key:

- Very rich: RGDP70 > 3506
 Rich: RGDP70 > 799 and < 3506
 Poor: RGDP70 > 362 and < 799
 Very poor: RGDP70 < 362

- M1Y = M1 to GDP
 LLY = Liquid liabilities to GDP
 QLLY = LLY-M1Y
 CBY = Central bank domestic credit to GDP
 BY = Deposit money bank domestic credit to GDP
 PRIVY = Gross claims on private sector to GDP
 BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit
 PRIVATE = Claims on the non-financial private sector to total domestic credit
 NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP
 RGDP70 = Real per capita GDP in 1970, in 1987 dollars

fraction of a year's income held for transactions purposes: in 1970, the average level is 0.18 across the 94 countries that we study; in 1985 the corresponding value is 0.19. There is some slight tendency for this financial indicator to be correlated with the level of development in the international cross-section. In fact, the finding that there is not a strong correlation is consistent with the standard view that there is close to a unit income elasticity in the demand for money: individuals and corporations hold transactions balances roughly in proportion to their income and expenditure flows.⁷

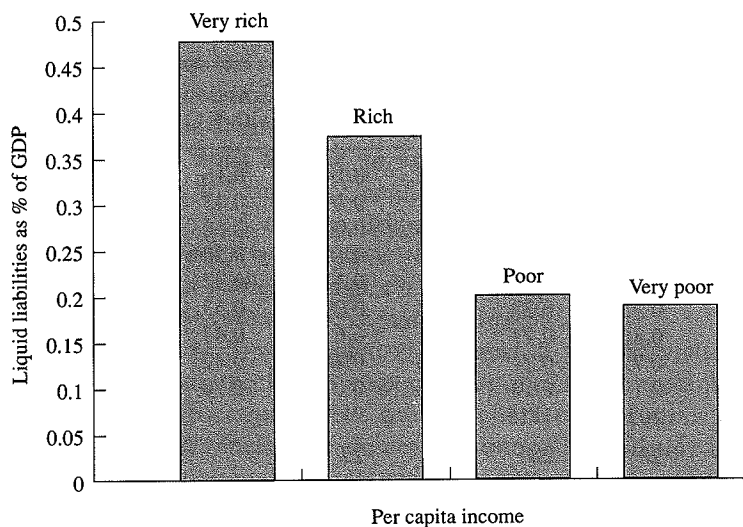


Figure 6.5 Financial size (LLY) and real per capita income, 1970

The scale of financial intermediaries. The size of the financial system is proximately measured by other financial indicators that are much more strongly correlated with the level of development. For example, as shown in Table 6.1, citizens of the richest countries – the top 25 per cent on the basis of income per capita – held about 30 per cent of a year's income in liquid assets beyond their monetary liabilities, while citizens of the poorest countries – the bottom 25 per cent – held only 5 per cent of a year's income in 1970. Figure 6.5 shows the cross-sectional relationship between GDP per capita and total liquid liabilities (including monetary and non-monetary components): we see a positive correlation, but in the poorest half of the sample there is simply little non-monetary demand for liquid liabilities and hence little correlation.

In a good portion of our empirical work, we focus on the financial indicator LLY, which measures the monetary and non-monetary liquid assets held by individuals. This is a measure long studied by development economists, so that it facilitates comparisons between our study and others; it also turns out that many other financial indicators give broadly the same results as LLY.

Central versus private bank lending. There are both public and private components of bank lending that bear distinct relations to the level of development. Private bank lending constitutes about 43 per cent of GDP in the top quarter of the world's countries and only 12 per cent of GDP in

Table 6.2. Financial developme

Indicators	Very rich	Rich
M1Y	0.18	0.20
LLY	0.67	0.51
LLY-M1Y	0.50	0.31
CBY	0.07	0.16
BY	0.66	0.39
PRIVY	0.53	0.31
BANK	0.91	0.73
PRIVATE	0.71	0.58
NON-MBY	0.30	0.11
RGDP85	13053	2376
N =	29	29

Key:

Very rich: RGDP85 > 4998
 Rich: RGDP85 > 1161 and
 Poor: RGDP85 > 391 and
 Very poor: RGDP85 < 391

M1Y = M1 to GDP
 LLY = Liquid liabilities to
 QLLY = LLY-M1Y
 CBY = Central bank dom
 BY = Deposit money ba
 PRIVY = Gross claims on p
 BANK = Deposit money ba
 bank + central ba
 PRIVATE = Claims on the non
 credit
 NON-MBY = Claims on the pri
 divided by GDP
 RGDP85 = Real per capita G

the bottom quarter: the overa
 is a negative correlation with

Asset distribution. It is also
 development depends on wh
 private or public institutions.
 association with a measure of
 private sector. The richest 2
 their loans going to private b
 countries have only 48 per ce

Table 6.2. *Financial development and real per capita GDP in 1985*

Indicators	Very rich	Rich	Poor	Very poor	Correlation with RGDP85	(P-value)
M1Y	0.18	0.20	0.18	0.15	0.05	(0.60)
LLY	0.67	0.51	0.39	0.26	0.51	(0.0001)
LLY-M1Y	0.50	0.31	0.21	0.11	0.60	(0.0001)
CBY	0.07	0.16	0.27	0.17	-0.27	(0.008)
BY	0.66	0.39	0.28	0.19	0.61	(0.0001)
PRIVY	0.53	0.31	0.20	0.13	0.70	(0.0001)
BANK	0.91	0.73	0.57	0.52	0.58	(0.0001)
PRIVATE	0.71	0.58	0.47	0.37	0.51	(0.0001)
NON-MBY	0.30	0.11	0.07	0.07	0.63	(0.0001)
RGDP85	13053	2376	754	241		
N =	29	29	29	29		

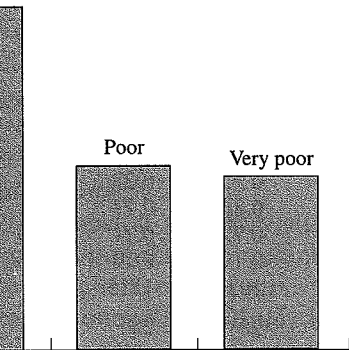
Key:

Very rich: RGDP85 > 4998
 Rich: RGDP85 > 1161 and < 4998
 Poor: RGDP85 > 391 and < 1161
 Very poor: RGDP85 < 391

M1Y = M1 to GDP
 LLY = Liquid liabilities to GDP
 QLLY = LLY-M1Y
 CBY = Central bank domestic credit to GDP
 BY = Deposit money bank domestic credit to GDP
 PRIVY = Gross claims on private sector to GDP
 BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit
 PRIVATE = Claims on the non-financial private sector to total domestic credit
 NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP
 RGDP85 = Real per capita GDP in 1985, in 1987 dollars

the bottom quarter: the overall correlation is about .5. By contrast, there is a negative correlation with the extent of central bank lending.

Asset distribution. It is also possible to investigate how the level of development depends on whether the recipients of loans are principally private or public institutions. In Table 6.1, there is also a marked positive association with a measure of the extent to which loans are directed to the private sector. The richest 25 per cent of countries have 72 per cent of their loans going to private borrowers, whereas the poorest 25 per cent of countries have only 48 per cent of such loans.



capita income
 real per capita income, 1970

ies. The size of the financial system is financial indicators that are much more of development. For example, as shown countries – the top 25 per cent on the about 30 per cent of a year's income in ary liabilities, while citizens of the 5 per cent – held only 5 per cent of a shows the cross-sectional relationship liquid liabilities (including monetary ve see a positive correlation, but in the simply little non-monetary demand for relation.

ical work, we focus on the financial e monetary and non-monetary liquid measure long studied by development comparisons between our study and other financial indicators give broadly

ng. There are both public and private bear distinct relations to the level of constitutes about 43 per cent of GDP untries and only 12 per cent of GDP in

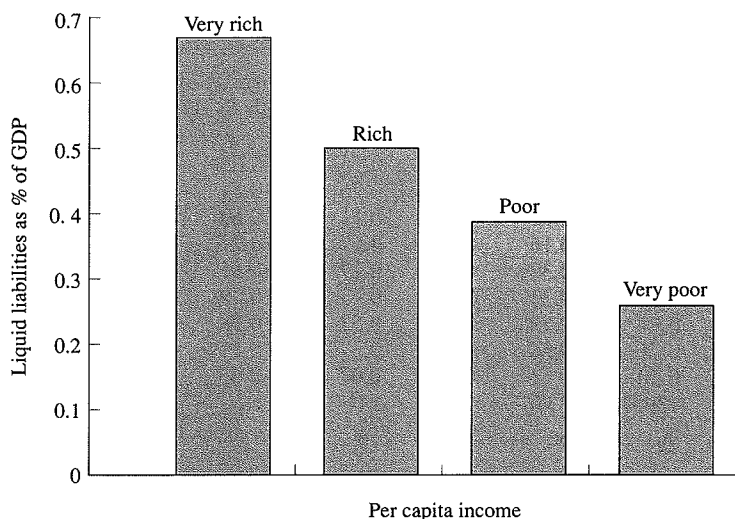


Figure 6.6 Financial size (LLY) and real per capita income, 1985

3.1.1 Robustness of findings

To gauge the stability of these cross-sectional relationships, we computed the same measures of financial development and economic development for 1985: the results for this later sample are reported in Table 6.2 and Figure 6.6. The bottom line is that these findings are largely robust to the exact year when one looks across the range of countries.

3.1.2 Summary of findings

It is useful to summarize these findings briefly before going on to interpret them. We think the main lessons are as follows. First, richer countries have more savings in liquid assets – per dollar of GDP – than do poorer countries. Second, richer countries do more lending – per dollar of GDP – via deposit banks as opposed to the central bank than do poorer countries. Third, richer countries allocate more of their lending – per dollar of GDP – to private companies as opposed to the government than do poorer countries.

Overall, this picture is consistent with the view that the health of the financial sector exerts an important positive influence on the level of development. But it is also consistent with the view that the health of the economy – measured by the level of development – exerts an important positive influence on the extent of financial intermediation.

3.2 Interpretations new and old

The traditional view is that the result of the influence of financial intermediation. The new view suggests a greater causal role for development. How should we choose between the two?

In situations such as this, where the causal direction is unclear, economists typically make an effort to sort out what is going on. In Figure 6.1 and 6.2, it is notable that all countries have a fraction of a year's income. To see this, we could view a richer country as having 10 per cent of its GDP in intermedation assets equal to the GDP of a poorer country. This is as having 10 per cent of its GDP in intermedation assets equal to the GDP of a poorer country. The role of investment in physical capital, it is possible to place a bet on the stock of assets might mean for the future. It would be that a country with a high level of development would be five times richer, but it would have GDPs that average fifty times that of poorer countries. Thus, in the traditional view, the direction of causality must run from development to financial intermediation.

From the new view of the relationship between financial intermediation and economic development, however, the direction of causality is reversed. From the new growth theory perspective, the factors – including the enhanced role of investment, technology adoption, and capital accumulation that lie at the heart of development – differences in the level of development and financial intermediation, allocation of resources to the private sector will enhance productivity. Financial intermediation can lead to much higher growth than the conventional view.

For this reason, as is explained in the next section, the causal issue econometrically is important. This is because our working econometric models are such that we can use them to produce

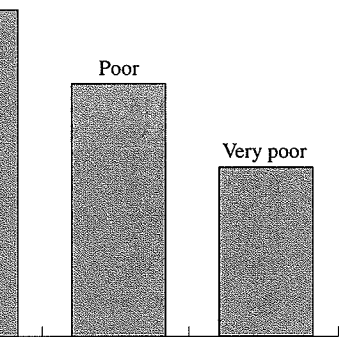
3.2 Interpretations new and old

The traditional view is that these cross-sectional correlations are largely the result of the influence of economic development on the level of financial intermediation. The new view questions this interpretation and suggests a greater causal role for the extent of financial market development. How should we choose between these two points of view?

In situations such as this, where the direction of causality is difficult to determine, economists typically try to bring to bear other information in an effort to sort out what is going on. In the traditional view, that other information was of two sorts. First, in looking at the numbers in Tables 6.1 and 6.2, it is notable that all of the measures of financial scale are some fraction of a year's income. To take extreme values that make the point, we could view a richer country as maintaining a stock of financial intermediation assets equal to 50 per cent of its GDP and a poor country as having 10 per cent of its GDP in that form. Second, working with the aggregate production function as in section 2 above – which highlights the role of investment in physical capital – and assuming that financial intermediation is important principally via its effect on the stock of capital, it is possible to place bounds on how much this difference in the stock of assets might mean for the level of development.⁸ An upper bound would be that a country with five times the rate of capital accumulation would be five times richer, but in Table 6.1 the top 25 per cent of countries have GDPs that average fifty times the GDP of the bottom 25 per cent of countries. Thus, in the traditional view, it is simply the case that direction of causality must run from development to intermediation.

From the new view of the links between financial intermediation and economic development, however, this argument misses the mark badly. From the new growth theory, it is differences in the productivity of factors – including the enhancements stemming from human capital investment, technology adoption, etc. – not differences in rates of physical capital accumulation that lie at the heart of understanding cross-national differences in the level of development. From the new theory of financial intermediation, allocation of more resources to the financial intermediary sector will enhance productivity. Combining these views, financial intermediation can lead to much stronger effects than is possible within the conventional view.

For this reason, as is explained more fully below, we try to deal with the causality issue econometrically rather than through model restrictions. This is because our working economic models have not reached the point that we can use them to produce more detailed restrictions.



capita income

real per capita income, 1985

cross-sectional relationships, we computed the relationship between economic development and financial intermediation in our sample are reported in Table 6.2 and these findings are largely robust to the full range of countries.

Findings briefly before going on to interpret the results are as follows. First, richer countries do more lending – per dollar of GDP – than do poorer countries. Second, the central bank does more lending – per dollar of GDP – than do poorer countries. Third, the private sector does more of their lending – per dollar of GDP – than do poorer countries. Fourth, the private sector does more of their lending – per dollar of GDP – than do poorer countries.

Consistent with the view that the health of the financial system has a positive influence on the level of economic development, the health of the financial system – exerts an important influence on financial intermediation.

Table 6.3. *Financial development and contemporaneous real per capita GDP growth, 1960-89*

Indicators	Very fast	Fast	Slow	Very slow	Correlation with growth	(P-value)
MIY	0.23	0.19	0.15	0.14	0.40	(0.001)
LLY	0.60	0.38	0.29	0.22	0.62	(0.001)
LLY-MIY	0.37	0.20	0.15	0.07	0.64	(0.001)
CBY	0.11	0.10	0.10	0.12	-0.12	(0.27)
BY	0.46	0.33	0.24	0.17	0.55	(0.001)
PRIVY	0.35	0.27	0.20	0.13	0.44	(0.001)
BANK	0.81	0.73	0.71	0.60	0.46	(0.001)
PRIVATE	0.70	0.56	0.61	0.51	0.39	(0.003)
NON-MBY	0.10	0.18	0.06	0.05	0.14	(0.001)
GROWTH	0.045	0.026	0.014	-0.005		
N =	29	28	29	28		

Key:

- Very fast: GROWTH > 0.03
 Fast: GROWTH > 0.02 and < 0.03
 Slow: GROWTH > 0.005 and < 0.02
 Very slow: GROWTH < 0.005

- MIY = M1 to GDP
 LLY = Liquid liabilities to GDP
 QLY = LLY-MIY
 CBY = Central bank domestic credit to GDP
 BY = Deposit money bank domestic credit to GDP
 PRIVY = Gross claims on private sector to GDP
 BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit
 PRIVATE = Claims on the non-financial private sector to total domestic credit
 NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP
 GROWTH = Average annual real per capita growth 1960-89

4 Financial intermediation and economic growth

The extent of financial intermediation may exert a sustained effect on the rate of economic growth in theoretical models that feature linkages between productivity growth and intermediation, such as those that we discussed earlier. In this section, we provide some cross-sectional evidence on the relationship between financial development and economic growth.

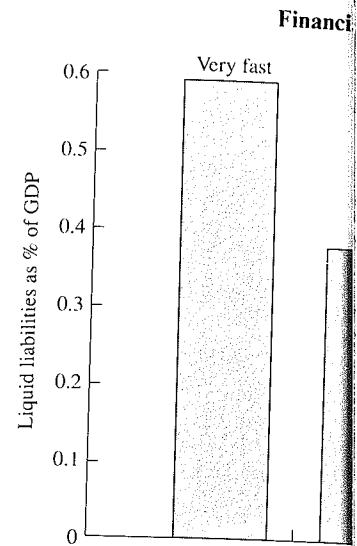


Figure 6.7. Average financial size

4.1 Growth and financial development

There is considerable dispersion in growth over 1960-89 for the fastest-growing countries, the per cent growth rate of per capita GDP averaged -0.5 per cent. While the power of compound interest is important over sustained periods, a country in a low position in 1960 but had these growth rates their per capita GDPs would be higher. Interestingly, according to Table 6.4 and Figure 6.7, countries that grow faster also have higher liquid assets (for example, have a higher share of lending done by the private sector than by the central bank, and have a higher share of lending done by the private sector than to the public sector).

Importantly, there is also evidence that countries that had fast growth over 1970-89 had a greater share of lending done by the private sector and had a higher share of lending done by the private sector in 1960-9.

and contemporaneous real per capita

	Very slow	Correlation with growth	(P-value)
	0.14	0.40	(0.001)
	0.22	0.62	(0.001)
	0.07	0.64	(0.001)
	0.12	-0.12	(0.27)
	0.17	0.55	(0.001)
	0.13	0.44	(0.001)
	0.60	0.46	(0.001)
	0.51	0.39	(0.003)
	0.05	0.14	(0.001)
4	-0.005		
28			

< 0.03
< 0.02

OP

credit to GDP
domestic credit to GDP
e sector to GDP
domestic credit divided by deposit money
domestic credit
financial private sector to total domestic
sector by non-deposit money banks
r capita growth 1960-89

economic growth

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intermediation, such as those that we
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financial development and economic

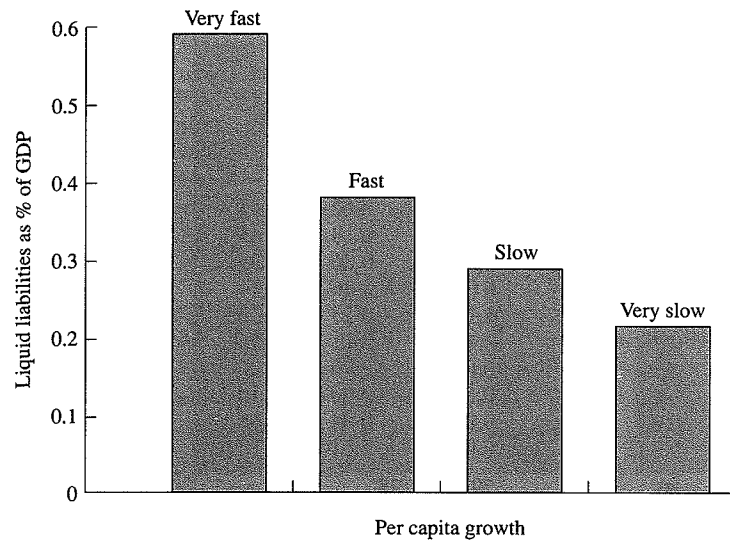


Figure 6.7 Average financial size and growth, 1960-89

4.1 Growth and financial development: some stylized facts

There is considerable dispersion in the average annual rates of economic growth over 1960-89 for the 114 countries displayed in Table 6.3. The fastest-growing countries, the top quarter of our sample, averaged a 4.5 per cent growth rate of per capita GDP and the bottom 25 per cent averaged -0.5 per cent. While these differences may look small to some, the power of compound interest implies that this difference is very important over sustained periods: if two countries started in the same position in 1960 but had these different growth rates, then the ratio of their per capita GDPs would be 4.4 in 1990.

Interestingly, according to Table 6.3 and Figure 6.7, the stylized facts that we discussed in section 3 carry over directly to growth rates: countries that grow faster also have larger financial systems (measured by liquid assets for example), have a greater share of lending done by banks than by the central bank, and have a higher share of lending to the private sector than to the public sector.

Importantly, there is also predictive content to these relations, as documented in Table 6.4 and Figure 6.8. That is, those countries that displayed fast growth over 1970-89 had larger financial systems in 1960-9, had a greater share of lending done by banks than by the central bank in 1960-9, and had a higher share of lending to the private sector than to the public sector in 1960-9.

Table 6.4. *Initial financial development and subsequent per capita GDP growth, 1970–89*

Indicators	Very fast	Fast	Slow	Very slow	Correlation with growth	(P-value)
M1Y	0.22	0.22	0.14	0.12	0.43	(0.0001)
LLY	0.42	0.35	0.23	0.18	0.45	(0.0001)
LLY-M1Y	0.20	0.15	0.09	0.06	0.41	(0.0001)
CBY	0.08	0.10	0.07	0.06	0.14	(0.25)
BY	0.31	0.27	0.19	0.13	0.33	(0.004)
PRIVY	0.26	0.23	0.15	0.11	0.34	(0.001)
BANK	0.76	0.70	0.67	0.76	0.06	(0.64)
PRIVATE	0.67	0.57	0.57	0.60	0.18	(0.17)
NON-MBY	0.05	0.14	0.07	0.04	0.08	(0.68)
GROWTH	0.042	0.022	0.008	-0.014		
N =	30	29	29	28		

Key:

Very fast: GROWTH > 0.03

Fast: GROWTH > 0.02 and < 0.03

Slow: GROWTH > -0.002 and < 0.02

Very slow: GROWTH < -0.002

All financial variables are average annual, 1960–9

M1Y = M1 to GDP

LLY = Liquid liabilities to GDP

QLLY = LLY-M1Y

CBY = Central bank domestic credit to GDP

BY = Deposit money bank domestic credit to GDP

PRIVY = Gross claims on private sector to GDP

BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit

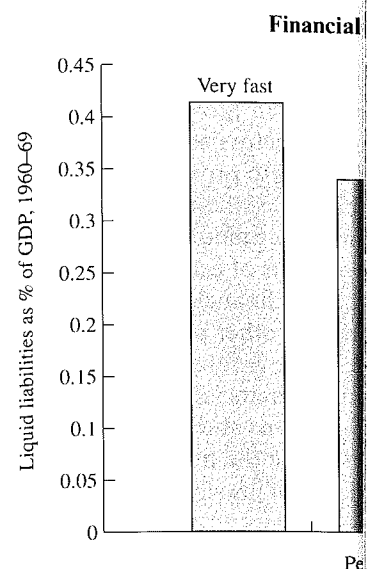
PRIVATE = Claims on the non-financial private sector to total domestic credit

NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP

GROWTH = Average annual real per capita growth 1970–89

4.2 Growth and financial intermediation: some regression results

There is a large and rapidly growing literature that explores the cross-country determinants of economic growth within a multivariate regression framework. We now summarize how financial intermediation fits into this setting. First, we examine the empirical importance of our measures of financial intermediation for the rate of per capita GDP

Figure 6.8. *Initial financial size and growth*

growth, working within an empirical framework conventional in the literature (see King and Levine, 1993). Second, motivated by our theoretical work, we examine the 'channels of influence' by which financial development affects growth. In particular, we examine the effect of (i) physical capital accumulation and (ii) financial growth. This proxy is based on the Maddison growth accounting framework, which defines productivity growth as

$$a_i = \Delta \log(Y_i) - a \Delta \log(K_i)$$

where $\Delta \log(Y_i)$ is annual average per capita growth. We assume a is constant across time.

Before starting to discuss the various tables and figures in this framework that we use, first we discuss the determinants of growth generated by regressions that are designed to examine the effect of financial accumulation and (ii) the effect of financial growth on subsequent economic growth.⁹ The determinants are generally (i) the country's per capita real GDP

ment and subsequent per capita GDP

Very slow	Correlation with growth	(P-value)
0.12	0.43	(0.0001)
0.18	0.45	(0.0001)
0.06	0.41	(0.0001)
0.06	0.14	(0.25)
0.13	0.33	(0.004)
0.11	0.34	(0.001)
0.76	0.06	(0.64)
0.60	0.18	(0.17)
0.04	0.08	(0.68)
-0.014		
28		

< 0.03
and < 0.02
annual, 1960-9

DP
credit to GDP
domestic credit to GDP
sector to GDP
domestic credit divided by deposit money
domestic credit
financial private sector to total domestic
sector by non-deposit money banks
per capita growth 1970-89

mediation: some regression results

ing literature that explores the cross-
c growth within a multivariate regres-
sion. We summarize how financial intermediation fits
the empirical importance of our
findings for the rate of per capita GDP

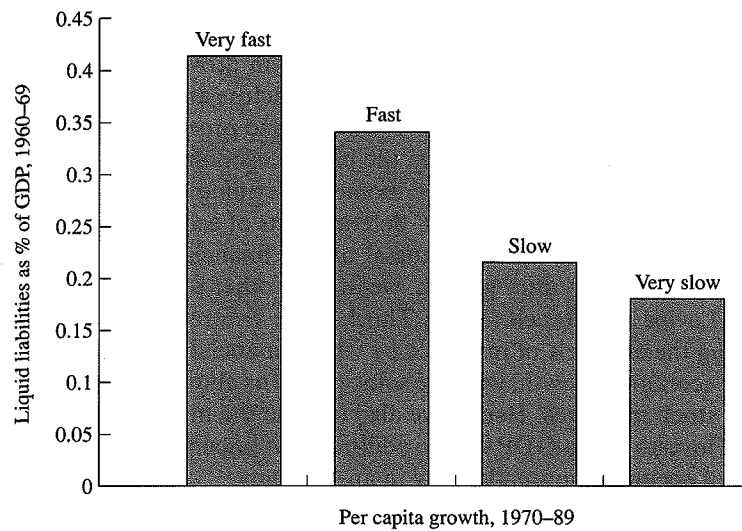


Figure 6.8 Initial financial size and subsequent per capita growth

growth, working within an empirical regression framework that is conventional in the literature (see Barro, 1991, and Levine and Renelt, 1992). Second, motivated by our theoretical discussion, we seek to explore the 'channels of influence' by which financial intermediation is linked to growth. In particular, we examine the effects of our financial indicators on (i) physical capital accumulation and (ii) a proxy for productivity growth. This proxy is based on an incomplete version of the Solow-Maddison growth accounting formula. That is, for country i , we measure productivity growth as

$$a_i = \Delta \log(Y_i) - a \Delta \log(K_i),$$

where $\Delta \log(Y_i)$ is annual average output growth and $\Delta \log(K_i)$ is annual average capital growth. We assume that the 'capital share' parameter a is assumed constant across time and countries (we use $a = 0.3$).

Before starting to discuss the details of the results, which are reported in various tables and figures below, we motivate the general empirical framework that we use. First, the empirical literature on cross-country determinants of growth generally includes a set of 'core' variables in regressions that are designed to capture (i) the influences of human capital accumulation and (ii) the effects of initial economic conditions on subsequent economic growth.⁹ The empirical proxies used for these determinants are generally (i) the country's school enrolment rate; and (ii) the country's per capita real GDP in the starting year (1960). Second, work by

Levine and Renelt (1992) indicates that many proposed determinants of cross-country growth are individually significant in growth regressions, but that this finding disappears when additional factors are included; this finding is particularly acute for measures that seek to proxy for monetary instability, government intervention in the private economy, and government intervention in trade. In the econometric terminology of Leamer (1978), such variables are not 'robust' determinants of economic growth. Accordingly, to evaluate the 'robustness' of our financial indicators as determinants of cross-country growth, we include other policy indicators studied by Levine and Renelt (1992). Third, while we are very interested in evaluating the channels of influence by which financial intermediation is linked to economic growth, we have some concerns about the quality of the capital stock measures. Hence, we also include the investment rate – the ratio of investment to GDP – as an additional, if imperfect, measure of the extent of accumulation under way in an economy.

4.3 Results with contemporaneous financial indicators

In discussing the empirical results, we will begin by detailing the relationship between one measure of the size of the financial intermediation industry – LLY – and economic growth as displayed in Table 6.5. Subsequently, we will turn to links with other financial indicators.

4.3.1 The standard regression

The first regression in Table 6.5 is fairly representative of the standard finding in the empirical growth literature. First, there is a positive and empirically important effect of school enrolments on growth rates. Second, there is some tendency for countries that are initially rich to grow more slowly than countries that are initially poor. Barro and Sala-i-Martin (1992) and Mankiw, Romer and Weil (1992) provide recent discussions of such 'convergence' results. In most studies, however, the pace of this convergence process is found to be very slow and, in our regression, the associated coefficient on initial income is statistically insignificant.

4.3.2 Intermediation effects on economic growth

Growth is found to be significantly positively related to our financial indicator, which measures the size of the financial intermediation sector. Figure 6.9 plots the average annual per capita growth rate, net of the value predicted by all explanatory variables except LLY, against LLY. Thus, the figure shows the partial correlation between the rate of economic growth and the size of the financial intermediation industry. This figure illustrates the strong positive relationship between financial

Table 6.5. Sources of growth: links to contemporaneous financial size

Dependent variables	N =	Independent variables		SEC	GOV	PI	TRD	LLY	R ²
		Constant	LYO						
GYP	88	0.02* (0.01)	-0.003 (0.002)	0.03** (0.01)				0.035** (0.006)	0.43
GYP	88	0.02* (0.01)	-0.003 (0.002)	0.03** (0.01)	-0.04 (0.03)	-0.0001 (0.0002)	0.01 (0.01)	0.032** (0.007)	0.45
GK	88	0.01* (0.008)	-0.0004 (0.001)	0.003 (0.003)				0.014** (0.005)	0.14
GK	88	0.01 (0.009)	-0.001 (0.001)	0.003 (0.008)	-0.01 (0.02)	-0.0001 (0.0001)	0.0002 (0.004)	0.014** (0.005)	0.15
	98	0.12**	0.08	-0.07				0.093**	0.30

s that many proposed determinants of growth are equally significant in growth regressions, when additional factors are included; this measures that seek to proxy for monetary growth in the private economy, and government expenditure, and the econometric terminology of Leamer and others. 'Just' determinants of economic growth. 'Justness' of our financial indicators as well as growth, we include other policy indicators (Table 6.2). Third, while we are very interested in the evidence by which financial intermediation may have some concerns about the quality of financial services, we also include the investment rate as an additional, if imperfect, measure of growth in an economy.

Financial indicators

We will begin by detailing the relationship between the size of the financial intermediation sector and growth as displayed in Table 6.5. We will also discuss its relationship with other financial indicators.

This is fairly representative of the standard literature. First, there is a positive and significant relationship between school enrolments on growth rates in both rich and poor countries that are initially rich to grow and initially poor. Barro and Sala-i-Martin (1992) and Barro and Sala-i-Martin (1995) provide recent discussions of this relationship. In other studies, however, the pace of this country's growth is slow and, in our regression, the association is statistically insignificant.

Economic growth

Our results are mostly positively related to our financial indicators, particularly those of the financial intermediation sector. We regress the annual per capita growth rate, net of the effect of other variables except LLY, against LLY. The correlation between the rate of growth in the financial intermediation industry and the rate of growth in the economy is positive and statistically significant.

Table 6.5. Sources of growth: links to contemporaneous financial size

Dependent variables	N =	Constant	Independent variables	LYO	SEC	GOV	PI	TRD	LLY	R ²
GYP	88	0.02* (0.01)	- 0.003 (0.002)	0.03** (0.01)	- 0.04 (0.03)	- 0.0001 (0.0002)	0.01 (0.01)	0.035** (0.006)	0.43	
GYP	88	0.02* (0.01)	- 0.003 (0.002)	0.03** (0.01)	- 0.04 (0.03)	- 0.0001 (0.0002)	0.01 (0.01)	0.032** (0.007)	0.45	
GK	88	0.01* (0.008)	- 0.0004 (0.001)	0.003 (0.008)	- 0.01 (0.02)	- 0.0001 (0.0001)	0.0002 (0.004)	0.014** (0.005)	0.14	
GK	88	0.01 (0.009)	- 0.001 (0.001)	0.003 (0.008)	- 0.01 (0.02)	- 0.0001 (0.0001)	0.0002 (0.004)	0.014** (0.005)	0.15	
INV	88	0.12** (0.04)	0.08 (0.02)	- 0.07 (0.04)	0.05 (0.11)	0.0001 (0.0001)	0.06** (0.02)	0.093** (0.022)	0.30	
INV	88	0.09** (0.04)	0.01 (0.01)	0.01 (0.04)	0.05 (0.11)	0.0001 (0.0001)	0.06** (0.02)	0.071** (0.023)	0.40	
EFF3	88	0.06** (0.01)	- 0.005** (0.002)	0.01 (0.01)	- 0.02 (0.03)	- 0.0001 (0.0001)	0.004 (0.006)	0.021** (0.006)	0.15	
EFF3	88	0.05** (0.01)	- 0.004** (0.002)	0.01 (0.01)	- 0.02 (0.03)	- 0.0001 (0.0001)	0.004 (0.006)	0.018** (0.007)	0.16	

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate

GK = growth in capital stock

INV = investment share of GDP

EFF3 = real GDP growth - .3*GK

LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960

GOV = government consumption as share of GDP

PI = average annual inflation rate

TRD = imports + exports as share of GDP

LLY = liquid liabilities as share of GDP

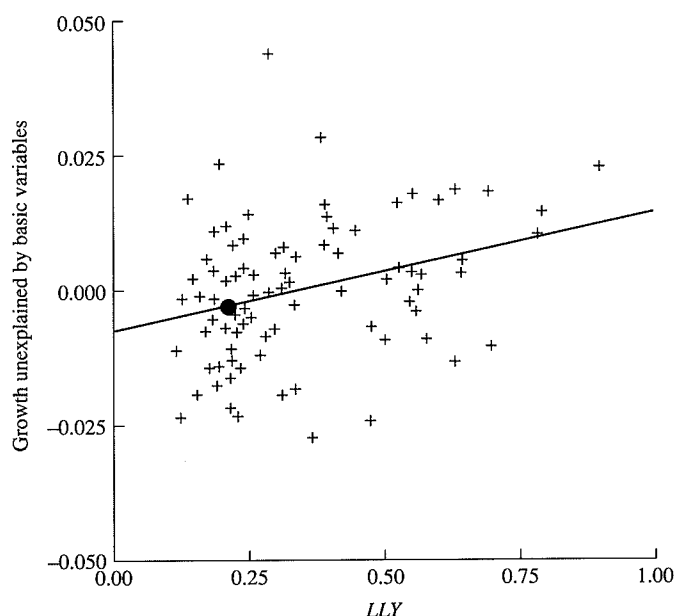


Figure 6.9 Partial association between LLY and contemporaneous per capita growth

size and growth reported statistically in Table 6.5. The estimated coefficient .04 implies that a country that increased its LLY level from the mean of the slowest-growing countries (.2) to the mean of the fastest-growing countries (.6) would raise its growth rate by 1.6 per cent per year over the thirty-year time period of our study. Since the difference between fast and slow growers is about 5 per cent in Table 6.3, this would eliminate about one-third of the growth gap. To us, this is a considerable effect.

4.3.3 Robustness

The second regression documents the fact that the significance of our financial indicator is robust to the inclusion of other public policy indicators, although there is a slight attenuation of the estimated coefficient, which would cut the effects of the experiment imagined above from 1.6 per cent to 1.2 per cent.

4.3.4 Sources of growth

The remainder of the regressions in Table 6.5 are designed to explore the channels by which variation in financial intermediation affects economic

growth. We summarize those uniformly significant, positive effects on growth through each channel in findings with respect to the other determinants of economic growth.

We interpret these findings as support for the view that financial growth through channels that accumulate capital is a natural view.

4.3.5 Results for other indicators

Tables 6.6 and 6.7 demonstrate the relationship with other financial indicators. Table 6.6 captures (i) whether a bank is lending (Table 6.6); and (ii) whether a bank is receiving the loan (Table 6.7). The results for the size measure that the financial indicators are significant to growth and appear linked to growth channels.

While we have interpreted the financial indicators as exogenous, it is commonplace in the empirical literature, subject to the caveat in the correlations summarized in the growth on financial intermediation, the two series. With that concern, the findings are sensitive to use of financial indicators.

4.4 Results with initial financial

When we use initial rather than contemporaneous regressions as Table 6.5, except over the 1960-9 period and relative to the first regression in Table 6.8 above, again has an LLY coefficient. The growth rate effect of moving from the initial fraction of credit

growth. We summarize those regressions as follows. First, there are uniformly significant, positive and robust effects of the financial indicator on growth through each channel. Second, there is much more uniformity in findings with respect to the financial indicator than with respect to other determinants of economic growth.

We interpret these findings as indicating that there is some empirical support for the view that financial intermediation affects economic growth through channels that are richer than just the physical capital accumulation process that is suggested as the main linkage in the traditional view.

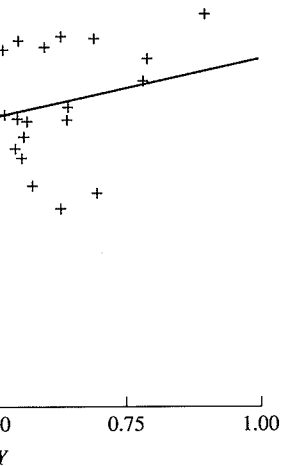
4.3.5 Results for other indicators

Tables 6.6 and 6.7 demonstrate that there is also a significant correlation with other financial indicators, specifically those that seek to capture (i) whether a bank or the central bank is undertaking the lending (Table 6.6); and (ii) whether a public or private institution is receiving the loan (Table 6.7). The findings are sufficiently similar to those for the size measure that they are worth only a brief summary: the financial indicators are significantly and robustly positively related to growth and appear linked through both physical and productivity channels.

While we have interpreted the preceding regressions as though the financial indicators were exogenous determinants of economic growth, as is commonplace in the empirical growth literature, these results are, of course, subject to the caveat introduced in section 3. That is, the partial correlations summarized in the tables might indicate an influence of growth on financial intermediation or a mix of causal influences between the two series. With that concern in mind, it is natural to ask whether the findings are sensitive to use of contemporaneous or initial values of our financial indicators.

4.4 Results with initial financial indicators

When we use initial rather than contemporaneous financial indicators, there are few important changes. For example, Table 6.8 reports the same regressions as Table 6.5, except that all included indicators are averaged over the 1960–9 period and related to growth over the 1970–89 period. The first regression in Table 6.8, whose counterpart we discussed in detail above, again has an LLY coefficient of .04 indicating a 1.6 per cent growth rate effect of moving from $LLY = .2$ to $LLY = .6$. The measure of the initial fraction of credit allocated by banks as opposed to by the



between LLY and contemporaneous per capita

ally in Table 6.5. The estimated coefficient increased its LLY level from the mean (.2) to the mean of the fastest-growing growth rate by 1.6 per cent per year over the study. Since the difference between fast and slow growth in Table 6.3, this would eliminate about 1.6 per cent of the growth rate effect. This is a considerable effect.

As the fact that the significance of our regressions is attenuated by the inclusion of other public policy indicators, the attenuation of the estimated coefficient, the experiment imagined above from 1.6 per cent to 0.4 per cent.

The regressions in Table 6.5 are designed to explore the effect of financial intermediation on economic growth.

Table 6.6. Sources of growth: links to contemporaneous importance of banks

Dependent variables	N =	Independent variables							R ²
		Constant	LYO	SEC	GOV	PI	TRD	BANK	
GYP	81	0.01 (0.01)	-0.004* (0.002)	0.04** (0.01)				0.032** (0.011)	0.34
GYP	81	0.01 (0.01)	-0.003 (0.002)	0.04** (0.01)	-0.04 (0.04)	-0.0001 (0.0001)	0.002 (0.01)	0.032** (0.012)	0.33
GK	81	0.01 (0.01)	-0.0007 (0.001)	0.005 (0.008)				0.018** (0.007)	0.11
GK	81	0.01 (0.009)	-0.001 (0.002)	0.005 (0.009)	0.01 (0.03)	0.0001 (0.0001)	-0.0005 (0.005)	0.017** (0.008)	0.12
INV	81	0.08** (0.04)	0.002 (0.01)	0.01 (0.04)				0.151** (0.034)	0.33
INV	81	0.07 (0.04)	0.002 (0.01)	0.03 (0.04)	0.03 (0.12)	0.0002 (0.0001)	0.06** (0.02)	0.109** (0.037)	0.41
EFF3	81	0.05** (0.01)	-0.005** (0.002)	0.01 (0.01)				0.026** (0.0099)	0.12
EFF3	81	0.05** (0.01)	-0.005** (0.002)	0.01 (0.01)	-0.01 (0.04)	-0.0001 (0.0001)	-0.001 (0.006)	0.026** (0.011)	0.12

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate

GK = growth in capital stock

INV = investment share of GDP

EFF3 = real GDP growth - .3*GK

LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960

GOV = government consumption as share of GDP

PI = average annual inflation rate

TRD = imports + exports as share of GDP

BANK = deposit money bank domestic credit divided by deposit money bank + central bank domestic credit

Table 6.7. Sources of growth: links to contemporaneous credit allocated to private sector

Dependent variables	N =	Independent variables							R ²
		Constant	LYO	SEC	GOV	PI	TRD	PRIVATE	
GYP	80	0.02 (0.01)	-0.004 (0.002)	0.04** (0.01)				0.024** (0.011)	0.29
GYP	80	0.02 (0.01)	-0.003 (0.002)	0.04** (0.01)	-0.05 (0.04)	-0.0001 (0.0001)	0.01 (0.01)	0.022** (0.011)	0.31
GK	80	0.01 (0.01)	-0.0003 (0.002)	0.006 (0.008)				0.011 (0.007)	0.07
GK	80	0.01 (0.01)	-0.0002 (0.002)	0.006 (0.008)	0.01 (0.01)	-0.0001 (0.0001)	0.002 (0.006)	0.009 (0.007)	0.08

INV	81	(0.04) 0.07 (0.01)	(0.01) 0.002 (0.04)	(0.04) 0.03 (0.12)	0.0002 (0.0001)	0.06** (0.02)	0.41
EFF3	81	(0.04) 0.05** (0.01)	(0.01) -0.005** (0.002)	(0.04) 0.01 (0.01)	0.0002 (0.0001)	0.109** (0.037)	0.12
EFF3	81	(0.04) 0.05** (0.01)	(0.01) -0.005** (0.002)	(0.04) 0.01 (0.01)	0.0002 (0.0001)	0.026** (0.0099)	0.12

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate
 GK = growth in capital stock
 INV = investment share of GDP
 EFF3 = real GDP growth - .3*GK
 LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960
 GOV = government consumption as share of GDP
 PI = average annual inflation rate
 TRD = imports + exports as share of GDP
 BANK = deposit money bank domestic credit divided by deposit money
 bank + central bank domestic credit

Table 6.7. Sources of growth: links to contemporaneous credit allocated to private sector

Dependent variables	N =	Independent variables		SEC	GOV	PI	TRD	PRIVATE	R ²
		Constant	LYO						
GYP	80	0.02 (0.01)	-0.004 (0.002)	0.04** (0.01)				0.024** (0.011)	0.29
GYP	80	0.02 (0.01)	-0.003 (0.002)	0.04** (0.01)	-0.05 (0.04)	-0.0001 (0.0001)	0.01 (0.01)	0.022** (0.011)	0.31
GK	80	0.01 (0.01)	-0.0003 (0.002)	0.006 (0.008)				0.01 (0.007)	0.07
GK	80	0.01 (0.01)	-0.0002 (0.002)	0.006 (0.009)	0.01 (0.03)	-0.0001 (0.0001)	0.002 (0.005)	0.009 (0.008)	0.08
INV	80	0.10** (0.04)	0.004 (0.01)	0.02 (0.04)				0.114** (0.035)	0.26
INV	80	0.08* (0.04)	0.004 (0.01)	0.03 (0.04)	0.04 (0.13)	0.0002 (0.0001)	0.07** (0.02)	0.078** (0.035)	0.38
EFF3	80	0.05** (0.01)	-0.005** (0.002)	0.02 (0.01)				0.018* (0.0097)	0.08
EFF3	80	0.05** (0.01)	-0.004* (0.002)	0.01 (0.01)	-0.03 (0.04)	-0.0001 (0.0001)	0.003 (0.006)	0.017** (0.011)	0.09

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate
 GK = growth in capital stock
 INV = investment share of GDP
 EFF3 = real GDP growth - .3*GK
 LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960
 GOV = government consumption as share of GDP
 PI = average annual inflation rate
 TRD = imports + exports as share of GDP
 PRIVATE = claims on the non-financial private sector to total domestic credit

central bank (BANKI) and the measure of the initial fraction of credit allocated to the private sector as opposed to the public sector (PRIVATEI) do, however, enter less significantly.

The results in Tables 6.8–6.10 may be viewed as a simple ‘proxy variable’ exploration of the sensitivity of our conclusions to a particular specification of ‘reverse causality’, in which it is growth over 1970–89 that is linked to the variation in the financial indicators over 1960–9. There is no evidence that this form of endogeneity is important. In some companion research (King and Levine, 1992a), we use alternative, more sophisticated econometric procedures to purge growth regressions of ‘reverse causality’ mechanisms and find even stronger evidence that – even for the BANKI and PRIVATEI measures – measures of financial intermediary services importantly predict economic growth.¹⁰

5 Implications for the reconstruction of Europe

The resolution of the debate between the ‘traditional’ and ‘new’ views of the relationship between financial markets and economic development has important implications for the monumental reforms being undertaken in Europe. In general, the ‘traditional’ view places a low priority on financial sector reform because improvements in financial markets are viewed as having only a weak effect on the savings rate, while changes in the savings rate are viewed as having only a small, temporary effect on economic growth. This traditional view would give financial reform a particularly low priority in the reconstruction of formerly socialist economies in Europe, because, historically, the savings and investment rates in these countries have been very high (often over 30 per cent of GDP). Thus, growth will probably come from increases in the efficiency with which resources are used not from increases in the rate of savings and investment. Since the traditional view places little weight on the role that financial markets may play in improving the allocation of resources, this view of the linkages between financial and economic development would minimize the importance of financial sector reform relative to other public policy initiatives.

In contrast, the ‘new’ view gives financial markets a particularly central role in stimulating economic growth in the formerly socialist countries of Europe. The new view emphasizes that financial market development can improve economic efficiency, which will probably be the engine of growth in Europe. As discussed conceptually and supported empirically above, countries with well-developed banks that allocate a relatively large share of credit to the private sector tend to enjoy more rapid economic growth over the next twenty years; and financial market development stimulates

Table 6.8. Sources of growth: links to previous financial size

Dependent variables	N =	Constant	Independent variables LYO	SEC	GOVI	PII	TRDI	LLYI	R ²
GYP	86	0.02 (0.02)	-0.002 (0.003)	0.02 (0.02)				0.035** (0.01)	0.27
GYP	86	0.02 (0.02)	-0.003 (0.003)	0.03* (0.02)	-0.04 (0.05)	0.0003 (0.0002)	0.01 (0.01)	0.036** (0.01)	0.30
GK	86	0.03** (0.01)	-0.001 (0.002)	0.002 (0.009)				0.003 (0.006)	0.01
GK	86	0.03** (0.01)	-0.001 (0.002)	0.005 (0.009)	-0.04	0.0001	0.006*	0.002 (0.006)	0.07

measure of the initial fraction of credit opposed to the public sector (PRI) significantly.

may be viewed as a simple 'proxy variable' for our conclusions to a particular specification which is growth over 1970-89 that is significant indicators over 1960-9. There is no doubt that efficiency is important. In some companion regressions we use alternative, more sophisticated growth regressions of 'reverse causality' for evidence that - even for the BANKI countries - measures of financial intermediary services are important with.¹⁰

Conclusion of Europe

Between the 'traditional' and 'new' views of financial markets and economic development, the 'traditional' view places a low priority on improvements in financial markets and on the savings rate, while changes in the savings rate bring only a small, temporary effect on growth. The 'new' view would give financial reform a high priority. In the construction of formerly socialist economies, the savings and investment rates in the savings rate (often over 30 per cent of GDP) are high. The 'new' view places little weight on the role that improvements in the efficiency with which resources are allocated from increases in the rate of savings and investment rates. Improving the allocation of resources, this view places little weight on the role that improvements in the efficiency with which resources are allocated from increases in the rate of savings and investment rates. Improving the allocation of resources, this view places little weight on the role that improvements in the efficiency with which resources are allocated from increases in the rate of savings and investment rates.

Financial markets a particularly central role in the formerly socialist countries of Europe. It is argued that financial market development can be a major engine of growth and that it will probably be the engine of growth in the former socialist countries. Empirically and supported empirically above, the evidence indicates that banks that allocate a relatively large share of resources to enjoy more rapid economic growth. Financial market development stimulates

Table 6.8. Sources of growth: links to previous financial size

Dependent variables	N =	Independent variables	SEC	GOVI	PII	TRDI	LLYI	R ²
GYP	86	Constant 0.02 (0.02)	-0.002 (0.003)				0.035** (0.01)	0.27
GYP	86	0.02 (0.02)	0.03* (0.02)	-0.04 (0.05)	0.0003 (0.0002)	0.01 (0.01)	0.036** (0.01)	0.30
GK	86	0.03** (0.01)	0.002 (0.009)				0.003 (0.006)	0.01
GK	86	0.03** (0.01)	0.005 (0.01)	-0.04 (0.03)	0.0001 (0.0001)	0.006* (0.003)	0.002 (0.006)	0.07
INV	86	0.18** (0.05)	0.05 (0.04)				0.065** (0.028)	0.18
INV	86	0.17** (0.04)	0.07 (0.04)	-0.19 (0.12)	-0.0005 (0.001)	0.07** (0.01)	0.048* (0.025)	0.38
EFF3	86	0.05** (0.01)	0.001 (0.01)				0.021** (0.008)	0.08
EFF3	86	0.05** (0.02)	0.004 (0.003)	-0.02 (0.04)	0.0001 (0.0001)	0.004 (0.005)	0.021** (0.009)	0.10

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate

GK = growth in capital stock

INV = investment share of GDP

EFF3 = real GDP growth - .3*GK

LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960

GOVI = government consumption as share of GDP, 1960

PII = inflation rate, 1960

TRDI = value of imports + exports as share of GDP, 1960

LLYI = liquid liabilities as share of GDP, 1960

Table 6.9. Sources of growth: links to previous importance of banks

Dependent variables	N =	Independent variables							R ²
		Constant	LYO	SEC	GOVI	PII	TRDI	BANKI	
GYP	68	0.01 (0.02)	-0.001 (0.003)	0.03 (0.02)				0.014 (0.012)	0.16
GYP	68	0.01 (0.02)	-0.001 (0.003)	0.03* (0.02)	-0.01 (0.06)	0.0002 (0.0003)		-0.008 (0.01)	0.18
GK	68	0.02* (0.01)	-0.001 (0.002)	0.001 (0.01)				0.007 (0.007)	0.02
GK	68	0.02* (0.01)	0.001 (0.002)	0.002 (0.01)	-0.02 (0.03)	0.0002 (0.0002)		-0.003 (0.005)	0.07
INV	68	0.17** (0.04)	-0.005 (0.01)	0.07 (0.04)				0.095** (0.031)	0.28
INV	68	0.17 (0.04)	-0.01 (0.01)	0.09* (0.04)	-0.13 (0.14)	0.0001 (0.0007)		0.06** (0.02)	0.37
EFF3	68	0.05** (0.02)	-0.003 (0.003)	0.005 (0.01)				0.010 (0.011)	0.03
EFF3	68	0.05** (0.02)	-0.003 (0.003)	0.002 (0.01)	0.02 (0.05)	-0.0001 (0.0002)		0.009 (0.011)	0.06

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate

GK = growth in capital stock

INV = investment share of GDP

EFF3 = real GDP growth - .3*GK

LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960

GOVI = government consumption as share of GDP, 1960

PII = average annual inflation rate, 1960

TRDI = imports + exports as share of GDP, 1960

BANKI = deposit money bank domestic credit divided by deposit money bank + central bank domestic credit, 1960

Table 6.10. Sources of growth: links to previous credit allocated to private sector

Dependent variables	N =	Independent variables							R ²
		Constant	LYO	SEC	GOVI	PII	TRDI	PRIVATEI	
GYP	64	0.01 (0.02)	-0.002 (0.003)	0.03 (0.02)				0.028 (0.014)	0.17
GYP	64	0.01 (0.02)	-0.002 (0.003)	0.02 (0.02)	0.01 (0.06)	0.0001 (0.0003)		-0.01 (0.01)	0.19
GK	64	0.02** (0.003)	-0.001 (0.003)	-0.001 (0.01)				-0.009 (0.009)	0.02

INV	68	0.17 (0.04)	-0.01 (0.01)	0.09* (0.04)	-0.13 (0.14)	0.0001 (0.0007)	0.06** (0.02)	0.099** (0.031)	0.37
EFF3	68	0.05** (0.02)	-0.003 (0.003)	0.005 (0.01)	0.010 (0.011)			0.010 (0.011)	0.03
EFF3	68	0.05** (0.02)	-0.003 (0.003)	0.002 (0.01)	0.02 (0.05)	-0.0001 (0.0002)	-0.01 (0.01)	0.009 (0.011)	0.06

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate
 GK = growth in capital stock
 INV = investment share of GDP
 EFF3 = real GDP growth - .3*GK
 LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960
 GOVI = government consumption as share of GDP, 1960
 PII = average annual inflation rate, 1960
 TRDI = imports + exports as share of GDP, 1960
 BANKI = deposit money bank domestic credit divided by deposit money bank + central bank domestic credit, 1960

Table 6.10. Sources of growth: links to previous credit allocated to private sector

Dependent variables	N =	Independent variables		SEC	GOVI	PII	TRDI	PRIVATEI	R ²
		Constant	LYO						
GYP	64	0.01 (0.02)	-0.002 (0.003)	0.03 (0.02)				0.028 (0.014)	0.17
GYP	64	0.01 (0.02)	-0.002 (0.003)	0.02 (0.02)	0.01 (0.06)	0.0001 (0.0003)	-0.01 (0.01)	0.027* (0.014)	0.19
GK	64	0.02** (0.01)	-0.001 (0.002)	-0.001 (0.01)				-0.009 (0.009)	0.02
GK	64	0.02** (0.01)	-0.001 (0.002)	-0.0004 (0.01)	-0.004 (0.03)	0.0001 (0.0002)	-0.004 (0.005)	-0.009 (0.009)	0.04
INV	64	0.17** (0.05)	-0.003 (0.01)	0.06* (0.04)				0.094** (0.039)	0.24
INV	64	0.16** (0.05)	-0.006 (0.01)	0.07 (0.04)	-0.06 (0.15)	-0.0005 (0.0007)	0.06 (0.02)	0.101** (0.038)	0.34
EFF3	64	0.05** (0.02)	-0.004 (0.003)	0.002 (0.01)				0.018 (0.013)	0.05
EFF3	64	0.05** (0.02)	-0.004 (0.003)	0.003 (0.02)	0.04 (0.05)	-0.0001 (0.0002)	-0.014* (0.01)	0.018 (0.013)	0.11

Standard errors in parentheses

* significant at .10 level

** significant at .05 level

GYP = real per capita GDP growth rate
 GK = growth in capital stock
 INV = investment share of GDP
 EFF3 = real GDP growth - .3*GK
 LYO = log of real GDP in 1960

SEC = secondary school enrolment rate in 1960
 GOVI = government consumption as share of GDP, 1960
 PII = average annual inflation rate, 1960
 TRDI = imports + exports as share of GDP, 1960
 PRIVATEI = claims on the non-financial private sector to total domestic credit, 1960

growth both by increasing the rate of capital accumulation and by increasing the efficiency with which the economy allocates resources. Since the formerly socialist economies of Europe are likely to generate growth by improving resource allocation, our conceptual framework and empirical analysis suggest that early financial market improvements should significantly enhance economic growth over the next decades. Thus, financial sector reform should be given a relatively high priority by the leaders of transitional socialist economies.

Furthermore, successful financial sector reform will promote the effectiveness of other policy reforms. Price and trade liberalization policies are designed to change relative prices, so that countries devote more resources to areas in which they have a comparative advantage. The huge relative price changes that are occurring in these countries will encourage large-scale restructuring that will require a massive reorientation of capital and labour. An improved financial system will importantly enhance the effectiveness of price and trade liberalization by expediting the efficient reallocation of capital to more productive sectors.

5.1 Qualification

Reforming the financial sector alone, however, will certainly not be sufficient to generate sustained growth. Property rights must be clearly defined and enforced, the tax system revised, and enterprises privatized. Indeed, a key aspect of financial sector reform is successfully reforming the enterprise sector. In an economy dominated by state-owned banks funding state-owned enterprises, where many of these enterprises are very unprofitable, substantial financial sector improvements will materialize and promote economic growth only when enterprises have been successfully restructured and/or privatized. Furthermore, the changing structure of the financial sector is likely to be as dynamic as the transformation of the enterprise sector. In most countries, there will probably be a declining group of financial institutions that primarily interact with state-owned enterprises and a growing group of financial institutions that primarily do business with emerging private firms. A major policy challenge will be encouraging the development of healthy, private-sector-oriented financial institutions, uncontaminated by the bad debts of deteriorating state-owned enterprises, while political pressures force some financial institutions temporarily to finance loss-making enterprises during the transition.¹¹

6 Summary and conclusion

In the traditional view, the role of economic activity was perceived in the sense that intermediation and investment rates and the sense that intermediation had only minor effects.

By contrast, the emerging role of financial intermediation exerts a major influence on growth. This involves a revision of thinking about the process of economic growth and on the process of economic development. New modes of thought is produced that enhance the efficiency of production. Countries are taken to grow faster if financial intermediation is improved.

In this paper, we have positioned financial intermediation and economic development. We summarized some new evidence on the role of financial intermediation in more detail in King and Levine (1993). The scale and efficiency of financial intermediation is significantly correlated with economic growth. Interpreted causally, a major positive effect on economic growth is financial intermediation system. Both very fast and very slow growth are associated with the scale of the financial intermediation system. For growing countries to the mean, financial intermediation is a major determinant of economic development.

We conclude that financial intermediation is a major determinant of economic development. The channels of influence by which financial intermediation interacts with other factors in promoting policies, and on economic growth, are particularly central to the development of financial intermediation.

NOTES

We thank Colin Mayer, Mark Zervos and Sara K. Zervos for expert research. This area is supported by the World Bank. 'Long-run Growth?'

1 See Chandravarkar (1992) for a survey of the development literature.

2 This section summarizes the findings of the script, King and Levine (1993).

6 Summary and conclusions

In the traditional view, the role of financial intermediaries in determining economic activity was perceived to be relatively minor, restricted by both the sense that intermediation had only minor influences on savings/investment rates and the sense that changes in physical capital accumulation had only minor effects on development.

By contrast, the emerging new view is that financial intermediaries can exert a major influence on growth and development. This new perspective involves a revision of thinking both on the nature of financial intermediaries and on the process of economic development. At the centre of each of these new modes of thought is productivity: financial intermediaries are taken to enhance the efficiency of productivity-enhancing investments and countries are taken to grow faster if they have better returns on such investments.

In this paper, we have posited the linkages between financial intermediation and economic development – in both the new and old views – and summarized some new empirical evidence. That evidence, presented in more detail in King and Levine (1992a), indicates that measures of the scale and efficiency of financial intermediation are robustly and significantly correlated with economic growth in the international cross-section. Interpreted causally, our regression estimates suggest that there is a major positive effect on economic growth of increasing the size of the financial intermediation system: roughly one-third of the gap between very fast and very slow growing countries is eliminated by increasing the scale of the financial intermediation sector (from the mean in very slow growing countries to the mean in very fast growing countries).

We conclude that financial development may well be an important determinant of economic development. We plan additional research on the channels of influence by which finance affects development, on the interaction of the effects of financial policies with those of other growth-promoting policies, and on isolating those financial policies that are particularly central to the development process.

NOTES

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- 1 See Chandravarkar (1992) for a discussion of the general neglect of finance in the development literature.
- 2 This section summarizes the formal model under development in our manuscript, King and Levine (1992b), and hence is most closely tied to that

theoretical perspective. Other noteworthy recent contributions are Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), Levine (1991), Roubini and Sala-i-Martin (1991), and Saint-Paul (1992).

- 3 A similar argument leads to a restriction on the influence of international differences in investment rates on economic development. In the long run of the Solow model, the investment rate (i/y) is proportional to the capital output ratio (k/y). If g is the rate of growth of population and technical progress and δ is the depreciation rate, then the relationship is $(i/y) = (g + \delta)(k/y)$.
- 4 In this discussion, we assume that variations in observed investment rates (i/y) are good proxies for variations in comprehensive investment rates (i/y).
- 5 One feature of the $\alpha = 0.8$ models would, however, work in the opposite direction: the transitional dynamics proceed at a much slower pace, as discussed by King and Rebelo (1989). However, much of the transition would still occur within a thirty-year period.
- 6 The national GDP measures were converted to common international units (US\$) as follows: each country's data were formed in a constant 1987 local currency series and then multiplied by the 1987 \$/local currency exchange rate.
- 7 The departures from exact proportionality may reflect the fact that poor countries engage in inflationary policies that induce currency substitution.
- 8 This is a wildly optimistic upper bound because it assumes that fivefold differences in intermediation translate into fivefold differences in capital.
- 9 In contrast to some of the empirical literature, we do not use the investment rate (i/y) as an independent variable. This is because we believe that this rate depends strongly on other determinants of growth and, hence, is not an appropriate regressor.
- 10 In King and Levine (1992a) we consider some instrumental variables estimators that are based on initial value instruments. The results are essentially those reported in the tables because the first-stage regressions (i) have good fits; and (ii) essentially explain each individual variable by its own initial value.
- 11 Although every effort should be made to isolate government subsidies to loss-making enterprises from market-based credit decisions, political economy pressures suggest that governments will attempt to 'hide' these losses in bank credit decisions. See Caprio and Levine (1992) for a general discussion of reforming the financial sector in transitional socialist economies and Levine and Scott (1992) for a detailed discussion of confronting the 'bad' debt problem in these countries.

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