

Chapter 3

Intermediation and Stock Markets

3.1 Introduction

The previous chapter presented the McKinnon-Shaw argument that in a repressed economy development is retarded and that governments in those environments would either have to raise institutional rates to their equilibrium levels or reduce inflation. However, endogenous constraints to credit allocation still affect efficiency. Section 3.2 begins by examining why this is so, and what the role of equity finance under these conditions may be. Section 3.3 goes on to contrast the traditional and modern views of the role of intermediation in the growth context, while Sections 3.4 to 3.6 focus attention on the role of stock markets in the allocation of resources, for developing countries, particularly in that context. Section 3.7 marshals the attack on that thesis by introducing the argument that stock market expansion actually makes developing country financial system's more fragile and thus capitalism in these countries may do better without it. Section 3.8 summarizes the material to arrive at the research problem the current study will address.

3.2 Why Liberalisation needs Stock Markets

Chapter 2 has surveyed the liberalisation literature flowing from the seminal work of McKinnon (1973) and Shaw (1973), that examined the workings of financially repressed economies and the benefits of liberalisation. It advanced the claim that liberalising the financial sector from interest rate ceilings and other restrictions facilitates growth as higher interest rates both increase savings and the efficiency of capital allocation. Cho (1986) has offered that this argument is incomplete. By emphasizing the elimination of interest-rate ceilings and fostering bank competition, he argues, endogenous constraints in the credit market such as imperfect information are overlooked. These could still present significant barriers to efficient credit allocation even when banks are freed from rate ceilings. Further he posits, that although the banking sector is the predominant organized capital

market in most developing countries, by not dealing with its structure (often cartelized and oligopolistic) the literature has neglected the potential role stock markets could have for efficient capital allocation and risk sharing in a liberalized environment.

Despite the benefits suggested by proponents of liberalisation, many countries are hesitant to liberalize their financial systems, or return to repression after short-lived liberalisation attempts. Korea for instance returned to a repressive policy in 1972 after its experience with liberalisation in 1965 described in Chapter 1, as did Argentina in 1982. Until the mid-80s even industrialized countries like Japan hesitated to fully liberalize their markets. In Chapter 2 it was suggested that many developing countries resort to repression as they find it practically impossible to satisfy inter-temporal budget constraints with conventional tax revenue and must thus rely on revenue from the inflation tax. Repression also enables them to reduce their interest costs. This section examines the poor development of equity markets as well as the preponderance of bank loans as aspects that make liberalisation attempts difficult. To do this requires an analysis beyond that presented in Chapter 2 that dealt solely with average interest rate levels and whether a liberalized financial system is more desirable than a repressed one. A deeper understanding of the structural problems and imperfections of developing country capital markets and how such constraints limit financial policies is needed.

This section, by drawing attention to the structure of capital markets in developing countries, examines potential barriers to full-scale financial liberalisation policies. The literature, examined in the previous chapter, has argued for liberalisation of the banking sector from interest-rate ceilings and other restrictions based on the assumption that the banking sector is the only organized capital market. Cho (1986) contended that full-scale liberalisation of the banking sector would not achieve efficient capital allocation in the absence of well-functioning stock markets, making substantial development of such markets a necessary condition for complete financial liberalisation. "Until a country has an

active equity market, it may have to settle for a second-best approach to financial liberalisation in which some government intervention in the credit market is maintained, contrary to presumptions in the current literature" (Cho, 1986: 192). Following that argument Subsection 3.2.1 analyzes the efficiency of capital allocation in a free, competitive credit market under imperfect information, while Subsection 3.2.2 compares that to the case where capital is allocated through an equity market. It will be demonstrated that for a given degree of imperfect information, capital would flow more efficiently through equity markets.

3.2.1 Capital Allocation under Uncertainty

When different interest rates in credit markets are set according to borrowers' characteristics, two possible constraints, one exogenous and the other endogenous, are introduced. The exogenous constraint may be legal or institutional such as interest-rate ceilings that impinge on the setting of different rates. The endogenous constraint arises out of the cost (particularly the information cost) of distinguishing between the risk characteristics of different borrowers. It may be prohibitively costly, and, in the case of new borrowers might even be impossible, to distinguish sufficiently among their risk characteristics. Thus liberalising these banks by eliminating interest rate ceilings and securing free competition will by no means assure the improvement of capital allocation efficiency if these information constraints are strong.

The financial liberalisation literature of Chapter 2 has emphasized eliminating exogenous constraints to achieve higher allocative efficiency but largely neglected the effect of endogenous constraints. These remaining constraints can still be significant barriers to efficient allocation³⁵, especially if a country's capital is allocated only (or primarily) through the banking system.

³⁵ Capital is allocated efficiently if an economy can expect more output with a given amount of investment, independent of the uncertainty of investment return. Society, because it could well diversify among various projects, is assumed to be risk neutral. See Arrow & Lind (1970).

The endogenous constraint has been modeled as a possible explanation of why rationing still occurs in competitive credit markets (*c.f.*, Jaffe & Russell, 1976; Stiglitz & Weiss, 1981; 1983). These studies investigated credit rationing as an equilibrium or efficient outcome of the rational behaviour of borrowers and lenders. They found that even though an excess demand for loans at particular interest rate levels did exist, it was more profitable for the lender to respond to it by rationing credit at a lower rate than increasing the rate overall. The objective of most of these studies was to explain the presence of rationing in competitive capital markets rather than to examine the efficiency of its allocation. Exceptions to this being the papers by Stiglitz & Weiss (1981) and Ordober & Weiss (1981). These suggested the possibility that, given several groups of observationally distinguishable borrowers, imperfect information would result in some groups being totally excluded from the credit market although the expected returns from their investments may be higher than from those who do get credit.

According to Stiglitz & Weiss (1981) a bank's return from lending to a specific group of borrowers may not be a monotonically increasing function of the interest rate it charges the borrowers. This may be for two reasons. First, borrowers deterred from borrowing by the high cost of capital may be precisely those to whom the bank could most profitably lend because they are safe borrowers (an adverse selection effect). Second, given the choice, borrowers would tend to favour projects with higher probability of default when interest rates are increased (an incentive effect). The intuition behind this second motive being that a riskier project has higher returns in good states and lower returns in poor ones. Should the project turn out to be in a good state the borrower could get the entire excess of return over the costs of loans, although the bank would still only be repaid the loan with interest regardless of the extent to which the actual return has exceeded the interest rate. Conversely, should the project experience difficulties, the borrower would only lose the fixed amount of his collateral (if any) while the bank would suffer the whole loss, less the collateral. Lower returns imply less assets available to the bank. Thus, the expected profit of a borrower is an increasing function of the riskiness of his project, while the bank's expected profit

decreases with project risk, assuming the expected total return on investment and the interest rate are held constant. Higher interest rates thus discourage the safer borrowers that banks prefer. This incentive effect reinforces the adverse selection effect (if borrowers choose among several projects), discouraging banks from raising their interest rates in response to excess credit demand. Thus, it may happen that the bank's expected return from lending to a specific group of borrowers (say group i) does not monotonically increase with the interest rate levied on that group. Rather, an optimal value of interest rate r^* at which the expected return reaches a local maximum $E\pi^*$ exists. Based on this argument, Stiglitz & Weiss (1981) have shown how there could be several groups of observationally distinguishable borrowers, with some groups being totally excluded from the credit market even though the expected productivity of their investments may be higher than from those groups who do get credit.

Taking this argument a step further shows why a banking system alone cannot allocate credit efficiently even if it were free from interest-rate ceilings. Suppose there were n groups of potential borrowers in an economy, with banks being able to distinguish among them by size, industry, past credit history and so on. Banks could roughly estimate the expected productivity R of firms belonging to each group. Potential borrowers belonging to the same group may be treated as observationally equivalent (*i.e.*, $R_i = R_i$), but distinct if they come from different groups (*i.e.*, $R_i < R_j$ for $i < j$). However, although borrowers may be in the same groups they are still heterogeneous as the degree of risk varies among them. Even among otherwise identical borrowers (newly established personal computer producers of similar size, for example) there would still be different success probabilities, depending on factors such as managerial skill or marketing ability, which are not easily observed. Banks have imperfect information, in the sense that while they may distinguish among different groups of borrowers they cannot distinguish among borrowers within the same group. To this Stiglitz & Weiss (1981) hold that within each group the expected return to the bank does not increase monotonically and the bank is left with an inferior optimal interest rate for each of them.

Now, consider an economy that has after a long period of repression liberalized its financial system. Under the repressed conditions the banks tended to concentrate their loans on a small number of large firms (say group i) that have had long established relationships with them, and usually, little information about other firms. Among these rationed-out firms there could have been a group (say group j) that are innovative and highly productive. Because the banks have imperfect information they cannot easily identify the individual risk characteristics of these firms, although they may be able to compute some probability distribution of each group's riskiness. Due to either the characteristics of the projects the firms undertake or the poor screening ability bank's have on the first group of borrowers (or both) the variance in the distribution of riskiness of group j would be larger than that of group i. The bank's subjective estimate of the variance for group j would be larger since they know they could end up with a pool of loan applicants with a higher variance of credit worthiness or risk of default.

Cho (1984) has shown that the maximum expected return of banks $E\pi^*$ from lending to specific borrower groups is a function of the risk variance of the borrower pool that constitutes that group. And that the bank's expected return from lending to one group could be higher than that from lending to another although the expected productivity of the latter is higher than that of the former.

$$E\pi_i^* > E\pi_j^* : R_i < R_j \quad (3.1)$$

The intuition behind this proposition is appealing: As banks have imperfect information they must charge a uniform rate r^* to borrowers who seem identical. At this rate borrowers discriminate among themselves and either borrow or drop out, depending on their risk profiles. From those who decided to go on and borrow, their expected profits will differ depending on their riskiness even though they might have the same productivity. As the total expected return from the project will be divided between the lender and the borrower, riskier borrowers would have higher expected profits, leaving a lower return for the bank. If all

borrowers in group i had the same degree of riskiness or if banks had full information on individual borrower riskiness in the group, banks would be able to find r_i^* such that $E\pi^*$ equals to R_i . As banks cannot tell them apart they must expect a lower average return relative to these borrower's productivities as their riskiness varies substantially among themselves. The difference between the banks return $E\pi^*$ and borrower productivity R increases as the bank has poorer information or screening abilities of the group. Thus, the banks' return from the more productive group could be lower than its return from the less productive one. Figure 3.1 shows this situation, where the expected return to a bank $E\pi$ from each borrower group is a function of the loan rate it charges r . Their rate of return from lending will be the same as the deposit rate assuming their net profits are zero. Thus, the vertical axis in Figure 3.1 expresses both the deposit rate as well as the bank's expected return, while the loan interest rate lies on the horizontal axis. The Figure shows that each group's rank in $E\pi(r^*) (= E\pi^*)$ is not the same as that in R , when it is assumed that $R_1 < R_2 < R_3 \dots < R_n$.

The effects of the imposition and elimination of an interest rate ceiling on the allocative efficiency of credit can now be considered. Assuming the government has imposed a loan rate ceiling at r , the bank's most preferred group of borrowers would be group 1, followed by group 2 and so on, since Equation 3.2 holds.

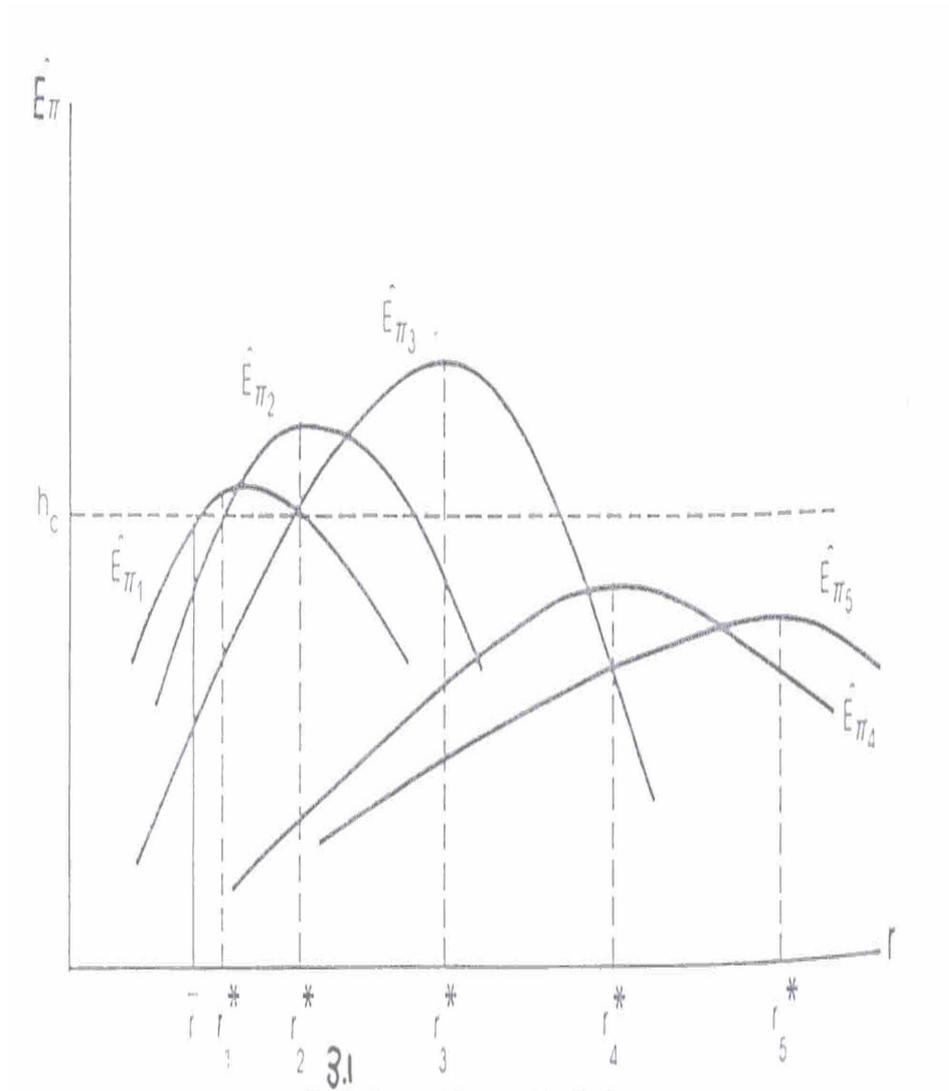
$$E\pi_n(r) < \dots < E\pi_2(r) < E\pi_1(r) \quad (3.2)$$

Meaning that when an interest rate ceiling is imposed on lending, the rank of the banks priority would be Group 1, Group 2, Group 3, ..., Group n , which clearly contradicts the efficiency of credit allocation since $R_1 < R_2 < R_3 < R_4 \dots < R_n$. Eliminating the interest rate ceiling would reverse group priority rankings as Equation 3.3 now holds. While this would partially improve efficiency it would still be sub-optimal capital allocation as groups are still being rationed out despite them being more productive than those who actually borrow under a free interest rate regime. Figure 3.1 shows this where, although the deposit rate at h_c is

competitively determined allowing Groups 1 to 3 to borrow, the most productive, Groups 4 and 5, are still rationed out.

$$E\pi_3^* > E\pi_2^* > E\pi_1^* > \dots > E\pi_n^* \tag{3.3}$$

Fig. 3.1: Expected Return of the Bank



Source: Cho (1986)

The implication of this result being that free interest rate regimes alone are insufficient for full allocative efficiency of capital under conditions of imperfect information. Banks would avoid financing new productive groups of borrowers, who are perceived as risky even though the banks are risk neutral and free from rate ceilings. The dynamic effect of this on economic development is even more severe as it reduces opportunities to innovate and makes adjustments of industrial structure difficult in rapidly developing economies where comparative advantage may shift from one industry to another.

3.2.2 Equity Capital and Allocative Efficiency

The difficulty that new productive customers have in obtaining finance from banks stems from the fixed-fee characteristic inherent in bank loan contracts, for which lenders and borrowers have conflicting interests. The borrowers are concerned with the upper tail of investment outcome distribution while the lenders are effectively restricted to the lower tail of that distribution. Under this situation, unless banks have information that enables them to sort out each borrower and charge interest rates appropriate to each borrower's riskiness, thereby ensuring themselves a profitable expected return, they may totally avoid lending to specific groups.

These risky groups will be able to source funding from equity markets. Suppose that risk-neutral lenders and potential shareholders have the same level of information on firms as described above (*i.e.*, they can sort out among groups of borrowers whose expected productivities are the same but cannot sort out within the groups each deficit unit's particular risk profile). Then the most attractive to the equity investor would be Groups 4 and 5 while the institutional lender would favour Groups 3 and 2. This is because, in the presence of asymmetric information, equity finance is free from moral hazard and adverse selection effects, while debt finance is subject to them. The expected return to an equity investor $E\pi^e$ would be exactly the same as the expected return from the project itself because $E\pi_i^e = R_i$. In order for lenders (debt financiers) to allocate credit to firms as efficiently as equity investors, they need to know one more parameter,

the riskiness of each individual borrower. Thus when information is uncertain, the existence of equity markets enhances the allocative efficiency of capital.

In the absence of well functioning equity markets, government, assuming it has the same level of information as commercial banks, would have to intervene in the credit market by forcing banks to lend to those deficit units who would otherwise have been rationed out at some interest rate. Or by imposing proportional taxes on the profits of borrowers and transferring that revenue to depositors. However, because government often has even less information than the private sector on such issues as industry characteristics and is susceptible to inefficient administration and possible corruption, in practice directed credit programmes often go to rather less productive borrowers. Even if the government had the same level of information and was free from political corruption, it would still be very difficult to achieve the first-best allocation from taxing borrowers and transferring revenue to depositors because of the costs associated with this intervention. Cho (1986: 198) clearly posits "The result is that, in practice, government intervention in the credit market often fails to achieve efficient capital allocation".

Liberalising the financial market and allowing it to allocate capital produces the most efficient results. But if that market is composed of only (or mainly) debt financing institutions such as commercial banks, because of the shortcomings of debt finance in the presence of asymmetric information, the market would still allocate this capital sub-optimally. Thus the development and expansion of stock markets is necessary to achieve full capital allocative efficiency if liberalisation is to succeed. Equity finance takes up those riskier yet potentially super productive projects that suffer from acute information asymmetries, while banks prefer to concentrate on the well-established, safer borrowers. As a second best approach, where equity markets are poorly developed, governments may find justification for credit market intervention, although, in practice, results from such intervention may hinder capital market efficiency even further.

3.3 Intermediation and Development

How important are financial markets to the construction of an economic system that fosters growth, development and international trade? Although, the traditional view has always been that financial markets are simply the 'handmaidens of industry', recent economic research suggests otherwise. In this new paradigm, financial markets play a central role in determining a country's patterns of trade and growth. This emerging new view linking financial markets to growth stems from two of the most dynamic sub-fields of economic research. Economists have adopted an essentially new perspective on what intermediaries do and how the economic growth process works. Combining these two as is occurring in ongoing research leads to the conclusion that financial markets can play an important role in the growth process. This has been supported by evidence that cross-country growth rate differences have reliable linkages to measures of the size and efficiency of the intermediation sector.

The traditional view of financial intermediaries was that they passively funnel household saving to business investment³⁶. The 'new view of financial intermediation' has a much more informed vision of the nature and economic function of these organizations. They are now viewed as playing an active, even a dominant role, in the organization of industry. By 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 will take place and which cannot and which new economic products firms can introduce and which they cannot.

With regard to growth, the traditional view is that for which Solow won the Nobel prize in economics and is reflected in two of his classic articles. In his theoretical work Solow (1956) identified differences in paths of physical capital accumulation as the central endogenous determinant of different economic growth experiences for different countries, although that same work identified the resulting

³⁶ Chandravarkar (1992) provides a discussion of the general neglect of finance in the development literature.

differences as temporary. In his empirical work (1957), Solow showed that capital accumulation did not explain much of observed US growth, a finding shown later by Maddison (1987) and others to be generally true for many other countries over different time periods. Several economists accepted these findings as setting the limits on the extent to which government policies (including financial market policies) could be potential determinants of the economic development process. This view of the relative unimportance of policy determinants of growth, especially for those researchers working closely with actual development experiences, was almost impossible to believe, so that development economics increasingly divorced itself from that part of economics interested in theoretically modeling economic growth. By the end of the 1970s each field had different participants and standards with relatively little communication between them.

Romer (1986) and Lucas (1988) initiated the new economics of growth and development of the 1980s. Its theoretical literature holds that a range of economic policies can have important effects on a country's growth rate over lengthy periods. Some of these "endogenous growth" models, particularly those that influence the private costs and benefits of human capital investments and productivity enhancement, suggest such policies may even permanently influence an economy's growth rate. Its empirical literature is closely linked to theoretical work, with many of the same researchers engaging in both aspects often using their own theoretical models as organizing principles and sources of hypotheses in empirical investigations. Similarly, empirical evidence is used to circumscribe theoretical models and evaluate their quantitative implications.

This section has three objectives. Subsection 3.3.1 provides a detailed exposition of how intermediation and productivity can be modeled, reviewing some of the empirical evidence that suggests the measures of the extent and quality of intermediation is reliably linked to historical growth differences. Subsection 3.3.2 and 3.3.3 describe the relationship between economic activity and, first, financial

development and, second financial intermediation. All the while being mindful of what the deficiencies of the traditional view have been and consequently how these can be improved upon. Subsection 3.3.4 reviews the role of public policy in promoting economic growth by improving the efficient allocation of resources.

This section will demonstrate that, although theoretical and empirical research on financial intermediation and economic development is in its early stages, good reasons exist to suspect that the links may be quite important. First, independent theoretical developments in the two areas have suggested important interactions, even though developing such ties was not the initial objective of either research area. Second, the ever-growing empirical evidence suggests that there has been an important historical relationship between intermediation and development, with countries with larger and more efficient intermediation sectors systematically outperforming other countries during the post World War II period.

3.3.1 Modelling Intermediation and Productivity

This subsection, based on ongoing research in the area (King & Levine, 1993a,b) first summarizes why intrinsic links between intermediation and the productivity of an economy are suspected. This will lead to a discussion of how variations in productivity have implications for long-run economic development as well as the long-term growth rate.

Sustainable economic development originates within a nexus involving entrepreneurship, intangible capital investment and financial intermediation, blending the ideas of both Knight (1951) and Schumpeter (1934). An entrepreneur contemplating an innovation³⁷ is placed at the centre of the exposition. That the accumulation of such innovations is at the heart of growth is taken from Schumpeter (1934), while the concept of entrepreneurship, where individuals possess certain skills to turn abstract ideas into marketable products,

³⁷ Defined here as the undertaking of an economic activity in a way that, in some dimension, is new.

comes from Knight (1951). The idea of 'newness' is interpreted very broadly.

It could literally involve:

- the creation of a new product (such as the cellular phone);
- the enhancement of an existing product (enabling the cellular phone to connect to the internet);
- the adoption of technology produced elsewhere (such as the production of cellular phones in Nigeria);
- adapting technologies, such as creating a cellular phone that could readily be used to conduct telephone banking;
- producing an existing product using altered business methods, such as making the cellular phone using a costly modification of a firm's organization of production (the most important of these modifications being specific investments in the human capital of workers).

The key aspects of this view are:

- an entrepreneur who seeks to undertake an innovation requiring investment finance;
- the heterogeneous makeup of those innovations, where some ideas are efficient for society to undertake and others are not. Evaluating the desirability of ideas is feasible but costly, with limits being placed on that process so as not to reveal too much information about the nature and character of the idea lest it be appropriated by competitors;
- much of productivity-enhancing investment involving construction of an intangible capital good. By the nature of this asset it is difficult for a third party to evaluate the efficacy of the investment and, because it is embodied in an entrepreneur and a team of managers and production workers, it serves as poor collateral;
- returns to the intangible good are quasi-rents determined by market size, rate of competitor innovation, taxation and public regulation.

Within this context financial intermediaries arise endogenously as part of a market mechanism for entrepreneur screening and the financing of intangible,

productivity-enhancing investment by those entrepreneurs judged to be creditworthy.

This chapter has thus far implied that countries with better-functioning financial systems will be correspondingly better at evaluating innovations and entrepreneurs. *Ceteris paribus*, countries with superior financial systems will allocate savings to more efficient and productive endeavours than will countries with less effective financial systems. More efficient resource allocation translates into increased productivity and growth through physical capital accumulation, improvements in the types of intangible capital described and human capacity development.

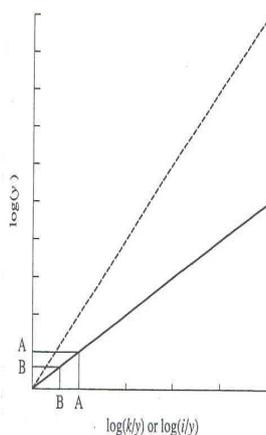
Linking financial intermediation to productivity creates different implications from the traditionally advanced viewpoint of the role of intermediation in the economic growth process. The traditional view consists of two main propositions. First, the growth effects of changes in intermediation are small. Second, that the effects of a country's level of development on the demand for various forms of financial systems are large. Being the corollary that finance is the handmaiden of industry the traditional view predicts that most of the observed correlations would involve a causal link from development to finance.

Figure 3.2 shows graphically the reasons the conventional view suggests small effects of financial intermediation on the level of economic development and more so, on sustained economic growth. The linkages of financial intermeditaion having only a minor effect on physical capital investment and of investment being vied as relatively unimportant for determining economic activity are shown visually. Being more precise in following the Solow's (1956) analytical route requires that the use of a Cobb-Douglas production function be introduced:

$$Y = AK^a \quad (3.4)$$

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. Conventional estimates for this type of production function are that a is about 0,3 with an upper bound being 0,5. The restriction embodies the position that the investment process is subject to sharply diminishing returns at a given level of exogenous technical progress.

Fig. 3.2: Accumulation and Economic Development in the Solow model



Source: Solow (1956)

The ability of the Solow (1956) model to explain cross-national differences in economic development and national growth rates is substantially limited by this diminishing returns to capital position. First, it holds that cross-country differences in long-run levels of capital/output ratio (K/Y) or the investment rate (I/Y) have limited effects on output levels. Figure 3.2 graphs the long-run relationship between $\log(Y)$ and $\log(K/Y)$ as a line with slope $O = a/(1 - a)$, such that:

$$Y = A(1 - a) \cdot (R/Y)^a \quad (3.5)$$

This means that if country A had twice the capital/output ratio of country B, then it could have no more than twice the output level, since O is at most $0,5/(1 - 0,5) = 1$. The upper bound on the extent to which cross-country differences in asset stocks (including those maintained by intermediaries) could lead to differences in economic development levels is illustrated³⁸.

Second, examining the time series of growth observations for a single country, changes in its investment rate (I/Y) within a specific sample period lead only to relatively minor growth rate variations. For instance, an increase of 10 percent would lead, at most, to a 10 percent increase in the level of output in the long run. Assuming all this occurred within a 30 year period then the impact on the annual average growth rate would be limited to 0,33 percent (no proportion being present in the initial GDP level and no proportion being incomplete at the end).

Third, as the Solow (1956) model shows, the Cobb-Douglas production function implies that physical investment and capital formation can account for only a small portion of US economic development. Maddison's (1987) survey confirmed this finding for many other countries and time periods.

The traditional view also circumscribed the channels through which financial intermediation could affect development levels and growth rates. Financial intermediaries were simply accepted as passive conduits of funds from savers to firms undertaking physical capital investments. Intermediation was only important to the extent that it bounded the effects of physical investment. Together with evidence that suggest small interest elasticities of saving rates (through intermediaries and other forms) and investment meant that financial sector distortion was viewed as relatively unimportant for investment. The impact on the development level as well as the rate of growth were assumed to be the result of

³⁸ Similarly a restriction on the influence of international differences in investment rates on economic growth may be shown. 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 population growth and technical progress and δ the depreciation rate, the relationship becomes $(I/Y) = (g + \delta) (K/Y)$.

combining two empirically minor channels of influence and multiplying two small effects together produces very little.

The cracks within this framework began to appear with Goldsmith's (1969) study of 36 countries over 1960-1963 where he showed that a strong positive relationship between the ratio of financial institutions' assets to GDP and output per capita. That study also demonstrated that rapid economic growth periods tended to be associated with above average financial development rates. Still, it was quick to note that that by itself did not establish a causal link from intermediation to growth, nor did it identify the channels (capital accumulation or productivity enhancements) through which growth and development were linked.

The emerging new view takes quite a different perspective on the potential influence of intermediaries on the level of economic development and economic growth rates. The new view involving challenges to both the role of intermediation and the nature of the growth process. The exact nature of the links between intermediation and economic development depend on which of a range of more recent growth models are employed. These models differ on the precise nature of the long run opportunities for an individual country but concur on the more core elements. They all, especially view the process of capital accumulation as much richer than the Solow model had highlighted. Lucas (1988), in addition to physical capital stresses investment in general human capital, Romer (1990) emphasizes investments that extend the product offerings an economy already produces, while Prescott & Boyd (1987) stress investment in firm-specific human capital. Each of these more recent advances takes investment in intangible, productivity enhancing investments (described earlier in this subsection as 'innovation') as core.

This class of models, often called bounded growth models, stress the characteristic that a technological frontier, determined by the world's scientific knowledge (and which it is useful to think of as growing at a constant rate) exists. At any given level of such knowledge all countries have limits on what they can

achieve. These countries differ in the extent to which they are able to exploit this knowledge: some using it well, others poorly (or not all). Rich countries are those that have typically three types of capital: productivity enhancing intangible capital, physical capital and general human capital. A permanent decrease in the cost of accumulating productivity enhancing capital, within these models, raises the rewards to investments in physical and human capital. This in turn sets in motion the transition to a new higher growth path at which stocks of all factors of production are higher. While still accepting much of the Solowian argument, these models use a comprehensive capital stock³⁹, which is subject only to mildly diminishing returns.

Rebelo (1991) presents another class of models known as unbounded or perpetual growth models. Here the country is viewed not as constrained by world scientific developments but able to grow forever at rates that depend only on the extent of investments made by the country in all the three types of capital. The conclusion from this work being that economic policies can raise or lower the growth rate of an economy permanently.

The new view provides for a much larger impact from intermediation on economic growth. First, by suggesting that important connections between intermeditaion and productivity exist and that productivity has an important effect on economic activity. King & Levine (1993a,b) have demonstrated these important linkages from financial intermediation to productivity and then ultimately on to economic development. Second, by assigning a larger role to the influences on investment (primarily be taking more economic activity as capitalistic in nature) including physical capital accumulation, general human capital accumulation and investment in other intangible productivity-enhancing goods. Equation 3.4 can be rewritten in terms of an aggregate production function:

$$Y = \underline{A(K)}^a \tag{3.6}$$

³⁹ Defined as the aggregate of all social investments.

where \underline{K} is a comprehensive capital aggregate and \underline{a} is the associated share parameter. Using this function, examples of the two new models of growth can be represented very simply. The basic bounded growth model has \underline{a} much larger than in the traditional view but still $\underline{a} < 1$. The basic unbounded model has $\underline{a} = 1$.

Figure 3.3 shows some of the important implications of the bounded growth models with comprehensive capital aggregate. Comparing it with Figure 3.2, this diagram suggests that the effects of cross-national differences \underline{K}/Y or \underline{I}/Y are much larger. Adopting a value for \underline{a} of 0,8 as suggested by Barro & Sala-i-Martin (1992) or Mankiw *et. al.* (1992), would show that cross-national output level differences are related to cross-national differences in \underline{K}/Y or \underline{I}/Y levels by $O = 0,8/(1 - 0,8) = 4$. Meaning that a country with a capital/output ratio twice as high as another had double the income per capita in Figure 3.2 but 16 times the income per capita in Figure 3.3.

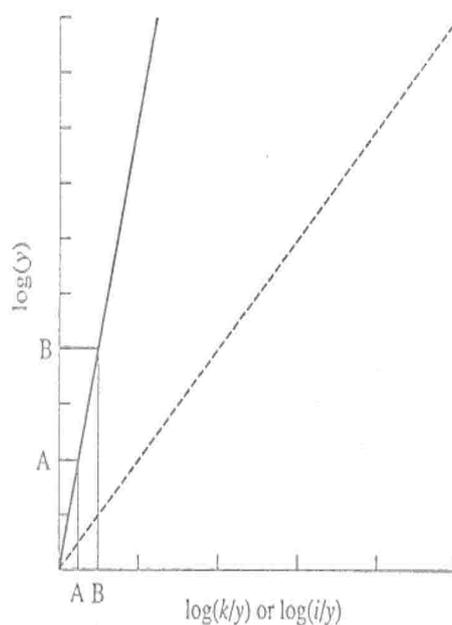
Second, this comprehensive view of capital formation implies that changes in investment rates also account for more sustained growth⁴⁰. Reworking the example used earlier in the traditional view, an increase in the investment rate by 10 percent of its base levels sets of a 40 percent increase in GDP (with $\underline{a} = 0,8$). Again if all of this increase occurred over 30 years, its impact on growth would be 1,33 percent (or four times the Solowian growth effect)⁴¹.

⁴⁰ This discussion assumes that variation in observed investment rates (I/Y) are good proxies for variations in the comprehensive rates \underline{I}/Y .

⁴¹ As King & Rebelo (1989) have discussed, one feature of the $\underline{a} = 0,8$ models would work in the opposite direction. That of transitional dynamics proceeding at a much slower pace. However, much of the transition would still occur within the 30 year period.

**Fig. 3.3: Accumulation and Development
in the Comprehensive Model**

Robert G. King and Ross Levine



3.3
Figure 6.4 Accumulation and development in the comprehensive model

Source: King & Levine (1993b)

With unbounded growth ($\underline{a} = 1$), there is no analogue to Figure 3.3 since there is no technological frontier to which the economy converges. Rather, there is simply a shift to a new higher growth rate that depends positively on the productivity of the comprehensive capital aggregate (*i.e.*, on the value of \underline{A} in Equation 3.6). Results to follow will show that intermediation positively affects \underline{A} and thus permanently increases economic growth rates. In the analysis to follow, specifications from both the bounded and unbounded growth models are used.

One of the most important implications of the new view is that it suggests important interaction effects among public policy actions designed to promote long-term growth and development. Since openness to international trade is often stressed as a growth-promoting strategy and since trade liberalisation is less contentious than financial liberalisation, elaboration of interactions in this area will be discussed.

Consider a country with substantial barriers to international trade in the form of both import/export restrictions and tariffs. The country could have chosen this to protect the domestic monopoly of producers (both capitalist and specialist workers) in import-competing countries. If this is the case then other implications of the hypothesis have to be borne in mind. Such as that such protection requires not only international trade isolation but possibly also restrictions on the entry of potential domestic rivals. This could be accomplished by regulating new enterprises (requiring extensive licensing requirements that include disclosure of key concepts and ideas to entrenched rivals). As well as the regulation of domestic and international banking. Regulation of banking would limit the ability of potential rivals to enter the protected market. Regulating domestic banking while important, would not be sufficient and foreign lending in the domestic market would also have to be excluded, either explicitly or via the threat of confiscation of returns. Otherwise, domestic entrepreneurs seeking to be rivals to the domestic monopoly would have ready access to sources of venture capital. Thus the model of finance and growth presented here requires both trade and financial restrictions.

The model considers what would happen if that country alters some of its policies, specifically adopting export promotion based on the observation that high-export countries are high-growth ones as well. Without major government subsidies inefficient domestic monopolies will not be able to compete in international markets and so changes in export policy may mean very little without changes in existing capabilities. Instead, these producers would now have to adopt new technologies to make products viable in world markets.

Society is thus called upon to reallocate resources to a new group of producers. The success of international trade policies may therefore depend on the extent to which domestic and international financial markets operate effectively.

3.3.2 Economic Activity and Financial Development

It is useful to begin any discussion of the links between financial and economic development by asking how intermediation and the real level of economic activity are related. To measure this real economic activity King & Levine (1995) used gross domestic product (GDP) per capita in 1987 dollars for each of 94 countries in 1970 and 1985. Based on research they had conducted previously (King & Levine, 1993a,b) a number of measures of the extent of financial intermediation within a country were constructed. Table 3.1 defines these measures in more detail.

The crucial types of indicators used can be roughly grouped as follows:

- Money demand indicators: This type of indicator captures the scale of domestic currency funds held by individuals and corporations primarily for transactions. The indicator M1Y is the ratio of a country's currency and demand deposits to its GDP. It captures the fraction of a year's income held for transaction purposes. Comparing Tables 3.1 and 3.2 shows that there is a weak correlation between this indicator and level of development, consistent with the standard view that there is close to a unit income elasticity in the demand for money. Individuals and corporations hold transaction balances roughly in proportion to their cash flows⁴².

⁴² It is not exactly proportional due to the fact that poor countries engage in inflationary policies that induce currency substitution.

Table 3.1: Financial Development and Real GDP in 1970

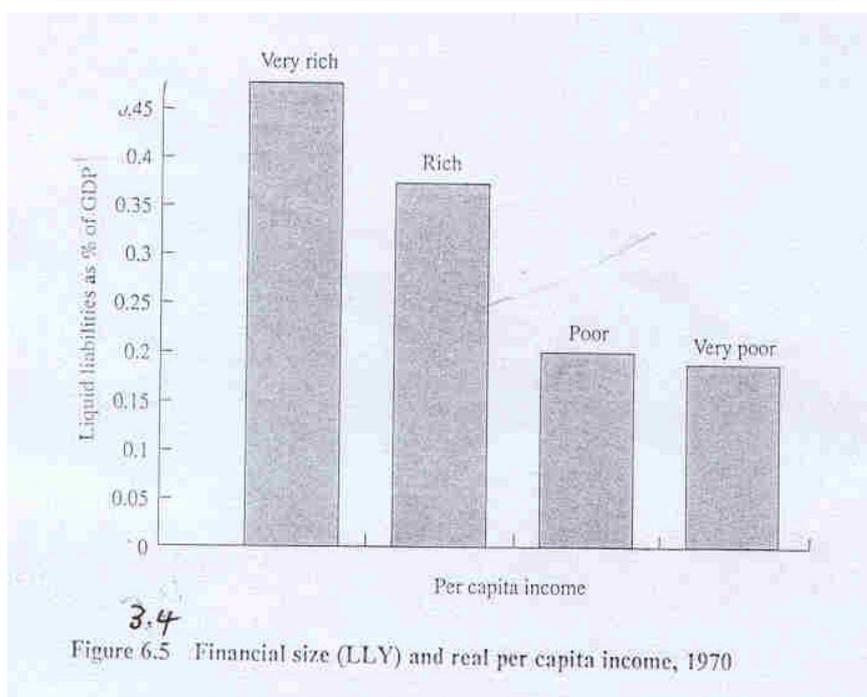
Indicators	Very Rich	Rich	Poor	Very Poor	Corr	P - Value
M1Y	0.19	0.20	0.15	0.14	0.16	0.11
LLY	0.48	0.38	0.21	0.19	0.43	0.0001
LLY - M1Y	0.31	0.18	0.06	0.05	0.56	0.0001
CBY	0.06	0.07	0.10	0.10	-0.20	0.06
BY	0.43	0.25	0.17	0.12	0.72	0.0001
PRIVY	0.35	0.23	0.14	0.09	0.53	0.0001
BANK	0.86	0.77	0.71	0.62	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	CBY = Central bank domestic credit to GDP					
Rich: RGDP70 > 799 And < 3506	BY = Deposit money bank domestic credit to GDP					
Poor: RGDP70 > 362 And < 799	PRIVY = Gross claims on private sector to GDP					
Very Poor: RGDP < 362	BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit					
M1Y = M1 to GDP	PRIVATE = Claims on the non-financial private sector to total domestic credit					
LLY = Liquid liabilities to GDP	NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP					
QLLY = LLY - M1Y	RGDP70 = Real per capita GDP in 1970, in 1987 dollars					

Source: King & Levine (1993a,b)

- The scale of financial intermediaries: Indicators that measure the size of the financial system are much more strongly correlated with development level. As shown in Table 3.1 citizens of the richest countries, the top 25 percent on the basis of per capita income held about 30 percent of that year's income in

liquid assets beyond their monetary abilities. While citizens of the poorest countries (the bottom 25 percent) held only five percent of that year's income. Figure 3.4 shows the cross sectional relationship between GDP per capita and total liquid liabilities (monetary and non-monetary components). There is a positive correlation, but as in the poorest half of the sample there was simply little non-monetary demand for liquid liabilities that correlation was weak.

Fig. 3.4: Financial Size and Real Per Capita Income, 1970



Source: King & Levine (1995)

- Central versus private banking: Bank lending has both public and private components that bear distinct relations to the level of development. In the top quarter of the world's countries private bank lending constitutes about 43 percent of GDP and only 12 percent in the bottom quarter. The overall correlation is about 0.5. By contrast a negative correlation with the extent of central bank lending is said to exist.

Table 3.2: Financial Development and Real GDP in 1985

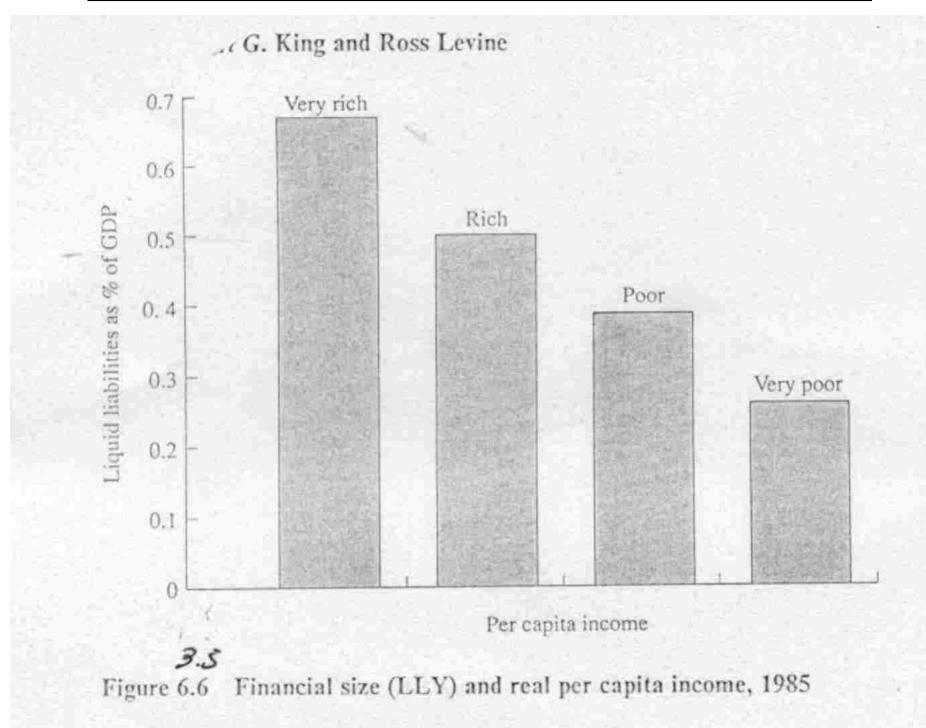
Indicators	Very Rich	Rich	Poor	Very Poor	Corr	P - Value
M1Y	0.18	0.20	0.18	0.15	0.05	0.60
LLY	0.67	0.51	0.39	0.26	0.51	0.0001
LLY - M1Y	0.50	0.31	0.21	0.11	0.60	0.0001
CBY	0.07	0.16	0.27	0.17	-0.27	0.008
BY	0.66	0.39	0.28	0.19	0.61	0.0001
PRIVY	0.53	0.31	0.20	0.13	0.70	0.0001
BANK	0.91	0.73	0.57	0.52	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: RGDP70 > 3506	CBY = Central bank domestic credit to GDP					
Rich: RGDP70 > 799 And < 3506	BY = Deposit money bank domestic credit to GDP					
Poor: RGDP70 > 362 And < 799	PRIVY = Gross claims on private sector to GDP					
Very Poor: RGDP < 362	BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit					
M1Y = M1 to GDP	PRIVATE = Claims on the non-financial private sector to total domestic credit					
LLY = Liquid liabilities to GDP	NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP					
QLLY = LLY - M1Y	RGDP70 = Real per capita GDP in 1970, in 1987 dollars					

Source: King & Levine (1993a,b)

- Asset distribution: It is also interesting to investigate how the level of development depends on whether recipients of loans are primarily public or private institutions. In Table 3.1 a marked positive association with the extent to which loans are directed to the private sector. The richest 25 percent of countries have 72 percent of their loans going to private borrowers, whereas the poorest 25 percent have only 48 percent of such loans.

To gauge the stability of these cross-sectional relationships King & Levine (1993a,b) computed the same measures of financial development and economic development for 1985. The results for this later sample are reproduced in Table 3.2 and Figure 3.5. The net result is that the findings are largely robust to the exact year when looked at across a range of countries.

Fig. 3.5: Financial Size and Real Per Capita Income, 1985



Source: King & Levine (1995)

Summarizing these findings suggest that, per dollar of GDP:

- richer countries have more savings in liquid assets than do poorer countries;
- richer countries do more lending via deposit banks as opposed to the central banks than do poorer countries;
- richer countries also allocate more of their lending to private companies as opposed to the government than do poorer countries.

This picture is consistent with the health of the financial sector exerting an important positive influence on the level of development. It is also consistent with the view that the health of the economy, as measured by its level of development, exerts an important positive influence on the extent of financial intermediation. Traditionalist would accept the first half of this assessment, 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 financial market development. How then does one choose between these two points of view?

Under these situations, where the direction of causality is difficult to determine, researchers often attempt to bring other information to bear on what is going on. In the traditional view that information was of two kinds. First, looking at the numbers in Tables 3.1 and 3.2, it is notable that all of the measures of financial scale are some fraction of a year's income. Using extreme values to make the point, it could be said that a richer country would maintain a stock of financial intermediation assets equal to 50 percent of its GDP, while a poor country would maintain only 10 percent in that form. Second, using the aggregate production function of Equation 3.6, which highlights the role of investment in physical capital and assumes that financial intermediation exerts its influence primarily through its effect on the capital stock, permits bounds on how much this asset stock difference might mean for development levels⁴³. An upper bound would be that a country with five times the rate of capital accumulation would be five times richer, but in Table 3.1 the top 25 countries have GDPs that average 50 times the GDP of the bottom 25 percent of countries. Thus, support for the traditional view that the direction of causality must run from development to intermediation.

⁴³ This leads to a wildly optimistic upper bound as it assumes that fivefold differences in intermediation translate into fivefold differences in capital.

Proponents of the new view of the links between financial intermediation and economic development would argue that such an argument misses the mark badly. They would contend that it is the differences in the productivity of factors (including the enhancements that stem from human capital investment and technology adoption) and not differences in the rates of physical capital accumulation that lie at the heart of understanding cross-national differences in development levels. Based on this the allocation of more resources to financial intermediation would enhance productivity, resulting in much stronger effects than possible within the conventional view.

However, working financial models have not reached the point where they can be used to produce further detailed restrictions and this is the fundamental reason more recent causality studies (including this doctoral thesis) have attempted to use econometric methods rather than impose such restrictions.

3.3.3 Economic Activity and Intermediation

Theoretical models that feature links between productivity growth and intermediation, such as the bounded and unbounded models discussed earlier, may have the extent of financial intermediation exerting a sustained effect on economic growth rates. This subsection will examine some of the cross-sectional evidence on this relationship.

For the 114 countries reported in Table 3.3 considerable dispersion in the average annual economic growth rates over 1960-1989 is evident. The top quarter of the sample, representing the fastest growing countries, averaged a 4,5 percent growth rate of per capita GDP while the bottom 25 percent averaged -0,5 percent. While these differences may appear small at first, the power of compound interest implies that the difference is very important over sustained periods. If two countries had started in the same position in 1960 but had these different growth rates, the ratio of their per capita GDPs would have been 4,4 in 1990.

Table 3.3: Financial Development and Contemporaneous GDP Growth, 1960-1989

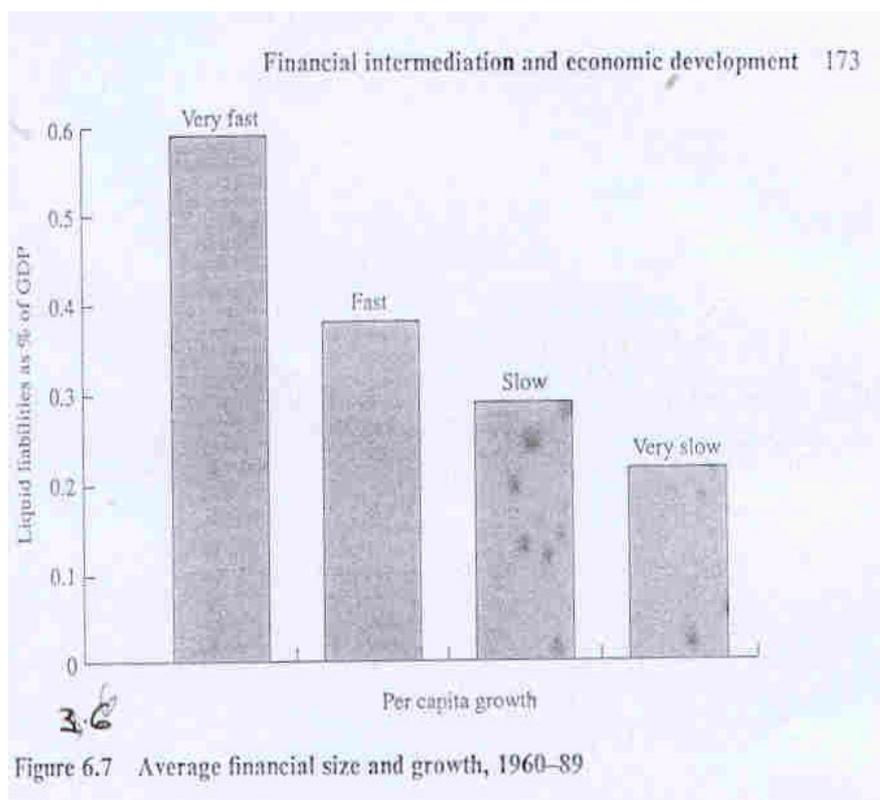
Indicators	Very fast	Fast	Slow	Very Slow	Corr	P - Value
MIY	0.23	0.19	0.15	0.14	0.40	0.001
LLY	0.60	0.38	0.29	0.22	0.62	0.001
LLY-M1Y	0.37	0.20	0.15	0.07	0.64	0.001
CBY	0.11	0.10	0.10	0.12	-0.12	0.27
BY	0.46	0.33	0.24	0.17	0.55	0.001
PRIVY	0.35	0.27	0.20	0.13	0.44	0.001
BANK	0.81	0.73	0.71	0.60	0.46	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			CBY = Central bank domestic credit to GDP			
Fast: Growth > 0.02 and < 0.03			BY = Deposit money bank domestic credit to GDP			
Slow: Growth > 0.005 and < 0.02			PRIVY = Gross claims on private sector to GDP			
Very slow: GROWTH < 0.005			BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit			
M1Y = M1 to GDP			Private = Claims on the non-financial private sector to total domestic credit			
LLY = Liquid Liabilities to GDP			NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP			
QLLY = LLY - M1Y			GROWTH = Average annual real per capita growth 1960 – 1989			

Source: King & Levine (1995)

The stylized facts discussed in the previous subsection carry over directly to growth rates as Table 3.3 and Figure 3.6 show. Countries that grow faster have larger financial systems (as measured by liquid assets for instance), have a

greater share of lending done by banks and have a higher proportion of that lending going to private as opposed to state hands.

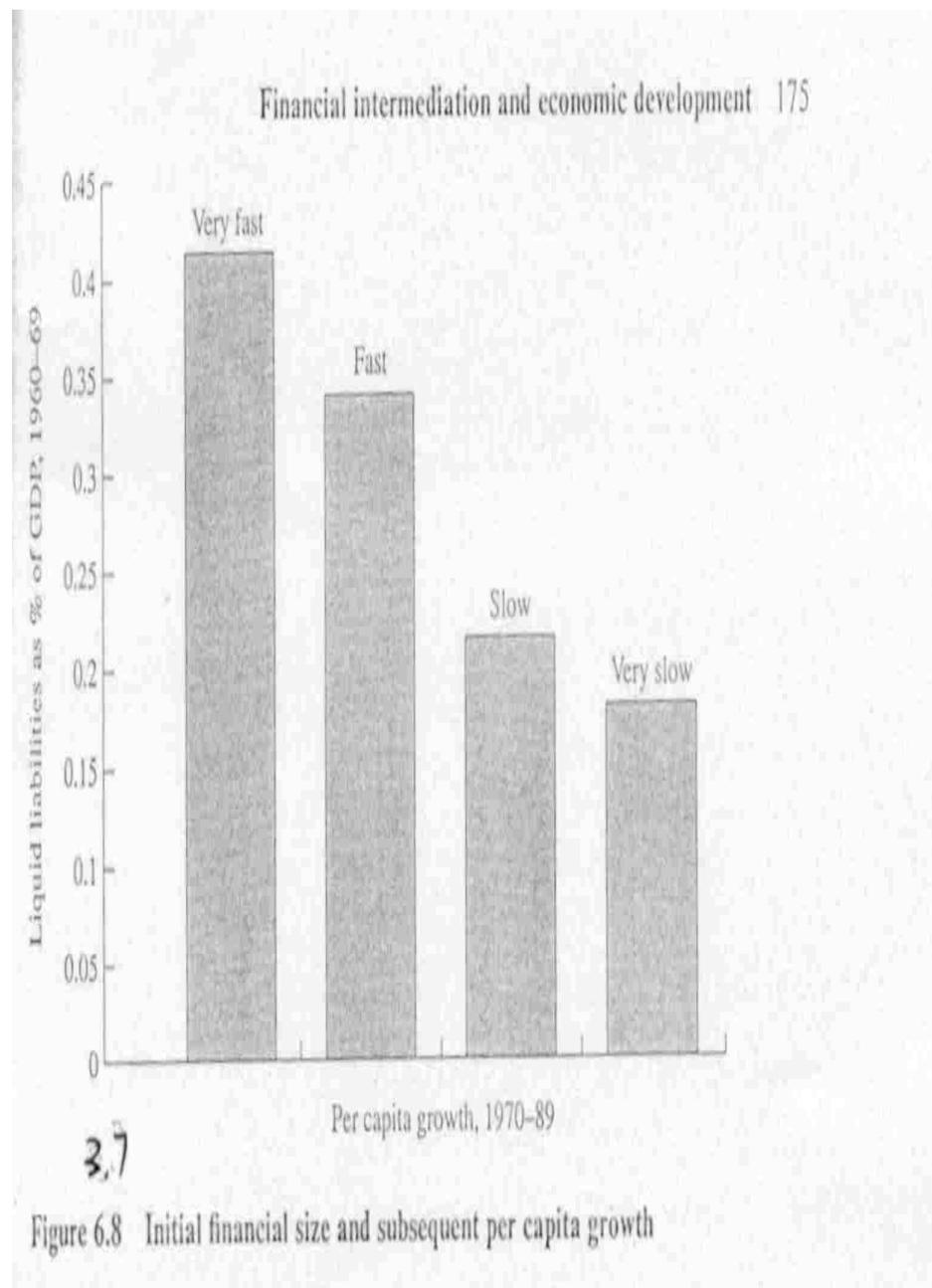
Fig 3.6: Average Financial Size and Growth, 1960-1989



Source: King & Levine (1995)

Table 3.4 and Figure 3.7 also have a predictive content, in that those countries that displayed fast growth over 1970-1989 had larger financial systems in 1960-1969, had a greater share of lending done by banks than by the central bank in 1960-1969 and a higher share of lending to the private sector than to the state over 1960-1969.

Fig. 3.7: Initial Financial Size and Subsequent Per Capita Growth



Source: King & Levine (1995)

**Table 3.4: Initial Financial Development and subsequent per capita
GDP Growth, 1970-1989**

Indicators	Very fast	Fast	Slow	Very Slow	Corr	P – Value
MIY	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			CBY = Central bank domestic credit to GDP			
Fast: Growth > 0.02 and < 0.03			BY = Deposit money bank domestic credit to GDP			
Slow: Growth > 0.005 and < 0.02			PRIVY = Gross claims on private sector to GDP			
Very slow: GROWTH < 0.005			BANK = Deposit money bank domestic credit divided by deposit money bank + central bank domestic credit			
M1Y = M1 to GDP			Private = Claims on the non-financial private sector to total domestic credit			
LLY = Liquid Liabilities to GDP			NON-MBY = Claims on the private sector by non-deposit money banks divided by GDP			
QLLY = LLY - M1Y			GROWTH = Average annual real per capita growth 1960 – 1989			

Source: King & Levine (1995)

There is a large and rapidly growing literature exploring the cross-country determinants of economic growth within a multivariate regression framework. This subsection summarizes how financial intermediation fits into that setting. First, the empirical importance of King & Levine's (1995) measures of financial intermediation for the rate of per capita GDP, within the conventional empirical

framework (*c.f.*, Barro, 1991; Levine & Renelt, 1992) is examined. Then, motivated by this sections theoretical discussion, the 'channels of influence' by which financial intermediation is linked to growth is explored. In particular, the effects of the financial indicators on physical capital accumulation and as a proxy for productivity growth are examined. This proxy is based on a partial version of the Solow-Maddison growth accounting formula, where for country i , productivity growth is measured as:

$$a_i = \Delta \log(Y_i) - a \Delta \log(K_i) \quad (3.7)$$

where $\Delta \log(Y_i)$ is annual average output growth and $\Delta \log(K_i)$ is annual average capital growth. The capital share parameter a is assumed constant across time and countries ($a = 0,3$ is used). The empirical literature on cross-country determinants of growth generally include a set of core variables in regressions that are designed to capture the influences of human capital accumulation and the effects of initial conditions on subsequent economic growth⁴⁴. The empirical proxies used for these determinants have generally been the country's school enrollment rate and the country's per capita GDP in the starting year. Also, work by Levine & Renelt (1992) has shown that many proposed determinants of cross-country growth appear individually significant in regressions at first but that this finding disappears when additional factors are included. This is especially true for those measures that seek to proxy monetary instability, government intervention in the private economy and government intervention in trade. Using the econometric terminology of Leamer (1978) these variables are not "robust" determinants of economic growth. To evaluate the robustness of King & Levine's (1995) financial indicators as determinants of cross-country growth, the other policy indicators studied by Levine & Renelt (1992) will therefore be used. Finally, while this subsection is interested in evaluating the channels of influence by which intermediation is linked to growth, King & Levine (1995) have expressed

⁴⁴ In contrast to some of the empirical literature, the investment rate (I/Y) is not used here as an independent variable. This is because this rate depends strongly on other determinants of growth and is therefore not an appropriate regressor.

some concerns about the capital stock measures. Thus the investment rate, the ratio of investment to GDP is used as an additional although imperfect measure of the extent of accumulation underway in an economy.

The standard finding in the empirical growth literature is that school enrolments have a positive and empirically important effect on growth rates. And that there is a tendency for initially rich countries to grow more slowly than those that start off poor. Barrow & Sala-i-Martin (1992) and Mankiw *et. al.* (1992) provide discussions of this 'convergence' effect. Most studies have found the pace of convergence to be very slow and in King & Levine's (1995) regression the associated coefficient on initial income was statistically insignificant. Growth was found to be significantly positively related to King & Levine's (1993a,b) financial indicator measuring the size of the financial intermediation sector. There was a strong positive relationship between financial size and growth, with an estimated coefficient of 0,04. This means that a country that increased its liquid liabilities to GDP from the mean of the slowest growing countries (0,2) to the mean of the fastest growing ones (0,6) would have raised its growth rate by 1,6 percent per year over the 30 years in their study. As Table 3.3 suggests that the difference between fast and slow growers is about five percent, this would eliminate about a third of the growth gap, a considerable effect. Testing this regression for robustness by including other policy indicators confirmed the significance of the indicator although there was a slight attenuation of the estimated coefficient from 1,6 percent down to 1,2 percent.

Exploring the channels by which variation in financial intermediation affects economic growth shows that the intermediation indicator has a significantly positive and robust effect on growth through each channel and that indeed, there was much more uniformity with respect to findings from this indicator than any other. Thus empirical support for the modern view that intermediation affects economic growth through more than just the physical capital accumulation process was found. There was also a significant correlation with other financial indicators, specifically those that seek to capture whether a commercial bank or

the central bank does the lending and whether a private or public institution is receiving the loan.

Using initial rather than contemporaneous financial indicators still demonstrated a 0.04 coefficient for liquid liabilities to GDP reinforcing the 1,6 percent growth rate effect. The measure of the initial fraction of credit allocated by commercial banks as opposed to by the central bank and of the initial fraction of credit granted to the private as opposed to the public sector, entered less significantly.

3.3.4 The Role of Public Policy

Resolving the debate between the traditional and new views of the relationship between financial markets and economic development has important implications for development policies in Sub-Saharan and particularly South Africa. The traditional view places a low priority on financial sector reform as it views improvements in financial markets as having only a small, temporary effect on economic growth. In contrast the new view gives financial markets a particularly central role in stimulating economic growth. This section has shown that 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 long run (taken in this case to be the next 20 years). Further financial market development would stimulate growth both by increasing the rate of capital accumulation and by increasing the efficiency with which the economy allocates resources.

3.4 Stock Markets and Resource Allocation

One of the most important choices facing the policymakers of both the industrialized countries, as they integrate their economies, and developing countries, as they assess their financial institutions, concerns the emphasis that should be placed on stock markets as opposed to banks for providing finance to their industries.

Although in most advanced countries both stock markets and banks have existed for many years, the relative importance of each has varied. Stock market based

financial systems have been associated with the United Kingdom during the nineteenth century when it was the first country to go through the industrial revolution as well as the United States during the twentieth century, when it was the first to experience the post-industrial revolution. In France, Germany and Japan however, bank-based financial systems were more dominant. Using the UK as an example, Michie (1987) showed that during the second half of the nineteenth century, the stock market played an important role in industrial finance. About a quarter of capital formation was raised through the London Stock Exchange in 1853, which by 1913 had risen to a third. Table 3.5 gives a detailed breakdown of the distribution of securities by industry between these periods. Apart from government debt, railways were the most important category, while urban services, financial services and commercial and industrial firms were all significant, making up the remainder. Agriculture was a minor component consisting entirely of overseas investment.

Table 3.5: London Stock Exchange - Securities Quoted, 1853-1913*

Category	1853	1863	1873	1883	1893	1903	1913
Government							
Domestic	92.5	84.0	63.8	48.4	46.6	43.8	38.8
Foreign	7.5	16	36.2	51.6	53.4	56.2	61.2
Total	76.0	67.0	59.3	52.0	39.5	36.0	34.8
Railways							
Domestic	86.1	55.4	51.4	44.6	35.3	35.8	29.4
Foreign	13.9	44.6	48.6	55.4	64.7	64.2	70.6
Total	18.5	27.7	32.1	40.6	49.4	44.2	43.4
Urban Services							
Total	2.0	1.7	1.4	2.8	2.9	2.9	4.6
Financial Services							
Total	1.1	1.6	5.4	2.8	4.1	6.3	6.4
Commercial and Industrial							
Total	1.8	1.7	1.4	1.2	3.5	9.9	9.6
Mining							
Domestic	-	19.6	16.9	2.9	0.9	-	-
Foreign	-	80.4	83.1	97.1	99.1	100.0	100.0
Total	0.6	0.3	0.3	0.6	0.7	0.6	1.0
Agriculture (All Foreign)							
Total	-	-	0.1	-	-	0.1	0.3
Total (£m)	1,215.2	1,601.4	2,269.1	3,634.3	4,899.2	6,978.3	9,550.3
Domestic	97.1	76.7	62.6	50.1	46.3	50.7	46.8
Foreign	8.5	23.3	37.4	49.9	53.7	49.3	53.2

*Figures as a percentage of overall and individual totals

Source: Michie (1987)

While in the first half of the twentieth century the role of the London Stock Exchange in raising funds for industry declined, it was the US where stock markets came to have the greatest relative importance. Neill (1950) showed that of the stocks listed on the New York Stock Exchange at the end of 1949, manufacturing industries were dominant again while agriculture was also negligible.

Table 3.6: New York Stock Exchange

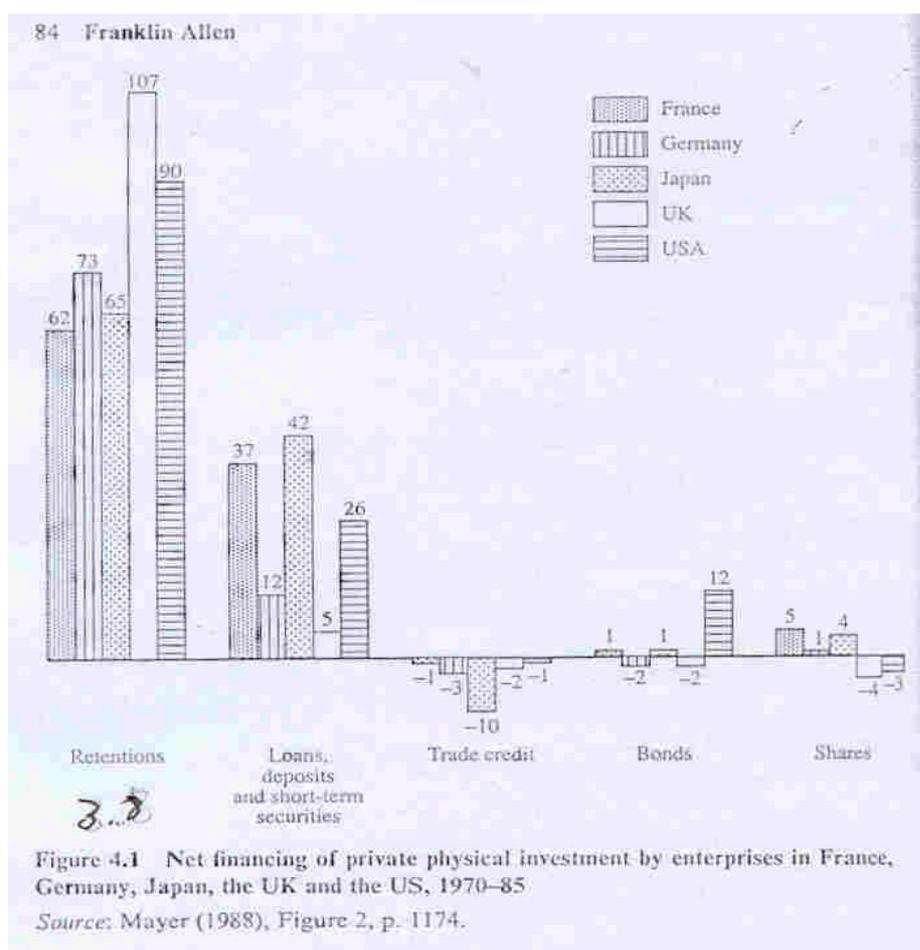
- **All Listed Stocks as at 31 December 1949**

Sector	No of Issuers	Market Value (US\$ '000)
Aircraft	24	733,622
Amusement	22	990,202
Automotive	69	5,597,060
Building trade	29	1,150,761
Chemical	78	10,661,300
Electrical equipment	20	2,105,845
Farm machinery	8	956,488
Financial	32	1,667,982
Food products & beverages	70	4,646,688
Leather & its products	12	339,010
Machinery & metals	103	2,612,936
Mining	40	1,958,759
Office equipment	10	883,151
Paper & publishing	35	1,198,242
Petroleum & natural gas	45	10,046,827
Railroad & R.R. equipment	86	4,391,592
Real estate	11	240,588
Retail trade	73	4,729,705
Rubber	10	621,731
Shipbuilding & operating	11	167,453
Steel & iron	41	3,086,983
Textile	44	1,302,786
Tobacco	15	1,710,630
Utilities	94	11,696,454
Miscellaneous	17	623,017
US companies operating abroad	25	980,200

Source: Neill (1950)

Mayer (1988) has examined the importance of various sources of funds for financing investment in a number of industrialized countries in more recent times. His comparison, using data from 1970-1985 for France, Germany, Japan, the UK and the US is shown in Figure 3.8. Except for the US, where significant amounts were raised through bond issues, the most important source of funds proved to be retained earnings and stock markets were therefore relatively unimportant.

Fig. 3.8: Net Financing of Private Physical Investment by Enterprises in France, Germany, Japan, the UK and US, 1970-1985

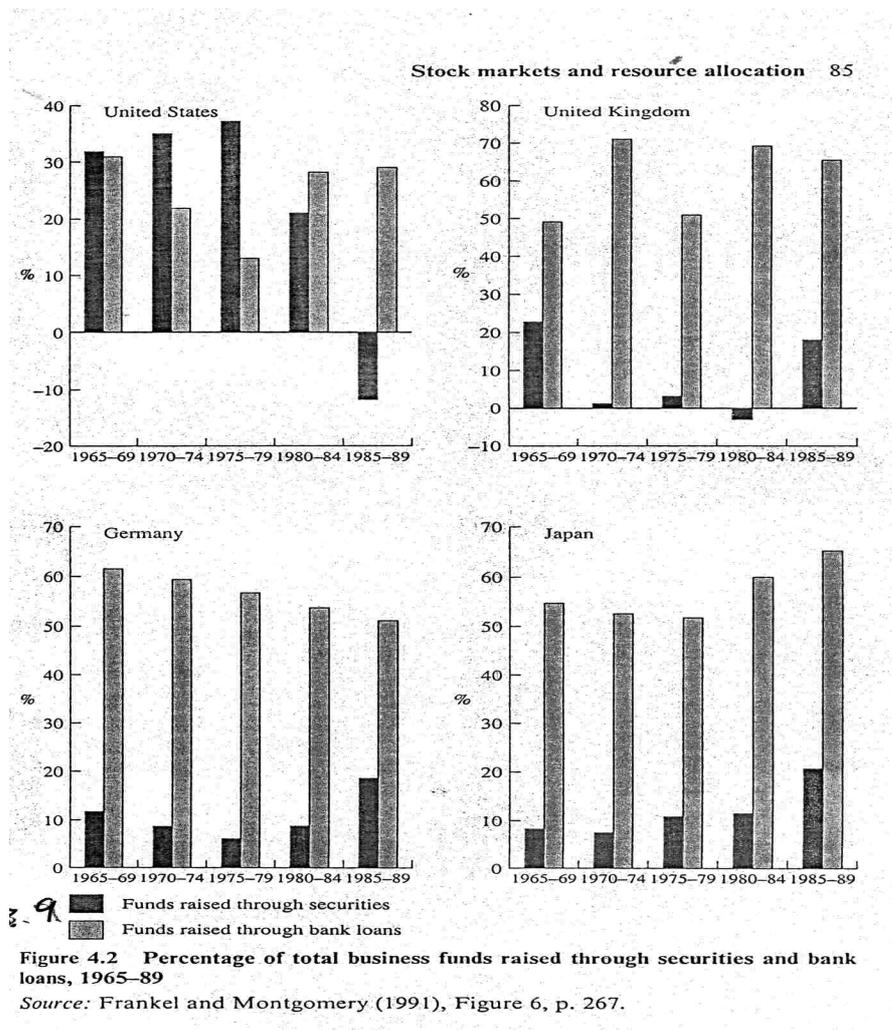


Source: Mayer (1988)

Frankel & Montgomery (1991) have offered a more direct comparison of the relative importance of banks and stock markets. This is depicted in Figure 3.9 where it can be seen that the US is dramatically different from other countries in terms of the proportion of funds raised through securities (both stock and bond issues). Except for the period 1985-1989, when companies were actually

borrowing to fund share repurchase programmes, securities have been much more important for the US.

Fig. 3.9: Percentage of Total Business Funds Raised through Securities and Bank Loans, 1965-89



Source: Frankel & Montgomery (1991)

Any attempt to understand why such stark differences between banks and stock markets exist requires a contrast between these two intermediaries. Hellwig (1990) has suggested that the main distinction is between their structure rather

than the instruments they issue. This is because there are countries whose banks lend using debt and equity and countries whose stock markets trade bonds and shares. Rather, the main difference is that banks individually negotiate contracts with borrowers and it is rare for borrowers to deal with more than a few banks. In stock markets however, there are a large number of anonymous lenders who have to accept the contract form the borrowers or intermediaries provided as is. This difference may not be as apparent in some countries as in others. In Germany, for example, the stock market is not as competitive and firms can seek financing from several different banks. Still, as the phenomenon of globalization progresses the number of participants in most major stock markets does grow and markets become more competitive while bank loans are still negotiated individually.

The banking system two important functions:

- it acts as delegated monitors of firms (Diamond, 1984); and,
- it allows long-term relationships and commitments (Mayer, 1988; Shleifer & Summers, 1988; Berkovitch & Greenbaum, 1990; and Boot *et. al.*, 1987; 1991).

Diamond (1984) believed that the management of firms needed to be "monitored" to ensure that it acts in the interests of investors who finance them. As duplication does not result in improved monitoring, it need only be done by one party. The diverse ownership inherent in stock market finance means that security-holders may waste resources through costly repetition of monitoring. Due to a free-rider problem (where each would want the other to bear the cost of monitoring the monitor) they are unable to combine to hire such a monitor. In this paradigm Diamond (1984) suggests that through bank lending to corporations, the advantages of a single monitor are captured while the problem of monitoring it is also solved. The bank guarantees its depositors that it is undertaking the monitoring by holding a large portfolio of loans to different companies and thus overcomes the free-rider problem. If it did not monitor the firms it would be unable to make the promised payment to depositors.

The second aspect, that of long-term relationships, has been emphasized in the writings of Mayer (1988) and Shleifer & Summers (1988). These authors have pointed out that it is in the firm's interest to make long-term implicit contracts with workers, suppliers and other groups they do business with because of incomplete contracting possibilities. Such long term relationships allow significant *ex ante* gains to be made. For instance, workers and suppliers may be willing to acquire firm-specific capital, which in the absence of an implicit contract, they would be unwilling to do. *Ex post* however, a firm may have to make payments to fulfil its implicit contracts, which it is not legally obligated to. A firm listed on a stock exchange could be taken over by an acquirer who sees the incentive to cease making the payments the implicit contract requires. With this backdrop workers and others will be wary of entering into implicit contracts and those *ex ante* gains would be lost. The advantage of bank-oriented financial structures is that this problem is much less probable. Banks both wish to encourage long-term relationships in order to share in the *ex ante* gains, while *ex post* they wish to keep contracts implicit in order to maintain long-term reputations. Thus they have positions and incentives that are very different from stock market raiders. Berkovitch & Greenbaum (1990) as well as Boot *et. al.* (1987; 1991) have all stressed the importance of bank's ability to make credible long term commitments. The fact that bank loans are provided on an individual basis causes other desirable characteristics to arise. For instance, bank loans can be renegotiated more easily than securities sold in stock markets (Wilson, 1991). There are also better incentives for various types of information about borrowers to be gathered than with stock markets (Sharpe, 1990)⁴⁵.

The literature has also provided a number of advantages for stock markets, including:

- that they allow efficient risk sharing (Diamond, 1967);

⁴⁵ Bhattacharya & Thakor (1992) provide a comprehensive survey of these and other recent theories of banking.

- that they provide incentives for information gathering, which then becomes reflected in stock prices. These prices then act as signals for efficient resource allocation (Grossman, 1976; 1978; Grossman & Stiglitz, 1980; Diamond & Verrecchia, 1981); and,
- that the information content of stock market prices allows effective managerial incentive schemes (Diamond & Verrecchia, 1982; Holmstrom & Tirole, 1990).

Diamond (1967) and other writers have held that one primary advantage of stock markets is that they allow efficient risk sharing between investors. However, if this is accepted then the absence of agriculture from stock markets is somewhat surprising. Although futures markets exist to spread some of the risk in agriculture, the residual risk is still considerable and larger than many of the other industries that feature prominently on the stock market. Further, comparing the US with other countries Allen (1995: 87) contends that "there does not appear to be any evidence that risk is shared better in the US. In France, Germany and Japan the portfolios held by banks and other financial institutions appears to spread risk across the population as effectively as happens in the US".

Table 3.7 shows the number of firms that had analyst coverage in 1992 and a considerable difference between countries can be noted. The Table indicates that in France and Germany especially, very little information seems to be gathered and thus stock prices would be unlikely to reflect much information. At the other extreme, as US firms seem to be heavily covered by analysts, they should likely incorporate more information.

Table 3.7: Number of firms covered by analysts by country

Country	No of firms covered
France	303
Germany	210
Japan	1,152
United Kingdom	1,183
United States	> 4,600

Source: Nelson's Directory of Investment Research (1992)

Grossman (1976; 1978), Grossman & Stiglitz (198) and Diamond & Verrecchia (1981) have all advanced models where investors have diverse information which stock prices aggregate. This allows stock prices to provide efficient signals for resource allocation. In fact, Diamond & Verrecchia (1982) and Holmstrom & Tirole (1990) extended this idea to suggest that the information content of stock prices allow effective managerial incentive schemes to be provided. Still, Allen (1995: 88) maintains that as with risk sharing "it does not appear that the US has had any significant advantage over other countries in terms of the efficiency of investment allocation or the provision of managerial incentives". Given this assessment bank-oriented systems would appear to engage in wasteful expenditures in the form of analyst gathered information.

Thus far in this section arguments have been presented that stock market based systems have few advantages and a number of disadvantages when compared with bank-based systems and thus bank-based systems are superior. The remainder of this section will examine these standard arguments and contend, on the contrary, that they do not capture all the benefits of stock markets, which can play a meaningful role. Subsection 3.4.1 will suggest that from the classical economists onwards, the typical starting point has been that the production technology is well known and the essential resource allocation problems have been static in nature. With competitive industries like agriculture, repetition ensures that consensus will be reached soon, an assumption that is appropriate. However, in many countries (developing ones in particular) with oligopolistic or monopolistic industries, the actions managers of large corporations should take are far from clear. They face extraordinarily complex problems and there will be a divergence of opinion on what firms should do. This sheer complexity means that although there may be some information sharing, a consensus on how firms should be run will not be reached, it being simply too time consuming and costly to transfer all the relevant information. The crucial issue for resource allocation in this situation is one of checking that management undertake sensible strategies. In this context, Allen (1995) holds that the stock market provides the great advantage of providing incentives for a large number of investors to check what

the firm is doing. These arguments will be explored more carefully in Subsection 3.4.2. Having examined this checking aspect to stock markets, the role of banks is put under the spotlight. The crucial difference between Allen's (1995) framework and those of Diamond (1984) and Mayer (1988) is that repetition of the decision making process is valuable. Banks suffer from the weakness that they allow checking to occur only a relatively few times⁴⁶. In Subsection 3.4.3 the argument that banks are institutions which will be advantageous when there is consensus on the actions management should take, the problem as Diamond (1984) explains, being to ensure that they actually do take them, will be debunked. This argument is flawed because in industries where wide disagreement on optimal policies exist, stock markets provide a distillation of wisdom. Allen's (1995) proposition that the stock market provides a checking role also has implications for government ownership. One of the defects of the centrally-planned systems under communism was that there were no checks in the sense of decisions being replicated. Although the information managers was often far from the truth that did not become apparent for a considerable time. In non-communist countries, particularly those with natural monopolies, there has also been considerable government ownership of firms. The only checks on these firms are provided by politicians, which again rarely involves decision replication. A stock market quotation in contrast means that analysts have a constant incentive to consider how the firm is being run and what alternative strategies there could be. Such a position suggests that private ownership of firms even when they have natural monopolies may be preferable to government ownership. A position particularly relevant to developing countries being advised to privatize their state enterprises. This position will be discussed in Subsection 3.4.4. The approach of this section is related to that taken by Sah & Stiglitz (1985; 1986). They considered the optimal firm structure given the mistakes people make in screening projects. This section advances this view by examining that optimal structure given that different views exist on how firms should be run. It is thus still concerned with the allocation of resources but

⁴⁶ If there is just one bank lending, checking might only occur just once.

similarly dispenses with the traditional assumption that the production function is known to all.

3.4.1 Traditional Analyses

The traditional view of firms, the classical economists advanced, was that they combined a vector of inputs (such as various types of capital and labour) to provide a vector of outputs. Here owners or managers had simply to choose that vector of inputs that would maximize profits given the technological relationship between inputs and outputs. Prior to the industrial revolution, modeling the firm by assuming its production function was well known was appropriate. There were many features of the industries in such economies that made such an assumption reasonable, such as:

- industries were competitive with many producers;
- production cycles were relatively short; and
- technology was constant.

Agriculture is a classic example of an industry with such characteristics. There were many farmers, production occurred within a matter of months and was repeated annually and the technology used in the process changed only slowly. An assumption of a known production function under these conditions was appropriate. Because there were many producers and production cycles were short, a wide range of actions could be tried and their results uncovered. Direct observation and movement between farms ensured this information spread widely and wide agreement on the most appropriate technology could be found throughout the industry.

Suppose a manager, who may or may not be the owner, runs a firm⁴⁷. She could choose various courses of action ϕ for it, which would be multidimensional and may include a wide array of measures. Examples being how much to invest in equipment, research and development, what human resource policies to follow and so on. Manager i's opinions of the effectiveness of the various possible

⁴⁷ For larger corporations 'the manager' could be envisaged to include the management team that runs the firm.

actions would be determined by her information set ψ_i , which again would be multidimensional. It would include the information the manager has about the firm, her education and training, relevant sociopolitical views and so on. The manager's perception of firm value would depend on this information set and the course of action undertaken and could be modeled:

$$V_i = V(\varphi, \psi_i) \quad (3.8)$$

The true information set being denoted ψ_T . Each manager's view of that information set would be a function of it as well as a vector of random disturbances ε_i , such that:

$$\psi_i = \psi_T + \varepsilon_i \quad (3.9)$$

where $E\varepsilon_i = 0$ and the ε_i are independent.

Figure 3.10 shows the relationship between firm value and the manager's information for the special case where φ has only one dimension⁴⁸. Manager i will perceive the optimal course of action as φ_i^* although in reality it is φ_T^* . Thus, while the manager perceives the value of the firm as $V(\varphi_i^*, \psi_i)$, in reality it actually is $V(\varphi_T^*, \psi_T)$.

⁴⁸ It is important to bear in mind that in practice φ will be multidimensional.

Fig. 3.10: The Relationship between Value and Actions

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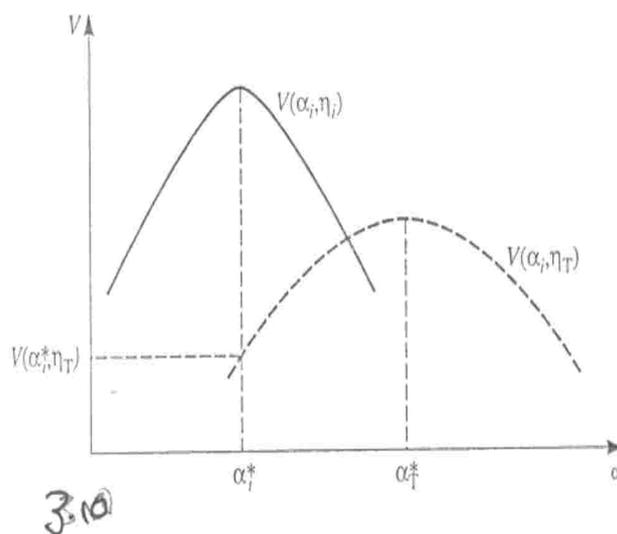


Figure 4.3 The relationship between value and actions

Source: Allen (1995)

Although important it is still a long and complex process for managers to acquire the information they need. Part of it occurs during their formal training, while part of it is acquired through seeing the outcomes from the decisions they make as they run their firms. Since the amount for information involved is so large, it can be directly transferred only at great cost. For firms in competitive industries with brief production cycles, the effect of various actions is soon empirically established. Such empirical information will come to dominate and a consensus on the relationship between actions and value will emerge, providing:

$$V(\varphi_i, \psi_i) = V(\varphi_i, \psi_T) \text{ for all } i. \quad (3.10)$$

This information convergence occurs through a variety of ways including through the educational system, trial and error, personnel moving between firms and direct observation of the competition. In this environment, having competitive industries with many firms enables the information that forms the basis of managerial decision-making, having been numerously verified, to be widely agreed upon. Given these features it is natural to assume that everybody knows the production technology.

This was the view the classical economists took of the production process and it provided very useful insights into the price system in allocating resources efficiently. This type of economy would have little use for a stock market and that is probably why the classical economists rarely mentioned its existence⁴⁹. This static resource allocation theory culminated with the Arrow-Debreu model and the fundamental welfare economics theorems. An efficient allocation of resources could be attained provided markets are complete. Important for them to be complete is that the appropriate financial markets be available to consumers. While equity and bond markets may provide this role there is no need that they do so as any other types of financial security that could complete the market could be used. In the Arrow-Debreu theory, apart from a possible role in risk sharing the stock market is not important.

3.4.2 The Checking Role of Stock Markets

A number of factors active in the modern economy makes the assumption, that the relationship between actions and outcomes is agreed upon, problematic.

These include:

- increasing returns to scale resulting in only a few firms dominating an industry;
- a long time gap between the adoption of policies and the realization of their success or failure; and
- the speed and importance of technological change.

⁴⁹ Even though Soule (1935) describes Ricardo as having made a fortune on the stock market before turning to economics, his theories ascribed it no special place.

These factors occur in sharp contrast with those upon which the pre-industrial revolution was based. Now, in several industries instead of there being many firms there are but a few, instead of short production cycles, these can now be up to several decades in length and finally, instead of technological change being unimportant, it often happens rapidly with major consequences for producers. Together, these factors suggest that very little consensus about the effects of managerial action will emerge. The complexity of running modern corporations means that even though considerable effort on gathering information may be spent, a uniform view on what the best actions to undertake will not be found. It is not just that there will be differences in the data collected but the way it is interpreted will differ due to the different education, experience and backgrounds of the people doing the interpretation. Also, as the range of relevant information is so large, in practice it cannot be shared between people. The time taken for a project to reach completion and ongoing technological change means that few data points will be gathered. Differences in views of the production function will persist given the absence of a large enough data sample on the effect of various policies. This opinion divergence is an important feature of many industries especially for developing countries.

From standard Bayesian decision theory it is known that if two people have the same priors for a given event and their posteriors are common knowledge, they cannot agree to disagree (Aumann, 1976). Geanakoplos & Ploemarchakis (1982) showed that if two agents receive different information, by communicating their posteriors back and forth they would eventually converge upon a common posterior. Extending these results to n individuals McKelvey & Page (1986) demonstrated that public announcement of posteriors was not necessary for convergence as the public announcement of other aggregate statistics could have the same effect. The crucial point being that if the information each person observes is complex enough, the number of iterations required to reach convergence will be large. The process of making public announcements and

updating priors is both costly and time consuming. In an environment with continually changing technology, agents are only able to update a limited amount and in practice, will have to agree to disagree.

Returning to Equation 3.9 where a manager's information set was assumed to be the true one plus a disturbance and, where these disturbances are independent, means that the more values of ψ_i that are obtained, the better will be the aggregate information set. That is why competitive industries do well in this set-up: there are multiple 'draws' and a consensus as to the true production function will, in the long run, be reached. In oligopolistic and monopolistic industries, where there are only a limited number of views, each having a certain amount of idiosyncratic noise, this will not be the case.

The resource allocation problem here becomes one of trying to ensure that managers make decisions on information sets that are as close to the true one as possible. Increasing the number of firms to make the industry more competitive and hence have more draws of ψ_i would be one way of doing this. However, if there are significant returns to scale this will be an inefficient way of obtaining checking. Another way to achieve checking is to set up a stock market with many investors where an incentive would exist to obtain numerous estimates of ψ_i .

Grossman (1976; 1978) in a series of papers has argued that if some agents are better informed than others about the value of a financial asset, then the price of that asset would be an aggregate of the information possessed by all the traders. Similarly, in their work on agreeing to disagree, McKelvey & Page (1976) demonstrated that, provided markets are complete, public revelation of asset prices would be sufficient to ensure consensus on the return distribution from that asset. However, given that there are costs to acquiring that information, a paradox in the complete market framework exists (Grossman & Stiglitz, 1980). If the price reflected all investors' information there would be no incentive to expend resources for information gathering and thus no one would do so.

However, if no one does then an incentive to expend resources and profitably trade on it arises. As a solution to this paradox Grossman & Stiglitz (1980) argue that there may be a number of variables which are unobservable to participants so that markets remain incomplete thus limiting the ability of the uninformed to deduce the information of the informed from the price. In this case the costs of gathering and analyzing market information are recoverable. While uninformed investors may be able to deduce some information from the price they will not end up with the same posteriors as the informed. In general, the more variables that are unobservable, the less is the information that can be deduced from the price and hence the greater the difference in posteriors between informed and uninformed will be.

When many different dimensions of information become relevant for determining optimal actions, stock prices will transfer very little of it. Although the stock price may be a relatively accurate signal of $V(\varphi_i^*, \psi_T)$, where φ_i^* is the current set of actions management proposes, given the large dimension of ψ_T being postulated and the lack of knowledge about the structure of the economy itself, the stock price may reveal a very limited amount about ψ_T itself⁵⁰.

If the market comprises many small investors it will typically not be worthwhile for each individual investor to undertake the necessary research. Although, even in this case the existence of an information market as considered by Admati & Pfleiderer (1986; 1990) and Allen (1990) may mean that a number of groups still go through the process of estimating ψ_i . In those countries where market activity is dominated by institutions and investment houses who employ financial analysts to gather and analyze company data, a wide range of circumstances for the stock price to reflect $V(\varphi_i^*, \psi_T)$ ⁵¹ occurs.

⁵⁰ For example, the stock price of Sappi may be a reasonable estimate of its value given current management policies, while revealing very little about others' views of what its optimal strategies should be.

⁵¹ In Allen (1990) analysts are provided with the correct incentives to reveal their information truthfully, which may not always be possible in practice. In such cases analysts may be compared with their peers and may thus 'herd together' creating an insufficient diversity of views relative to the truth.

Allen's (1995) views on this subject are clear: Because stock prices tend to reflect the true value of the firm given current management policies, the stock price can help to allocate resources efficiently. Further, as the stock price does not provide much information about the optimal policies a firm should pursue, other means of transferring the information about such policies need to be followed. Each of these propositions will be examined a bit more closely.

There is a number of ways stock prices affect resource allocation. A firm first raises money in the market through its initial public offering (IPO). If the market ascribes a value to the firm less than its start up cost, the offering will fail. This is an example of the direct allocational effect of checking by investors. Ibbotson (1976) and others have documented the fact that IPOs are underpriced⁵² and that stock prices rise, on average, by about 15 percent during the first day of trading. While this was for some time regarded as a puzzle, Rock (1986) showed that such underpricing comes about because some investors collect information and value the firm, leaving uninformed investors with an adverse selection problem. Informed investors who calculate that a stock is worth more than its issue price will order a large amount. As a result the uninformed will be rationed when buying the stock is profitable. Should the stock have an issue price above its value the informed will not demand any and the uninformed will receive their full allocation. Thus, in order for the uninformed to be willing to participate there must be underpricing on average.

An alternate explanation for IPO underpricing is based on the assumption that the owners of the firm are better informed about its value than are investors in the market. Allen & Faulhaber (1989), Grinblatt & Hwang (1989) and Welch (1989) have suggested that in such a case underpricing acts as a signal. Good firms signal they are good by underpricing their IPOs which enables them subsequently to raise capital on better terms than if they did not signal.

An important question, given these two views, is whether it is the firm itself or the market that has the best information about the firm's value? Michaely & Shaw

⁵² See Smith (1986) for a summary of the empirical evidence on underpricing.

(1992) considered data from firms with IPOs between 1984-1988 to test between these two hypotheses. Their results do not support the signalling hypothesis but suggest instead that it is the market that has the superior information. Jegadeesh *et. al.* (1991) investigated a similar issue using IPOs between 1980 and 1986, their results also showed that it was the market with the better information. The result that the market has better information than the managers (who would be considered insiders) of a firm undergoing an IPO, appears unlikely at first. However, what is important is that even though the firm may be better informed about its prospects than any single investor, in the aggregate the market may be better informed than the firm. IPOs are therefore an example of how checking by investors ensures that resources are allocated to viable firms. Should the firm's managers have information sufficiently different from the truth, the stock market mechanism will ensure that they will not be allocated resources. This multiple checking by investors ensures, on aggregate, an efficient allocation of resources. The larger the degree of initial underpricing the stronger the incentive investors will have to become informed. Thus, the information collected initially tends to be relatively positive.

After the firm goes public, its equity trades on the stock market. Because it is publicly quoted investors have an incentive to value it. This involves continually evaluating ψ_i and deducing $V(\varphi_i^*, \psi_i)$, the stock price again reflecting this average valuation of investors. The allocational effect is now not the same as during the firm's IPO, and it has been shown that even in the US companies resort relatively infrequently to the capital market to raise money preferring to rely on internal finance instead (Mayer, 1988).

This raises a number of points. The first being that as long as a firm is making reasonable earnings it will not have to rely on the market for funding. In terms of this section's analysis, as long as managers' information is sufficiently close to the truth, ψ_T , it should be able to generate earnings and need not be extensively checked by the market. Should ψ_i be very different from ψ_T , the firm will not be successful, earnings will not be enough to finance its needs and it will have to go

to the market for capital. Its stock market valuation is again important and in the same way as in its IPO. Only those firms investors on average think have a value greater than their costs will receive funds, the checking function of the stock market again ensuring efficient resource allocation.

The financial policies firms pursue is an important determinant of the effectiveness of the stock market as a checking agent. Firms using a significant amount of debt and paying out a large portion of earnings will have to raise finance continually, with the average valuation investors will assign to them, being an important consideration of the level of resources they will be allocated. Clearly this is related to Jensen's (1986) free cash flow theory. The difference being that in this case the poor quality of information managers have wastes resources while in Jensen's theory managers pursue their own ends.

It is interesting to ask why it is that investors do not always insist on keeping firms on a short rein so that they must frequently return to the market? Thus far no distinction has been drawn between the ease with which managers and investors acquire their values of ψ_i . It often does happen that once a firm is in operation managers may have more accurate information than is available to outsiders and it may then be optimal to give those managers relatively long reins. For companies where research and development are important components of its long-term viability (IBM and Kodak are examples) and where investors have very limited access to the results of R&D programmes, this is likely to be the case. Investors may be able to give managers a lot of freedom while correspondingly accepting fairly conservative debt and dividend policies. Conversely, for firms where the technology is relatively well known (such as utilities) it may be optimal to restrict managerial action and force them to return to the capital market relatively frequently. This type of theory of corporate financial policies may help explain why taxes often appear to have such little influence on them.

Allen (1995) has argued that the stock market helps allocate resources efficiently because of these incentives that are provided to investors to gather information

and check that the plans managers follow are sensible. Going through this exercise a multitude of times ensures that stock prices reflect values accurately. In the case of IPOs this effect on resource allocation is immediate. Even though firms raise funds in markets relatively infrequently this effect is still important for the trading of stocks in the secondary market. The primary purpose of corporate financial policy then becomes one of determining the extent to which firms can rely exclusively on their perception of ψ_i . The issue of how information is transferred still remains.

It was argued that in competitive industries a consensus on ψ_T , through the transfer of information by various mechanisms, emerges over time. In non-competitive industries, subject to technological change, the stock market ensures that only those managers, who intend to follow strategies close to the market consensus, will be allocated resources. Given its complexity, the stock price allows very little of the information set ψ_T to be deduced. Thus, important to efficient allocation is some mechanism that ensures information transfer takes place. A certain amount of information will be transferred directly, analysts will discuss what they think of various options a firm could take and the likely effectiveness of these, with some of these views reaching management and affecting their view of ψ_T . Through trade associations, cartels and joint research ventures firms are also able to voluntarily exchange information directly. Novshek & Sonnenschein (1982), Clarke (1983), Vives (1984) and Gal-Or (1985) all discuss the role of trade associations for information exchange. In the Novshek & Sonnenschein (1982) model, firms with access to the same amount of private information are indifferent between revealing and not revealing it. In the papers by Clarke (1983) and Gal-Or (1985), information sharing is not optimal in equilibrium. Still, Vives (1984) demonstrated that if goods are substitutes and there is Bertrand competition, or if goods are complements and there is Cournot competition, sharing information is optimal.

Roberts (1985), Cramton & Palfrey (1990) and Kihlstrom & Vives (1989) looked at the information sharing that occurs in cartels. By considering a duopoly where

costs could be high or low but not publicly observable, Roberts (1985) showed that if firms are sufficiently alike, then information about costs would not be shared and collusion would not be achieved without side payments. Cramton & Palfrey (1990) generalized this analysis by considering a model with a continuum of firms and a finite number of types. They demonstrated that as the number of firms is increased, information exchange and cartel formation, even in the presence of side payments, would not occur. Although they used a similar model, Kihlstrom & Vives (1989) found that the adverse selection problem was less severe, information was exchanged and the monopoly outcome was enforceable. Katz (1986) in looking at joint research ventures posited that firms in these relationships had an incentive to share the costs and knowledge the research projects created. The paper by Bhattacharya *et. al.* (1990) analyzed the optimal level this knowledge sharing should be and showed how it could be implemented.

Besides these methods for voluntary information exchange, the market for corporate control provides another important mechanism. An important element of market economies is the ability of different management teams to compete for asset control (Manne, 1965). Essentially three mechanisms exist for this to occur - proxy fights, direct share purchase and mergers. These mechanisms can be interpreted using Allen's (1995) information set framework. Suppose there is a raider R whose information set is ψ_R such that its optimal set of actions, ϕ_R^* differs from that being pursued by current management ϕ_i^* and:

$$V(\phi_i^*, \phi_R^*) > MV \quad (3.11)$$

where MV is the market value of the firm.

The raider can take advantage of this opportunity through a proxy fight. In order to persuade shareholders to vote with the raider so that what it judges are the optimal policies ϕ_R^* are implemented, it must transfer ψ_R to them in a bid to convince them that it is better than their own information set. Unless the current management is adopting policies that are clearly suboptimal, this will be difficult.

Transferring an information set can be exceedingly complex, with differences in education meaning that different interpretations may still emerge though agreement about the data is found, making it necessary to share information about educational processes to obtain consensus. If the number of shareholders is large, it is unlikely that proxy fights will be either practical or successful. This corresponds with the evidence that proxy fights are relatively rare.

The second way is by tender offer, where there is no need to persuade the shareholders directly, a large enough offer inducing them to sell. The information set of the median holder ψ_M conditional on the offer will determine the amount that must be paid. The size of the raider's offer being dependent on:

$$\text{Max} \{V(\varphi_i^*, \psi_M), V(\varphi_R^*, \psi_M)\} \quad (3.12)$$

Shareholders will update their beliefs in response to the raider's offer but as before, given significant differences in information interpretation, not very much will be updated because of this single piece of information. Thus, Grossman & Hart's (1980) holdout problem will not necessarily arise. Suppose the median shareholder thinks firm value will drop after the raider obtains control (*i.e.*, $V(\varphi_i^*, \psi_M) > V(\varphi_R^*, \psi_M)$). They would need only their reservation value $V(\varphi_i^*, \psi_M)$ in order to sell willingly. A holdout problem would only arise if the median holder has similar views to the raider (*i.e.*, $V(\varphi_i^*, \psi_M) \geq V(\varphi_R^*, \psi_M)$). In that case, unless there are possibilities for dilution as in Grossman & Hart (1980), the raider will have to pay the full price. Takeovers are thus most profitable for raiders when their views are both different from other shareholders and closer to the truth. This would require that as little information as possible is transferred before the takeover occurs.

Mergers present the third way of transferring control. However, if the merger occurs after a tender offer it is still the tender offer that enables that transfer. Thus the case being described here is one where both firms agree to the merger and no tender offer takes place. One of the advantages of mergers is that there need not be a complete loss of the experience of previous managerial actions. If

ψ is very complex, mergers may be the most effective way of both sharing information and obtaining a superior information set on average.

This subsection has suggested that one of the main roles of stock markets is that they provide a check that firms are well run when there are divergences of opinion about how they should be run. By being publicly quoted, firms provide built-in incentives for investors to assess what management is doing. Because the stock price comes to reflect the views of a wide range of investors it is likely to be representative of the true value of the firm. Even though firms do not often seek capital from the market, preferring instead to fund investments through retained earnings, a stock market quotation is still important as it ensures continuous checking. Should managers get a long way out of line with the consensus in the market they will be forced to relinquish control either because they will not be able to secure additional capital or because of a takeover attempt. An important implication of this analysis is that stock market ownership is preferable to individual or family ownership. Although the latter confer certain incentives absent from stock market ownership, the checking function arising from the listing should lead to a better allocation of resources overall.

3.4.3 Why Commercial Banks Aren't Enough

The Diamond (1984) theory of commercial banks advocated that banks were delegated monitors who would collect information about firm management to ensure that they do not take suboptimal action. In a firm in which equity is owned by many shareholders, none of them has the correct incentives to monitor the firm. While they could combine to hire somebody to do this, that person would effectively be another manager. The essential problem then is one of who monitors the monitor? Diamond (1984) showed that a bank that undertook to monitor a number of firms could diversify the risk associated with each. It could guarantee the cost of such monitoring by promising a certain return to depositors, for if it did not monitor the firms it would be unable to pay the promised return. This theory depends on the assumption that consensus exists both on the way a firm should be run as well as the probability distribution of returns to loans. If

there were disagreement on the expected return on loans, depositors would not be able to evaluate properly whether or not the bank had done the required monitoring.

When there is no consensus on the way in which firms should be run, as in the previous subsection, stock markets are more effective than banks in allocating financial resources. When banks evaluate companies for loans they produce an estimate of ψ in order to value the firm. Thus they provide a check on the manager's estimate. The problem is that there is only this one check. In situations where there are diverse views on ψ this does not enable much of a consensus to be reached. The notion, that the bank cannot simply hire more people to produce information sets that mimic those individual shareholders would have, is implicit in this argument. Because banks negotiate loans with borrowers individually it is necessary that information be aggregated. Ultimately there will be a loan officer in charge of the negotiation and her biases would affect the weights given and determine ψ_i . The complexity of the information that forms the basis of the negotiation and its subjective nature, mean that it cannot be aggregated simply. Of course, a bank could exactly replicate a stock market but because of the costs involved setting up an actual market would be preferable.

Hellwig (1990) criticized Diamond's (1984) theory for assuming that firms will transact with only one bank, which in practice is not usually the case. If differences in information sets do exist an increase in the number of banks the firm deals with may be quite advantageous for all. But as Allen (1995: 102) points out "The problems associated with coordinating negotiations that are likely to occur as the number of banks increases, however, mean that it will usually be worth only a few banks lending".

The essential difference between Diamond's (1984) theory and that supported here is that multiple opinions are valuable. Banks do not give repeated evaluations in the same way as stock markets do and thus inefficiencies in

resource allocation when there are large differences of opinion on production functions may well occur. Combining these two theories may help explain why banks appear to be the optimal way of allocating resources in some situations while in others stock markets are. At the beginning of this section it was noted that on both the London and New York Stock Exchanges agriculture was an insignificant sector, a trend that can be observed on most exchanges even today. This is because as the technology is well known and wide consensus on how farming should be done exists, banks are a better way of providing financing. The bank would be able to both monitor the firm effectively and take advantage of scale economies in that monitoring. In industries that are rapidly changing there is little consensus on how firms should be managed and thus an allocation of resources through the stock market is more desirable. Countries whose industries are fast growing and developing or with industries with a significant amount of concentration should therefore encourage stock market expansion.

It was the UK that first experienced the industrial revolution in the nineteenth century with the development of railways and other new industries. These were to a large extent financed through issues on the London Stock Exchange. It is intuitively appealing therefore to contend that as developing countries experience their own versions of the industrial revolution they should look to stock exchanges to fund that development.

3.4.4 The Role of Government

An important debate among economists, about whether or not planned socialist economies, where the state owned the means of production, could allocate resources efficiently, occurred during the early part of the twentieth century. Lange and Lerner argued that there was no inherent reason why such an economy could not achieve the same allocation of resources as a capitalist one. This debate took the traditional classical model discussed in Subsection 3.4.1 as its starting point, where a consensus on production functions was essentially assumed. As an illustration consider Lange's (1938: 34) argument that "the administrators of a Socialist economy would have exactly the same knowledge,

or lack of knowledge, of the production functions as the Capitalist entrepreneurs have". Even in their defense of capitalism Robbins and von Hayek took the traditional framework of analysis as given, arguing that the practical difficulty of calculating the necessary prices would be the main problem of most socialist systems (Robbins, 1934).

All the arguments advanced followed the classical tradition of ignoring the channels of intermediation and especially assigned the stock market no special role in that debate. Very little discussion, about the basic assumptions of the static model occurred, the question of private versus state ownership not really being very important to this framework. As the technology is known, managers employed by the state could run firms as efficiently as managers employed by shareholders. Although most countries did not go as far as the Soviet block in terms of central planning, state ownership became a central tenet of many socialist parties. After the Second World War many of these parties attained power and nationalized a large section of their industries. Many developing country governments were also heavily influenced by Lange and Lerner's ideas and large sectors of industry came under state control.

The argument presented in Subsections 3.4.2 and 3.4.3 suggests that public ownership will be inefficient as there is only one group attempting to estimate the relationship between firms' actions and outcomes. There is no replicative checking except that undertaken by the ministries in charge of the industries and politicians. Also there is no automatic incentive for this to occur, in the way that there is for a stock market economy. The misperceptions of managers who have inaccurate information could persist almost indefinitely. State-owned industries thus provide a stark contrast to those where firms are listed on stock exchanges.

In many countries natural monopolies are directly owned by the state. Traditional theory has little to say in terms of the efficacy of this compared with having a company owned by shareholders and regulated by the government. The theory in Subsection 3.4.2 would suggest that there is an important difference. With

government ownership there is again no checking but with private ownership stock market investors will constantly monitor what the management of the firm is doing. In this regard it is interesting to note that many of the early listings on the exchanges of developed countries were of monopolies. The first joint stock companies in the UK were for instance trading monopolies such as the East India Company and other monopolies such as those providing water supplies. Later in the United States, a large proportion of listed stocks were those of regulated utilities. Of course, it must be kept in mind that the desirability of ownership of natural monopolies depends on the effectiveness of government regulation, the disadvantages of which may offset the advantages associated with market listings.

3.5 Equity Investment in Developing Countries

In recent years world financial markets have been characterized by trends toward increased liberalisation, integration and securitization. These markets show today a much higher degree of integration where large amounts of capital cross borders to take advantage of the slightest perceived financial or diversification benefit. Gross capital flows among industrial countries are also larger now than they were about a decade ago. In 1993 gross capital outflows from the main developing countries came to about US\$850 billion compared with an average of about US\$500 billion during the period 1985-1993 and about US\$100 billion during the first half of the 1980s (BIS, 1993/1994). Easy tradable securities such as bonds, equities and other negotiable instruments comprise much of this increased cross-border flow. This has all happened, especially in developing countries, against the backdrop of increased domestic financial liberalisation and the opening up of domestic markets to foreigners through the reduction in capital controls and other barriers.

Developing countries supported by improved domestic policies and increased economic growth during the 1990s shared in these trends. Total net capital flows (in real terms) to all developing countries reached their highest levels during the mid 1990s since the debt crisis of the early 1980s (World Bank, 1993). Private

capital flows especially increased in the 1990s and were about 50 percent higher than in their peak in the 1980s. Compared to the 1970s when there were also large private flows, these newer flows showed a shift from bank to nonbank destinations, particularly through increased direct and portfolio investment⁵³. Since the mid-1980s direct investment flows to developing countries have been increasingly at very high rates and portfolio flows to emerging markets have increased sharply in magnitude in particular. An important component of these flows have been into equity.

The large amount of portfolio flows to several developing countries raises several research and policy questions. Such as what the benefit to an industrial country investor is from investing here? How well these markets are integrated with developed country markets, and how has this changed over time? To what extent are changes to free capital movement barriers affecting financial integration? And finally what exactly are the barriers (both in developed and developing countries) to full financial integration? Developing countries are also concerned about what volume of financing can be expected in the coming years? From where will it originate and to whom will it flow? To what extent are these flows a function of developing country factors as opposed to factors in the developed ones? Are these flows volatile (so called "hot-money") which require some form of public action? Do developing stock markets price assets efficiently? What is the broader function of these markets for resource allocation and managerial control? And finally, what is the relationship between stock market expansion and domestic economic performance?

While these are the types of questions this section seeks to address, it should be kept in mind that the research surveyed here presents the first wave of serious research in this area. Thus many of the questions raised will not be answered exclusively, more research and experience on this important aspect of capital

⁵³ Taken as a percentage of exports or of the GDP of developing countries, aggregate resource flows in the 1990s, while above their 1980 levels were still below their level in the mid to late 1970s. This implies more of a change in composition than an increase in overall net flows. In the 1970s most financing was from commercial banks to governments and equity investment was a much smaller percentage than today.

market theory being necessary. Subsection 3.5.1 provides a brief overview of the amounts and motivation for equity portfolio flows. Subsection 3.5.2, a survey of the different approaches to benefit-testing, from an investors perspective, of investing in emerging markets and the most significant findings. Subsection 3.5.3 looks at the role of stock markets and their benefits for developing countries, while Subsection 3.5.4 examines the various policy issues that arise from such increased flow for these countries.

3.5.1 Amounts and Motivations

Table 3.8 shows that from 1989 to 1993 total portfolio flows (bonds, certificates of deposit, commercial paper and equity) increased more than seven fold to a level of US\$55.8 billion (Gooptu, 1993). Portfolio equity flows now account for about a third of overall net resource flows to the developing world, with equity flows being an important component of these. Total equity flows to developing countries in 1993 were at US\$13,2 billion quadrupling that just three years earlier. Seen in perspective such flows are still small for developing countries on aggregate (about seven percent of the aggregate net resource flows they received in 1993), still for many these equity flows provide an important source of external finance⁵⁴. Equity flows may be through direct equity purchases by investors in host stock markets, country-fund investments, rights issues on equities held by depository institutions in the form of American Depository Receipts (ADRs) and Global Depository Receipts (GDRs)⁵⁵, and foreign direct equity offerings. In the early 1990s equity flows took place largely through such depository receipts. Table 3.8 shows that for 1989-1993 the volume of ADRs and GDRs issued for developing country equity claims was about US\$18,2 billion, including direct offerings on foreign capital markets by developing country corporations outside of the ADR or GDR structure. Until 1990 closed-end country funds were most important, US\$10,3 billion worth of these funds being created for developing countries

⁵⁴ Equity flows for Mexico for example, represented a quarter of the total net external financing for that country in 1991 and 1992.

⁵⁵ ADRs and GDRs are receipts issued by intermediaries in developed countries against shares they hold in custody in developing ones.

during 1989-1993. The highest relative increase in the early 1990s (and of second importance overall) was direct purchase of equities, estimated to have been around US\$3,2 billion in 1993 up from US\$0,8 billion just three years earlier.

Table 3.8: Portfolio Flows to Developing Countries, 1989-1993 (estimates in US\$ billion)

Type of Flow	1989	1990	1991	1992	1993	Total 1989-93
Bonds, commercial paper and deposit certificates	4.0	5.5	12.7	23.7	42.6	88.5
Equity	3.5	3.8	7.6	13.0	13.2	41.1
New country funds	2.2	2.9	1.2	1.3	2.7	10.3
American and global depository receipts	0.0	0.1	4.9	5.9	7.3	18.2
Direct equity	1.3	0.8	1.5	5.8	3.2	12.6
Total	7.5	9.3	20.3	36.7	55.8	129.6

Source: World Bank (1993)

A number of factors in both developing and developed countries have played a role in the recently increased importance of equity flows. Calvo *et. al.* (1993), Dooley *et. al.* (1994) and Fernandez-Arias (1994) suggest that the decline in global interest rates in the early 1990s was an important "push" factor for equity flows. While Chuhan *et. al.* (1993) point to improved domestic policies and better growth performance in recipient countries, reflected by their higher rates of return on equity, as important attractors of capital. The removal of barriers by both developing and industrial countries on foreign participation in domestic stock markets has also contributed (Claessens & Rhee, 1994). Many developing countries have removed foreign ownership restrictions, liberalized their capital account transactions and improved their accounting and information standards thereby making it easier for foreigners to access their markets. In Europe and Latin America for instance, many countries now have very few (or no) restrictions on foreign access to their markets, treating foreign and domestic investors virtually the same. In like manner, several industrial countries removed or relaxed their restrictions on investments in developing countries (Chuhan, 1994).

3.5.2 Why Investors should invest in Emerging Markets

Ultimately the tradeoff between expected return and associated risk constitute the benefits for investors in emerging markets. Assessing this tradeoff requires that the underlying factors driving rates of return and its variability, domestic stock market efficiency, the accounting, regulatory and enforcement standards in the host country, the ability to invest in that country, the different forms of transfer risk⁵⁶, taxes and other transaction costs as well as any accounting, regulatory and restrictive standards that a home country may impose⁵⁷ should all be considered. Although the returns from emerging stock markets have been high, the annual US dollar rate of return on the IFC composite index for Latin America was 38,88 percent during 1988-1993, compared with just 14,40 from the US Standard and Poor's 500, volatility of those returns have also been high. During that same period going as high as 100 percent on an annual basis for Argentina for example. This high *ex post* rate of return and high volatility already suggest a tradeoff for investors.

The risk-return tradeoff should be seen from the perspective of an investor with an internationally well-diversified portfolio contemplating investing in emerging markets. As equity returns from different countries are lower correlated than those from the same country the diversification benefits⁵⁸ are stronger across international financial markets than within domestic ones. This is particularly true for investments in developing countries as their stock returns tend to have even lower correlations with those from industrial countries. Participating in emerging markets is thus likely to lower overall unconditional portfolio risk. This is now a well established fact, Harvey (1993) and Divecha *et. al.* (1992) both found that by investing up to 20 percent of an international portfolio in emerging markets, the

⁵⁶ For instance that capital controls that will affect the ability to repatriate capital out of the host country will be imposed.

⁵⁷ Such as restrictions on the proportion of foreign assets pension funds may hold.

⁵⁸ A lower risk for an equivalent return or a higher return for an equivalent risk.

risk-return tradeoff is Pareto-improved and that the unconditional mean-variance frontier shifted upwards quite dramatically. Harvey (1994) and De Santis (1993) demonstrated that this shift was not just dramatic but statistically significant as well.

An important caveat concerning these diversification benefits is whether these gains are attainable in practice or represent theoretical base case scenarios. Barriers (and transaction costs) may affect the actual result, meaning that diversification benefits are particularly related to capital market integration. Sans barriers capital markets are fully integrated and due to the successful elimination of arbitrage opportunities, assets traded in different markets but with identical risk characteristics will post identical expected returns. With barriers, markets would be segmented allowing assets, even with the same risk characteristics, to post different expected returns.

There are several ways to test for and measure the degree of stock market integration. One of which would be to explicitly model the barriers, derive the effect on equilibrium asset prices and stock holdings and then test the model. Stulz (1994) for instance models an equilibrium price given ownership restrictions, taxes and other barriers. This approach is problematic with there being so many barriers to consider few of them being easily quantifiable. Besides, the use of any specific asset-pricing model brings with it the risk of mis-specification as it would be unclear which rejections should be attributed to the model and which to a lack of integration.

Assuming that market integration exists and that a particular asset-pricing model holds is an alternative way to test and measure stock market integration. Still, this method is hampered by the lack of a well-established international asset pricing model as well as the mis-specification drawbacks highlighted. While the single factor Capital Asset Pricing Model (CAPM) with its single source of risk may be adequately applied in a domestic market, it cannot be appropriated to international stock returns due to its assumption that investors have identical

preferences (*c.f.*, Solnik, 1974; Adler & Dumas, 1983). Unless purchasing parity holds, which it doesn't in the short run, exchange risk will have to enter the tests. Few modern empirical tests have done so however, (among the exceptions being the papers by Dumas & Solnik, 1994 and Ferson & Harvey, 1993). In general Stulz (1994) and Dumas (1994) show that empirical results in tests of the international CAPM have been ambiguous.

A fully satisfying asset-pricing model being absent, the general direction in empirical testing has been toward more complex multifactor models. Risk is then measured with respect to covariances, the "betas" of equity returns with various risk factors. Still, as these factors need to be prespecified, the problem of misspecification remains. Further complicating the matter is that recent research has found significant time variation in expected returns, both domestic and international, although there is, at yet, no consensus on what is driving this apparent predictability⁵⁹. Harvey (1995) is unable to tell if this return predictability is evidence of market inefficiency, time-varying risk premia or infrequent trading of stocks. "Without an explicit, dynamic asset-pricing theory it is *impossible* to distinguish between highly variable risk premiums, peso problems, regime switches, knowledge of policy changes or other inefficiencies" (Claessens, 1995; emphasis added). Nonetheless it has been found that a common set of instruments can predict returns from different industrial countries (Harvey, 1991), a commonality that suggests such countries are relatively well integrated. Testing for such commonality in the factors driving cross-country return predictability thus offers a third way of measuring integration.

A fourth method is to look at the actual investment patterns. Real portfolios of investors from industrial countries exhibit significant "home bias". The proportion of domestic securities held in their portfolios being much higher than would be expected on the basis of simple risk-return tradeoffs and after allowing for a reasonable level of risk aversion. French & Poterba (1991) posit that this suggests a lack of integration.

⁵⁹ A simple static asset-pricing model would require no changes over time in return predictability.

The difficulties associated with testing for and measuring stock market integration have motivated several ephemeral approaches (*c.f.*, De Santis, 1993; Bekaert & Harvey, 1994). The latter authors used the world portfolio as a benchmark for measuring risk and reported that an unconditional, single-factor CAPM was unable to characterize returns in emerging markets. As a corollary this result actually confirms the unconditional mean-variance diversification benefits already advanced. Because a single source of risk (in this case global) is assumed, tests for diversification and segmentation become identical. Deviations from integration represent unexploited mean-variance diversification benefits while diversification benefits would imply lack of integration. In later writing Bekaert (1995) observed that in recent years the slope coefficient of the country return on the world portfolio return (beta) had increased for most emerging markets. He assigned these higher betas as evidence of increased integration on the basis that most industrial countries have high betas. Buckberg (1995) went a bit further by testing a conditional single-factor CAPM in which expected returns are allowed to change over time. Contrary to Bekaert & Harvey (1994) she could not reject the hypothesis that equity markets have become more integrated in recent years while she could reject it for the earlier period, suggesting that the benefits of further diversifying into emerging markets have been reduced. Harvey (1995) doubts this result due to the power of the test Buckberg used. He pointed to an earlier paper (Harvey, 1994) where both expected returns as well as covariance risk (beta) was allowed to change over time and where he found that this more general model was rejected. He then tested multifactor models and found significant evidence that global risk factors were not powerful in explaining returns in emerging markets, especially when compared with explaining returns from industrial countries. Thus while his evidence is consistent with emerging markets being segmented from industrial countries, he found, however, that compared with earlier periods the importance of global factors for many emerging markets had increased. This would suggest greater yet still imperfect integration.

Bekaert (1995) used both global and domestic variables to investigate the degree of return predictability in emerging markets (*c.f.*, Buckberg, 1993; Harvey, 1994). He found rates of return in these markets to be more predictable than those from industrial countries, primarily due to a higher autocorrelation of returns in them⁶⁰. He also observed that global instruments were less important for developing countries than they were for industrial ones. Finally, comparing the 1985-1992 period with a pre-1985 period he observed that global predictability had declined.

These findings substantially complicate the interpretation of predictability through common factors as an indication of market integration. This, as no clear pattern on how predictability for individual emerging markets changes over time has emerged. Thus Bekaert (1995) had to conclude that predictability on its own does not yield much information about market segmentation. Rather, by calculating the correlation between fitted values from his expected return equation for the United States with each country he was able to control for the apparent decline in global predictability. Thus he was able to interpret this correlation as a measure of the degree of cross-country market integration⁶¹. Comparing the correlations for the two periods he found evidence of increased integration for most industrial countries and many emerging markets after 1985.

Tesar & Werner (1995) showed a significant "home bias" exists in most developing countries. The cumulative inflow of foreign equity investments represented only a small fraction of emerging stock market capitalisation and an even smaller portion of the capitalisation of industrial countries, much below any "optimal" share. Their work also showed that turnover ratios for foreign investment in emerging markets was either roughly the same magnitude or somewhat lower than in the United States. However, their analysis also revealed that the share of recent US outward equity investment was in line with the share

⁶⁰ Claessens, Dasgupta & Glen (1995), Buckberg (1995) and Harvey (1995) also reported this higher autocorrelation.

⁶¹ In a single factor model, expected returns would be perfectly correlated across markets, if the markets were perfectly integrated.

of market capitalisation of emerging markets in global capitalisation. This would suggest that, at the margin, the home bias has more recently disappeared. Taken together the evidence based on asset prices suggests that emerging markets were, until the mid-1980s, not integrated with world financial markets but are now increasingly becoming integrated. Evidence from actual investment further supports the view that these markets are becoming *de facto* integrated.

3.5.3 Do Developing Countries need Stock Markets?

The traditional focus of improving the functioning of the financial markets of developing countries, so that they allocate capital more efficiently, has been on the core financial themes examined in this study thus far. These are interest rate liberalisation, smaller government role in credit allocation and an improvement in the role of commercial banks as financial intermediaries. Recently capital markets in general and stock markets in particular have received more attention from policy makers. This subsection reviews first the principal roles stock markets can perform (Claessens, 1995) and then surveys some of the evidence of their benefits for developing countries.

First, stock markets can be a vehicle for corporations raising capital. While this is true for all other forms of financial intermediation as well, in developing countries where privatization and a greater role for the private sector necessitate a large demand for equity capital, stock markets may play a larger role. Second, capital markets and in particular stock markets enable investors to diversify their wealth across a wide variety of assets usually with greater ease than in most other financial markets. By reducing the overall risk investors must bear, the risk premium is also reduced and with it the cost of capital. In the case of foreign equity investment, as foreign investors are more diversified, the benefits to them of a lower risk premium can be particularly large. Third, stock markets perform a screening and monitoring role. Relying on the information sets and judgements of numerous participants, stock prices quickly reflect changes in underlying values and indicate profitable investment opportunities, so providing a screening and selecting function. Through continuous adjustment of stock prices, stock markets

can also assist in monitoring the managers of public corporations thus possibly improving corporate governance. In this sense foreign investment, because it brings with it international best practices and cross-country experiences, may be particularly useful. As the number of publicly traded companies in developing countries increases this monitoring role may be expected to take on increased importance. Fourth, a well functioning financial system requires that the whole financial sector function efficiently. From the perspective of both deficit and surplus units there can be important relations and complementarities among the various financial institutions. For instance, despite having a well functioning debt market, the absence of a correspondingly well functioning stock market, may limit the ability of firms to achieve an optimal debt/equity capital structure. Seen this way stock markets as well as other financial intermediaries function as complements rather than substitutes and a well functioning equity market may have positive externalities for the rest of the financial system.

These stock market benefits must be balanced against their costs. Do they perform their roles more efficiently than other intermediaries? This question often becomes more important when there are specific costs and concerns associated with stock markets that are not necessarily part of other financial intermediaries. Critics often claim that as stock market prices are not related to fundamentals, stock markets are often nothing but casinos. And, this section has already discussed how developing country stock markets are associated with much higher levels of volatility than found in industrial ones. Other policy makers may be concerned that foreign flows may lead to excessive price movements and general macroeconomic instability (real exchange rate variability for instance). Others (e.g., Stiglitz, 1991) argue that stock markets may contribute little to economic efficiency and may even be welfare decreasing.

Table 3.8 that shows the large foreign inflows into developing countries convincingly supports the view that stock markets are able to raise foreign savings. However, whether they actually increase the overall mobilization of

domestic resources or simply are another vehicle for channeling the same amount of resources is unclear. Mayer's (1989) paper, that suggests that in industrial countries with mature markets the net contribution of stock markets to the financing needs of firms is rather small, has already been discussed. Singh *et. al.* (1992) and Stiglitz (1993) show however that firms in developing countries rely to a greater extent on stock markets than firms in industrial ones currently do. Whether this higher mobilization of resources will be sustained, remains to be seen.

Regarding the risk-adjusted cost of capital, benefits for developing countries are the mirror image of the benefits for an industrial country investor. Bekaert (1995), Buckberg (1995) and Harvey (1995) have all reported test results that show increased integration. This would imply that the risk-adjusted cost of capital in emerging markets would fall more in line with that in developed markets. Studies of individual securities' offerings seem to support such a lower cost of capital being associated with increased integration. Tandon (1994) for instance, showed that offering bonds on the international markets leads to a reduction in the required rate of return of the same firm's equity. He found a similar effect for the introduction of a country fund. In general, increased foreign equity flows are part of a process that allocates global savings to their most productive uses, a process that leads not only to direct cost savings but to higher investment and growth as well.

The inflow of foreign resources and the lower risk-adjusted cost of capital, which together constitute the static benefits of increased portfolio equity flows are easily documented. However, the dynamic benefits of improved screening and monitoring and other externalities are more difficult to show. To some extent the situation is analogous to the benefits of increased integration in trade. As has now been demonstrated, while the static gains of increased trade are relatively small, large dynamic gains flow from an increased openness to trade and price liberalisation. While the exact channels through which these gains are realized are unclear, there is much evidence of increased overall economic growth.

The situation with respect to foreign equity flows may be similar. By bringing domestic asset prices in line with foreign ones, foreign investment could lead to an improvement in the overall functioning of domestic financial markets and, as a result, indirectly to economic efficiency and welfare gains. Although there is anecdotal evidence of such dynamic gains, evidence specific to foreign equity flows is scarce.

The literature providing evidence that emerging markets are not yet efficient, at least when compared with the (more thoroughly studied) industrial country markets, is rather more convincing. Return behaviour, both on a cross-sectional and time-series basis displays patterns that raise questions about the asset allocation role developing country stock markets may play. Claessens, Dasgupta & Glen (1995), Harvey (1995), Buckberg (1995) and Bekaert (1995) report for instance that rates of return in many emerging markets have significant positive first order autocorrelation, indicating return predictability and possible inefficiencies⁶², compared with industrial countries that generally have insignificant autocorrelations. The authors also show that emerging markets display few of the seasonal and cross-sectional anomalies found for industrial countries. However, it is still unclear whether this means that the often institution based explanations used for industrial countries do not transpose themselves to emerging markets or that such markets are more or less efficient.

Nevertheless the evidence that is available suggests that emerging stock markets can still improve their functioning. By speeding up domestic innovation and stimulating innovation, foreign capital may play a useful role in this regard thus leading to dynamic gains. Bekaert (1995) finds evidence that suggests that opening up markets improves market efficiency, while Diwan *et. al.* (1993) showed that despite their relatively small size, country funds can contribute to pricing efficiency and domestic resource mobilization. Just as with comparative advantage in the trade of goods, countries may find it more efficient to import

⁶² Fama (1970, 1991) provides motivation for various types of time-series tests and results of actual tests for industrial countries. Harvey (1995) and Claessens, Dasgupta & Glen (1995) also report that many emerging market returns depart from normality.

some financial services rather than produce them domestically. By relying on foreign financial intermediaries and institutions a country may avoid the cost of setting up expensive domestic financial infrastructure as well as benefit from economies of scope and scale in international financial markets. The use of GDRs and direct listings on foreign stock exchanges are good examples of this importation of foreign financial skills which can lead to cost savings.

3.5.4 Barriers and Volatility in Developing Markets

The two major policy issues for developing countries with emerging markets concern barriers to integration and volatility of equity (and other portfolio) flows. The tests that show increased but still incomplete integration of emerging markets over time suggest that for both investors and firms in developing countries some unexploited gains from increased foreign investment remain. Whether these gains are attainable in practice depends on whether barriers can be overcome or removed. Legal barriers may be removed through political decisions to repeal the legislation, *de facto* barriers may limit foreigners' access for some time further. Which are the most important of the barriers and how can they be overcome or removed?

Bekaert (1995) identified several barriers to equity flows in recipient countries, examining their effectiveness by relating them to measures of market integration. First, he found that macroeconomic instability in recipient countries is an important detriment causing poor credit ratings, high and variable inflation and exchange controls, which were all barriers that had high rank correlations with market integration measures. Second, the degree of domestic stock market development is also an important factor. Here he found that the limited size of some stock markets as well as the absence of high-quality accounting and regulatory frameworks were associated with a lower degree of integration. Claessens, Dasgupta & Glen (1995) made the related point that the functional inefficiency of some emerging markets may be caused through certain firms or individuals having exclusive ("insider") access to information. These markets are thus stacked against "outsiders" and will be less likely to attract new investors

either foreign or domestic. Efficiency improvements may consequently by itself constitute barrier reduction. Finally, Bekaert (1995) found that the *de facto* openness of stock markets does matter. Lack of sufficient country funds or cross-listed securities (or both) was both associated with lower integration. Surprisingly, he found that formal barriers in the form of ownership restrictions seem to matter little, suggesting that these are either not binding or being circumvented. The overriding conclusion from his study was that if benefit is to be furthered, countries need to lower barriers.

Many of these barriers cannot be removed overnight. A poor credit rating for instance will remain a portfolio flow constraint for many developing countries in the immediate future. But other barriers could be more easily removed. Countries wishing to attract portfolio flows would do best to list country funds and other securities internationally. As would improving the way the market functions, which would require adopting investor protection safeguards among them disclosure requirements, accounting standards as well as custody and settlement procedures. Such safeguards may be introduced relatively easily especially if self-enforcing regulators (such as exchange houses or investment boards) are available. Tax reform through harmonization of capital gains and dividends with the tax codes in industrial countries could also enhance the effective returns to foreigners and lower their cost of capital (Claessens, 1995). Ultimately investor perceptions and attitudes matter too and this makes it difficult to predict how any change in a given barrier will affect inflows. Still, there is no doubt that removing many of them would be beneficial.

For many developing countries receiving large portfolio flows there is considerable concern as to whether portfolio flows in general and equity flows in particular are volatile and thus have a potentially destabilizing effect on financial markets and the economy as a whole. Reisen (1993) holds to the conventional wisdom that short-term flows and portfolio flows to developing countries especially are inherently unstable. Thus many developing countries actively try to discourage these through quantity constraints, taxes or other instruments or

rather to encourage longer-term flows through subsidizing foreign direct investment. Claessens, Dooley & Warner (1995) argue against this conventional view that short-term flows are inherently more unstable thus requiring policy intervention. Using data for five developing countries as well as five industrial countries they show no significant differences between the time series properties of short and long-term flows. This would mean that based only on time-series statistics it would not be possible to tell the label of the flow. They also show that as much substitution between the various flows exists, only an analysis of the aggregate capital account is meaningful. Thus any capital control programme or other policy (including subsidies and taxes) aimed at discouraging a particular type of flow because of its alleged volatile behaviour may be misguided or ineffectual. Rather, appropriate macroeconomic policies aimed at achieving a desirect capital account behaviour would more likely be effective in dealing with volatile flows. Corbo & Hernandez (1994) who used capital inflow data from nine countries to evaluate the various mechanisms used to manage these inflows, confirm this view. Their conclusion was that aggregate demand measures (*i.e.*, fiscal contractions) have been most effective.

Tesar & Werner (1995) who investigated the time series behaviour of US equity flows to emerging markets have corroborated these findings. They found little indication that countries with high US investment activity had high rates of turnover (measured by the volume of equity traded to local market capitalisation). They also found no relationship between US flows and stock return volatility. This issue has been investigated by Kim & Singal (1993) as well as De Santis & Imrohoroglu (1994), both papers having studied stock price behaviour after the opening of a market to foreigners or large foreign inflows. They both concluded that no systematic effect of liberalisation on stock market volatility could be found. These findings support Bekaert's (1995) finding that volatility in emerging markets is unrelated to his measure of openness. Thus the fear that foreign-market access inevitably leads to greater domestic market volatility may be ill founded.

3.6 Markets and Economic Growth

World stock markets during the mid-1990s were booming with emerging markets composing a disproportionately large share of that boom. Between 1985 and 1995 world stock market capitalisation rose from US\$4,7 trillion⁶³ to US\$15,2 trillion with emerging market capitalisation jumping from less than four to 13 percent of this total. Trading in these markets had also surged: the value of shares traded climbing from less than three percent of the US\$1,6 trillion world total in 1985 to 17 percent of the US\$9,6 trillion worth of shares on the world's exchanges in 1994. Further, as the previous section has discussed, emerging markets have become more integrated with world capital markets. International investors have noticed and participated in this rapid expansion of emerging stock markets. Most notably equity portfolio investment into emerging markets soared from a mere \$0,1 billion in 1985 to US\$39 billion just ten years later.

The rapid development of stock markets in developing countries has also attracted the attention of academics and policymakers. The previous section has surveyed the recent literature on the benefits for investors of holding a globally diversified portfolio and the benefits for countries removing capital controls and other barriers to international capital flows. As far as policy goes many countries have reformed their laws and regulations and removed capital controls and other foreign portfolio flow restrictions. While analysts have been content thus far to study the price behaviour of emerging stock markets, more focus needs to be applied in understanding the linkages between the functioning of those markets and economic development. That is why the objective of the current study is to contribute to this knowledge by exploring the role of the JSE Securities Exchange and economic development in South Africa.

The research outlined in this section covers four issues. First it examines the various measures of stock market development, comparing liquidity, concentration, volatility, institutional development and international integration. Evidence from 44 industrial and developing countries from 1976 to 1993 will be

⁶³ One trillion is equal to 1,000 billion.

discussed. Besides simply arriving at measures that may empirically define stock market development, the data will show how research into the relationship between stock market development, financial intermediation, corporate finance decisions and economic growth may be facilitated. The relationships established here will come in handy in Chapter 5 of this study when those relationships particular to South Africa need to be modeled.

Second, the literature based on these new measures also allows the relationship between stock markets and financial intermediaries to be examined. Although bankers in many countries are concerned that stock markets will steal business, evidence to the contrary will be presented. It will be shown that countries with better-developed stock markets also have better-developed bank and nonbank financial intermediaries⁶⁴ and conversely those countries with weak stock markets have other similarly weak intermediaries. Thus stock market development appears to go hand in hand with other aspects of financial development.

Third, the research explored here on the relationship between stock market development and long-run economic growth will show how these markets might boost growth and present some empirical evidence to support this view. Specifically, it will be argued that the level of stock market development does a good job of predicting future economic growth. This has important implications for developing country policymakers as it implies that in many countries capital market reform should be high on the reform agenda.

Fourth, the literature discussed here examines the ties between stock market development and the financing choices firms must make. Surprisingly, this issue has only been sparsely investigated previously. Research will be surveyed that shows that for many countries improvements in stock market functioning produces a higher debt/equity ratio in firms. Given that stock market development naturally implies greater use of equity markets for capital raising this finding

seems out of place at first. That is unless stock market expansion also stimulates greater use of bank finance causing these corporate debt/equity ratios to rise. For the countries surveyed here stock markets and banks are not substitute sources of finance but rather stock market development tended to increase the quantity of bank loans. Complementing this overview the research shows how a theoretical framework for understanding the interactions among banks, equity markets and corporate decision making may be built.

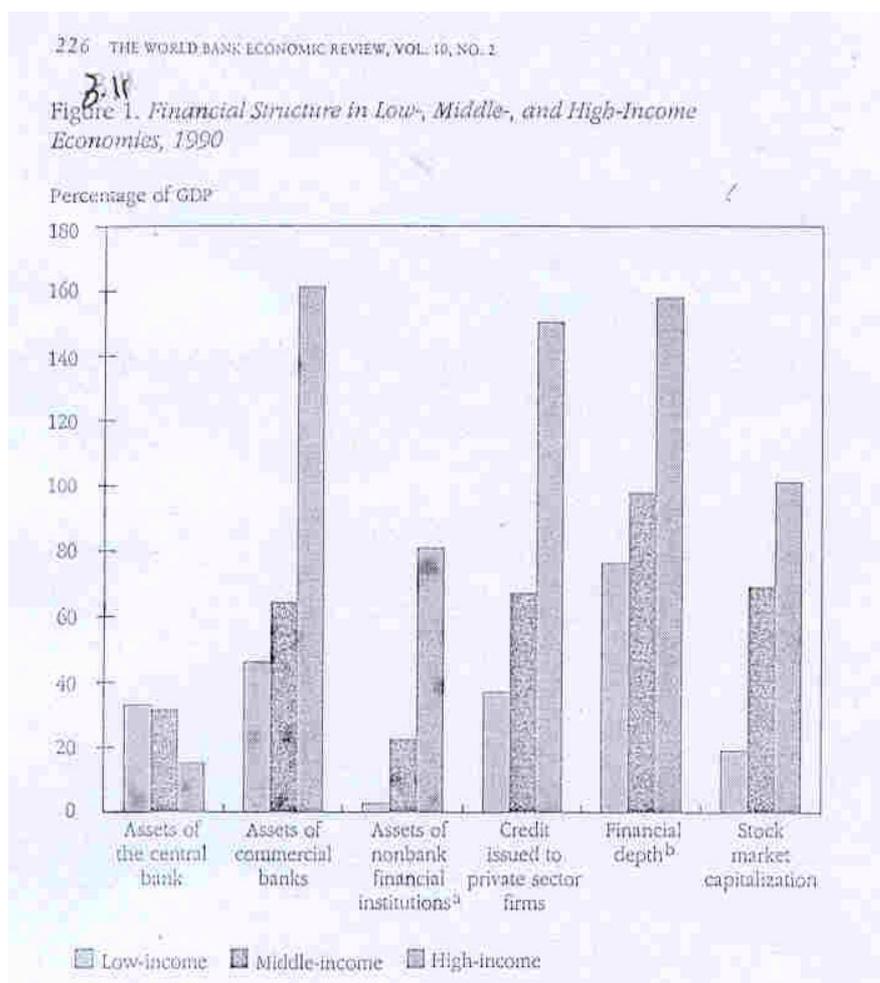
Subsection 3.6.1 provides a brief review of the role of stock markets in economic development documenting the evolution of debt and equity markets during the growth process. Subsection 3.6.2 presents an overview of the various ways stock market development may be defined as well as the summary data on the co-development of financial intermediaries and stock markets. Subsection 3.6.3 looks at the evidence of the effect of stock market development and economic growth, while Subsection 3.6.4 summarizes the empirical results available on how stock market development affects the financing decisions of firms.

3.6.1 Stock Markets and Economic Development

This subsection is concerned with studies that have analyzed the role of stock markets in corporate finance decisions and economic development, presenting the latest information on the co-development of financial intermediaries and stock markets. Beginning with the early observations of Gurley & Shaw (1955, 1960) as well as Goldsmith (1969), it was accepted that as economies develop, self-financed capital investment first gives way to bank intermediated debt finance and subsequently to the emergence of equity markets as an additional channel for raising external funds. Thus the mix of financial intermediaries and markets (collectively called the financial structure) changes as countries develop. This can be illustrated by differences in that structure across countries and across times for individual countries.

⁶⁴ Such as finance companies, mutual funds, investment companies, brokerage houses and pension funds.

Fig. 3.11: Financial Structure in Low-, Middle- and High Income Economies, 1990

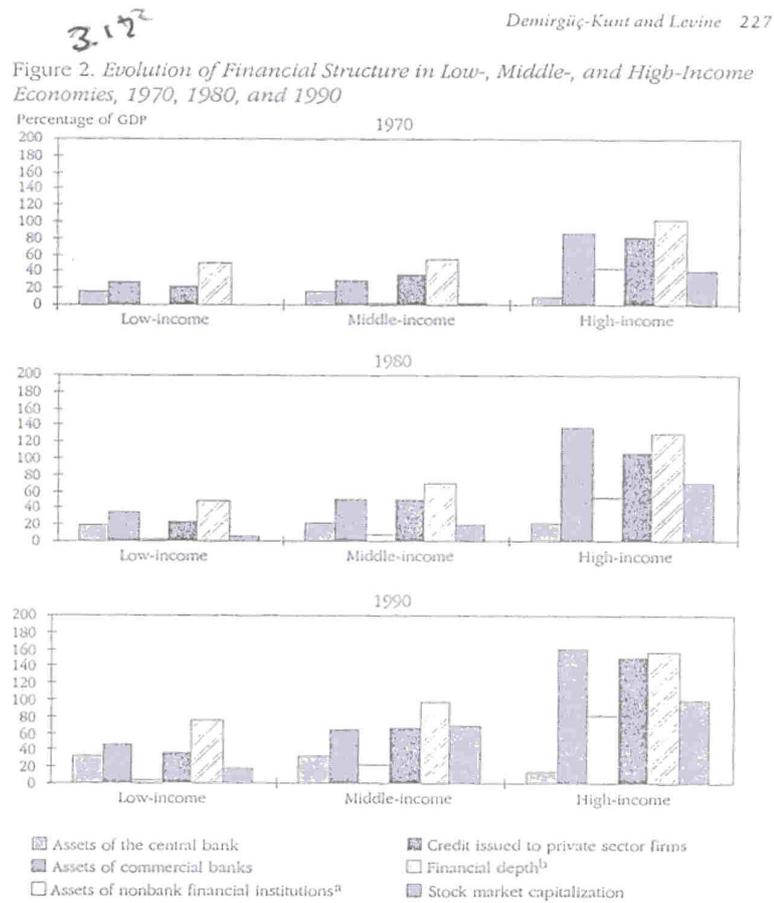


Source: IMF (Various Issues) and individual country reports by central banks, banking commissions and stock exchanges

Figure 3.11 shows how the financial structure of economies varies with their income. Moving from poorer to richer countries, commercial banks and nonbank financial institutions grow in importance as the role of the central bank diminishes. Also, the financial system allocates more credit to the private sector as a share of GDP in richer countries, with richer countries tending to have larger

overall financial systems and stock markets as percentages of GDP than do poorer ones.

Fig. 3.12: Evolution of Financial Structure in Low-, Middle- and High-Income Economies, 1970, 1980 and 1990



Source: IMF (Various issues) and individual country reports by central banks, banking commissions and stock exchanges

Figure 3.12 illustrates how financial structure evolves over time. Pictorially Gurley & Shaw's (1955, 1960) view that at low levels of development commercial banks dominate is supported. As economies grow, however, specialized financial

intermediaries as well as equity markets grow and prosper. Figure 3.12 traces the same set of low, middle and high-income countries through time. In the 1970s the low income countries had virtually no stock market or other nonbank activity to speak of. By 1990 however both of these began to develop. The financial systems in middle and high income countries having evolved according to a similar pattern, they just simply being ahead of the low income group in the time dimension.

These diagrams should not be misinterpreted as suggesting that countries follow financial development paths that have no anomalies. Many differences in structure exist across countries at what could be considered similar stages of development. For instance in the United Kingdom the assets of commercial banks made up 65 percent of the financial system's assets in 1990, but this figure was almost 80 percent for Germany. Likewise, German nonbank assets were 15 percent of the financial system's assets at that time but in the UK they were over 30 percent. Developing countries show anomalies as well. In 1990 the share of nonbank assets in total financial assets was 28 percent in the Republic of Korea but only 18 percent in Malaysia. Mexico had a mere three percent of financial system assets in private insurance and pension funds while these accounted for ten times as much in Chile. Thus while there is a general trend involving financial structure and the level of GDP per capita, exceptions and differences within the categories presented in Figures 3.11 and 3.12 still exist.

Though stock market development is part of how financial structures evolve with economic development, most research concerned with the ties between financial development and economic growth has focused almost exclusively on financial intermediaries. As Figure 3.11 depicts empirically, central and commercial banks do compose the vast majority of developing country financial systems. Thus research has centered on the ties between banks and economic growth, having been aided by the fact that statistics on central and commercial banks have been more readily available than data on emerging stock markets, which until quite recently there was little of.

The focus on financial intermediaries may also have been motivated by theoretical concerns (*c.f.*, Gertler, 1988; Levine, 1996a; 1996b; Stiglitz, 1994). As Diamond (1984), Stiglitz & Weiss (1981) and others have argued, banks and other financial intermediaries have important advantages over securities markets in reducing information asymmetries that produce adverse selection and in bettering the inefficiencies information differences may cause. Akerlof (1970), Greenwald *et. al.* (1984) as well as Myers & Majluf (1984) have all pointed to the adverse selection problem such informational asymmetries may cause in securities markets. If potential investors cannot distinguish high quality from low quality counters then outside purchases of securities will only pay a price that reflects the average value of firms issuing securities. While low quality firms may find this average price attractive, high quality ones will feel disadvantaged, so much so that they will not want to issue further securities at these prices. Thus there are theories that emphasize the importance of financial intermediaries and the weakness of securities markets in allocating capital.

This is not to discount the utility of the research on ties between financial intermediation and growth. Goldsmith (1969) in his study of 35 countries from 1860 to 1963 found that the size of financial intermediaries as a share of GDP tends to rise with per capita income and that when a country experiences faster than normal growth, the ratio of its financial system assets to GDP also tends to experience above average growth. McKinnon (1973) argued that appropriate financial sector reforms expedite growth-inducing financial development. More recently King & Levine (1993a,b) examined empirical ties between financial intermediation and long-run growth using data on 80 countries from 1960 to 1989. Their major findings discussed in Section 3.3 were that after controlling for the many other factors associated with long-run growth, the level of financial intermediation was strongly linked to such growth and that finance does not passively follow economic growth. Taken together these studies suggest that the predetermined component of financial development is a good predictor of future economic growth. In Subsection 3.3.3 King & Levine's (1993a,b) work using instrumental variables and other techniques showed that the strong link between

financial development and the rate of long-run economic growth does not merely reflect contemporaneous shocks that affect both financial development and economic growth.

Although existing evidence suggests that well-developed intermediaries assist economic development, there is little evidence on the role of stock markets in economic growth making this study timely. This empirical gap is notable because the data that does exist suggests that stock markets are an integral part of financial development. Thus in order that a comprehensive view of the ties between financial and economic development be found, researchers must both conceptually and empirically explore the relationship between the functioning of the stock market and economic growth more fully than they have.

While stock market expansion is a common feature of financial and economic development, many analysts view stock markets in developing countries as casinos having little positive and a potentially large negative impact on economic growth. Others, following Mayer (1988) argue that as not much corporate investment is financed through equity issues, stock markets are unimportant for growth. Various conceptual propositions have been advanced emphasizing the potentially positive, neutral or even negative implications of stock market development for economic growth.

Levine (1991) and Bencivenga *et. al.* (1996) have shown that stock markets may affect economic activity through the creation of liquidity. Many profitable investments require long term capital commitments, but investors are often uncomfortable with relinquishing control of their savings for long periods. Thus by allowing savers to acquire an asset (equity) and sell it quickly and cheaply if they need access to their savings or to make portfolio alterations, liquid equity markets make investment less risky and thus more attractive. Simultaneously, companies have the benefit of permanent access to capital raised through equity issues. Such liquid markets improve the allocation of capital and thereby enhance long-term economic growth prospects by facilitating longer-term and

more profitable investments. Also, because liquidity makes these investments less risky and more profitable, it can lead to more savings and investment. Simply "investors will come if they can leave" (Demirguc-Kunt & Levine, 1996a: 229).

There is historical support for this critical role of financial market liquidity in affecting the efficiency of physical production. Hicks (1969) for instance, argued that it wasn't new technological inventions that ignited the industrial revolution in eighteenth century England. In fact most of the innovations that characterized the early phases of the industrial revolution had been invented much earlier. Rather, the greater liquidity of the financial markets made it possible to develop those projects that needed large capital injections for long periods before they could ultimately yield profits. Sans liquid capital markets, savers would have been less willing to invest in the large, long-term projects that characterized the industrial revolution. In the words of Bencivenga *et. al.* (1996: 243) "the industrial revolution therefore had to wait for the financial revolution".

Admittedly there are alternative views about the effect of liquidity on long-term economic growth. Increased liquidity could deter growth through at least three channels (Demirguc-Kunt & Levine, 1996a):

- by increasing the returns to investment thereby reducing saving rates through income and substitution effects. Greater stock market liquidity could slow economic growth if saving rates fall enough and there is an externality attached to capital accumulation;
- by reducing the uncertainty associated with investment because of the ambiguous effect of uncertainty on saving. While risk-averse agents see less uncertainty as more attractive, it also lowers the demand for precautionary savings. Together the impact of lower uncertainty on saving rates becomes indeterminate;
- by adversely affecting corporate governance. Very liquid markets encourage myopic behaviour. As it is easy for dissatisfied investors to sell quickly, this may weaken their commitment thereby reducing their incentives to exert

corporate control through overseeing managers and monitoring firm performance and potential.

Another vehicle through which internationally integrated stock markets can affect economic growth is through risk diversification. Obstfeld (1994) contended that as high-return projects must invariably be of greater comparative risk, stock markets that facilitate risk diversification encourage a shift to higher return projects. Thus *ceteris paribus* better functioning, more internationally integrated stock markets boost economic growth by shifting society's savings into higher-return investments. But all else is not necessarily equal. As noted above such greater risk sharing by reducing uncertainty could reduce the need for precautionary savings so reducing saving rates and thereby retarding economic growth. As a result the theory must be uncertain about the ultimate effects of greater risk sharing through internationally integrated stock markets on economic growth.

The incentives for investors to acquire information about firms may also be affected by stock markets. An investor who has obtained information about a firm would find it easier to trade at posted prices in markets that are large and liquid. Such an investor may make money before the information becomes widely available and prices change (Kyle, 1984). As investors can profit from obtaining information they would be more likely to research and monitor firms. To the extent that larger more liquid stock markets increase incentives for company monitoring, improved information will improve resource allocation and accelerate economic growth. Stiglitz (1985, 1994) maintains however that developed stock markets quickly reveal information through price changes. Such a quick public revelation creates a free-rider problem, thereby reducing incentives for investors to expend their resources in obtaining information about companies which they can just as easily obtain by observing prices.

The final way stock markets may impact economic growth is through changes in incentives for corporate control. As already discussed greater stock market

liquidity may cause investor myopia and diffuse ownership which reduces incentives for careful investor monitoring (Shleifer & Vishny, 1995). Jensen & Murphy (1990) provide the countervailing argument that if stock markets accurately value firms then the efficacy of tying manager compensation to stock is improved. If stock prices rise, not only do stock holders benefit but so do managers as well. They thus have an incentive to maximize firm value. By aligning the interests of owners and managers, well-developed stock markets thereby spur resource allocation and economic growth.

3.6.2 Developing Markets and Markets in Development

What does stock market development mean conceptually and how can such a phenomenon be measured? Unfortunately theory does not provide a unique measure of stock market development to guide empirical work. The existing models, many of them surveyed in the previous section, suggest that stock market development is multifaceted, involving issues of market size, liquidity and integration with world capital markets.

Several papers (*c.f.*, Errunza & Losq, 1989; Bekaert, 1995; Buckberg, 1995; Harvey, 1995 and Tesar & Werner, 1995) test whether developing country stock markets are integrated with world markets. Examining whether integration is important for economic development requires measures of degree of integration that are country specific. Theory suggests that if markets are financially integrated, capital would flow across borders to equalize the price of risk. However, if they are not, possibly due to distortion by capital controls or other barriers, then the price of risk will differ across markets. Korajczyk (1996) estimated deviations from the law of one price using the International Arbitrage Pricing Model (IAPM). He found market segmentation to be larger for emerging markets than for developed ones. He also noted that such segmentation decreased as a function of time for many countries, suggesting a gradual reduction in barriers to capital flows.

Demirguc-Kunt & Levine (1996b) used Korajczyk's (1996) measure of market integration as well as measures of stock market size, liquidity, volatility, concentration and institutional development for 44 developed and emerging markets from 1986-1993. They found that larger markets tended to be more liquid, less volatile and less concentrated in a few stocks than smaller ones. Importantly they concluded that internationally integrated markets were less volatile. And that institutionally developed markets with strong information disclosure laws, international accounting standards and unrestricted capital flows had larger more liquid markets. A related finding in their article was that Indonesia, Turkey, Portugal and Venezuela had experienced explosive stock market development. The fact that these four countries liberalized restrictions on portfolio and dividend flows highlights the importance of policy in affecting stock market development. This supports the earlier work by Levine & Zervos (1995) who showed that countries that liberalized capital and dividend flow restrictions showed a marked improvement in stock exchange functioning.

Table 3.9: Changes in Stock Market Variables following Capital Market Liberalisation in 14 Countries in the 1980s

Country	Size	Liquidity	Volatility
Argentina	increase	increase	increase
Brazil	no change	no change	increase
Chile	no change	increase	increase
Columbia	no change	increase	increase
India	increase	increase	increase
Jordan	no change	increase	no change
Republic of Korea	no change	increase	no change
Malaysia	no change	no change	not available
Pakistan	increase	increase	increase
Philippines	no change	increase	no change
Portugal	increase	increase	not available
Thailand	no change	increase	increase
Turkey	increase	increase	no change
Venezuela	no change	increase	increase

Source: Levine & Zervos (1995)

That particular paper, concerned with the effects of liberalisation of capital controls, identified 14 countries that significantly reduced barriers to international capital and dividend flows in the 1980s. It showed that those countries experienced rapid improvements in their stock market functioning following liberalisation. Table 3.9 summarizes their results, interestingly while it suggests

that stock return volatility rises immediately after capital control liberalisation, Demirguc-Kunt & Levine's (1996b) analysis shows that in the long term such volatility is lower in those countries with more open capital markets.

Demirguc-Kunt & Levine (1996b) also examined the interaction between stock market development and financial intermediaries. They found that as countries grow and reach middle income⁶⁵, stock markets and nonbank financial intermediaries develop rapidly. Correspondingly with this growth, commercial banks come to represent a smaller share of the overall financial system. Still, however, the ratio of bank assets to GDP continues to grow as stock markets and nonbanks prosper. After constructing individual measures of bank, nonbank and financial system development, the authors also constructed indexes of financial intermediary development based on the individual measures of bank and nonbank development. They found that across countries stock market development was positively correlated with these composite financial intermediary development indexes. Hence, stock markets and financial institutions are generally complements and they grow simultaneously.

3.6.3 Developing Markets and Long-Run Growth

Levine & Zervos (1996) also examined the empirical relationship between measures of stock market development and long-run economic growth rates. They constructed aggregate indexes of stock market development combining information on market size, liquidity and international integration. Following Levine & Renelt (1992) they used instrumental variable procedures and controlled for the other more established variables associated with economic growth to assess the strength of the empirical relationship between growth and stock market development. This amounted to controlling for the initial level of GDP per capita, initial investment in human capital, political stability, the level of banking development as well as measures of monetary, fiscal and exchange rate policy. They found that the predetermined composite of stock market

⁶⁵ Define by the World Bank as having \$2,000 per capita in 1990.

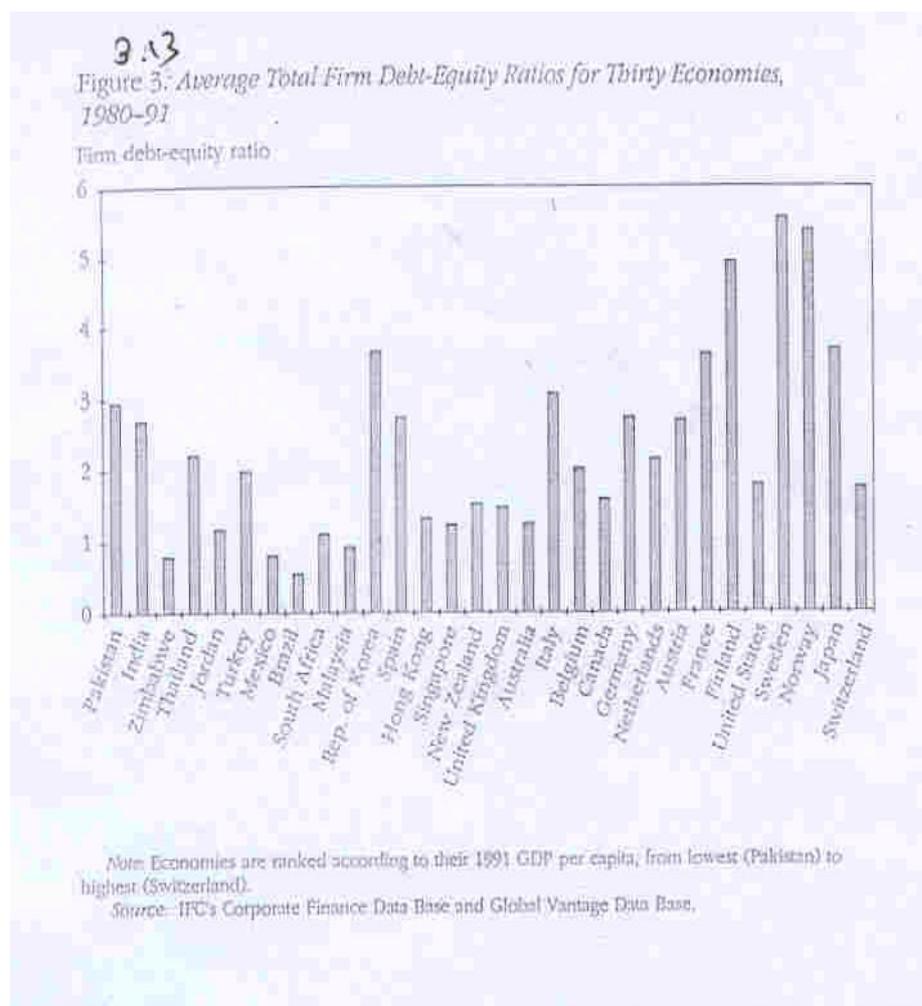
development was both positively and significantly correlated with long-run economic growth.

This strong correlation between overall market development and long-run economic growth is economically important. It suggests, for instance, that if Brazil and Mexico (which were placed in the middle of the sample in terms of stock market development) had the same level of market development as Malaysia (in the top third of the sample) then they would have enjoyed 1,6 percent faster per capita growth each year. This sort of inference, although made with caution, suggests that a potentially large economic relationship between stock market development and economic growth exists. Much work on this issue remains, of which this present study is but a small contribution. Still, these results are congruent with both the theoretical conjecture and historical analysis that implies a positive relationship between stock market development and economic performance. Haber (1991) for instance, using evidence from Brazil, Mexico and the United States during the nineteenth and early twentieth century documented the positive impact of capital market development and market reform on competition and industrialisation.

3.6.4 Developing Markets and Corporate Capital Structure

Harris & Raviv (1991) and Demirguc-Kunt (1992) review the literature that suggests firms decide whether to issue debt or equity on the basis of taxes and other market imperfections. When Rajan & Zingales (1994) and Demirguc-Kunt & Maksimovic (1994) studied international differences in firm capital structure they analyzed the impact of firm characteristics on the financing choices of firms within individual countries. However, these differences could explain only part of the significant cross-country variation in firm debt/equity ratios.

Fig. 3.13: Average Total Firm Debt-Equity Ratios for Thirty Economies, 1980-91



Source: IFC's Corporate Finance Data Base and Global Vantage Data Base

The existing literature had overlooked an important factor influencing financing choices of firms: the level of stock market development. For the first time in the research Demircuc-Kunt & Maksimovic (1996) empirically explored the effect of financial market development, especially stock market development, on financing choices of firms. Looking at a sample of 30 industrial and developing economies

they observed that the effect of stock market development on firm debt/equity ratios depends on the initial level of stock market development. Firms in countries with underdeveloped stock markets first increase their debt/equity ratios as their market develops. Thus, not only do they issue new equity they also borrow more. This relationship changes as the market develops. Firms in countries with relatively developed stock markets substitute equity for debt as those markets develop further. These results are congruent with the view that at early stages of market development improving stock market functioning improves information quality, monitoring and corporate control, such that these improvements induce creditors to lend more. For such firms debt and equity finance is complementary.

Boyd & Smith (1996) developed a theoretical framework to help explain the important aspects of these findings for corporate finance and financial market development. They constructed a model in which firms finance capital accumulation externally through a combination of equity and debt and in which the level of development of debt and equity markets, interacts with physical capital investment decisions. Their model predicts that as an economy moves along its growth path, the use of more specialized and complex technologies become more common. This leads to a rise in the relative cost of monitoring, so those firms reduce their investments in projects with high returns and high monitoring costs. As these investments are generally associated with debt, the model offers that richer countries would tend to use more equity and less debt finance. Their model also suggests that at low levels of economic development agents do not use equity markets. However, once the economy attains a critical level of per capita income, savers and firms switch to stock markets. Again, this model suggests that stock markets and banks act as complements rather than as substitute sources of capital.

3.7 The Counter-Thesis Explored

In the late 1980s Sir Kenneth Berrill, former Chair of the UK's Securities and Investment Board lead a distinguished World Institute for Development Economics Research study group that forcefully argued for developing countries to liberalize their financial markets in order to attract foreign portfolio equity flows. Their argument was that developing countries who liberalized their markets externally and developed their stock markets internally would be able to attract a considerable amount of financial capital that was available through the pension and investment funds of developed countries. Since foreign bank loans, which had dominated inward capital flows to the developing world in the 1970s, were decreasing as a result of the Latin American debt crises, liberalisation was an absolute necessity. Their report, while noting the lack of a clear connection between growth and stock market development, held out a large number of benefits developing countries could potentially reap. Among them (WIDER, 1990):

- an additional channel for encouraging and mobilizing domestic savings;
- improvements in investment productivity through market allocation of capital;
and
- a market for corporate control which would exercise greater managerial discipline.

The reasoning that different demographic profiles of developed and developing countries would make portfolio flows a Pareto-optimal solution to the systemic problems in the world economy has also been advanced. Reisen (1994) for instance, argued that the rapid aging of developed country populations undermines the viability of state-sponsored pension schemes making the only realistic alternative the growth of privately funded ones. Pension fund managers, by encouraging the flow of such funds from aging slow-growing developing countries to the younger higher-growing developing ones, could achieve an improved combination of risk and return, while simultaneously allowing those developing countries to benefit from a steady long-term capital flow.

This advocacy took place in an environment where developing countries, as part of structural adjustment programmes required by the international financial institutions, were already undertaking far reaching financial market reforms. In many of these countries the *ancien regime* of repressed interest rates and state directed credit was giving way to a more market based regime. Among the many changes required, especially by the privatization programmes, was for the development of stock markets, so that the new ownership structures could be determined at market prices. At the same time, financial de-repression required of large companies that they diversify their sources of funds, also contributing to equity market development. The internal financial liberalisation logic encouraged an increased movement toward external liberalisation, which then interacted with the internal reforms. Markets could expand with relatively thin and illiquid markets benefiting from an inflow of foreign funds. Thus the 1990s saw in many developing countries the dismantling of capital controls and foreign ownership limitations that were put in place in the previous decade. In Subsection 3.7.1 the enormous increase in portfolio capital flows and stock market development that took place as a result of these measures will be discussed.

The essential question remains how, if at all, such stock market expansion and foreign capital flows help industrialisation or long term economic growth. To that end this section concentrates on the micro and macroeconomic perspectives on these developments in industrializing countries. Specifically, Subsection 3.7.2 will examine the role of stock markets in financing firm growth. While the implications of market volatility for productive efficiency and resource allocation as well as the destabilizing interactions between foreign exchange and stock markets in environments of internal or external economic shocks will be the focus of Subsection 3.7.3.

This section will show, surprisingly, that the stock market has been an important source of finance for funding corporate growth in developing countries. This conclusion has been theoretically unexpected (as was the extraordinarily fast growth of new listings on many of these markets). Considering the multiple

imperfections of developing country stock markets, from asymmetric information, poor supervision, inadequate disclosure requirements, rampant insider trading, and high price volatility, it would have been more consistent to expect firms to shun these markets relying instead more on internal finance and those in industrialized countries do. Although surprising to orthodox economists, the conclusion that stock markets were indeed important for funding corporate growth, was welcomed by them (*c.f.*, McLaury, 1994; El-Erian & Kumar, 1994). However, at the more crucial macroeconomic level these results have been disappointing, this section will review those reasons why reality has diverged so sharply from expectations, considering especially the policy implications it raises.

3.7.1 Developing Markets and Portfolio Capital Flows

The unprecedented speed and extent of stock market development in the emerging markets over the 1990s led to fundamental shifts both in their financial structures and the capital flows they received from advanced economies. This subsection, following Singh & Weisse (1998), will present an overview of these trends illustrating them with reference to India as a case study.

Mullins (1993) has shown that during the 1980s a key indicator of stock market development, the capitalisation ratio (market capitalisation to GDP) rose at an unprecedented rate in developing countries. It climbed from ten percent to over 70 per cent in countries like Taiwan and Chile in the course of a decade although it probably took the US about 8 decades to reach similar levels. Toward the late 1990s many developing countries had achieved or exceeded the capitalisation ratios of the average medium-sized European stock market. Further the IFC (1996) estimates that during 1986-1995 the number of new listings and investors in these markets soared. The total value of shares traded on the markets rising 12 fold over the period, increasing from just over two percent to nearly nine percent of the total world value.

**Table 3.10: Annual Average Capital Flows
to Developing Countries (US\$ billion)**

	1983-88	1989-95	1996
Developing countries			
Net private capital flows	15.1	107.6	200.7
Net direct investment	10.4	41.8	90.7
Net portfolio investment	3.4	44.0	44.6
Other net investments	1.3	22.1	64.9
Net official flows	29.0	21.4	-3.8
Change in reserves	8.4	-42.7	-82.3
Asia			
Net private capital flows	11.9	43.6	94.7
Net direct investment	3.6	25.0	54.8
Net portfolio investment	1.2	5.2	9.2
Other net investments	7.1	13.6	30.1
Net official flows	7.6	8.4	7.2
Change in reserves	-2.2	-23.8	-43.2
Western hemisphere			
Net private capital flows	-2.0	33.0	77.7
Net direct investment	4.7	13.2	29.9
Net portfolio investment	-1.1	25.4	27.1
Other net investment	-5.7	-5.6	20.7
Net official flows	9.7	5.7	-11.6
Change in reserves	0.5	-12.2	-20.8

Net capital flows comprise net direct investment, net portfolio investment and other long and short-term net investment flows (including official and private borrowing). Because of data limitations other net investment may include some official flows. A minus sign indicates an increase.

Source: IMF (1997)

External financial liberalisation and with it an influx of foreign portfolio capital flows aided these developments. As Table 3.10 shows, a major change in both scale and composition of capital flows to developing countries has occurred. The most striking aspect of which has been the huge increase in private finance. The average annual net private capital flow to developing countries over 1983-1988 was US\$15,1 billion which had, over 1989-1995 surged to US\$107,6 billion. By 1996 that flow had reached US\$200,7 billion⁶⁶. While net direct investment was an important component of these flows it was a surge in net portfolio investment that most characterized them, increasing from US\$3,4 billion in the earlier period to US\$44 billion in the latter part. There was a notable regional difference however, in the composition of these flows. Net direct flows were more significant in Asia while net portfolio flows more important in Latin America. In the 1970s

⁶⁶ Huge net private flows into Latin America are even more dramatic when it is remembered that a net outflow of capital had occurred over 1983-1988 due to the debt crisis.

and early 1980s, it ought to be remembered it was bank loans that dominated these private capital flows to developing countries.

Fernandez-Arias & Montiel (1996) and Smith & Walter (1996) describe the action of both "push" factors driving advanced country flows to developing markets and "pull" factors that draw them in, as operating together to accelerate capital flows. Low US interest rates in the early 1990s, lower developed country growth prospects as well as an increased desire of US institutional investors to diversify their portfolios are among the former. Pull factors on the other hand revolve around the economic, legal (particularly regulatory) and political environments in developing countries. Of considerable importance in attracting foreign capital flows is the ability of foreign investors to quickly move funds in and out of emerging stock markets following external liberalisation and high(er) growth rates.

The IMF (1996) show that developing countries during the 1990s accounted for a disproportionate share of global equity issuance. Although they had only 12,6 percent of total world market capitalisation in 1994, they were responsible for 37 percent of global equity issues. Even after the Mexican crisis and the subsequent flight of foreign portfolio capital in 1994, the latter figure was still a significant 25,3 percent. However, this rapid development does not mean that even the most advanced of the emerging markets has matured. In most markets trading occurs only in a few stocks accounting for a considerable part of total market capitalisation. Beyond these actively traded shares serious informational and disclosure deficiencies for other stocks exist. Further, supervision by regulatory authorities is often far from adequate with the lesser developed of these markets suffering from a wider range of deficits (Feldman & Kumar, 1994).

As an example of the trends noted above, the Indian stock exchanges provide a relevant illustration, even though liberalisation in that country has been laggard. While the Indian stock market is more than a hundred years old, from

independence in 1947 until the 1980s it was the sleepy backwater of the country's financial system, where a regime dominated by state directed credit allowed for little expansion. Its capitalisation ratio in 1980 was only five percent. Singh (1996) shows that as a result of the liberalisation measures of the 1980s that ratio was up to 13 percent by 1990. After a major change in government policy and the acceleration of liberalisation in 1991, stock market expansion was explosive, total market capitalisation reaching 60 percent of GDP by the end of 1993. Over 1980-1993 the number of shareholders and investors in unit trusts rose from two to 40 million, making the Indian investor population that second largest in the world⁶⁷. The Indian stock market, in terms of number of companies listed, became by the end of 1995 the largest in the world with nearly 7985 counters listed. This surpassed the 7671 listed domestic companies on the US exchanges and far exceeded the 2078 and 678 companies listed in the UK and Germany respectively, although Nagaraj (1996) suggests these numbers may be overstated to some extent.

Singh's (1996) paper shows that on the Bombay (now Mumbai) Stock Exchange the daily turnover of shares increased 30 times during the 1980s and early 1990s, from 0,13 billion Rupees in 1980-81 to 3,7 billion Rupees in 1993-1994. In fact the average daily trading volume on that market in the early 1990s was about the same as that in London about 45 000 trades a day. Trading activity at its peak occurred at almost double that rate. Mayya (1995) and Singh (1996) calculate that as these deals are put through in a short period of two hours, the Bombay stock exchange has the highest density of transactions in the world, second only to that in Taiwan.

The economic reforms India began in the 1990s were not only concerned with expanding its stock market activity but also with instituting the steps necessary to make the market more transparent and less subject to insider trading and fraud, thereby improving functional efficiency. The Securities and Exchange Board of India (SEBI) has made some progress in this area, although Singh & Weisse

⁶⁷ Second only to the US which has about 51 million active investors.

(1998: 610) estimate that it will be some time yet before the market loses its "justly deserved reputation of being a snake pit". Despite the SEBI's noble efforts, the Indian press continues to regale stories of fresh stock market scams. Indeed, the very influential magazine *India Today* (1997) wrote that market regulation was practically non-existent with the consequence that the financial markets had become a "virtual freeway".

3.7.2 Funding Firm Growth

Large, private diversified business groups such as the *zaibatsu* in pre-war Japan and the *chaebol* of South Korea has spear-headed the engine of economic growth in East Asia post the second World War. From Indonesia and Malaysia to India and Turkey such large business groups dominate the landscapes of most developing countries. Yet, development economics (both theoretical and empirical) have paid scant attention to the role of the developing country firm and its financing patterns⁶⁸. Singh & Hamid (1992) in the first large-scale empirical study of corporate finance in developing countries, by producing some rather surprising results have stimulated work in this area. Their research showed that contrary to *a priori* expectations, large developing country firms rely heavily on external and in particular equity finance. Figure 3.14 shows the relevant data from a follow up study by Singh (1995a). It analyzed accounting data for the 100 listed manufacturing corporations in ten developing countries between 1980-1990. The ten countries being India, Pakistan, South Korea, Jordan, Thailand, Mexico, Turkey, Malaysia, Zimbabwe and Brazil. The data shows that corporations in the sample relied extensively on external finance. In half the countries (Korea, Thailand, Mexico, Turkey and Malaysia) external funds financed more than 70 percent of the growth of corporate net assets during the period under review. In another two (India and Brazil) the external funding proportion was more than half. The importance of equity financing for developing countries was highlighted by the fact that in five of the countries (Korea, Mexico, Turkey, Malaysia and Zimbabwe) new share issues financed more than 40

⁶⁸ Although the work by Leff (1979), Pfeffermann (1988) and Amsden (1989) are notable exceptions.

percent of the asset growth in the 1980s. In a further two (Jordan and Brazil) equity finance accounted for more than 25 percent of corporate growth over that period.

Fig. 3.14: Median Values – Internal and External Financing of Corporate Growth

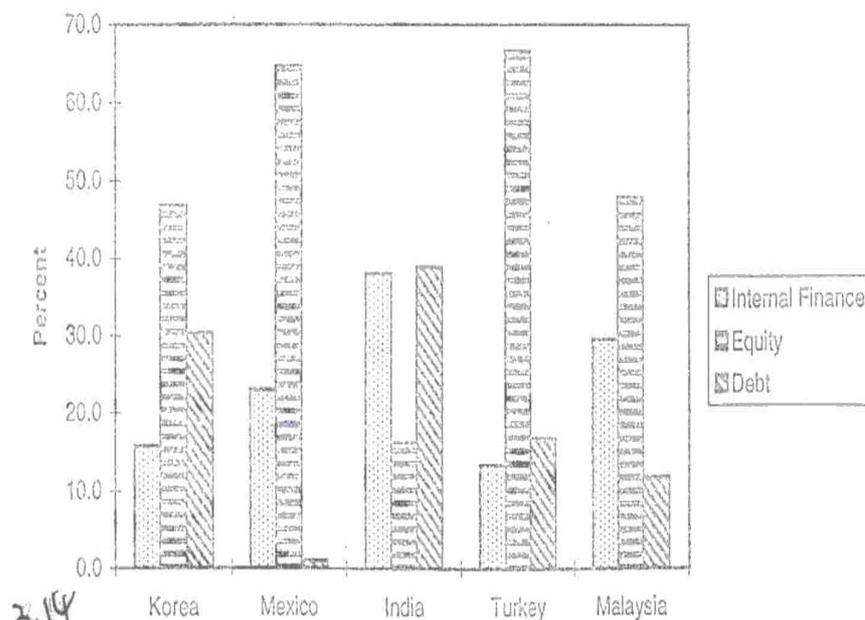


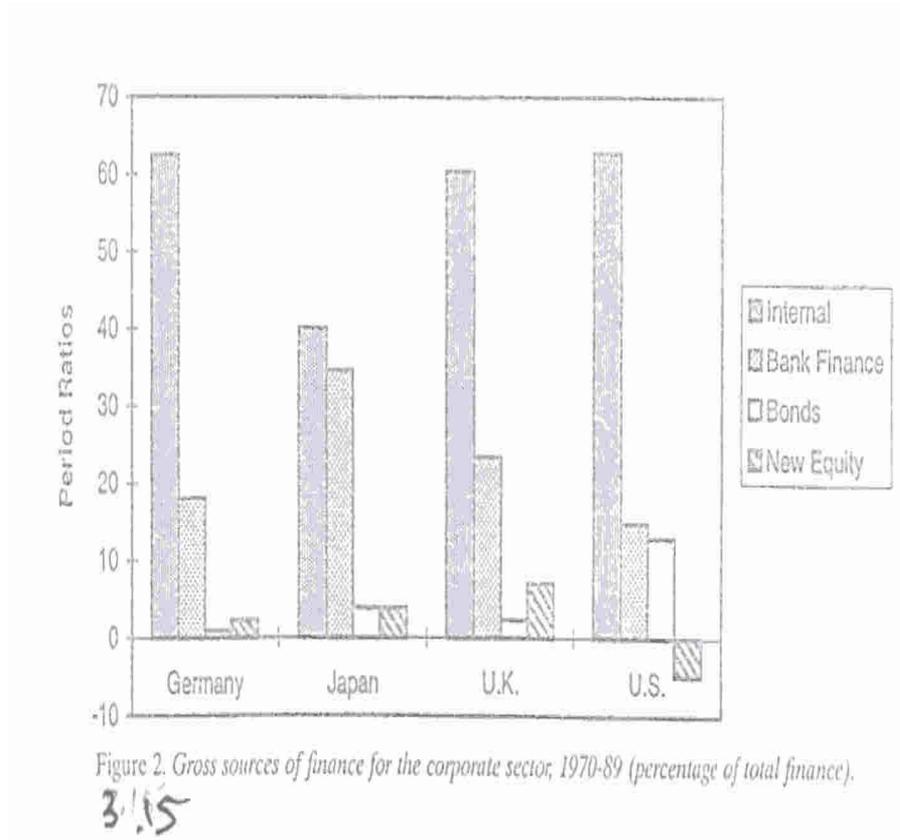
Figure 1. Top listed companies in manufacturing, internal and external financing of corporate growth: median values.

Source: Singh & Weisse (1998)

This corporate financing pattern goes against the pecking-order theory thought to characterize advanced country markets. The theory posits that a strict hierarchy of firm preferences in financing decisions exists. The most preferred source of investment financing being internal finance from retained earnings. Should more finance be required this is sought through bank financing and then long-term debt

both having significant tax advantages through the deductibility of interest payments. The issuance of new equity on the stock market is normally seen as the last resort. Figure 3.15 depicts data from a study by Corbett & Jenkinson (1994) of developed countries that corroborates this pecking order theory.

Fig. 3.15: Gross Sources of Finance for the Corporate Sector, 1970-89



Source: Corbett & Jenkinson (1994)

The results from the Singh & Hamid (1992) study are theoretically unexpected because:

- while it is not surprising that developed and developing countries have different financing patterns, the patterns they have observed are actually counterintuitive. As developed country corporations operate in an

environment with sophisticated capital markets, they could reasonably be expected to finance more of their growth through the intermediation of the market⁶⁹. In contrast firms operating in environments with far less mature capital markets should theoretically use internal funds for investment finance to a greater extent. The informational and regulatory shortcomings of their markets as well as the fact that most of these firms would not have established reputations which would make their pricing process both noisy and arbitrary (Tirole, 1991) further support this preference. There should consequently be greater share price volatility in emerging than in more mature markets, a fact many empirical studies have confirmed. El-Erian & Kumar (1984) report, for instance, that share price fluctuations in Mexico and Turkey were between ten and 20 times larger than on the New York or London stock markets. Shleifer & Vishny (1996) proffer that this would tend to discourage firms from seeking a market quotation or from raising funds through new issues.

- share price volatility reduces the efficiency of market signals which should discourage risk-averse investors from raising funds on the market and in fact firms from securing a listing in the first place.
- being family-owned many of the large diversified companies in the developing world would make their managers reluctant to issue equity for fear of losing control of the corporation.

Two consequences that should flow naturally from these considerations, that developing country firms would rely heavily on internal finance, only raising small amounts on stock markets or shunning listings altogether are not seen in actual behaviour in emerging markets. Even accepting India with its nearly 8000 listings as an outlier, the IFC (1990, 1993) has reported strong evidence of extremely fast growth of listings on stock markets in most industrializing economies. As discussed above the average sample developing country firm does not exhibit a pecking order structure of finance.

⁶⁹ Myers & Majluf (1984) explain this phenomenon in terms of the asymmetric information shareholders and managers have.

Singh (1995a) put forward a number of interlinked hypotheses to explain these phenomena in its specific historical and institutional context. First, the development of stock markets today is not a spontaneous response to market forces as it was in the US at the beginning of the last century. For a number of reasons developing countries have been actively involved in promoting the expansion of their markets. Pfeffermann (1988) for instance, names privatization as having been a major stimulus to stock market development. Conversely, many developing country governments have seen stock markets as the vehicle to tap private savings to finance state owned enterprises. Further, in the wake of the debt crisis the international financial institutions encouraged developing countries to foster stock market development thus attracting non-debt creating foreign investment. Finally, these same institutions through their policy advice as well as developed countries have together consistently applied pressure on emerging countries to liberalize their financial markets.

Second, as a result of the large share price rises during the course of the 1990s, the relative cost of equity capital fell significantly, thereby encouraging developing country corporations to resort more to stock market finance. That this took place amid a large increase in international interest rates as well as processes of financial de-repression that raised the cost of debt finance, further motivated a substitution toward equity finance in funding corporate growth. Third, governments also made use of active measures to ensure managers were willing to turn to the stock market to raise new issues, thereby increasing the supply elasticity of corporate securities. In Korea, for instance, these active measures were in the form of debt/equity ceilings that forced Korean conglomerates to seek stock market financing. Similarly Atkin & Glen (1992) found that in India the ability of state-owned banks to convert a portion of corporate loans into equity made Indian firms reluctant to take on debt.

The microeconomic effects of stock market expansion in developing countries could be argued to have been beneficial as it allowed large companies to raise

finance at cheaper rates by issuing equity to fund corporate growth. The critical test is whether the market has helped the overall long-term economic performance of those countries by increasing aggregate savings and the amount and productivity of investment. However, before getting to the crux of that question and staying within this exploration of the counter-thesis, the question as to whether the results on external financing have been overstated because of the methodology adopted needs to be raised.

Cobham & Subramaniam (1995) suggest that the Singh & Hamid (1992) [hereafter SH] analysis overstates the contribution of equity to corporate growth due to the methodology they use. A methodology that exaggerates the apparently positive role of the stock market. Using the alternative method of Mayer (1990) and Corbett & Jenkinson (1994) [hereafter called the MCJ method], Cobham & Subramaniam (1995) estimate that the contribution of new equity to Indian corporate investment was considerably smaller. Their methodology, traditionally employed on advanced countries, made use of flow-of-funds data as well as aggregate accounting data. Their results based on the latter data, show that during the 1980s Indian corporations financed only seven percent of their investment requirements from equity issues. This new argument raises important conceptual issues about how in general the contribution of the stock market and other sources of finance for firm growth should be estimated. While it is true that the differences in empirical results stem from the different methodologies, it is also true that the different methods have important implications for the economic interpretation of the results.

Singh & Weisse (1989) argue that three salient points are overlooked. The first being that a substantial part of the difference in empirical results is likely to arise from the fact that under the MCJ method depreciation is included as a major component of internal finance, whereas the SH analysis excludes it from both the numerator and denominator in the relevant ratio. Because the SH analysis set out to measure the sources of finance for corporate growth of net assets, they felt it appropriate to focus only on the net increase in corporate assets, seeing that

the depreciation provision is normally required to maintain the existing asset stock. Prais (1976) provides the standard discussion of this issue. The second aspect is that the MCJ method of using flow-of-funds data relates to the corporate sector as a whole, rather than to individual firms. This approach has intra-corporate sector transactions netted out with external finance being strictly defined as funds from outside the corporate sector. Thus the question the MCJ approach addresses, is one of how the gross physical investment of the corporate sector is financed by either internal (funds from within the sector) or external (funds from households or the financial sector) sources. This is a rather different question to the one SH have addressed, the latter using firm-level accounting data to enquire how individual corporations rather than the corporate sector as a whole, finances the growth of their net assets (net of depreciation). The differences between these two aspects are most pronounced during cases of takeovers. If Company A takes over Company B within the non-financial sector and pays for this acquisition, for example, through the issue of its own equity, SH would regard this as a new investment financed through the issue of fresh equity. Their thinking being that, from the perspective of the individual firm, growth by acquisition is an alternative to growth by the creation of new productive capacity. From the perspective of the corporate sector as a whole (and thus the MCJ method), as there is no increase in either physical investment or in shares issued, this intrasectoral transaction would simply be netted-out. Although the difference has been illustrated by considering a takeover the general point has wider application. Corbett & Jenkinson (1994) themselves note that "a firm that uses its cash flow to buy the equity of another company (from the financial or household sector) and issues no additional equity, will produce a negative net source of finance figure for equity".

The third important aspect is that the differences between the corporate financing patterns of developed and developing countries are greatly reduced when they are estimated by either methodology. This caused Singh (1995a) to revise one of the earlier conclusions of the SH report. Still, Singh & Weisse (1989) provide a stentorian defense that the SH method does not overstate the contribution of

equity finance to corporate growth in India or other emerging markets because it looks at the issue from the perspective of an individual firm rather than of the corporate sector as a whole. As well as because it considers the expansion of the firms net, as opposed to gross, assets.

3.7.3 Important Macroeconomic Issues for Developing Countries

The enormous expansion of stock markets in developing countries has raised several important macroeconomic issues that need careful consideration by their policymakers. Of critical significance to any macroeconomic analysis of the impact of this expansion is the role of portfolio capital flows. This is because many developing countries, particularly in Latin America following the debt crisis, are balance of payments constrained. Portfolio capital inflows at the end of the 1980s and during the 1990s enabled both the relaxation of this constraint as well as a resumption of economic growth, after a lost decade. Both the WIDER (1990) report as well as a paper from the United Nations Industrial Development Organization (UNIDO, 1996) have encouraged portfolio capital flows on a number of grounds besides this immediate benefit. Among them are listed the ability of such flows to bolster a country's external payments position, the greater flexibility of equity flows compared to debt, their immunity from interest rate shocks and their ability to promote domestic capital market development. Thus developing countries have been advised to abolish exchange controls and liberalize their capital accounts in order to attract institutional finance.

These massive capital inflows have proved, however, to be a double-edged sword. While they have enabled growth to resume, the example of Mexico shows that they could also lead to a crisis of massive proportions, not just for a specific country but for the international financial system as a whole. In the early 1990s, in response to reforms aimed at deregulating major markets, privatizing state enterprises and combating inflation, Mexico suddenly received a vast quantity of foreign capital. Developments in that country by raising expectations for economic growth enabled it to attract huge net capital inflows amounting to

US\$91 billion over 1990-1993, one fifth of all net inflows to the developing world (IMF, 1995). During 1992-1994, the annual capital inflows averaged eight percent of GDP compared with just five percent during the previous peak of 1977-1981. The largest share of these inflows comprised net portfolio inflows, amounting to US\$61 billion or 67 percent of net capital inflows over 1990-1993. Of these net portfolio inflows US\$22 billion was received by the Mexican stock market which subsequently fuelled a 436 percent share price index rise in dollar terms (IMF, 1995).

Then in December 1994 came the steep devaluation of the Mexican peso, which triggered a crisis that overwhelmed the country. It was clear that the capital surge was based neither on performance nor on fundamentals (Krugman, 1995; Rodrik, 1994). Despite these huge capital flows Mexico's annual average growth rate of GDP over 1990-1994 was only 2,5 percent just slightly above its population growth rate of two percent (World Bank, 1996). It also became apparent that during this period the current account balance also deteriorated: a deficit of US\$7 billion in 1990 mushrooming to over US\$29 billion in 1994 (ECLAC, 1996). Despite the fact that the country had expanded at a rate of only 0,6 percent per annum its current account deficit was six percent of GDP in 1993, widening to nine percent of GDP in 1994 while growth increased only to 3,5 percent per annum. These deficits were all greater than those which had occurred in 1981 on the eve of the debt crisis when the economy expanded at a rate of seven percent per annum. Moreover, private savings during 1990-1994 fell from 15 percent of GDP to just five percent. McKinnon & Pill (1996) describe these cumulative figures as strongly suggesting that the huge capital inflows lead to a collapse of private saving causing an unsustainable credit-driven consumption boom that ended in the forced devaluation.

Through the contagion effect, the burst of the speculative bubble in December 1994 had a devastating effect not only on the Mexican economy but on Latin America as a whole. The GDP of Latin America and the Caribbean grew by only 0,3 percent in 1995 while per capita GDP declined by 1,5 percent in contrast to

the 3,5 percent increase the year before (ECLAC, 1996). The IMF responded with an unprecedented rescue package of US\$50 billion but still could not stop GDP falling by seven percent in Mexico in 1995 and in Argentina (the Latin American country most effected by the contagion) by five percent. The IMF had to write up the entire episode as a systemic crisis for the international financial order as a whole. This subsection seeks to account for the astounding reversal of the expectations both orthodox theory and policymakers placed on portfolio capital inflows. At a theoretical level a number of different micro and macroeconomic elements that heightened the instability and negative impact of capital inflows may be identified. Stiglitz (1994) and Diaz-Alejandro (1985) have noted the uniqueness of financial markets in their susceptibility to market failure. Since these markets are concerned with the production, processing, dissemination and utilization of information many of the associated market failures revolve around problems of asymmetric information, moral hazard and adverse selection. These then subsequently lead to further problems of missing and incomplete markets. Moreover the cost of information also creates problems of imperfect competition as each financial institutions, for instance, has specific knowledge about its customer base that others do not have.

Stiglitz (1994) notes that the two crucial assumptions underlying the fundamental theorem of welfare economics, that there must be a complete set of markets and that information must be exogenous are absent for financial markets. Thus he argues that the prevalence of these market failures open up a wide range of regulatory interventions that could raise general welfare. Returning to the case of Mexico, a consequence of the presence of incomplete markets was that a consumption splurge rather than heightened investment occurred, as a result of the massive capital inflows. The costs associated with such a pattern of behaviour would have been relayed to market agents had there been complete markets. Government intervention to provide a mechanism for resolving this coordination failure could have, as in the case of Chile, raised welfare.

Mexico's deteriorating macroeconomic performance amid the huge amounts of capital flowing into the country suggests that the primary motive of investors was speculative and not based on economic fundamentals. In the 1930s John Maynard Keynes provided an important insight into how this seemingly irrational herd behaviour of institutional investors could be understood. He argued that as people do not trust their individual judgements under conditions of uncertainty they endeavour to fall back on the judgement of the rest of the world which is perhaps better informed. Thus people endeavour to conform with the behaviour of the average. Imitative and bandwagon behaviour which have been rationalized by economists and sociologists alike (*c.f.*, DiMaggio & Powell, 1983; Banerjee, 1992; Bikchandani *et. al.* 1992; and Schenk, 1996) come to dominate the market.

The process of liberalisation encourages a psychology that often generates wild expectations about growth in everything from stock market to property prices. This creates a large difference between current income levels and those expected in the future. McKinnon & Pill (1996) describe what they call an "overborrowing syndrome" as resulting where consumers increase consumption and investors step up borrowing to meet increased expected production. Excessive optimism and the consequent credit expansion this causes become reinforced by buoying share and property values the large-scale capital inflows cause (White, 1996). At the empirical level a crowding out of domestic savings by foreign capital inflows invariably occurs. In the case of Mexico this factor was especially conspicuous. However, there is evidence that even for developed countries, internal financial liberalisation is linked to declining domestic private savings (Bayoumi, 1993).

Akyuz (1993) pointed out that at a macroeconomic level external financial liberalisation leads to an interaction between two inherently unstable markets: the stock and foreign exchange markets. In environments with internal or external economic shocks the relationship between these two unstable markets may lead to a negative feedback loop and even greater instability. Which, in turn, would affect other important economic variables such as investment, imports and

exports (through exchange rate fluctuations) and consumption (through the wealth effect of stock market fluctuations). Portfolio capital inflows are often short-term and speculative instead of predictable and durable in supply. This reflects the desire of advanced country investors to have instant liquidity in what remain risky markets. As well as the vagaries of supply side conditions⁷⁰ in the industrial countries where the portfolio managers are based.

The primary policy conclusion arising from this discussion is that in order for a country to maximize the benefits from capital inflows, which may inevitably come in the form of surges and minimize their costs, appropriate and coordinated government action in a number of different spheres is required. The welfare costs of non-intervention are tremendous. Chile illustrates the kind of interventions required for this purpose. In contrast to the dramatic falls in output in Argentina and Mexico in 1995, Chile achieved GDP growth of over eight percent, a substantial increase in year-on-year growth as well as the 12th consecutive year of sustained growth (ECLAC, 1996). What is more compelling is that this was achieved despite net capital inflows to the country declining from US\$3,8 billion to US\$900 million in 1995 (ECLAC, 1996). A large part of why this occurred may be answered by looking at Chile's policy toward capital flows.

Following the failure of its non-interventionist policy on capital flows during the surge of inflows over 1978-1981, the country adopted a set of policies to influence both the level and composition of those flows. This in order that long term inflows such as FDI were encouraged and short-term equity flows discouraged (Singh, 1996b). French-Davis *et. al.* (1994) describe the Chilean government as using four basic instruments to neutralize any effects short-term capital inflows may have which were incongruent with its export development strategy. These were:

- the application of taxes and reserve requirements to capital inflows;

⁷⁰ Such as changes in US interest rates.

- an exchange rate policy based on a dirty float rate rather than one reference value pegged to a basket of currencies;
- open market operations to sterilize the monetary effects of exchange rate dealings; and
- the prudent supervision of financial markets.

Just as portfolio capital flows have turned out to be problematic for economic development, so to does the unprecedented expansion of stock markets raise severe questions as to its capacity to generate rapid economic growth and promote late industrialisation. Orthodox economists, as most of the work survey in this chapter has shown, have almost unanimously concluded that stock market expansion leads to faster economic growth (*c.f.*, King & Levine, 1993a,b; Levine & Zervos, 1996). Atje & Jovanovic (1993) for instance, conclude that stock markets on their own can raise a typical developing country's economic growth by 2,5 percent annually. Many of these studies have used Barro-type international cross-sectional analysis to determine the sensitivity of economic growth to stock market development. However, as Quah (1993), Lee *et. al.* (1996) and Arestis & Demetriades (1997) have pointed out, it is difficult to draw any causal inferences from the cross-section regression methods used in such work. Moreover, endogenous finance models represent reduced-form equations which abstract greatly from the workings of the stock market's most important mechanisms - the pricing process and the takeover mechanism (Singh, 1997). In the context of advanced country markets the operation of these mechanisms have been studied extensively and a critical body of literature has emerged drawing attention to its deficiencies.

Concerning the pricing process, while market prices might be reasonably efficient in Tobin's (1984) informational arbitrage sense, as they are subject to fads and speculation they are often dominated by noise traders and are thus not necessarily efficient in the more important fundamental value sense⁷¹. Singh (1992) has also discussed a number of intrinsic problems that affect the takeover

⁷¹ That is, the present values of the future cash flows of the company.

mechanism. First, he provided evidence that competitive selection in the corporate control market is not based on theoretically expected criterion of profitability or market valuation but on size. Thus, due to capital market imperfections a large unprofitable firm has a greater chance of survival than a small efficient one. Further, it is possible for large firms to increase their chances of survival by increasing their size simply through the takeover mechanism. Second, he supported evidence (e.g., Porter, 1992) that indicates the actual operation of the takeover mechanism in mature markets like the UK and US leads to short-termism on the part of managers forced to focus on quarterly returns rather than long term investment, particularly in firm-specific human capital.

McCauley & Zimmer (1989), Poterba (1991), Zimmer & McCauley (1991) and Porter (1992) have all debated the disadvantages of the stock market based systems in advanced countries for international competitiveness. In developing countries with weaker regulatory institutions and greater macroeconomic volatility, these disadvantages would be further magnified. The higher degree of price volatility on developing country markets for instances further reduces the efficiency properties of market signals with adverse implications for optimal resource allocation. Also, the fact that many developing countries have large potentially predatory business groups makes it likely the takeover mechanism will increase the aggregate level of concentration in those economies and with it probably increase allocative inefficiency. That the takeover process encourages short-term orientations and that volatile and liquid financial markets tend to emphasize financial engineering over productive efficiency are together inimical to late development. Late industrialisation because it is after all a long process of institutional and technological learning and adaptation (Amsden, 1989) requires a long-term investment horizon as well as patient finance.

While no one doubts that the stock market has made significant contributions to the growth of large developing country corporations in recent periods, the deficiencies inherent in the stock market based system requires an examination

of whether the economy as a whole has benefited through, for instance, greater aggregate savings, investment or increased productivity of that investment. Singh & Weisse (1998: 616) contend that "there is little systematic empirical evidence on this issue for developing countries", certainly not from the Singh (1995) or Singh & Hamid (1992) samples. However, there is some evidence that aggregate savings have declined in many of these countries over the relevant period. Nagaraj (1996) compiled some useful direct evidence for India that bears directly on these issues. Capital market growth can stand for either an increase in financial savings or a change in investor portfolios. In his study Nagaraj (1996) showed it was the latter element that dominated with a substitution away from "net bank deposits" toward "shares and debentures" reflecting the policy induced changes in these instruments financial returns. Thus despite rapid financial market growth since the latter half of the 1970s, the share of aggregate financial savings in the economy as a whole declined during the 1980s. Moreover the link between capital market growth and material investment has been weak and not positively related to growth in value added. With regard to this aspect Nagaraj (1996) notes that an increasing proportion of the economy's financial resources have gone into a sector (private corporate manufacturing) whose share in manufacturing has declined.

The results observed for India, the experience of Mexico and evidence from other developing countries together with the high degree of price volatility suggest that despite some beneficial microeconomic results serious grounds exist to question the orthodox position will necessarily have positive macroeconomic effects on either saving and investment or their allocation. The commercial bank system has been the most successful financial vehicle for late industrialisation, despite the "Washington consensus" encouraging stock market development. The financial systems of the two most successful late industrializers (Germany and Japan) having been characterized by them, albeit in different forms. Allen & Gale (1995) posit however that such systems are inefficient and simply a half-way house to more developed and sophisticated financial structures. The rapid industrialisation of South Korea and Taiwan (two countries with strong bank

based systems during their periods of rapid growth) suggest that there are features of commercial banks that are conducive to the provision of high and steady investment late industrialisation requires.

While considerable variation underlies the institutional arrangements of commercial banks, the basic premises are the same. In that the banks establish long-term relationships with industrial companies, often cemented by cross-shareholding. The relationship is complex and brings both benefits and obligations to the banks and firms. It is understood, for instance, that the bank will have preferential access to the firm's transaction deposits as well as to those of subsidiaries, subcontractors and even employees. In return the firm receives secure access to loans when credit is tight and an implicit assurance that the bank will rescue it through restructuring or merger rather than liquidate its assets, should it fail (Patrick, 1994).

In the context of economic development, the main bank system is efficient in two major respects. First, by having detailed knowledge of its client's operations it is able to effectively evaluate credit risk *ex post* as well as monitor the performance of management during the course of the investment itself (Aoki, 1994). The main banks equity participation providing a strong incentive to monitor. Further, in environments with undeveloped sources of market and corporate information as well as more limited amounts of managerial talent, there are efficiency gains in concentrating monitoring in banks that have the capability to assess projects and management. Thus reliance on stock market prices which are much more volatile in such environments are avoided.

Second, the process of later industrialisation as has been noted earlier requires stable and patient finance provision. As the bank has its focus on long-term relationships and lending it is capable of providing this while shielding the firm from instabilities in financial markets as the same time⁷². Capital markets, with their varied instruments, should, in theory, be more equipped to provide

⁷² Although it must be noted that the main bank system does not insulate an economy from excessive speculation, though it may help dampen its effects (Patrick, 1994; Tabb, 1995);

predictable long-term finance. However, Akyuz (1993) notes that historically, financial asset prices, interest rates and bank deposits have been less volatile and financial disruptions and bank failures less frequent in the bank systems of Germany and Japan than in the US. Consequently lower capital costs and a more stable supply of finance has enabled Japanese firms to undertake longer-term projects. The main bank system by precluding a market for corporate control has also promoted a longer-term perspective. This has enabled managers to focus on longer term productive investment rather than on quarterly returns in a stock market.

There are a variety of reasons that while bank based systems have characterized the economies of developing countries like India, China, Mexico and Turkey, these have not been as successful as those in East Asia or Europe. Among these are poor regulation and supervision, crony capitalism, monopolistic abuses, collusion and corruption. Despite this, these systems have supported the unprecedented rates of economic growth and industrial development in developing countries over the post-war era. An achievement more liberalized financial systems has yet to replicate. Bhatt (1994) while admitting that the lead bank system in India has not been as successful as in Japan in improving the investment and productive efficiency of client companies, it has ensured adequate long-term finance for sound industrial projects and has been responsible for diversification of the industrial structure. His research showed that the lead bank was a key factor behind the six percent annual growth rate of Indian industrial output over 1950-1990, a respectable record sustained over a four decade long period.

The implication of this being that developing countries would be better advised to reform the institutional structures of their banking systems rather than create stock markets which require sophisticated monitoring to ensure effective functioning⁷³. It stands to reason that as the fulcrum of any financial system if the

⁷³ Quite apart from the shortcomings already discussed.

banking system remains fragile, unreformed and subject to collusion there can be little hope that stock markets would be immune from these defects.

3.8 Summary

This chapter began by demonstrating that for a given degree of imperfect information, capital is allocated more efficiently through equity markets. In fact, if information constraints are strong, bank liberalisation through the elimination of interest rate ceilings and security of free competition on its own would by no means assure improvements in allocative efficiency. Banks, it was shown have imperfect information, in that while they may distinguish between groups of borrowers they cannot distinguish among borrowers within the same group. Given this informational uncertainty establishing and expanding equity markets would enhance allocative efficiency. The reason being that equity finance takes up those riskier yet potentially super-productive projects that particularly suffer information asymmetries while banks prefer to concentrate on well established safer borrowers.

But why should institutions of intermediation matter in the allocation of savings to their most efficient and productive endeavours? This chapter has answered that question by showing that more efficient resource allocation translates into increased productivity and growth through physical capital accumulation, improvements in types of intangible capital as well as through human capacity development. To understand this a more comprehensive notion of capital stock was advanced, one that comprises three types of capital:

- productivity enhancing intangible capital;
- physical capital; and
- general human capital.

The building of a superior financial system must by definition include the establishment and expansion of equity markets. Such a system would cause a permanent decrease in the cost of accumulating productivity enhancing capital thereby raising the rewards to investment in physical and general human capital. This then sets into motion the transition to a new higher growth path at which

stocks of all factors of production are higher. There are thus important linkages from financial intermeditaion to productivity and then ultimately on to economic development.

This chapter has also presented evidence that the crucial issue for allocating resources to firms is one of checking that management undertake sensible strategies. In this regard the stock market provides the great advantage of providing incentives for a large number of investors to check what the firm is actually doing. This repetition of the decision-making process is valuable when compared with banks that allow checking only a relatively few times. Banks would only be more advantageous when there is consensus on the actions management should take, their function then simply being to ensure that it takes them. In industries where wide disagreement on optimal policies exists, stock markets provide superior functions to banks by distilling marketplace wisdom.

This chapter has also looked at whether there are benefits both for international investors and developing countries that expand their stock markets. As equity returns from different countries are lower correlated than those from the same country, diversification benefits are stronger across international financial markets than within domestic ones. This is especially true for investments in developing countries as their stock returns tend to have even lower correlations with those from industrial ones. Participating in emerging markets is thus likely to lower overall unconditional portfolio risk. For developing countries stock markets can be an important vehicle for raising capital even more important than the more mature markets are for their corporations. Capital markets and stock markets in particular enable investors to diversify their wealth across a wide variety of assets usually with greater ease than in most other financial markets. By reducing the overall risk investors must bear, the risk premium is also reduced and with it the cost of capital. In the case of foreign equity markets, as foreign investors are more diversified, the benefits to them of a lower risk premium can be particularly large. Stock markets perform a screening and monitoring role, more frequently for particular projects than do banks. Relying on the information

sets and judgements of numerous participants, stock prices can quickly reflect changes in underlying values and indicate profitable investment opportunities, so providing a screening and selecting function. Through continuous adjustment of stock prices, stock markets can also assist in monitoring the managers of public corporations thus possibly improving corporate governance. In this sense foreign investment, because it brings with it international best practices and cross-country experiences, may be particularly useful. As the number of publicly traded companies in developing countries increases this monitoring role may be expected to take on increased importance. Finally, a well functioning financial system requires that the whole financial sector function efficiently. From the perspective of both deficit and surplus units there can be important relations and complementarities among the various financial institutions and a well functioning equity market may have positive externalities for the rest of the financial system.

This chapter has argued most resolutely that expanding emerging stock markets affects a country's economic activity, most noticeably through the creation of liquidity. Many profitable investments require long term capital commitments but investors are often reluctant to relinquish control of their savings for long periods. Thus, by allowing savers to acquire an asset (equity) and sell it quickly and cheaply if they need access to their savings or to make portfolio alterations, liquid equity markets make investment less risky and thus more attractive. Simultaneously, companies have the benefit of permanent access to capital raised through equity issues. Such liquid markets improve the allocation of capital and thereby enhance long-term economic growth prospects by facilitating longer-term and more profitable investments. Also because liquidity makes these investments less risky and more profitable it can lead to more saving and investment.

But surely such a contention needs to come with a caveat that expanding emerging stock markets exposes a developing country to short-term flows that are inherently unstable and thus requires policy intervention? This chapter has

surveyed evidence that in examining the time series properties of short and long term flows no significant differences were found. This implies that based only on time-series statistics it would not be possible to tell the label of a flow. Also, because much substitution between the various flows may exist, the only meaningful analysis may be of the aggregate capital account. This would mean that any capital control programme or other policy (including subsidies and taxes) aimed at discouraging a particular type of flow because of its alleged volatile behaviour may be misguided or ineffectual. Rather, appropriate macroeconomic policies aimed at achieving a desired capital account behaviour would more likely be effective in dealing with volatile flows.

Admittedly the validity of this textbook theory has been challenged by many who feel, quite paradoxically, that while stock markets are potent symbols of capitalism, capitalism could flourish better without them. To be fair this chapter has also reviewed their work that suggests that stock market expansion and the resulting capital inflows may hinder rather than promote long-run growth because:

- financial markets are particularly prone to market failures due to problems of asymmetric information, moral hazard and adverse selection that further lead to missing and incomplete markets;
- the primary motive for capital inflows into developing countries has often been speculative with investors simply following the herd, rather than basing decisions on fundamentals;
- internal liberalisation often generates wild expectations which may lead to an overborrowing syndrome;
- external liberalisation and the associated expansion of stock markets leads to the interaction between two highly unstable markets, that of equity and foreign exchange;
- foreign capital flows are often short term in nature reflecting foreign investors needs to have liquidity in what are essentially high risk markets, while late industrialisation requires long-term and patient finance; and

- the pricing and takeover mechanisms of stock exchanges have critical deficiencies which are accentuated under developing country conditions.

Having examined both these arguments the goal of the current study can now be placed in perspective. The orthodox view would propose that stock exchange expansion in South Africa has had a positive effect on the country's economic growth. This proposition will be translated into an empirically testable hypothesis in the next chapter. The theoretical and empirical framework that will form the basis of the hypothesis test of causality is the subject of that chapter.