The Role of Capital Markets in Economic Growth

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ABSTRACT

Capital markets play an important role in the economic development of emerging capital markets. Well functioning markets insure that both corporation and investors get or receive fair prices for their securities. This ensures that valuable projects will be financed and negative value projects will be rejected. Most importantly, we argue that integration into world capital markets will accelerate the growth process. A country that erects barries to international participation will face a higher cost of capital. This discourages domestic investment and diminishes foreign direct investment. Our analysis indicates that Brazil's cost of equity capital could be lowered if an aggressive program is undertaken to increase the degree of integration in world capital markets.

1. INTRODUCTION

Economic growth in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. Absent an effective set of financial institutions, productive projects will remain unexploited. Inefficient financial institutions will have the effect of taxing productive investment and thus reducing scope for increasing the stock of equipment needed to compete globally. The effect is to substantially cut growth from what would have been possible given appropriate policies and market structures.

This paper covers many of the major economic aspects of the link between growth and capital markets. Section 2 examines in detail the links between the financial sector and economic growth. One important component of a well-functioning financial system is the stock market; Section 3 of this paper reviews the latest research on this subject and presents empirical evidence indicating that stock markets are indeed important to economic development. Of paramount importance is their efficiency. This means that assets are traded at "fair" prices: the seller does not sell too cheaply, and the buyer does not pay too much for the asset. To function well, there must be a large group of traders, and information about the assets must be readily available. Finally, particular care must be paid to the structural characteristics of the market to ensure that the trading process is enhanced rather than hindered.

Underdeveloped or poorly functioning capital markets typically are illiquid and expensive, which deters foreign investors. Direct investment is adversely affected if raising local capital is difficult and costly. Illiquidity and high transaction costs also hinder the capital-raising efforts of large domestic corporations and may push them to foreign markets. In Section 4, we explore the relationship between global capital market integration and economic growth. A country that restricts its capital markets not only is less attractive to foreign investors but also imposes major economic penalties on local companies. This reduces growth rates below their full potential and specifically makes competing in world capital markets more difficult for domestic firms.

After a review of the statutory barriers in various countries, the regulatory framework in Brazil comes under scrutiny in Section 5. The main goal there is to assess whether the current financial and regulatory configuration in Brazil is conducive to economic growth. Section 6 concludes the report with some policy recommendations that would effectively open equity markets and thereby increase economic growth rates.

2. THE LINKS BETWEEN FINANCIAL STRUCTURE AND GROWTH

2.1. OVERVIEW

The existence of a link between financial development and economic growth has long been debated by economists. In the 19th century, economic theory held that the financial structure of an economy did not affect real economic variables, including economic growth. More recently, leading economists came to believe that unregulated capital markets perform better than regulated markets. Hence, the existence of competitive financial markets should, in principle, enhance economic livelihood. Indeed, early empirical work by Goldsmith (1969), McKinnon (1973), and Shaw (1973) produced considerable evidence that liberal financial policies correlate positively with growth.

In the last few years, interest in the link between financial development and economic growth has surged. The World Bank is currently sponsoring research programs that will provide detailed empirical evidence on these links (see, e.g., Demirguc-Kunt and Levine 1993). Recent theoretical literature on financial development and growth[1], identifies three fundamental channels through which financial structure and growth are linked:

- Financial development increases the proportion of savings that is funneled to investments.

- Financial development may change the savings rate and hence affect investments.

- Financial development increases the efficiency of capital allocation.

Efficient capital allocation means that funds are allocated to the investment projects or firms that bring the most value to the economy: the marginal product of capital value is the highest. Eficient allocation is undoubtedly the primary role of financial institutions and generally believed to be far more relevant to growth than the other factors (e.g., see Stiglitz 1989). Consequently, the capital allocation process receives considerable scrutiny in Section 2.4, after the first two channels identified above have been discussed. Additionally, Section 2.5 contains an evaluation of the different arguments presented and an assessment of the role governments might play in financial development.

The recent recognition of finance's importance to economic progress is a major advance from earlier models, which focused exclusively on technological progress as the main engine of growth. The new model of economic progress shows that growth can be self-sustaining without technological progress (see Lucas 1988). The main mechanisms of growth are the positive externalities associated with productive investments on the rest of the economy. An externality is a benefit or a cost that individuals or firms do not receive or bear. Some concrete examples appear in conjunction with the caveats offered in Section 2.5, since the idea of externalities not only explains the role of financial intermediation in achieving

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[1]   Pagano (1993) provides a useful survey of this literature.

economic growth but also provides a potential role for government to play in the growth process.

2.2. EFFICIENT FINANCIAL INTERMEDIATION

The process of funneling savings to firms and entrepreneurs requires efficient financial intermediation by banks, savings and loan institutions, investment banks, mutual funds, and insurance companies. Without a formal financial system in place, informal markets will perform the same task, although less efficiently. Of course, while aggregating the household savings and turning these into effective investments, financial intermediaries absorb some resources themselves. These resources may take the form of wages for their personnel or of funds kept within the financial system (i.e., not invested) to accommodate withdrawals from savers. Such uninvested funds are called reserves.

Financial institutions that are not sufficiently developed will fail to perform financial intermediation efficiently. They may either fall short of receiving all potential savings from households or divert too many of the savings away from investments. With underdeveloped financial markets, for example, individuals may allocate some of their savings to passive instruments, such as gold, which cannot be used directly for physical investment. Savers may hold gold because they are concerned about a future loss of purchasing power. This concern might arise from lack of stability in the banking sector or from the existence of government-imposed interest rate ceilings. In the latter case, individuals would be concerned that the inflation rate would exceed the ceiling and, hence, the real value of their savings would be eroded.

Thus, investment outside the financial sector, such as in gold, can be viewed as a diversification of risks caused by an underdeveloped sector. This underdevelopment can be exacerbated by ill-designed regulations, such as interest rate ceilings. Such perceived risks would disappear as financial institutions gained a reputation for stability and for providing a market-determined rate of return. Accordingly, more savings would be channeled to the financial sector. The bottom line is that the development of efficient financial institutions does increase the amount of funding funneled to investment and therefore to economic growth.

2.3. EFFECT ON THE SAVINGS RATE

The degree of development of the financial sector may also affect the savings rate of households. Since savings contribute to investment financing, economic growth is affected. However, evidence is ambiguous as to whether a more developed and efficient financial sector

would increase the proportion of income that individuals save.[2] This may seem counterintuitive. As the financial sector develops, the real return on savings will likely increase. With a more competitive financial system, the profit margin that financial intermediaries charge (for example, the difference between lending and borrowing rates of banks) decreases. In addition, the competitive environment causes firms to waste less resources. Consequently, savers are offered higher returns.

A higher real return on savings, however, does not necessarily translate into higher savings. The level of savings is subject to two countervailing effects. The decision of the household on how much to save depends on its preference with regard to present versus future consumption. With a higher return on savings, consuming in the future becomes relatively cheaper. The higher return induces the household to give up current consumption for higher consumption in the future: the household's members save more. This is called the *substitution effect*. However, the higher rate of return on savings implies that the household needs to save less to obtain the same level of future consumption as before. In a sense, the higher rate makes the household wealthier, so it wants to consume more today. This is called the *income effect*, which leads to a lower savings rate. Empirical studies have not provided a conclusive answer as to which effect dominates; that may vary across the population.[3]

The insurance function of financial institutions also has ambiguous effects on the savings rate. Financial markets provide insurance against liquidity shocks. For example, in the absence of banks or stock markets, individuals need to put aside cash for unforeseen emergencies, such as a job layoff. They cannot invest all their savings in physical assets, such as factories, buildings, machinery, and technologies, because these assets cannot be easily liquidated. Banks pool individuals' savings and create liquidity by setting aside a certain amount of these funds to accommodate households that suddenly must use their savings. Hence, individuals who face a liquidity shock get their savings back by withdrawing deposits from the bank or selling stock. Keeping a personal cash reserve is no longer necessary. Clearly, more savings would be channeled to physical assets, but whether individuals would increase aggregate savings is not clear at all.

Similarly, financial development would also increase the accessibility of consumer credit and mortgage loans. The improved borrowing opportunities offered by these markets lead to reduced (or negative) savings among young households, and decrease the funds available for investment. This can be detrimental to growth.

In summary, the development of financial institutions will facilitate saving and investment but the impact on the savings rate is complicated.

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[2] In an open economy, of course, foreign savings can be used to finance domestic investments, and such savings should be an important source of funds for developing countries (see argument below). When a country is borrowing from abroad, it is said to run a current account deficit. If the borrowed funds are channeled into productive domestic investment projects that pay for themselves with the revenue they generate, current account deficits should pose no problem.

[3] However, Giovannini (1985) finds that savings respond favorably to higher interest rates but that this positive effect is quantitatively small.

2.4. AGGREGATION AND ALLOCATION FUNCTIONS OF THE FINANCIAL SECTOR

The primary functions of financial institutions are to aggregate household savings and allocate these funds to investment projects. The aggregation of savings is essential since the funds required for many investments are typically beyond the capabilities of any single investor. By pooling the savings of many households, financial intermediaries enable the undertaking of large-scale projects.

Allocation refers to the selection of investment projects by the financial sector. Information gathering by financial intermediaries is an essential part of their role in this (see Collier and Mayer 1989; Stiglitz 1989). Typically, the value of an investment project is not readily available to potential investors, and determining this value requires a costly analysis. Suppose an individual undertakes this analysis but additional investors are needed to raise the required capital. Each new investor in the project must incur the same cost of analysis because usually no credible way exists to disseminate this information from one investor to the next. The informed investor may have no incentive to reveal the true value of a project to other potential investors. On the contrary, he or she may try to exploit any informational advantage for personal gain. For example, this person may want to overstate the returns from this investment to other investors to attract funding. Financial institutions, on the other hand, would have already pooled the necessary capital from individuals. If information needs to be disseminated, these institutions have significant incentive to be credible with their reporting.

Thus, from an informational viewpoint, financial institutions are better suited to fund investment projects. They analyze potential projects to determine the value and then fund those projects with the highest net value. This information-gathering and selection process is usually referred to as the screening function of the financial sector.

Some financial institutions, such as banks, also overcome what is known as the "moral hazard" problem after a project is selected for financing. Financing a project typically involves transferring funds to the firm or entrepreneur undertaking that project. However, investors do not know that the funds will be used efficiently by the project administrator, who may use the funds for personal benefit. Clearly, small firms and entrepreneurs are more susceptible to this temptation (i.e., moral hazard). Banks overcome this problem by monitoring the firm's progress after a loan is made. Such monitoring would be too expensive for individual investors to carry out.

Greenwood and Jovanovic's (1990) formal model of economic growth builds on this intuition. Through screening or monitoring activities, financial intermediaries generate information that positions them better to choose the best investment projects to fund than are households, which typically possess less comprehensive information. Suppose there is a safe, low-yield technology and a risky, high-yield technology. Projects using the high-yield technology are subject to an aggregate, economywide shock (unexpected recession) and a project-specific

shock (unexpected shortage of key project ingredient). When the aggregate shock lowers the return on risky projects, it is advantageous for the economy to invest temporarily in the safe technology; otherwise, funds should be directed to the high-risk sector. In the model of Greenwood and Jovanovic, intermediaries collect information on many projects, which allows them to infer the nature (good or bad) of the aggregate shock and to direct funds to the highest-return sector at the right time. Hence, allocating savings through financial intermediaries is more efficient and leads to a higher productivity of capital, resulting in higher growth. Economic growth, in turn, leads to higher levels of intermediation since intermediation is now more profitable. Hence, an efficient financial sector may lead to higher economic growth, and economic growth itself furthers financial development.

Finally, financial intermediaries ensure more efficient capital allocation by allowing firms and households to share risks. As mentioned before, households generally need to set aside cash for unforeseen future outlays; they cannot allocate their savings into illiquid, though perhaps higher-return, investments. Since not every household needs cash for emergencies at the same time, financial institutions such as banks are able to provide liquidity to many households without keeping large cash balances, by aggregating savings of many households (e.g., in the form of demand deposits). Similarly, well-developed stock markets allow households to convert part of their savings into cash by selling some of their stock holdings. A larger portion of total savings is then lent out for investment purposes and channeled to illiquid but more productive investments. This raises the productivity of capital and leads to faster growth.

Apart from liquidity risk in economies that lack financial markets, households also face rate-of-return risk. Without sophisticated financial markets, in particular stock markets, individual households would have difficulty investing in many different investment projects. Suppose a household has $100 available for savings. It is approached by an entrepreneur with a project that offers an uncertain return. The investment project may pay $125 when everything goes well, but it has an equal chance of paying only $95. Although it has an expected payoff of $110 (i.e., a return of 10%)[4], the investor may be reluctant to invest in this project because the return is volatile: it is either very high or low. The volatility of this investment can be computed to be $15. That is, $15 is the average variation of the payoff around its expected value of $110. If the household could reduce volatility to a lower number, it might be willing to undertake the investment.

Now suppose that a stock market exists. The household can invest $10 each in 10 different firms, representing 10 different investment projects. Thus, the household has diversified its portfolio. Diversification will always reduce the volatility of the total investment as long as the returns on the different projects are not perfectly correlated, that is, as long as they do not move together one-for-one.

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[4] The expected return on the investment is computed as the sum of the possible returns weighted by their probabilities. If the investor renewed an investment with the same profile ($125 payoff when times are good and $95 when times are bad) and the true probability of a "good time" is actually 50%, the investor should expect on average to earn $110 on his $100 invested.

For example, suppose all projects offered the same return profile as the one discussed above, but they are in different industries that are independent of each other. The expected payoff on the portfolio would still be $110 (10% return), but its volatility would drop to $4.7. Whatever happens, the investor is virtually assured a positive return.[5] If one project fails, other projects may produce high returns compensating for the loss of the bad project. That is the power of diversification. Of course, it is made easier by the existence of sophisticated financial markets.

The idea of liquidity insurance through banks was incorporated by Bencivenga and Smith (1991) into a growth model. Banks increase investment efficiency by directing some of the funds to illiquid assets and by preventing early liquidation of valuable projects; the growth rate is increased by higher returns on investment. Other, related research is reported in Levine (1991), which emphasizes the liquidity created by stock markets. In Levine's model, some individuals face liquidity shocks and need cash. Absent stock markets, individuals must withdraw capital invested in firms, which may require the liquidation of assets, such as machinery and computers. The reduced capital base in firms in turn will hurt productivity by removing capital. For example, the fact that one firm devotes less resources to research and development has negative effects on the whole economy. As a consequence, investment returns will fall along with the overall rate of investment. With the creation of stock markets, individuals can, by selling their stocks to other investors, transfer ownership without affecting the capital invested in firms. In addition, individuals can diversify firm-specific risks, thus, making investment in firms more attractive.

Similarly, the possibility of financial diversification affects the nature of projects entrepreneurs undertake. The ability to diversify sectoral risks through the stock market results in increased specialization and consequently in increased productivity.

Consider the example of a firm in the textile industry. Suppose that this firm can either invest in additional production facilities or diversify into the service industry. Given the firm's existing technology and experience, the additional investment in textiles has a higher return, but it increases the firm's risks. If the firm invests more in textiles and this sector suffers a downturn, the firm may go bankrupt. Investors may not want to invest money in such an endeavor if diversifying this specific textile-sector risk is difficult or costly. Therefore, in the absence of efficient hedging opportunities for investors, the firm may forgo the higher return investment and choose the less risky investment. On the other hand, this firm will probably choose the better project (specializing in textiles) if potential investors can diversify their risk through the financial sector.

This idea is presented in Saint-Paul (1992). In his model, firms choose between two categories of technologies, a flexible and low-return technology versus a specialized and high-return technology. As long as firm-specific risk can be diversified, firms will invest in the latter category, which leads to two possible outcomes (*equilibria* in the economist's jargon). In the high equilibrium, stock markets are developed and firms are specialized, resulting in

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[5] From statistics, we know that the realization of the return will not likely deviate from its expected value by more than two times the volatility number.

high returns and accelerated growth. In the low equilibrium, firms choose flexible technologies leading to slower growth.

2.5. CAVEATS

The importance of financial markets in general should not necessarily be taken as justification of a consistent public policy of supporting free markets. Economists have shown that high-growth countries have in fact successfully "guided" economic decision making by the private sector. Japan, South Korea, and Taiwan (among others) have had stellar economic growth with tightly regulated financial institutions. Conversely, the economy of Chile almost collapsed after financial deregulation, and extensive deregulation during 1980–1984 failed to significantly boost the Philippine economy. Whether Japan and South Korea would have been worse off under a completely liberalized financial system is not clear. However, their experience suggests the need to consider the circumstances where government intervention is required to achieve growth. Beason and Weinstein (1994) show that the Japanese government consistently subsidized low-growth industries.

Critical to this perspective is an emphasis on the concept of externalities (briefly introduced in 2.1 above)—for example, promoting investment in a computer factory where technology and skills, once developed, will have wider benefits to the economy than indicated in the market-determined return on capital. In particular, the creation of human capital (education) benefits the whole economy and might provide the impetus for a more general industrialization. Such externalities may motivate government intervention to promote investments whose economic returns are underestimated by purely financial analysis.

Institutional constraints may also make complete reliance on free markets inefficient in terms of growth. Hellmann, Murdock, and Stiglitz (1994) suggest that government interventions in financial markets may be justified at extremely low levels of development, such as those encountered in parts of sub-Saharan Africa. In such settings, deposit collection is extremely poor because of inadequate infrastructure. A network of rural branches may require large fixed costs before banks earn returns on their investments. One method of subsidizing such infrastructure would be government-fixed interest rate ceilings[6], which could encourage banks to seek out new sources of deposits even in remote rural areas. This may lead to increased savings being channeled to the financial sector and ultimately into productive investments, fostering economic growth. Such a policy also runs the risk of promoting the development of extremely inefficient financial institutions that, in effect, consume any economic payoff from improved accumulation of savings deposits.

Another key problem with government intervention results from the incentive structure facing financial institution managers. Poorly capitalized banks may have an incentive to invest in very high-risk investments. Their gamble might pay off, and they will end up being very

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[6] Hellmann et al. also discuss controls of the lending rates.

profitable to their private owners and managers. The cost of failure, in contrast, can be shifted to the public sector through deposit insurance, given the political costs of allowing households to lose their savings as a result of imprudent bank management.[7]

Households may cut their savings rates in the face of frequent banking crises. Risk-averse households will only deposit their wealth with financial intermediaries if they are highly confident that their funds remain safe and can be withdrawn at will. The government's role in this situation is to create an environment in which banks create financial stability. One way to do this, according to Hellmann et al. (1994), is to make providing financial intermediation services more valuable for institutions. For example, an interest rate ceiling on deposits will make the business of banking much more profitable, since the spread between the lending rate (the bank's revenue) and the deposit rate (the bank's cost) becomes wider.

Such a step is not without its own problems. Success for a policy of financial restraint requires limiting the competition in banking. Yet, even theoretical advocates of this approach emphasize the real-world risks: distributional distortions can result, and the costs of such policies have generally outweighed the benefits. Finally, and most important, Hellmann et al. stress that this policy should be phased out as soon as the financial sector is sufficiently developed.

Collier and Mayer (1989) argue that governments should first intervene heavily to overcome the shortcomings of the capital markets; afterward, as large and reputable firms and banks emerge in the economy, the deregulation process can be commenced. The main shortcoming of financial liberalization, according to Collier and Mayer, is that competition among banks may force them to seek more liquid (low-value) investments. To see this, suppose that one bank decides to increase its interest rate above the interest rates paid by all other banks. Investors will withdraw their deposits from other banks and deposit them with the bank offering higher interest rates. This in itself does not change total savings, but banks, afraid that such deposit shifts may happen in the future, may want to hold more liquid funds to accommodate them, hence reducing funds channeled into productive investments.

However, not even the strongest advocates of financial market intervention argue that the real return on savings should be artificially kept negative. That is, the interest payment the household receives on its savings account should at least match the rate of inflation. Ample empirical evidence suggests that negative real rates of return are negatively correlated with economic growth (Fry 1988).

Also, ample empirical evidence exists to show that well-intentioned government interventions can have unintended economic consequences. Institutions created to address perceived market failures have often compounded the problems they were designed to solve. State development banks with subsidized access to capital were justified on the grounds that projects with major growth potential for the economy as a whole were not being financed

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[7] This is a classic moral hazard problem that exists in every banking sector. Many countries have deposit insurance schemes in place for the deposit holders, which tend to aggravate the problem. However, even without such schemes, it would be difficult for the government to commit to not rescuing failing banks.

through private market channels. Such institutions, economic theorists suggested, could better assess the total benefits from projects, including their externalities. As a practical matter, the majority of those institutions throughout Latin America and South Asia have proven to be failures. Even the experience in South Korea and Japan with purely governmental development banks is far from a clear-cut success. Indeed, the World Bank, which was responsible for the development of such institutions in countries including Brazil, has abandoned its previous emphasis on these banks after a careful review of their economic performance.

2.6. CONCLUSION

To review the main links between growth and the financial sector, consider Exhibit 1. Households are net savers, and their savings are used by entrepreneurs to invest. The rate of growth in a particular economy directly depends on the savings rate of the households, the efficiency with which savings are channeled into investments, and the return on investments. Introducing an efficient, competitive financial sector between the dispersed households and entrepreneurs results in the following:

- Transaction costs associated with funneling savings into investments are reduced.

- Transaction costs associated with the trading or liquidation of assets are reduced, so that household savings remain highly liquid.

- Information on investment returns is efficiently gathered, enabling selection of efficient investments.

- Markets for diversification of risks by households and firms are provided.

As the line emanating from the financial sector back to the savings box indicates, the higher returns for investors made possible by an efficient financial sector have ambiguous effects on the savings rate.

What is the role of the government? The government enters the diagram twice. In the upper part, the government's role as a saver and investor is depicted. The lower part depicts its role as the provider of an overall regulatory and macroeconomic climate for the economy. The government taxes households, firms, and the financial sector to fund its own expenses. If these expenses are primarily aimed at the development of infrastructure or human capital, the government may efficiently add to the capital stock of the nation and boost economic growth. Likely, some of these socially productive investments would not be undertaken by private companies. However, a wasteful government simply absorbs resources that otherwise would have been productively invested.

EXHIBIT 1

FINANCIAL INTERMEDIATION AND ECONOMIC GROWTH
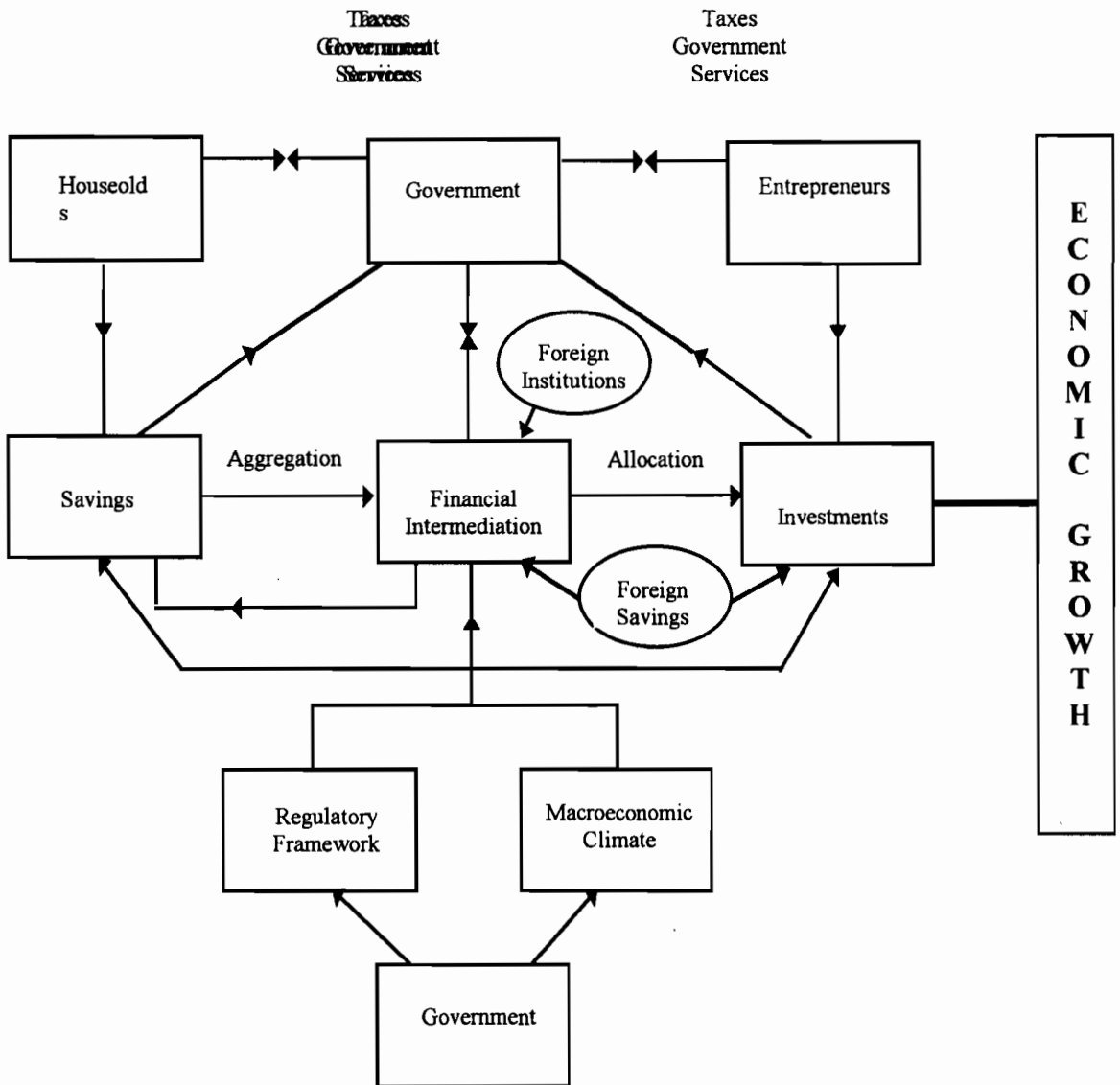
The government may also heavily intervene in the financial sector, which is typically the case in many developing countries. Some regulations are aimed at making markets work more smoothly, such as regulations on the disclosure of accounts of firms or regulations that prevent collusion of market makers in financial markets. Other regulations may directly interfere with growth. For example, high reserve requirements on banks will increase the amount of savings that is not channeled into investments, or governments may require banks to buy government bonds at artificially low interest rates, which is sure to stifle economic growth.

As the discussion above shows, economists have reached a consensus that an inefficient, overregulated financial sector will hurt the growth prospects of a developing country. At the same time, financial markets alone cannot ensure economic growth without the availability and accessibility of valuable investment opportunities. These investment opportunities may not be equally distributed over countries at all times. The creation and initiation of such opportunities may require government involvement in developing infrastructure and even in restriction or regulation of financial markets initially. The policy implication is that governments should endeavor to create a legal and structural framework to enhance the creation of investment opportunities and encourage entrepreneurial activities. In other words, in the right institutional environment, financial markets should allocate resources efficiently to the most promising economic sectors, especially since the private sector will likely be better informed about the true growth prospects of different industries than the government will.

Also by consensus, governments have a significant role to play in following credible noninflationary policies. High and variable inflation rates create uncertainty in the economy. This complicates investment planning, arbitrarily redistributes wealth, and may lead to negative real rates of return, which siphon off savings. Hence, an important task of the government is to provide a stable macroeconomic environment. Many failures of liberalization attempts may be attributed to the failure of the government to ensure macroeconomic and financial stability.

One part of Exhibit 1 has not been discussed yet: the foreign sector. The potential beneficial impact of foreign savings and the role of globally integrated capital markets is detailed in Section 4. Suffice it to say here that developing countries should be encouraged to import capital from abroad. In fact, from the viewpoint of world welfare, investors in developed markets should invest where the marginal product of capital is the highest. The marginal product of capital and the perceived rates of return should be the highest in developing countries. Consequently, an abundant supply of foreign savings is available when the domestic regulatory framework is right. The domestic financial sector could also benefit directly from foreign expertise in financial intermediation. Hellmann et al. (1994), for example, propose to gradually increase competition in the financial sector by allowing entry by foreign financial institutions. As development progresses, this creates both internal and external pressure for the government to evolve the financial restraint policy described above. If that is not done, bureaucrats running the system may want to uphold the financial controls long beyond any economic justification.

3. STOCK MARKETS AND ECONOMIC GROWTH

3.1. THEORY

A number of issues link efficient stock markets to growth. Atje and Jovanovic (1989) demonstrated such a link. Their empirical result contrasts with the theoretical arguments of some economists who have suggested that the existence of stock markets has little relevance to real economic activity (see Stiglitz 1989 and Mayer 1989). The following analysis shows what may be missing in this view that stock markets are not essential to growth and elaborates on empirical evidence that stock markets are in fact positively correlated to sustained economic progress.

The discussion in previous sections indicated some of the links between financial markets and growth, most notably diversification of risk exposure. Through such diversification, firms may be able to choose riskier but higher-return projects, and households may invest more of their savings. Similarly, hedging corporate or market risks may also be beneficial to economic growth. Derivative markets for managing risk cannot function, however, without efficient cash markets. The pricing of options or futures options on stocks requires constant pegging to the underlying asset price, which can only come from stock markets. (In Chapter 2 of this report, we deal with "The Importance of Derivative Securities Markets to Modern Finance.")

The capital structure theory helps to explain the link between cost of capital and efficient stock markets (see Harris and Raviv 1991). One important concept involved is that of unequal information between managers and outsiders in the financial markets. Because the managers typically have more information, the equity may be mispriced in the market from their point of view. Given that they have the choice of borrowing, the managers will issue new equity only if equity is overpriced, or at least priced fairly.

The issue of moral hazard is also considered in corporate finance literature. Moral hazard arises because managers gain from decisions affecting firm value only to the extent of the shares they hold. Suppose a manager holds 1% of the firm's equity and his compensation (either flat rate or tied to firm earning) produces most of his income. This manager has an incentive to take actions that maximize his compensation in ways that might have little or nothing to do with maximizing the firm's value. For example, many ways of manipulating earnings can lead to higher compensation. Because the manager's equity ownership is small, he has an incentive to take "imprudent actions."

How can the moral hazard problem be mitigated? One possibility is debt. Debt holdings decrease incentives for imprudent actions in two ways: they increase the fraction of equity ownership held by managers, and they increase the probability of bankruptcy after imprudent actions. Another possibility for mitigating the moral hazard problem is compensating managers with binding contracts that are contingent on long-term performance. Such contracts require a good measure of the long-term value of the firm, which represents the

performance of the management team. For example, as mentioned earlier, current profit is not a good measure for this purpose because it can be manipulated and it reflects short term considerations. Clearly, such a measure should be unbiased, free from manipulation by the management or outsiders and verifiable. Verifiability means that if arbitration of the contract is required, the value of the measure should be available directly to the judges. This point is particularly important; without vrifiability, the contract cannot be enforced.

The latter argument suggests an important use of efficient stock markets. Stock markets are said to be efficient if the stock price incorporates all available information in the marketplace. Thus, the stock price in an efficient market gives us a good measure of the firm's performance and its long-term value. As argued, tying the manager's compensation to stock prices in general would reduce the incentives for imprudent actions and therefore increase the firm's value. Without an efficient market, the manager and the shareholders can still agree on the value of the firm (which may be different from the value observed in an inefficient market), but such a value cannot be contracted upon because it is not verifiable.

This observation can be extended to the whole economy: an efficient stock market can enhance growth by mitigating moral hazard and consequently increasing productivity. The significance of this effect depends on the magnitude of the moral hazard problem and on the proportion of the economy that is represented in the stock market. Thus, one expects a positive correlation between stock market coverage (total market value as a fraction of gross domestic product [GDP]) and growth from this effect. Also, the gains from efficient stock markets may be greater if disciplining managers through other means is ineffective.

In addition to providing performance measures to be used in employment contracts, the stock market disciplines managers indirectly through change of ownership. If the managers are not doing a good job, the stock price declines below the potential value of the assets. Such firms are then takeover targets for investors who will increase the value of the shares by replacing current managers. Clearly, managers would refrain from productivity-decreasing actions when faced with the threat of takeovers.

Another key growth contribution of an efficient stock market is its effect on entrepreneurs. An entrepreneur considers not only the profits generated in a new venture but also the possibility of a lump-sum gain through selling the venture to the public. If the stock markets are not efficient, the public offering largely disappears as a result of high transaction costs or the uncertainty of getting a fair price in the stock market. Thus, inefficient stock markets may reduce the incentive to enter new ventures, reducing overall long-term productivity of the economy.

Finally, an efficient stock market reduces the transaction costs of trading the ownership of the physical assets and thereby opens the way for the emergence of an optimal ownership structure. Certain individuals possess the entrepreneurial spirit for "new start" ventures and such entrepreneurs should be involved in the innovation phase of a firm's development. As the firm matures, they should transfer ownership to another class of investors, one that specializes in running mature firms. The entrepreneurs can then move on to another fledgling company. This is the idea of optimal ownership. Clearly, transferring the ownership of such

assets would be very difficult without stock markets. The idea that stock markets contribute to the economy by providing rewards to innovators is an important one in the model studied by King and Levine (1993).

In the context of stock markets, liquidity is of paramount importance. The effective generation and dissemination of specific information requires easily concluded trading, which in turn implies liquidity. A market is liquid if transactions of large size can be made instantaneously and continuously without moving the price significantly. In fact, all of the benefits listed above will be substantially hindered if the market for stocks is not liquid. Indeed, illiquidity and increased transaction costs are the most important symptoms of inefficient stock markets. Such inefficiencies may be caused by the market power of brokers or other individuals, which increases the transaction costs, and by the dominance of the market by a small number of firms or individuals. The latter may result in the manipulation of stock prices, keeping them artificially low or high to suit the purposes of those in power. However, the net result is the eradication of the gains to be obtained from the stock market. Such inefficiencies can also result in the loss of public confidence in capital markets, leading to reduced participation of the public and thereby making the situation worse.

3.2. EMPIRICAL EVIDENCE

As mentioned above, Goldsmith (1969), McKinnon (1973), and Shaw (1973) documented a positive correlation between financial development and economic growth. However, questions remain about causality: does financial development affect growth, does economic growth lead to more financial development, or both? Recent research has not completely resolved the issue but suggests strongly that financial development is an important determinant of future economic growth. The most comprehensive of this research to date is by King and Levine (1993). They use four measures of financial development related to the development of a banking sector.[8] Their findings can be summarized as follows. First, using cross-country regressions, they find that all financial indicators have strong positive correlation with economic growth. Second, and more important, their analysis shows that countries with higher indicators of financial development at one point subsequently had higher real GDP growth rates, more specifically in the next 10 or 30 years. King and Levine conclude, "Our findings suggest that government policies toward financial systems may have an important causal effect on long-run growth" (p. 540).

Work on the more narrow question of input to growth through stock market development has been done by Atje and Jovanovic (1993). They compare the impact of the level of stock market development and bank development on subsequent economic growth.[9] They find a

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[8] The four measures are (1) the ratio of liquid liabilities to GDP; (2) deposit bank domestic credit divided by deposit bank domestic credit plus central bank domestic credit; (3) ratio of claims on the nonfinancial private sector to domestic credit and (4) gross claims on the private sector to GDP.

[9] King and Levine, Atje and Jovanovic discuss control for other factors, such as schooling and initial income level.

large effect of stock market development as measured by the value traded divided by GDP on subsequent development, but they fail to find a similar effect for bank lending. In their conclusion they write, "It is even more surprising that more countries are not developing their stock markets as quickly as they can as a means of speeding up their economic development" (p. 636).

Of course, one study may not be the definitive answer to this important question, and more empirical work should be done. To complement the evidence of the Atje and Jovanovic study, the authors of this paper computed correlations, for Brazil and 17 other countries, between a number of stock market development indicators and growth of real GDP during the 1986–1992 period. The results are presented in Table 1. Six measures of stock market development were considered: number of stocks listed, market capitalization (expressed in dollars), total value traded (again in dollars), turnover ratio (value traded divided by market capitalization), market capitalization divided by GDP, and total value traded divided by GDP. The data are averages of these variables for the period 1988–1992 as reported by Demirguc-Kunt and Levine (1993). Eighteen countries were ranked according to these measures of stock market development and according to economic growth, as measured by real GDP growth during the 1986–1992 period. All variables were ranked from high to low (e.g., the country with the highest GDP growth rate gets rank one). The authors then computed the rank correlation between the different stock market development measures and economic growth. If the ranks according to economic growth were to completely correspond to the ranks according to stock market development, the rank correlation would be one. The table also reports the particular rank for Brazil. In terms of growth, Brazil ranked last for that period.

The rank correlations presented in Table 1 are all positive. This confirms that stock market development is positively associated with economic growth. Brazil ranks relatively low; that is, the Brazilian stock market seems relatively well developed, although for the first three measures this is primarily due to its size. Compared with the size of the economy, the Brazilian stock market appears to have ample room to grow.

4. GLOBAL CAPITAL MARKET INTEGRATION AND ECONOMIC GROWTH

4.1. LINKS BETWEEN MARKET INTEGRATION AND GROWTH

Transaction costs are high for foreign investors in many emerging markets. Illiquidity (difficulty in finding a buyer when you are selling and vice versa) combined with taxes (income, withholding, and transaction based) and various capital market restrictions (official registration of securities transactions and exchange controls) make foreign market

participation very costly to many investors. As we will detail in Section 5, many of these issues are relevant for Brazil. In a discussion of speculators, Bekaert, Garcia, and Harvey (1995) argue that a sufficient mass of foreign speculators is necessary to provide adequate liquidity and market efficiency. This section explores the impact that world market integration has on the cost of capital in developing countries.

Recent research by Bekaert and Harvey (1994b) suggests that the cost of capital can be reduced in many emerging markets by increasing their integration into world capital markets. This research proposes a econometric model that examines two possible regimes: segmented capital markets and integrated capital markets. Using historical data, the model reveals the evolution of many markets from closed markets to being integrated into world capital markets. Some countries, however, move in the other direction, from integrated to closed.

Being more specific about the terms *integration* and *segmentation* is helpful. Many emerging markets are segmented. This means that investors are local residents and foreign participation in the local market is limited. Segmentation has many causes; for example, foreigners may be prohibited from participating in the local market or the causes may be more subtle in terms of regulatory, institutional, and tax barriers to investment. Nevertheless, a market dominated solely by local investors is not likely to be integrated into global capital markets.

In a segmented market, investors' portfolios are exposed to price fluctuations induced by the state of the local economy. Even though the investor might hold many stocks, this portfolio is not fully diversified, because all of the stocks are linked to the local economy. For example, if a recession or a currency crisis ocurrs in the local economy, all stocks will likely lose value. How diversified a portfolio is does not matter. Since all the stocks originate within one country, they all are exposed to fluctuations emanating from the local economy. Logically, the investors in the segmented capital market require compensation for their risk. This takes the form of higher expected rates of return, which translates into higher cost of capital.

In integrated capital markets, however, compensation is different. The investor holds securities from many countries. This is a truly diversified portfolio. Whereas local economic events will influence stocks in any one country, the investor has a portfolio that reaches across many national borders. A negative shock (bad news) in one country may be offset by a positive shock (good news) in another country. As a result, the investor does not demand compensation for local market volatility. In other words, the diversified international portfolio provides a natural hedge for country-specific events. The investor, although still concerned about negative shocks in any one country, does not require a risk premium for the lack of country diversification. The expected rate of return on the local stock is determined by how it interacts with all of the stocks in the investor's worldwide portfolio.

As explained above, the expected rates of return on equity (costs of capital) differ in segmented and integrated markets. In the segmented market, the expected rate of return is linked to local market volatility. In the integrated capital market, the expected rate of return is linked to the way the security interacts with a geographically broader investment portfolio. Why then would the cost of capital be lower in integrated markets? First, in emerging capital markets, the local market volatility is very high. In Brazil, the volatility of stock returns over

the 1988–1993 period (calculated in U.S. dollars) is six times higher than the volatility found in the United States. This high volatility will increase the cost of capital in segmented capital markets. Second, emerging markets are attractive investments for world investors because these markets serve as a hedge for their portfolios (the local economies are not highly correlated with developed economies). Since the industrial structure of emerging markets is much different than developed markets, bad news in developed markets is often cushioned with good news in emerging markets and vice versa. This natural hedging property is very important. It causes a high demand for the emerging market's securities by foreign investors—if the emerging market is integrated into world capital markets. This demand raises equity prices and reduces expected rates of return.

This analysis shows that the cost of capital should be lower in integrated capital markets than in segmented capital markets. That many emerging market enterprises are raising capital in the United States through American depository receipts (ADRs) is indirect evidence of a lower cost of capital in world markets. Now attention turns to the mechanism that translates the lower cost of capital into economic growth.

A lower cost of capital has an immediate impact on corporations operating in the developing market. In an environment of high costs of capital, many investment projects are rejected because the projects' rates of return are too low. For example, suppose an investment project could yield an average return of 25% over 10 years. If prospective equity investors require a minimum 30% return, the project will not be undertaken. Lowering the cost of capital makes an additional set of investments attractive. Projects that would otherwise not be undertaken become viable, creating jobs and other benefits to the economy.

A lower cost of capital also has an immediate impact on multinational corporations' willingness to make direct investments in the emerging market. Suppose the multinational corporation is based in the United States and its average cost of capital (in the United States) is 15%. The investment project in the emerging market promises to yield 25% over 10 years (calculated in U.S. dollars). Will this project be undertaken? Not necessarily. The 15% cost of capital only applies to projects of average risk within the United States. Projects are always evaluated with a cost of capital specific to the particular investment project. The project in the emerging market is not likely to have the same cost of capital as the average project in the United States.

Indeed, if the relevant cost of capital in the emerging market were 30%, the multinational corporation would reject the project with an expected return of 25%. A lower cost of capital increases the extent to which multinational corporations make a long-term commitment of resources to a country. This type of investment has many benefits to the local economy. It leads to job creation, it is long term in nature and it often is associated with international expertise being passed on to the local population (transfer of knowledge). These factors contribute positively to economic growth.

4.2. EMPIRICAL EVIDENCE

This section discusses the investment barriers that segment markets from global capital markets and constructs a number of indicators of global capital market integration, examining empirically whether any positive association exists between them and economic growth.[10] Unfortunately, no empirical work linking market integration and economic growth exists to date. Rank correlations presented here should be seen as suggestive of the true interactions between market integration and economic growth. A more formal investigation is planned for the future.

4.2.1. INVESTMENT BARRIERS IN EMERGING MARKETS

This paper distinguishes three different kinds of investment barriers: legal barriers arising from the different legal status of foreign and domestic investors (e.g., foreign ownership restrictions and taxes); indirect barriers arising from differences in available information, accounting standards, and investor protection; barriers arising from emerging market– specific risks (EMSRs) that discourage foreign investment and lead to de facto segmentation.

EMSRs include liquidity risk, political risk, and economic policy risk (macroeconomic stability). Chuhan (1992), for instance, reports that market participants in Canada, Germany, Japan, the United Kingdom, and the United States mentioned liquidity problems as one of the major impediments to investing in emerging markets. In Section 3.2, indicators of market liquidity, such as the turnover ratio or the value traded divided by GDP, were reported as positively correlated with economic growth.

Other EMSRs are related to the notion of country risk. Country risk indicators reflect the likelihood that companies or the government within the country will default on obligations. Credit rating agencies use country risk analysis to construct country credit ratings, which have a direct impact on the cost of funds raised in international markets. Country risk analysis not only reflects political stability assessments but also incorporates economic environment factors. In particular, unstable macroeconomic policies, leading to high and variable inflation, may jeopardize the credit rating of a country.

Needless to say, these barriers to investment are a direct function of the domestic policies pursued in the various countries. Through a number of indirect routes countries can attempt to integrate their markets with world markets. One route is to allow foreign investment companies to set up country funds that invest solely in the local market. Another is to let domestic companies list securities on foreign stock exchanges (cross-listings), typically through ADRs. These indirect channels of access to emerging markets are covered in more detail in Bekaert et al. (1995).

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[10] Some of the material here builds on Bekaert (1995).

Table 2 provides information on direct barriers to investment for 19 emerging markets. The first column contains information on the exchange rate regime. Many countries try to peg their exchange rates to the U.S. dollar or a basket of currencies. The second and third columns contain information on foreign ownership restrictions. They can take the form of certain sectors being closed for foreign investment or of direct equity participation limits. Some countries, such as Nigeria and Zimbabwe, are still completely closed to foreign investment. To quantify the extent of direct foreign ownership restrictions, we report the proportion of the International Finance Corporation (IFC) Investable Index to the IFC Global Index in the fourth column of the table. The IFC has recently launched indices that take the foreign ownership restrictions into account. The investable market capitalization of each stock is used for its weight in the index instead of the stock's total market capitalization as in the regular global indices.[11]

A second group of direct barriers to investment consists of exchange and capital controls that affect the repatriation of dividends and capital from emerging markets. Some countries have direct restrictions on the remittance of profits (e.g., a minimum investment period). Colume (5) of Table 3 reproduces a coarse rating of 18 countries according to dividend and capital repatriation and general entry restrictions provided by the IFC *Factbook*. The paucity of available information prevents ranking of the countries more precisely according to the severity of capital and exchange restrictions. An indirect measure of these restrictions could be constructed from an analysis of black market premiums, the difference between the black market exchange rate and the official exchange rate. Unfortunately, data on black market premiums are insufficient to allow a thorough analysis. Table 3 also reports information on taxes on dividends and capital gains, a final category of direct investment barriers.

Overall, restrictions have been gradually relaxed, with an acceleration of this process occurring in the 90s. Examples of countries where restrictions have been lifted recently include Brazil, Colombia, India, South Korea, and Taiwan. The final column in Table 2 lists the dates from some recent capital market liberalizations.

The first four columns of Table 3 contain qualitative information on indirect barriers to investment involving the regulatory and accounting environment. Investors might not have adequate information on these markets and on the financial health of the companies, the settlement systems might be inefficient and slow, accounting standards might be poor, and investor protection might be minimal. These factors can play a large role in the investment decisions of international investors. In her survey of market participants in industrialized countries, Chuhan (1992) lists limited information on emerging markets as one of the key impediments to investing in emerging markets. In that respect, however, the table shows that Brazil ranks among the best.

As to EMSRs, the focus here is on political or, more broadly, country risk. Political instability and economic mismanagement might add substantial risk premiums to investor's desired returns and deter some foreign investors. Table 4 reports a number of indicators of country

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[11] More details on how a variety of restrictions on foreign ownership change the weights used to construct the index are provided in *IFC Index Methodology*, issued by the IFC.

risk, together with data on economic growth as measured by growth in real GDP. A direct measure of political risk is the *Institutional Investor* country credit rating, reported in the last column. A useful indicator of the soundness of economic policies is the level of inflation and, especially, the variability of inflation. For completeness, we also report exchange rate variability. Clearly, Latin American countries seem to have a problem with inflation.

4.2.2. CORRELATIONS BETWEEN MARKET INTEGRATION MEASURES AND GROWTH

To compute rank correlations between global market integration and economic growth, a number of variables were constructed that measure the potential degree of openness of emerging equity markets. The first measure, OPEN I, simply ranks the countries according to the severity of ownership restrictions, using the investable index/global index proportion reported in Table 2. The number of country funds and crosslisted securities are used to construct a second measure of "openness," OPEN II. The measure is imperfect, as data availability prevents weighting of the funds and companies by market capitalization and the cross-listings are restricted to the United States. Based on information on the availability of market and company information and on the quality of accounting standards and investor protection provided in Table 3, indirect barriers are computed in a summary measure called OPEN III. The final two measures of country risk and macroeconomic stability are inflation variability (INFLAT) and the country credit rating by *Institutional Investor* (POLRI).

The rank correlations between all these different measures and real GDP growth are reported in Table 5; all but one are positive. Partly because the samples are small, most relationships statistically are not significantly different from zero. The one negative relationship, with the ranks according to ownership restrictions, may reflect a definition problem. For example, one country that ranks as the least open according to this measure is fast-growing South Korea. However, despite the ownership restrictions, the many means of indirect access, especially through numerous country funds, have effectively integrated the South Korean market with the world market. The return-based measures in both Bekaert (1995) and Bekaert and Harvey (1994b) find South Korea to be integrated rather than segmented. Interestingly, the significant relations are with POLRI and INFLAT—another indication that foreign investors value solid macroeconomic policies and a stable regulatory framework. This conclusion seems especially relevant for Brazil.

These measures have a number of disadvantages. First, each measures only one particular aspect of the degree of difficulty of international access to a particular market. To examine the relation between the degree of investability and economic growth is difficult if other factors are not controlled for, such as macroeconomic stability. That is, one factor alone may not be enough to fully characterize barriers to investment. What is needed is one summary measure. Second, investment restrictions can be circumvented and need not be binding. Moreover, the existence of indirect means of access, such as country funds or ADRs, makes inferring the degree of integration from statutory investment restrictions even harder. The solution is to try to measure the degree of integration from data on equity returns. As described in Section 4.1, stocks will be priced differently in integrated markets than in segmented or partially

segmented markets. Bekaert (1995), for example, postulates that in relatively well integrated markets, expected returns are likely to be highly correlated and the costs of capital similar.[12] We indicate this return-based measure by CORREL.[13] Bekaert and Harvey (1994b) develop a more sophisticated measure of integration in the context of an asset-pricing model. Estimation results from this model for Brazil appear in Section 5.

5. CAPITAL MARKETS AND GROWTH IN BRAZIL

For decades, foreign corporations have been making direct investments in the Brazilian economy in the form of plant, equipment, and real estate. Portfolio investment, a much more recent phenomenon, became important with the gradual liberalization of Brazilian financial markets by the end of the last decade. Portfolio investment gained significant momentum with the Annex IV regulation of 1991, which will be detailed below. Direct investments by foreign corporations are still regulated by Law 4131 of 1962 (modified last in 1965). This law limits the amount of profits and dividends that may be repatriated according to the amount of previous investments registered at the Brazilian central bank.

5.1. BARRIERS TO PORTFOLIO INVESTMENT IN BRAZIL

A number of key regulatory barriers to entry are faced by foreign portfolio investors, despite the fact that Brazilian markets are much more open to foreign investors today than five years ago. This section provides a detailed analysis of the legislation that affects foreign investors, with a particular focus on the resolutions the National Monetary Council (CMN: Conselho Monetário Nacional) enacted to allow foreign portfolio investors to participate in Brazilian markets: Resolutions 1289, 1832, 1927, and 2034.

Foreign investors have at least six methods for participating in the Brazilian market:

1. **Securities Portfolios for Institutional Investors (CVM: Carteiras de Valores Mobiliários):** These portfolios are the most widely used instrument to invest in Brazilian stock and derivative markets. They are regulated by Annex IV of Resolution 1289, enacted on May 31, 1991. Only foreign institutional investors may invest in these portfolios. Examples of institutional investors that qualify for the use of Annex IV are pension funds, banks and investment banks, insurance companies, and foreign investment funds.

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[12] This measure has a number of disadvantages which are detailed in Bekaert (1995), but his analysis seems to be robust to the use of an alternative return-based market integration measure.

[13] For the countries for which data are available on black market premiums, this measure correlates very highly with an integration measure computed from black market premiums.

Management of the portfolio is undertaken by an institution operating in Brazil and granted authorization by the CVM. Annex IV allows foreign mutual funds to invest in the Brazilian stock markets (each one forming its own portfolio). Previous to Annex IV, the foreign mutual funds would have been required to invest in other mutual funds. U.S. mutual funds are specifically forbidden to invest in other mutual funds.

All investments are registered at the central bank to facilitate repatriation of dividends and capital gains. Currently, these portfolios cannot invest in fixed-income securities, except in a few restricted cases. In these restrictive cases, fixed-income investments are subject to a 10% withholding income tax. The objective of this withholding tax is to ensure that all foreign investment in fixed-income securities be made through fixed-income funds (see item 2 below). Fixed-income funds pay a 9% "entrance" tax, whereas the variable-income portfolios (which invest in equities) pay only 1%.

Capital gains are exempted from income tax, but monetary payments are currently taxed at the same 10% rate as dividends. Until the end of 1994, there was a special 0.25% transactions tax on the total investment (IPMF: temporary tax on financial transactions).

The total amount of funds in these portfolios as of August 1994 was U.S.$20,241 million. This route is by far the most widely used entrance to foreign investment in variable-income financial instruments. This is because Annex IV allows previously invested funds to be sent back to their home countries immediately, whereas funds invested under Annexes I, II, and III have to wait for authorization that can take two to three weeks for authorization. In this respect, Annex IV regulations constituted a major step toward freer capital movements in relation to the older legislation of Annexes I, II, and III.

2. **Fixed-income funds for foreign investors (Fundos de Renda Fixa—Capital Estrangeiro):** Only through these funds may foreign investors invest in Brazilian private and public fixed-income securities. They were created and are regulated by Resolution 2034 of the National Monetary Council, dated December 17, 1993, and by Circular Letter 2388 of the central bank.

    These funds consist of overseas legal entities that invest in Brazilian fixed-income securities, as well as in foreign mutual funds. The management of these funds may be handled by a bank with an investment portfolio, an investment bank, a securities brokerage house, or a stocks and securities dealership.

    The fund's assets have to be at least 35% invested in bonds issued by the national treasury or central bank, and no more than 20% may be invested in fixed-income securities or acceptances by financial institutions. All investments must be recorded at the central bank to allow for later repatriation of yields and capital gains.

    Capital gains associated with stock and futures market operations are not subject to withholding taxes. All real income (except capital gains on stocks) is subject to a 10%

withholding income tax. 14 All fixed-income investments are currently subject to a 9% tax (IOF: tax on financial transactions) designed to inhibit capital inflows attracted by the high real Brazilian interest rates.

The total amount of funds in these funds as of August 1994 was U.S.$2,187 million.

3. **Depository receipts (DRs):** Depository receipts are securities traded in foreign (U.S.) stock exchanges based on domestic (Brazilian) stocks. Each receipt is issued based on a given amount of domestic stock that is kept under custody of a domestic financial institution. This process allows domestic stocks to be traded on U.S. exchanges without having to go through the regular listing process. Annex V of Resolution 1289, enacted on May 18, 1992, regulates the issuance of DRs. DRs are not yet widely used, but their importance is likely to grow in the future as a source of cheaper capital for corporations. (see Bekaertet al. 1995, sec. 5.2.2).

4. **Investment companies—foreign capital (Sociedades de Investimento—Capital Estrangeiro):** These companies, created and regulated by Annex I of Resolution 1289 of the National Monetary Council, may be composed of foreign individuals or institutions investing in Brazilian variable-income securities. Their portfolios must be managed by a Brazilian financial institution authorized by the CVM (the Brazilian SEC). As companies, they are regulated by the appropriate law of public companies (Lei das S.A.), which is administratively very demanding for an investment fund. This is one reason why Annex IV is the preferred alternative for foreign investments. All investments are registered at the central bank to permit repatriation of cash dividends and capital gains.   The minimum percentage invested in shares or debentures convertible into shares is 50%. Capital gains are exempted from income tax, but cash dividends and monetary payments are currently taxed at a 10% rate. The total amount of funds in these companies is quite small, U.S.$105 million as of August 1994.

5. **Investment funds—foreign capital (Fundos de Investimento—Capital Estrangeiro):** These funds were created and regulated by Annex II of Resolution 1289 of the National Monetary Council, dated March 20, 1987. These funds may be composed of foreign individuals, corporations or other collective investment entities organized abroad or resident, domiciled or with head offices abroad, with the aim of investing in Brazilian securities. These funds must be managed solely by an investment bank, brokerage house or securities organization authorized by the CVM.   All investments are registered at the central bank to permit repatriation of dividends and capital gains. The minimum percentage invested in stocks is 70%. Capital gains are exempted from income tax, but monetary payments are currently taxed at a 10% rate. The total amount of funds in these funds is small, U.S.$648 million as of August 1994.

Besides alternatives 4 and 5, Resolution 1289 in its Annex III created and regulated the Paper and Securities Portfolios (Carteira de Títulos e Valores Mobiliários) maintained

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14 *Real income* is defined as the income over and above the correction for inflation depreciation, measured by the variation of the official index (UFIR).

in Brazil. Currently, this option is rarely used. The total amount invested through Annex III, Funds of Foreign Capital Conversion and Privatization Funds—Foreign Capital, amounted to U.S.$405 million as of August 1994. Most of this amount is accounted for by the Brazil Fund, which trades on the New York Stock Exchange.

6.   **The Exchange Closing Contract and the Central Bank Circular Letter #5— Foreign Investors' Accounts (Contratos de Fechamento de Câmbio e Carta Circular nº 5):** The Exchange Closing Contract, as well as the Circular Letter #5, are instruments that foreign investors may use to participate in Brazilian markets. Although lightly regulated, such accounts are subject to prohibitive tax rates: 25% (variable real income) and 30% (fixed real income). These rates are much greater than more widely held alternatives. A tax (IOF) on short-term (less than 16 workdays) financial transactions also applies in this case, since the foreign investor is treated here as a domestic resident. Oddly enough, the recently enacted 1% transactions tax applies in this case as well. Notwithstanding these onerous tax penalties, this is the only mechanism for a retail investor who wants to invest directly in Brazilian financial markets.

Initially, these instruments, such as the Annex IV resolutions, were designed to allow different forms of foreign investments in the Brazilian markets. The regulations are summarized in Table 6. The recent surge in capital inflows has prompted a number of changes to these rules. The reasons for these changes explored below, hold important lessons on the interaction between foreign investors and the regulatory framework.

5.2. INTEREST RATE POLICY, COUNTRY RISK, AND SEGMENTATION

The uncertain prospective health of the Brazilian economy in late 1991 forced the Brazilian monetary authorities to keep real interest rates at a very high level to avoid capital flight. The spread between those and domestic U.S. real interest rates fueled a massive capital flow into the Brazilian economy. Figure 1 shows the ex post returns that a foreign investor would have made by investing in Brazilian Treasury bills. These returns are ex post because the U.S. investor in Brazilian Treasury bills assumes foreign exchange risk, which can offset high nominal returns. If the exchange rate moves unfavorably, the U.S. investor can lose money. Indeed, the ex post return has benn negative in some instances (before the end of 1991).

Nevertheless, the Brazilian domestic interest rates were very attractive to foreign investors. We will investigate two potential reasons. First, before the Real Plan (July 1, 1994), the Brazilian government fixed the real exchange rate to the U.S. dollar. This means that the change in the R$ exchange rate equals the difference between the inflation rate in the United States and the inflation rate in Brazil. (If inflation is 5% higher in Brazil than in the U.S. dollar, the Real depreciates by 5%.) As a result, an investor would find Brazilian investments attractive if the expected Real rate of return (interest rate minus inflation) is higher than the Real rate offered in the United States. Importantly, the investor is not guaranteed a high real

return. If the inflation rate in Brazil unexpectedly increases, the U.S. investor's return in purchasing Brazilian Treasury bills could be low or negative.

Second, the U.S. investor could eliminate the risk associated with unfavorable movements in the foreign exchange rate. This analysis involves the concept of covered interest parity and the covered interest differential. Covered interest rate parity (CIRP) is an arbitrage relationship that links spot exchange rates, interest rates, and forward rates. The relation states that the U.S. interest rate ought to equal the "covered interest" on Brazilian money market instruments, where "covering" refers to hedging the exchange rate change. The covered interest differential is the Brazilian interest rate (in R$) minus the sum of the U.S. dollars interest rate plus the Real depreciation with respect to the U.S. dollar exchange rate implied by the futures market.

To explore the concept of implied depreciation, consider the following financial transaction. A U.S. investor buys a Brazilian Treasury bill that will mature in one month. In one month, the investor will receive R$100 for the Brazilian security. However, what the value of the R$100 will be in one month in terms of U.S. dollar is not clear. To hedge the exchange rate risk, the foreign investor sells R$100 in the exchange rate futures market (forward exchange rate contracts are not liquid in Brazil). By engaging in the futures contract, the investor "locks in" a fixed value for the R$100 today; he has "covered" his investment. That is, the investor knows today how many U.S. dollar will be received for R$100 at the end of the month. This transaction has guaranteed a rate of return for the U.S. investor. The exchange rate that the investor "locks in" is not the current exchange rate but rather an exchange rate that incorporates expected depreciation. In this sense, the futures rate contains the implied depreciation.

If the U.S. investor is faced with a 4% return on U.S. Treasury bills and a 7% covered or "locked in" (U.S.$) return on Brazilian Treasury bills, covered interest parity is violated. This looks like an arbitrage opportunity, since both are "sure" returns. Why would not everyone in the world invest in Brazil?

A number of factors have been omitted. The first is country risk. This risk applies to all investments made in Brazil. For example, if Brazil institutes exchange rate controls and curtails the remittance of funds abroad, the investor will be unable to transfer the funds back to the home country, despite being covered against the exchange rate risk. The same reasoning applies to new and/or higher taxes. Second, the violations could be driven by controls on foreign investments. Frankel (1988) shows that controls on capital inflows are generally associated with positive violations to covered interest parity (covered returns higher in Brazil than in the United States), whereas controls on capital outflows are generally associated with negative violations. Intuitively, with capital inflow controls, the positive violations cannot be arbitraged: foreigners cannot purchase enough local Treasury bills to drive away the violation.

Figure 2 shows the violations of covered interest parity in Brazil over the past few years. The bars display the excess return of the covered exchange rate–hedged Brazilian securities with respect to U.S. securities (one month). This large premium is evidence of a large perceived

violations cannot be arbitraged: foreigners cannot purchase enough local Treasury bills to drive away the violation.

Figure 2 shows the violations of covered interest parity in Brazil over the past few years. The bars display the excess return of the covered exchange rate–hedged Brazilian securities with respect to U.S. securities (one month). This large premium is evidence of a large perceived country risk on the part of international investors and, after August 1993, of the "entrance tax" imposed on foreign investors. This premium may also contribute to the size of Brazil's capital inflows.

Table 7 shows the recent data on capital inflows to Brazil. Capital inflows are disaggregated into four categories: direct investments, stock investments, fixed-income funds, and currency loans (short-term deposits, Treasury bills, certificates of deposit). The interest rate environment accounts for international interest in the fixed-income market. Although the Brazilian stock market has attracted significant attention (with average annual U.S. dollar returns of 62.7% over 1988–1993 and 80.4% per annum since June 1991—the period after Annex IV), the bond market has dominated the capital inflows.

The main borrower in the Brazilian economy has been the government. Figure 3 shows the recent evolution of the Brazilian domestic debt, as well as the evolution of foreign reserves at the Brazilian central bank. With the managed exchange rate regime that prevailed before the Real Plan, all capital net inflows resulted in accumulation of reserves at the central bank. (See the analysis in Carneiro and Garcia 1993.)

This accumulation of reserves, beginning at the end of 1991, signaled the end of the restrictions associated with the external debt crisis. Very quickly, however, it started posing a fiscal problem. Most of the capital inflows purchased government debt that paid very high real rates of interest. Therefore, the accumulation of foreign reserves was financed by the issuance of domestic debt. The domestic debt required the Brazilian government to pay more than 20% a year in real terms, whereas the foreign currency reserves were invested at much lower rates.

The quasi-fiscal deficit originating from the accumulation of foreign reserves prompted the Brazilian government to start imposing restrictions on investment in the Brazilian bond markets. As with many regulations, investors found ways to bypass these restrictions by using the derivatives markets. Foreign investors constructed portfolios of derivative instruments (options). These portfolios produced returns that mimicked the fixed-income instrument. The counterpart of the transaction, usually a domestic investment bank, would offer the derivatives portfolio and use government bonds to hedge the transaction. The effect was the same as a foreign investor buying the government security. Regulations were introduced to preclude such financial transactions. One example is the well-known 'box" operation in the options markets.15 Foreign investors using Annex IV are prohibited from engaging in these

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15 A box operation consists of trading four options, two calls and two puts, so that the payment at the maturity date is fixed. Since the payment at the maturity date is fixed, an arbitrage argument leads to the conclusion that the return on the whole transaction should equal the riskless rate of return. In the Brazilian case, this is the rate on the interbank funds market (CDI).

To preclude foreign investors from engaging in transactions in the derivatives markets aimed at reproducing a fixed-income security (as the above-mentioned box operation), Article 3 of Resolution 2034 orders:

> to ban the use of Funds entering Brazil in terms of the Regulation Annexes I, II, III and IV, and Resolution 1289, dated 03/20/87, and regulation subsequent thereto:
>
> > I.   for the acquisition of fixed-income securities;
> >
> > II.   to carry out operations on derivative markets other than with the purpose of protecting spot positions, up to the limit thereof;
> >
> > III. to carry out operations on preset income derivative markets.
>
> The ban covered by Item I is not applicable to Fixed-Income securities admitted for payment under the aegis of Brazil's National Privatization Program."

Nevertheless, precluding arbitrage between different financial instruments is very difficult, if not impossible, in a well-developed financial market. Indications are that, foreign investors may be finding new ways to bypass the regulatory hurdles.

In the past, stock market investments were not discouraged. Recently, however, a 1% transactions tax (IOF) was imposed in Reals to be paid when the foreign currency is first converted.16 This tax was motivated by the links between the operations allowed under Annex IV and fixed-income securities (i.e., derivatives transactions that mimic the fixed-income return), as well as by concern that inflation could be driven by the monetization of capital inflows (under a fixed exchange rate regime, before the Real Plan) or with exchange rate appreciation (under a floating exchange rate regime, after the Real Plan).

Besides this tax, the two other main obstacles to foreign investments in Brazilian stock and derivatives markets are the requirement that all transactions be registered at the CVM and the discrimination against retail investors. As explained before, an investor who invested in the Brazilian stock markets without making use of the Annex IV regulation (which applies only to qualified institutional investors), would incur a 25% income tax on real returns (above inflation). The exclusion of retail investors of the Annex IV regulation was probably aimed at precluding domestic investors from profiting from the income tax exemption allowed by Annex IV. The government was concerned that domestic investors would illegally remit funds abroad and then reinvest them in the Brazilian stock market, thereby avoiding the income tax in Brazil. What the legislation tries to eliminate is the income tax avoidance by Brazilian investors who would "disguise" themselves as foreign investors.

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16 Portaria n° 534 of 10/19/94 enacted by the Ministério da Economia e Fazenda. This measure also raised to 7% the tax rate on foreign loans and to 9% the tax on investments in the fixed-income funds. Also, on July 1, 1994, there was a currency changover from Cruzeiro Real (R) to Real (R$).

However, that the current regulation is an effective means of achieving this objective is not clear. With capital mobility, enforcing tax regulations that discriminate between foreign and domestic investors becomes very difficult. More effective may be enforcement of a flat-rate tax aimed at all investors, without targeting foreign investment.

The current discrimination against retail investors has many negative effects. Exclusion of this important class of investors harms the market's liquidity and raises the cost of capital.

We can draw several lessons from Brazil's experience. First, if financial markets are reasonably developed, many restrictions can be circumvented; thus, they are fruitless. When large taxes were applied to fixed-income purchases, foreign investors used derivatives markets to bypass the regulations. Even since the derivative transactions were prohibited, investors have found ways to get around the regulations. Second, restrictions and frequent changes in restrictions lead to high country risk premiums, which may adversely affect the cost of capital (of corporations and the government). The transactions tax seems small and harmless, but it may raise expectations of further regulatory changes against foreign investors. Third, the real source of uncertainty is the macroeconomic instability which prompted the capital controls in the first place.

5.3. VOLATILITY, MARKET SEGMENTATION, AND THE COST OF CAPITAL

In "Emerging Equity Market Volatility," Bekaert and Harvey (1994a) provide a cross-country analysis of volatility, using the monthly returns on the IFC's indices. Importantly, their volatility measure captures the volatility expected by the market (rather than the ex post, or realized, volatility). Expected volatility is used in the calculation of the cost of capital. Figure 4 shows that the expected volatility calculated in U.S. dollars terms has sharply dropped from its peak at the beginning of 1991. The graph presents monthly standard deviations. A standard deviation of 0.20 implies that expected stock returns should fall in a plus or minus 40% range around their mean next month (two standard deviations). The graph indicates that the expected volatility has dramatically decreased from 0.35 to 0.18 during the sample period (1991–1993).

We also calculated the ex post standard deviation (volatility) of the daily returns. This calculation involved taking the standard deviation of six months of daily returns (calculated in U.S. dollars), say from January 2, 1987, to June 30, 1987. This would be graphed as June 30, 1987. The next volatility would be calculated with returns from January 3, 1987, to July 1, 1987. This so-called moving window estimation of volatility is reported in Figure 5.

The message from Figure 5 is the same as that in Figure 4: volatility has decreased. Indeed, over the January 1988–May 1991 period, the annualized volatility is 83.5%; in the recent June 1991–September 1994 period, volatility has fallen to 58.8%. Although volatility is high compared to other capital markets, the trend points to lower volatility in the future. Perhaps not by coincidence, the decrease in volatility coincides with the major capital market reforms

enacted in May 1991. These capital market reforms, combined with a lower volatility, may serve to decrease the cost of capital in Brazil.

At least two forces can reduce the cost of capital in Brazil: lower volatility and increased integration with world capital markets. Sharp evidence exists that volatility has decreased since May 1991. What about the degree of integration? Bekaert and Harvey (1994b) propose an econometric methodology to estimate the degree of integration of any market with world capital markets. Traditional estimation methods are based on assessment of the barriers to investing in a particular country. These methods are flawed because ingenious investors may be able to bypass these barriers. In addition, illiquid and inefficient markets may keep foreign investors away even in the absence of explicit barriers to entry.

When the Bekaert and Harvey methodology is applied to Brazil, the results show that Brazil appears to have been segmented from world capital markets throughout the 1980s. However, beginning in 1991, there has been a small but steady increase in the estimated integration measure. These results indicate that world investors believe that Brazil is moving in the direction of more integration. Combined with the decreasing volatility, they suggest the cost of capital is lower today than five years ago. The more important challenge involves the consolidation of these gains and the implementation of policies that will ensure that Brazil continues to move in the direction of integration with world capital markets.

6. POLICY RECOMMENDATIONS AND CONCLUSIONS

Strong economic arguments suggest that the cost of capital in Brazil could be lowered if Brazil became more integrated into world capital markets. Because the Brazilian market is segmented, investors demand an extra premium when investing in that country. This premium increases the cost of capital, which results in good investment projects being turned down. Integration will lower the cost of capital and reduce the hurdle rate that new investments must attain. With more investment (both direct and portfolio) come additional jobs, augmentation of human capital and economic growth.

6.1. POLICY INITIATIVES

Research results set forth in this paper suggested four proposals:

1. Capital market integration requires the dismantling of restrictions on both foreign investors participating in the Brazilian market and Brazilian investors participating in foreign markets. To this end, retail investors must be allowed to operate under Annex IV rules. The current discrimination against retail investors adds an extra premium to investing in Brazil that will be reflected in the country's cost of capital.

2.   Hence, exchange rate markets must be liberalized to allow foreigners to operate freely within Brazil and for Brazilians to be unfettered in their international investments. At a minimum, Brazilian banks should be able to offer Eurocurrency deposits. A foreign investor's return in Brazil is both the investment appreciation and the exchange rate change.

3.   A perception of safety requires enforcing prudent regulations. A major problem is that Brazil's state banks have overlent to state companies, are overburdened with state debt of long maturity (several years) and are undercapitalized. Their debt must be financed overnight in the interbank market. Prudent supervision, in terms of monitoring the banks' capitalizations and risk management procedures, is necessary given the current state of banking in Brazil. The new administration must take actions to resolve these problems.

4.   Brazil has begun a program of macroeconomic stabilization. However, the credibility of this program remains an issue. The required rate of return on Brazilian investments remains high. Our suggestion, following Carneiro, Werneck, Garcia, and Bonemo (1993), is to establish, perhaps in conjunction with the World Bank, an insurance program for foreign and domestic investors. Coverage would be directed at types of risks that are difficult to insure with conventional methods (e.g., the risk of a major devaluation and major increases in short-term interest rates). This program, even if modest in size, would send a signal to the international community about Brazil's commitment to stabilization. The insurance program would make deviation from its plans very expensive for Brazil. Aside from its insurance function, this policy affects the expectations of investors (both international and domestic) about the future stability of Brazil's economy. And it is investors' expectations that set the cost of capital.

6.2. CONCLUSIONS

Investors in developed markets increasingly are becoming convinced of the merits of investing in emerging markets. Indeed, a number of major investment banks in the United States have recommended that 5–10% of investors' portfolio be allocated to emerging markets. Notwithstanding short-term fluctuations, the long-term trend will involve portfolio investment flows to emerging markets on a large scale. Importantly, Brazil is only one of many possible emerging markets among which investors can choose. Developing policy to ensure that Brazil benefits from this tide of capital inflows, rather than missing out, is critical.

Recommendations in this report focus on ways to integrate Brazil's capital markets into world markets. Efficiency has many implications. Fundamentally, it means that securities are traded at fair prices. This fairness may make portfolio investment, whether in bonds or stocks, more attractive to both foreigners and domestic investors. Indeed, many domestic investors in Brazil may have avoided the equity market in particular because of reservations about its fairness. Domestic investment, as well as foreign investment, is a critical ingredient in fostering the right environment for economic growth.

Efficiency also affects the allocation of capital. Research has detailed how inefficiencies may distort the investment process of the firm. Important projects may be turned down, leading to lower economic growth, while low-return projects are implemented. Within this context, it is important to recognize that this argument is not just directed to firms that already have equity or bonds traded in the capital markets. Bekaert al. (1995) show that the level of concentration in Brazil is high compared to many other markets. There are a few large firms. Efficiency implies that new, smaller firms should be able to access the capital markets successfully. An efficient market creates the conditions for venture capital to work through initial public offerings. Experience in the United States suggests that such venture capital–funded company start-ups can prove to be major engines of growth.

TABLE 1

STOCK MARKET DEVELOPMENT AND ECONOMIC GROWTH

Stock Market Development Measures	Rank Correlation	Rank Brazil
Number of stocks	.412	3
Market capitalization	.341	4
Value traded	.335	5
Turnover ratio	.203	5
Market capitalization/GDP	.249	13
Value traded /GDP	.360	8

Source: Authors' computations.

TABLE 2

EXCHANGE RATE RESTRICTIONS, OWNERSHIP RESTRICTIONS AND LIBERALIZATIONS IN EMERGING MARKETS

Market	Exchange Rate Regime, 1994	Percentage Investable, 1992	Percentage Investable/ Global, 1993	Liberalization	Date
Argentina	Pegged to dollar	100	88.2	All limits on foreign capital abolished	Dec. 89
Brazil	Free float	49^a	60.4	Group of foreign investment trusts approved	Mar. 87
				Interbank foreign exchange markets allowed	Mar. 90
				Foreign ownership levels increased	May. 91
				Foreign portfolios without custody allowed, and minimum holding period and portfolio diversification restrictions abolished	Jul. 91
Chile	Pegged to basket	25	20.9	Noncentral bank foreign exchange market authorization	Apr. 90
Colombia	Free float	100	76.0	Made 100% investable	Feb. 91
Greece	Managed float	100	80.8	N/A^b	N/A
India	Free float	24	19.1	All shares made investable	Nov. 92
				Managed exchange rate abolished	Mar. 93
Jordan	Pegged to basket	49	29.0	N/A	N/A
Malaysia	Free float	30	67.4	N/A	N/A

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Country	Exchange rate system			Event	Date
Mexico	Free float	87.7	100[a]	Dual exchange rate system unified	May. 89 / Nov. 91
Nigeria	Pegged to dollar	0.0	0[a]	N/A	N/A
Pakistan	Managed float	29.3	100	Made 100% investable	Feb. 91
Philippines	Free float	47.3	40[a]	All shares made investable	Nov. 91
Portugal	EMS[c]	54.1	100[a]	N/A	N/A
South Korea	Pegged to dollar	9.6	10[a]	Government announced sweeping liberalization	Dec. 88
				Investment preapproval rules softened	Jan. 90
				Market average exchange rate system introduced	Mar. 90
Taiwan	N/A	3.0	10[a]	Equity market broadly opened, $5 billion foreign holdings	Jan. 91
				Maximum foreign security holdings limit increased to $10 billion	Mar. 93
Thailand	Pegged to basket	27.0	100[a]	N/A	N/A
Turkey	Free float	97.3	100	N/A	N/A
Venezuela	Free float	36.3	100	Foreign ownership allowed with limits	Dec. 88
				All restrictions lifted	Jan. 90
Zimbabwe	Pegged to basket	0.0	a	N/A	N/A

Source: For foreign exchange policies: Exchange Agreements and Exchange Restrictions, 1994 annual report (IMF); for foreign ownership levels and liberalizations, IFC Index Methodology (1993); some liberalization dates from Park and Van Agtmael, ed. (1993), World's Emerging Stock Markets.

[a] Industry exceptions.

[b] N/A = Not applicable.

[c] EMS = European Monetary System.

TABLE 3

EMERGING STOCK MARKETS—INSTITUTIONAL INDICATORS

Country	(1) Regular Publication of P/E Yield	(2) Accounting Standards	(3) Investor Protection	(4) Securities Commission	(5) Restrictions			(6) Withholding Tax Rate	
					Dividend	Capital	Entry	Capital Gains	Dividend
Latin America									
Argentina	0	1	1	1	0	0	0	36%	17.5%
Brazil	1	2	2	1	0	0	0	25	25
Chile	1	2	2	1	0	1	0	10	10
Colombia	0	1	1	1	1	0	0	30	0
Mexico	1	2	2	1	0	0	0	0	0
Venezuela	0	1	1	1	1	1	0	0	20
Asia									
India	1	2	2	1	1	1	1	40	25
Indonesia	1	0	1	1	1	1	0	20	20
Malaysia	1	2	2	0	0	0	0	0	0
Pakistan	0	1	1	1	0	0	0	0	15
South Korea	1	2	2	1	0	0	1	0	25
Thailand	1	1	1	1	0	0	0	25	20
Europe/Mideast/Africa									
Greece	1	0	0	0	1	1	0	0	42
Jordan	0	0	1	1	0	0	0	0	0

Nigeria	0	1	1	1	1	2	20	15
Portugal	1	1	1	0	0	0	0	25
Turkey	1	1	0	0	0	0	0	0
Zimbabwe	0	1	1	1	1	1	30	20

Column (1): 0=published, 1=comprehensive and published internationally.

Columns (2) and (3): 0=poor, 1=adequate, 2=good, of internationally acceptable quality.

Column (4): 1=functioning securities commission or similar government agency, 0=no agency.

Column (5): 0=free, 1=some restrictions, 2=restricted.

Column (6): withholding tax rates, given in percentages.

Source: The table is based on the information provided in the IFC's <u>Factbook</u>. All data are as of year-end 1991.

TABLE 4

**MACROECONOMIC CLIMATE AND COUNTRY RISK
IN EMERGING MARKETS**

Country	Inflation	Real GDP Growth	Inflation Variability	Rank	Exchange Rate Variability	Credit Rating
Argentina	370.10	0.97^c	>1,000	20	442.9	26.2
Brazil	624.10^a	-3.10^a	>1,000	21	173.0	27.1
Chile	20.20	5.68	10.5	12	25.1	45.9
Columbia	27.30	4.94^a	11.6	15	17.4	37.2
Greece	18.70	0.71^a	16.1	13	40.0	46.7
IND?	10.00	5.28^a	9.8	10	33.6	37.5
Jordan	8.16	-2.12^a	19.2	11	33.1	20.7
South Korea	6.13	10.72	6.3	6	10.0	67.6
Malaysia	2.71	6.22^b	4.1	3	13.3	64.6
Mexico	53.30	1.28^a	38.2	19	66.8	42.6
Nigeria	25.10	3.96	42.9	16.5	223.6	19.5
Pakistan	7.86	5.96	10.6	9	12.1	27.7
Philippines	9.46	2.19	9.0	8	32.2	25.2
Portugal	11.00	7.13^b	6.1	7	41.7	65.0
Taiwan	-	-	-	-	16.1	77.5
Thailand	3.96	10.82^b	5.8	4	7.9	61.3
Turkey	57.70	2.46^b	28.0	18	30.2	43.9
Venezuela	38.20	0.98^a	33.2	16.5	58.8	39.0
Zimbabwe	18.70	-0.55^c	13.0	14	45.6	26.1
Germany	2.04	3.77	3.0	1	46.0	90.8
Japan	1.67	3.74	5.77	2	43.1	89.8
United Kingdom	5.60	2.26^a	6.2	5	48.1	84.6

Sources: Inflation and GDP data are from *International Financial Statistics;* the exchange rates from the IFC EMDB database for the emerging markets and from Citicorp Data Services for the industrialized countries. The credit rating is taken from *Institutional Investor* in 1992.

Notes:

1. For inflation, we report the annual compounded growth rate for the CPI between the end of 1985 and 1992, or the latest available year.

2. For real GDP, a similar computation is made. In many cases,
    1992 data were not available.   Final year used other than 1992 are
    footnoted. For most countries the GDP growth number is close to
    the average annual growth rate over the sample period, except for
    Argentina and Brazil. For those countries, hyperinflation makes
    some of the data difficult to interpret and the numbers given are
    subject to this caveat.
3. Inflation and exchange rate variability is the standard deviation
    of monthly rates times 1,200.
4. Rank is based on the sum of the ranks according to the level of
    inflation and the variability of inflation.

[a] 1991; [b] 1990; [c] 1989; [d] 1988; [e] 1987.

TABLE 5
GLOBAL MARKET INTEGRATION AND ECONOMIC GROWTH

Global Market Integration Measures	Rank Correlation	Rank Brazil
OPEN I	-.241	7
OPEN II	.235	8
OPEN III	.310	1
POLRI	.591	13
INFLAT	.777	18
CORREL	.393	10

Source: Authors' computations.

TABLE 6
RESTRICTIONS SUMMARY AS OF FOURTH QUARTER, 1994

	Anne x I	Annex II	Annex III	Annex IV	Fixed Income Funds	Circular Letter #5
May remit funds without previous authorization	No	No	No	Yes	Yes	Yes
Must register all transactions	Yes	Yes	Yes	Yes	Yes	Yes
Available to retail investor	No	No	No	No	No	Yes
Withholding income tax (rate) cap gains	0%	0%	0%	0%	0%	25% or 30%
Withholding income tax (rate) cash pmts	15%	15%	15%	15%	15%	25% or 30%
"Entry" transaction tax (rate)	1%	1%	1%	1%	9%	1%
IPMF (.25%) until 12/31/94	Yes	Yes	Yes	Yes	Yes	Yes
Transaction tax for short-term operations	Yes	Yes	Yes	Yes	No	Yes

Note: Foreign ownership of nonvoting stock is not limited, but it may
not surpass 49% of voting (common) stocks.

TABLE 7

NET INFLOW OF EXTERNAL RESOURCES (US$ IN MILLIONS)

Month	Direct Investments	Stock Investments	Fixed Income Funds	Currency Loans[1]	Total	Part. (%) Portfolios Inv.	Part. (%) Direct Inv.	Part. (%) F.I.F	Part. (%) Currency Loans
1989	-57	-340	–	361	-36	N/A	N/A	N/A	N/A
1990	104	287	--	1,045	1,436	7.24	19.99		72.00
1991	571	561	–	4,408	5,540	10.31	10.13		79.57
1992	1,704	1,154	–	7,979	10,837	15.72	10.65	·	73.63
1993	6,594	397	80	11,030	18,101	36.43	2.19	..	60.94
Feb. 93	262	27	–	197	486	53.91	5.56	..	40.53
Mar. 93	137	23	–	1,259	1,419	9.65	1.62	–	88.72
Apr. 93	252	59	–	762	1,073	23.49	5.50	·	71.02
May 93	394	20	–	587	1,001	39.36	2.00		58.64
Jun. 93	192	11	–	1,412	1,615	11.89	0.68		87.43
Jul. 93	702	-49	–	1,076	1,729	40.60	-2.83		62.23
Aug. 93	1,168	18	–	879	2,065	56.56	0.87		42.57
Sep. 93	-439	14	–	1,024	599	-73.29	2.34		170.95
Oct. 93	1,373	48	–	865	2,286	60.06	2.10		37.84
Nov. 93	899	112	–	1,009	2,020	44.50	5.54		49.95
Dec. 93	1,417	13	80	1,792	3,302	42.91	0.39	2.42	54.27
Jan. 94	1191	313	82	745	2,331	51.09	13.43	3.52	31.96
Feb. 94	1,124	119	78	771	2,092	53.73	5.69	3.73	36.85
Mar. 94	275	176	100	714	1,265	21.74	13.91	7.91	56.44
Apr. 94	396	366	119	932	1,813	21.84	20.19	6.56	51.41
May 94	887	370	68	283	1,608	55.16	23.01	4.23	17.60
Jun. 94	535	371	450	305	1,661	32.21	22.34	27.09	18.36

[1] Gross inflows.

Source: Banco Gross

FIGURE 1
INTEREST RATES ON GOVERNMENT SHORT-TERM BILLS (BBC)
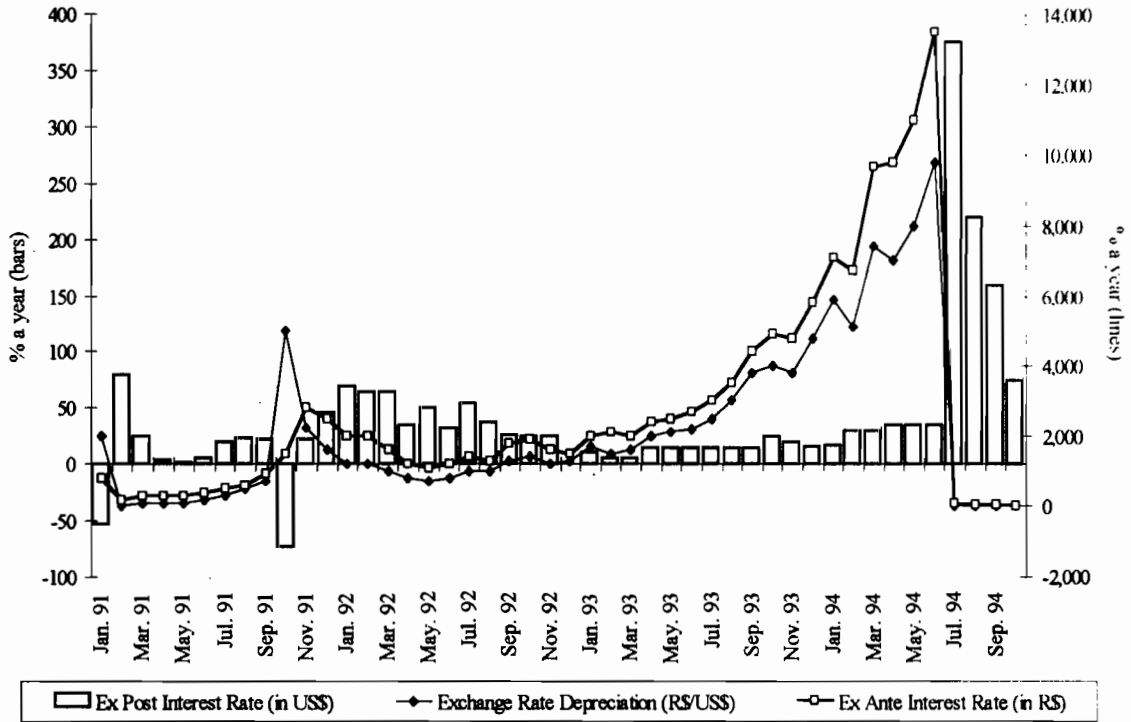
Source: Brazilian Central Bank.
Using the nominal interest rates available at the beginning of the month and the actual exchange rate devaluation of the Brazilian currency that is available at the end of the investment period.

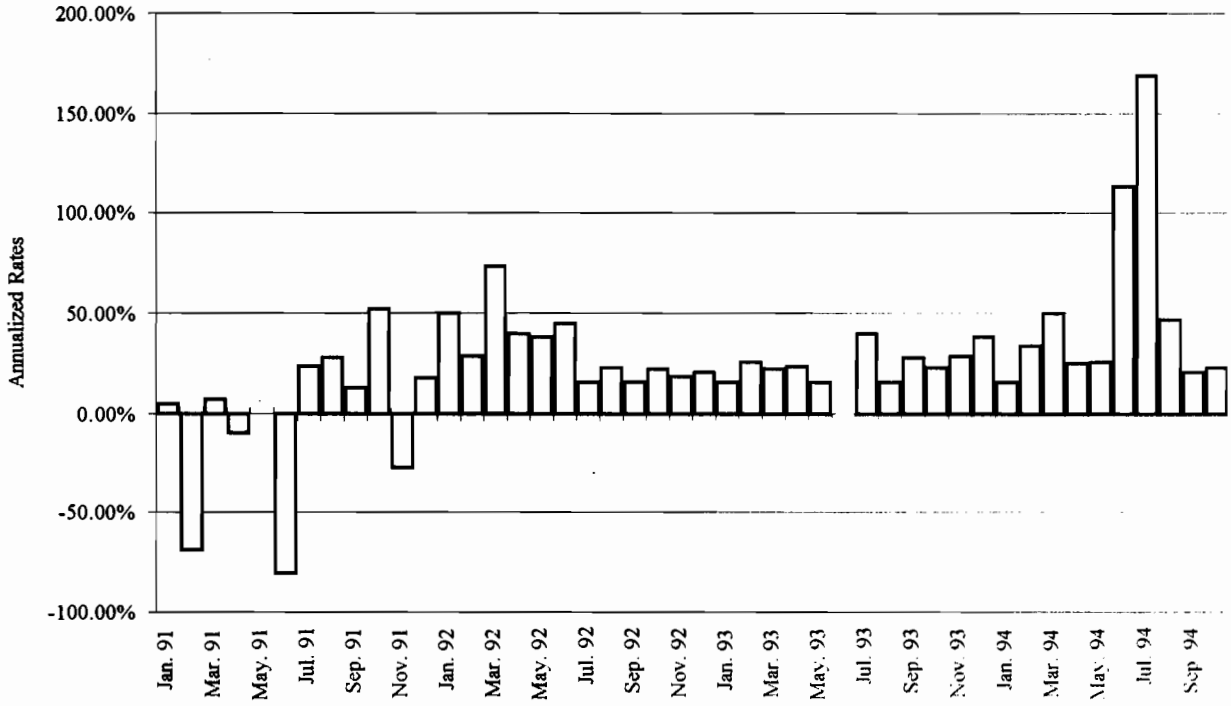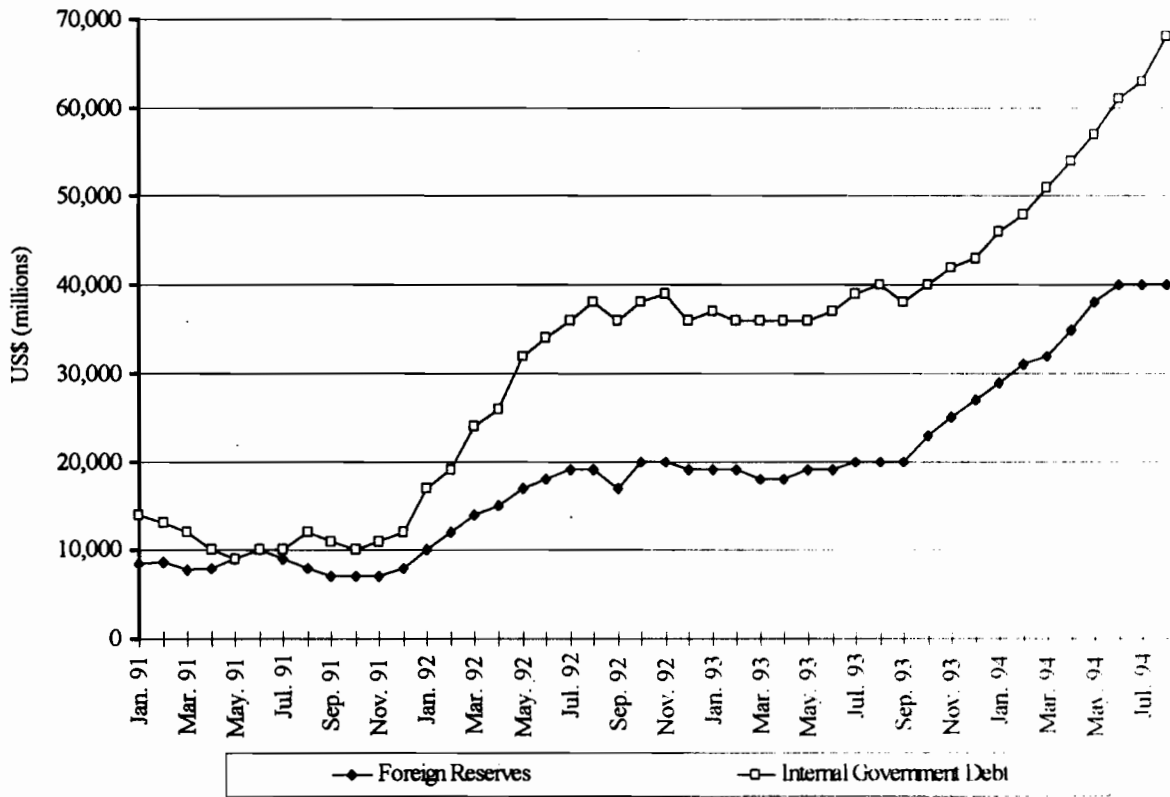**FIGURE 2**
COVERED INTEREST DIFFERENTIAL

FIGURE 3
FOREIGN RESERVES AND INTERNAL DEBT

Source: Brazilian Central Bank

FIGURE 4
BRAZIL: TIME PLOT OF EXPECTED VOLATILITY

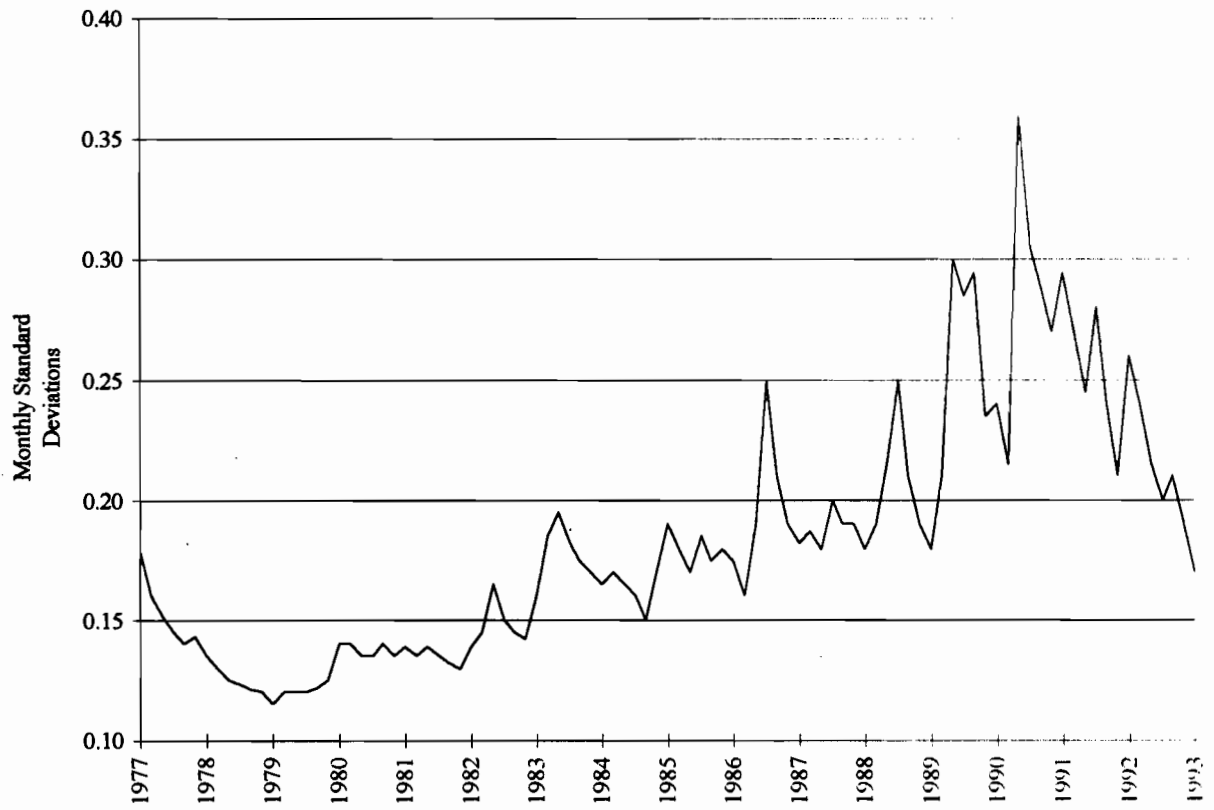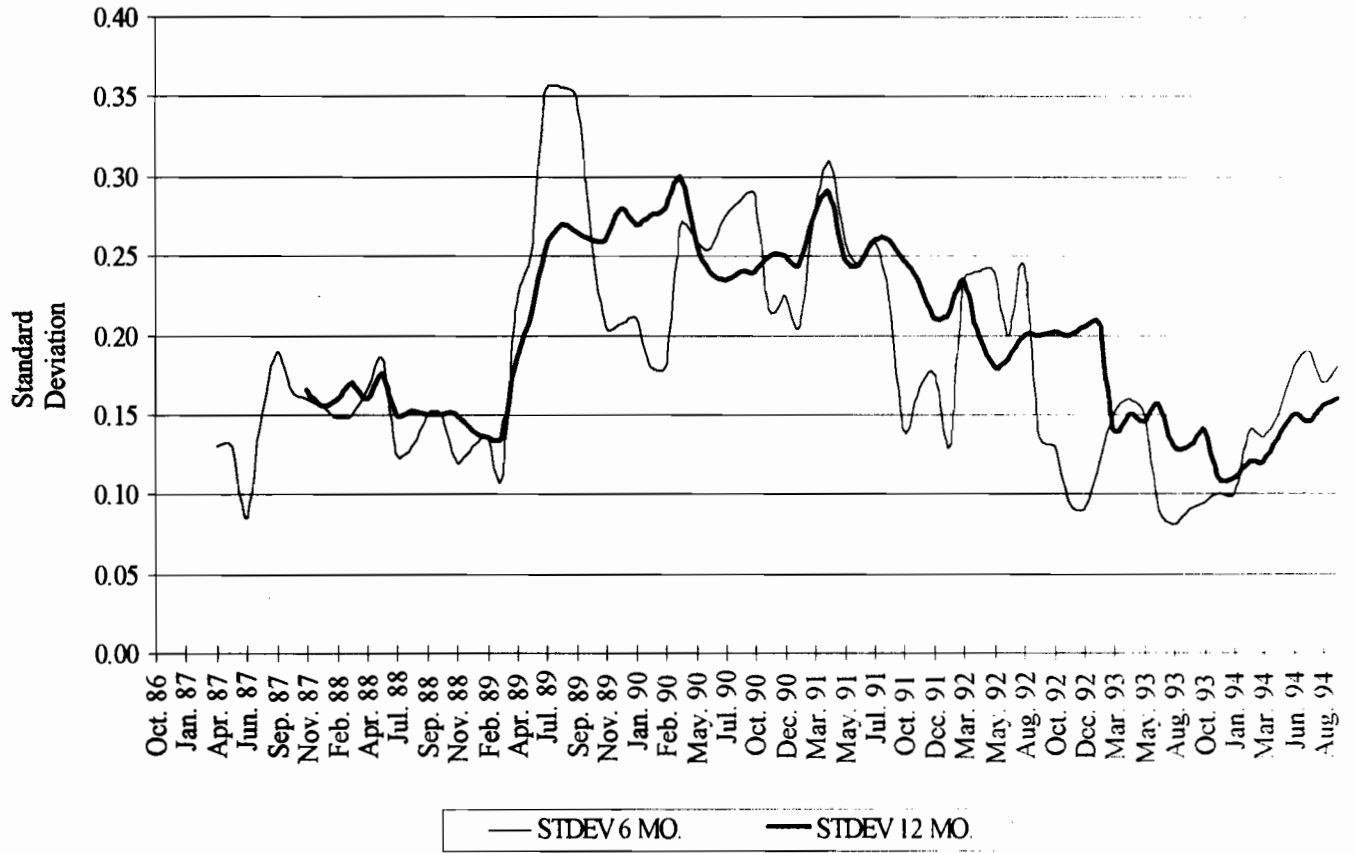
FIGURE 5

BRAZIL: ANNUALIZED STOCK MARKET VOLATILITY

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