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The contribution of speculators to effective financial markets

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TEXTO PARA DISCUSSÃO
N.º 341

The Contribution of Speculators to Effective Financial Markets

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ABSTRACT

We present critical examination of the role of the speculator in transitional market-based economies. Speculators provide additional liquidity to the market and, in general, enhance the operational efficiency of the market. This serves to reduce the cost of capital which has broad positive implications for the welfare of the whole society. However, we argue that the presence of speculators alone does not guarantee these benefits. Indeed, the presence of a small group of speculators may lead to a distortion of market prices. Hence, in order to ensure the positive benefits, there must exist a sufficient number of speculators -- both domestic and international. Our policy recommnendations focus on ways to obtain this critical mass.

1. INTRODUCTION

The goal of this report is to provide a critical examination of the role of speculators in the economic development of emerging market economies, with particular emphasis on Brazil. Throughout history and in many market economies, speculators have been characterized both as villains and as saviors. Indeed, their reputation generally depends on the country where they do business. In well-functioning, advanced capital markets, such as in the United States, the speculator is viewed as an integral part of the free market system. In developing capital markets, the speculator—in particular the international speculator—is looked upon with many reservations.

Why do opinions about the role of the speculator differ so? This study argues that many of the perceptions are based on a misunderstanding of the functions of the speculator. The purpose of this report is not to engage in a philosophical debate on the merits of speculation in an open market economy; rather, the focus is on the economic issues. The study details both the benefits and the potential costs of having speculators in the marketplace. It postulates throughout that "fair" prices maximize public welfare. "Fair" assumes sellers need not liquidate assets at prices that are "too low" and investors need not purchase assets at prices that are "too high." Arguably, in *most* situations the presence of speculators increases the chances that prices are fair. However, in some situations this is not true. Understanding the nature of the trading environments that might cause speculators to disrupt the pricing process is important. Indeed, once both the benefits and the potential costs of speculation are understood, an economic environment can be proposed that enhances the chances that speculation leads to beneficial effects on the economy.

1.1. DEFINITION OF SPECULATION

Sometimes, first comprehending its opposite makes understanding a concept easier. In this case, hedging is the opposite of speculation. Suppose a farmer is concerned about fluctuating wheat prices: if the price of wheat drops at the time of harvest, the farmer may not be able to make interest payments or keep up with the required maintenance of the farm. The farmer could "hedge" by agreeing today to sell the wheat crop at harvest at a fixed price. This could be accomplished with a trade in the futures market. On the other hand, a cereal company might be worried about the cost of wheat rising. If input costs rise to a particular level, the competitive position of the firm may be damaged. The cereal company could agree today to purchase a certain amount of wheat at harvest time at a fixed price. This is also a hedge.

If very few cereal companies exist or few cereal companies want to hedge, hedging could be very difficult for the farmer. With very few cereal companies, the price the farmer could obtain for the wheat at harvest time may be too low, so the farmer may choose not to hedge. Enter the speculator. The speculator has neither farming interests nor any ownership in the cereal company. The speculator, like any investor, is looking for a return on investment and is willing to take some risk. The speculator may be willing to take the other side of the farmer's

transaction. That is, the speculator may fill out the market where it was very thin (i.e., few cereal companies or few that want to hedge) and allow the farmer both to hedge and to get a fair price for the grain at harvest.

In this simple example, speculation provided two positive benefits: it created an environment where hedging became feasible for the farmer, and it contributed to liquidity, making the market reflect fair price. However, a positive outcome is not the only possibility. Suppose the market had very few speculators, or suppose a collusive agreement existed between the speculators. In these cases, speculators could create a negative situation in which the price would be either too low or too high.

This example encapsulates one of the main messages of this study. To think that speculation alone will create economic prosperity is naive. Speculation may contribute to better prices in the marketplace, but it also may distort prices. For policy development, an understanding of the situations in which speculators might interfere with the price mechanism is critical. Successful policy will try to create market conditions that will increase the probability that speculators contribute to social welfare.

1.2. OUTLINE

Section 2 of this report provides a rigorous examination of speculation in economic markets. It includes popular theories of speculation and makes specific reference to the role of futures markets in speculation. Indeed, most of the controversy surrounding speculation arises from these important markets. Section 3 examines speculation's potential spillovers onto price volatility. The social welfare implications of speculation are studied in Section 4, which also includes how speculators contribute to market liquidity, convey information about asset prices, and potentially lower the transaction costs associated with trading. We assess the role of both domestic and international investors in creating a critical mass of speculators to enhance the effectiveness of financial markets. Section 5 focuses on Brazil. As one of the leading developing markets, Brazil must have in place an economic policy promoting efficiently operating markets. Section 6 provides conclusions and policy recommendations.

2. SPECULATION: THEORY AND ORIGINS

2.1. TERMINOLOGY

The overall market for financial instruments can typically be divided into the derivatives market and the spot market. In the derivatives market, financial instruments are contracts whose values are a function of an underlying asset's price (hence the term *derivative*

security). In the spot market, trading of stocks, bonds, or commodities takes place in the form of assets for cash. A trader who holds positive quantities of an underlying asset (e.g., an agricultural producer) is termed *long* in the spot market. A trader who holds negative quantities of the underlying asset (e.g., a cereal producer) is termed *short* in the spot market. In our example, the company must purchase grain in the future to produce the cereal; however, at the moment, it does not have the grain in inventory. It is "short" the necessary input for future production. Long and short positions in derivative markets are thus similar in certain functional respects.

A trader whose net position in one market (e.g., the spot market) is offset by his net position in another market (e.g., the futures market) is called a *hedger*. This includes the agricultural producer who is long in the spot market and enters into a short position in a futures contract (i.e., an agreement to sell the grain in the future). It also includes the cereal company that is short in the spot market (i.e., it needs but does not have the input for production) and long in the futures market (i.e., an agreement to purchase the grain in the future). Traders who are net long or net short in the overall market, and hence in another market (or markets), are known as *speculators*. Alternatively, *speculation* can be viewed as the purchase (or temporary sale) of goods for later resale (purchase) rather than use, in the hope of profiting from interim price changes.

Analysis of the effects of speculation includes consideration of two frequently asked questions:

- Do speculators destabilize prices?
- Do speculators improve/decrease market efficiency (make prices more/less fair)?

The aim of this research is to address these questions and more. Specifically, this study will analyze the effects of speculation on the volatility of asset prices, on market efficiency, on market liquidity, and on the cost of raising capital. All of these can be viewed within the context of the above two questions. An understanding of these effects allows assessment of the overall impact of speculation on the effective operation of financial markets in Brazil. Bekaert, Garcia, and Harvey (1995) analyze the link between effectively functioning capital markets and economic growth in developing nations and more specifically in Brazil.

Given that price volatility and market efficiency are most often linked with speculation, the distinction between these two concepts should be illuminated from the outset. Price volatility refers to the variation of asset prices over an interval of time. The variation in prices is influenced by many factors that in turn are determined by the design of markets and the participating institutions. More important, the extent of price variation is a consequence of the uncertain dynamic process governing market conditions. Some price volatility is intrinsic to the market—no design or regulation will eliminate it entirely.

In contrast to price volatility, market efficiency is neither intrinsic to the market nor a consequence of the market's underlying uncertainty. It is a desirable property that markets want to achieve. Policymakers and regulatory institutions striving for efficient markets will

take actions such as reducing the chance of price manipulation. Price volatility need not be of major concern when issues of market efficiency are being assessed; market efficiency and price volatility are not greatly related. Although some variation in prices is necessary for markets to be efficient, the questions posed regarding the effect of speculation on price volatility are not greatly relevant to the issue of speculation's effect on market efficiency. This report provides an in-depth analysis of how speculative activity affects both market efficiency and price volatility.

To illustrate the depth of the relevant issues and the unresolved debate, some of the economic concepts affected by speculation will be introduced. In the United States, one principal goal of securities laws is to create stock markets in which the market price of a stock corresponds with its fundamental value, or (in other words) to heighten price accuracy. Indeed, accurate prices are synonymous with the concept of market efficiency. One of the key points of this report is that, in a competitive setting, speculative activity should enhance market efficiency and price accuracy.

In order to proceed, one needs to understand why accurate stock prices are desired and what role speculators play in achieving the goal of accurate prices. Simply stated, price inaccuracies may result in an inefficient allocation of capital. As a result, the whole economy suffers, and this is known as a social welfare loss. Consider the following illustration. If equities are overpriced, the corporation may be tempted to offer additional (overpriced) equity to the market and to use the proceeds to invest in projects that otherwise would have been passed over. Conversely, when stocks are underpriced, good projects may be rejected. If stocks are underpriced, financing cost rises and could exceed the benefits of proceeding with the project; hence the project is rejected. This reasoning holds even in the presence of alternative capital sources. Indeed, the most common alternative source, debt, may be an inadequate substitute for selling stock. Raising the debt-to-equity ratio may increase the likelihood of bankruptcy. Thus, even in the presence of alternative capital sources, inaccurate stock prices may lead to capital misallocation. This idea is developed in more detail in Section 4.

Some have argued that accurate stock prices do not matter because many firms use commitment underwriting in their raising of capital. In this case, the company receives a predetermined price for each unit of stock it sells; hence the amount of raised capital appears to be independent of the market price. However, this resourcing has an obvious flaw: although the company will negotiate a predetermined price per stock with the underwriter, the latter's willingness to pay will depend on its expectation of the market price. This expectation is very much a function of the accuracy of current market prices.

Market efficiency and price accuracy affect capital allocation and hence welfare through other channels as well. This study examines the effect of speculation on market liquidity, market volatility, and the cost of capital and links these concepts to economic welfare.

2.2. EARLY THEORIES OF SPECULATION

The debate over the role of speculation first appeared in a seminal article by John Maynard Keynes in 1923. His theory, originally discussed in the context of commodity futures markets, has general implications for all markets.

Keynes made the following observation. The people using the futures market to hedge were mainly agricultural producers. These farmers had "short" positions in the sense that they were agreeing to "sell" their crop at some date in the future at a fixed price. Hence, the speculators in the market must predominantly be the "buyers." But why would the speculators all want to buy commodities in the futures market? Usually, one would think of some speculators as buyers and some as sellers.

Keynes argued that the speculator's position could only be rationalized if the speculator expected to make a profit on his or her position. That is, if the speculator commits today to buy corn in three months for $2.00 per bushel, this speculator must expect the price of corn to be higher than $2.00 three months from now (to make a profit). Hence, when the futures contract is initiated, the price is below the expected final price. Intuitively, if the hedgers (such as the agricultural producer) are net sellers, the futures price will be below the expected spot price. This argument implies that the $2.00 price of corn in the futures market is not the expected price of corn in three months. The futures price, according to Keynes, is a downward-biased predictor of the commodity price three months from now.

Keynes's theory, criticized by Holbrook Working in 1953, empirically achieved only limited success. Indeed, basic portfolio theory in finance is capable of elucidating the theory's flaws. (Their portfolio theory earned Harry Markovitz and William Sharpe the Nobel Memorial Prize in Economics in 1991.) Keynes's analysis assumes that the commodity futures market is isolated from other asset markets. As a result, speculators must be beneficiaries of the risk premiums paid to hedgers (the farmers) for their willingness to take net long positions. However, in an integrated set of asset markets, hedgers need not pay a risk premium to induce other investors to trade. Rather, the existence of a risk premium depends on the correlation between the returns to the hedged asset and the economywide risks faced by all the traders. Assets that protect against these market risks will be more expensive than assets that offer no protection.

Although the debate over the speculator's source of returns has been resolved, the role of speculators in the economy is a topic of vigorous ongoing discussion. This study explores the role of speculators, particularly foreign speculators in developing economies. The Keynesian and portfolio theories are not just detailed for their historical significance; they offer an important insight that remains useful to this day. Specifically, any positive, welfare-improving roles of speculators are bounded by the amount of hedging the speculators allow. Each speculator will optimize his or her personal position; the size of this position determines the amount of hedging available in the market. Obviously, without speculators, hedging is more

difficult. If very few speculators are present, then only a limited amount of hedging is allowed. As a result, market policy must create the conditions for a large class of speculators. With a sufficient number of speculators, all hedging demand can be accommodated. With large groups of speculators, the chance of collusive behavior is minimized. With enough speculators, transactions will more likely occur at competitive prices (i.e., the hedgers get fair prices).

2.3. FUTURES MARKETS AND SPECULATORS

To understand the role of speculation, one must understand more carefully the context in which speculation has most often been studied, namely the futures markets. The standard explanation for the existence of futures markets is that they help to spread and hence to reduce risks, as well as to motivate the collection and dissemination of relevant information; they provide hedging and price discovery. Futures trading also facilitates the allocation as well as the planning of production and consumption over time. For example, if futures prices for distant deliveries are far lower than those for early deliveries, we would anticipate a postponement of consumption or production.

In general, the economic functions of futures markets will be performed most effectively when these markets are highly competitive. Hence, having a critical mass of traders is important. If a group (of any size) of traders can exert market power and manipulate the futures trading prices, these prices not only will misrepresent the underlying market supply and demand conditions but will also induce a suboptimal allocation of resources. These sorts of distortions should be of primary concern to policymakers and futures exchange regulators. For developing countries, such as Brazil, allowing for greater involvement of foreign speculators helps to alleviate such distortions.

Whereas instances of market manipulation are well known, economic theory has also articulated the distortionary opportunities producers may wish to take advantage of in the futures markets. Economists David Newbery and Joseph Stiglitz (1984) have argued that a situation may arise in which producers would wish to intervene in futures markets, thereby distorting price efficiency and potentially inducing misallocation of resources. Conceivably, a producing firm might be able to increase its profits if it had the ability to influence the production decisions of its competitors.

Newbery and Stiglitz based their research on the idea that a producer may be motivated to manipulate futures market conditions in an attempt to influence the competition's production decisions. They show that certain producers may find greater instability of futures prices profitable. However, the feasibility of such behavior is another question. Such situations can occur only when the producer has significant market power. In addition, this strategic behavior will likely be successful only if futures markets have a limited supply of speculators. The direct implication of this theory is that allowing for a large number of speculators will reduce the chance of market distortions.

This is, of course, not a complete survey of the role of speculators in futures markets. (In fact, the majority of controversy surrounds the question of volatility, which will be addressed in Section 3.) However, in the example of the manipulative producer, economic theory is very clear on how market prices can be distorted. How to minimize the probability that these distortions will arise is also clear. Before proceeding to examine the speculators' effect on volatility, the authors briefly investigate the questions: Who are speculators? And why do they exist?

2.4. WHO ARE SPECULATORS, AND WHY DO THEY EXIST?

In the context of futures markets, there is no ambiguity with respect to the identity of the speculators. Speculators mentioned above are simply those traders who take a net long or short position in the futures market. Also as mentioned above, economists argued initially that the existence of speculators was related to the positive risk premium received (futures prices are downward-biased predictors of future spot prices). Thus, the risk premium for taking a long position in the futures market seemed to provide a satisfactory explanation for why speculators participate in the futures market.

Given the insights from modern portfolio theory, a deeper investigation of the nature of speculation seems appropriate. In general, speculation is often defined as the purchase (or temporary sale) of goods or assets for later resale (purchase) rather than use, in the hope of profiting from interim price changes. However, this definition is somewhat problematic, as it would classify almost all investments as a form of speculation.

Whereas that general a definition is obviously too broad, one easily discernible criterion exists by which speculators may be differentiated from other traders, or hedgers: traders on the winning side of a bid-ask spread may be referred to as speculators. In any competitive trading situation, there is a price that investors bid to purchase the asset and a price that investors ask (or offer) to sell the asset. These prices are not identical, and the difference is the bid-ask spread (where bid prices exceed the offer prices). Transactions occur at either the bid or the ask or, more often, in between the bid and the ask price.

This view of speculation purposes has a certain logic. Hedgers, who unlike speculators are typically anxious to complete a particular trade for risk reduction purposes, are likely to take the losing side of the spread. Suppose the bid price to purchase is 102 and the ask price to sell is 100. A hedger enters the market with the need to sell. It is likely that the hedger will accept the price of 100 and extremely likely that the hedger will settle for a price below 101 (the midpoint). The speculator will want to execute transactions on the outer edges of the bid-ask spread, purchasing from the hedger at 100 and selling to someone else for 102. Note that the speculator's return is linked to the size of the bid-ask spread. This source of gain for speculation has traditionally been overlooked.

This view of speculation also is somewhat too broad; although it adequately characterizes most speculators, it would also classify market makers as speculators.

Sanford Grossman and Joseph Stiglitz (1980) developed yet another way to consider speculation: speculators are traders who incur costs in search of relevant information. From this view, speculators collect information, and their trading process acts to aggregate information. Different speculators collect different pieces of information, which may be revealed to the marketplace by the act of trading. For example, individual speculators may collect mutually exclusive information that indicates favorable opportunities for the firm. As the speculators begin to purchase the firm's stock, the marketplace infers the prospects of the firm by aggregating the information revealed by many speculators, and the price rises accordingly. Of course, for this definition to make sense, speculators must have the incentive to collect information.

Clearly, the definition of speculation involves some ambiguity. Rather than developing the tightest possible definition of speculation, this report seek to explore and learn from properties that are common to every speculator, regardless of the particular definition.

Before examining the effect of speculative activity on price volatility, one interesting aspect of speculation should be noted. Attempting to comprehend the role of speculation, Tirole (1982) reached the conclusion that, in a purely speculative market (one without hedgers), speculation cannot take place among risk-averse traders. The compelling intuition for his argument lies in the following adage: "If you wish to trade with me, you must know something I do not." In a purely speculative market, trading is a zero-sum game. Therefore, no trader will be willing to trade with others that he or she believes must, since they are willing to trade, possess better information.

3. SPECULATION AND MARKET VOLATILITY

The relationship between speculation and volatility has been hotly debated in the economics and finance literature. This section presents a synopsis of the argument over whether speculation is stabilizing or not. First, the original notion of why speculation tends to stabilize equilibrium asset prices is briefly presented. This perplexing argument in favor of the stabilizing nature of speculation is followed by more-rigorous arguments. Before the theoretical motivations are considered, the relevant empirical evidence is examined. Then, possible explanations for both the stabilizing and destabilizing roles of speculation are given. This section concludes with an overall evaluation of the arguments presented.

3.1. BACKGROUND

Recent theories of speculative activity have been deeply influenced by an intuition offered by Milton Friedman (1953). Friedman's insight was that rational speculators must stabilize asset prices. Were this not true, speculators would on average be buying when prices are high and selling when prices are low. Also on average, these speculators would lose money and consequently would leave the market. Thus, for speculators to be destabilizing, they would have to be irrational.

As many authors have since observed, matters are far more complicated. Indeed, a consensus does not yet exist as to whether rational speculation stabilizes or destabilizes asset prices. (Some specific models of speculation that have been proposed in the literature are reviewed below.) Empirical research has not resolved the question either. First of all, the empirical research is quite limited, and the scant evidence that has accrued focuses on futures trading. The most cited empirical research addressing the question of excess volatility (in the context of commodity futures markets) is that of Cox (1976). Cox found that prices varied less in periods with futures trading than for periods before futures trading was allowed. His research also concluded that the introduction of futures markets made the spot markets more efficient. However, this study is far from definitive. As a result, the question of stabilization/destabilization continues to be vigorously debated among economic theorists.

3.2. SPECULATORS AND PRICE STABILIZATION

What does economic theory imply about the conditions under which speculation will stabilize prices? Once again in the context of futures trading, if transactions costs were lowered, then speculative activity would be increased, leading to greater incentives for information collection. This information, when traded upon, will typically be partially revealed to otherwise uninformed traders. Thus (and using the fact that spot markets are intrinsically volatile to some degree), the better forecasts of future spot prices as revealed to the market will tend to elicit supply responses. For example, if prices are expected to jump higher in the future, then firms will see profit in producing more and carrying more stocks forward. This increased supply in the future will reduce the price increase and serve to stabilize price fluctuations.

This argument resembles the one presented by Cox (1976) to explain his empirical findings. He argued that the trading in the futures market gave information (about future prices) not previously available. Given the supply responses to this information, price fluctuations were smoothed.

The main thrust of this argument is that speculation, by increasing the information available to traders, must lead to greater price stability. Storage will become cheaper to the extent that futures markets reduce storage risks. This in turn will stabilize supply and prices directly. The theoretical motivation for Cox's empirical finding of greater market efficiency in the presence of greater speculation is quite intuitive; anticipated disturbances will have a more immediate effect on current prices and will tend to make them more responsive to new information.

Arguments have also been offered regarding the possible price-destabilizing effect induced by speculation. One such explanation was offered by David Newbery in 1987. His basic idea was that in the presence of futures markets and speculation, the ability to hedge (enriched insurance opportunities) leads to greater undertaking of risky ventures. Although in many cases these risky activities will tend to promote price stability, as will be the case with storage, increased price instability may result in situations in which the risky activity increases price risk. Risk taking encouraged by futures markets, suggested Newbery, may either stabilize or destabilize spot market prices, depending on whether the risky activity tends to stabilize or destabilize spot prices.

An even more intuitive story of how speculation may lead to less stable equilibrium prices is offered by Hart and Kreps (1986). Their intuition is captured in the following example. Suppose that demand for a commodity in each trading period may be high or low. Although market participants do not know with certainty what type of demand will be present in the forthcoming period, they know that there is a low probability of high demand. Furthermore, whenever a high-demand period is imminent, a signal appears. This signal is imperfect in that it may appear at times that do not precede high-demand periods; yet if a high period is to follow, the signal will certainly be present. Speculators, in the Hart and Kreps scenario, are differentiated from other traders by their ability to store commodities in anticipation of selling the stored commodity at a later date at a higher price. Thus, "other traders" in this context should simply be thought of as consumers.

Now consider a scenario in which current demand is low but the imperfect signal is present. In anticipation of a possible high-demand period and hence higher prices, speculators may buy some of the commodity and place it in storage. This buying pressure will increase prices today. Hence, the consequence of speculation is higher current equilibrium prices today than would have prevailed in the absence of speculation. If the following trading period is one with a low demand and no signal is present, speculators' expectations are not fulfilled in the sense that higher prices do not prevail. Moreover, the absence of a signal indicates that the following period cannot be of high-demand type. Therefore, speculators must revise their previously held expectations: prices will not rise in the future. Consequently, stored commodities will be offered for immediate sale, causing prices to drop. The resulting price sequence is one of a higher initial price and lower second-period price than would have prevailed in the absence of speculation.

The volatility scenario just depicted is in fact only one of many possible outcomes. Notably, it is the only scenario in the Hart and Kreps model in which speculation leads to greater price

instability. The other scenarios lead to greater stability. Hence, the lesson from this example is not that speculation *is* destabilizing but rather that speculation *may be* destabilizing.

The two specific cases outlined above highlight the possible destabilizing nature of speculation. Although intuitive, these explanations are not very compelling. In addition, one must be cautious in interpreting these scenarios as implying some public policy initiatives. In Newbery's case, investors may choose riskier projects because of increased insurance opportunities. However, these risky projects have the highest value added to the economy; they are precisely the projects that enhance economic growth. In the Hart and Kreps case, speculators invest in information collection and balance their portfolios to reflect their expectations. If they expect prices to rise in the future, they will purchase the commodity today. This act of trading reveals information to the marketplace, and other investors benefit from this information.

As a result, stories (such as the two described above) that attempt to show the possible destabilizing effects of speculation must be considered with great caution when regulatory and policy implications are sought. Similar caution must be applied to other arguments that cite the manipulative use of market power to effect destabilization through speculation. The problem is not speculation per se but rather the structure of the market. Regulations should directly address manipulative behavior; those that focus on the speculator are misplaced. Indeed, these destabilization market imperfections will typically disappear as markets obtain a critical mass of speculators and traders.

One final argument suggests that speculation may be destabilizing. Jeremy Stein (1987) considered a framework where traders possess different information. His results allow uninformed traders (hedgers) to "learn" or make informational deductions by observing prices. The result, that speculation is destabilizing, hinges on the assumption that traders learn incorrectly. More precisely, the traders systematically make errors in judgment when interpreting news. Stein argues that such a conception is realistic, particularly in financial markets where much information or its interpretation comes from a common source (e.g., a large investment bank).

This line of reasoning should be followed with some caution. First, for the purposes of this study, what is relevant are the implications of adding a larger number of speculators to the market. This research is not necessarily concerned (as Stein is) with the implications of moving from the extreme situation of no speculators to a market environment with speculators. Second, as the number of speculators increases, information collection and dissemination will become more competitive. How likely is it that systematic misinterpretations of information will persist? Not very likely. Indeed, judgment errors by traders will create arbitrage opportunities for the better-informed speculators, and hence misinterpretations of information will immediately be reflected in speculative trading. That this type of equilibrium could be maintained seems rather far-fetched.

Economists generally agree with the empirical results of Cox: increased speculative activity should lead to greater price stability. However, this report has taken care to outline the main arguments suggesting the opposite conclusion. Indeed, the assertion that increased

speculative activity is price stabilizing is intimately linked to the idea that increased information aggregation and dissemination follow from greater speculative intensity. Research has pointed out that this need not hold everywhere and every time, but it should hold most of the time. As learned from Grossman and Stiglitz (1980), information aggregation cannot be perfect in a sensible market equilibrium; if it were, no incentives would exist for information collection. Notwithstanding, the bulk of reasoning tends to support competitive speculation as a vehicle for greater price stability. Moreover, in the overall welfare implications of more speculation, which this report turns to next, lie the fundamentally more important concepts of market efficiency and accurate pricing.

4. SPECULATION AND WELFARE

This section will examine the role speculative activity plays in enhancing the efficiency of financial markets and lowering the cost of capital. First the concepts of market efficiency and cost of capital will be explained. Then the negative welfare implications of inefficient capital markets and how speculative activity may alleviate them will be explored. These negative implications lead to a set of recommendations for economic policy. Finally, recent academic literature that has drawn attention to potential negative welfare effects of speculative behavior will be evaluated.

4.1. Market Efficiency, Price Accuracy, and Cost of Capital

In an efficient market, market prices reflect all relevant information for determining the value of securities. In such a market, available information cannot be used to obtain riskless trading profits: there are no arbitrage opportunities. Eugene Fama, in a seminal article on market efficiency (1970), distinguished three degrees of market efficiency: weak, semistrong, and strong. In weak-form efficient markets, constructing profitable trading rules based on historical securities prices is impossible. For markets to have semistrong efficiency, traders must be unable to profit from publicly available information (not just past prices). In strong-form efficient markets, no relevant information, whether public or private, can be exploited to create lucrative trades. An implication of the strong form of market efficiency is that insider trading cannot be profitable.

That the empirical evidence for these different forms of market efficiency is mixed is not surprising: researchers have uncovered evidence against strong-form efficiency; insider trading is typically profitable. Financial economists generally believe that most developed stock

markets, and the U.S. market in particular, are weak- and semistrong-form efficient, and ample empirical evidence exists that supports this belief.[1]

Market efficiency is generally believed to lead to price accuracy, in that security prices equal their fundamental value. In fact, price accuracy requires the additional acceptance of the rational expectations hypothesis: market participants with rational expectations are not systematically wrong when estimating the true value of a security. The crux of the debate over the validity of the rational expectations hypothesis lies in the following question: Is it likely that, or will there ever exist a situation in which, equilibrium prices are persistently inaccurate but the capital markets are efficient? Equivalently, this is asking for the possibility that all market participants form trading strategies based on all relevant market information and each believes that he or she is incapable of profiting, whereas in fact each of their beliefs is wrong. Intuitively, this seems very unlikely. Hence, the hypothesis of rational expectations is generally maintained in mainstream financial economics.

Market efficiency will affect the cost of capital—the expected rate of return that investors require on a capital project (e.g., the construction of a new factory). This rate of return is fundamentally linked to the risk of the project. Consider the case of two projects with the same expected cash flows. Both require an initial investment of $100. Project A will pay off with equal chance $120 or $110 next year (expected return is 15%). Project B will yield either $140 or $90 next year (expected rate of return is 15%). Although the expected rates of return are equal, no one will purchase project B, because its cash flows are far riskier (more volatile). As a result, the initial price of B must drop to attract investors. If the price drops to $90, investors may be interested (expected return is 27%). Hence, risk is the main determinant of the cost of capital.

To see how market efficiency could affect the cost of capital, consider a firm trying to finance project B. To keep the example simple, suppose the project is financed with 100% equity. That is, the firm goes to the market and tries to raise $90 for this project. However, because the market participants are not incorporating all information into prices, they are only willing to offer $85. In other words, investors are demanding a higher return than the project's true expected rate of return. As a result, the corporation will not pursue this project. In the end, a good project (with a return of 27%) is abandoned. The economy as a whole suffers a loss that is directly related to the efficiency of the markets.

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1 Some recent literature reports detection of predictable patterns in the equity returns of developed markets (Bekaert and Hodrick 1992; Ferson and Harvey 1993). However, few researchers believe that these patterns reflect market inefficiencies that can be exploited in trading strategies; rather, they may capture time-varying rewards to risk taking.

4.2. WELFARE IMPLICATIONS OF INEFFICIENT MARKETS

To maximize economic welfare, a country should allocate its resources to their most productive use. Efficient markets and the accurate evaluation of asset prices play a crucial role in this capital allocation process. In the previous section, a simple example was presented of a situation in which resources were not put to their most effective use—a potentially profitable project was abandoned. In that scenario, one company was trying to finance a project. Now consider the situation of two companies competing for shareholders' investments. This example will illustrate how an efficient stock market guides managers and entrepreneurs to the most effective use of the capital provided by the shareholders.

The stock price can be viewed as the market's assessment of the aggregate value of a company's investment projects. Suppose the two companies plan to undertake investment projects that will use the same natural resources. If these projects have very different values, it is important that the most profitable one is carried out. Accurate valuation in the stock market will accomplish this. Suppose that company 1's project is highly valuable, and company 2's project has zero or negative value. On the announcement of the investment plans, an efficient market will raise the stock market price of company 1, whereas company 2's price will fall. Since entrepreneurs care very much about the value of the stock, the stock market effectively ensures that the most valuable projects are undertaken. That the stock market functions properly is therefore important.

Most projects are undertaken with a combination of debt and equity financing. Inefficient capital markets can manifest themselves by inducing an inappropriate capital structure (the mix of debt and equity). If equity prices do not reflect the fair value of the expected future cash flows, corporations will finance their projects with more debt than would otherwise be used. Of course, debt is a much different financing tool. With equity, if cash flows are lower than expected, the dividend is omitted or cut. With debt, lower than expected cash flows could cause the firm to miss a payment to the bank (or the bondholders) and may induce bankruptcy. Higher than required debt financing increases the chance of bankruptcy.

The impact inefficient markets have on capital structure is particularly important for developing countries. As mentioned before, suboptimal capital structure is often associated with a greater incidence of loan default, which in turn creates higher frequencies of bankruptcy. The consequences are twofold. First, the greater perceived credit risk will raise the cost of capital, resulting in profitable investment projects being passed over. Second, bankruptcy incurs many indirect costs, which are known as deadweight losses. For example, an average bankruptcy proceeding in the United States lasts three years. The fees that are paid to the lawyers, accountants, consultants, and others involved in the court proceedings are deadweight losses—employing these skilled professionals in valuable investment projects would be better. To eliminate unnecessary occurrences of bankruptcy is important for the

economy as a whole. Inefficient capital markets, by distorting the debt/equity mix of a corporation, increase the chances of unnecessary occurrences of bankruptcy.

Inefficient markets often lead to reduced market liquidity. In liquid capital markets, participants can convert securities they hold into cash, or vice versa, at reasonable costs and speeds. Illiquid markets are typically characterized by low levels of trading and high bid-ask spreads. Market inefficiency will cause market prices to deviate from their true values. Investors will shy away from holding securities if the market does not price them accurately. This reduces market liquidity.

To make things worse, the negative implications of illiquidity are self-perpetuating. Indeed, illiquidity may lead to a liquidity crunch. The term *liquidity crunch* refers to situations in which the number of investors who want to convert their securities into cash exceeds the capacity of the market, and as a result the costs of such conversions are increased. To realign supply and demand, the price of the security must deviate from its fundamental value; in particular, the price will have to decrease until the market clears. Thus, illiquidity induced by market inefficiencies cultivates further inefficiencies that subsequently propagate illiquidity, and so on.[2] Obviously, liquidity crunches also induce otherwise unwarranted price fluctuations (increase volatility).

Because of the higher transaction costs it entails, the lack of liquidity may have substantial social costs. Stock markets, for example, are an important long-term savings vehicle for consumers that lets them share in the benefits of long-term economic growth. Finance theory suggests that investors should hold a basket of securities in order to diversify their risk. In the presence of high transaction costs, they are unlikely to hold the optimal set of securities and, and as a result, will not be able to diversify their risk. For example, investors may choose to hold the subset of securities that are liquid. Even if they hold illiquid securities, they may not rebalance their portfolios as often as is optimal, because of the transaction costs they face.

From the vantage point of firms, the stock market is an important source of capital. If the market is generally illiquid, investors will demand compensation for having to operate in unfavorable trading conditions. This compensation will take the form of higher expected returns, which in turn translate into a higher cost of capital for the firm. Again, the market is in a situation in which profitable investment projects will not be undertaken. The entire economy bears this price.

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[2] Kahan (1992) describes further multiplier effects with respect to liquidity and market inefficiencies as consequences of margin maintenance requirements.

4.3. THE ROLE OF SPECULATIVE ACTIVITY

Greater speculative activity will tend to drive asset prices toward their fundamental value (thereby making markets more efficient) through two main channels. First, having a larger number of speculators may ensure more efficient dissemination of information into asset prices. Through the trading process in a financial market, information is revealed to all investors. For example, the speculator who has discovered favorable information about the firm's prospects will begin purchasing the firm's stock. The rising price reveals information to all investors about the firm's prospects. In fact, numerous "laboratory" economics experiments have found the rate of information dissemination by the trading process to be remarkably high.

The way information is revealed by the trading process is called information aggregation. This aggregation property, although undisputed, is necessarily imperfect. Earlier the point was made that the information revealed in prices must be imperfect—otherwise there would no longer be any incentives for information collection. Nonetheless, if asset prices deviate substantially from their fundamental value, arbitrage opportunities arise. Speculators, who collect information on the asset, detect the price inaccuracy and try to profit from it. They buy undervalued assets and sell the overvalued assets. Their trades provide information to other market participants regarding the true value of the asset. The trading process should quickly bring the price back to its fundamental value. Of course, this will only happen in a competitive market with many speculators. If the market has only a few speculators, they might try to manipulate the market by colluding. Such manipulation is likely to lead to inaccurate prices, which benefit the colluders but hurt everybody else. This is one of the important themes of this report. Speculators alone do not ensure that the market is efficient. A critical mass of speculators must exist in order to reduce any chance of market manipulations.

The policy implication is clear. A regulatory framework that encourages speculation must go hand in hand with a set of regulations that discourage or prohibit collusion among speculators. The potential for market manipulation is particularly acute in small, emerging markets. Most important, increasing the number of speculators greatly reduces the chance of collusion. The domestic market will not likely generate enough speculators to sufficiently reduce the chance of collusion. Hence, foreign speculators must be allowed to play an active role in emerging capital markets.

Second and almost by definition, increased speculative activity improves the liquidity of the market. Many possible policy initiatives could increase liquidity. For example, reform of pension systems can help stimulate a wider participation in the stock market (see Barbosa and Mondino 1994). However, ensuring that regulatory constraints do not increase effective transaction costs is equally important. This will reduce the trading activity of all potential investors—whether pensioner or speculator—leading to an illiquid market.

Emerging-market countries tend to make transactions costs particularly high for foreign investors. Illiquidity coupled with taxes and various capital market restrictions makes foreign market participation very costly. As we will detail later, some of these issues directly and critically apply to Brazil. Making the market accessible to foreign speculators has more dramatic effects on economic welfare than does increasing local speculative activity in the market. This follows from two arguments. First, as mentioned earlier, there may not be a sufficient mass of domestic speculators to provide an impact on market liquidity and efficiency. Second, opening the market to foreign speculators will change the valuation of local companies in a such a way as to reduce the cost of capital. A lower cost of capital implies that more investment projects will be undertaken, which serves to enhance economic growth. Next we will detail this second argument.

The intuition behind the reduction in the cost of capital is described in recent work by Bekaert and Harvey (1994). Many emerging markets are segmented: the investors are local residents, and the local market has no, or limited, foreign participation. Such a market is not integrated in global capital markets. In a segmented market, investors' portfolios are subject to price fluctuations induced by the state of the local economy. Even though the investors might hold many stocks in their portfolios, all of those stocks are linked to the local economy; it makes sense that the investors in the segmented capital market will demand compensation (higher expected rate of return or higher cost of capital) for being exposed to the local market volatility. However, in integrated capital markets, the compensation is different. The investor now is able to hold many securities across many countries. Although local economic events will still affect stocks in any one country, the investor has a diversified portfolio reaching across a number of borders. Bad news in one country is often offset by good news in another. This investor does not demand compensation for local market volatility. The expected rate of return on the local stock is determined not by how it fluctuates with the local economy but by how it interacts with all of the stocks in the investor's worldwide portfolio.

Clearly, compensation differs 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 larger-world investment portfolio. But why would the cost of capital be lower in integrated markets? First, local market volatility is very high in emerging capital markets. For example, the volatility of stock returns in Brazil (calculated in U.S. dollars) is four times higher than the volatility found in the United States. This 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 natural hedge for investors' portfolios. Since the industrial structure of emerging markets is much different than that of 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 results in 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. Hence, integration into world capital markets reduces the cost of capital. The fact that so many developing-market companies try to cross-list and issue new capital in the United States through American depository receipts (ADRs) is indirect evidence that the cost of capital is lower in integrated, liquid stock markets.

A lower cost of capital makes operating within a developing market easier for corporations. Investment projects previously not undertaken may be pursued because of the reduction in the cost of capital. Also, foreign corporations more likely will increase their foreign direct investment. Both of these factors positively contribute to economic growth in the developing market. (These ideas are pursued in greater detail in Bekaert et al. 1995.)

4.4. ALTERNATIVE VIEWS ON THE ROLE OF SPECULATIVE ACTIVITY AND MARKET EFFICIENCY

Some researchers claim that speculation always moves equilibrium asset prices toward their fundamental values. The thesis is that speculators may create speculative bubbles in asset prices. The idea of a bubble is simple. Some speculators (or one) begin purchasing a security, and its price rises. Other investors and speculators join because they think that the one group of traders has special information about the prospects of the firm. If the speculators do not have special information, the price of the security may widely deviate from its fundamental value. As the speculators begin to sell (at a price well above the true value of the security), other investors follow, causing a sharp drop in the price of the security. The patterns in the price through time (steady rise in price from previous levels and a sharp drop, or pop) resemble the "life cycle" of a bubble.

Recent theories of speculative bubbles rely on the existence of "positive feedback" trading. Positive feedback investors are those who buy securities when prices rise and sell when prices fall. Intuitively, it makes sense that some investors follow trends. On the other hand, the theory of positive feedback trading has its drawbacks.

First, the theory implies the presence of bubbles, but the presence of the bubbles has not been confirmed in any empirical test of the data. These tests are complicated by the definition of bubbles (deviation from fundamental value). To identify the deviation, one needs to know the fundamental value. Even if a bubble were identified, its identification would be contingent on the correct specification of the fundamental value. An incorrect estimate of the fundamental value could lead to incorrect identification of bubbles.

Second, the theory is not consistent with any model of rational speculation. Specifically, the speculative bubble theory only works if a subset of investors exists who are irrational positive-feedback speculators. These investors take the losses that constitute the profits of the rational speculators. Whether positive-feedback trading can be rationalized in a market equilibrium

has yet to be demonstrated.[3] That rational human beings would be willing consistently to take losses is hard to imagine.

Nevertheless, the theory has some appeal since positive-feedback trading is common in real-world securities markets. The extent to which such trading affects price accuracy and market efficiency remains an open issue. Common sense suggests that inefficiencies induced by positive-feedback trading necessarily will have limits. If they are too large, they will create an opportunity for other speculators to come in and take advantage of the price inaccuracies.

Although these alternative views of the speculator must be taken seriously, the positive aspects of the role of the speculator greatly outweigh the chance of a negative impact. As the number of speculators grows, investors find hedging easier (the market is deeper). Importantly, the higher volume of trading often associated with speculators entering a market increases the chances that securities' prices accurately reflect all available information. This accuracy, or market efficiency, has a positive impact on the health of the economy as a whole.

5. THE ROLE OF SPECULATORS IN EMERGING MARKETS AND BRAZIL

The main message of this report is that the creation of a sufficient mass of speculators, both domestic and foreign, increases both the liquidity and efficiency of financial markets. Further, the absence of such efficient financial markets will have negative effects on economic welfare. The links between financial markets and economic growth are detailed by Bekaert et al. (1995). The evidence of the effects of speculation on volatility has also been summarized. Although this outcome is ambiguous, additional volatility is not necessarily detrimental to economic welfare. From the discussion an important policy prescription emerged, namely to allow and encourage foreign participation in local markets.

This section surveys the regulatory framework for foreign investors in Brazil and compares it to other countries. The liquidity level and transactions costs in Brazil are also detailed. In addition, the regulatory environment is put in perspective via a comparison with other emerging markets.

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[3] From a theoretical standpoint, positive feedback trading will be rationalizable if a model of asset trading has participating agents that follow positive-feedback trading strategies while continuing to be rational, profit-maximizing individuals.

5.1. REGULATORY FRAMEWORK IN BRAZIL

The regulation of foreign participation in Brazilian capital markets through both direct investment and overall portfolio investment has always been motivated by a fear of capital flight. Brazil has almost always had (at least) a dual exchange rate market: the official market and the black market. The importance of the black market exchange rate began to diminish in 1989, when new regulations were established that aimed to unify the exchange rate markets. Two markets were created: the commercial and the floating markets. The latter was aimed at attracting all legal transactions from the black market. To operate in the commercial market, some requisites would have to be fulfilled. Otherwise, any legal transaction could be performed through the floating market. Therefore, the expectations were that, as liberalization progressed, the premium between the floating rate and the commercial rate would eventually disappear and both markets would be unified at the floating rate.

Several resolutions of the National Monetary Council (CMN—Conselho Monetário Nacional) were enacted to allow foreign portfolio investors to participate in Brazilian markets. Those resolutions (1289, 1832, 1927, and 2034) are surveyed below. Appendix A summarizes the current legislation regarding foreign capital mutual funds in Brazil. The most widely used route for foreign investments in Brazil is the so-called Annex IV. Recently, investment in all but a few fixed-income securities was disallowed under Annex IV. Fixed-income funds were created for foreign investors, with a transactions tax rate higher than that applicable for Annex IV. After a review of the most important regulations, the macroeconomic reasons are presented that made the Brazilian government partially reverse its liberalization course and reimpose some restrictions to foreign investment. This report turns now to possible routes for foreign investment in Brazil. A more detailed examination of the specific regulatory initiatives is contained in Bekaert et al. (1995).

1. *Carteiras de Valores Mobiliários (Securities Portfolios for Institutional Investors):* This is by far the most popular route to investing in Brazilian variable-income instruments, with funds in these portfolios totaling U.S.$20,241 million in August 1994. This type of participation was created under Annex IV of Resolution 1289, enacted on May 31, 1991. The resolution allowed foreign investment funds to participate in the Brazilian market. Previously, foreign investment funds would have had to invest in a mutual fund in Brazil (and U.S. mutual funds generally are not allowed to invest in mutual funds outside the United States). Now only equity investments are allowed; these funds are not permitted to invest in fixed-income securities. Also, this route is restricted to institutional investors.

2. *Fundos de Renda Fixa—Capital Estrangeiro (Fixed-Income Funds for Foreign Investors):* These funds allow foreign investors to participate in the fixed-income market. They were enacted on December 17, 1993, with a number of restrictions. The funds must hold at least 35% in government bonds. In addition, all investments must be registered. The transactions tax (5%) on the fixed-income investment is important. The idea was to

deter foreign investments in bonds as a result of the high local interest rates. The logic of this will be investigated below. The funds totaled U.S.$2,187 million in August 1994.

3. *Depository receipts (DRs):* DRs have not yet been widely used, but their importance is likely to grow in the future as a potential source of cheaper capital for corporations (see Urias 1994 and Section 5.2.2 of this report).

4. *Sociedades de Investimento—Capital Estrangeiro (Investment Companies—Foreign Capital):* These companies, which can be institutional or foreign investors, were created on March 20, 1987. However, the much more administratively demanding and time-consuming procedures result in a very limited participation (U.S.$105 million in August 1994).

5. *Fundos de Investimento—Capital Estrangeiro (Investment Funds—Foreign Capital):* Similar to the regulation described in item 4, these are open to individuals and institutions. However, unfavorable tax treatment results in a relatively limited participation (U.S.$648 million in August 1994).

6. *Contratos de Fechamento de Câmbio e Carta Circular nº 5 (Exchange Closing Contract and Central Bank Circular Letter #5—Foreign Investors' Accounts):* This method of investment by foreigners in the Brazilian market entails the most punitive tax rates of all of the investment routes.

7. *Other:* Resolution 1289 offers some other investment possibilities in its Annex III. Participation has been limited and amounted to U.S.$405 million in August 1994.

These resolutions, first designed to allow different forms of foreign investment in the Brazilian markets, later were also aimed at restricting some forms of investment. This change occurred because the uncertain future health of the Brazilian economy had prompted the Brazilian central bank to raise domestic interest rates to a very high level by the end of 1991 to avoid capital flight. However, the high rates attracted a huge inflow of capital and started to pose a fiscal problem. That is, the new funds were being used to purchase high-yield government debt, and the resulting foreign exchange reserves were being invested at low international interest rates. The spread in the rates caused the fiscal problem.

These are some of the obstacles for investing in Brazilian bonds. Also because the cash flows from bonds could be mimicked by ingenious strategies with derivative securities, regulatory barriers have been imposed on certain derivatives transactions.

In addition to the regulatory barriers to foreign investment, numerous tax-induced barriers to investment have been raised. These barriers, detailed in Bekaert et al. (1995), include withholding taxes, taxes on real income, transactions taxes on currency conversion, and a transactions tax on financial transactions (IPMF). These taxes, as does the regulatory environment, serve to discourage foreign investment. Bekaert et al. also provide a cross-country analysis of investment barriers. Among the 20 emerging markets they study, Brazil currently ranks 10th in terms of openness to foreign investors.

5.2. LIQUIDITY AND THE COST OF TRADING IN BRAZIL

Current market capitalization of the main Brazilian Stock Exchange (BOVESPA) hovers around U.S.$150 billion (with more than 500 stocks being traded). Trade is extremely concentrated in a few blue chips; only nine firms (10 stocks) represent 86% of the market turnover. Blue chips have small bid-ask spreads (0.2%), whereas other stocks have much higher and very variable bid-ask spreads. So, apart from those selected stocks, the Brazilian equity market lacks liquidity. Public offerings are also quite small, as detailed in Table 1.

Table 2 presents the world market capitalizations of the top 40 countries, based on December 1993 data. Brazil ranks 6th behind Mexico, South Korea, India, Taiwan, and Malaysia among the emerging markets marked by asterisks and 21st overall. The market capitalization to gross domestic product (GDP) ratio is only 21.6%. This is low compared to the GDP of developed countries, indicating Brazil has room for significant growth in the size of its equity market.

A measure of liquidity is the ratio of value traded to market capitalization (turnover ratio). Table 3 examines this ratio across 66 different countries. Brazil places 14th among the emerging markets and 34th overall with a turnover of only 32.6%. Clearly, liquidity in the Brazilian market is a problem that must be addressed.

Table 4 details the participation of foreign investors in the Brazilian stock market. In July 1994, only 16% of the stock market capitalization was represented by foreign investors. Given that there needs to be a sufficient mass of foreign speculators participating in the market, the assumption that a 16% share is not enough is a safe one.

Long experience with high inflation has given rise to sophisticated new financial instruments in Brazil. Futures trading used to be confined mainly to agricultural commodities markets (especially coffee and cattle). In 1960, 92% of the contracts referred to grains and cattle; by 1983, financial contracts had grown to 38% of traded contracts.

Started in 1986, the BM&F (futures and commodities exchange), now is ranked as the sixth largest futures exchange in the world (in terms of traded contracts). In the first quarter of 1992, the BM&F traded an average of 140,000 contracts each day, of which 50% referred to futures contracts of interfinancial deposits—an instrument to hedge against interest rate changes. Table 5 details the volume of derivative contracts traded on the BM&F per year. Total trading volume has grown by a factor of 25 from 1986 through 1993.

The derivatives markets are well-developed liquid markets. However, with rapid growth, a number of strategic issues arise. That the regulatory apparatus adapts to the new importance of derivative markets is critical. Responsibility for regulating derivative markets is assigned to the CVM. An important issue is information disclosure. Derivatives can be very risky investments, and an important role for regulators is to ensure that the sellers of derivatives

make the risks clear to the customers. Currently, no standards have been set for how financial institutions should inform their clients about the risk of specific derivative instruments.

5.3 THE CONCENTRATION OF TRADING IN BRAZIL

5.3.1. MARKET MANIPULATIONS

Some episodes of market manipulation have marked the recent history of the Brazilian stock markets. Two cases are famous: the Audi (in the 1970s) and the Nahas (in the late 1980s). Both episodes were based on a similar Ponzi scheme; investors obtained credit to buy selected stocks that increased in value because of the buying pressure. These stocks were then used as collateral for further borrowing that financed further stock purchases. Both schemes collapsed when creditors stepped back, causing a massive fall in stock prices. Such episodes are responsible for the mistrust that the typical Brazilian citizen has for the stock market.

The most famous scandal in the Brazilian stock markets occurred in 1989, when Naji Nahas built a Ponzi scheme that crashed when a check of his bounced, affecting several financial institutions. The Rio de Janeiro stock exchange covered the check and, because of that, almost went bankrupt; its clearinghouse had barely enough funds to cover the check. On July 12, 1989, the day following this event, all Brazilian stock exchanges closed their doors, and trade did not resume until the next day. (The circuit breakers [halts in trading] are activated when the index falls by 10% or more.) Options markets remained closed for a whole year; more than 1,000 workers of Rio de Janeiro's financial sector lost their jobs, and several financial institutions involved in the Nahas scheme closed permanently. The Rio de Janeiro stock exchange has never quite recovered from this event.

In his Ponzi scheme, Nahas bought stocks that were to be paid on the fifth day after the transaction (the norm at the time). He then sold the stocks and asked the financial institutions to pay him on the spot (for a discount). By acting in this way, he was able to get credit to buy more stocks while the stock market was rising, and the stock market went up for a while because he managed to buy astronomical amounts of stock with this scheme. (He also made a lot of money in the derivatives market with call options.) Of course, when the stock market turned around, Nahas found himself short of funds to pay for his purchase of stocks, and the whole scheme collapsed.

The Brazilian Securities and Exchange Commission was to start judging the Nahas case by the end of November 1994, more than five years later.[4] This delay illustrates how the current procedures are ineffective to deal in a timely manner with criminal behavior in the Brazilian markets. One of the most important changes needed in the Brazilian financial markets is to

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[4] Gazeta Mercantile, Monday, 11/21/1994, p. 17, Julgamento do caso Naji Nahas deve começar em 30 de novembro, diz CVM.

better staff the CVM, so that it can deal quickly and effectively with the inevitable problems that arise in the stock and derivative markets. The current president, Tosta de Sá, and his predecessors have emphasized over and over the need to strengthen this federal agency so that the regulations can be enforced.

5.3.2 CONCENTRATION OF TRADING

Trading is very concentrated in the Brazilian capital markets. As mentioned above, 86% of the turnover in 1993 was accounted for by nine firms. Significant concentration also occurs in the sources of foreign investment. Table 6 analyzes the portfolio investment of foreigners by the managing institution and the type of entry (Annex II, Annex IV, fixed-income funds, and other). The data refer to September 1994. The managing institutions are ordered by the size of total portfolio investment in Brazil. The percentage shares that appear in the first four columns of the table represent each institution's distribution across the types of entry. The fifth column represents the total amount of foreign funds managed by each institution, and the final column displays each institution's share in the total amount of foreign funds invested.

As Table 6 shows, foreign investment is very concentrated. Almost 50% of the foreign funds are concentrated in only three financial institutions: in the subsidiaries of Chase Manhattan and Citibank and in Garantia, the largest Brazilian investment bank.

Table 7 displays the relative volumes traded in the largest Brazilian stock exchange (BOVESPA), by financial institutions. Current and previous rankings are shown. Although trading is less concentrated in general than is reflected in the analysis of foreign portfolio investment, Garantia places first in both tables (holding 6.3% of trading). The top 10 firms account for 32% of the trading volume.

Table 8 reports a cross-country analysis of concentration of trading. This analysis is conducted using the International Finance Corporation's index for Brazil. The IFCI covered 61.2% of the total value of Brazilian stocks in 1993. In terms of individual firms, 36.3% of the index capitalization is accounted for by 10 firms. This degree of concentration ranks 8th among the 20 IFC emerging markets. In addition, 43.8% of trading was concentrated in the top 10 firms in the index. This concentration places Brazil 11th in terms of the other emerging markets.

Table 8 also examines some additional measures of concentration, which are analyzed in Harvey (1994a) and Divecha, Drach, and Stefek (1992). The asset concentration factor provides a weight between 0 and 1 that reflects the relative size of the firms within the index. A factor of 0 means that all firms have equal size, and a factor of 1 means that there is one dominant firm. Brazil's rating is 0.17, which puts Brazil in a tie for seventh place in terms of asset concentration. The industry concentration measure puts firms in 12 different industry groups. A factor of 0 means that firms are equally distributed among industries. A factor of 1 means that all firms are drawn from a single industry. Brazil's rating of 0.38 is eighth best among the emerging markets. Finally, the average correlation among the individual stocks is

calculated. For Brazil, this correlation is 70%, which is quite high compared with many other countries. However, now that Brazilian investors can invest in other countries under the MERCOSUL Treaty of November 1992, the Brazil correlation should begin to change.

5.4 POLITICAL RISK AND FOREIGN SENTIMENT IN BRAZIL

5.4.1. POLITICAL HISTORY AND RISK

Figure 1 illustrates that the stock market in Brazil is very volatile. (Table 8 shows that Brazil is the third most volatile emerging market over the 1988–1993 period, following Argentina and Poland.) The annualized standard deviation is 90%. This means if an investor is considering purchasing a Brazilian portfolio and expects the return to be 20% next year, then there is a 95% chance next year's return will be in the -100% to +200% range—quite large a range. In other words, the market is so volatile that having any confidence in the outcome is next to impossible.

Figure 2 graphs the inflation in Brazil, which is a good proxy for the major idiosyncratic risk of the Brazilian economy. The arrows mark the stabilization attempts; all except the last one involved some sort of price and wage controls.

In 1971, when the first stock market peak occurred, the government decided to push the demand for stocks by giving tax breaks for those who invested in the stock market. Several funds (Fundos 157) were then created. The supply of stocks, however, remained rather fixed, causing the boom portrayed in Figure 1. The subsequent crash lasted 15 years.

In March 1985, a nonmilitary president took office in the midst of a wave of optimism that favorably affected the stock market. As inflation rose, the optimism faded until the advent of the Cruzado Plan (February 28, 1986), the first stabilization plan.

The 1986 boom was clearly caused by the Cruzado Plan, which froze wages and prices. The plan was very successful in its first semester, causing the stock market to boom. However, the market collapsed as inflation resumed, and the plan proved to be a failure.

In 1989 the market boomed again, pushed by the another stabilization plan, the Summer Plan of January 15, 1989, which also froze wages and prices. It was successful only for a very short period. In addition, the above-mentioned Nahas case affected the market in June and July of 1989.

On March 15, 1990, the new Collor administration attempted a new stabilization plan. This time, besides freezing the wage and prices, the government froze 80% of all financial assets. As an immediate consequence, the stock market fell abruptly.

Since May 1991, when the foreign investment regulations were liberalized, the market has been trending upward with high volatility. A major downturn occurred in May 1992. Until that time, inflation had been falling (see Figure 2). In May, the president's brother accused him of committing a series of frauds and of being involved in a major embezzling scheme. These accusations ended up in the impeachment of the president a few months later. The stock index reacted with another marked fall.

5.4.2. ANTIFOREIGNER FEELINGS

The once-prevalent antiforeigner feelings in Brazil have diminished substantially. In the last presidential election, only two candidates spoke against greater participation of foreign investment. One of them, Leonel Brizola, is an old politician whose career started in the 1950s. The following paragraph appeared in one of his campaign pamphlets:

> In the name of a false market economy, of the so-called neoliberalism (the new face of the conservatism), of destatization with a shameful favoritism of national and foreign private groups, [they] broke or threatened to break the last respect for national sovereignty, which not even the dictatorship dared to violate. They already gave away the Usiminas, the CSN [state-owned steel mills]. . . . Now they threaten to break the Petrobrás [the state-owned monopolistic oil company], the Embratel, the Telebrás [the state-owned monopolistic telecommunication companies] and other key areas for an economically independent life for our country.

The fact that Mr. Brizola, despite his very prominent career, garnered less than 5% of the total vote shows that those ideas are no longer very popular among the Brazilian electorate. The winning candidate wants more foreign investment to enhance economic growth in Brazil.

5.5. EFFECT OF COUNTRY FUNDS AND AMERICAN DEPOSITORY RECEIPTS

Despite the persistence of various restrictions on foreign investors, several markets have been open to some form of foreign investment for a surprisingly long time. Two examples of such indirect participation of foreign speculators in local stock markets are country funds and American depository receipts. The theoretical and empirical evidence on the effects of these external financing vehicles is reviewed here.

5.5.1. COUNTRY FUNDS

A closed-end country fund is an investment company that invests in a portfolio of assets in a foreign country (e.g., Brazil) and issues a fixed number of shares domestically (e.g., in the United States). Each fund provides two distinct market-determined prices: the country fund's share price quoted on the market where it trades and its net asset value determined by the prices of the underlying shares traded on the foreign market. Closed-end mutual funds were

the original vehicles for foreign investment in emerging financial markets. For example, in the late 80s, the closed-end Brazil Fund was the only way through which U.S. investors could invest in the Brazilian market.

Diwan, Errunza, and Senbet (1993) examine theoretically the effects that the introduction of country funds has on the pricing of the underlying assets in the originating emerging markets. They show that country funds drive up the prices of local companies and reduce the cost of capital. The country fund essentially renders the local market partially integrated with global markets. This result holds even though the typical size of a country fund is very small relative to the total market capitalization of the emerging market. The price increase will be larger for small emerging markets with limited risk-sharing opportunities. Similarly, the effect will be more pronounced when the country fund invests in local companies that offer unique exposure to foreign investors, rather than in blue-chip companies.

Tandon (1994) presents empirical evidence that supports this claim. He examines the price effects of a broad sample of recent country fund launchings. The local stock market increases in the month that the closed-end fund is launched and in the few months preceding its launch. Mean returns decrease in the months following the introduction. This is consistent with the Diwan et al. theory. As foreign money enters the local capital market, the country fund drives up prices and reduces the cost of capital. Tandon's finding that the volatility of returns typically decreases after the country fund is introduced, suggests that the presence of foreign speculators in the local market does not lead to an increase in volatility. Tandon attributes this effect to the increased monitoring and advanced financial research by fund managers and analysts. Both activities further the efficiency of the local market.

5.5.2. AMERICAN DEPOSITORY RECEIPTS

American depository receipts are rights to foreign shares that trade in dollars on a U.S. exchange or over the counter. ADRs can be exchanged at any time for the underlying security in the local market. The underlying shares represented by the ADRs are held in custody by the depository bank, which converts dividends and other payments into dollars for distribution to holders of the "receipts" representing the underlying shares. The depository bank may also distribute company reports, and it exercises corporate voting rights on behalf of ADR holders in the foreign market.[5]

ADRs are popular with investors seeking exposure to foreign markets, in part because they trade in dollars and overcome many of the investment restrictions, transaction costs, and informational problems associated with investing in foreign securities. Since ADRs are treated as U.S. securities in most legal situations, they enable mutual funds, pension funds, and other U.S. institutions to hold securities that are fungible with foreign shares. ADRs also eliminate the global custodial safekeeping charges involved with direct investments in foreign

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[5] More details are provided in Urias (1994).

shares, and the depository bank converts payments to shareholders at favorable rates (although it charges some fee for its services).

ADR-issuing companies cite several reasons for the recent success enjoyed by ADR programs. ADRs increase the base of shareholders, thereby increasing the dissemination of information about the company. ADRs enhance the local market price and the liquidity of the shares through their being traded on the liquid secondary market in the United States (foreign investors may be more predisposed to purchase the equity in the liquid ADR market). Finally, they allow companies to raise capital "cheaply."

Urias (1994) views an ADR as an investment liberalization and investigates, both theoretically and empirically, the effects on local stock market prices and on the cost of capital. A cross-listed stock, one listed on both the local stock exchange and in the United States through an ADR issue, is priced by investors from both the local and the U.S. markets. However, local stocks that are correlated with a newly cross-listed security will also respond, although they are not themselves cross-listed. This is called a spillover effect.

Although the model is complex, Urias ventures a number of predictions. Liberalization and spillover effects are more pronounced the more the two markets differ in terms of rewards to risk (prices of risk), the lower the absolute correlation between the two, and the smaller the market capitalization of the emerging market. Liberalization and spillover effects are generally most pronounced following the first cross-listing. The larger the capitalization of the cross-listed stock, the larger is the spillover effect. In most cases, the higher the correlation between a stock trading exclusively in the emerging market and a newly liberalized stock, the larger the spillover effect.

Urias reports preliminary empirical results for Chile and Venezuela. In most cases, significant positive price effects are seen in the local market before and/or after the ADR issue (although some exceptions do occur). These price increases imply lower costs of capital. The empirical work is hampered by the difficulty in controlling for other events happening around the ADR issues (e.g., political crises in Venezuela) and for the large volatility in individual stock returns.

Bekaert (1995) provides some indirect evidence on the importance of country funds and ADRs in effectively integrating emerging equity markets into global capital markets and hence reducing the cost of capital. Table 9 documents the use of country funds and ADRs for 19 emerging markets. An index of openness based on the number of country funds and ADRs for each country is computed. This measure correlates very highly with a number of measures of market integration.[6] In other words, countries with a relatively large number of ADRs

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[6] Bekaert's main measure of market integration is based on the correlation of expected returns in a particular country with expected returns in the world market. A high correlation indicates that the local market is relatively well integrated into global capital markets.

and/or country funds tend to be more integrated into global capital markets and hence to have lower costs of capital. The openness measure is not significantly correlated with the volatility of the various stock markets, which indicates that increased foreign investor participation has little effect on the volatility of the underlying market—as is feared by so many policymakers in developing countries.

6. CONCLUSIONS AND POLICY PROPOSALS

Significant interventions are needed to allow the securities markets to play a more prominent role in the economy of Brazil. Bekaert et al. (1995) make the case that an efficiently performing securities market is associated with enhanced economic growth. Speculators, in general, can add to the liquidity and efficiency of the market.

Having a critical mass of speculators is crucial, and Brazil cannot rely on its own mass of speculators. Indeed, having too few speculators may actually undermine the efficiency of the market. This is perhaps evidenced by the episodes involving Naji Nahas in 1989 and the earlier case of Audi in the 1970s. In other words, allowing foreign speculators to participate in the market eliminates the chance that one investor could successfully manipulate the market.

Eight proposals should be considered:

1. Allow retail foreign investors to invest under Annex IV rules. The current regulations discriminate by taxing institutional and retail (individual) investors differently. As argued throughout this paper, additional traders, in the form of foreign speculators, increase the liquidity of the market and make fair prices more likely.

2. Enhance the staff and the training of the CVM so that it has the resources and capabilities to intervene quickly in the market to enforce prudent regulation of market manipulations. The strategic focus of the CVM should be shifted to creating an environment that encourages trading, rather than discouraging it through regulation.

3. Allow more firms to offer equity on the local markets. In particular, a number of public firms have monopolistic positions. For example, Petrobrás, Telebrás, and others have stocks trading in the market. However, they are monopolies; in addition, the government owns at least 51% of the outstanding equity. With competition and more of the equity of these utilities offered to the market, this would attract significant foreign interest and bring in new equity capital and liquidity.

4. Liberalize the exchange rate market to allow foreigners to operate freely in Brazilian financial markets and Brazilians to invest freely abroad. Brazilian banks should be able to offer Eurodollar accounts.

5. Eliminate the transactions taxes. These taxes reduce trading and hence make the markets less liquid. The lack of liquidity diminishes the chances that the markets will efficiently price securities. The taxes also spill over in raising the cost of capital. A higher cost of capital discourages both domestic investment and foreign direct investment and leads to lower economic growth.

6. Eliminate (or reduce and standardize) capital gains and variable income taxes across all investment classes. This would lead to greater foreign participation in the capital markets.

7. Institute a floating-rate market for bonds. At the current stage of stabilization, both lenders and buyers are fearful of long-term commitments in the bond market, and indexation is forbidden for contracts of less than one year. Floating rates could be a useful innovation. ANBID (Investment Bank Association) already computes daily average rates for existing maturities. These rates could be used as the basis of for the floating-rate bonds. Such an innovation should enhance the liquidity of the bond market.

8. Given the explosive growth in the derivatives market, the regulatory mechanism must adjust to accommodate the new conditions. Currently, the regulatory jurisdiction is vague (shared by both the CVM and the central bank). Regulation of derivatives should be centralized under one organization. Since some derivative instruments can carry a high degree of risk, regulatory action should focus on the communication of the inherent risks of derivative transactions from investment banker to customer.

APPENDIX A

EVOLUTION OF BRAZILIAN LEGISLATION REGARDING FOREIGN CAPITAL MUTUAL FUNDS

One must be careful in interpreting the effective dates of legislation, because laws may have been preceded by provisional measures. Provisional measures become effective when signed by the president, although they become laws only when approved by the legislature. Some legislation currently in effect replaced older legislation. The main changes in the legislation were the following:

1. *Resolution 1832* (CMN, May 31, 1991): Created the Annex IV of Resolution 1289. This allowed a much greater influx of foreign capital.

2. *Resolution 2013* (CMN, August 19, 1993; replaced by Resolution 2028 on November 25, 1993): Forbade fixed-income investments for portfolios regulated by the Annex IV. Investments in fixed-income securities and in commodities funds (which are basically fixed-income securities) fell precipitously from 25% in August 1993 to 0% in September 1993.

3a. *Resolution 2028* (CMN, November 25, 1993; replaced by Resolution 2034 on December 17, 1993, which also forbade transactions in the derivative markets with predetermined

results, such as "box" operations): Created the fixed-income funds and forbade new investments in debentures.

3b. *Decree 995* (November 25, 1993; replaced by Edict nº 111 on March 2, 1994): Created the IOF (financial transaction tax) of 3% on foreign loans and 5% on fixed-income investments.

4. *Edict nº 534* (October 19, 1994): Raised the IOF to 1% in variable-income securities (stocks were not taxed before), 5% on foreign loans, and 9% on fixed-income investments.

TABLE 1

PUBLIC OFFERINGS OF STOCKS AND DEBENTURES IN BRAZIL, 1986 THROUGH 1993 (U.S.$ MILLIONS)

Year	Equity	Debenture	Total
1986	$ 1,188	$ 133	$ 1,321
1987	331	22	353
1988	301	3,198	3,499
1989	678	1,261	1,939
1990	616	1,796	2,412
1991	815	1,064	1,879
1992	943	338	1,281
1993	987	3,600	4,587

TABLE 2

WORLD MARKET COUNTRIES RANKED BY MARKET CAPITALIZATION, VALUE TRADED, AND NUMBER OF LISTED DOMESTIC COMPANIES

(YEAR-END 1993 LEVELS; U.S.$ MILLIONS)

Rank	Market	Total Market Cap	Rank	Market	Total Value Traded	Rank	Market	Number of Listed Domestic companies
1	United States	$5,223,768	1	United States	$3,507,223	1	United States	7,607
2	Japan	2,999,756	2	Japan	954,341	2	India*	6,800
3	United Kingdom	1,151,646	3	United Kingdom	423,526	3	Japan	2,155
4	Germany	463,476	4	Taiwan*	346,487	4	United Kingdom	1,646
5	France	456,111	5	Germany	302,985	5	Canada	1,124
6	Hong Kong	385,247	6	South Korea*	211,710	6	Australia	1,070
7	Canada	326,524	7	France	174,283	7	South Korea*	693
8	Switzerland	271,713	8	Switzerland	167,880	8	Pakistan*	653
9	Malaysia*	220,328	9	Malaysia*	153,661	9	South Africa	647
10	South Africa	217,110	10	Canada	142,222	10	Israel	558
11	Australia	203,964	11	Hong Kong	131,550	11	Brazil*	550
12	Mexico*	200,671	12	Thailand*	86,934	12	France	472
13	Taiwan*	195,198	13	Singapore	81,623	13	Hong Kong	450
14	Netherlands	181,876	14	Australia	67,711	14	Germany	426
15	South Korea*	139,420	15	Netherlands	67,185	15	Malaysia*	410
16	Italy	136,153	16	Italy	65,770	16	Spain	376
17	Singapore	132,742	17	Mexico*	62,454	17	Thailand*	347
18	Thailand*	130,510	18	Brazil*	57,409	18	Taiwan*	285
19	Spain	119,264	19	Spain	47,156	19	Chile*	263
20	Sweden	107,376	20	Sweden	43,593	20	Denmark	257
21	Brazil*	99,430	21	China*	43,395	21	Netherlands	245
22	India	97,976	22	Israel	30,327	22	Peru*	233
23	Belgium	78,067	23	Turkey*	23,242	23	Switzerland	215
24	Israel	50,773	24	India*	21,879	24	Italy	210
25	Chile*	44,622	25	Denmark	20,989	25	Sri Lanka*	200
26	Argentina*	43,967	26	South Africa	13,049	26	Mexico*	190
27	Denmark	41,785	27	Belgium	11,199	27	China*	183
28	China*	40,567	28	Argentina*	10,339	28	Portugal*	183
29	Philippines*	40,327	29	Indonesia*	9,158	29	Argentina*	180
30	Turkey*	37,496	30	Norway	8,751	30	Philippines*	180
31	Indonesia*	32,953	31	Finland	8,112	31	Singapore	178

32	Austria	28,437	32	New Zealand	6,785	32	Indonesia*	174
33	Norway	27,380	33	Philippines*	6,785	33	Nigeria*	174
34	New Zealand	25,597	34	Austria	6,561	34	Belgium	165
35	Finland	23,562	35	Portugal*	4,835	35	Bangladesh	153
36	Luxembourg	19,337	36	Chile*	2,797	36	Turkey*	152
37	Portugal*	12,417	37	Greece*	2,713	37	Greece*	143
38	Greece*	12,319	38	Kuwait	2,612	38	Ecuador	142
39	Pakistan*	11,602	39	Poland*	2,170	39	New Zealand	136
40	Kuwait	10,103	40	Venezuela	1,874	40	Iran	124

Notes: 1. Total market cap = total market values of listed domestic companies; total value traded = total value traded of listed domestic company shares; excludes listed investment funds where possible.

2. South Africa has been reclassified as an emerging market based on gross domestic product (GDP) per capita criteria used by IFC in defining emerging markets.

* Market included in the IFC global price indexes in 1993.

TABLE 3

WORLD STOCK MARKET TURNOVER, 1993
(RANKED BY 1993 TURNOVER RATIO)

Rank	Market	Turnover Ratio	Rank	Market	Turnover Ratio
1	Taiwan*	235.5 %	34	Brazil*	32.6 %
2	South Korea*	172.2	35	India*	27.5
3	China*	164.0	36	Austria	25.8
4	Poland*	129.1	37	Philippines*	25.1
5	Malaysia*	94.3	38	Greece*	24.4
6	Thailand*	91.5	39	Venezuela*	23.7
7	Singapore	89.8	40	Morocco	21.7
8	Turkey*	80.9	41	Sri Lanka*	19.6
9	Germany	73.6	42	Pakistan*	18.7
10	Israel	73.5	43	Iran	18.4
11	Switzerland	72.3	44	Belgium	15.7
12	United States	72.2	45	Hungary*	14.2
13	Denmark	55.9	46	Jamaica	14.1
14	Kuwait	52.3	47	Trinidad and Tobago	12.0
15	Canada	49.5	48	Colombia*	9.8
16	Italy	49.1	49	Chile*	7.4
17	Sweden	47.4	50	South Africa	7.4
18	Hong Kong	47.2	51	Botswana	7.2
19	Finland	46.3	52	Luxembourg	7.0
21	Peru*	43.6	53	Mauritius	6.5
20	Portugal*	44.0	54	Zimbabwe*	5.2
22	France	42.7	55	Tunisia	5.2
23	Spain	42.4	56	Ecuador	4.7
24	Netherlands	41.8	57	Uruguay	4.7
25	Indonesia*	40.6	58	Ghana	4.5
26	United Kingdom	40.6	59	Bangladesh	3.8
27	Australia	40.0	60	Cyprus	2.7
28	Norway	37.7	61	Costa Rica	2.4
29	Mexico*	36.8	62	Nigeria*	1.5
30	Japan	33.4	63	Barbados	1.5
31	New Zealand	33.2	64	Ivory Coast	1.5
32	Jordan *	33.2	65	Kenya	1.4
33	Argentina*	33.0	66	Honduras	0.0

Note: Data for emerging markets not part of IFC global index market coverage are local index percentage changes adjusted to U.S. dollars.

* Markets included in the IFC price indexes in 1993.

TABLE 4

PARTICIPATION IN THE BRAZILIAN STOCK MARKET BY TYPE OF INVESTOR, JULY 1994

Type of Investor	% Total Capitalization
Individual investor	11.1%
Institutional investor	20.3
Foreign investor	16.0
Public and private enterprises	10.9
Financial institutions	41.8

TABLE 5

DERIVATIVES TRADING VOLUME (U.S.$ THOUSANDS)

A. BM&F, 1986–1993

Market	1986	1987	1988	1989	1990	1991	1992	1993
Gold market								
Gold spot (250g)	$ 30,897	$ 254,090	$ 710,888	$ 3,276,299	$ 5,426,310	$ 6,887,054	$ 9,592,931	$ 4,556,854
Call options	96,254	177,709	1,327,896	6,426,892	4,689,100	5,359,802	5,786,085	5,748,091
Put options		119	75,878	516,418	1,311,759	2,095,327	2,146,494	2,140,881
Futures/ forward	64,771	128,109	42,316	71,574	21,832	4,556	1,124	3,620
Option exercise	11,115	5,190	76,279	330,212	373,398	1,034,842	802,402	1,184,570
Electronic (250g)								2,274,933
Total	203,037	565,217	2,233,257	10,621,395	11,822,399	15,381,581	18,329,033	15,908,949
Stock index market	1,550,857	5,339,126	8,931,080	4,219,914	2,540,346	7,838,256	7,287,054	8,997,523
Interest rate market	173,802	160,322	470,723	193,422	711,097	2,607,741	14,072,749	17,024,120

Foreign currency market								
U.S. dollar futures	3,026	1,191	25,202	862,028	608,203	969,788	4,501,952	6,214,390
Call options		1,701	154	9,481	2,654	69,112	348,380	235,941
Put options			487	15,844	4,664	71,080	26,061	13,190
Options exercise			10			42,380	38,176	50,190
Total	3,026	2,892	25,853	887,353	615,551	1,152,360	4,914,569	6,513,711
Agricultural market	3,017	20,425	1,391	7,459	149	15,376	62,796	1,273,401
Grand total	$1,933,739	$6,087,982	$11,662,304	$15,929,543	$15,689,542	$26,995,314	$44,666,201	$49,717,704

Source: Data from BM&F Annual Report 1993.

B. BOVESPA, 1994

Month/Year	Forward Contracts				Options Contracts		Subscription Warrant	Souza Barros Index
	30 Days	60 Days	90 Days	Expressed in Points	Buy	Sell		
Jan. 94	$ 24				$ 736,441.0	$ 6,940.6	$ 215.8	$ 428.6
Feb. 94					1,301,423.1	37,489.1	1,095.9	203.6
Mar. 94					888,741.5	42,538.7	37.8	115.4
Apr. 94					474,469.6	345,707.1	46.9	57.2
May 94					431,299.6	345,686.7	32.7	44.3
Jun. 94					581,342.1	501,047.6	17.0	95.3
Jul. 94	1,582				467,394.1	32,386.5	65.3	100.7
Aug. 94	20,942				1,926,805.3	400,386.8	29.1	1,561.2
Sep. 94	33,841				2,605,129.4	254,540.3	23.5	882.2
Oct. 94	31,102		$ 4	69	1,238,446.3	755,928.6		197.0
Nov. 94	31,053	$ 44			978,706.1	290,446.8	94.9	110.8
Dec. 94	54,645	5,590			1,385,033.7	954,334.7	319.3	274.6
TOTAL	$173,189	$5,634	$4	$69	$13,015,202.0	$3,967,434.0	$1,978.2	$4,070.7

TABLE 6

FOREIGN INVESTMENT FUNDS AND PORTFOLIOS IN SEPTEMBER 1994, BY MANAGING INSTITUTION (PERCENTAGE SHARE AND VOLUME IN U.S.$ MILLIONS)

Managing Institution	Share in Each Institution				Total Volume	Share of Total Foreign Funds Invested
	Annex II	Fixed-Income Fund	Annex IV	Other*		
CHASE MANHATTAN	0.02%		99.83%	0.14%[a]	$ 5,106,128.35	20.353%
CITIBANK	0.49	0.45%	99.06		3,785,593.73	15.089
GARANTIA		6.10	93.90	[b]	3,562,286.57	14.199
BOSTON		0.22	99.78	[c]	2,009,719.11	8.011
PACTUAL	9.72		90.28		1,231,650.37	4.909
UNIBANCO	21.25	2.27	75.41	1.07[d]	722,203.65	2.879
GERAL DO COMÉRCIO	5.19	27.81	67.00		690,210.98	2.751
ITAÚ S.A.		33.72	66.28		688,435.12	2.744
ICATU	0.35	50.33	49.32		607,474.25	2.421
BOZANO SIMONSEN	53.40		31.54	15.06[a,d]	602,107.69	2.400
SAFRA		68.29	31.71		594,183.35	2.368

MATRIX			100.00		404,820.90	1.614
BFB			100.00		397,120.11	1.583
LIBERAL S.A.	0.90		6.74	92.36[b]	359,971.54	1.435
CCF		22.24	53.60	24.16	312,448.90	1.245
NORCHEM		8.62	83.57	7.81[d]	303,286.07	1.209
ECONÔMICO			100.00		300,041.04	1.196
BBA		100.00			278,560.61	1.110
GUILDER		100.00			222,795.40	0.888
CREFISUL	0.01	96.73	3.26		211,430.69	0.843
HKB			100.00		208,744.97	0.832
BRADESCO		32.21	67.79		206,498.66	0.823
BB DTVM		5.74	94.26		197,033.78	0.785
BOAVISTA		14.13	85.87		190,696.37	0.760
JP MORGAN		100.00			189,960.52	0.757
TENDÊNCIA CCTVM			100.00		176,662.06	0.704
NACIONAL		39.62	60.38		155,152.76	0.618
ITAMARATI		14.73	85.27		139,157.69	0.555

LLOYDS		31.84	65.40	2.77	136,777.63	0.545
FATOR S.A.			99.83	0.17[a]	119,650.32	0.477
HEDGING-GRIFFO	4.97		95.03		115,492.87	0.460
PRIMUS			100.00		109,602.30	0.437
BAHIA		77.23	22.77		106,204.22	0.423
SUL AMÉRICA		28.12	71.88		101,831.78	0.406
SOLIDUS			100.00		82,827.32	0.330
EXCEL DTVM LTDA			100.00		81,755.64	0.326
MULTIPLIC		61.43	38.57		64,239.53	0.256
SRL		34.02	65.98		53,940.31	0.215
CREDIBANCO		39.25	60.75		49,083.30	0.196
MARKA			100.00		33,787.98	0.135
PROSPER			100.00		23,685.09	0.094
FINAMBRÁS			100.00		20,881.14	0.083
STOCK			100.00		20,491.73	0.082
FONTE			100.00		17,571.52	0.070
GRAPHUS			100.00		16,953.10	0.068
SANTANDER			100.00		15,442.17	0.062
FIBRA		100.00			14,471.84	0.058

CAPITALTEC		100.00		13,873.97	0.055
SLW CVC	100.00			9,392.62	0.037
PRIME			100.00	5,774.07	0.023
CELTEC			100.00	3,099.67	0.012
VEGA			100.00	3,097.57	0.012
VÉRTICE	100.00			2,891.98	0.012
DEUTSCHE BANK			100.00	2,730.16	0.011
REAL			100.00	2,389.60	0.010
PATRIMÔNIO	100.00			2,260.15	0.009
EXPRINTER	100.00			1,968.67	0.008
BAMERINDUS		100.00		1,359.40	0.005
ATIVA CTV	100.00			1,183.99	0.005
SUDAMERIS	83.82	16.18		752.06	0.003
SANTOS			100.00	616.18	0.002
UNITAS DTVM	100.00			599.11	0.002
BANDEIRANTES	100.00			58.47	0.000
BFC					
CINDAM					
CONVENÇÃO					

OMEGA						
TOTAL	2.71%	11.27%	83.86%	2.16%	25,088,067.69	100.000%
Total by category in U.S. dollars	$680.44	$2,827,237	$21,038,964	$541,429		

Data source: ANBID.

[a] Foreign investment conversion funds.

[b] Privatization funds.

[c] Annex III.

[d] Annex I.

TABLE 7

VOLUME TRADED JANUARY–OCTOBER 1994, BY FINANCIAL INSTITUTION

(PERCENTAGE SHARE AND VOLUME IN REAL THOUSANDS)

Institution	Ranking		Share of Total Volume
	Current	Previous	
Garantia S/A CTVM	1	1	6.26%
HEDGING-GRIFFO CV S/A	2	4	4.21
BFB CCVM S/A	3	2	4.12
ITAU CV S/A	4	3	3.89
TENDENCIA CCTVM LTDA.	5	5	2.99
SUDAMERIS CCVM S/A	6	7	2.47
COR. SOUZA BARROS CT S/A	7	6	2.28
CIA REAL CCVM	8	8	2.14
PROSPER	9	10	2.09
SN CREFISUL S/A SC	10	13	1.91

Source: BOVESPA.

TABLE 8

ACTIVITY AND CONCENTRATION MEASURES FOR THE EMERGING MARKETS

Country	Capitalization of Top 10 Firms in Index[a]	Trading by Top 10 Firms in Index[a]	Asset Concentration Factor[b]	Sector Concentration Factor[b]	Sector Correlation of Stock[b]
Latin America					
Argentina	65.7%	68.4%	0.26	0.43	0.92
Brazil	36.3	43.8	0.17	0.38	0.70
Chile	48.3	54.6	0.18	0.26	0.59
Colombia	69.6	58.0	0.18	0.39	0.34
Mexico	36.4	44.3	0.21	0.42	0.70
Venezuela	55.7	85.5	0.26	0.49	0.60
East Asia					
Korea	20.6	12.3	0.16	0.28	0.56
Philippines	51.1	38.3	0.33	0.57	0.70
Taiwan	33.8	21.7	0.13	0.37	0.77
South Asia					
India	19.6	29.9	0.13	0.48	0.55
Indonesia	32.0	40.7	0.17	0.44	0.69
Malaysia	34.0	11.5	0.12	0.28	0.57
Pakistan	34.7	49.8	0.14	0.33	0.17
Thailand	32.7	24.0	0.11	0.42	0.47
Europe/Mideast/Africa					
Greece	39.7	40.7	0.18	0.44	0.72
Jordan	44.1	48.2	0.55	0.62	0.21
Nigeria	48.0	14.8	0.17	0.66	0.23
Portugual	53.2	50.0	0.17	0.40	0.80
Turkey	45.6	58.3	0.23	0.36	0.81
Zimbabwe	50.2	40.2	0.25	0.43	0.25
Developed Markets					
Japan	16.7		0.09	0.29	0.46
United Kingdom	25.5		0.11	0.30	0.56
United States	11.9		0.08	0.32	0.49

Source: [a] International Finance Corporation, *Emerging Market Factbook 1994*, p. 35, data for 1993.
[b] Devecha, Drach, and Stefek (1992).

TABLE 9

MEASURES OF OPENNESS IN EMERGING MARKETS II & III: COUNTRY FUNDS, CROSS-LISTED SECURITIES, AND MARKET QUALITY

	Country Funds				Cross-Listed Securities				
Country	First Entry (Exchange, type)	Date of First Public Offering	Number by 8/92	Rank	First Entry (U.S. Exchange)	Date of First Public Offering	Number by 6/93	Rank	Market Quality Rank*
Argentina	Argentinean Invt. Co. (Luxembourg, open)	Feb. 91	3	10	Telefonica Argentina (NYSE)	Dec. 91	4	6	17
Brazil	Brazilian Invt. Co. (Luxembourg, open)	Dec. 87	3	10	Aracruz Celulose (NYSE)	May 92	1	9.5	4.5
Chile	Chile Fund, Inc. (New York, closed)	Sep. 89	4	7.5	Co. De Telefonos (NYSE)	Jul. 91	4	6	6.5
Colombia	Colombian Invt. Co. (Luxembourg, open)	May 92	1	14.5	—	—	0	15	13
Greece	Greece Fund Ltd. (London, closed)	Sep. 88	1	14.5	Global Ocean Carriers (AMEX)	Dec. 88	1	9.5	19
India	Indian Fund (London, closed)	Jun. 86	3	10	—	—	0	15	10
Jordan	—	—	0	17.5	—	—	0	15	21.5
Korea	Korea Fund, Inc. (New York, closed)	Aug. 84	15	1	Samsung Co. (144A)	—	2	8	6.5
Malaysia	Wardley GS Malaysia (Luxembourg, open)	Feb. 87	10	3.5	Bandar Raya Devt. (OTC)	—	13	2	8
Mexico	Mexico Fund, Inc. (New York, closed)	Jun. 81	5	5.5	Tubos de Acero (AMEX)	Jun. 67	30	1	4.5
Nigeria	—	—	0	17.5	—	—	0	15	15.5
Pakistan	Pakistan Fund (Hong Kong, closed)	Jul. 91	2	12.5	—	—	0	15	21.5
Philippines	Manila Fund Ltd. (London, closed)	Sep. 89	5	5.5	Benguet Corp. (NYSE)	Jun. 49	6	3	10

Portugal	Portugal Fund Ltd. (London, closed)	Aug. 87	4	7.5	—	—	0	15	13
Taiwan	Taipei Fund (London, open)	May 86	10	3.5	—	—	0	15	15.5
Thailand	Bangkok Fund Ltd. (London, closed)	Jul. 85	11	2	Adv. Info. Services (OTC)	—	4	6	10
Turkey	Turkish Invt. Fd, Inc. (New York, closed)	Dec. 89	2	12.5	—	—	0	15	13
Venezuela	—	—	0	17.5	Corimon (OTC)	Jan. 92	5	4	19
Zimbabwe	—	—	0	17.5	—	—	0	15	19
Total			79				70		

Sources: Wilson Emerging Market Fund Research; Latin Finance; K. H. Park and A. W. Agtmael, eds., *The World's Emerging Stock Market, 1993*; AMEX and NYSE research departments.

Note: Cross-listed securities are restricted to those listed on U.S. exchanges. Only country funds listed outside the target market and available to the public are included.

* Ranking based on qualitative information from the 1991 *EMDB Factbook* concerning the availability and quality of market and company information, the quality of accounting standards, and the extent of investor protection. The ranks for the United Kingdom, Germany, and Japan were arbitrarily fixed at 2.

FIGURE 1

BRAZIL: STOCK MARKET INDEX (IBOVESPA)

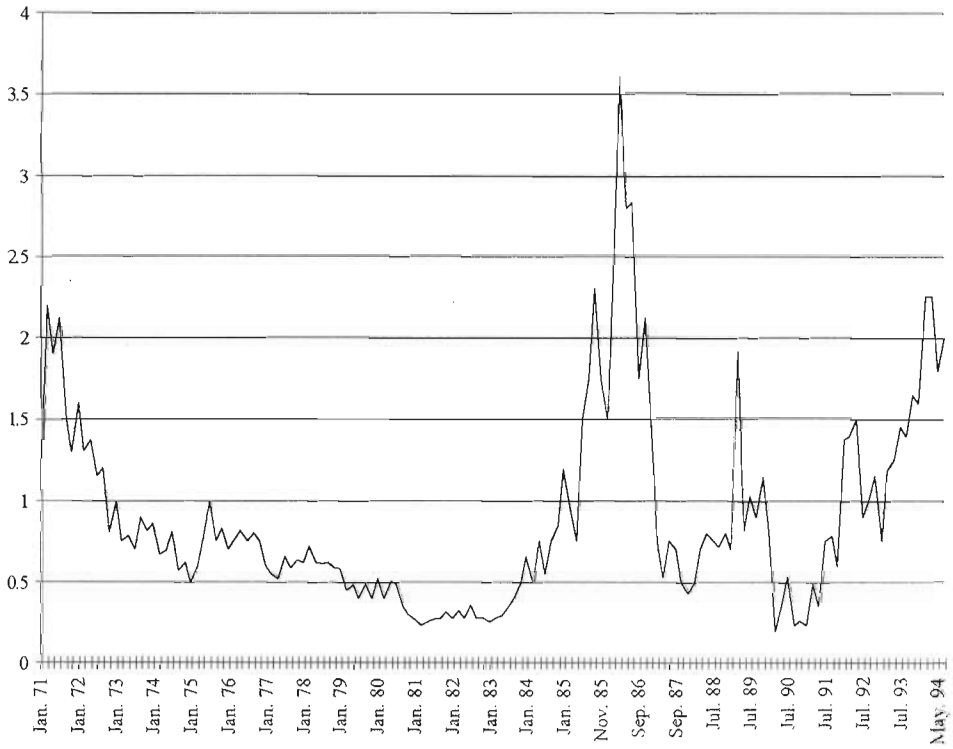
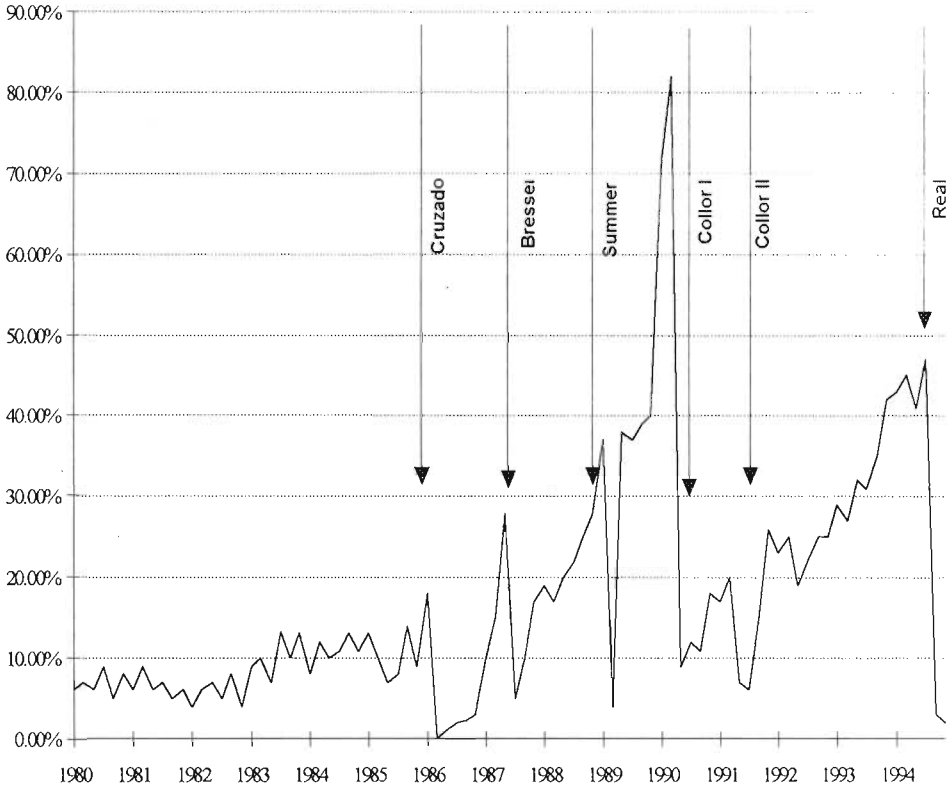


FIGURE 2

MONTHLY INFLATION IN BRAZIL



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