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STOCK MARKET LIBERALIZATION,
ECONOMIC REFORM, AND EMERGING
MARKET EQUITY PRICES

by

Peter Blair Henry
Stanford University

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Center for Economic Policy Research
Stanford University
Stanford, CA 94305
(650) 725-1874

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Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices

Peter Blair Henry*
pbhenry@stanford.edu
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Abstract

The decade from 1984 to 1994 witnessed unprecedented emerging stock market liberalizations, as governments from Caracas to Kuala Lumpur opened their equity markets to non-residents for the first time. Emerging market stock prices also boomed during this period. It is tempting to conclude that the stock market openings were responsible for the jump in asset prices, but the wave of openings was concurrent with a period of drastic economic reform. What then, caused the boom? Was it external opening, reform, or both? By constructing an exhaustive list of all major stock market liberalizations and economic reforms occurring in twelve LDCs from 1984 to 1994, I am able to disentangle the effects of stock market opening from the influence of economic reform. The results are striking. The effects of stock market liberalization are at most two thirds as large as suggested by previous work, and economic reforms are an equally important source of asset revaluation.

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1. Introduction

The decade from 1984 to 1994 witnessed unprecedented stock market liberalization in emerging markets, as governments from Caracas to Kuala Lumpur opened their equity markets to foreign investors for the first time. In 1984 there was no legal way for a foreigner to invest in emerging market equity. However, with the advent of closed end country funds, the legalization of direct investment in portfolio equity, and the onset of American Depositary Receipts (ADRs), by 1994 there were over 100 different vehicles through which foreigners could invest in emerging stock markets.

The dramatic increase in stock market openings was accompanied by a boom in emerging market stock prices. Starting in 1989, a five year buy and hold strategy in a Chilean index fund would have realized a 264 percent capital gain in real dollar terms; the numbers for an identical strategy in Mexico or Thailand would have been 393 percent and 129 percent respectively. The boom was not confined to these few cases. The real dollar price of all emerging market equity increased by more than 300 percent from December 1984 to December 1994. By way of comparison, over the same time period the real price of the S&P 500 increased by 93.5 percent.

Thus, we have two salient facts characterizing emerging stock markets during the period: (1) unprecedented stock market liberalization and (2) a boom in real equity prices. It is tempting to conclude that the liberalizations were responsible for the increase in asset prices. However, the years from 1984 to 1994 were also a time of unprecedented real reform in emerging markets. In an effort to reverse the largely detrimental effects of the distortionary microeconomic and unsustainable macroeconomic policies pursued during the 1950s, 60s, and 70s, governments discarded statist philosophies in favor of market-based approaches. With a few exceptions,
macroeconomic stabilization, trade opening, and privatization- as opposed to deficit financing, import substitution and nationalization- became the prevailing wisdom. Viewed in this context, it is less clear whether stock market opening was the primary share price impetus.

What then, caused the boom in emerging market stock prices? Was it stock market liberalization, economic reform, or both? By constructing an exhaustive list of all the major stock market liberalizations and economic reforms occurring in a cross-section of 12 emerging markets from 1984 to 1994, I am able to disentangle the effects of external opening on equity prices from the influence of more general reforms. The results are striking.

After controlling for all relevant factors, the revaluation effect of liberalization is at most two thirds as large as that implied by previous work. Liberalization causes asset revaluation, but the effects should not be overstated. Furthermore, I find that economic reforms are also a significant source of asset revaluation. In particular, trade opening seems to be very good news for the stock market. These results suggest that both stock market liberalization and economic reform were responsible for the boom in emerging market equity prices. Finally, I also find preliminary evidence that emerging market stock prices may be subject to price pressure a la Shleifer (1986).

This paper is of interest to international finance, because the effects of external opening and reform convey information both about the rate at which internationally traded claims on country cash flows are discounted and about the expected growth rate of those cash flows. It is also of interest to macroeconomics, because changes in a country’s cost of equity financing have strong implications for real investment.¹

¹ Henry (1997) finds a strong relationship between stock returns and investment in emerging markets.
I begin by presenting a brief overview of the contributions of macroeconomics and finance to the subject of stock market liberalization and stock market values in sections 1.1 and 1.2. The underlying theory is discussed in section 2. I discuss data and country selection issues in section 3. In sections 4 and 5 I present empirical evidence on the effects of stock market liberalization. Section 6 concludes.

1.1 Stock Market Liberalization and Macroeconomics

Macroeconomists have long been interested in stock prices, because a firm’s optimal capital stock should be determined by the ratio of the market value of its capital to that capital’s replacement cost. This ratio, Tobin’s $q$, provides a sufficient statistic for all the firm’s investment decisions. Similarly, one can think of the optimal aggregate capital stock as being related to the value of a country’s stock market index, Von Furstenberg (1977), Barro (1990), Blanchard, Rhee, and Summers (1993). As the market value of equity is one component of $q$’s numerator, there is a direct link between stock prices and investment. Therefore, policies which change the value of a country’s stock market may have non-trivial implications for real investment. A particularly salient example of such a policy is stock market liberalization: a decision by the government to allow foreign investment in the domestic equity market.

The subject of stock market liberalization typically arises within the context of macroeconomic discussions of stabilization and reform. While there is a vast literature dealing with crisis, stabilization and reform in developing countries- Corbo and Fischer (1995), Haggard and Kaufman (1994), and Rodrik (1996)- macroeconomists have had little to say about the effects

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2 Actually, the macroeconomics literature has generally been concerned with the broader issue of capital account liberalization. Stock market liberalization is one particular type of capital account liberalization.
of stock market liberalization on equity prices. The majority of work on stock market liberalization looks at its optimal sequencing within a broader program of economic reforms. The general conclusion- Frenkel (1983), Dornbusch (1983), McKinnon (1991), Edwards (1984)- is that stabilization should precede liberalization and that current account liberalization should precede stock market liberalization. However, this literature is relatively silent about the effects of liberalization on equity prices. This is particularly surprising given the previous discussion on stock prices, investment, and Tobin’s $q$. Indeed, according to Dornbusch (1995), “As countries move toward opening their capital markets it is surprising how little formal analysis there has been of the process.”

1.2. Stock Market Liberalization and Finance

With the advent of major stock market liberalizations in LDCs during the late 1980s, financial economists have begun analyzing the effects of external opening on the return properties of these markets. One branch of the literature asks whether stock market liberalization has led to greater financial market integration. Bekaert and Harvey (1995) analyze 12 emerging markets that opened to foreign stock market participation and find that only 4 of the 12 countries are more integrated in the period following liberalization. Buckberg (1995) finds stronger effects of stock market liberalization on stock market integration. She estimates an International Capital Asset Pricing Model (ICAPM) and finds that in the period 1977-1984 the model can be rejected by six out of ten countries whereas in the post 1984 period the model cannot be rejected for 18 of 20

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3 The arguments for macroeconomic stabilization first are: successful trade liberalization requires a real depreciation; inflation distorts price signals; and there are insufficient instruments to set the exchange rate at an appropriate level for both stabilization and structural reforms. Frenkel (1983) argues for trade liberalization ahead of capital account liberalization because goods markets adjust much more slowly than financial markets. If reforms take place simultaneously, capital market adjustment will be complete before prices are right in the goods market, resulting in further distortions.
countries. Therefore, her conclusion is that stock market liberalization has led to greater market integration.

The papers closest in spirit to this one are Tandon (1996) and Kim and Singal (1995). Tandon examines the effects of opening a country fund on the value of a country's stock market index. By calculating abnormal returns of the market index in the months before and after opening, he finds evidence that returns increase prior to opening. Employing a similar methodology, Kim and Singal find that returns are higher than average during the year immediately following a stock market liberalization. I will discuss these papers in a bit more detail in section 4, but I now turn to the question of why stock market liberalization should cause a revaluation of the domestic stock market.

2. Theory

In the absence of bubbles, the value of a country's stock market is simply the present value of expected future cash flows. A Stock market liberalization will lead to an increase in valuation if it causes a fall in discount rates, an increase in expected future cash flows, or both. The next few pages will develop these effects in some detail.

To understand why stock market liberalization should result in asset revaluation, it is helpful to think clearly about the role that international asset trade plays in consumption smoothing. Imagine a simple two country world in which all agents have identical constant relative risk aversion (CRRA) preferences. For our purposes think of one country as being an LDC, which I will call South, and the other as the industrialized world which I will call North. Imagine that both countries have Lucas (1978) style economies. Both the North and South have
trees that are identical in the type of fruit they produce. Also, for simplicity, imagine that there are two states of the world in each period, hot and cold. When it is hot Southern output is high and Northern output is low and *vice versa*. I now focus on the South. In autarky the value of a southern tree will be given by the following formula

\[
V_i = E_i \left\{ \sum_{s=1}^{\infty} \beta^{s-t} u'(c_s) \tilde{Y}_s \right\}
\]

where \( \beta \) is the rate of time preference and \( \tilde{Y}_s \) is the stochastic southern output stream at time \( s \).

Using the fact that \( \text{Cov}(\tilde{X}, \tilde{Y}) = E(\tilde{X} \cdot \tilde{Y}) - E(\tilde{X})E(\tilde{Y}) \) equation (1) may be re-written as

\[
V_i = \sum_{s=1}^{\infty} R_{s,t} E_i \{ \tilde{Y}_s \} + \sum_{s=1}^{\infty} \text{Cov}_i \left\{ \frac{\beta^{s-t} u'(c_s)}{u'(c_t)}, \tilde{Y}_s \right\}
\]

where \( R_{s,t} = E_i \left\{ \frac{\beta^{s-t} u'(c_s)}{u'(c_t)} \right\} \). Equation (2) says that the South’s stock market value is the expected present value of future Southern output “plus a sum of risk adjustments, each of which reflects the asset’s contribution to consumption insurance on a different future date.” Obstfeld and Rogoff (1996).

In the absence of international trade in assets, southern agents will have high consumption when it is hot and low consumption when it is cold. This state of affairs is not optimal. Both Northerners and Southerners would like to smooth their consumption. One way of doing this is to allow international trade in claims on country output. In exchange for Southern shares that
give them claims to future Southern output, Northerners will give Southerners a fractional claim to future Northern output. In an integrated equilibrium the price of a Southern tree will be given by

\[ V_i^* = \sum_{s=t+1}^{\infty} R_{ts}^* E_t\left\{ \tilde{Y}_s^* \right\} + \sum_{s=t+1}^{\infty} Cov_t\left\{ \frac{\beta^{-1} u'(c_s^*)}{u'(c_t^*)}, \tilde{Y}_s^* \right\} \]

where \( R_{ts}^* = \frac{E_t\left\{ \beta^{-1} u'(c_s^*) \right\}}{u'(c_t^*)} \) and the '⋆' on consumption indicates that the marginal conditions are now jointly determined by Northern and Southern preferences and endowments. The '⋆' on the Southern output stream is intended to capture the fact that if financial opening is accompanied by other economic reforms, the country’s expected output stream may also change.

The question is: under what conditions will the value of Southern equity be greater in an integrated equilibrium than in autarky? The answer is greatly simplified by focusing on the special case of log utility. In this case (2) becomes

\[ V_t = \sum_{s=t+1}^{\infty} R_{ts} E_t\left\{ \tilde{Y}_s \right\} + \sum_{s=t+1}^{\infty} Cov_t\left\{ \frac{\beta^{-1} \tilde{Y}_s}{\tilde{Y}_s}, \tilde{Y}_s \right\} \]

and (4) becomes

\[ V_t^* = \sum_{s=t+1}^{\infty} R_{ts}^* E_t\left\{ \tilde{Y}_s^* \right\} + \sum_{s=t+1}^{\infty} Cov_t\left\{ \frac{\beta^{-1} \tilde{Y}_s^w}{\tilde{Y}_s^w}, \tilde{Y}_s^* \right\} \]
where \( Y^*_t \) denotes the sum of Northern and Southern output in period \( s \). Comparing (4) and (5) we see that for the price of southern equity to be greater in an integrated equilibrium than in autarky, the following conditions are sufficient:

\[
\begin{align*}
(S1) & \quad \sum_{s=t+1}^{\infty} R_{s,t}^* E_t \{ \tilde{Y}^*_t \} > \sum_{s=t+1}^{\infty} R_{s,t} E_t \{ \tilde{Y}_t \} \\
\text{and} \\
(S2) & \quad \sum_{s=t+1}^{\infty} \text{Cov}_t \left\{ \frac{\beta^{s-t} \tilde{Y}^*_t}{Y^*_t}, \tilde{Y}^*_s \right\} > \sum_{s=t+1}^{\infty} \text{Cov}_t \left\{ \frac{\beta^{s-t} \tilde{Y}_t}{Y_t}, \tilde{Y}_s \right\}.
\end{align*}
\]

These two conditions have intuitive explanations. Consider first (S1). This is a statement about Southern growth prospects. It says that the present value of expected future southern output in the integrated equilibrium is greater than in autarky. This will occur (i) if the sequence of world discount rates \( \{ R^*_s \} \) are strictly lower than the sequence of autarky discount rates \( \{ R_s \} \) and (ii) if the expected value of future output streams is higher after liberalizing trade in assets\(^4\). Consider now the second condition (S2), which is a statement about the hedging qualities of Southern equity. (S2) will obtain if, on average, Southern output tends to be high when Northern output (marginal utility) is low (high).

In other words, there are two characteristics which make emerging market equity attractive to foreigners: high expected future dividend payments and its value as a consumption

\(^4\) It will also be true if either of these conditions holds, and the effect which works in favor of higher asset prices dominates the other effect.
hedge. Stock market liberalization will affect stock market prices by changing the rate at which future dividend payments are discounted and by increasing aggregate risk-sharing. Economic reform will affect stock prices by altering the expected dividend payments. The distinction between discount rates/risk-sharing and expected cash flows is an important point and I will return to it later in the paper.

The preceding analysis reveals strong theoretical reasons why external opening should lead to asset revaluation. When liberalization occurs, discount rates, aggregate risk-sharing, and expected cash flows may change. A change in any or all of these variables will lead to a revaluation of the stock market.\(^5\) The link between theory and testing is straightforward in this context. Assume that (S1) and (S2) hold so that the market value of equity that would prevail in an integrated equilibrium is greater than the autarky market value. If the Southern government credibly announces at time \(T_A\) that it will liberalize the stock market at time \(T^*\), there will be a jump in the price of Southern stock at the time of announcement and, in the absence of additional news, a mild increase in value from \(T_A\) until \(T^*\).\(^6\) Before proceeding to formal empirical tests I now provide a detailed description of the data.

3. Data and Choice of Countries

There were four primary steps involved in collecting the data for this paper: (1) country selection; (2) stock market data; (3) stock market liberalization dates, and (4) Economic Reform dates. I will discuss the first of these three points here and return to the policy event dates in section 4.4.

\(^5\) Apriori, there is no reason to expect the knife-edge case where all changes exactly offset each other to obtain.

\(^6\) Although the change in discount rates and expected cash flows is fully anticipated there will be still be some mild price appreciation after the announcement until the risk-sharing actually takes effect at the time of opening.
3.1 Country Selection

This paper looks at the case of twelve developing countries. While it is desirable to understand the effects of stock market liberalization on stock market values in all LDCs, there are good reasons for limiting the study to twelve countries. Multi-country studies provide a wealth of cross-sectional information but have the drawback that, as the number of countries becomes large, the reader is left with a poor feel for individual country effects. On the other hand, individual country studies provide detailed institutional knowledge but do not allow for discovery of broad generalizations or patterns. I choose the middle route. By focusing on twelve Asian and Latin American countries I maintain enough cross-sectional heterogeneity to establish empirical regularities while still providing a wealth of institutional details about each country.

Why Asia and Latin America? The first round of cuts was determined by data limitations. I obtain LDC share price data from the IFC’s Emerging Markets Database. The IFC began keeping records of a few country stock markets in 1976, but for most countries the data series begins in 1984, and in some cases even later. In particular, data on Eastern Europe is only available since 1992 and therefore I excluded these countries from my study. After eliminating Eastern Europe I was left with Africa, Asia, Latin America and the Middle East. The IFC only tracks three African markets: Nigeria, South Africa, and Zimbabwe. Nigeria was closed to foreign investment throughout the sample period, the IFC only began tracking South Africa in 1992, and Zimbabwe was closed until June of 1993. Thus Africa was eliminated from the study. At this point I was left with three regions and chose Asia and Latin America for two reasons. First, given the general consensus that Asia successfully stabilized and reformed in the early 1980s
while Latin America, with the exception of Chile and Colombia, foundered, the two regions were a natural choice. Second, given the volume of work involved in constructing the stock market liberalization and policy event lists, twelve countries seemed like a reasonable stopping point. The only countries eliminated by this final constraint are Jordan, Pakistan, and Turkey. In the end I was left with Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela in Latin America, and India, Malaysia, Korea, The Philippines, Taiwan, and Thailand in Asia.

3.2 Stock Market Data

All emerging market stock return data is taken from the International Finance Corporation’s Emerging Markets Data Base (EMDB). In particular, I use the ex-dividend, US dollar and local currency IFC Global index. The Morgan Stanley Capital Index for Europe, Asia, and the Far East is also taken from the EMDB. The data on the S&P 500 is obtained from the IMF’s International Financial Statistics (IFS). I deflate all of the stock market indices by the relevant consumer price indices, which I also obtained from the IFS. All of the data is monthly from the period of December 1984 to December 1994.

3.3 Stock Market Liberalization Dates

Does a country’s first stock market liberalization cause an increase in stock prices? Answering this question requires two things: (1) a working definition of a stock market liberalization and (2) a clear description of the procedure by which I date each country’s first stock market

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7 Of course, there are varying degrees of stock market liberalization. Sometimes the liberalization is a once-and-for-all removal of all restrictions on foreign purchases, so that the first liberalization is also the last. In most countries, however, liberalization is a gradual process whereby restrictions on foreign participation in the stock market are gradually lifted; these countries will, by definition, have multiple liberalizations. Nevertheless, in a rational asset pricing world, it is a country’s first stock market liberalization that we would expect to cause the greatest asset revaluation. Thus I will begin by focusing on countries’ first stock market liberalization. The stock price effects of subsequent liberalizations are taken up in section 5.
liberalization. The next two paragraphs are devoted to the definition of liberalization and a
description of the dating procedure respectively.

Imagine a country in which foreigners are completely forbidden from owning shares on the stock market. In this context, stock market liberalization is defined as a decision by that country’s government to allow foreigners to purchase equities on the domestic stock market. There are two crucial dates with respect to stock market liberalization: the announcement date and the implementation date. The announcement date is the date on which the government announces that foreigners will be allowed to purchase shares on the domestic stock market; the implementation date is the first date on which foreigners are legally able to purchase shares. Unless otherwise specified, when I refer to the date of a country’s first stock market liberalization, I am referring to the implementation date.\(^8\)

How do I arrive at the date on which each country first liberalized its stock market? The optimal dating procedure would report the official date on which foreign purchases became legal, but with few exceptions this kind of documentation is unavailable. In the absence of legislation dates there are two reliable alternatives. First, the overwhelming majority of foreign purchases in emerging stock markets are done through country mutual funds. Since government permission is a necessary condition for establishment of these funds, the date of the first country mutual fund serves as an excellent proxy for the official implementation date. The second way of capturing official implementation dates is to monitor the IFC’s investability index. The investability index is the ratio of the market capitalization of stocks that foreigners can legally hold to total market capitalization. Therefore, a large jump in the investability index necessarily indicates an official liberalization. I define the date of a country’s first stock market liberalization by the first month in

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\(^8\) The announcement dates are discussed in section 4.1.
which I am able to verify the occurrence of any of the following: liberalization by policy decree, establishment of the first country fund, or an increase in the investability index. A list of the dates of each country's first stock market liberalization and contemporaneous economic reforms is given in table 1. For the moment I will focus exclusively on the stock market liberalizations; the crucial issue of reforms will be addressed in detail beginning in section 4.4.

4. Empirical Effects of The First Stock Market Liberalization

What was the actual effect of stock market liberalization on equity prices in each of these countries? I begin by discussing previous work on stock market liberalization. By examining the effects of opening a country fund on the value of a country's stock market index, Tandon(1996) finds evidence that returns increase prior to opening. Kim and Singal (1995) present a number of stylized facts about the effects of liberalization on stock returns, stock return volatility, stock market efficiency, exchange rates, and inflation. Their primary focus is not a rigorous examination of whether stock market liberalization causes an increase in equity price levels, but they do present some preliminary evidence that this is in fact the case. In contrast, my paper focuses almost exclusively on trying to measure the effect of liberalization on price levels. Rather than presenting an overview of the stylized facts about the behavior of several macroeconomic variables around liberalization, I take the one stylized fact that consistently emerges in all of the papers on liberalization and equity prices- liberalization increases stock prices - and subject it to a wide array of alternative explanations. In spite of the difference in emphasis, it is nevertheless worth reviewing the methodology and findings of previous work as a means of both motivating my approach and providing a context for understanding my findings.
Previous work seeks to determine whether stock prices increase in the twelve month period preceding a stock market liberalization. These papers measure the effects of liberalization on stock prices by using what can be best described as the constant-mean-return approach to event studies. The basic idea is to construct a statistical test of whether stock returns in the year before stock market liberalization are higher than during non-liberalization periods. There are \( i = 1,2,...,K \) countries and \( t = 1,2,...,N \) months of returns. Let \( R_t = \frac{P_t}{P_{t-1}} - 1 \) be the dividend-exclusive return on country \( i \)'s stock market at time \( t \) and assume that stock returns obey a simple process: \( R_t = \mu_i + \varepsilon_t \) with \( E(\varepsilon_t) = 0 \) and \( Var(\varepsilon_t) = \sigma_i^2 \). Further, let \( \bar{R}_i = \frac{1}{N} \sum_{t=1}^{N} R_t \) be the mean return on country \( i \)'s stock market over the entire sample period, and define the abnormal return on country \( i \)'s stock market in month \( t \) as \( AR_t = R_t - \bar{R}_i \). Also, define the cumulative abnormal return in country \( i \) during the post-liberalization period as \( CAR_i(T^* - 12, T^*) = \sum_{t=T^*-12}^{T^*} AR_t \). Under the null hypothesis, that stock market liberalization has no effect on stock returns in country \( i \), \( CAR_i(T^* - 12, T^*) \sim N(0, \sigma_i^2(T^* - 12, T^*)) \). In order to assess the average effects of liberalization across all countries, the cumulative abnormal returns are aggregated across all \( K \) countries to create a single aggregate measure, \( CAR(T^* - 12, T^*) = \frac{1}{K} \sum_{i=1}^{K} CAR_i(T^* - 12, T^*) \), of abnormal returns during the post-liberalization period. Under the null hypothesis, \( CAR(T^* - 12, T^*) \sim N[0, \frac{1}{K^2} \sum_{i=1}^{K} \sigma_i^2(T^* - 12, T^*)] \). The authors

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9 For an in depth discussion of event studies see MacKinlay (1997).
find evidence to reject the null hypothesis at the 1 percent significance level; emerging market stock returns are abnormally high during the one year period preceding liberalization.

Although these papers certainly suggest that stock market liberalization causes an increase in equity prices, their results raise several issues. First, there is a fundamental endogeneity problem which complicates such a study: liberalization itself may be a function of stock returns. Second, although they acknowledge that there may have been confounding events throughout the sample period, these papers do not control for them directly. All of the countries in question were in the process of implementing major economic reforms before, during, and after their first stock market liberalization. Not accounting for the effects of these reforms could yield erroneous results about the effects of stock market liberalization. Finally, the effect of country stock returns and own country macroeconomic fundamentals are not accounted for. Is the conclusion that stock market liberalization causes stock market revaluation robust to changes in these countries' macroeconomic prospects? I will systematically deal with each of these issues, but first I explore the implications of the previous literature's methodology.

4.1 Replicating Previous Work

Although I have raised some conceptual problems with using the constant-mean return model to address the issue of whether stock market liberalization causes stock market revaluation, taking it as the starting point for empirical analysis still serves a useful function. The ultimate question is: "what is the true effect of stock market liberalization?" However, the penultimate question: "if one were to assess the effects of stock market liberalization using a constant-mean return model, by how much would this simply calculated revaluation effect differ from the true revaluation
effect?" is almost as instructive. Put another way, if a country were to liberalize its stock market and do nothing else, how large a price response could it expect? Do simple constant-mean return calculations provide an accurate guideline? or does omission of contemporaneous reforms and macroeconomic fundamentals render them grossly mistaken?

The most direct way of addressing these questions is to calculate the revaluation effect following the previously used methodology and then compare the results with the effects yielded by more sophisticated statistical models. Since Brown and Warner (1980, 1985) find that the constant-mean return model often yields results similar to more intricate statistical models, this is far from a perfunctory exercise.\textsuperscript{10} If reforms and macroeconomic fundamentals turn out to be important, then embedding a more detailed methodology in the simple constant-mean return approach offers a distinct advantage over proceeding directly to the preferred statistical model. In addition to producing an estimate of the true revaluation effect, the indirect approach will yield a quantitative measure of the discrepancy between the true revaluation effect and the effect one would infer from attributing the emerging stock market boom exclusively to liberalization.

Recall the simple model outlined in section 2. Suppose that the Southern government announces at time $T_a$ that it will liberalize the stock market to foreign investment for the very first time at $T^*$. If stock market liberalization is good news,\textsuperscript{11} there will be a jump in the price of Southern equity when the announcement is made. In the absence of information asymmetries or credibility problems, stock prices will behave in such a way that in the absence of any additional news there will be no new price adjustment at $T^*$. All this suggests that the true effects of liberalization on equity returns should be observed in the months immediately preceding

\textsuperscript{10}This is because the variance of the abnormal return is frequently not reduced by choosing a more sophisticated model. See MacKinlay (1997).

\textsuperscript{11}Good news in the sense that conditions (S1) and (S2) hold so that the market value of equity which would prevail in an integrated equilibrium is greater than the autarky market value.
liberalization, with most of the price appreciation occurring upon announcement of the liberalization.

As an empirical matter, I have all the dates on which each country implemented its very first stock market liberalization, but very few announcement dates. The announcement dates I did find tended to be 3 to 4 months in advance of the opening. However, even when the "official" announcement dates are known with precision, using these windows may miss the true effect if news of the opening is leaked to certain market participants prior to the official opening. Therefore, I tried various windows of greater length ranging from $T^*-12$ to $T^*-5$. In the end I report results based on estimations using an eight month announcement window that starts with month $T^*-7$.\footnote{Although if there is uncertainty about when and if the liberalization is going to occur there may be significant price appreciation as news confirming the liberalization date is released. Once the implementation date arrives and liberalization occurs, however, all uncertainty (about whether the stock market will be opened to foreigners) is resolved and there should be no further price appreciation. In general, if news of the liberalization is gradually leaked to the public there may be jumps in the stock market during the entire window leading up to the implementation of the liberalization. This is the rationale behind using an 8 month window.}

Before reporting any results, I calculate a 12 month impulse response to liberalization as a means of allaying any concerns about the seemingly arbitrary choice of an eight month announcement window. The intention is to provide the reader with a feel for how results might differ according to the length of the announcement window used. The response window is taken to be the year before the opening date plus the three months following the opening. The impulse response is defined simply as follows: let $AR_{iti}$ be the abnormal stock market return for country $i$ in month $t$. Following the simple constant-mean-return approach abnormal returns are defined in the following way:
\[ AR_{it} = R_{it} - \frac{1}{N} \sum_{t=1}^{N} R_{it} \]

Now let the cumulative abnormal return for country \( i \) relative to the stock market liberalization date be defined as

\[ CAR_{i\tau} = \sum_{t=\tau-\tau}^{\tau} AR_{it} \]

where \( T^* \) is the month in which the stock market is liberalized and \( \tau \in [T^*-12, T^*+3] \). The cross country average cumulative abnormal return is given by

\[ CAR_{\tau} = \frac{1}{12} \sum_{i=1}^{12} CAR_{i\tau} \]

The impulse response function is thus simply a plot of the ordered pair \( (CAR_{\tau}, \tau) \). I provide a picture of the impulse response in figure 1. From \( T^*-12 \) to \( T^*-8 \) returns are slightly below normal and then begin to drift up after \( T^*-7 \). That the largest jump occurs at \( T^*-6 \) clearly does not mean that this is the month in which all markets receive the news, but it does illustrate that using a seven month window does not unduly bias the results in favor of the argument that the revaluation effects of liberalization are overstated.\(^{13}\)

The magnitude and statistical significance of the abnormal returns during the liberalization window are most easily evaluated by running the following regression:

\[ R_{it} = \alpha_i + \gamma \text{Liberalize}_{it} + \varepsilon_{it} \]

\(^{13}\) I will be arguing that previous work overstates the effects of stock market liberalization. Choosing a liberalization window that biases against finding a revaluation effect would artificially bolster my argument. The impulse response illustrates that I have not chosen to use such a window.
where \( \text{Liberalize}_{it} \) is a dummy variable\(^{14}\) that takes on the value 1 in each of the 8 months preceding country \( i \)'s first stock market liberalization.\(^{15}\) In equation (9) the parameter \( \gamma \) measures the change in the country stock market index in response to expectations about the impending stock market liberalization. If news about stock market liberalization affects equity prices then \( \gamma \) should indicate whether liberalization is interpreted as good or bad news. If stock market liberalization is good news then \( \gamma \) will be positive; if bad it will be negative.

The coefficient on the \( \text{Liberalize} \) variable can be interpreted as the average abnormal return induced by the market’s anticipation of the liberalization during each of the eight months from \( T^* - 7 \) to \( T^* \). The results are given in column (1a) of table 2. The coefficient of 0.054 on \( \text{Liberalize} \) is highly significant. On average, a country’s first stock market liberalization is associated with a total revaluation of 52 percent in US dollar terms.\(^{16}\) Since the dollar experienced substantial depreciation after 1985 when many of these liberalizations were occurring, a legitimate concern is that the \( \text{Liberalize} \) coefficient is simply picking up this substantial dollar depreciation. To address this concern I provide estimates using local currency stock returns in column (1b) of table 2. The sets of estimates are almost identical. When returns

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\(^{14}\) This dummy variable method is a variant of standard event study methodology. Typically, an asset pricing equation is estimated over a period prior to the event of interest. The estimated parameters are then used to forecast returns over the event window. These predicted returns are then subtracted from the actual returns in order to generate the abnormal returns associated with the event. However, standard event studies are unable to take into account exogenous shifts in the equation parameters that may occur during the event window. The dummy variable method avoids specification errors while yielding the same information on returns that would be obtained from the cumulative abnormal residual in event studies. (see Ozler 1989).

\(^{15}\) That is in months \( T^* - 7 \) through \( T^* \). If announcement of the future liberalization was a once and for all event, that is, if all market participants learned about the liberalization at the same time and there was no uncertainty about when the liberalization was going to occur, then the \( \text{Liberalize} \) variable would only need to be on during the month in which the announcement occurred. In reality, however, learning about an impending liberalization is a gradual process. The technique of allowing the dummy variable to be on during the entire announcement window is well established. See for example MacKinlay (1997).

\(^{16}\) The total revaluation number is calculated by cumulating the average monthly abnormal return. The coefficient on \( \text{Liberalize} \) indicates an positive abnormal returns of 5.4 percent a month for each month during the eight month liberalization window. This yields a total revaluation effect of \( \left((1.054)^{8} - 1\right) \times 100 = 52 \) percent. I will discuss all of the results in terms of the total revaluation effect.
are measured in domestic currency the coefficient on \textit{Liberalize} is .053, which translates into a total revaluation of 51 percent; the weakening of the dollar is not driving the results.

Before introducing additional right hand side variables to address the issue of market fundamentals and concurrent reforms, there is an even more vital issue that must be addressed: the decision to liberalize may itself be a function of how the stock market is doing. How does the endogeneity of the liberalization decision affect the estimated liberalization effect? This is the issue to which I now turn.

\section*{4.2 Policy Endogeneity}

Policy makers have incentive to liberalize the stock market when economic conditions are such that foreigners will pay dearly for claims on future streams of country output: when the economy is flourishing rather then in recession, for example.\footnote{Otherwise they may be accused of selling off their country at bargain basement prices. Imagine a country with huge growth potential but an incompetent government. Stock prices in this environment will be low, reflecting the great uncertainty about whether the reforms necessary for the country to reach its potential will ever take place. Liberalizing the stock market in this environment will allow foreigners to purchase country assets quite cheaply. If the economy turns around the foreigners will reap handsome returns for having borne the risk, but domestic residents may be quite upset at the government for selling foreigners the rights to their country’s future cash flows so cheaply.} In turn, interest in emerging markets will tend to be high when these stocks are earning handsome returns. This line of reasoning implies that the decision to liberalize may be a function of stock prices. Therefore, any regression specification with stock returns on the left hand side and liberalization on the right is subject to the simultaneity critique. Furthermore, the preceding discussion suggests that the contemporaneous correlation between the error term and the liberalization variable will be positive, so that estimates of the liberalization effect will be upward biased.\footnote{Actually, to extend the argument to the entire panel I need the additional assumption that $L_{i,t}e_{j,t} = 0 \forall i \neq j$; there is no contemporaneous correlation between liberalization and the error term across countries.}
One way around the policy endogeneity problem is the use of instrumental variables, but the primary difficulty with this approach lies in convincing the reader of the validity of the instrument. In the present context one needs a variable that is correlated with the liberalization decision, but uncorrelated with the stock market or underlying macroeconomic fundamentals. Besley and Case (1994) suggest the use of political variables as instruments for isolating the effects of policy. However, while changes of political regime are correlated with liberalization in my sample, such changes invariably bring with them new economic teams and new economic programs. There is no convincing argument as to why changes in a country’s economic plan will not affect expectations about the stock market and underlying macro fundamentals. Thus, changes in political regime are also highly correlated with broader macro policy, rendering them an unsuitable instrument for estimating the effect of liberalization.

In the absence of suitable instruments, my empirical strategy is simple. As I have already argued, the liberalization variable and the error term are positively correlated, resulting in upward biased estimates. Thus all of the estimates I will present can be conceived of as upper bounds on the liberalization effect. Since my fundamental argument is that previous work overstates the effects of liberalization, the estimation bias actually helps me make my case. If I can demonstrate that the upward biased estimates of the effects of liberalization are small relative to what previous studies imply, then it follows that the true effect of liberalization must also be smaller.

I have begun by adopting the methodology of previous researchers and documenting the revaluation effect implied by their approach: 52 percent in real US dollar terms over an 8 month horizon. Starting in section 4.3, I will explicitly discuss some of the potential problems with this estimate and systematically augment the methodology to handle the issues I raise. First, I control
for world stock market returns. Second, I collect a time series of major policy events and use it to construct a list of reform variables for each country. Finally, I control for domestic and international economic fundamentals. At each step of the process, the effects of liberalization are diminished. In the end, I am left with an upper bound on the effects of liberalization which is at most two thirds as large as the effect implied by previous work.

4.3 Benchmark Results: Controlling for World Stock Returns

The most glaring omission associated with the simple constant mean return model is the effect of world stock market returns. After all, it may have been neither stock market liberalization nor reform, but a world-wide equity price boom in the late 1980s that precipitated the sharp increase in LDC equity prices. Thus I am interested in measuring the abnormal return associated with the news of a country’s first stock market liberalization after controlling for the effects of foreign stock market fluctuations.

There is an extensive literature on the specification and testing of equilibrium asset pricing models. Tests of the Capital Asset Pricing Model (CAPM) have motivated theoretical work incorporating multiple factors. Specifically, Arbitrage Pricing Theory (Ross 1976) asserts that a security’s return is linearly related to one or more global factors plus an idiosyncratic risk term. A large body of empirical research (Roll and Ross 1980, and Chen, Roll, and Ross 1986) supports the multifactor approach to modeling stock returns. Here I use a multifactor linear regression model. In particular, a country’s stock return is modeled as a function of emerging market stock returns, US stock returns and developed country stock returns in Europe and Asia. The stock return process for each country in the panel is given by
\[ R_n = \alpha + \beta_1 R^{LDC}_n + \beta_2 R^{US}_n + \beta_3 R^{EAFE}_n + \pi^{Liberalize}_n + \varepsilon_n \]

where:

\( R^{LDC}_n \) = The real dollar return on an index of emerging market funds at time \( t \).

\( R^{US}_n \) = The real return on Standard and Poor’s 500 index at time \( t \).

\( R^{EAFE}_n \) = The real dollar return on Morgan Stanley’s Europe, Asia, and Far East stock market index at time \( t \).

Column (2a) of table 2 shows the results. As evidenced by the sharp increase in adjusted R-squared as compared with that in column (1a), the inclusion of world stock returns dramatically improves the regression fit. Not surprisingly, the largest beta is associated with other emerging market returns; own country returns are most sensitive to movements in other emerging markets. On average, when the aggregate emerging market index rises by an extra 1 percent, an individual country’s index will rise by 0.5 percent. Emerging market stock returns are considerably less sensitive to US stock returns and appear virtually uncorrelated with the MSCI Europe, Asia, and far East index.\(^{19}\) Again, the results are not currency-dependent. Regression (2b) illustrates that when the left hand side variable is changed to local currency stock returns, the world betas are virtually identical to the dollar-denominated betas.

If the run-up in LDC stock prices was the result of liberalization and not a world-wide stock market boom, then the coefficient on the \( \text{Liberalize} \) dummy obtained by estimating (9) should be significantly reduced under this more complete return-generating process. This is not.

\(^{19}\) The low correlation of emerging market returns with developed country returns has been pointed out by a number of authors. See for example Harvey (1995).

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the case; the magnitude and significance level of the *Liberalize* coefficient fall, but not by much. A monthly point estimate of .052 implies a total revaluation effect of about 50 percent. The local currency returns display a similar pattern with the total revaluation effect also falling by only 2 percent relative to the first set of local currency estimates. Although world stock returns are clearly an important explanatory factor for emerging market returns, their inclusion has little effect on the *Liberalize* coefficient. Hence, the story that liberalization induces significant asset revaluation appears resilient to the alternative explanation that a world-wide stock market boom caused the increase in emerging market equity prices.

4.4 Economic Reforms

The wave of stock market liberalizations between 1984 and 1994 occurred during a period of general economic reform throughout most of the developing world. As table 1 illustrates, countries' first stock market liberalization invariably coincided with a host of other macroeconomic reforms. How much of the equity price increase was caused by the liberalization and how much was due to the other reforms? Ignoring these events could easily yield incorrect conclusions about the effects of liberalization. Let me explain exactly why this is the case.

Since I am working with monthly index data, I pinpoint the month and year of liberalization. Thus, a liberalization date of July 1992 means that the liberalization could have taken place at any time during the month.\(^2^0\) As far as prices are concerned, the IFC records the monthly value of the country's stock market as the value of the index on the last day of the month. The combination of imprecise dating of liberalization episodes and the IFC's index

\(^{20}\) It is not possible to obtain more precise datings.
methodology could affect some of my results. For example, suppose I am testing for the effect of an opening which I know occurred in July of 1987. Assume that there is some fully anticipated event (good news) that occurs on August 1. Further suppose that the opening actually takes place on July 1. Since the July value of the index (determined by prices on July 31) will incorporate the market's anticipation of the impending August 1 event, what I perceive to be the effect of the July opening may in fact be the market anticipating the August event. This problem is most serious when the last month of an event window is followed by an event with strong implications for market valuation.

I address the complication of concurrent economic reforms by constructing event lists for each country. Table 1, in addition to providing a list of all stock market openings for each country, also enumerates all major economic events occurring within a 15 month window for all twelve countries. Each event list contains all the salient political, social, and economic events which occurred in the country during the sample period. Broadly speaking, there are two classes of event to consider: local occurrences and exogenous macroeconomic shocks. Domestic events consist of changes in the exchange rate regime, labor market reforms, trade openings, reforms of the domestic financial system, and privatizations of public enterprises. The latter category includes events such as wars, natural disasters, and other events that truly lie outside the policy ambit of any country. The primary source in constructing these lists is the Economist Intelligence Unit (EIU) which provides quarterly intelligence reports on 165 countries. I also consult the Dow Jones Wire, the IMF Year Book, the World Bank Lending Reports, and various other books and journals.
In order to be included in the major event list, an event must meet several criteria. First, it 
must be mentioned in one of the sources I consult. Second, if the source lists a major policy event 
it must also give the date on which the policy took effect. Also, when the policy is put in place 
it must be stated to take effect within the next twelve months for me to consider it a policy event 
date. For example, a trade opening that begins in November 1979 but is being phased in over a 
six year period does not count as a policy event according to my classification. As a rule, I do not 
document events that are announced more than a year in advance. The reason for this is simple. 
Many events, particularly privatizations, are announced far in advance of their implementation 
date, but do not take place as originally scheduled. A thorough reading of the sources leads me to 
conclude that as an empirical matter, announcement windows of more than a year tend to be more 
fiction than fact. Finally, in order for an event to make my list there must be strong a priori 
reasons to believe it will move stock prices. Therefore, any event that does not have theoretical 
implications for expected profits, discount rates, the equity premium, or some combination of the 
three does not get included in my list.

Argentina provides a poignant example of why attention to concurrent economic reforms 
is a vital part of an event study like this one. At least part of the dramatic increase in Argentine 
stock prices during 1989 was due to the implementation of a sweeping stabilization plan. The 
tables reveal myriad other examples of major economic policy changes coinciding with the first 
stock market liberalization: IMF negotiations, a free trade agreement, and the overthrow of 
Marcos in the Philippines (1986), privatization in Malaysia (1987); a Brady debt reduction deal in 
Venezuela (1990); privatization and tariff reductions in Colombia (1992), and so on. The point is, 

\[21 \text{I try to track down when the public learned about the impending change} \]
\[22 \text{One exception is NAFTA, but even here I don’t consider the impending NAFTA agreement a confounding effect until 12 months before it is signed.} \]
\[23 \text{Also, the longer the announcement window, the smaller the impact the news will have due to discounting.} \]
that reaching definitive conclusions about the effects of stock market liberalization on equity prices necessitates a teasing out of the effects of stock market liberalization from the influence of more general reforms. I now describe how I attempt to do just that.

Using the event list, I construct variables for four kinds of economic reform: macroeconomic stabilization, trade opening, privatization, and the easing of exchange controls. These variables are denoted \( \text{Stabilize} \), \( \text{Trade} \), \( \text{Privatize} \), and \( \text{Exchange} \) respectively. Each reform variable has a value of 1 whenever there is an announcement and subsequent implementation of that type of reform and zero elsewhere. I then estimate the following panel model

\[
R_t = \alpha + \beta_1 r_t^{LDC} + \beta_2 r_t^{IFS} + \beta_3 r_t^{EAFE} + \gamma_1 \text{Liberalize}_t + \gamma_2 \text{Stabilize}_t + \gamma_3 \text{Trade}_t + \gamma_4 \text{Privatize}_t + \gamma_5 \text{Exchange}_t + \epsilon_t
\]

Column (3a) of table 2 shows the results. After controlling for world stock returns and macroeconomic reforms, the \( \text{Liberalize} \) coefficient is a highly significant 0.049. As a result of stock market liberalization, domestic stock holders experienced a positive revaluation of their portfolios to the tune of 47 percent in real dollar terms over the eight month liberalization window.

Although they barely affect the \( \text{Liberalize} \) coefficient, the macroeconomic reforms are themselves a major source of equity price revaluation. For instance, the coefficient on \( \text{Trade} \) is 0.023, implying that trade opening causes total revaluation on the order of 20 percent. The \( \text{Privatize} \) coefficient is 0.021 and significant at the five percent level, indicating that privatization causes an 18 percent revaluation. The \( \text{Stabilize} \) coefficient also has the expected sign, but does
not have a statistically significant effect on stock returns.\textsuperscript{24} The coefficient on \textit{Exchange} is negative, but also insignificant. It is interesting to ask whether the estimated stock market revaluation effects of liberalization are statistically distinguishable from those of the economic reforms. The null hypothesis that the \textit{Liberalize} coefficient is equal to the \textit{Trade} and \textit{Privatize} coefficients is rejected at the 10 percent level.\textsuperscript{25}

Given their magnitude and significance, the \textit{Trade} and \textit{Privatize} coefficients merit some further discussion. The \textit{Trade} result is a little surprising. If we believe that LDCs are relatively capital-poor, then standard theory predicts that trade opening should lead to a fall in the real rate of return to capital. One possible explanation is that trade opening is a credible signal of future stock market opening. In this case, when a trade opening is announced, the value of the stock market will react to the anticipated stock market opening as well the publicly announced trade opening. If conditions (S1) and (S2) hold, then anticipation of the stock market liberalization will give equity values an extra boost, inflating the trade opening coefficient. Another competing explanation is that trade opening leads to a fall in the cost of imported intermediate inputs. Lower input costs may raise expectations of future profitability thereby causing the stock market to react. The sign of the \textit{Privatize} coefficient is consistent with a story that says placing state enterprises in private hands raises their efficiency and hence expected future profitability.\textsuperscript{26} There are a number of competing stories which can explain the signs of the \textit{Trade} and \textit{Privatize} coefficients. While extensive elaboration on competing explanations is beyond the scope of this paper, the

\textsuperscript{24} I count every IMF agreement as a stabilization plan, but in reality, some agreements are not so much "news" in the sense of being a new stabilization plan as they are more a continuation of an already existing plan. This may bias against finding a significant effect of stabilization, but is favorable to omitting some agreements and running the risk of attributing to liberalization that which is due to stabilization.

\textsuperscript{25} The $F$ statistics are 2.58 (d.f. = 1, 1403) and 3.29 (d.f. = 1, 1403) for trade and privatize respectively.

\textsuperscript{26} The efficiency argument is one of two competing effects of privatization on equity prices. The other effect is that the news that privatization is coming may increase the supply of shares in the country, driving down equity prices in some models. That privatization positively impacts the stock market would seem to suggest that the efficiency effect dominates.
documentation that privatization and trade opening may cause significant asset revaluation certainly points the way to interesting future research.

4.5 Controlling for Macro Factors

Thus far, liberalization has held up admirably. After controlling for changes in world-wide stock prices and concurrent economic reforms, the first stock market liberalization still has a 47 percent revaluation effect. However, macroeconomic factors have still not been accounted for. This is a potentially serious problem, because it is possible that exogenous macro shocks unrelated to reform, a terms of trade shock for instance, might cause a run-up in equity prices. Not accounting for such shocks might overstate the effects of both liberalization and reform. Following Fama (1981) I deal directly with this critique by adding distributed lags and leads of the growth rates of country macroeconomic fundamentals to the right hand side of the previous regression. Let $F_t$ be a vector of country fundamentals. I estimate

\[ R_t = \alpha + Returns \beta + Re\, forms \Gamma + \delta(L)\Delta(\ln F_t) + \varepsilon_t \]

(12)

The results are listed in column (4a) of table 2. This time the story is substantially altered. After controlling for the fundamentals, the *Liberalize* coefficient falls to 0.0387. At first glance this may not seem like much of a discrepancy from the 0.054 in the constant mean return model. However, cumulated over the entire 8 month liberalization window the new estimate implies a

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27 Liberalization itself may affect macroeconomic activity. Therefore, one might argue that this approach, in taking into account the effects of macroeconomic activity, may give undue importance to macroeconomic activity because it soak up some of the effects of liberalization. However, the effects of liberalization on the macroeconomy will not be immediate and this concern would be worrying only if I included long leads, say a year, of the fundamentals. After trying a number of specifications I ended up including one month lagged, current, and one month leads of the fundamentals; The actual growth rates of the fundamentals a year out might reflect the effects of liberalization, but not in a month's time. As such, I am more concerned about erroneously attributing to liberalization, stock price increases that are a result of strong growth in the fundamentals. The fundamentals are domestic industrial production, the US treasury bill rate, domestic inflation, the real exchange rate, and a political stability index.
total revaluation of 35 percent, or two thirds of the effect one would attribute to liberalization using the first specification (1a). This is a crucial point. Following the methodology used by previous work in this area one would conclude that the total eight month revaluation is 52 percent. My estimation suggests that 35 percent is a more realistic number. The difference is even more striking since the estimates are in fact an upper bound. Furthermore, after controlling for macro factors, the Privatize coefficient is no longer significant. One possible explanation is that governments decide to privatize when macro conditions are strong. In the absence of fundamentals on the right hand side, the Privatize dummy simply picks up this correlation. Finally, the hypothesis that the Liberalize and Trade coefficients are the same can no longer be rejected.\footnote{The F statistic is 0.89 (d.f. = 1, 1403).} After accounting for the effects of macroeconomic activity on the stock market, trade opening has as large a revaluation effect as stock market liberalization.

That the effects of liberalization are substantially diminished by adding macro fundamentals to the right hand side suggests that policy-makers may be trying to time market openings to coincide with sanguine economic conditions. If officials look at macro fundamentals in deciding when to open then there is every reason to believe that they also look at the value of the stock market. Again, it seems likely that officials choose to open when the market is doing well, inducing a positive correlation between liberalization and the error term. Thus the results in table 2 provide strong support to the notion that my estimates provide an upper bound on the effects of liberalization.

5. Multiple Stock Market Liberalizations
In practice, stock market liberalization is not a binary variable with countries shifting from a completely closed to a completely open capital market regime. As table 4 indicates, with the exception of Colombia, all countries undertook at least one more opening following the initial stock market liberalization. Should these subsequent stock market liberalizations also cause asset revaluation? Subsequent liberalizations can’t blithely be treated like the first, because rational asset pricing theory predicts that if the first liberalization is done credibly\(^\text{29}\) then subsequent liberalizations should not have much effect.

A typical example is as follows. A government announces that in four months it will open its stock market to foreign investment for the first time. This is news to the market, and stock prices jump in anticipation. As the world learns that this country’s stock market is now open to foreign capital, foreign financial institutions initiate plans to create new emerging market funds down the road. These plans often become public knowledge long before the fund is operational.\(^\text{30}\) The farther in advance of implementation the market becomes aware of these subsequent liberalizations, the greater the discount on future risk-sharing and cash flow effects, and the smaller the attendant price increase.

How, then, should we think about subsequent liberalizations? An alternative to rational asset pricing theory which may be relevant in the current context is the hypothesis that demand curves for stocks slope downward. Shleifer (1986) argues that the inclusion of a company’s stock in the S&P 500 index represents an outward shift in the demand curve for that firm’s equity that is not prompted by good information.\(^\text{31}\) If the demand curve for the firm’s equity is horizontal, as

\(^{29}\) There is good reason to believe these liberalizations are credible. There is not a single case in my sample of a liberalization that is announced and then does not occur. There are also no examples of liberalizations that occur and are then reversed by the government.

\(^{30}\) A good example is the Morgan Stanley Africa Fund.

\(^{31}\) This is so because index funds which try and mimic the behavior of the S&P 500 buy substantial portions of these firms’ equity subsequent to the announcement of inclusion. Also note that the closer the announcement date is to the implementation date, the larger the jump will be.
suggested by rational asset pricing theory, then this inclusion should not be accompanied by a large share price increase. However, if the demand curve slopes downward then we should observe a share price increase at the announcement of the inclusion. Shleifer goes on to show that such announcements are accompanied by large share price increases.

The establishment of country mutual funds after the initial stock market opening provides an entirely analogous scenario. Once the first stock market liberalization has occurred credibly, subsequent liberalizations have no news content per se but do represent an increase in the demand for country equity. If the demand curve for emerging market equities is downward sloping, then in addition to a country's first stock market liberalization, subsequent liberalizations will also cause stock market revaluation. In order to test this hypothesis I run a second set of regressions in which I no longer look at countries' first stock market liberalization. I construct a new variable called Liberalize2 which takes on the value 1 in the eight month window associated with the second (and all other) stock market liberalizations.\(^{32}\) I begin by estimating

\[
R_{it} = \alpha_i + \gamma_1 \text{Liberalize}_{it} + \gamma_2 \text{Liberalize2} + \varepsilon_{it}
\]

and proceed to run the analogous battery of regressions used in generating the results in table 2.

The results are reported in table 4. Regression (1a) indicates that the coefficient on Liberalize2 is a statistically significant 0.018. In the absence of any other controls one is led to believe that subsequent liberalizations induce a 15 percent revaluation. The Liberalize coefficient is now .059, slightly larger than the coefficient associated with specification (1a) in table 2. More importantly, the hypothesis that the estimated Liberalize and Liberalize2

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\(^{32}\) Some countries have liberalizations that are too close together to allow for a seven month window without creating overlap. When this occurs I use a shorter window, but there aren't many of these so the mean window length is very near 7 months.
coefficients are statistically the same is rejected at the one percent level.\textsuperscript{33} On average, subsequent stock market liberalizations have less of a valuation effect than the first. Regression (2a) illustrates that including world stock returns on the right hand side makes little difference. Neither set of coefficients changes very much.

Regression (3a) demonstrates that the effects of including contemporaneous reforms follow the same pattern as in table 2. Neither \textit{Liberalize} or \textit{Liberalize2} are much affected, and the \textit{Trade} and \textit{Privatize} coefficients are significant and similar in magnitude to the estimates in table 2. Of particular interest is the fact that the \textit{Liberalize} coefficient is larger than both the \textit{Trade} and \textit{Privatize} coefficients respectively, but the hypothesis that \textit{Liberalize2} is the same as \textit{Trade} and \textit{Privatize} can not be rejected;\textsuperscript{34} subsequent stock market liberalizations have smaller effects than the first liberalization and their effects are no bigger than those of economic reforms.

Finally, there are a number of interesting points about regression (4a), which includes the macroeconomic fundamentals. First, notice that the \textit{Liberalize} coefficient has fallen from .059 in (1a) to 0.042. The true revaluation effect is about 39 percent, or about two thirds of the 58 percent implied by the constant-mean-return approach. This completely corroborates the story that emerged from table 2. Similarly, the \textit{Liberalize2} coefficient is 0.013, which implies a revaluation effect about three fourths as large as in regression (1a). The effects of the fundamentals on the reform estimates also follow the same pattern as in table 2. The \textit{Trade} coefficient remains significant, but the \textit{Privatize} coefficient does not. Again, these results support the argument that liberalizations are timed to coincide with good macroeconomic news.

\textsuperscript{33} The F statistic is 8.45 (d.f. = 1, 1409).
\textsuperscript{34} The F statistics are 3.26 (d.f. = 1, 1402) and 4.41 (d.f. = 1, 1402) for \textit{Trade} and \textit{Privatize} respectively in the case of \textit{Liberalize}. In the case of \textit{Liberalize2} the F statistics are 2.50 (d.f. = 1, 1402) and 0.35 (d.f. = 1, 1402) for \textit{Trade} and \textit{Privatize} respectively.
Let me briefly summarize the main results of this section. Subsequent stock market liberalizations have a positive revaluation effect, but this effect is smaller than that of the first stock market liberalization and no bigger than the effects of trade opening and privatization.

6. Conclusion

The late 1980s and early 1990s witnessed unprecedented stock market liberalizations throughout the developing world and an emerging market equity price boom. It is natural to ask: did the liberalizations cause the boom? Surprisingly, little work has been done on this topic. Macroeconomists have focused on the real effects of capital account liberalization, largely ignoring stock price reactions to financial openings. At the other extreme, financial economists working on emerging markets have identified a strong correlation between stock market liberalization and asset revaluation, but their analysis does not incorporate changes in the real macroeconomic environment. Furthermore, their work does not address the endogenous relationship between stock prices and the decision to liberalize.

By confronting the issue of policy endogeneity, meticulously constructing a set of reform variables, and acknowledging the crucial role of macroeconomic fundamentals, I am able to construct reliable estimates of the effects of stock market liberalization. The paper documents a number of important findings. First, the revaluation effects of liberalization are smaller than previous work suggests. Using identical methodology to previous studies, one would conclude that over a period of eight months prior to market opening, liberalization induces stock market revaluation on the order of 52 percent in US dollar terms. However, this estimate does not take into account macroeconomic fundamentals or the multiplicity of reforms which accompanied
liberalization. After taking these factors into account, I find that 35 percent is a reasonable upper bound on the revaluation effect. Second, I document that economic reforms, particularly trade liberalization, are good news for the stock market.

Finally, the data reveal that emerging stock markets may be subject to price pressure effects. In a rational asset pricing world, once the stock market is credibly opened, subsequent liberalizations should not have large price effects. However, I find that liberalizations subsequent to the first opening also cause significant asset revaluation. A revaluation effect of 15 percent is the upper bound in this case. The price pressure result should not be overstated, however, as trade liberalization has just as large an effect.

The first stock market liberalization provides a larger revaluation effect than any other economic reforms, but once the move to an open capital market regime has occurred, macroeconomic reform has an equally large effect on stock prices. The obvious implication would seem to be that policy makers can initially generate large wealth effects for domestic shareholders by simply opening the stock market to foreign investors, but that further asset price increases depend at least as heavily on sound macroeconomic policy.

What are we to make of all these facts? That economic reforms as well as liberalization cause asset revaluation has important implications for both finance and macroeconomics. First, liberalizing and implementing economic reform is likely to generate greater wealth effects for domestic shareholders than liberalization alone. Foreign investors would be better served placing their money in countries where financial opening is likely to be followed by real reforms. Second, since stock market openings subsequent to a country’s first have significant price effects, a portfolio long in stocks likely to be included in future country funds may be a wise strategy.
Finally, from a macroeconomic perspective, countries which liberalize their stock market and put their macroeconomic house in order should see larger subsequent increases in real investment than those that only pursue financial opening.
<table>
<thead>
<tr>
<th>Country</th>
<th>Date of First Liberalization</th>
<th>Liberalization Type</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arg</td>
<td>December 89</td>
<td>Limits on foreign capital reduced</td>
<td>Airline privatization; dual exchange rate system fails</td>
<td>Structural adjustment funds frozen; economic team resigns</td>
<td>Privatization; stabilization plan</td>
<td>IMF agreement</td>
<td>Exchange rate devalued by 35 percent</td>
<td>IMF agreement frozen</td>
</tr>
<tr>
<td>Braz</td>
<td>March 88</td>
<td>Country Fund</td>
<td>Finance minister resigns</td>
<td>Second Cruzeado Plan</td>
<td>New proposals submitted to creditors</td>
<td>None</td>
<td>Capital goods duties reduced</td>
<td>Tariffs reduced</td>
</tr>
<tr>
<td>Chil</td>
<td>May 87</td>
<td>Country Fund</td>
<td>None</td>
<td>Attempt on Pinochet’s life</td>
<td>None</td>
<td>Largest banks privatized; new debt repayment terms</td>
<td>None</td>
<td>Two floods and an earthquake</td>
</tr>
<tr>
<td>Col</td>
<td>January 92</td>
<td>Investability Index jumps 46 percent</td>
<td>Restrictions on profit remittance eased</td>
<td>Tariffs reduced; external debt refinanced</td>
<td>Tariffs cut; credit controls relaxed</td>
<td>Exchange controls eased</td>
<td>Privatization of telecom industry begins</td>
<td>None</td>
</tr>
<tr>
<td>Ind</td>
<td>June 86</td>
<td>Country Fund</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Attempt on Prime Minister’s life</td>
</tr>
<tr>
<td>Kor</td>
<td>June 87</td>
<td>Country Fund</td>
<td>None</td>
<td>None</td>
<td>False Rumors of Kim Il Sung’s death</td>
<td>Tariffs reduced on consumer durables</td>
<td>Protracted student protests</td>
<td>Tariff cuts announced</td>
</tr>
<tr>
<td>Mal</td>
<td>February 87</td>
<td>Country Fund</td>
<td>None</td>
<td>National Economic Plan (NEP) frozen</td>
<td>NEP to be extended past 1990</td>
<td>Privatization of telecom industry</td>
<td>Rubber price stabilization pact reached</td>
<td>None</td>
</tr>
<tr>
<td>Mex</td>
<td>May 89</td>
<td>Investability Index jumps 410 percent</td>
<td>Salinas elected, US govt gives $3.5B to boost reforms</td>
<td>Pacto extended</td>
<td>Privatization of two state mines</td>
<td>Brady Plan approved by US Congress; IMF agreement</td>
<td>Brady agreement with creditors</td>
<td>None</td>
</tr>
<tr>
<td>Phil</td>
<td>May 86</td>
<td>Country Fund</td>
<td>Debt rescheduling signed</td>
<td>IMF targets missed</td>
<td>$2.9 billion of public debt rescheduled</td>
<td>Marcos overthrown</td>
<td>Import restrictions lifted</td>
<td>Talks open with IMF</td>
</tr>
<tr>
<td>Tai</td>
<td>May 86</td>
<td>Country Fund</td>
<td>None</td>
<td>None</td>
<td>Investment in foreign securities allowed</td>
<td>None</td>
<td>Import bans lifted</td>
<td>Exchange controls eased</td>
</tr>
<tr>
<td>Thai</td>
<td>January 88</td>
<td>Country Fund</td>
<td>General Yongchaiyut calls for reforms</td>
<td>None</td>
<td>ASEAN free trade agreement extended</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Ven</td>
<td>April 90</td>
<td>Full market access except bank stocks</td>
<td>Trade liberalization; adjustment loan approved</td>
<td>None</td>
<td>None</td>
<td>Brady deal; profit remittance by foreign firms made easier</td>
<td>$680 million structural adjustment loan</td>
<td>Agricultural tariffs reduced</td>
</tr>
</tbody>
</table>

Notes: T* is the date of the country’s stock market liberalization, in event time. For example, in Argentina any event listed in the T*+6 box occurred on or between June and August of 1989.
Figure 1: Emerging Stock Market Responses to First Liberalization

Impulse Response to Liberalization

-0.15 -0.1 -0.05 0 0.05 0.1 0.15 0.2 0.25 0.3 0.35

T-12 T-11 T-10 T-9 T-8 T-7 T-6 T-5 T-4 T-3 T-2 T-1 T +1 T +2 T +3

CAR
Table 2: 1st Stock Market Liberalization

<table>
<thead>
<tr>
<th></th>
<th>Dependent variable: stock returns in US dollars</th>
<th>Dependent variable: stock returns in local currency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Liberalize</td>
<td>0.054</td>
<td>0.052</td>
</tr>
<tr>
<td></td>
<td>(4.0)</td>
<td>(3.4)</td>
</tr>
<tr>
<td>$R^{LDC}$</td>
<td>0.50</td>
<td>0.498</td>
</tr>
<tr>
<td></td>
<td>(3.4)</td>
<td>(3.4)</td>
</tr>
<tr>
<td>$R^{US}$</td>
<td>0.22</td>
<td>0.223</td>
</tr>
<tr>
<td></td>
<td>(2.4)</td>
<td>(2.4)</td>
</tr>
<tr>
<td>$R^{EAFE}$</td>
<td>-0.01</td>
<td>-0.006</td>
</tr>
<tr>
<td></td>
<td>(-0.2)</td>
<td>(-0.1)</td>
</tr>
<tr>
<td>Stabilize</td>
<td>0.01</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.7)</td>
<td>(0.3)</td>
</tr>
<tr>
<td>Trade</td>
<td>0.023</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(4.6)</td>
<td>(4.3)</td>
</tr>
<tr>
<td>Privatize</td>
<td>0.021</td>
<td>0.011</td>
</tr>
<tr>
<td></td>
<td>(3.6)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Exchange</td>
<td>-0.004</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(-0.4)</td>
<td>(0.2)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Obs</td>
<td>1423</td>
<td>1423</td>
</tr>
</tbody>
</table>

Notes: The regressions are performed using monthly data from December 1984 to December 1994. Liberalize is a dummy variable for the announcement window of the first stock market liberalization. $R^{LDC}$, $R^{US}$, and $R^{EAFE}$ are the monthly return on the IFC’s emerging market stock index, the S&P 500 and the MSCI’s Europe, Asia, and Far East index respectively. Stabilize, Trade, Privatize, and Exchange are dummy variables for macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. A constant plus eleven country dummies were also estimated but not reported; t-statistics calculated using heteroskedasticity-consistent (White) standard errors are in parentheses.
### Table 3: Subsequent Stock Market Liberalizations and Policy Events

#### Argentina: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 91</td>
<td>Investable Index jumps 19 percent</td>
<td>Airline and ship privatizations begin</td>
<td>Structural adjustment funds unfrozen</td>
<td>IMF agreement; privatizations</td>
<td>Domingo Cavallo appointed finance minister</td>
<td>Tariff reductions</td>
<td></td>
</tr>
<tr>
<td>January 92</td>
<td>Country Fund</td>
<td>Privatizations</td>
<td>IMF stand by loan</td>
<td>None</td>
<td>IMF approves economic plan</td>
<td>IMF agreement; Brady Deal</td>
<td></td>
</tr>
</tbody>
</table>

#### Brazil: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 88</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Third Cruzado Plan</td>
</tr>
<tr>
<td>April 90</td>
<td>Investability Index jumps 33 percent</td>
<td>IMF talks open; stock market scandal</td>
<td>Tariffs reduced</td>
<td>Privatization process frozen</td>
<td>None</td>
<td>Collor takes office, sweeping deregulations</td>
<td>Tariffs reduced; Curb on profit remittance removed</td>
</tr>
<tr>
<td>January 91</td>
<td>Investability Index jumps 34 percent</td>
<td>IMF talks open</td>
<td></td>
<td></td>
<td></td>
<td>Second Collor Plan</td>
<td>None</td>
</tr>
<tr>
<td>July 91</td>
<td>Investability Index jumps 185 percent;</td>
<td></td>
<td></td>
<td></td>
<td>Agreement on payment of arrears</td>
<td>IMF Negotiations begin; privatizations</td>
<td>None</td>
</tr>
<tr>
<td>May 92</td>
<td>Country Fund</td>
<td>IMF approves a new stand by loan</td>
<td>Negotiations begin on Brady Deal</td>
<td></td>
<td></td>
<td>Brady debt deal signed; official charges of corruption against Collor</td>
<td>None</td>
</tr>
</tbody>
</table>

#### Chile: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 88</td>
<td>Country Fund</td>
<td>None</td>
<td>Telefonos de Chile privatized</td>
<td>Privatization of state electricity company begins</td>
<td>Poll shows Pinhoet to win plebiscite</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>January 89</td>
<td>Investability Index jumps 15 percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pinhoet defeated in Plebiscite</td>
<td>None</td>
</tr>
<tr>
<td>February 90</td>
<td>Country Fund</td>
<td>IMF mission visits</td>
<td>IMF loan; Central Bank independent</td>
<td>Patricio Alwyyn takes over as President</td>
<td>Foreign exchange controls eased</td>
<td>Alwyyn announces commitment to reforms</td>
<td>None</td>
</tr>
<tr>
<td>January 91</td>
<td>Investability Index jumps 42 percent</td>
<td>Debt rescheduling</td>
<td></td>
<td>None</td>
<td>Capital outflow restrictions eased</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>January 92</td>
<td>Investability Index jumps 46 percent</td>
<td>None</td>
<td>Free trade agreement with Mexico</td>
<td>None</td>
<td>Peso revalued by 5 percent</td>
<td>Foreign exchange controls eased</td>
<td>None</td>
</tr>
</tbody>
</table>
### India: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>$T_{-12}$</th>
<th>$T_{-9}$</th>
<th>$T_{-6}$</th>
<th>$T_{-3}$</th>
<th>$T_{-}$</th>
<th>$T_{+3}$</th>
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</thead>
<tbody>
<tr>
<td>May 87</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td>Stock market scandal</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>August 88</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>Talks on trade liberalization begin</td>
<td>Import liberalization package</td>
<td>Government declares support for privatization</td>
<td>None</td>
</tr>
<tr>
<td>December 88</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>October 89</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Gandhi congress ousted</td>
</tr>
<tr>
<td>June 90</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td>None</td>
<td>Import liberalization</td>
</tr>
<tr>
<td>May 92</td>
<td>Country Fund</td>
<td>Rao elected PM; rupee devalued</td>
<td>None</td>
<td>None</td>
<td>Exchange controls eased</td>
<td>Illegal stock trading exposed</td>
<td>None</td>
</tr>
<tr>
<td>May 94</td>
<td>Country Fund</td>
<td>Government faces no confidence vote</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Foreigners can enter telecom industry</td>
</tr>
<tr>
<td>September 94</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### Korea: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>$T_{-12}$</th>
<th>$T_{-9}$</th>
<th>$T_{-6}$</th>
<th>$T_{-3}$</th>
<th>$T_{-}$</th>
<th>$T_{+3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 88</td>
<td>Government announces plan to open stock market</td>
<td>Roh Tae Woo elected president</td>
<td>Tariffs reduced on consumer durables</td>
<td>None</td>
<td>Minimum wage increased by 23 percent</td>
<td>Interest rates deregulated</td>
<td>Investment in foreign real estate allowed</td>
</tr>
<tr>
<td>July 90</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>None</td>
<td>North Korea proposes disarmament</td>
<td>Diplomatic relations with USSR</td>
<td>None</td>
</tr>
<tr>
<td>March 91</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>January 92</td>
<td>Foreigners allowed to hold up to 10 percent of market</td>
<td>Foreign firms allowed to hold retail outlets</td>
<td>Limit on foreign banks issue of CDs eased</td>
<td>Bank bailout of $680 million</td>
<td>North Korea agrees to military inspection</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>October 92</td>
<td>Instability Index jumps 23 percent</td>
<td>Pension funds urged to buy more equity</td>
<td>Kim Young Sam elected president</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 93</td>
<td>Country Fund</td>
<td>Governor of Bank of Korea is sacked</td>
<td>Financial reform plan published</td>
<td>Foreigners can buy convertible bonds</td>
<td>Real Name financial system decree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 93</td>
<td>Country Fund</td>
<td>Lending rates liberalized</td>
<td>GATT; tariff reduction agreements</td>
<td>Foreign banks admitted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 94</td>
<td>Foreign equity ceiling raised to 12 percent</td>
<td>Manufacturing firms can issue unlimited corporate bonds</td>
<td>Kim Il Sung dies</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Malaysia: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 87</td>
<td>Country Fund</td>
<td></td>
<td></td>
<td></td>
<td>90 arrests under Internal Security Act</td>
<td>None</td>
<td>$1 billion rescue plan for depositors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td>Hiatus on restructuring foreign equity</td>
</tr>
<tr>
<td>April 89</td>
<td>Country Fund</td>
<td>Most favored nation trade pact with China</td>
<td>None</td>
<td>ASEAN-Japan Development Fund loans</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>April 90</td>
<td>Country Fund</td>
<td>Banks allowed to purchase stock</td>
<td>152 firms delist from Singapore Stock Exchange</td>
<td>None</td>
<td>Plan for electricity privatization</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>January 91</td>
<td>Insolvency Index jumps 29 percent</td>
<td>None</td>
<td></td>
<td></td>
<td>Prime Minister Mahathir's party retains power in general elections</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### Mexico: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 90</td>
<td>Country Fund</td>
<td>Brady term sheet submitted</td>
<td>None</td>
<td>Privatization of banks approved</td>
<td>None</td>
<td>Salinas requests NAFTA talks; Telmex to be privatized</td>
<td>None</td>
</tr>
<tr>
<td>January 92</td>
<td>Insolvency Index jumps 51 percent</td>
<td>None</td>
<td>NAFTA talks begin; S2.2B of Telmex privatized</td>
<td>Election: strong PRI showing boosts reforms</td>
<td>Bancomer privatized</td>
<td>None</td>
<td>Environmental concerns about NAFTA</td>
</tr>
</tbody>
</table>

### The Philippines: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 87</td>
<td>Country Fund</td>
<td>Import controls lifted</td>
<td>Paris Club debt rescheduling of $870 million</td>
<td>$10.5 billion Structural adjustment loan; debt rescheduling</td>
<td>Agrarian land reform plan is approved</td>
<td>Coup attempt; bombings of businesses in Makati</td>
<td></td>
</tr>
<tr>
<td>November 89</td>
<td>Country Fund</td>
<td>IMF approves stabilization plan</td>
<td>None</td>
<td>Debt rescheduling $2.2 billion</td>
<td>Brady Deal reached in principle</td>
<td>Coup attempt</td>
<td>None</td>
</tr>
<tr>
<td>October 93</td>
<td>Country Fund</td>
<td>None</td>
<td>Airline privatization announced</td>
<td>IMF negotiations begin</td>
<td>Privatization of copper and shipyards</td>
<td>Privatization of steel company approved</td>
<td>IMF agreement reached</td>
</tr>
</tbody>
</table>
### Taiwan: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*-+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 86</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>Import tariffs reduced</td>
<td>None</td>
<td>Restrictions imposed on capital inflows</td>
<td></td>
</tr>
<tr>
<td>May 89</td>
<td>Country Fund</td>
<td>None</td>
<td>Capital gains tax imposed</td>
<td>Privatization of China Steel announced</td>
<td>More flexible exchange rate regime</td>
<td>Central bank governor resigns; trade restrictions lifted; privatizations</td>
<td></td>
</tr>
<tr>
<td>January 91</td>
<td>Foreigners allowed to hold up to 10 percent of market</td>
<td>Bank privatizations announced</td>
<td>Han Pei-Tsun elected prime minister</td>
<td>Pension funds allowed to invest in stock market</td>
<td>None</td>
<td>None</td>
<td>Privatizations</td>
</tr>
<tr>
<td>August 93</td>
<td>Instability Index jumps 115 percent</td>
<td>Privatizations</td>
<td>Lien Chan becomes prime minister</td>
<td>None</td>
<td>None</td>
<td>288 million shares of China Steel sold</td>
<td>Banking opened to foreign banks</td>
</tr>
<tr>
<td>March 94</td>
<td>Instability Index jumps 33 percent</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td>Tariffs cut by an average of 100 percent</td>
<td></td>
</tr>
</tbody>
</table>

### Thailand: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*-+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 88</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>Chartchai Choonthavan takes office</td>
<td>None</td>
<td>Ceiling on foreign borrowing raised</td>
<td>US imposes restrictions on imports from Thailand</td>
</tr>
<tr>
<td>December 89</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td>Accusations of corruption</td>
<td>None</td>
<td>Strikes protesting privatization</td>
<td>Ceiling on loan rates raised</td>
</tr>
<tr>
<td>June 90</td>
<td>Country Fund</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td>None</td>
<td>Twenty ministers sacked in corruption scandal</td>
</tr>
<tr>
<td>January 91</td>
<td>Instability Index jumps 35 percent</td>
<td>None</td>
<td></td>
<td></td>
<td>None</td>
<td>Coup overthrows government</td>
<td>Exchange controls eased</td>
</tr>
</tbody>
</table>

### Venezuela: Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

<table>
<thead>
<tr>
<th>Opening Date</th>
<th>Type of Opening</th>
<th>T*-12</th>
<th>T*-9</th>
<th>T*-6</th>
<th>T*-3</th>
<th>T*</th>
<th>T*-+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 94</td>
<td>Instability Index jumps 33 percent</td>
<td>None</td>
<td>Perez suspended from presidency</td>
<td>Privatization process frozen</td>
<td>Price controls imposed; Banco Latino collapses</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perez accused of misusing public funds</td>
<td>Free agreement with Chile; rampant coup rumors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4: 1st and All Subsequent Stock Market Liberalizations

<table>
<thead>
<tr>
<th></th>
<th>Dependent variable: stock returns in US dollars</th>
<th>Dependent variable: stock returns in local currency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Liberalize</td>
<td>0.059</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td>(4.4)</td>
<td>(3.6)</td>
</tr>
<tr>
<td>Liberalize2</td>
<td>0.018</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(1.9)</td>
</tr>
<tr>
<td>R^{LDC}</td>
<td>0.50</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>(3.3)</td>
<td>(3.3)</td>
</tr>
<tr>
<td>R^{US}</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>(2.3)</td>
<td>(2.4)</td>
</tr>
<tr>
<td>R^{EAFE}</td>
<td>0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.1)</td>
<td>(-0.1)</td>
</tr>
<tr>
<td>Stabilize</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.7)</td>
<td>(0.3)</td>
</tr>
<tr>
<td>Trade</td>
<td>0.024</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>(4.6)</td>
<td>(4.3)</td>
</tr>
<tr>
<td>Privatize</td>
<td>0.019</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(3.4)</td>
<td>(0.9)</td>
</tr>
<tr>
<td>Exchange</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(-0.5)</td>
<td>(-0.3)</td>
</tr>
<tr>
<td>\bar{R}^2</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Obs</td>
<td>1423</td>
<td>1423</td>
</tr>
</tbody>
</table>

Notes: The regressions are performed using monthly data from December 1984 to December 1994. Liberalize is a dummy variable for the announcement window of the first stock market liberalization. Liberalize2 is a dummy variable for the announcement window of each of all stock market liberalizations subsequent to the first. R^{LDC}, R^{US}, and R^{EAFE} are the monthly return on the IFC's emerging market stock index, the S&P 500 and the MSCI's Europe, Asia, and Far East index respectively. Stabilize, Trade, Privatize, and Exchange are dummy variables for macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. A constant plus eleven country dummies were also estimated but not reported; t-statistics calculated using heteroskedasticity-consistent (White) standard errors are in parentheses.
References


