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

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Abstract

A stock market liberalization is a decision by a country's government to allow foreigners to purchase shares in that country's stock market. On average, a country's aggregate equity price index experiences abnormal returns of 3.3 percent per month in real dollar terms during an eight-month window leading up to the implementation of its initial stock market liberalization. This result is consistent with the prediction of standard international asset pricing models that stock market liberalization may reduce the liberalizing country's cost of equity capital by allowing for risk sharing between domestic and foreign agents.

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A stock market liberalization is a decision by a country's government to allow foreigners to purchase shares in that country's stock market. Standard international asset pricing models (IAPMs) predict that stock market liberalization may reduce the liberalizing country's cost of equity capital by allowing for risk sharing between domestic and foreign agents (Stapleton and Subrahmanyan (1977), Errunza and Losq (1985) Eun and Janakiramanan (1986), Alexander et. al. (1987), and Stulz (1999a, 1999b)).

This prediction has two important empirical implications for those emerging countries that liberalized their stock markets in the late 1980s and early 1990s. First, if stock market liberalization reduces the aggregate cost of equity capital, then, holding expected future cash flows constant, we should observe an increase in a country's equity price index when the market learns that a stock market liberalization is going to occur. The second implication is that we should observe an increase in physical investment following stock market liberalizations, because a fall in a country's cost of equity capital will transform some investment projects that had a negative net present value (NPV) before liberalization into positive NPV endeavors after liberalization. This second effect of stock market liberalization should generate higher growth rates of output and have a broader impact on economic welfare than the financial windfall to domestic shareholders (see Henry (1999a)). This paper examines whether the data are consistent with the first of these two implications. Specifically, an event study approach is used to assess whether stock market liberalization is associated with a revaluation of equity prices and a fall in the cost of equity capital.

In the sample of 12 emerging countries examined in this paper, stock markets experience average abnormal returns of 4.7 percent per month in real dollar terms during

an eight-month window leading up to the implementation of a country's initial stock market liberalization. After controlling for comovements with world stock markets, economic policy reforms, and macroeconomic fundamentals, the average abnormal return, 3.3 percent per month over the same horizon, is smaller but still economically and statistically significant. Estimates using five-month, two-month, and implementation-month-only windows are all associated with statistically significant stock price revaluation. The largest monthly estimate, 6.5 percent, is associated with the implementation-month-only estimate.

These facts are consistent with a fundamental prediction of the standard IAPM. If an emerging country's stock market is completely segmented from the rest of the world, then the equity premium embedded in its aggregate valuation will be proportional to the variance of the country's aggregate cash flows. Once liberalization takes place and the emerging country's stock market becomes fully integrated, its equity premium will be proportional to the covariance of the country's aggregate cash flows with those of a world portfolio. If, in spite of foreign ownership restrictions, the emerging market is not completely segmented ((Bekaert and Harvey (1995)) then the emerging market's equilibrium valuation will incorporate an equity premium that lies somewhere between the autarky and fully integrated premium.[1]

The general consensus-- Stulz (1999a, 1999b), Tesar and Werner (1998), Bekaert and Harvey (1998), and Errunza and Miller (1998)-- is that the local price of risk (the variance) exceeds the global price of risk (the covariance). Therefore, we expect the equity premium to fall when a completely or mildly segmented emerging country liberalizes its stock market.[2] Holding expected future cash flows constant, this fall in the

equity premium will cause a permanent fall in the aggregate cost of equity capital and an attendant revaluation of the aggregate equity price index.[3]

One of the key issues in constructing estimates of the cumulative abnormal returns associated with a country's initial stock market liberalization lies in establishing the date of the initial liberalization and picking an appropriate time interval around this date. After providing a detailed description of the dating procedure and the reasons for using an eight-month event window, the empirical analysis in this paper begins by focusing on the behavior of stock prices during the eight-month window. After controlling for comovements with world stock returns, macroeconomic reforms, and macroeconomic fundamentals, the average monthly revaluation effect associated with the eight-month stock market liberalization window is 3.3 percent, which implies a total revaluation of 26 percent.

Although these results suggest a revaluation of equity prices in anticipation of the initial stock market liberalization, using a relatively long window is problematic because policymakers may behave like managers who issue equity following a run-up in stock prices (Ritter (1991) and Loughran and Ritter (1995)). Using an eight-month event window may overstate the liberalization effect if policymakers try to liberalize after a period of unusually high returns. To address this problem, the paper also presents estimates based on shorter event windows. Estimates using five-month, two-month, and one-month (implementation-month-only) windows are all associated with statistically significant stock price revaluation. The largest effect, 6.5 percent, is associated with the implementation-month-only estimate. This suggests that the revaluation associated with a country's initial stock market liberalization is not an artifact of using long windows.

Further checks of robustness of the results are performed by estimating the revaluation effect using implementation-month-only windows and alternative liberalization dates that have been proposed by other authors. These results are quantitatively and qualitatively similar to the benchmark results. Finally, the paper also demonstrates that stock market liberalizations that follow the initial liberalization are associated with much smaller and statistically insignificant revaluations.

This paper presents the first careful empirical estimates of the impact of stock market liberalization on emerging market equity prices. A number of papers examine the effect of stock market liberalization on market integration (Errunza, Losq, and Padmanabhan (1992), Buckberg (1995), Bekaert (1995), and Bekaert and Harvey (1995)). However, none of these papers estimate the valuation impact of stock market liberalization. Kim and Singal's (1999) evidence that emerging market stock returns are abnormally high in the months leading up to liberalization provides crucial initial evidence on the valuation question, but they acknowledge that there were confounding events throughout the sample period for which they do not control. In a related paper, Bekaert and Harvey (1998) show that liberalization tends to decrease aggregate dividend yields and argue that the price change reflects a change in the cost of capital rather than a change in earnings or profits of firms.[4] They control for the potentially confounding effect of economic reforms by using proxy variables such as credit ratings.

An important contribution of this paper relative to Bekaert and Harvey (1998) is that rather than using ready-made proxy variables to control for economic reforms, I construct a novel data set of economic policy reforms (Henry (1999b)) for each of the 12 countries in my sample. Using this time series of economic policy changes to control

explicitly for economic reforms provides transparent evidence on the impact of stock market liberalization. Specifically, in addition to disentangling the effect of stock market liberalization from the effects of macroeconomic stabilization, trade liberalization, privatization, and the easing of exchange controls, the paper also provides a first set of estimates of the impact of these macroeconomic reforms on the stock market.

For example, in the sample of countries considered here, stock markets experience average abnormal returns of 2.1 percent per month in real dollar terms during the eight months leading up to a trade liberalization. The trade reform window frequently overlaps with the window for stock market liberalization. Therefore, estimating the effect of stock market liberalization without controlling for trade reforms may result in upward biased estimates. Moreover, the stock price responses to trade and other macroeconomic reforms are of independent interest.

The remainder of this paper proceeds as follows. Section I presents the data and descriptive findings. Section II describes the methodology that will be used to identify a country's initial stock market liberalization and measure its valuation impact. Section III presents the empirical results. Section IV discusses some potential interpretation problems. Section V summarizes the main results and conclusions.

I. Data and Descriptive Findings

A. Stock Market Data

The sample examined in this paper includes 12 emerging markets: Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela in Latin America, and India, Malaysia, Korea, the Philippines, Taiwan, and Thailand in Asia. These countries were chosen

because of the general interest in the two regions. Indonesia was excluded from the Asian list because Indonesian stock market data is available only after the date on which its stock market was liberalized. All emerging stock market data are taken from the International Finance Corporation's (IFC) Emerging Markets Data Base (EMDB). Returns for individual countries come from the *IFC Total Return Index* (U.S. dollar denominated). The Morgan Stanley Capital Index for Europe, Asia, and the Far East is also from the EMDB. The data on the S&P 500 comes from the IMF's International Financial Statistics (IFS). Each country's U.S. dollar total return index is deflated by the U.S. consumer price index, which comes from the IFS. All of the data are monthly. All returns are logarithmic.

B. Stock Market Liberalization Dates

B.1. Implementation Dates

Testing the hypothesis that a country's first stock market liberalization causes equity price revaluation requires a systematic procedure for identifying the date of each country's first stock market liberalization. Official policy decree dates are used when they are available. When policy decree dates are not available, two alternatives are pursued. First, many countries initially permitted foreign ownership through country funds. Since government permission is presumably a necessary condition for establishment of these funds, the date when the first country fund is established is a proxy for the official implementation date. The second way of indirectly 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. A large jump in the investability index is evidence of an official liberalization. In what follows, the date of a country's first stock market liberalization is defined as the first month with a verifiable occurrence of any of the following: liberalization by policy decree, establishment of the first country fund, or an increase in the investability index of at least 10 percent.

[Table I and Table II Here]

Table I lists the date on which each of the 12 countries first liberalized its stock market, as well as the means by which they liberalized. In particular, where the initial liberalization is through a country fund, the specific name of the country fund is given. Table II provides a comparison of the liberalization dates in Table I with other liberalization dates in the literature. Specifically, column (2) of Table II lists the liberalization dates identified using the procedure outlined in the preceding paragraph. Columns (3) through (5) list the official liberalization dates of Bekaert and Harvey (1998), Kim and Singal (1995), and Buckberg (1995) respectively. Column (6) lists the earliest date of the preceding four columns. Three of the 12 dates in column (2) are preceded by dates in column (6). An investigation of the three dates preceding those given in column (2) yielded no confirmation of the September 1987 opening for Thailand or the December 1988 opening for Venezuela. The February 1991 date for Colombia actually refers to *La Apertura* which was a trade liberalization not a stock market liberalization. Hence, the liberalization dates in column (2) also represent the earliest verifiable stock market liberalization dates listed in Table I. This is important because the goal here is to identify the first stock market liberalization in any particular country. The empirical analysis in

Section III begins with the dates in column (2), but for comparison, results based on the other dates are also presented.

B.2. Announcement Dates

A search for announcement dates corresponding to the implementation dates listed in Table I was conducted using the database *Lexis/Nexis Research Software Version 4.06*. Consultations with library science staff suggested that Lexis/Nexis offers two distinct advantages relative to Bloomberg and the Dow Jones News Retrieval. First, Bloomberg has relatively little coverage prior to 1991. Second, Dow Jones News Retrieval covers a subset of the news sources spanned by Lexis/Nexis. Lexis/Nexis covers more than 2,300 full-text information sources from U.S. and overseas newspapers, magazines, journals, newsletters, wire services, and broadcast transcripts. It also covers abstract material from more than 1,000 information sources.

The search algorithm used was as follows. If the initial stock market liberalization came via a country fund, the search was conducted using the name of the country fund. If the initial stock market liberalization was not a country fund, then the following search phrases were used: *stock market liberalization, stock market opening, capital market liberalization, capital market opening, restrictions on foreign capital, foreign investment,* and *foreign portfolio investment*.

[Table III Here]

Table III presents the complete results of the search. The first column of the table lists the country with the implementation date of its first stock market liberalization below it in parentheses. Column 2 lists all announcement dates that were uncovered by the

search. For seven of 12 countries the earliest news of stock market liberalization comes on or after the actual implementation date. Of the five countries for which the announcement date precedes the actual liberalization date, three of them have announcements occurring only one month in advance. Given the legal, political, and logistical complexities of enacting such a policy, it is hard to believe that the market first learns of the undertaking only a month before it happens. By way of comparison, the average time between announcement and listing for American Depositary Receipts (ADRs) is three months, and ADRs are issued in markets that have already been liberalized. For the remaining two countries, Colombia and Taiwan, only Taiwan's announcement date seems reasonable. The headline for Colombia actually corresponds not to the stock market, but to its major trade liberalization, *La Apertura.* The central point of Table III is that announcement dates uncovered using a source such as Lexis-Nexis are likely to be poor proxies for the date at which information about the liberalization first reached market participants. In the absence of credible announcement dates, the only reliable way of capturing all of the price changes associated with the liberalization is to estimate abnormal returns over a generous window of time preceding the liberalization. A detailed discussion of the construction of such a window is postponed until Section II.

[Figure 1 Here]

C. Descriptive Findings

Figure 1 motivates the analysis by plotting the average cumulative abnormal return (triangles) across all 12 countries in event time. T* is the month in which the stock market liberalization was implemented (see the dates in Table I). Figure 1 suggests a

revaluation of aggregate equity prices in anticipation of stock market liberalization; the cumulative abnormal return from T*-12 to T* is on the order of 40 percent.[5]

As a way of checking the consistency of the cumulative abnormal return plot with other work, Figure 1 also plots the cumulative abnormal change in the log of the dividend yield (squares). As one would expect, the respective plots are near mirror images: realized returns increase as the dividend yield decreases. The cumulative decline in dividend yields from T*-12 to T* is on the order of 30 percent. Since the average level of the dividend yield in these countries prior to liberalization is about four percent, the 30 percent decline reported in Figure 1 suggests an average fall in the dividend yield of about 100 basis points.[6] This estimate of 100 basis points is slightly larger than the range of declines (5 to 90 basis points) reported by Bekaert and Harvey (1998), but once controls are introduced in Section III, this number falls well within the range of Bekaert and Harvey's estimates.

While Figure 1 suggests a causal channel from stock market liberalization to stock prices and the cost of equity capital, the graph needs to be interpreted with caution because it does not control for any other reforms. In particular, note that there is a stock price revaluation of about 20 percent from T* to T*+4. The dividend yield also continues to fall after implementation of the liberalization. Since there is no theoretical reason to expect a stock-market-liberalization-induced revaluation after implementation, Figure 1 suggests that favorable, unanticipated macroeconomic events tend to occur following stock market liberalizations. Macroeconomic reforms are the focus of the next subsection.

D. Economic Reforms

Conducting an event study is the most direct and transparent way of assessing the impact of stock market liberalization on emerging market equity prices. However, unlike the typical event study in finance where the econometrician can be reasonably certain that the event in question is isolated from other influential events, the shift from closed to open capital markets usually coincides with four equally important changes in economic policy: macroeconomic stabilization, trade liberalization, privatization, and the easing of exchange controls.

[Table IV Here]

Table IV, which lists all confounding macroeconomic events occurring within a 15-month window around the initial stock market liberalization, forcefully illustrates this point. Argentina provides a good illustration of why attention to concurrent economic reforms is a critical part of this event study. At least part of the dramatic increase in Argentine stock prices during 1989 was probably due to the implementation of a sweeping stabilization plan. There are many other conspicuous examples: 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).[7]

The theory used to explain the stock price effects of a capital market liberalization assumes that everything else is held constant when this change is made. To construct an estimate that we can use to test the theory, it is necessary to hold constant the other reform measures and isolate a pure capital market effect. In addition, the stock market's response to the other reforms is interesting in its own right. Using the full list of events allows for measurement of the price response to each of the four major reforms.

In addition to the problem of confounding macroeconomic reforms, there are four other methodological issues involved in measuring the impact of stock market liberalization on equity prices: construction of the event windows in the absence of announcement dates, multiple stock market liberalizations, and accounting for macroeconomic fundamentals and policy endogeneity. The next section discusses these issues in detail.

II. Methodological Issues

A. Construction of Event Windows

In the absence of reliable announcement dates, the average time between announcement and listing for American Depositary Receipts (three months)[8] provides an announcement proxy. Suppose the government announces in month T*-3 that it will open the stock market to foreign investors in month T*. Since there can be no anticipated price jumps, the price must jump on the announcement and then gradually appreciate in such a way that there is no jump in price when the liberalization occurs at T*. Measuring the impact of stock market liberalization in this textbook world would be straightforward: regress real returns on a constant, a set of control variables, and two dummies. The first dummy would be for T*-3 (the announcement month) only and the second dummy for months T*-2, T*-1, and T*. The first dummy would pick up the level effect of the jump, and the second dummy would measure the slope effect due to gradual price appreciation.[9]

However, unlike the canonical example where all market participants learn about the future opening at the same time, Errunza and Miller (1998) argue that in practice there is likely to be widespread information leakage prior to any official announcement in

emerging markets.[10] Given that learning about a future liberalization is a gradual process in which market participants receive the news at different times, and the theoretical expectation of no revaluation implementation, an event window of T*-7 to T* is used to test for a revaluation effect. Again, T* refers to the implementation dates in Table I.

The magnitude and statistical significance of abnormal returns during the liberalization window are evaluated by estimating the following panel regression:

$$R_{it} = a_i + g \cdot Liberalize_{it} + e_{it} . \quad (1)$$

The a_i are country-specific dummies. $Liberalize_{it}$ is a dummy variable that takes on the value 1 in each of the eight months from T*-7 to T* associated with country *i*'s first stock market liberalization.[11] Hence, the parameter g measures the average monthly abnormal return across all 12 countries during the 8-month stock market liberalization window.

B. Multiple Stock Market Liberalizations

Table AI shows that most countries' initial stock market liberalization did not constitute a complete opening to foreign investors. Rather, stock market liberalization is a gradual process generally involving several liberalizations subsequent to the first. Inasmuch as it is part of a broader set of economic reforms geared toward increased openness, news of the first stock market liberalization is also implicit news about the entire future schedule of stock market liberalizations. Consequently, future stock market liberalizations are probably anticipated at the time of the first stock market liberalization. Because subsequent liberalizations are probably anticipated there are two relevant states of the world to consider:

> **S1:** When the first stock market liberalization occurs, future liberalizations are anticipated, and it is known that they will take place with a probability of 1.
>
> **S2:** When the first stock market liberalization occurs, future liberalizations are anticipated, but there is some positive probability that each of the subsequent liberalizations will not occur.

If **S1** is the true state of the world, then the only revaluation occurs when the first stock market liberalization is announced. Although there will be a gradual appreciation of prices until the entire liberalization process is completed, this slope effect[12] will be hard to detect given the noise in the data. If **S2** is the true state of the world, then in addition to the first price jump, there may also be revaluations as each scheduled liberalization date approaches and market participants receive news confirming that it will take place according to schedule.

These two distinct states of the world raise the important question of how to measure the effects of the initial stock market liberalization versus those of subsequent liberalizations. Testing for revaluation effects by using a dummy variable that takes on the value one during the event window of each and every stock market liberalization is likely to understate the true effects of stock market liberalization if **S1** is the true state of the world. On the other hand, it is also important to know whether subsequent stock market liberalizations induce revaluation effects. This discussion argues for creating two dummy variables. The first, called *Liberalize*, takes on the value one during the event window of the first stock market liberalization. The second, called *Liberalize2*, takes on the value one during all liberalization windows subsequent to the first.

C. Macroeconomic Fundamentals and Policy Endogeneity

As the ultimate goal is to estimate the size of the aggregate equity price response to stock market liberalization holding expected future cash flows constant, equation (1) will need augmentation. Sections III.C and III.D will control for expected future cash flows by adding a set of economic reform dummies and macroeconomic fundamentals as right-hand-side variables. More generally, a fundamental concern with estimating the stock price response to liberalization is that policy makers have an incentive to liberalize the stock market when it is doing well. A policymaker who liberalizes the stock market when prices are depressed risks being accused of selling off the country at fire-sale prices. Summers (1994) makes a similar point in the context of privatization. To the extent that stock market performance depends on economic conditions, the decision to liberalize depends on the economy's current and expected future performance. Although controlling for macroeconomic fundamentals partially controls for this concern, the standard event study approach may yield upward biased estimates if policymakers time liberalizations to coincide with news about positive future macroeconomic shocks. On the other hand, some liberalizations have been undertaken during crises, and foreign portfolio investment has also been encouraged to invigorate dormant markets. Nevertheless, the potential endogeneity of the liberalization decision requires cautious interpretation of the estimated revaluation effect. This issue is raised again in Section III.E.

III. Results

Sections *A* through *D* estimate the average cumulative impact of a country's first stock market liberalization on aggregate market returns over the eight month liberalization window described in Section II. Section *A* begins with a benchmark specification, (1), that is comparable to Kim and Singal's (1995) earlier work. Sections *B* through *D* pose

three alternative specifications that take seriously the notion that comovements with foreign stock markets, contemporaneous economic reforms, or a favorable shock to macroeconomic fundamentals might be responsible for the sharp increase in valuations. Section E discusses some of the interpretation difficulties involved in using a relatively long event window, and also presents results based on shorter windows. All of the estimates in Sections *F* and *G* use implementation-month-only windows. Section *F* also tests for a revaluation effect using alternative event dates. Specifically, the implementation dates of all the authors in Table II are used along with exactly the same battery of controls as in Sections *A* through *E*. Section *G* estimates the average effect of the second and all subsequent stock market liberalizations.

[Table V Here]

A. Benchmark Estimates

The results from estimating equation (1) are given in column (1a) of Table V. The coefficient of 0.047 on *Liberalize* is highly significant. On average, a country's first stock market liberalization is preceded by a total revaluation of 38 percent in U.S. dollar terms. The total revaluation number is calculated by multiplying the average monthly abnormal return during the window by the length of the window (4.7 percent per month x eight months = 37.6 percent). Table V, Panel B provides estimates of the impact of liberalization on dividend yields. The specification is identical to equation (1) except that the left-hand-side variable is the change in the log of the dividend yield. The dividend yield results are not as strong as those for returns. Specifically, the coefficient of –0.024 on *Liberalize* in the dividend yield specification implies an average fall in dividend yields of about 70 basis points. Again, this is consistent with Bekaert and Harvey (1998) who

also find a small fall in dividend yields around liberalization. Errunza and Miller (1998) also report dividend yield results that are not as significant as those for stock returns. Nevertheless, the negative coefficient on *Liberalize* in column (1b) of the dividend yield regressions is qualitatively consistent with a one-time equity price revaluation resulting from a fall in the cost of equity capital.

B. Controlling for World Stock Returns

A glaring omission associated with specification (1) is the effect of comovements with foreign stock markets. The following specification measures the abnormal return associated with a country's first stock market liberalization after controlling for the effects of foreign stock market fluctuations

$$R_{it} = a_i + b_1 R_t^{LDC} + b_2 R_t^{US} + b_3 R_t^{EAFE} + g \cdot Liberalize_{it} + e_{it}. \quad (2)$$

Where:

R_t^{ldc} = The continuously compounded real dollar return on an index of emerging market funds at time t.

R_t^{us} = The continuously compounded real return on the S&P 500 index at time t.

R_t^{eafe} = The continuously compounded real dollar return on Morgan Stanley's Europe, Asia, and Far East (EAFE) stock market index at time t.

If the run-up in emerging market equity prices was the result of booming foreign stock markets, then the coefficient on the *Liberalize* dummy in equation (2) should be significantly reduced relative to specification (1).

Column (2a) of Table V 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.[13] On average, when the aggregate emerging market index rises by one percentage point, an individual country's index will rise by 0.5 percentage points. The U.S. beta is smaller than the emerging market beta, but is also significant. The EAFE beta is not significant. Although comovements with foreign stock markets are an important explanatory factor for emerging market returns, their inclusion has little effect on the *Liberalize* coefficient. The monthly point estimate is now 0.041. The coefficient on *Liberalize* in the dividend yield specifications is still negative, but no longer is significant.

C. Controlling for Concurrent Economic Reforms

Four variables are constructed to control for the effect of the following economic reforms: macroeconomic stabilization, trade liberalization, privatization, and the easing of exchange controls. These variables are denoted *Stabilize*, *Trade*, *Privatize*, and *Exchange* respectively. The underlying data used to construct these variables are the policy events in Tables IV and V, and the full event list. For example, Table IV indicates that in May of 1986 the Philippines lifted import restrictions. Thus, May of 1986 is T* for this particular trade liberalization, and the variable *Trade* takes on the value 1 in each of the eight months from October 1985 to May 1986. The exact same methodology is

followed for every occurrence of each type of reform in all 12 countries. The following panel model is then estimated.

$$R_{it} = a_i + b_1 R_t^{LDC} + b_2 R_t^{US} + b_3 R_t^{EAFE} + g_1 Liberalize_{it} + g_2 Stabilize_{it} + g_3 Trade_{it} + g_4 \Pr ivatize_{it} + g_5 Exchange_{it} + e_{it} \quad (3)$$

Column (3a) of Table V shows the results. After controlling for world stock returns and macroeconomic reforms, the *Liberalize* coefficient is now 0.039. Although they barely affect the *Liberalize* coefficient, the macroeconomic reforms are themselves associated with equity price revaluation. For instance, the coefficient on *Trade* is 0.025 and the *Privatize* coefficient is 0.016. This implies that trade liberalization and privatization are associated with a cumulative revaluation of 20 percent and 13 percent respectively. The *Stabilize* coefficient also has the expected sign, but does not have a statistically significant effect on stock returns.[14] The coefficient on *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 *Liberalize* coefficient is equal to the *Trade* and *Privatize* coefficients is rejected at the 10 percent level.

Given their magnitude and significance, the *Trade* and *Privatize* coefficients merit some further discussion. The *Trade* result is consistent with recent studies like Sachs and Warner (1995) which find that trade liberalization is the single economic reform most closely tied to future growth. Trade liberalization reduces the cost of imported intermediate inputs thereby increasing expected future profitability.[15] This interpretation,

that trade liberalization signals higher future profitability, is also consistent with the negative and significant coefficient on *Trade* in the dividend yield specification in column (3b). The sign of the *Privatize* coefficient is consistent with a story that says placing state enterprises in private hands raises their efficiency and expected future profitability.[16] Indeed, this story is corroborated by Boubakri and Cosset (1998) who find evidence that privatization leads to improved firm performance.

D. Controlling for Macroeconomic Fundamentals

After controlling for comovements with foreign markets and concurrent economic reforms, the first stock market liberalization still has a point estimate of 0.039. However, macroeconomic factors have still not been accounted for. This is a potentially serious problem, because of the possibility that exogenous macroeconomic shocks unrelated to reform might cause a run-up in equity prices. Therefore, not accounting for country fundamentals might lead to an overstatement of the effects of stock market liberalization. This critique is addressed by adding distributed lags and leads of the growth rates of country macroeconomic fundamentals[17] to the right hand side of regression (3) as in Fama (1981). Let F_t be a vector of country fundamentals. The following regression is estimated

$$R_{it} = a_i + Returns\,b + Reforms\,\Gamma + d(L)\Delta(\ln F_{it}) + e_{it} \quad (4)$$

The results are listed in column (4a) of Table V. To conserve space, the estimates of the fundamentals are not included since they are not of direct interest.

This time the story is substantially altered. After controlling for the fundamentals, the *Liberalize* coefficient falls to 0.033. At first glance this may not seem like much of a discrepancy from the 0.047 in specification (1). However, cumulated over the entire eight-month liberalization window, the new estimate implies a total revaluation of 26 percent, or two-thirds of the total revaluation implied by the original point estimate. Furthermore, the *Privatize* coefficient is no longer significant. One possible explanation for the attenuation of the *Privatize* coefficient is that governments decide to privatize when macroeconomic 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. 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 stock market liberalization are substantially diminished by adding macroeconomic fundamentals to the right hand side supports the argument in Section II that policymakers time market openings to coincide with good economic conditions.

E. Shorter Window Lengths

In the absence of verifiable announcement dates, Sections III.*A* through III.*D* used an event window of eight months to capture potential announcement effects and to allow for the possibility of information leakage. The use of this relatively long event window raises the following problem in interpreting the results. Policymakers may time stock market liberalization in the same way that managers time equity issuance to follow a period of significant run-up in their firm's equity price. (Ritter (1991), Ritter and

Loughran (1995)) If this is the case then the results in Table V may be an artifact of the relatively long event window. This section re-estimates the response of equity prices to liberalization using shorter event windows. Specifically, equation (4) is re-estimated using three different length windows for the *Liberalize* variable, five months (T*-4 to T*), two months (T*-1 to T*), and one month (T* only). The reform variables remain exactly as described in Section C.

[Table VI Here]

The results, which are presented in Table VI, indicate that the equity price revaluation associated with stock market liberalization is relatively robust to the choice of window length. Although the statistical significance is not as strong as for the eight-month window, the *Liberalize* coefficient of 0.030 for the five-month window (T*-4 to T*) is almost identical to the eight-month coefficient of 0.033. Interestingly, the point estimate for the two-month window (T*-1 to T*), 0.050, is larger than both the five-month and eight-month windows. The implementation month only (T*) point estimate, 0.065, is the largest of all. The fact that the strongest results are those for the window which is least susceptible to the market-timing critique is indeed suggestive of a revaluation effect of stock market liberalization. Given that the interpretation difficulties are least severe with the implementation-month-only estimation windows, all of the results in Sections III.F and III.G will rely on estimates using T* only windows.

F. Other Initial Stock Market Liberalization Dates

Sections III.A through III.E present results based on the stock market liberalization dates in Table I. This section estimates the impact of stock market

liberalization using the other liberalization dates. Table AII provides a chronological listing of all the unique liberalization dates in columns 1 through 4 of Table II. A variable called *LiberalizeAll*, which takes a value of 1 on each of the implementation dates listed in column 1 of Table AII, is created. Specifications (1) through (4) are re-estimated, replacing *Liberalize* with *LiberalizeAll*. The *LiberalizeAll* coefficient can be interpreted as the average implementation-month-only revaluation across all the unique liberalization dates in Table II.

Table AIII, columns (1a) through (4a), presents the results. The *Liberalize* coefficient is highly significant in all stock return regressions. After controlling for all relevant factors the coefficient of 0.052 on *LiberalizeAll* is slightly smaller than the coefficient of 0.065 on the *Liberalize* variable in Table VI.[18] The fall in dividend yields is only statistically significant in the first regression (1b), but the results in specifications (2b) through (4b) are qualitatively consistent with the stock return results. As in Tables V and VI the *Trade* coefficient is highly significant in all dividend yield regressions, indicating that a move towards freer trade is seen as improving future growth prospects. Column (2) of Table AII lists all of the unique dates in columns (3) through (5) of Table II. Column (5a) of Table AIII presents stock return estimates using these dates. The coefficient on *LiberalizeAll* in this case is 0.051.

G. Stock Market Liberalizations Subsequent to the First

Sections III.A through III.F analyze whether revaluations occur in anticipation of the first stock market liberalization. In order to test whether revaluations occur in anticipation of subsequent stock market liberalizations, a second set of regressions is run

which no longer looks at countries' first stock market liberalization in isolation. A new variable called *Liberalize2* is created which takes on the value 1 during the implementation month of all the stock market liberalizations listed in Table AI. Again, as in Section III.F, since the dummy variable is on during the implementation month only, the total revaluation effect is the same as the point estimate. The analysis begins by estimating

$$R_{it} = \alpha_i + \gamma_1 Liberalize_{it} + \gamma_2 Liberalize2 + \varepsilon_{it}, \quad (5)$$

and proceeds to augment specifcation (5) with the identical set of right hand side variables used as controls in Sections III.B through III.D.

The results are reported in Table AIV. Regression (1a) indicates that the coefficient on *Liberalize*2 is 0.030, but it is statistically insignificant. The *Liberalize* coefficient is now 0.101, and the hypothesis that the estimated *Liberalize* and *Liberalize*2 coefficients are statistically the same is rejected at the 5 percent level. 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 does not change either set of coefficients very much.

Regression (3a) demonstrates that after including contemporaneous reforms The *Liberalize* coefficient is not affected much. *Liberalize*2 continues to be statistically insignificant, and the *Trade* and *Privatize* coefficients are similar in magnitude to the estimates in Table V. Regression (4a), which includes the macroeconomic fundamentals, shows that the *Liberalize* coefficient has fallen from 0.101 in (1a) to 0.066. The true implementation-month-only revaluation effect of the first stock market liberalization is

about two-thirds of what one is led to believe in the absence of controls. This corroborates the story that emerged from Table V where the true cumulative eight-month revaluation effect also was about two-thirds as large as in the absence of controls. The *Liberalize*2 coefficient has fallen from 0.030 in regression (1a) to 0.022 and is still statistically insignificant.

The statistically insignificant *Liberalize2* coefficient lends itself to two possible interpretations. First, it could be that the revaluation effects of subsequent stock market liberalizations are not detectable at the time they occur, because they are anticipated at the time of the first stock market liberalization. Urias (1994) makes a similar argument in the context of ADRs. Second, it is possible that once the initial liberalization occurs, new country funds (the majority of subsequent liberalizations) provide minimal diversification benefits because they are spanned by existing funds (Diwan, Errunza, and Senbet (1993)). In other words, it is possible that the first liberalization effectively integrates the market.

IV. Alternative Explanations

The central message from Sections III.A to III.F is that a substantial appreciation of aggregate share prices occurs both in the months leading up to the implementation of a country's initial stock market liberalization as well as in the implementation month itself. On average, in the eight-month window preceding its initial stock market liberalization, a country's aggregate share price index experiences a 38 percent increase in real dollar terms. After controlling for relevant factors, the revaluation is about 26 percent. About 6.6 percent of this revaluation takes place in the actual implementation month. The macroeoconomic reforms are themselves a significant source of share price revaluation. In

particular, the stock market experiences a total revaluation of 2.1 percent per month in each of the eight months leading up to a trade liberalization. These results certainly suggest a revaluation of aggregate share prices in anticipation of future stock market liberalization and trade liberalization. Nevertheless, it is not clear that we can infer causation.

Suppose a trade reform occurs before a stock market liberalization. We might end up attributing any associated stock market revaluation to the trade reform and not to the stock market liberalization. However, the revaluation might really be due to the stock market liberalization, but the market knows that stock market liberalizations usually follow trade reforms. In fact, the sequencing literature (Dornbusch (1983), Edwards (1984), and McKinnon (1991)) advocates trade liberalization first, followed by capital account liberalization. Given the influence of this literature on the policy reform debate in developing countries during the 1980s, it is more than plausible that trade liberalizations were seen as a harbinger of future stock market liberalizations. Analogously, the possibility remains that equity prices jump when a stock market liberalization is implemented, because stock market liberalization is interpreted as a signal of future macroeconomic reforms.

V. Conclusion

The standard IAPM makes a salient prediction about an emerging country that does not allow foreigners to purchase shares in its stock market: The country's aggregate cost of equity capital will fall when it opens its stock market to foreign investors. Equivalently stated, holding expected future cash flows constant, we should see an

increase in an emerging country's equity price index when the market learns of an impending future stock market liberalization. This paper examines whether the data are consistent with this theoretical prediction.

The paper attempts to hold expected future cash flows constant by augmenting the standard event study analysis with a set of right-hand-side variables that control for major economic policy changes such as macroeconomic stabilization programs, trade liberalizations, privatizations, and the easing of exchange controls. The analysis also controls for comovements with foreign stock markets and macroeconomic fundamentals. Finally, the paper confronts the potential endogeneity problem that arises out of policymakers' incentive to liberalize the stock market in response to a prolonged run-up in equity prices.

Bearing in mind all of the caveats about inferring causality, it is instructive to do some simple calculations. Suppose that the pre-liberalization discount rate on equity is 20 percent and that the entire revaluation effect is 26 percent-- the size of the response to the first stock market liberalization. Since we are holding expected future cash flows constant and using logarithmic returns, this revaluation means that the cost of equity capital also falls by 26 percent. This implies a fall in the level of the discount rate to about 15 percent. If one uses the more conservative, implementation-month-only revaluation effect of 6.5 percent, the implied level of the post-liberalization discount rate is on the order of 19 percent. Stulz (1999a, 1999b) argues that the magnitudes of the fall in the level of the discount rate implied by such estimates are small relative to what we would expect in a world where: (1) there was no home bias and (2) liberalizations were implemented in a fully credible, once-and-for-all fashion.

An important question for future research lies in assessing whether what seems like a relatively small revaluation effect has any economic significance. At the macroeconomic level, Henry (1999a) finds that stock market liberalizations are consistently followed by a surge in the growth rate of private physical investment. Although this suggests significant economic effects of stock market liberalization, further research is needed. In particular, future research should work to uncover the sector-specific, valuation, cost of capital, and investment effects of stock market liberalization.

The fact that aggregate valuation seems to increase in anticipation of future trade liberalizations also points to a potentially fruitful line of research. Trade liberalization has heterogeneous effects on exporters and importers; an analysis of firm level data would deepen our understanding of the sector-specific valuation impacts of trade liberalization. More generally, if the goal is to understand emerging financial markets, then the fact that emerging stock markets respond to macroeconomic reforms suggests that there is positive value added to careful documentation and explicit statistical use of macroeconomic policy changes.

Endnotes

[1] See also Errunza, Losq, and Padmanabhan (1992). They demonstrate that emerging markets are neither fully integrated nor completely segmented. Even if the emerging country prohibits developed-country investors from investing in its domestic equity market, developed-country investors may be able to construct portfolios of developed country securities that mimic the returns on the emerging country's stock market.

[2] Markets that are mildly segmented *ex-ante* should experience a smaller decline than fully segmented markets. See Errunza and Losq (1989).

[3] This is the case of an unanticipated liberalization. If the liberalization is announced before it actually occurs, then there will be a jump in price upon announcement followed by mild price appreciation until the liberalization is implemented. The reason for price appreciation between announcement and implementation is as follows: Let P*>P be the integrated capital market equilibrium price. Upon announcement of a future liberalization at time T, the current price will jump only part of the way to P*, because no risk sharing takes place until T*. However, since the price at T* must be P* and there can be no anticipated price jumps, the price must gradually appreciate between T and T*. Also, if there is uncertainty as to whether the announced stock market liberalization is going to occur, there may be significant price appreciation, as news confirming the liberalization becomes public knowledge.

[4] Errunza and Miller (1998) and Foerster and Karolyi (1998) provide firm level evidence on the related issue of ADR issuance.

[5] Kim and Singal (1995) also find that emerging countries experience positive abnormal returns in the months leading up to stock market liberalization. Errunza and Miller (1998) find similar results using firm level data.

[6] Ln(4)-Ln(3) is approximately equal to 1. Therefore, a fall in the dividend yield from 4 to 3 percent implies a fall of approximately 100 basis points.

[7] For a complete chronological listing of events in each country see Henry (1999b).

[8] I thank an anonymous referee for bringing this fact to my attention.

[9] Let P*>P be the integrated capital market equilibrium price. Upon announcement of a future liberalization at time T, the current price will jump only part of the way to P*, because no risk sharing takes place until T*. However, since the price at T* must be P* and there can be no anticipated price jumps, the price must gradually appreciate between T and T*.

[10] They give an example of the leakage problem in the context of Indian ADRs.

[11] 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 *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). This dummy variable method is a variant of standard event study methodology. 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) and Binder (1998).

[12] Section II.A and footnote 9 explain why there may be a slope effect.

[13] It is possible that the strong correlation results from the fact that each country in the sample is also a part of the emerging market index. Excluding the LDC returns from the right hand side does not alter the sign or magnitude of the other betas.

[14] Every IMF agreement is counted 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 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.

[15] For a formal model along these lines see Basu and Morey (1998).

[16] 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.

[17] The fundamentals are domestic industrial production, the U.S. Treasury bill rate, domestic inflation, the real exchange rate, and a political stability index. After trying a number of specifications I ended up including one month lagged, current, and one-month leads of the fundamentals.

[18] That the point estimate for *LiberalizeAll* is somewhat smaller than that for *Liberalize* is consistent with the fact that a number of the stock market liberalization dates used in constructing *LiberalizeAll* occur later than those used to construct *Liberalize*.

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Table I
First Stock Market Liberalization

The stock market liberalization dates are based on information obtained from the following sources: Levine and Zervos (1994), The *Wilson Directory of Emerging Market Funds*, IFC Investable Indices, Park and Van Agtmael (1993), Price (1994), The *Economist Intelligence Unit* various issues, *The Economist Guide to World Stock Markets* (1988), The IMF's *Exchange Arrangements and Restrictions*, various issues.

Country	Date of First Stock Market Liberalization	Details About the Liberalization
Argentina	November 1989	**Policy Decree:** The Liberalization began with the New Foreign Investment Regime in November 1989. Legal limits on the type and nature of foreign investments were reduced (Park and Van Agtmael (1993) page 326).
Brazil	March 1988	**Country Fund Introduction:** "The Brazil Fund Incorporated" (*The Wilson Directory of Emerging Market Funds*, page 17).
Chile	May 1987	**Country Fund Introduction:** "The Toronto Trust Mutual Fund" (*The Wilson Directory of Emerging Market Funds*, page 17).
Colombia	December 1991	**Policy Decree:** Resolution 52 allowed foreign investors to purchase up to 100 percent of locally listed companies (Price (1994)).
India	June 1986	**Country Fund Introduction:** "The India Fund" (*The Wilson Directory of Emerging Market Funds*, page 12).
Korea	June 1987	**Country Fund Introduction:** "The Korea Europe Fund Limited" (*The Wilson Directory of Emerging Market Funds*, page 13).
Malaysia	May 1987	**Country Fund Introduction:** "The Wardley GS Malaysia Fund" (*The Wilson Directory of Emerging Market Funds*, page 14).
Mexico	May 1989	**Policy Decree:** Restrictions on foreign portfolio inflows were substantially liberalized, (Levine and Zervos (1994)).
The Philippines	May 1986	**Country Fund Introduction:** "The Thornton Philippines Redevelopment Fund Limited" (*The Wilson Directory of Emerging Market Funds*, page 15).
Taiwan	May 1986	**Country Fund Introduction:** "The Taipei Fund" (*The Wilson Directory of Emerging Market Funds*, page 15).
Thailand	January 1988	**Country Fund Introduction:** "The Siam Fund Limited" (*The Wilson Directory of Emerging Market Funds*, page 16).
Venezuela	January 1990	**Policy Decree:** Decree 727 completely opens the market to foreign investors except for bank stocks ((Levine and Zervos (1994)).

Table II
Comparison of Official Liberalization Dates Across Authors

The dates in column (2) are constructed using the dating procedure described in the paper. The dates in columns (3) through (5) are taken from Bekaert and Harvey (1998), Kim and Singal (1995), and Buckberg (1995) respectively. The date for each country in column 5 represents the earliest date given for that country in each of the preceding 4 columns

(1) Country	(2) Dating Procedure	(3) Bekaert & Harvey	(4) Kim & Singal	(5) Buckberg	(6) Earliest
Argenina	11-89	11-89	11-89	10-91	11-89
Brazil	3-88	5-91	5-91	5-91	3-88
Chile	5-87	1-92	9-87	10-89	5-87
Colombia	12-91	2-91	2-91	10-91	2-91
India	6-86	11-92	11-92	NA	6-86
Korea	6-87	1-92	1-92	NA	6-87
Malaysia	5-87	12-88	12-88	NA	5-87
Mexico	5-89	5-89	11-89	5-89	5-89
The Philippines	5-86	6-91	7-86	10-89	5-86
Taiwan	5-86	1-91	1-91	NA	5-86
Thailand	1-88	9-87	8-88	NA	9-87
Venezuela	1-90	1-90	1-90	12-88	12-88

Table III
Annnouncement Dates For First Stock Market Liberalizations

The announcements were procured via Lexis-Nexis Software Version 4.06 using the search procedure described in the paper.

(1) Country	(2) Announcement Date(s)	(3) Source	(4) Headline
Argentina (November 1989)	December 11, 1989	The Financial Times	Argentina fund aims at privatised companies.
Brazil (March 1988)	March 23, 1988	The Toronto Financial Post	Some like it hot: Shares in the fund will be offered to the public shortly by first Boston Corporation and Merril Lynch Capital Markets
	March 31, 1988	PR Newswire	Brazil Fund Common Stock Offered
	April 4, 1988	Institutional Investor, Inc.	Brazil Fund is Hot
Chile (May 1987)	February 7, 1996	The Reuter European Business Report	Micropal names best 1995 emerging market funds The Toronto Trust Chile Fund, launched in 1987, is Micropal's best performing emerging market fund over the past seven years
Colombia (December 1991)	February 1991	National Trade Data Bank Market Reports	Colombia-Economic Policy and Trade Practices The administration of President Gaviria has embarked on "la apertura" (the opening), a bold plan to lower tariffs and other barriers to foreign trade
India (June 1986)	May 12, 1986	The Financial Times	Maverick Brings in the Savings The government approved the Unit trust of India's (UTI) collaboration with Merrill Lynch to launch the India Fund
	June 17, 1986	The Financial Times	More Details Given for India Fund. The Indian government last week approved the proposal which for the first time will allow foreigners to invest in the Indian stock markets
Korea (June 1987)	March 21, 1987	The Economist	South Korean Securities; Authorised Entry Only
Malaysia (May 1987)	April 8, 1987	Jiji Press Limited	Arab-Malaysian Merchant Bank – IFC Move to Tap U.S. Market.
	May 11, 1987	U.P.I.	Malaysian Fund Offering Increased
Mexico (May 1989)	May 15, 1989	Reuters	Mexico Announces New Foreign Investment Rules
	July 8, 1989	The New York Times	Mexico Eases Foreign Curb The government has opened Mexico's stock exchange to foreign investment
Philippines (May 1986)	September 22, 1986	Business Week	For Aquino, U.S. Business Will Be a Tough Sell Text: Hong Kong-based Thornton Management (Asia) Ltd. Recently launched the Philippines Redevelopment Fund which invests in Philippine stocks
Taiwan (May 1986)	July 3, 1985	Central News Agency	Local Securities Investment Company Formed in Taipei. Details: A 25 million dollar investment fund to be called the Taipei Fund will be raised soon
	June 28, 1986	The Economist.	Asian FundsDetails: The Taipei Fund was formed on May 22nd
Thailand (January 1988)	April 27, 1988	The Financial Times	Headline: Another Thai Fund to Join the Market. Details: the fund was established in January
Venezuela (January 1990)	December, 1989	South Magazine	Scramble at the fringe; Third World Stock Markets Details: Liberalisation is proceeding in Argentina and Venezuela

Table IV
First Stock Market Liberalizations and Contemporaneous Economic Reforms

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. All events are taken from *The Economist Intelligence Unit: Quarterly Economic Reports*. A full chronology of events is presented in Henry (1999b).

Country	Date	Type	T*-12	T*-9	T*-6	T*-3	T*	T*+3
Arg	November 1989	Limits on foreign capital reduced	Airline privatization; dual exchange rate system fails	Structural adjustment funds frozen; economic team resigns	Privatizations tabilization plan	IMF agreement	Exchange rate devalued by 35 percent	IMF agreement frozen
Braz	March 88	Country Fund	Finance minister resigns	Second Cruzado Plan	New proposals submitted to creditors	None	Capital goods duties reduced	Tariffs reduced
Chil	May 87	Country Fund	None	Attempt on Pinochet's life	None	Largest banks privatized; new debt repayment terms	None	Two floods and an earthquake
Col	December 91	Investability Index jumps 46 percent	Restrictions on profit remittance eased	Tariffs reduced; external debt refinanced	Tariffs cut; credit controls relaxed	Exchange controls eased.	Privatization of telecom industry begins	None
Ind	June 86	Country Fund	None	None	None	None	None	Attempt on Prime Minister's life
Kor	June 87	Country Fund	None	None	False Rumors of Kim Il Sung's death	Tariffs reduced on consumer durables	Protracted student protests	Tariff cuts announced
Mal	February 87	Country Fund	None	National Economic Plan(NEP) frozen	NEP to be extended past 1990	Privatization of telecom industry	Rubber price stabilization pact reached	None
Mex	May 89	Investability Index jumps 410 percent	Salinas elected; US govt. gives $3.5B to boost reforms	Pacto extended	Privatization of two state mines	Brady Plan approved by US Congress; IMF agreement	None	Brady agreement with creditors
Phil	May 86	Country Fund	Debt rescheduling signed	IMF targets missed	$ 2.9 billion of public debt rescheduled	Marcos overthrown	Import restrictions lifted	Talks open with IMF
Tai	May 86	Country Fund	None	None	Investment in foreign securities allowed	None	Import bans lifted	Exchange controls eased
Thai	January 88	Country Fund	General Yongchaiyut calls for reforms	None	ASEAN free trade agreement extended	None	None	None
Ven	January 90	Full market access except bank stocks	Trade liberalization ; adjustment loan approved	None	None	Easier profit remittance for foreign firms	$680 million structural adjustment loan	Brady deal; Agricultural tariffs reduced

Table V
Stock Market Reactions to First Stock Market Liberalization

The regressions are performed using monthly stock market data from December 1976 to December 1994 for Argentina, Brazil, Chile, India, Korea, Mexico, and Thailand. For the other countries the data is monthly from December 1984 to December 1994. The dividend yield data is also monthly and covers the period from December 1984 to December 1994. *Liberalize* is a dummy variable for the event window of the first stock market liberalization. The event window begins seven months prior to the implementation month and ends in the implementation month. For example, for a stock market liberalization that was implemented in November of 1989, the event window begins in April 1989 and ends in November 1989. R^{LDC}, R^{US}, and R^{EAFE} are the dividend-inclusive monthly return on the IFC global 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 the event windows of macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. Each of the event windows for these economic reform variables begins seven months prior to the implementation of the reform and ends in the implementation month. A constant plus 11 country dummies were also estimated but not reported. Heteroskedasticity-consistent (White) standard errors are in parentheses.

	Panel A: Stock Returns				Panel B: Δln(D/P)			
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Liberalize	0.047***	0.041***	0.039***	0.033***	-0.024*	-0.019	-0.015	-0.010
	(0.010)	(0.0124)	(0.012)	(0.011)	(0.015)	(0.015)	(0.015)	(0.017)
R^{LDC}		0.522***	0.517***	0.525***		-0.350***	-0.341***	-0.339***
		(0.148)	(0.015)	(0.142)		(0.114)	(0.110)	(0.115)
R^{US}		0.250***	0.278***	0.278***		-0.355*	-0.365*	-0.446**
		(0.102)	(0.109)	(0.109)		(0.200)	(0.205)	(0.200)
R^{EAFE}		-0.008	-0.006	-0.018		-0.043**	-0.045**	-0.027
		(0.044)	(0.044)	(0.042)		(0.020)	(0.022)	(0.024)
Stabilize			0.003	0.003			-0.003	0.003
			(0.010)	(0.010)			(0.010)	(0.010)
Trade			0.025***	0.021***			-0.039***	-0.037**
			(0.005)	(0.048)			(0.015)	(0.016)
Privatize			0.016**	0.010			-0.029	-0.030
			(0.007)	(0.008)			(0.019)	(0.021)
Exchange			-0.005	-0.002			0.010	0.007
			(0.015)	(0.015)			(0.049)	(0.045)
$\overline{R}^2$	0.007	0.076	0.083	0.147	0.000	0.018	0.023	0.027
Obs	2292	2292	2292	2292	1569	1569	1569	1569

*, **, *** Significant at the 10, 5 and 1 percent levels respectively.

Table VI

Stock Market Reactions to First Stock Market Liberalization, Alternative Event Window Lengths

The regressions are performed using monthly stock market data from December 1976 to December 1994 for Argentina, Brazil, Chile, India, Korea, Mexico, and Thailand. For the other countries the data is monthly from December 1984 to December 1994. The dividend yield data is also monthly and covers the period from December 1984 to December 1994. *Liberalize* is a dummy variable for the event window of the first stock market liberalization. For T*-4 to T*, the event window begins four months prior to the implementation month and ends in the implementation month. For example, for a stock market liberalization that was implemented in November 1989, the event window begins in July 1989 and ends in November of 1989. For T*-1 to T*, the event window begins in the month before the implementation month. For T*, the event window is the implementation month only. R^{LDC}, R^{US}, and R^{EAFE} are the dividend-inclusive monthly return on the IFC Global 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 the event window of macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. Each of the event windows for these economic reform variables begins seven months prior to the implementation of the reform and ends in the implementation month. A constant plus 11 country dummies were also estimated but not reported. Heteroskedasticity-consistent (White) standard errors are in parentheses.

	Panel A: Stock Returns			Panel B: Δln(D/P)		
	T*-4 to T*	T*-1 to T*	T*	T*-4 to T*	T*-1 to T*	T*
Liberalize	0.030*	0.050*	0.065*	0.017	-0.008	-0.003
	(0.018)	(0.028)	(0.039)	(0.032)	(0.051)	(0.076)
R^{LDC}	0.520***	0.522***	0.522***	-0.340***	-0.340***	-0.339***
	(0.058)	(0.058)	(0.059)	(0.118)	(0.111)	(0.116)
R^{US}	0.283***	0.280***	0.281***	-0.451**	-0.367*	-0.448**
	(0.091)	(0.091)	(0.094)	(0.200)	(0.204)	(0.197)
R^{EAFE}	-0.016	-0.0150	-0.014	-0.028	-0.0276	-0.0281
	(0.036)	(0.036)	(0.033)	(0.024)	(0.021)	(0.024)
Stabilize	0.003	0.003	0.003	0.002	0.003	0.003
	(0.010)	(0.010)	(0.010)	(0.008)	(0.008)	(0.008)
Trade	0.021**	0.020**	0.020**	-0.037**	-0.037**	-0.037**
	(0.009)	(0.009)	(0.009)	(0.016)	(0.017)	(0.017)
Privatize	0.010	0.011	0.011	-0.030	-0.030	-0.030
	(0.009)	(0.009)	(0.009)	(0.021)	(0.021)	(0.0210
Exchange	-0.002	-0.002	-0.003	0.008	0.008	0.008
	(0.014)	(0.014)	(0.014)	(0.045)	(0.045)	(0.045)
$\overline{R}^2$	0.146	0.146	0.146	0.027	0.027	0.027
Obs	2292	2292	2292	1569	1569	1569

*, **, *** Significant at the 10, 5 and 1 percent levels respectively.

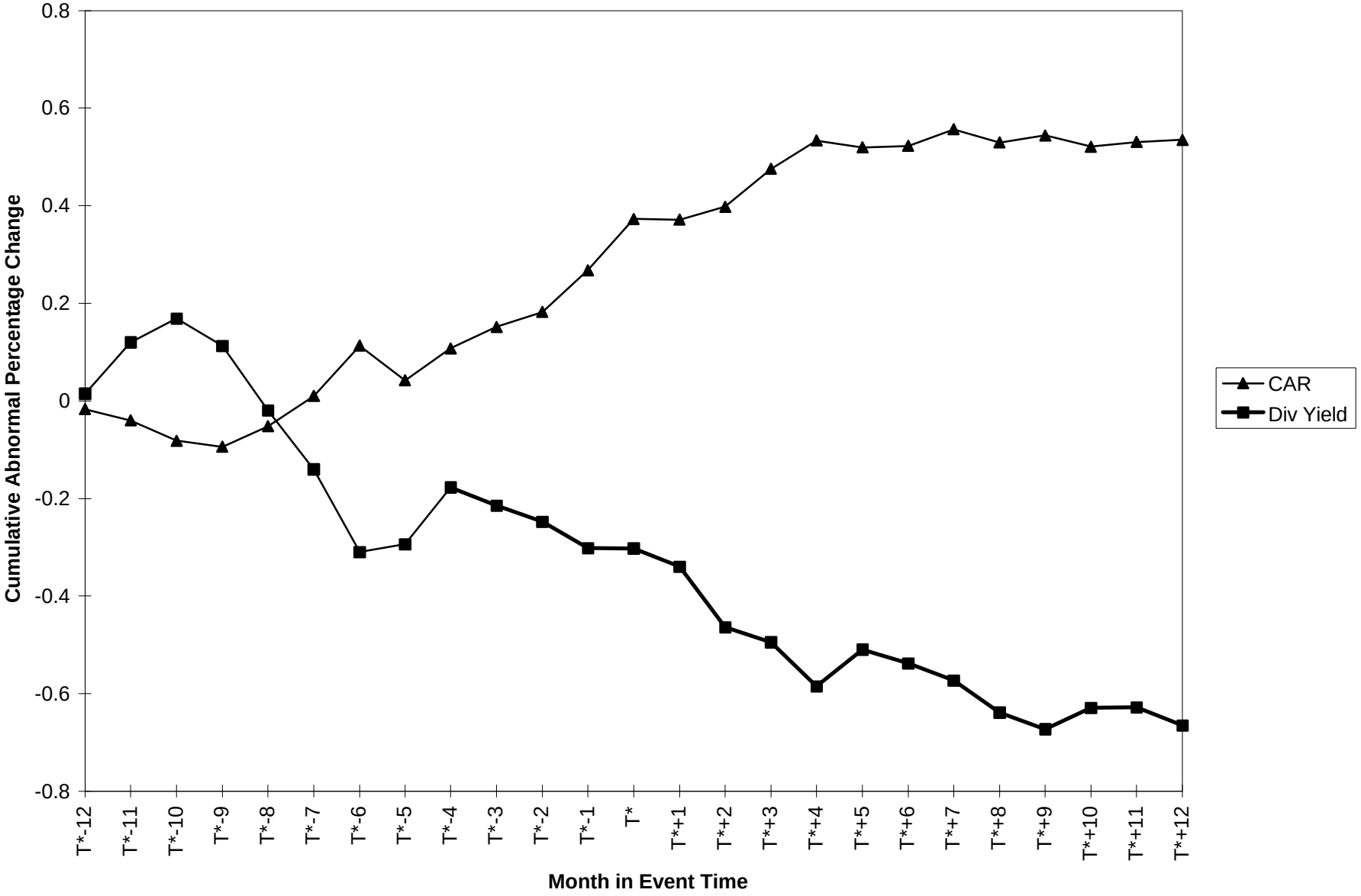

Figure 1. The behavior of stock returns and dividend yields around the first stock market liberalization. The variable on the y-axis is the continuously compounded abnormal percentage change. T* is the month in which the stock market liberalization was implemented. The upward trending series (triangles) is a plot of the cumulative residuals from a panel regression of the real dollar return from all 12 countries on a constant and 11 country-specific dummies. The downward trending series (squares) is a plot of the cumulative residuals from a panel regression of the change in the natural log of the dividend yield on a constant and 11 country-specific dummies.

Table AI
Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

T^* is the date of the country's stock market liberalization in event time. All events are taken from *The Economist Intelligence Unit: Quarterly Economic Reports*. A full chronology of events is presented in Henry (1999b).

Opening Date	Type of Opening	T*-12	T*-9	T*-6	T*-3	T*	T*+3
	Panel A: Argentina						
January 91	Investable Index jumps 19 percent		Airline and ship privatizations begin	Structural adjustment funds unfrozen	IMF agreement; privatizations	Domingo Cavallo appointed finance minister	Tariff reductions
January 92	Country Fund		Privatizations	IMF stand by loan	None	IMF approves economic plan	IMF agreement; Brady Deal
	Panel B: Brazil						
October 88	Country Fund				IMF approves economic program; import ban lifted	Creditors ratify new loan agreement	Third Cruzado Plan
April 90	Investability Index jumps 33 percent	IMF talks open; stock market scandal	Tariffs reduced	Privatization process frozen	None	Collor takes office, sweeping deregulations	Tariffs reduced; Curb on profit remittance removed
January 91	Investability Index jumps 34 percent			IMF talks open	Deregulation measures announced; debt restructuring rejected	Second Collor Plan	None
July 91	Investability Index jumps 185 percent;				Agreement on payment of arrears	IMF negotiations begin; privatizations	None
May 92	Country Fund			IMF approves a new stand by loan	Negotiations begin on Brady Deal	Brady debt deal signed; official charges of corruption against Collor	None
	Panel C: Chile						
June 88	Country Fund		None	Telefonos de Chile privatized	Privatization of state electricity company begins	Poll shows Pinochet to win plebiscite	None
January 89	Investability Index jumps 15 percent				Pinochet defeated in Plebiscite	None	None
February 90	Country Fund		IMF mission visits	IMF loan; Central Bank independent	Patricio Alwyn takes over as President	Foreign exchange controls eased	Alwyn announces commitment to reforms
January 91	Investability Index jumps 42 percent			Debt rescheduling	None	None	Capital outflow restrictions eased
January 92	Investability Index jumps 46 percent		None	Free trade agreement with Mexcio	None	Peso revalued by 5 percent	Foreign exchange controls eased

Table AI
Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

T^* is the date of the country's stock market liberalization in event time. All events are taken from *The Economist Intelligence Unit: Quarterly Economic Reports*. A full chronology of events is presented in Henry (1999b).

Opening Date	Type of Opening	T*-12	T*-9	T*-6	T*-3	T*	T*+3
	Panel D: India						
May 87	Country Fund			Stock market scandal	None	None	None
August 88	Country Fund	None	Talks on trade liberalization begin	Import liberalization package	Government declares support for privatization	None	None
December 88	Country Fund					None	None
October 89	Country Fund		None	None	None	Gandhi congress ousted	None
June 90	Country Fund				None	None	Import liberalization
May 92	Country Fund	Rao elected PM; rupee devalued	None	None	Exchange controls eased Import duties decreased	Illegal stock trading exposed	None
May 94	Country Fund	Government faces no confidence vote	None	None	None	Foreigners can enter telecom industry	None
September 94	Country Fund					None	None
	Panel E: Korea						
December 88	Government announces plan to open stock market	Roh Tae Woo elected president	Tariffs reduced on consumer durables	None	Minimum wage increased by 23 percent	Interest rates deregulated	Investment in foreign real estate allowed
July 90	Country Fund	None	None	None	North Korea proposes disarmament	Diplomatic relations with USSR	None
March 91	Country Fund				None	None	None
January 92	Foreigners allowed to hold up to 10 percent of market			Foreign firms allowed to hold retail outlets	Limit on foreign banks issue of cds eased	Bank bailout of $680 million	North Korea agrees to military inspection
October 92	Investability Index jumps 23 percent				Pension funds urged to buy more equity	Kim Young Sam elected president	None
July 93	Country Fund			Governor of Bank of Korea is sacked	Financial reform plan published	Foreigners can buy convertible bonds	Real name financial system decree
December 93	Country Fund				Lending rates liberalized	GATT; tariff reduction agreements	Foreign banks admitted
December 94	Foreign equity ceiling raised to 12 percent		Manufacturing firms can issue unlimited corporate bonds	Kim Il Sung dies	None	None	

Table AI
Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

T^* is the date of the country's stock market liberalization in event time. All events are taken from *The Economist Intelligence Unit: Quarterly Economic Reports*. A full chronology of events is presented in Henry (1999b).

Opening Date	Type of Opening	T*-12	T*-9	T*-6	T*-3	T*	T*+3
	Panel F: Malaysia						
December 87	Country Fund			Possible cut in corporate tax rate announced	90 arrests under Internal Security Act	None	$1 billion rescue plan for depositors
April 89	Country Fund	Most favored nation trade pact with China	None	ASEAN-Japan Development Fund loans	None	None	Hiatus on restructuring foreign equity
April 90	Country Fund		Banks allowed to purchase stock	152 firms delist from Singapore Stock Exchange	None	Plan for electricity privatization	None
January 91	Investability Index jumps 29 percent			None	Prime Minister Mathir's party retains power in general elections	None	None
	Panel G: Mexico						
October 90	Country Fund	Brady term sheet submitted	None	Privatization of banks approved None	Salinas requests NAFTA talks; Telmex to be privatizatized	None	None
January 92	Investability Index jumps 51 percent	None	NAFTA talks begin; $2.2B of Telmex privatized	Election: strong PRI showing boosts reforms	Bancomer privatized	None	Environmental concerns about NAFTA
	Panel H: The Philippines						
May 87	Country Fund		Import controls lifted	Paris Club debt rescheduling of $870 million	$10.5 billion Structural adjustment loan; debt rescheduling	Agrarian land reform plan is approved	Coup attempt; bombings of businesses in Makati
November 89	Country Fund	IMF approves stabilization plan	None	Debt rescheduling $2.2 billion	Brady Deal reached in principle	Coup attempt	None
October 93	Country Fund	None	Airline privatization announced	IMF negotiations begin	Privatization of copper and shipyards	Privatization of steel company approved	IMF agreement reached

Table AI
Subsequent Stock Market Liberalizations and Contemporaneous Economic Reforms

T^* is the date of the country's stock market liberalization in event time. All events are taken from *The Economist Intelligence Unit: Quarterly Economic Reports*. A full chronology of events is presented in Henry (1999b).

Opening Date	Type of Opening	T*-12	T*-9	T*-6	T*-3	T*	T*+3
	Panel I: Taiwan						
December 86	Country Fund				Import tariffs reduced	None	Restrictions imposed on capital inflows
May 89	Country Fund	None	Capital gains tax imposed	Privatization of China Steel announced	More flexible exchange rate regime	Central bank governor resigns; trade restrictions lifted	Exchange controls lifted; privatizations
January 91	Foreigners allowed to hold up to 10 percent of market	Bank privatizations announced	Han Pei-Tsun elected prime minister	Pension funds allowed to invest in stock market	None	None	Privatizations
August 93	Investability Index jumps 115 percent	None	Privatizations	Lien Chan becomes prime minister	None	None	None
March 94	Investability Index jumps 33 percent				Tariffs cut by an average of 100 percent	288 million shares of China Steel sold	Banking opened to foreign banks
	Panel J: Thailand						
December 88	Country Fund		None	Chartchai Choonhavan takes office	None	Ceiling on foreign borrowing raised	US imposes restrictions on imports from Thailand
December 89	Country Fund		None	Accusations of corruption	None	Strikes protesting privatization	Ceiling on loan rates raised
June 90	Country Fund				None	None	Twenty ministers sacked in corruption scandal
January 91	Investability Index jumps 35 percent				None	Coup overthrows government	Exchange controls eased
	Panel K: Venezuela						
January 94	Investability Index jumps 33 percent	Perez accused of misusing public funds	Free trade agreement with Chile; rampant coup rumors	Perez suspended from presidency	Privatization process frozen	Price controls imposed; Banco Latino collapses	None

Table AII
Unique Stock Market Liberalization Dates

This table lists the unique liberalization dates from Table II. Column (1) lists all of the unique liberalization dates in Table II. Column (2) lists the unique liberalization dates from columns (3) through (5) of Table II.

	(1)	(2)
Country	All Unique Stock Market Liberalization Dates from Table II	Unique Stock Market Liberalization Dates from Table II, Columns (3)-(5) only
Argentina	November 1989 October 1991	October 1991
Brazil	March 1988 May 1991	May 1991
Chile	May 1987 September 1987 October 1989 January 1992	September 1987 October 1989 January 1992
Colombia	February 1991 October 1991 December 1991	February 1991 October 1991
India	June 1986 November 1992	November 1992
Korea	June 1987 January 1992	January 1992
Malaysia	May 1987 December 1988	December 1988
Mexico	May 1989 November 1989	November 1989
The Philippines	May 1986 July 1986 June 1991 October 1989	July 1986 June 1991 October 1989
Taiwan	May 1986 January 1991	January 1991
Thailand	January 1988 September 1987	September 1987
Venezuela	January 1990 December 1988	December 1988

Table AIII

Stock Market Reactions to First Stock Market Liberalization, Alternative Event Dates

The regressions are performed using monthly stock market data from December 1976 to December 1994 for Argentina, Brazil, Chile, India, Korea, Mexico, and Thailand. For the other countries the data is monthly from December 1984 to December 1994. The dividend yield data is also monthly and covers the period from December 1984 to December 1994. *Liberalize* is a dummy which takes on the value 1 during the implementation month of the first stock market liberalization. R^{LDC}, R^{US}, and R^{EAFE} are the dividend-inclusive monthly return on the IFC Global 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 the event windows of macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. Each of the event windows for these variables begins seven months prior to the implementation of the reform and ends in the implementation month. A constant plus 11 country dummies were also estimated but not reported. Heteroskedasticity-consistent (White) standard errors are in parentheses.

	Panel A: Stock Returns					Panel B: Δln(D/P)				
	(1a)	(2a)	(3a)	(4a)	(5a)	(1b)	(2b)	(3b)	(4b)	(5b)
Liberalize	0.072***	0.057**	0.056**	0.052**	0.051*	-0.051*	-0.041	-0.041	-0.034	-0.040
	(0.024)	(0.025)	(0.024)	(0.024)	(0.027)	(0.029)	(0.030)	(0.030)	(0.035)	(0.041)
R^{LDC}		0.512***	0.507***	0.516***	0.519***		-0.343***	-0.334***	-0.334***	-0.335***
		(0.063)	(0.062)	(0.059)	(0.143)		(0.103)	(0.103)	(0.104)	(0.116)
R^{US}		0.266***	0.272***	0.293***	0.293***		-0.363***	-0.372***	-0.452***	-0.453**
		(0.100)	(0.100)	(0.094)	(0.108)		(0.140)	(0.140)	(0.156)	(0.205)
R^{EAFE}		-0.004	-0.002	-0.014	-0.015		-0.045	-0.047	-0.029	-0.029
		(0.036)	(0.036)	(0.033)	(0.042)		(0.054)	(0.055)	(0.056)	(0.024)
Stabilize			0.004	0.003	0.003			-0.003	0.003	0.003
			(0.013)	(0.011)	(0.005)			(0.024)	(0.023)	(0.008)
Trade			0.025***	0.021***	0.021***			-0.039**	-0.037**	-0.037**
			(0.008)	(0.008)	(0.005)			(0.016)	(0.017)	(0.016)
Privatize			0.017*	0.011	0.011			-0.030*	-0.030	-0.030
			(0.010)	(0.008)	(0.001)			(0.018)	(0.017)	(0.022)
Exchange			-0.007	-0.003	-0.003			0.008	0.008	0.008
			(0.015)	(0.014)	(0.016)			(0.037)	(0.037)	(0.046)
$\overline{R}^2$	0.001	0.066	0.070	0.147	0.145	0.000	0.010	0.010	0.030	0.030
Obs	2292	2292	2292)	2292	2292	1569	1569	1569	1569	1569

*, **, *** Significant at the 10, 5 and 1 percent levels respectively.

Table AIV
Stock Market Reaction to First and All Subsequent Stock Market Liberalizations

The regressions are performed using monthly data from December 1984 to December 1994. *Liberalize* is a dummy variable which takes on the value 1 during the month that the first stock market liberalization is implemented. *Liberalize2* is a dummy variable which takes on the value 1 during the implementation month of all stock market liberalizations subsequent to the first. R^{LDC}, R^{US}, and R^{EAFE} are the monthly return on the IFC Global 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 the event windows of macroeconomic stabilization, trade opening, privatization, and exchange controls respectively. Each of the event windows for these variables begins seven months prior to the implementation of the reform and ends in the implementation month. A constant plus 11 country dummies were also estimated but not reported. Heteroskedasticity-consistent (White) standard errors are in parentheses.

	Panel A: Stock Returns				Panel B: Δln(D/P)			
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Liberalize	0.101***	0.082**	0.078	0.066	-0.060	-0.043	-0.037	-0.003
	(0.038)	(0.041)	(0.039)	(0.036)	(0.049)	(0.050)	(0.049)	(0.081)
Liberalize2	0.030	0.030	0.028	0.022	-0.056	-0.057	-0.055	-0.074
	(0.022)	(0.022)	(0.021)	(0.018)	(0.059)	(0.060)	(0.060)	(0.062)
R^{LDC}		0.520***	0.514***	0.524***		-0.353***	-0.343***	-0.325***
		(0.150)	(0.147)	(0.143)		(0.120)	(0.116)	(0.115)
R^{US}		0.251***	0.258***	0.280***		-0.349*	-0.359*	-0.385**
		(0.102)	(0.101)	(0.110)		(0.195)	(0.200)	(0.191)
R^{EAFE}		-0.002	-0.001	-0.013		-0.049	-0.051	-0.041
		(0.044)	(0.044)	(0.042)		(0.021)	(0.022)	(0.025)
Stabilize			0.005	0.003			-0.003	-0.001
			(0.011)	(0.010)			(0.011)	(0.005)
Trade			0.025***	0.021***			-0.040***	-0.039**
			(0.005)	(0.005)			(0.015)	(0.017)
Privatize			0.016**	0.010*			-0.027	-0.026
			(0.006)	(0.007)			(0.019)	(0.021)
Exchange			-0.007	-0.003			0.008	0.009
			(0.015)	(0.016)			(0.050)	(0.046)
$\overline{R}^2$	0.000	0.070	0.070	0.147	0.000	0.010	0.011	0.031
Obs	2292	2292	2292	2292	1569	1569	1569	1569

*, **, *** Significant at the 10, 5 and 1 percent levels respectively.