

QEH Working Paper Number 51

Emerging Stock Market Liberalisation, Total Returns, and Real Effects: Some Sensitivity Analyses

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Recent studies report that equity market liberalisation positively correlates with total return, which in turn purportedly increases private investment growth. While the finding on reform and performance is generally robust to alternative perspectives on capital account liberalisation that emphasise over-heating and volatility, this crucial first link in the causal chain is not wholly robust empirically. For example, previous findings are very sensitive to alternative definitions of precise liberalisation event dates. Also, spatial variance seems to drive significant results in panel regressions, which is problematic for interpreting the particular path from equity prices to private investment. Finally, existing studies do not satisfactorily control for other determinants of returns, and extreme bound analysis (EBA) suggests that liberalisation is spurious.

October 2000

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1. Introduction

Whether capital account liberalisation has positive real macroeconomic effects in lower income countries is a considerably controversial issue. Nonetheless, despite the general dearth of evidence (Fischer, 1999), a few recent empirical studies report benevolent direct real effects of capital flows – including foreign direct investment (FDI) (Balasubramanyam et al., 1996; Borensztein et al., 1998) and foreign portfolio investment (FPI) (Bekeart and Harvey, 1998) – on growth and private investment. Additional work focuses on indirect effects through financial variables such as stock market development and performance (Henry, 2000a, 2000b; Levine and Zervos, 1998b). This paper re-examines the short-run financial and, by implication, the real effects of stock market liberalisation through valuation.

Theory suggests that liberalisation, first, lowers the cost of equity capital and concomitantly produces an aggregate price appreciation, and, second, boosts private investment as erstwhile negative net present values (NPVs) become positive following reform. Several studies report a positive correlation between liberalisation and stock market performance (Henry, 2000a; Bekaert and Harvey, 1998; Froot et al., 1998), and fewer complete the transmission mechanism to private investment booms (Henry, 2000b). The policy implications for poorer countries are lucidly compelling – encourage stock market development, especially foreign equity inflows, and expect greater private investment (and growth).

But unfortunately, shortcomings beset the initial primary empirical link in the grand mechanism from reform to price appreciation to (private) investment. While the finding is generally robust given explicit controls for alternative and less optimistic perspectives on financial flows, particularly those that focus on over-heating and volatility, the statistical relation is highly sensitive to assessments of when the liberalisation event precisely occurs.

Also, problematic for the contention that corporate managers issue new equity at higher prices to fund investment after liberalisation, previous results on valuation heavily rely on spatial as opposed to temporal variance, as most individual time-series equations do not corroborate panel model results.

Leaving aside the appropriateness of event study methodology and interpretation of cross-sectional variance vis-à-vis adaptations of Tobin's q related theory, the purportedly significant¹ link between liberalisation and real total returns is not robust to alternative specifications. That is, liberalisation is not the only purported determinant of stock market performance. Rather, the literature on market anomalies is burgeoning, and previous literature does not satisfactorily control for other factors. Therefore, following recent studies on stock market anomalies (Durham, 2000a, 2000b) and earlier literature on growth regressions (Levine and Renelt, 1992; Sala-i-Martin, 1997a, 1997b) as well as the demand for money (Hess et al., 1998; Cooley and LeRoy, 1980), this paper uses extreme bound analysis (EBA) to determine specification bias. The results generally suggest that liberalisation is generally, as well as comparatively with respect to other factors, a spurious determinant.

Therefore, with respect to interpretation, the benevolent theoretical transmission mechanism from liberalisation to market performance to investment (and growth) is less persuasive if the first step is econometrically dubious. Of course, policy implications for poorer countries therefore are less straightforward. Perhaps stock market development does in fact positively affect *long-run* performance (Levine and Zervos, 1996, 1998a), a research question beyond the scope of this study, but the short-run implications of equity market reform for lower income countries remain unclear.

¹ Unless otherwise noted, this paper uses 'significant' to mean *statistical* as opposed to *economic* significance, as outlined in McCloskey and Ziliak (1996). That is, a statistically significant parameter is distinct from the null hypothesis (of zero) according to some statistical test and (arbitrary) decision rule. Such a parameter is not necessarily economically significant, meaning the *size* of the parameter (the salience of the estimated impact) is meaningful for policy or theoretical implication.

Section 2 briefly outlines the general debate on the financial and real effects of international financial flows and capital account reform with particular respect to stock market liberalisation. Section 3 tests alternative perspectives on liberalisation. This includes explicit consideration of the alternative ‘boom-and-bust’ or ‘over-heating’ perspective, volatility in stock market returns, alternative liberalisation dates, and individual time-series regressions. Section 4 performs a broad sensitivity analysis of return in emerging markets and explores particular specifications under which liberalisation is fragile. Section 5 concludes.

2. Recent literature on equity market liberalisation and financial and real effects

FPI does not exhibit the advantages of FDI with respect to dissemination of technology and (more arguably) capital flow stability according to conventional wisdom. But nevertheless, some economists advance the virtues of cross-border equity investment. For example, in his general overview of proposals for reducing global financial instability – including international bankruptcy courts, capital controls, and the prospect of a global central bank – Rogoff (1999) recommends a substantial shift from debt to equity finance. He argues that equity finance introduces risk sharing, via reductions in moral hazard with ownership, as well as more efficient resource allocation, via (share) price signalling. His advocacy broadly reflects some recent studies (Levine and Zervos, 1996, 1998a) that produce a positive statistical correlation between aggregate stock market development measures (such as relative capitalisation, turnover, and volume) and long-run growth.

Similarly consistent with this benevolent perspective on stock market development and equity finance, recent literature suggests that stock market liberalisation – the decision to allow foreigners to investment in the domestic stock market – has positive real affects. For example, a (very) long-run perspective implies that reform encourages stock market

development, which in turn boosts macroeconomic performance (Levine and Zervos, 1996, 1998a, 1998b). While previous evidence perhaps curiously rests on samples that include OECD countries,² the tacit implication for lower income countries is that equity forms of FPI eventually produce sustained expansion.

Also, a second perspective, which is the focus of this paper, addresses the short-run effects of liberalisation on private investment through (windfall) increases in equity prices upon liberalisation. For example, Henry (2000a, 2000b) documents temporary increases in private investment growth rates among a sample of 11 developing countries³ that liberalised their stock markets during the 1977 to 1994 period (notably before the Tequila crisis). He argues that stock market liberalisation in general lowers the cost of capital, k ,⁴ and therefore concomitantly increases aggregate stock prices in emerging markets.⁵ Given the decrease in k and holding expected cash flows constant, some investment projects with negative NPVs before liberalisation exhibit positive NPVs afterwards, which induces increased private

² Durham (2000d) produces some evidence that suggests that data from developed countries largely drive the correlation between growth and stock market development.

³ These include Argentina, Brazil, Chile, Colombia, India, Korea, Malaysia, Mexico, the Philippines, Thailand, and Venezuela. He finds that in the first, second, and third years after liberalisation, 9, 10 and 8 of the 11 sample countries, respectively, had growth rates of private investment above their non-liberalisation medians. He reports that growth rates return to their pre-liberalisation by the fourth year after reform.

⁴ Henry cites three arguments that liberalisation lowers k (p. 2). First, 'liberalisation can increase net inflows, which could reduce the risk free rate.' Second, foreign participation in the domestic equity market 'facilitates risk sharing across borders,' which 'should reduce the equity premium.' Third, 'increased capital inflows may also increase stock market liquidity,' which purportedly reduces the equity premium. This contention is based on evidence that lower liquidity stocks have higher returns (Ahimud and Mendelson, 1986). He clearly notes, however, the possibility that the risk-free rate might rise upon liberalisation if 'the autarky risk-free rate, which is an equilibrium outcome of aggregate savings and investment, is above or below the world rate' (ft. 2). More generally, Henry suggests that '(t)he central message...is not that the stock market liberalisation will in all cases lead to a fall in a country's cost of capital...rather...stock market liberalisation may *change* the liberalising country's cost of capital, with attendant implications for physical investment' (p. 13, emphasis added).

⁵ One can easily deduce the effect of decreased k on aggregate prices from the standard Gordon growth model of aggregate valuation (in equilibrium), as in

$$P = \frac{D}{k - g}.$$

where D refers to dividends, k is the cost of capital (composed of the risk-free rate and the equity risk premium), and g is the expected growth rate of dividends. All else equal (most contentiously g in the case of liberalisation), a decrease in k produces an increase in P . Of course, this formulation resembles the (mature) steady state and an equilibrium in which the growth rate is necessarily less than the cost of capital.

investment.⁶ Therefore, the short-run benevolent mechanism from flows through the stock market to the real economy follows:

(1)

$$\text{Liberalization} \Rightarrow \downarrow k, \uparrow \text{Aggregate Prices} \Rightarrow \uparrow \text{Private Investment} .^7$$

Notably, increases in private investment do not merely substitute for direct investment according to previous evidence. Rather, Henry finds that the share of FDI to total investment in general increased (p. 19).⁸

Empirically, mechanism (1) of course implies two regularities. First, liberalisation must positively correlate with stock prices, and, second, such valuation changes should increase private investment. Notably, both dependent variables in this system – stock market behaviour and private investment – are hardly understudied. With respect to the first inquiry, without tracing the effects ultimately to private investment, many studies report a positive impact of flows on stock prices using distinct data sets as well as different observation frequencies.⁹ For example, Froot et al. (1998) report a positive correlation lagged equity capital flows and stock returns using daily data from 28 emerging markets from 1994 to 1998. Also, given lower frequency data and with varying degrees of qualification, Bekaert and Harvey (2000) and Henry (2000b) find that equity market liberalisation and/or flows

⁶ Another important issue, as Henry (2000a) readily suggests, is possible simultaneity bias, which the use of lower frequency data complicates. Given daily price and flow information, Froot et al. (1998) find evidence that, at least with respect to emerging markets, lagged flows help predict returns (pp. 3, 14). While they fail to control for broader global index performance, this broadly corroborates Henry's contention that inflows lead to price appreciation (rather than vice versa).

⁷ It seems somewhat unclear from Henry's (2000b) evidence whether liberalisation has a *direct* effect on private investment in addition to its (purported) *gross* effect on valuation. While he illustrates through statistical interaction terms that 'liberalisation specific' valuation changes have a significant effect on private investment, he never includes liberalisation and valuation simultaneously in any specification of private investment growth. If only gross liberalisation effects support the theory, then any lack of robust relation between reform and prices would be very problematic for (1).

⁸ The cost of equity capital, k , is related to local market volatility (variance) in closed capital markets. In open markets, k is related to the covariance with world market returns. Theory suggests that if the covariance is less than the (domestic) variance, then the cost of equity capital should decrease after liberalisation.

⁹ Portes and Rey (1999) find no relation between flows and returns using annual data and suggest that the dearth of their findings are due to data frequency.

lowers the cost of capital, as measured by ex post returns and/or dividend yields, in emerging markets.¹⁰

Regarding the second empirical question, the supposed link between price appreciation and real variables is critical, as Henry documents a ‘strong correlation’ between the growth rate of investment and valuation changes, particularly stock price appreciation associated with liberalisation. As he notes, while some literature addresses this equation with respect to higher-income countries, there is a dearth of studies on lower income countries, and his (under-specified) regressions indicate that lagged one-year stock returns are significant determinants of private investment growth rates.¹¹

The discussion now turns to evidence that supports the crucial first link in the causal chain.

3. Polemics on international capital flows:

Over-heating, volatility, liberalisation dates, and spatial variance

There are four shortcomings with respect to existing empirical estimations of equity market channels that broadly stem from the debate on capital account liberalisation. First, existing studies consistent with (1) do not satisfactorily test the ‘boom-and-bust’ hypotheses associated with more sceptical views of FPI, as there is a dearth tests that might capture the longer-run effects of liberalisation on possible over-heating and asset price bubbles. Second, studies do not control for volatility (absolute risk), which increases upon liberalisation according to some studies (Levine and Zervos, 1998b). If volatility positively correlates with

¹⁰ In particular, Henry (2000b) finds that stock market liberalisation is a robust determinant of returns in equations that control for contemporaneous LDC, EAFE, and S&P500 index performance (p. 18). However, inclusion of macroeconomic fundamentals weakens the relation, as the dummy variables for trade and financial reform are no longer statistically distinguishable (p. 21).

¹¹ Durham (2000d) also argues that controlling for other factors in the literature, namely lagged GDP growth, total private credit to GDP, government spending, and foreign exchange availability – vitiates the relation between lagged valuation changes and private investment growth. Moreover, he also finds that lagged valuation does affect private investment in developed markets.

(ex post) real total returns, as it should in (partially) segmented markets, such a relation would perhaps vitiate the purported (ex ante) decrease in k .

Third, unlike most event studies in econometrics, coding the event in question, stock market liberalisation, remains controversial. In fact, various studies use different dates, and, even more problematic, some economists argue that liberalisation is inherently a gradual process given uncertainty regarding policymakers' commitment to sustainable reform (which might suggest that event studies per se are not necessarily appropriate). Put simply, a sturdy event relation between liberalisation and stock market returns (and therefore private investment) should be robust to alternative dates based inherently on subjective assessments. Finally, cross-sectional variance considerably informs previous results, which *is* wholly sensible with respect to whether liberalisation affects returns. However, with respect to the particular transmission mechanism involving private investment decisions based on share prices, perhaps price appreciation vis-à-vis previous levels is more germane to corporate managers than relative stock market performance across space.

3.1. Sustainable asset price increases versus over-heating

Assuming a robust link between liberalisation and stock market performance, does liberalisation lead to *sustainable* increases in equity prices? Similar to Henry (2000a), Bekeart and Harvey (1998), and others, more pessimistic perspectives on capital account liberalisation also posit asset price increases (upon monetary expansion). However, such observers explicitly consider the prospect of overshooting, as financial bubbles eventually burst, and crises ensue (Calvo and Mendoza, 1999; Bhagwati, 1998).¹² Therefore, to

¹² Upon liberalisation, equity capital inflows could lead to rapid monetary expansion and a credit boom. Moreover, under a floating exchange rate, the demand for local currency should lead to considerable currency appreciation with potentially adverse effects on the trade balance. Under a fixed regime, the monetary authorities purchase of foreign currency could exacerbate monetary expansion (assuming no effective sterilisation). In either case, some observers would expect resulting overheating, eventual reductions in output, and asset price contractions.

augment previous studies that document increases in aggregate prices, is there some measurable cyclical symmetry to the initial appreciation? Put differently, how sustainable is the purported decrease in the cost of capital?¹³

Therefore, a useful econometric exercise is to test for lagged effects of liberalisation and flows on possible asset price collapses. Such a specification would not only address the one-time increase in prices (and decrease in k) but also consider the possibility of over-heating. The general model resembles

(2)

$$R_{it} = \beta_0 + \beta_1 LIB_{t_w} + \beta_2 LIB_{t_j} + \beta_3 X + e$$

where R_{it} is the total aggregate real market return for country i at time t , LIB is the event dummy for liberalisation, w refers to the event window before and including the implementation month, j represents various intervals after liberalisation that might capture ‘over-heating,’ and X is a set of control variables. If β_1 is positive and significant, consistent with previous studies, but β_2 is negative and significant, this would suggest that stock market prices increase shortly after liberalisation but notably decrease after longer periods.

Depending of course on the relative values of β_1 and β_2 , this result would seem to corroborate the overheating perspective rather than the purely benevolent Tobin’s q ¹⁴ related transmission mechanism from stock prices to private investment and the real economy. This inquiry addresses the longer-term effects of liberalisation as well as Bhagwati’s (1998, p. 10) general suggestion that advocates of capital mobility fail ‘to evaluate its crisis-prone downside’.

¹³ There is some econometric indication of this phenomenon. Bekaert and Harvey (2000) find some evidence, however sensitive to specification, that returns are lower in later periods following liberalisation. For example, they report that ‘(w)hereas we find a consistent decrease in dividend yields, excess returns may increase or decrease from the pre- to post-liberalisation period depending on specification. In the longer-term, average returns appear to be lower’ (p. 25). There are perhaps two conflicting interpretations. On the one hand, one could conclude that lower returns correspond with a lower equity premium and cost of capital. On the other, one might conjecture that in some cases, equity market liberalisation leads to price bubbles and market collapses.

¹⁴ Of course, changes in stock market prices only represent a portion of the numerator in Tobin’s q . Market value also includes debt securities.

More specifically, evaluation of (2) in this paper includes the 8-month liberalisation window dummy to estimate β_1 , and \mathbf{X} comprises proxies for global equity market performance – including the MSCI USA index, the MSCI EAFE index, and an index for less developed countries (LDCs)¹⁵ – as well as country specific dummy variables. To inductively test for the possible effect of systematic overheating, j alternatively comprises various lag periods after liberalisation. As Table 1A indicates, these include 6-, 8-, and 12-month intervals up to four years after liberalisation. For example, models 1 through 8 separately test for over-heating for every 6-month interval from the first month until the forty-eighth month after the event, and model 19 includes each of these post-liberalisation lags simultaneously, again, controlling for the liberalisation event window and \mathbf{X} .

Turning to the results from Table 1A, 21 alternative forms of equation (2) fail to indicate any consistent overheating after liberalisation events,¹⁶ and importantly, the 8-month liberalisation window is clearly significant in all models, as the column of t statistics indicates. While some intervals during the third and fourth years after liberalisation (including models 6, 8, 12, 14, and 18) have negative coefficients, no parameter estimate is statistically significant.

Perhaps more surprisingly, some intervals covering various segments of the first year after liberalisation are (perversely) *positive* and statistically significant. For example, the interval from the seventh through the twelfth month after the event is significant (within the

¹⁵ The LDC index in this paper follows the IFC composite index, which dates from January 1985. The proxy for LDC index returns from January 1976 through December 1984 follows the market capitalisation weighted average of total returns for each available country in the IFC's *Emerging Markets Database*. The correlation between this constructed proxy and the direct IFC composite index is 0.9957 using data from January 1985 through December 1997.

¹⁶ Similar to previous studies, panel regressions in this paper are temporally dominant, with considerably more time periods than cases. Therefore, similar to Durham (2000a, 2000b) econometric estimation follows FGLS with panel-corrected standard errors (Greene, 1997, pp. 651-654; Kennedy, 1998, p. 231; Beck and Katz, 1995), which entails OLS with its variance-covariance matrix estimated by $(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{W}\mathbf{X}(\mathbf{X}'\mathbf{X})^{-1}$, where \mathbf{W} is an estimate of the error variance-covariance matrix. When $T > N$, the Parks-Kmenta method estimates the error variance-covariance matrix with insufficient degrees of freedom. The panel regressions also correct for possible panel-specific serial correlation using the Prais-Winsten transformation. The precise estimation command in STATA is 'xtpcse' with the option 'c(psar1)'.

10 and 5 percent confidence intervals in models 2 and 19), and the larger estimate is nearly equal to the point estimate for the liberalisation window (0.0342 versus 0.0346, model 19). In addition, the dummy variable for the entire year after liberalisation is perhaps more clearly significant (models 15 and 21), although the point estimates are between 78 and 76 basis points lower than the liberalisation coefficient (models 15 and 21, respectively).

Economic interpretation of the apparent persistent positive effect after liberalisation seems somewhat problematic for the perspective on a one-time price appreciation outlined in mechanism (1). As this preliminary evidence indicates, perhaps the event window is even longer, extending not just before the announcement date due to information leaks, but also afterwards because market participants possibly assign a non-zero probability to a reversal of reform.¹⁷ In other words, evidence of delayed appreciation might reflect the perceived credibility of the stated commitment to liberalisation and the prolonged period required to convince the market that policymakers will successfully implement reforms.¹⁸

But in short, Table 1A most importantly indicates that increases in stock prices after liberalisation are largely sustainable, at least with respect to systematically consistent possible price collapses. These results certainly do not suggest, however, that market bubbles never develop after liberalisation. But, this empirical exercise uncovers no common trends in depreciation given this (limited) sample that is commensurable with previous studies.

3.2. *Volatility, Liberalisation, and Returns*

Another unexplored theoretical issue, also in the context of the debate on international capital flows, regards the simultaneously documented increase in stock prices (Henry, 2000b; Bekaert and Harvey, 2000; Froot et al., 1998) *and* augmentation in stock market volatility

¹⁷ This possibility might be analogous to the notion behind medium-term return momentum on the firm level, as market participants purportedly under-react to earnings announcements.

(Levine and Zervos, 1998b) after liberalisation. Again, several studies report a positive relation between reform and returns, but Levine and Zervos (1998b, p. 1182) also note that liberalisation tends to increase stock market volatility.¹⁹ Therefore, does the one-time increase in asset prices reflect the decrease in the cost of capital, or does the market simply compensate investors for the increased (absolute) risk? While variance is idiosyncratic in integrated capital markets, it is an appropriate risk measure in segmented markets according to theory (Bekaert et al., 1997, p. 45).²⁰

Indeed, as Table 1B illustrates, these data indicate a significant relation between volatility and liberalisation events.²¹ A panel regression of 12 emerging markets from January 1986 through December 1994, which replicates previous samples as closely as possible, suggests that volatility (the estimated standard deviation) increases on average by approximately 1.9 percent during the 8-month liberalisation window, which is significant within the 5-percent confidence interval (model 1).²² Also, a few individual (univariate) time-series regressions corroborate the relation, as data for Argentina suggest a 25.06 percent monthly increase in volatility upon liberalisation (model 2), and the equation for Thailand indicates a 5.91 percent increase (model 12). Finally, albeit at the 10 percent confidence interval, data indicate a 2.81 percent increase for Malaysia (model 8), but no other model yields significant results.

¹⁸ This perhaps reflects the potential bias in defining liberalisation events ex post. None of the events, for example, coded in Henry (2000a, 2000b) entail reform announcements followed by renegeing of actual implementation.

¹⁹ The distinction between temporal and spatial variance with respect to this finding is noteworthy. While Levine and Zervos (1998b) find increases in volatility in individual time-series after liberalisation, they also note that with respect to the cross-section of stock markets that less integrated markets are more volatile (p. 1173). Furthermore, Bekaert (1995, p. 95) finds that market integration and volatility co-vary negatively, and Tesar and Werner (1995, p. 126) also report that the volume of equity flows from the United States also correlates negatively with volatility as well as market turnover. One might conjecture, then, that liberalisation might increase volatility in the short-run but decrease volatility in the long-run.

²⁰ Markets might not be fully integrated after the liberalisation 'event.' Indeed, the very controversy surrounding precise event dates (and therefore market segmentation) noted in Section 3.3 suggests that variance be an appropriate risk measure.

²¹ The calculations cover January 1986 through December 1994, which most closely matches Henry's (2000b) sample, as data for all 12 countries are available during this period.

²² This model includes an intercept and country-specific dummies.

This significant correlation between volatility and liberalisation, which the panel regression documents and some time-series models corroborate, begs the question of whether previous models of return and liberalisation, such as (2), are under-specified and only capture the *gross* effect of the event, which might over-state its *direct* influences. More formally, the gross effect of liberalisation on stock returns, $\beta_{G,R}$, follows

(3)

$$\beta_{G,R} = \beta_{D,R} + (\beta_{D,V} \times \alpha_{D,R})$$

where $\beta_{D,R}$ is the direct effect of liberalisation on returns controlling for volatility, $\beta_{D,V}$ is the direct effect of liberalisation on volatility, and $\alpha_{D,R}$ is the direct effect of volatility on return controlling for liberalisation. Given that some evidence indicates that $\beta_{D,V}$ is positive, estimates of $\alpha_{D,R}$ would seem imperative, because a positive and significant coefficient would suggest that $\beta_{G,R}$ overstates the effect of liberalisation on growth.²³ This specification question is perhaps of significant interest to observers that emphasise volatility in the context of international capital flows, and of course, simply controlling for absolute risk should shed light on this issue.

But notably, the data seem to indicate that the effect of volatility on return is ambiguous. Individual time-series models for Argentina and Korea suggest a positive and robust relation within the 10 and 5 percent confidence intervals, respectively (models 14 and 19), but the remaining parameters are insignificant. Moreover, data for Mexico, perhaps perversely, indicate a very strong negative effect (an approximate 0.7293 percent decrease in return per one percent increase in volatility) that is within the one percent confidence interval (model 21), and the corresponding panel regression for the 12 markets indicates no significant effect (model 26). Finally, and perhaps most importantly, the direct estimate for

²³ Put somewhat differently, consideration of the full system of equations helps indicate whether the indirect effect of liberalisation on returns through volatility overshadows its direct effect.

$\alpha_{D,R}$ indicates that volatility has no significant effect on return, controlling for liberalisation, which is safely significant and positive within the 5 percent confidence interval (model 27).

Therefore, these data suggest that the increase in volatility (variance) associated with liberalisation does not effect the apparent positive direct effect of reform on valuation. In fact, the indirect effect of liberalisation through volatility is insignificant, which broadly supports the perspective on k . One should note, however, that the key variable of interest in the context, volatility, is not measured directly but is an estimate following Schwert (1989, pp. 1117-1118) and Levine and Zervos (1998b). The preceding analysis would be more precise if daily total return data were available to estimate (non-overlapping) monthly volatility, but nonetheless, available data seem to support the first step in mechanism (1).

3.3. *Alternative dates for 'liberalisation'*

While previous estimates of the effect of liberalisation on stock market performance often follow an event study methodology, researchers readily confess that, unlike other applications, the event in question is difficult to define (Henry, 2000a; Levine and Zervos, 1998).²⁴ Estimates follow essentially historical analyses of reforms or more technical examination of structural breaks in the autocorrelation of cross-border equity flows, but the literature produces no consensus on when the crucial event in question occurs. The question, then, is whether findings with respect to stock market returns are robust to this methodological controversy.

Some studies include some limited sensitivity analysis in this regard. For example, Henry (2000a) lists alternative liberalisation dates from various studies, and reruns the analysis coding for all 'unique dates' across four separate studies,²⁵ and the exercise largely

²⁴ Levine and Zervos (1998, p. 1173) write that '(s)electing...key dates when a country importantly changed policies toward international capital flows is both arduous and, ultimately, less systematic than we would like.'

²⁵ That is, if two or more authors have two different liberalisation dates for the same cases, Henry assigns a value of '1' for both dates.

confirms his general findings. However, notably no study separately tests for each complete coding alternative. Toward that end, Table 1C lists the results for the baseline panel regression using alternative event dates from Henry (2000a), Bekaert and Harvey (1998), Kim and Singal (1999), and Levine and Zervos (1998).

The data clearly suggests that the results are highly fragile to coding scheme. For example, with respect to the 8-month event window, both Henry's coding and the unique dates from all four studies produce statistically significant results with the expected sign and general magnitude (rows 1 and 2). But, as rows 3 through 5 indicate, no other coding produces significant results within any conventional confidence interval. In fact, no scheme from Bekeart and Harvey (1998), Kim and Singal (1999), or Levine and Zervos (1998b) is significant for any event window given Henry's (unbalanced panel) sample from January 1976 through December 1994. In fact, every coefficient using the dates from Levine and Zervos (1998b) is negative, which suggests a perverse effect. Therefore, in general these results imply that the significant empirical relation between liberalisation and returns depends critically upon (perhaps unsystematic) assessment of singular event dates.²⁶

3.4. Temporal versus Spatial Variance

In general, supplementing panel regressions with time-series analysis helps indicate the relative importance of variance across time and space given a particular panel result. In fact, perhaps the issue of temporal versus spatial variance is particularly crucial with respect to the purported transmission mechanism from liberalisation to stock prices to private investment levels. Of course, significant and positive cross-sectional findings with respect to liberalisation would indicate that, at any given point in time, a bourse that undergoes liberalisation has greater total returns than non-liberalising markets. Conversely, time-series

²⁶ This sensitivity might underscore the survivorship bias in defining liberalisation dates ex post.

evidence vis-à-vis the hypothesis would indicate that, irrespective of the particular case, total returns are greater in a given market during the 8-month liberalisation window compared to periods during which there is no such reform. As the panel regressions imply, both variance across space and over time *is* germane to the general question of whether liberalisation boosts stock market performance.

But, with more particular respect to the hypothesis regarding the effect on private investment, perhaps temporal variance is more germane. Again, the argument is that managers in liberalising stock markets experience a decrease in k , NPVs increase, and private investment increases. Simply, it would seem that indigenous equity price changes with respect to previous local levels would be more relevant than the comparative performance of the local market vis-à-vis other foreign bourses.²⁷ The relative temporal change in k seems to be critical according to theory, as NPVs turn from negative to positive notably *over time*, before and after reform.

Table 1D helps indicate the relative extent to which temporal and spatial variance inform the panel estimates. Notably, among 12 cases in the ‘baseline’ panel regressions, only the time-series regression for Colombia (which has only 120 observations), produces a positive and significant coefficient for the 8-month event window within the 5 percent confidence interval (model 9). The estimate for Malaysia is positive and significant at the 10 percent level (model 10), but the remaining 10 cases – Argentina, Brazil, Chile, India, Korea, Mexico, Thailand, the Philippines, Taiwan, and Venezuela – are clearly not robust. In fact, while again not significant, three cases – Chile, Mexico, and Venezuela – actually a negative effect of liberalisation. Therefore, perhaps problematic for the comprehensive mechanism from liberalisation to real variables, spatial variance seems to drive the overall panel result.

²⁷ This should not be confused with the notion that k is related to the covariance (variance) of the local market in integrated (segmented) markets.

4. Motivation for More General Sensitivity Analyses

Findings regarding the effect of stock market liberalisation and returns are robust to the boom-and-bust perspective and explicit consideration of the effect of reform on stock market volatility. However, the analysis nonetheless suggests that these findings are highly sensitive to the precise coding of when liberalisation occurs and whether cross-sectional variance informs the estimates. These findings cast some doubt on the short-run real effects of equity FPI in general and reform in particular.

But beyond the debate on capital account liberalisation, several studies suggest that many variables, seemingly unrelated to economic reforms, supposedly exhibit statistically significant relations with stock market performance. The literature on such anomalies is vast, which begs the question of whether previous findings regarding liberalisation, however sensitive to the issues raised in the previous section, are robust to broader specifications of the dependent variable. In addition, low overall fit measures for regressions in the previous section imply considerable unexplained variance, and therefore identification of possible missing variables seems prudent. But generally, how statistically significant is reform in the much broader context of the study of stock market behaviour?

4.1. Extreme Bound Analysis

As Durham (2000a, 2000b, 2000c) argues, the rigor of asset pricing studies is less advanced compared to sensitivity analyses of growth regressions,²⁸ as very few studies satisfactorily control for competing explanations of market anomalies. With respect to the question of stock market liberalisation, the specification of real returns is sensible with respect to variables related to reforms, but nonetheless incomplete considering a much broader literature on market behaviour.

²⁸ With respect to emerging market returns, Durham (2000a) finds that no emerging market factor is robust according to the extreme decision rule, while five variables are robust to the CDF criterion.

Therefore, to help assess the relative robustness of the financial effects of liberalisation, this section evaluates 14 additional anomalies germane to emerging markets studies using EBA. While the details of EBA with respect to this general research question can be found elsewhere (Durham, 2000a, 2000b) the basic framework follows

(4)

$$R_{it} = \alpha_j + \beta_{zj}z + \beta_{fj}\mathbf{f} + \beta_{xj}\mathbf{x}_j + \varepsilon$$

where R_{it} is real total return, z is the ‘doubtful’ variable of interest, \mathbf{f} is the set of ‘free’ variables that appear in every regression, and \mathbf{x} includes variables from the set of 14 other ‘doubtful’ variables, χ . The EBA entails running M regressions that consider every possible linear combination of three variables from χ in \mathbf{x} .²⁹ Of course, the z variable of interest is liberalisation, using particular dates and event windows that produce significant results in (under-specified) previous studies. Following previous studies, \mathbf{f} includes three aggregate equity indices – MSCI USA, MSCI EAFE, and the IFC (emerging market) composite – as well as country dummy variables (and a constant term).

With respect to χ , the sensitivity analysis should include most reasonable theories, and a very brief description of alternative hypotheses is instructive. For example, a sizeable literature examines *value factors*³⁰ (Fama and French, 1998), and therefore the EBA employs P/B , P/E , and D/P IFC ratios. Also, χ includes *price history* variables. The most simple and succinct views include “contrarian” strategies in the *short-* (Jegadeesh, 1990)³¹ and *long-term* (De Bondt and Thaler, 1985), which exploit purported negative autocorrelations, and “relative strength” strategies in the *medium-run* (three to 12 months), which utilise supposed

²⁹ This follows Sala-i-Martin (1997a, 1997b) and, more importantly, a typical number of exogenous variables in multi-factor models of returns. Therefore, the total number of M regressions to evaluate the robustness of liberalisation vis-à-vis other variables is $(14! \div [3! \times 11!])$ 364.

³⁰ Members of the same family of factors are nonetheless *independent* variables. In fact, Fama and French (1998) note that, while value strategies, portfolios formed on P/B , P/E , D/P , and P/C are nonetheless distinct (p. 1985). An equation with sufficient degrees of freedom isolates the separate effects of variables from the same family.

positive autocorrelations (Asness et al., 1997). Turning to macroeconomics, as Bekaert et al., 1997 suggest, *inflation* should have a negative impact on cash flows, primarily via price signaling and operating cost shocks, and (univariate) empirical tests confirm the relation (Asprem, 1989). In addition, to capture published findings regarding *population demographics* (Erb et al., 1997a), the EBA includes the lagged proportion of the population older than 65. Furthermore, some researchers argue that *survey measures of country risk* correlate with stock returns,³² especially in emerging markets (Erb et al., 1995, 1996, and 1997b, Bekaert et al., 1997, Ferson and Harvey, 1997). Somewhat related, Bekaert et al. (1997) find that *relative market size* is significant, and Amihud and Mendelson (1986, 1991) argue that *low-liquidity* firms enjoy abnormal long-term returns within certain parameters. Also, non-equity financial development also conceivably relates to returns, as Demirgüç-Kunt and Levine (1996) find that stock market volatility significantly correlates with *banking system development*. Finally, the doubtful set includes the *January effect*.

The first EBA purports to replicate previous samples as closely as possible. The data cover the same 11 emerging markets,³³ but only from March 1987 because of data limitations on other variables in χ . To more closely replicate previous study and to therefore avoid capturing temporal out-of-sample bias, the data extend through December 1994. With 11 cases and 94 times periods, the total number of observations for the panel regressions is 1034.

4.2. EBA Results: Limited Sample

³¹ An important alternative perspective suggests that emerging markets in particular could exhibit positive autocorrelation, which would indicate predictability (Bekaert et al., 1997, p. 17).

³² Notably, these country risk measures might proxy for not only other concurrent reform policies but also for perceptions of credibility.

³³ Given data limitations in the World Bank's *World Development Indicators*, Taiwan is unfortunately not included in either EBA. Also, the earliest date for which data are available for all 11 countries and 14 χ variables is March 1987. This date notably follows liberalisation according to Henry's coding for India (June 1986) and the Philippines (May 1986), two cases that nonetheless inform the EBA estimates. While some authors (Bekaert and Harvey, 1998; Kim and Singal, 1999) do code liberalisation dates for both countries during the EBA sample period, the inclusion of markets that did not liberalise would seem to usefully inform estimates

In general, EBA suggests that liberalisation is not in fact a robust determinant of stock market performance.³⁴ For example, as Table 2A indicates, the 8-month window for liberalisation does not pass the ‘extreme’ decision rule.³⁵ With respect to both the 4.55 and 10 percent confidence intervals, the upper and lower bounds have the opposite signs (column 1, rows 1-2, 4-5, respectively), and the coefficient is only significant in approximately 8.52 and 46.63 percent of all (364) M regressions.³⁶ Also, given elimination of models not within 90 percent of the specification that explains the most variance (following the R^2 decision rule), only 17.46 percent (row 9) of the coefficients are significant, and the bounds have opposite signs (rows 7-8). Finally, while the weighted beta is positive and comparable to

of whether the event affects the dependent variable. (Perhaps all stock markets should be included in any analysis of the effect of cross-sectional variance in liberalisation events.)

³⁴ The regression that omits every variable from χ but controls for world market proxies and country specific effects suggests that the 8-month liberalisation measure is significant at the 10 percent level. Specific details on all underlying models are available on request.

³⁵ For a more complete description of EBA decision rules see Durham (2000b), but the three basic rules used in this paper are as follows. The ‘extreme’ decision rule (Levine and Renelt, 1992) essentially states that each t statistic among the M regressions should be greater than 2 (or 1.645 using the 10 percent confidence interval as Henry does), and each z coefficient should have the same sign. A more lenient criterion (Granger and Uhlig, 1990) suggests that only models among the original M regressions with an R^2_j that satisfies

$$R^2_j \geq (1-\alpha)R^2_{max}$$

where R^2_{max} is the highest R^2 value among all M regressions, and α is 0.1 in this study. This ‘ R^2 ’ decision rule is identical to the extreme criterion, but only models that satisfy the condition inform the bounds. Finally, the ‘CDF’ decision rule follows the test outlined in Sala-i-Martin (1997a, 1997b). Sala-i-Martin weights each of the M estimates of β_z by some measure of overall fit for the underlying j^{th} regression. The weighted means in this paper follow

$$\hat{\beta}_z = \sum_{j=1}^M w_{zj} \beta_{zj}$$

and

$$\hat{\sigma}_z^2 = \sum_{j=1}^M w_{zj} \sigma_{zj}^2$$

where w_{zj} is the weight, as in

$$w_{zj} = \frac{R^2_{zj}}{\sum_{i=1}^M R^2_{zi}} .$$

³⁶ The 8-month event window is perhaps the most apt to pass a EBA decision rule among the liberalisation measures. As Henry (2000a) suggests, the event window perhaps more realistically captures the flow of information regarding imminent reform. But a remaining problem is that policymakers are considerably more inclined to liberalise when market performance is relatively (presumably with respect to temporal variation) positive, thereby making the empirical link between the event window and returns possibly endogenously selected. (Policymakers would not wish to open equity markets and sell shares at ‘fire sale prices’ to foreigners following periods of poor market performance.) Seemingly, the longer the event window, the more problematic

previous estimates at approximately 3.71 percent (Henry, 2000a), the figure only passes the CDF decision rule under the assumption of weighted normality (row 12). The weighted non-normal (row 13) and un-weighted non-normal (row 14) assumptions narrowly miss the decision rule.³⁷

The remaining measures of liberalisation using alternative event windows produce more unequivocally fragile results. In fact, as all statistics under the extreme and R^2 decision rules indicate, no liberalisation coefficient is robust controlling for any χ set of three χ factors, even with the 10 percent confidence interval (row 6, columns 2-4). Of course, all statistics germane to the CDF decision rule similarly indicate fragility, as the weighted betas, while positive in support of the hypothesis, are considerably lower than the 8-month window estimate (3.71 percent) (row 11, columns 2-4).³⁸

4.3. EBA Results: Expanded Sample

Unfortunately, previous studies seem with respect to temporal coverage through 1994, which perhaps notably precludes key crises in emerging markets, including the Tequila Crisis in Mexico the Asian Flu beginning in 1997. This section present results from an expanded sample that includes 5 additional countries from regions beyond Latin American and East Asia – Greece, Jordan, Nigeria, Pakistan, and Zimbabwe – and data on all countries through the end of 1997. Liberalisation dates for the additional five countries follow Bekaert and Harvey (1998). Notably, this panel produces a considerably more powerful test, as the

possible endogenous selection, but the more likely a significant result (in an EBA). (Indeed, a review of Henry's results for alternative windows suggests that the relations are more robust for longer windows.)

³⁷ This study notably does not consider other reforms – with respect to trade, stabilisation, exchange rate controls, and privatisation – that might occur simultaneously with equity market reform. This would suggest that the following EBA is somewhat biased toward positive and robust results for liberalisation. (Henry's precise monthly coding for these other reforms was not made available.)

³⁸ EBA also indicates that post liberalisation effects reported in Table 1A are also sensitive to specification. Only one regression among the 364 possible models (which include the 8-month liberalisation window in \mathbf{f} along with the MSCI USA, MSCI EAFE, and IFC indices) is significant at the 10 percent level for the measure that considers the seventh through the twelfth month after liberalisation. Only 2.2 percent of models for the variable covering the first year after the event are statistically significant. Results are available on request.

number of observations more than doubles from 1034 to (16 countries \times 130 months) 2080. As a result, the EBA also illustrates ‘out-of-sample’ in addition to specification bias vis-à-vis previous literature. But nonetheless, an applicable finding should be robust across space, time, and specification assumptions.

Turning to the results, Table 2B again suggests that liberalisation is not a robust correlate of stock market returns.³⁹ For example, the standard 8-month window clearly passes no decision rule, as the coefficient is significant in only 1.65 percent of the 364 regressions at the 4.55 percent confidence interval and only 22.25 percent at the 10 percent level. The R^2 and CDF decision rules similarly indicate fragility.

The alternative 5-month liberalisation window seems more robust, as 4.12 and 46.98 percent of the M coefficients are significant at the 4.55 and 10 percent confidence intervals. But, the upper and lower bounds have opposite signs, only 1.61 percent of superior models are significant (row 9, column 2), and CDF statistics narrowly miss the decision rule. Finally, the 2-month event window and contemporaneous implementation measures are insignificant in all possible specifications and therefore fail all EBA decision rules.

4.4. Complete EBA of Anomalies in Emerging Markets

All in all, liberalisation measures are not robust to EBA. None of the event windows around reform dates are robust according to any decision rule in either the limited or expanded panel samples. But, as previous applications of EBA to financial market anomalies (Durham, 2000a, 2000b, 2000c) and other econometric issues (Levine and Renelt, 1992; Sala-i-Martin, 1997a, 1997b; Hess et al. 1998) indicates, very few independent variables tend to pass the extreme decision rule. While stock market liberalisation indeed fails more lenient

³⁹ With respect to the augmented sample, the regression that omits every variable from χ but controls for world market proxies and country specific effects suggests that the 8-month liberalisation measure is in only significant at the 12 percent level. This suggests that in addition to specification, fragile results are also due to out-of-sample bias.

EBA tests, the question remains as to whether any other variables in the remaining set of doubtful variables, χ , are robust. In other words, how *comparatively* robust is liberalisation compared to other purported determinants of stock market returns? Is EBA too stringent a test? Also, in addition to statistical significance and specification, are other variables also economically significant?⁴⁰

Tables 3A and 3B address this issue and summarise the EBA results for all 14 variables in the χ set for the limited and expanded samples.⁴¹ Similar to the results for liberalisation summarised in Table 2B, these data suggest that some variables are also fragile according to all EBA decision rules under identical test conditions. These variables include *value measures (P/B, P/E, and D/P), inflation volatility, market capitalisation, market liquidity, and the January effect.*

However, in sharp contrast to liberalisation, a number of variables pass at least one EBA criterion in at least one sample and additionally exhibit economic significance. For example, the *long-term contrarian proxy* is significant in every M specification and therefore passes the extreme decision rule (and therefore the remaining tests) in both the limited and more comprehensive sample. Moreover, the weighted beta from the augmented (limited) sample of approximately 0.3438 (0.3328) percent listed in Table 3B (Table 3B) has the expected sign. *Inflation* has the expected negative aggregate coefficient and passes the CDF

⁴⁰ Following McCloskey and Ziliak (1996), this section duly notes the size of the weighted betas to address the distinction between statistical and economic significance, which some applications of EBA neglect given its explicit emphasis on the former.

⁴¹ There are a few key differences between the EBA of emerging markets in Durham (2000a) and the present study. First, the augmented sample differs considerably with 2080 versus 1328 panel observations, as this study includes data from March 1987 through December 1997, while the previous study covers March 1988 through January 1995. The number of cases is similarly 16, but this study substitutes data for Portugal with data covering Jordan. Second, the previous study includes temporal dummy variables to capture shocks, whereas this study includes market proxies for the U.S., EAFE, and a LDC (IFC) index, which follows Henry (2000a). Third, given that the emphasis in this sensitivity analysis is not to capture replicable investment strategies, some variables enter the current study contemporaneously, including inflation, inflation volatility, country risk, population demographics, and bank development. Fourth, the measure for inflation volatility follows Schwert (1989) rather than the relative change in inflation rates from month to month. Fifth, the previous study uses total nominal excess (\$U.S.) return on the left-hand-side, while the dependent variable in this study is the total real gross (\$U.S.) return. While the overall EBA results are similar, these key differences may contribute to the generally more robust results in this application of EBA.

criterion in both samples, as the weighted beta suggests that a one percent increase in the monthly inflation rate corresponds with a 0.1351 (0.1985) percent decrease in real monthly (\$U.S.) total return in the augmented (limited) sample.

Also, at least with respect to the augmented sample, five other 'doubtful variables' are robust, at least in the augmented sample. The *Institutional Investor country credit* rating narrowly misses the extreme decision rule, but passes the R^2 and CDF criteria with the expected coefficient. The weighted coefficient suggests that the difference between the lowest (Nigeria in March 1996 and March 1997) and highest country credit rating (Korea in October 1995) implies an approximate 10.332 percent monthly increase in total returns. Four other factors pass the CDF decision rule in the augmented sample. The weighted beta for *momentum* suggests that monthly total returns are approximately 0.1398 percent greater. Also, a one percent increase in the proportion of the *population older than 65* suggests a 1.8114 percent decrease in return, and a one percent increase in the ratio of *bank credit to GDP* suggests an approximate 4.21 basis point decrease in return. Finally, the *short-term contrarian proxy* is robust to Sala-i-Martin's test statistic. The weighted coefficient suggests that a one percent increase in the previous month's total return corresponds with an approximate 6.02 basis point contemporaneous *increase*, which is inconsistent with the contrarian hypothesis but corroborates the view of emerging market inefficiency (predictability).

In general, these results on other (competing) perspectives on stock market performance suggests that EBA is not an unreasonable econometric criterion on which to doubt results on stock market liberalisation. Clearly, especially given the augmented sample, other factors are robust in identical samples, as seven variables pass EBA tests in at least one sample. Also, while assessments as to 'how large is large' are ultimately subjective (McCloskey and Ziliak, 1996), the economic significance of some variables – perhaps

particularly including long-run lagged returns, inflation, country risk, and population demographics – seem noteworthy. Therefore, one might conjecture that specification bias besets results for liberalisation.

4.5. *Toward identification of problematic specifications*

Previous applications of EBA (Levine and Renelt, 1992; Sala-i-Martin, 1997a, 1997b; Hess et al. 1998; Durham, 2000a) do not discuss particular specifications that produce fragile results for particular hypotheses of interest. They simply report the robustness of each doubtful variable. But, perhaps some preliminary discussion of key specifications that are problematic might be instructive for future research. The fragility of stock market liberalisation is of course no exception, and therefore this section examines which, if any, variables in χ drive insignificant coefficients for liberalisation measures.

Toward that end, Table 4A lists summary statistics for sub sets of the M regressions from Table 2A by doubtful variable. For example, row 6 lists 9 statistics for all 78 equations (among the total 364 models) that include the long-run contrarian proxy. Row 6, column 2 indicates that of the 78 regressions which include long-run lagged returns, 23.08 percent produce statistically significant coefficients for the 8-month liberalisation measure at the 10 percent confidence interval. Given that liberalisation is significant in 46.43 percent of specifications overall (Table 2A, row 6, column 1), inclusion of this particular doubtful variable further increases the probability of an insignificant coefficient for liberalisation. Similarly, column 1 suggests that including inflation volatility (row 8), country risk (row 10), and relative market size (row 11) are particularly problematic, as only 7.69, 7.69, and 35.9 percent of the regressions produce significant results for liberalisation, respectively.⁴²

⁴² The average t statistic captures similar information, as the figures for variables that produce no significant coefficients, inflation volatility and country risk, are the lowest among the 14 factors at approximately 1.46 and 1.44, respectively.

Also, Table 4A indicates which particular specifications produce the extreme bounds. For example, the model that includes the long-run contrarian proxy, inflation volatility, and country risk in the \mathbf{x} set produces the lower bound (column 3), and the equation that includes inflation, turnover, and bank development produces the upper bound (column 4). Perhaps also instructive, Table 4A also shows which model among the 364 regressions has the best overall fit, as the model that includes the long-run contrarian proxy, inflation, and inflation volatility has an R^2 value of 0.1302. Notably, liberalisation is not significant in this particular regression within any standard confidence interval, with a t statistic of only 1.388.⁴³

The expanded panel sample produces similar results. For example, variables that are particularly problematic for the 8-month window measures include the long-run contrarian proxy (12.82 percent significant at the 10 percent confidence interval – Table 4B, row 6, column 2), inflation volatility (1.28 percent), population demographics (0.00 percent), country risk (0.00 percent), and relative market size (10.26 percent). Also, the model among the 364 M regressions with the best fit includes long-run lagged returns, inflation, and country risk, and notably, the 8-month window has the expected positive sign, but the parameter is insignificant with a t statistic of 1.251.⁴⁴ Finally, as Table 4C indicates, the same five variables similarly seem to increase the probability of fragile results for the 5-month window, and the best model again produces an insignificant result for liberalisation (t statistic of 1.34).⁴⁵

Therefore, while liberalisation is largely fragile according to EBA inference criteria, this examination of subsets of M regressions by (competing) doubtful variable indicate that some factors seem to increase the probability of insignificant results. Perhaps future research

⁴³ Long-run lagged returns and inflation significantly enter the equation with the expected negative signs and t statistics of 2.656 and 2.547, respectively. Inflation volatility is unexpectedly positive, with a t statistic of 1.935. Further particulars on all M regressions are available on request.

⁴⁴ In this particular model, each variable included in \mathbf{x} is statistically significant with the expected sign, and the R^2 value is 0.094 (Table 4B; rows 6, 7, 10; column 9).

should consider particular variables such as inflation, long-run lagged returns, country risk measures, and relative market size.

4.6. Time-Series EBA

Several factors recommend supplementing panel regressions with time-series analysis of individual countries. In addition to isolating the general importance of spatial and temporal variance, time-series analysis ameliorate problems in defining concepts across different markets, as variables such as accounting measures or, particularly given this research question, liberalisation. Again, as Table 1C indicates, definitions of the event in question are highly contentious, and the results are very sensitive to definitional changes.

Given the fragility outlined in the previous section, time-series EBA is also instructive, and Table 5A summarises the results for 14 countries from the expanded panel sample that covers March 1987 through December 1997. Notably, few time-series results support the liberalisation hypothesis, as data from only two countries are robust according to any decision rule with the expected sign. Data for Colombia do unequivocally suggest that liberalisation leads to higher real returns, as the variable is clearly robust according to the most extreme decision rule with a weighted beta that implies approximately 10.36 percent greater returns on average during the 8-month event window. Also, some data for Argentina support the hypothesis, as the coefficient suggests 18.35 percent greater returns given liberalisation, which passes the R^2 and CDF but not the extreme decision rule.⁴⁶

But the remaining 12 cases clearly do not support the hypothesis. In fact, data for Brazil, Korea, Malaysia, Mexico, Thailand, and Venezuela, all suggests that temporal variation in liberalisation is fragile. Also, countries notably excluded from previous samples

⁴⁵ Similar to the results for the 8-month window in the expanded panel sample, the equation that includes the long-run contrarian proxy, inflation, and country risk produces the greatest overall fit, as each factor is safely significant with the expected sign.

(Henry, 2000b) – Greece, Jordan, Nigeria, Pakistan, and Zimbabwe – all indicate that liberalisation does not pass any EBA decision rule. Perhaps most problematic, however, data for Chile actually indicate a negative effect on returns during the 8-month window, which is robust at least according to the CDF decision rule.

5. Conclusions

The recently reported positive association between equity market liberalisation, stock prices (the decrease in k), and private investment has profound implications for lower income countries. Assuming robust empirical relations to support this transmission mechanism, (nascent) emerging stock markets should allow foreigners to purchase domestic shares, and policymakers can expect price appreciation and increased private investment. In some respects, this paper suggests that previous evidence is robust to controversies in the literature on international capital flows. That is, at least with respect to the first chain in the mechanism, liberalisation seems to lead to sustainable increases in equity price levels given models that include post-liberalisation dummy variables – booms do not seem to be followed by busts. Also, the effect of liberalisation on prices seems independent from its effect on market volatility, which does not seem to affect performance.

But unfortunately, other sensitivity analyses cast doubt on the benevolent relation. For example, the event study methodology on which these findings are based ultimately rests on subjective assessments of when ‘liberalisation’ exactly occurs. Indeed, this paper shows that previous results are extremely sensitive to alternative sets of event assumptions. Also, even using coding that produces significant results, it seems that spatial as opposed to temporal variance seems to drive previous findings from panel regressions, as only data from only one country, Colombia, suggests a statistically significant result within the 5 percent

⁴⁶ Table 5B1 indicates that liberalisation would pass the extreme decision rule using data for Argentina if only P/E , inflation, inflation volatility, and bank development were included in the x set.

confidence interval. Briefly, while spatial variance is in fact relevant to the general question of whether liberalisation affects prices, it seems less relevant to this particular transition mechanism from local market price appreciation to private investment growth.

Moreover, event definitions and spatial variance aside, liberalisation is not the only purported determinant of stock market performance according to the empirical finance literature. In fact, EBA analysis indicates that the hypothesis is not robust to alternative specifications. Notably, while EBA is a rigorous exercise, this paper nonetheless shows that some variables are in fact robust to various decision rules, which suggests that liberalisation is comparatively fragile. Perhaps useful for future empirical research and theory, inclusion of a few particular variables – the long-run contrarian proxy, inflation volatility, population demographics, country risk measures, and relative market capitalisation – seem to increase the probability that liberalisation is statistically fragile.

Therefore, the statistical relation between liberalisation and stock market performance is perhaps not as lucid as previous studies suggest. This implies that the grand transmission mechanism from reform to private investment growth is empirically tenuous, especially if liberalisation has no direct effect on private investment in addition to its purported gross effect through valuation. While the evidence in this paper does uncover robust negative effects, the short-run policy implications of stock market liberalisation seem unclear.

Two questions remain with respect to interpretation, particularly with respect to policy. First, given persuasive theory, ambiguous results require some explanation. Therefore, to briefly proffer a possible interpretation, as other economists discuss in detail, policymaker credibility could be critical in this regard. Under textbook conditions policymakers are fully committed to reform and market participants have perfect information through the announcement, and this reform scenario should produce a one-time decrease in k and increase in stock market prices. But, if the market does not consider reform

pronouncements as credible, prices are unlikely to respond accordingly, all things being equal, and indeed, the use of event windows in previous studies seems to accommodate market imperfections by definition. Therefore, ambiguous results given more fully specified models of asset returns might reflect market participants' perception of reform credibility and commitment.⁴⁷ Simply, equity markets may not judge policy as credible, and reform announcements therefore have no robust measurable effect on prices.⁴⁸

Second, general conclusions from the evidence in this paper regarding the real effects of stock markets in lower income countries can only be drawn with considerable trepidation, as this study only address the first phase in the short-run mechanism. However, some data suggest that liberalisation does not directly affect private investment, controlling for several factors in the literature as well as contemporaneous and lagged valuation changes (Durham, 2000d). Also, some long-run data suggest that the correlation between stock market development and economic growth only holds for higher income country samples (Durham, 2000d), which casts doubt on the second phase of the long-run mechanism from reform to expansion. But these issues aside, which are far beyond the scope of this paper, the relation between liberalisation and market returns seems questionable, and therefore lower income countries should proceed cautiously with reform.

⁴⁷ Perhaps the comparatively robust findings for inflation according to the CDF EBA decision rule in both the limited and expanded samples is germane to policy credibility – markets seem to react favourably to lower inflation.

⁴⁸ Some intervening factors might be relevant. For example, it might be instructive to explicitly consider the electoral cycle – markets might judge policy announcements before competitive elections as less credible.

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Table 1A: Post Liberalisation Event Windows
Augmented 'Baseline' panel regressions
(7 countries from 1/76 to 12/94, 5 countries from 1/85 to 12/94)

	Post Event Window (months)	β	t score	8-month Liberalise event window β	8-month Liberalise event window t score	R^2	Obs.
(1)	1 to 6	0.0151	0.8829	0.0318	2.1015	0.0968	2119
(2)	7 to 12 *	0.0308	1.8171	0.0322	2.1400	0.0979	2119
(3)	13 to 18	0.0070	0.4123	0.0313	2.0809	0.0964	2119
(4)	19 to 24	0.0084	0.4928	0.0314	2.0855	0.0964	2119
(5)	25 to 30	0.0226	1.3317	0.0319	2.1192	0.0971	2119
(6)	31 to 36	-0.0231	-1.3519	0.0303	2.0048	0.0970	2119
(7)	37 to 42	0.0014	0.0779	0.0311	2.0657	0.0963	2119
(8)	43 to 48	-0.0017	-0.0947	0.0310	2.0578	0.0963	2119
(9)	1 to 8	0.0241	1.5985	0.0326	2.1509	0.0976	2119
(10)	9 to 16	0.0109	0.7181	0.0316	2.0970	0.0965	2119
(11)	17 to 24	0.0128	0.8566	0.0317	2.1079	0.0967	2119
(12)	25 to 32	-0.0037	-0.2485	0.0309	2.0500	0.0963	2119
(13)	33 to 40	0.0094	0.6161	0.0315	2.0895	0.0965	2119
(14)	41 to 48	-0.0059	-0.3822	0.0308	2.0439	0.0964	2119
(15)	1 to 12 **	0.0255	2.0142	0.0333	2.1975	0.0984	2119
(16)	13 to 24	0.0083	0.6531	0.0317	2.1036	0.0965	2119
(17)	25 to 36	0.0000	0.0010	0.0311	2.0594	0.0963	2119
(18)	37 to 48	-0.0001	-0.0113	0.0311	2.0592	0.0963	2119
(19)	1 to 6	0.0196	1.1410	0.0346	2.2698	0.1005	2119
	7 to 12 **	0.0342	1.9905				
	13 to 18	0.0109	0.6363				
	19 to 24	0.0125	0.7224				
	25 to 30	0.0245	1.4268				
	31 to 36	-0.0185	-1.0677				
	37 to 42	0.0041	0.2273				
	43 to 48	0.0008	0.0439				
(20)	1 to 8 *	0.0267	1.7534	0.0347	2.2749	0.0989	2119
	9 to 16	0.0151	0.9861				
	17 to 24	0.0157	1.0337				
	25 to 32	-0.0001	-0.0095				
	33 to 40	0.0120	0.7750				
	41 to 48	-0.0027	-0.1741				
(21)	1 to 12 **	0.0271	2.1152	0.0347	2.2740	0.0988	2119
	13 to 24	0.0114	0.8849				
	25 to 36	0.0033	0.2542				
	37 to 48	0.0028	0.2083				

* Significant within the 10 percent confidence interval.

** Significant within the 5 percent confidence interval.

**Table 1B: Volatility (Absolute Risk), Liberalisation, and Real Total Returns
12 Emerging Markets, January 1986 through December 1994**

	<u>Sample</u>	<u>Dependent Variable</u>	<u>Volatility β</u>	<u>Volatility t score</u>	<u>8-month Liberalise event window β</u>	<u>8-month Liberalise event window t score</u>	<u>R²</u>	<u>Obs.</u>
(1)	Total Panel Sample **	Volatility			0.0190	2.1570	0.4963	1296
(2)	Argentina **	Volatility			0.2506	5.7576	0.2383	108
(3)	Brazil	Volatility			-0.0049	-0.1108	0.0001	108
(4)	Chile	Volatility			-0.0048	-0.3646	0.0030	108
(5)	Colombia	Volatility			0.0235	1.2923	0.0176	108
(6)	India	Volatility			0.0107	0.3897	0.0074	108
(7)	Korea	Volatility			-0.0035	-0.2367	0.0024	108
(8)	Malaysia *	Volatility			0.0281	1.6607	0.0254	108
(9)	Mexico	Volatility			0.0062	0.1533	0.0000	108
(10)	Philippines	Volatility			0.0040	0.1407	0.0002	108
(11)	Taiwan	Volatility			-0.0750	-1.5589	0.0188	108
(12)	Thailand *	Volatility			0.0591	2.4740	0.0532	108
(13)	Venezuela	Volatility			-0.0432	-1.4025	0.0163	108
(14)	Argentina †	Real Total Return	0.2649	1.8467			0.0870	108
(15)	Brazil	Real Total Return	-0.2470	-1.5912			0.1950	108
(16)	Chile	Real Total Return	0.0244	0.1442			0.2200	108
(17)	Colombia	Real Total Return	0.0692	0.4272			0.0399	108
(18)	India	Real Total Return	0.1783	0.9822			0.0480	108
(19)	Korea ††	Real Total Return	0.3533	1.9795			0.1921	108
(20)	Malaysia	Real Total Return	-0.1063	-0.7677			0.4222	108
(21)	Mexico ††	Real Total Return	-0.7293	-5.1020			0.4543	108
(22)	Philippines	Real Total Return	0.1317	0.8725			0.1175	108
(23)	Taiwan	Real Total Return	0.0551	0.5557			0.6682	108
(24)	Thailand	Real Total Return	0.0143	0.1043			0.3255	108
(25)	Venezuela	Real Total Return	-0.0671	-0.4102			0.0186	108
(26)	Total Panel Sample	Real Total Return	-0.0280	-0.4707			0.1161	1296
(27)	Total Panel Sample **	Real Total Return	-0.0402	-0.6798	0.0354	2.2574	0.1206	1296

* Liberalisation Significant within the 10 percent confidence interval.

** Liberalisation Significant within the 5 percent confidence interval.

† Volatility Significant within the 10 percent confidence interval.

†† Volatility Significant within the 5 percent confidence interval.

Table 1C: Sensitivity Analysis of Alternative Liberalisation Dates (Various Authors)
'Baseline' Panel Regressions
(7 countries from 1/76 to 12/94, 5 countries from 1/85 to 12/94)

		β	t score	R^2	Obs.
8-month event window:					
(1)	Henry (2000a) **	0.0311	2.0640	0.0963	2119
(2)	Henry (2000a) "unique dates" **	0.0228	2.1615	0.0966	2119
(3)	Bekaert and Harvey (1998)	0.0054	0.3521	0.0940	2119
(4)	Kim and Singal (1999)	0.0101	0.6404	0.0942	2119
(5)	Levine and Zervos (1998)	-0.0091	-0.5919	0.0940	2119
5-month event window:					
(6)	Henry (2000a) **	0.0077	0.4132	0.0941	2119
(7)	Henry (2000a) "unique dates" **	0.0219	1.7447	0.0957	2119
(8)	Bekaert and Harvey (1998)	0.0010	0.0521	0.0939	2119
(9)	Kim and Singal (1999)	0.0057	0.2930	0.0940	2119
(10)	Levine and Zervos (1998)	-0.0165	-0.8686	0.0943	2119
2-month event window:					
(11)	Henry (2000a) **	0.0065	0.2392	0.0940	2119
(12)	Henry (2000a) "unique dates" **	0.0216	1.2206	0.0948	2119
(13)	Bekaert and Harvey (1998)	-0.0166	-0.6032	0.0941	2119
(14)	Kim and Singal (1999)	-0.0102	-0.3630	0.0939	2119
(15)	Levine and Zervos (1998)	-0.0202	-0.7314	0.0941	2119
Implementation month:					
(16)	Henry (2000a) **	0.0184	0.5189	0.0941	2119
(17)	Henry (2000a) "unique dates" **	0.0378	1.7050	0.0954	2119
(18)	Bekaert and Harvey (1998)	-0.0127	-0.3564	0.0940	2119
(19)	Kim and Singal (1999)	-0.0070	-0.1926	0.0939	2119
(20)	Levine and Zervos (1998)	-0.0065	-0.1844	0.0939	2119

* Significant within the 10 percent confidence interval.

** Significant within the 5 percent confidence interval.

**Table 1D: Individual Time-Series Regressions ('Baseline' Panel)
12 Emerging Markets (Henry [2000a] sample)
December 1976 to December 1994**

	<u>Sample</u>	β	<u>t score</u>	R^2	Prais- Winsten <u>DW</u>	<u>Obs.</u>
(1)	Total Panel Sample **	0.0311	2.0640	0.0963	NA	2119
(2)	Argentina	0.1070	1.4157	0.0606	2.0123	217
(3)	Brazil	0.0214	0.4096	0.2174	1.9932	217
(4)	Chile	-0.0053	-0.1343	0.0964	2.0394	217
(5)	India	0.0219	0.7083	0.0152	1.9771	217
(6)	Korea	0.0101	0.3308	0.0825	1.9941	217
(7)	Mexico	-0.0098	-0.2052	0.2229	1.9391	217
(8)	Thailand	0.0212	0.7344	0.1724	2.0239	217
(9)	†Colombia **	0.0987	2.4912	0.0793	1.9487	120
(10)	†Malaysia *	0.0398	1.6755	0.3798	2.0005	120
(11)	†Philippines	0.0093	0.2173	0.1115	1.9416	120
(12)	†Taiwan	0.0216	0.5336	0.6363	1.9115	120
(13)	†Venezuela	-0.0244	-0.4289	0.0066	2.0314	120

† Total return data from IFC available beginning January 1985.

* Significant within the 10 percent confidence interval.

** Significant within the 5 percent confidence interval.

Table 2A: Panel EBA
Stock Market Liberalisation Events
14 Factors $\in \chi$, 11 Emerging Markets, March 1987 to December 1994
(Regressions per Factor = 364, Observations per Regression = 1034)

	(1) Liberalise (8-month <u>window</u>)	(2) Liberalise (5-month <u>window</u>)	(3) Liberalise (2-month <u>window</u>)	(3) Liberalise (No <u>window</u>)
Extreme Decision Rule (Levine and Renelt, 1992) (4.55% Confidence Interval, t=2.000)				
(1) Lower Bound	-0.0218	-0.0512	-0.0544	-0.0746
(2) Upper Bound	0.0961	0.0721	0.0957	0.1122
(3) Fraction Significant	8.52%	0.00%	0.00%	0.00%
Extreme Decision Rule (Levine and Renelt, 1992) (10.00% Confidence Interval, t=1.645)				
(4) Lower Bound	-0.0139	-0.0423	-0.0429	-0.0597
(5) Upper Bound	0.0883	0.0633	0.0842	0.0973
(6) Fraction Significant	46.43%	0.00%	0.00%	0.00%
R² Decision Rule (Granger and Uhlig, 1990) (4.55% Confidence Interval, t=2.000)				
(7) Granger Lower Bound	-0.0218	-0.0512	-0.0544	-0.0746
(8) Granger Upper Bound	0.0961	0.0669	0.0904	0.1120
(9) Granger Fraction Significant	17.46%	0.00%	0.00%	0.00%
(10) M Models Eliminated	82.69%	89.01%	89.01%	89.56%
CDF Decision Rule (Sala-i-Martin, 1997a, 1997b)				
(11) Weighted Beta	0.0371	0.0130	0.0244	0.0218
(12) Weighted Normal CDF	0.9501	0.6978	0.7720	0.6978
(13) Weighted Non-Normal CDF	0.9457	0.6955	0.7709	0.6972
(14) Non-Weighted Non-Normal CDF	0.9457	0.6960	0.7716	0.6977

Table 2B: Panel EBA
Stock Market Liberalisation Events
14 Factors, 16 Emerging Markets, March 1987 to December 1997
(Regressions per Factor = 364, Observations per Regression = 2080)

	(1)	(2)	(3)	(4)
	Liberalise (8-month window)	Liberalise (5-month window)	Liberalise (2-month window)	Liberalise (No window)
Extreme Decision Rule (Levine and Renelt, 1992) (4.55% Confidence Interval, t=2.000)				
(1) Lower Bound	-0.0194	-0.0172	-0.0311	-0.0432
(2) Upper Bound	0.0626	0.0735	0.0811	0.0936
(3) Fraction Significant	1.65%	4.12%	0.00%	0.00%
Extreme Decision Rule (Levine and Renelt, 1992) (10.00% Confidence Interval, t=1.645)				
(4) Lower Bound	-0.0139	-0.0108	-0.0225	-0.0325
(5) Upper Bound	0.0572	0.0672	0.0725	0.0828
(6) Fraction Significant	22.25%	46.98%	0.00%	0.00%
R² Decision Rule (Granger and Uhlig, 1990) (4.55% Confidence Interval, t=2.000)				
(7) Granger Lower Bound	-0.0194	-0.0172	-0.0311	-0.0432
(8) Granger Upper Bound	0.0592	0.0702	0.0786	0.0926
(9) Granger Fraction Significant	1.82%	1.61%	0.00%	0.00%
(10) M Models Eliminated	84.89%	82.97%	84.62%	85.99%
CDF Decision Rule (Sala-i-Martin, 1997a, 1997b)				
(11) Weighted Beta	0.0213	0.0287	0.0270	0.0270
(12) Weighted Normal CDF	0.9215	0.9471	0.8684	0.8151
(13) Weighted Non-Normal CDF	0.9138	0.9425	0.8660	0.8136
(14) Non-Weighted Non-Normal CDF	0.9141	0.9427	0.8666	0.8144

Table 3A: Panel EBA
14 Doubtful Variables
14 Factors $\in \chi$ (including Liberalise, 8-month window), 11 Emerging Markets, March 1987 to December 1994
M Regressions = 364, Observations per Regression = 1034

Doubtful Variable	Extreme Decision Rule (Levine and Renelt, 1992) (4.55% Confidence Interval, t=2.000)			Extreme Decision Rule (Levine and Renelt, 1992) (10.00% Confidence Interval, t=1.645)			R ² Decision Rule (Granger and Uhlig, 1990) (4.55% Confidence Interval, t=2.000)				CDF Decision Rule (Sala-i-Martin, 1997a, 1997b)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Lower Bound	Upper Bound	Fraction Significant	Lower Bound	Upper Bound	Fraction Significant	Granger Lower Bound	Granger Upper Bound	Granger Fraction Significant	M Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Price to Book	-0.0065	0.0030	0.00%	-0.0059	0.0023	0.00%	-0.0065	0.0030	0.00%	86.81%	-0.0017	0.8240	0.8194	0.8200
Price to Earnings	-0.0003	0.0001	0.00%	-0.0003	0.0001	0.00%	-0.0003	0.0001	0.00%	85.99%	-0.0001	0.7807	0.7782	0.7785
Dividend Yield	-0.0095	0.0054	0.00%	-0.0084	0.0042	0.00%	-0.0095	0.0048	0.00%	85.16%	-0.0019	0.7380	0.7350	0.7348
Short-term Contrarian Proxy	-0.0746	0.1195	0.00%	-0.0596	0.1045	0.00%	-0.0746	0.1184	0.00%	89.56%	0.0251	0.7227	0.7211	0.7222
Momentum Proxy	-0.2198	0.3472	0.00%	-0.1834	0.3112	0.00%	-0.2198	0.3472	0.00%	87.64%	0.0652	0.7397	0.7312	0.7311
Long-term Contrarian Proxy	-0.6411	-0.0379	100.00%	-0.5935	-0.0842	100.00%	-0.6411	-0.0381	100.00%	87.91%	-0.3328	0.9936	0.9934	0.9933
Inflation	-0.5493	0.0383	46.15%	-0.5090	0.0057	94.78%	-0.5493	0.0205	79.52%	77.20%	-0.1985	0.9807	0.9751	0.9748
Inflation Volatility	-0.3580	1.1488	13.19%	-0.2733	1.0524	21.43%	-0.0698	1.1488	62.75%	85.99%	0.2866	0.8757	0.8424	0.8389
Population > 65	-8.4993	8.6996	0.00%	-7.6020	7.6980	0.00%	-8.4993	8.0082	0.00%	90.11%	-0.1369	0.5219	0.6747	0.6729
<i>Institutional Investor</i> Country Risk	-0.0055	0.0016	15.93%	-0.0050	0.0011	36.54%	-0.0053	0.0002	91.30%	93.68%	-0.0018	0.9428	0.9325	0.9314
Market Capitalisation (% GDP)	-0.0807	0.0559	3.02%	-0.0741	0.0473	15.66%	-0.0742	0.0559	6.25%	86.81%	-0.0158	0.8443	0.8376	0.8371
Turnover	-0.2329	0.0983	0.00%	-0.2095	0.0736	0.00%	-0.2329	0.0874	0.00%	87.09%	-0.0597	0.8168	0.8132	0.8122
Bank Development	-0.1025	0.1646	0.00%	-0.0873	0.1489	0.27%	-0.0873	0.1646	0.00%	89.56%	0.0080	0.5847	0.6385	0.6345
January	-0.0340	0.0295	0.00%	-0.0291	0.0246	0.00%	-0.0329	0.0295	0.00%	85.71%	-0.0038	0.6090	0.6109	0.6118

Table 3B: Panel EBA
14 Doubtful Variables
14 Factors $\in \chi$ (including Liberalise, 8-month window), 16 Emerging Markets, March 1987 to December 1997
M Regressions = 364, Observations per Regression = 2080

Doubtful Variable	Extreme Decision Rule (Levine and Renelt, 1992) (4.55% Confidence Interval, t=2.000)			Extreme Decision Rule (Levine and Renelt, 1992) (10.00% Confidence Interval, t=1.645)			R ² Decision Rule (Granger and Uhlig, 1990) (4.55% Confidence Interval, t=2.000)				CDF Decision Rule (Sala-i-Martin, 1997a, 1997b)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Lower Bound	Upper Bound	Fraction Significant	Lower Bound	Upper Bound	Fraction Significant	Granger Lower Bound	Granger Upper Bound	Granger Fraction Significant	M Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Price to Book	-0.0067	0.0030	0.00%	-0.0061	0.0024	3.02%	-0.0060	0.0029	0.00%	84.34%	-0.0018	0.8625	0.8517	0.8530
Price to Earnings	-0.0003	0.0001	0.00%	-0.0002	0.0001	0.00%	-0.0003	0.0001	0.00%	83.52%	-0.0001	0.8253	0.8228	0.8231
Dividend Yield	-0.0049	0.0042	0.00%	-0.0043	0.0036	0.00%	-0.0047	0.0041	0.00%	87.64%	-0.0004	0.5927	0.6217	0.6216
Short-term Contrarian Proxy	-0.0143	0.1260	77.20%	-0.0043	0.1159	99.18%	-0.0143	0.1194	18.75%	82.42%	0.0603	0.9830	0.9815	0.9818
Momentum Proxy	-0.0595	0.3299	50.27%	-0.0340	0.3042	91.21%	-0.0595	0.3020	20.31%	82.42%	0.1398	0.9755	0.9711	0.9715
Long-term Contrarian Proxy	-0.5862	-0.1049	100.00%	-0.5521	-0.1373	100.00%	-0.5862	-0.1102	100.00%	70.05%	-0.3428	0.9999	0.9998	0.9998
Inflation	-0.4010	0.1032	39.01%	-0.3747	0.0770	72.80%	-0.4010	0.0954	72.22%	90.11%	-0.1351	0.9734	0.9524	0.9513
Inflation Volatility	-0.2995	0.8904	13.74%	-0.2348	0.8175	21.70%	-0.2602	0.8904	43.48%	93.68%	0.2224	0.8823	0.8466	0.8447
Population > 65	-4.8417	1.0516	58.24%	-4.5352	0.7439	77.47%	-4.8417	0.5811	80.00%	80.77%	-1.8114	0.9839	0.9632	0.9625
<i>Institutional Investor</i> Country Risk	-0.0041	0.0004	92.03%	-0.0039	0.0001	98.90%	-0.0041	-0.0003	100.00%	84.89%	-0.0018	0.9976	0.9931	0.9928
Market Capitalisation (% GDP)	-0.0825	0.0470	62.91%	-0.0768	0.0413	74.18%	-0.0825	0.0470	64.29%	76.92%	-0.0310	0.9797	0.9450	0.9458
Turnover	-0.2508	0.0486	1.37%	-0.2286	0.0280	31.87%	-0.2508	0.0415	6.67%	87.64%	-0.0956	0.9426	0.9398	0.9396
Bank Development	-0.0991	0.0369	65.66%	-0.0918	0.0282	78.57%	-0.0991	0.0173	85.42%	86.81%	-0.0421	0.9805	0.9652	0.9646
January	-0.0251	0.0189	0.00%	-0.0214	0.0152	0.00%	-0.0248	0.0188	0.00%	85.44%	-0.0032	0.6230	0.6229	0.6230

**Table 4A: Subsets of M EBA Regressions by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
11 Emerging Markets, March 1987 to December 1994**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (<u>t=2.000</u>)	% Significant (<u>t=1.645</u>)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	6.41%	50.00%	-0.0175	0.0931	0.0374	1.6632	0.1111	0.1070	0.1224
(2) Price-to-Earnings	8.97%	69.23%	-0.0153	0.0938	0.0389	1.7358	0.1122	0.1085	0.1233
(3) Dividend Yield	8.97%	65.38%	-0.0159	0.0952	0.0387	1.7162	0.1116	0.1078	0.1231
(4) Short-Run Contrarian Proxy	6.41%	41.03%	-0.0184	0.0918	0.0364	1.6265	0.1118	0.1083	0.1228
(5) Momentum Proxy	12.82%	66.67%	-0.0169	0.0948	0.0388	1.7369	0.1115	0.1077	0.1234
(6) Long-Run Contrarian Proxy	2.56%	23.08%	-0.0218	0.0900	0.0341	1.5144	0.1180	0.1156	0.1302
(7) Inflation	39.74%	80.77%	-0.0183	0.0961	0.0423	1.9081	0.1182	0.1135	0.1302
(8) Inflation Volatility	0.00%	7.69%	-0.0218	0.0826	0.0321	1.4563	0.1124	0.1075	0.1302
(9) Population > 65	2.56%	46.15%	-0.0185	0.0936	0.0381	1.6314	0.1108	0.1069	0.1224
(10) <i>Institutional Investor</i> Country Risk	0.00%	7.69%	-0.0218	0.0873	0.0330	1.4394	0.1120	0.1078	0.1260
(11) Market Size (Relative)	2.56%	35.90%	-0.0179	0.0917	0.0362	1.5906	0.1106	0.1068	0.1221
(12) Turnover	8.97%	57.69%	-0.0170	0.0961	0.0384	1.6960	0.1113	0.1072	0.1234
(13) Bank Development	12.82%	51.28%	-0.0184	0.0961	0.0379	1.6802	0.1111	0.1068	0.1256
(14) January	6.41%	47.44%	-0.0181	0.0930	0.0371	1.6455	0.1107	0.1068	0.1222

Table 4B: Subsets of M EBA Regressions by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
16 Emerging Markets, March 1987 to December 1997

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	1.28%	24.36%	-0.0163	0.0608	0.0220	1.4525	0.0783	0.0730	0.0875
(2) Price-to-Earnings	1.28%	37.18%	-0.0147	0.0616	0.0232	1.5341	0.0789	0.0737	0.0883
(3) Dividend Yield	1.28%	25.64%	-0.0160	0.0607	0.0223	1.4728	0.0780	0.0729	0.0877
(4) Short-Run Contrarian Proxy	1.28%	24.36%	-0.0157	0.0582	0.0212	1.4560	0.0828	0.0784	0.0918
(5) Momentum Proxy	7.69%	42.31%	-0.0139	0.0626	0.0239	1.5926	0.0807	0.0756	0.0887
(6) Long-Run Contrarian Proxy	0.00%	12.82%	-0.0194	0.0592	0.0204	1.3526	0.0858	0.0815	0.0940
(7) Inflation	7.69%	57.69%	-0.0138	0.0626	0.0252	1.6721	0.0810	0.0750	0.0940
(8) Inflation Volatility	0.00%	1.28%	-0.0186	0.0555	0.0192	1.2861	0.0790	0.0729	0.0883
(9) Population > 65	0.00%	0.00%	-0.0194	0.0556	0.0178	1.1567	0.0794	0.0742	0.0893
(10) Institutional Investor Country Risk	0.00%	0.00%	-0.0194	0.0542	0.0174	1.1508	0.0815	0.0768	0.0940
(11) Market Size (Relative)	0.00%	10.26%	-0.0174	0.0583	0.0206	1.3537	0.0793	0.0748	0.0886
(12) Turnover	1.28%	26.92%	-0.0154	0.0626	0.0229	1.5100	0.0789	0.0736	0.0886
(13) Bank Development	0.00%	23.08%	-0.0174	0.0590	0.0212	1.4103	0.0807	0.0757	0.0923
(14) January	1.28%	25.64%	-0.0163	0.0611	0.0221	1.4611	0.0780	0.0729	0.0874

Table 4C: Subsets of M EBA Regressions by Factor (78 Regressions)
Doubtful Variable: Liberalise (5-month window)
16 Emerging Markets, March 1987 to December 1997

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	3.85%	56.41%	-0.0134	0.0721	0.0298	1.6767	0.0787	0.0733	0.0879
(2) Price-to-Earnings	10.26%	66.67%	-0.0116	0.0730	0.0311	1.7554	0.0793	0.0740	0.0887
(3) Dividend Yield	2.56%	55.13%	-0.0136	0.0716	0.0295	1.6572	0.0783	0.0733	0.0880
(4) Short-Run Contrarian Proxy	5.13%	61.54%	-0.0127	0.0696	0.0291	1.6952	0.0832	0.0789	0.0923
(5) Momentum Proxy	10.26%	66.67%	-0.0120	0.0735	0.0309	1.7464	0.0809	0.0758	0.0891
(6) Long-Run Contrarian Proxy	0.00%	47.44%	-0.0172	0.0702	0.0279	1.5763	0.0862	0.0818	0.0942
(7) Inflation	16.67%	67.95%	-0.0140	0.0735	0.0312	1.7569	0.0812	0.0751	0.0942
(8) Inflation Volatility	0.00%	32.05%	-0.0156	0.0672	0.0268	1.5200	0.0794	0.0733	0.0886
(9) Population > 65	0.00%	2.56%	-0.0172	0.0659	0.0251	1.4035	0.0798	0.0746	0.0898
(10) Institutional Investor Country Risk	0.00%	0.00%	-0.0172	0.0639	0.0242	1.3652	0.0819	0.0771	0.0942
(11) Market Size (Relative)	0.00%	30.77%	-0.0151	0.0685	0.0275	1.5394	0.0796	0.0752	0.0891
(12) Turnover	6.41%	61.54%	-0.0128	0.0735	0.0305	1.7107	0.0793	0.0739	0.0889
(13) Bank Development	0.00%	52.56%	-0.0150	0.0701	0.0288	1.6288	0.0810	0.0759	0.0927
(14) January	2.56%	56.41%	-0.0139	0.0717	0.0294	1.6538	0.0783	0.0733	0.0878

Table 5A: Time-Series EBA
Doubtful Variable: Liberalise (8-month window)
14 Factors $\in \chi$, 16 Emerging Markets, March 1987 to December 1997
M Regressions = 364, Observations per Regression = 130

Country	Extreme Decision Rule (Levine and Renelt, 1992) (4.55% Confidence Interval, t=2.000)			Extreme Decision Rule (Levine and Renelt, 1992) (10.00% Confidence Interval, t=1.645)			R ² Decision Rule (Granger and Uhlig, 1990) (4.55% Confidence Interval, t=2.000)				CDF Decision Rule (Sala-i-Martin, 1997a, 1997b)			
	(1) Lower Bound	(2) Upper Bound	(3) Fraction Significant	(4) Lower Bound	(5) Upper Bound	(6) Fraction Significant	(7) Granger Lower Bound	(8) Granger Upper Bound	(9) Granger Fraction Significant	(10) M Models Eliminated	(11) Weighted Beta	(12) Weighted Normal CDF	(13) Weighted Non-Normal CDF	(14) Un-Weighted Non-Normal CDF
Argentina	-0.0462	0.5149	68.41%	-0.0207	0.4762	89.01%	0.0521	0.4380	100.00%	98.63%	0.1835	0.9901	0.9818	0.9805
Brazil	-0.1529	0.2119	0.00%	-0.1333	0.1897	0.00%	-0.1302	0.1776	0.00%	97.53%	0.0233	0.6624	0.6769	0.6764
Chile	-0.1958	0.0426	1.37%	-0.1792	0.0256	62.91%	-0.1528	0.0275	0.00%	79.67%	-0.0702	0.9531	0.9502	0.9502
Colombia	0.0134	0.2047	100.00%	0.0277	0.1903	100.00%	0.0293	0.1507	100.00%	87.09%	0.1036	0.9991	0.9989	0.9986
Korea	-0.1742	0.1538	0.00%	-0.1548	0.1336	0.00%	-0.1095	0.0689	0.00%	97.80%	-0.0072	0.5604	0.6328	0.6333
Malaysia	-0.1016	0.1525	0.00%	-0.0855	0.1333	0.00%	-0.0701	0.1115	0.00%	89.84%	0.0097	0.5855	0.5973	0.5958
Mexico	-0.2039	0.0911	0.00%	-0.1846	0.0734	2.75%	-0.1407	0.0641	0.00%	78.57%	-0.0380	0.7885	0.7705	0.7677
Thailand	-0.1026	0.1772	3.85%	-0.0866	0.1635	10.71%	-0.1026	0.1428	5.97%	81.59%	0.0301	0.8019	0.7689	0.7754
Venezuela	-0.2660	0.1325	0.82%	-0.2478	0.1068	2.20%	-0.1323	0.0591	0.00%	93.96%	-0.0340	0.7730	0.7403	0.7394
Greece	-0.0717	0.2352	12.64%	-0.0532	0.2180	40.66%	-0.0590	0.1378	2.27%	87.91%	0.0593	0.9343	0.9107	0.9231
Jordan	-0.0449	0.0461	0.00%	-0.0392	0.0400	0.00%	-0.0301	0.0382	0.00%	99.45%	0.0000	0.5000	0.5756	0.5750
Nigeria	-0.2574	0.1430	0.00%	-0.2343	0.1196	1.92%	-0.2447	0.0290	0.00%	99.45%	-0.0607	0.8366	0.8185	0.8257
Pakistan	-0.1053	0.0727	0.00%	-0.0927	0.0607	0.00%	-0.1038	0.0218	0.00%	99.73%	-0.0134	0.6563	0.6590	0.6447
Zimbabwe	-0.2618	0.0769	16.48%	-0.2435	0.0584	27.20%	-0.1276	0.0612	0.00%	82.97%	-0.0449	0.8821	0.7751	0.8511

Table 5B1: Subsets of M EBA Time-Series Regressions (Table 5A, Argentina) by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
Argentina, March 1987 to December 1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	80.77%	93.59%	-0.0462	0.5149	0.2133	2.3550	0.1141	0.0924	0.1443
(2) Price-to-Earnings	98.72%	100.00%	-0.0296	0.4773	0.2065	2.5932	0.1254	0.1055	0.1660
(3) Dividend Yield	60.26%	91.03%	-0.0357	0.4540	0.1604	2.1453	0.1153	0.0901	0.1532
(4) Short-Run Contrarian Proxy	64.10%	85.90%	-0.0404	0.4876	0.1741	2.1911	0.1072	0.0817	0.1437
(5) Momentum Proxy	52.56%	78.21%	-0.0432	0.4669	0.1586	2.0969	0.1094	0.0817	0.1475
(6) Long-Run Contrarian Proxy	58.97%	92.31%	-0.0362	0.4739	0.1648	2.2176	0.1233	0.0979	0.1790
(7) Inflation	98.72%	100.00%	-0.0048	0.4933	0.2168	2.6842	0.1306	0.1089	0.1640
(8) Inflation Volatility	76.92%	100.00%	-0.0137	0.5149	0.2071	2.1772	0.1112	0.0890	0.1527
(9) Population > 65	56.41%	94.87%	-0.0329	0.4656	0.1696	2.2008	0.1127	0.0817	0.1596
(10) Institutional Investor Country Risk	50.00%	78.21%	-0.0432	0.4482	0.1598	2.0685	0.1109	0.0836	0.1453
(11) Market Size (Relative)	51.28%	71.79%	-0.0462	0.4964	0.1648	2.1507	0.1241	0.0887	0.1790
(12) Turnover	56.41%	84.62%	-0.0363	0.4649	0.1660	2.1931	0.1112	0.0835	0.1467
(13) Bank Development	97.44%	100.00%	-0.0064	0.5149	0.2161	2.6058	0.1244	0.0951	0.1790
(14) January	55.13%	75.64%	-0.0462	0.4407	0.1501	2.0238	0.1265	0.1051	0.1612

Table 5B2: Subsets of M EBA Time-Series Regressions (Table 5A, Chile) by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
Chile, March 1987 to December 1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	2.56%	84.62%	-0.1772	0.0362	-0.0749	1.7614	0.3516	0.3307	0.4222
(2) Price-to-Earnings	5.13%	61.54%	-0.1772	0.0312	-0.0726	1.7144	0.3489	0.3212	0.4205
(3) Dividend Yield	0.00%	47.44%	-0.1744	0.0338	-0.0703	1.6448	0.3453	0.3200	0.4214
(4) Short-Run Contrarian Proxy	0.00%	57.69%	-0.1528	0.0283	-0.0607	1.6363	0.4073	0.3783	0.4299
(5) Momentum Proxy	0.00%	62.82%	-0.1778	0.0309	-0.0716	1.7009	0.3451	0.3159	0.4194
(6) Long-Run Contrarian Proxy	0.00%	58.97%	-0.1778	0.0326	-0.0702	1.6620	0.3432	0.3137	0.4173
(7) Inflation	0.00%	52.56%	-0.1781	0.0426	-0.0664	1.5573	0.3521	0.3188	0.4057
(8) Inflation Volatility	0.00%	57.69%	-0.1775	0.0362	-0.0697	1.6516	0.3428	0.3137	0.4143
(9) Population > 65	3.85%	79.49%	-0.1958	0.0317	-0.0730	1.7564	0.3564	0.3357	0.4299
(10) Institutional Investor Country Risk	3.85%	78.21%	-0.1958	0.0337	-0.0725	1.7237	0.3516	0.3308	0.4252
(11) Market Size (Relative)	2.56%	84.62%	-0.1729	0.0426	-0.0740	1.7483	0.3518	0.3312	0.4286
(12) Turnover	0.00%	64.10%	-0.1781	0.0325	-0.0714	1.6894	0.3439	0.3137	0.4161
(13) Bank Development	1.28%	32.05%	-0.1958	0.0426	-0.0713	1.5750	0.3451	0.3210	0.4165
(14) January	0.00%	58.97%	-0.1754	0.0362	-0.0688	1.6497	0.3502	0.3193	0.4299

Table 5B3: Subsets of M EBA Time-Series Regressions (Table 5A, Thailand) by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
Thailand, March 1987 to December 1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	14.10%	28.21%	-0.0735	0.1772	0.0479	1.3693	0.4794	0.4003	0.5708
(2) Price-to-Earnings	11.54%	12.82%	-0.1026	0.1772	0.0360	1.0082	0.4765	0.3962	0.5666
(3) Dividend Yield	1.28%	7.69%	-0.0987	0.1716	0.0345	0.9441	0.4657	0.3953	0.5615
(4) Short-Run Contrarian Proxy	1.28%	1.28%	-0.1026	0.1772	0.0217	0.5379	0.4988	0.4339	0.5510
(5) Momentum Proxy	0.00%	0.00%	-0.0894	0.1132	0.0087	0.3958	0.5279	0.4974	0.5905
(6) Long-Run Contrarian Proxy	1.28%	6.41%	-0.0966	0.1698	0.0330	0.9181	0.4690	0.4099	0.5631
(7) Inflation	1.28%	6.41%	-0.0997	0.1647	0.0301	0.8532	0.4697	0.4048	0.5645
(8) Inflation Volatility	2.56%	11.54%	-0.0854	0.1664	0.0356	0.9978	0.4764	0.4188	0.5641
(9) Population > 65	5.13%	12.82%	-0.1025	0.1333	0.0192	0.7004	0.5132	0.4578	0.5905
(10) Institutional Investor Country Risk	3.85%	15.38%	-0.1000	0.1641	0.0506	1.2982	0.4722	0.3953	0.5850
(11) Market Size (Relative)	2.56%	12.82%	-0.0994	0.1592	0.0320	0.9108	0.4820	0.3995	0.5858
(12) Turnover	2.56%	5.13%	-0.0978	0.1620	0.0281	0.8314	0.4727	0.4109	0.5590
(13) Bank Development	5.13%	21.79%	-0.0775	0.1333	0.0291	0.9679	0.5337	0.4894	0.5905
(14) January	1.28%	7.69%	-0.1026	0.1718	0.0319	0.8836	0.4632	0.3953	0.5536

Table 5B4: Subsets of M EBA Time-Series Regressions (Table 5A, Greece) by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
Greece, March 1987 to December 1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (t=2.000)	% Significant (t=1.645)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	3.85%	17.95%	-0.0628	0.2091	0.0628	1.3622	0.1418	0.0929	0.3563
(2) Price-to-Earnings	10.26%	50.00%	-0.0602	0.2352	0.0738	1.6368	0.1360	0.0848	0.3398
(3) Dividend Yield	10.26%	48.72%	-0.0636	0.2288	0.0723	1.6027	0.1332	0.0793	0.3391
(4) Short-Run Contrarian Proxy	2.56%	8.97%	-0.0590	0.1378	0.0381	1.2743	0.3321	0.3159	0.3664
(5) Momentum Proxy	5.13%	11.54%	-0.0717	0.2110	0.0585	1.2826	0.1401	0.0840	0.3563
(6) Long-Run Contrarian Proxy	8.97%	44.87%	-0.0533	0.2020	0.0693	1.6275	0.1532	0.1145	0.3435
(7) Inflation	10.26%	46.15%	-0.0682	0.2135	0.0701	1.5737	0.1325	0.0792	0.3465
(8) Inflation Volatility	10.26%	51.28%	-0.0626	0.2161	0.0744	1.6579	0.1360	0.0848	0.3465
(9) Population > 65	12.82%	39.74%	-0.0648	0.2173	0.0713	1.5763	0.1369	0.0787	0.3408
(10) Institutional Investor Country Risk	58.97%	91.03%	-0.0417	0.2352	0.0960	2.0986	0.1529	0.0942	0.3664
(11) Market Size (Relative)	2.56%	12.82%	-0.0717	0.2000	0.0568	1.1813	0.1421	0.0897	0.3475
(12) Turnover	15.38%	48.72%	-0.0668	0.2271	0.0726	1.6322	0.1364	0.0787	0.3664
(13) Bank Development	15.38%	48.72%	-0.0717	0.2352	0.0735	1.6409	0.1346	0.0787	0.3438
(14) January	10.26%	48.72%	-0.0689	0.2148	0.0708	1.5892	0.1319	0.0787	0.3406

Table 5B5: Subsets of M EBA Time-Series Regressions (Table 5A, Zimbabwe) by Factor (78 Regressions)
Doubtful Variable: Liberalise (8-month window)
Zimbabwe, March 1987 to December 1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	% Significant (<u>t=2.000</u>)	% Significant (<u>t=1.645</u>)	Lower Bound	Upper Bound	Average β	Average t statistic	Average R^2	Minimum R^2	Maximum R^2
(1) Price-to-Book	14.10%	26.92%	-0.2531	0.0453	-0.0801	1.5463	0.1413	0.0648	0.4360
(2) Price-to-Earnings	14.10%	48.72%	-0.2618	0.0464	-0.0829	1.6619	0.1592	0.0803	0.4507
(3) Dividend Yield	12.82%	21.79%	-0.2558	0.0767	-0.0619	1.2187	0.1351	0.0484	0.4463
(4) Short-Run Contrarian Proxy	0.00%	1.28%	-0.1276	0.0612	-0.0132	0.4710	0.4169	0.3674	0.4507
(5) Momentum Proxy	6.41%	14.10%	-0.2235	0.0769	-0.0475	0.9278	0.1358	0.0215	0.4280
(6) Long-Run Contrarian Proxy	76.92%	85.90%	-0.2618	0.0382	-0.1138	2.2349	0.1611	0.0824	0.4144
(7) Inflation	12.82%	19.23%	-0.2448	0.0756	-0.0584	1.1772	0.1359	0.0377	0.4263
(8) Inflation Volatility	12.82%	19.23%	-0.2518	0.0769	-0.0597	1.1702	0.1215	0.0215	0.4320
(9) Population > 65	12.82%	33.33%	-0.2618	0.0744	-0.0683	1.3687	0.1394	0.0215	0.4507
(10) <i>Institutional Investor</i> Country Risk	12.82%	17.95%	-0.2613	0.0755	-0.0614	1.2176	0.1301	0.0414	0.4413
(11) Market Size (Relative)	14.10%	30.77%	-0.2603	0.0687	-0.0701	1.3672	0.1347	0.0460	0.4453
(12) Turnover	14.10%	21.79%	-0.2549	0.0716	-0.0650	1.2655	0.1254	0.0311	0.4310
(13) Bank Development	14.10%	20.51%	-0.2528	0.0761	-0.0620	1.2141	0.1291	0.0371	0.4379
(14) January	12.82%	19.23%	-0.2539	0.0769	-0.0611	1.1910	0.1210	0.0215	0.4361

Appendix 1A
Correlation Matrix of Real Return (US\$) and 14 'Doubtful' Independent Variables
(11 Emerging Markets from March 1987 through December 1994)
(Observations=1034)

	Real Return (\$)	8-month Liberalise Event Window	Price-to-Book	Price-to-Earnings	Dividend Yield	Short-Run Contrarian Proxy	Momentum Proxy	Long-Run Contrarian Proxy	Inflation	Inflation Volatility	Population > 65	Institutional Investor Country Risk	Market Cap (% GDP)	Turnover	Bank Development	January
Real Return (\$)	1.000															
8-month Liberalise Event Window	0.058	1.000														
Price-to-Book	-0.046	-0.069	1.000													
Price-to-Earnings	-0.047	0.053	0.096	1.000												
Dividend Yield	0.024	0.127	-0.247	-0.080	1.000											
Short-Run Contrarian Proxy	0.031	0.045	0.048	0.014	-0.124	1.000										
Momentum Proxy	0.026	-0.104	0.128	-0.094	-0.126	0.025	1.000									
Long-Run Contrarian Proxy	-0.082	-0.052	0.043	-0.007	0.080	-0.069	-0.099	1.000								
Inflation	-0.071	0.121	-0.162	0.105	0.040	0.033	0.021	-0.061	1.000							
Inflation Volatility	0.018	0.185	-0.063	0.140	0.027	-0.035	-0.058	0.023	0.595	1.000						
Population > 65	0.019	0.005	-0.186	-0.039	0.073	0.023	0.022	0.034	0.197	0.390	1.000					
Institutional Investor Country Risk	-0.034	-0.092	0.106	0.063	-0.121	-0.032	-0.062	-0.090	-0.385	-0.319	-0.202	1.000				
Market Cap (% GDP)	-0.032	-0.125	0.210	0.067	-0.137	0.019	0.040	-0.034	-0.203	-0.162	-0.098	0.517	1.000			
Turnover	-0.026	0.031	0.028	0.026	-0.132	0.030	-0.016	-0.038	-0.042	-0.056	-0.068	0.454	0.010	1.000		
Bank Development	-0.001	-0.010	-0.062	0.049	0.134	0.001	0.004	-0.103	0.377	0.110	-0.060	0.285	0.381	0.238	1.000	
January	0.030	-0.005	-0.010	-0.031	0.003	0.097	0.022	-0.001	0.036	-0.027	-0.001	-0.004	-0.008	0.018	0.001	1.000

Appendix 1B
Correlation Matrix of Real Return (US\$) and 14 'Doubtful' Independent Variables
(16 Emerging Markets from March 1987 through December 1997)
(Observations=2080)

	Real Return (\$)	8-month Liberalise Event Window	Price-to-Book	Price-to-Earnings	Dividend Yield	Short-Run Contrarian Proxy	Momentum Proxy	Long-Run Contrarian Proxy	Inflation	Inflation Volatility	Population > 65	Institutional Investor Country Risk	Market Cap (% GDP)	Turnover	Bank Development	January
Real Return (\$)	1.000															
8-month Liberalise Event Window	0.039	1.000														
Price-to-Book	-0.043	-0.072	1.000													
Price-to-Earnings	-0.040	0.034	0.108	1.000												
Dividend Yield	0.028	0.089	-0.252	-0.114	1.000											
Short-Run Contrarian Proxy	0.070	0.026	0.055	0.018	-0.075	1.000										
Momentum Proxy	0.064	-0.051	0.133	-0.048	-0.117	0.067	1.000									
Long-Run Contrarian Proxy	-0.081	-0.042	0.074	0.010	-0.025	-0.067	-0.034	1.000								
Inflation	-0.039	0.106	-0.141	0.103	-0.013	0.038	0.050	-0.019	1.000							
Inflation Volatility	0.025	0.143	-0.059	0.149	0.034	-0.028	-0.024	0.027	0.565	1.000						
Population > 65	0.010	-0.012	-0.020	-0.004	0.030	0.010	0.022	0.028	0.033	0.082	1.000					
Institutional Investor Country Risk	-0.061	-0.093	0.115	0.085	-0.313	-0.055	-0.051	-0.014	-0.259	-0.252	0.250	1.000				
Market Cap (% GDP)	-0.051	-0.095	0.245	0.081	-0.245	-0.004	0.018	0.001	-0.169	-0.144	-0.106	0.491	1.000			
Turnover	-0.039	-0.003	0.029	0.054	-0.271	0.015	0.017	-0.003	0.002	-0.037	0.030	0.469	0.064	1.000		
Bank Development	-0.058	-0.013	0.016	0.053	-0.045	-0.050	-0.038	-0.064	0.218	0.014	0.044	0.378	0.511	0.217	1.000	
January	0.029	-0.005	-0.001	-0.018	0.000	0.074	0.008	-0.001	0.027	0.008	-0.001	-0.002	0.000	0.006	-0.001	1.000

Appendix 2
Variable Definitions/Data Sources
(Monthly Observations)

<u>Variable</u>	<u>Data Source</u>
Total Real Return (\$) (Log Difference in Monthly Total Return Index)	IFC (Emerging Markets Database) (Total Return Index)
Lagged Price-to-Book	IFC
Lagged Price-to-Earnings	IFC
Lagged Dividend Yield	IFC
Lagged Total Real Return	IFC (Total Return Index)
Average Six- to 12-Month Lag Return	IFC (Total Return Index)
Average 13- to 24-Month Lag Return	IFC (Total Return Index)
Inflation Rate	IMF International Financial Statistics (IFS)
Inflation Volatility	Estimates follow procedure in Schwert (1989, pp. 1117-1118) and Levine and Zervos (1998b).
Population > 65	World Bank <i>World Development Indicators 2000</i>
Country Risk Ratings	<i>Institutional Investor</i> (The surveys ask respondents to rate country creditworthiness on a scale from 0 to 100, and <i>Institutional Investor</i> adds greater weights to bankers with larger international exposure.)
Market Cap (% GDP)	Market capitalisation figures are from the IFC. GDP figures are from World Bank <i>World Development Indicators 2000</i> .
Turnover	IFC (Emerging Markets Database)
Bank Development	Total Domestic Credit Provided by the Banking Sector (World Bank <i>World Development Indicators 2000</i>)