QEH Working Paper Number 56

Time-Series Econometrics of the Real and Financial Effects of Capital Flows: Selected Cases in Africa and Southern Asia

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Few studies address the real effects of international capital flows. Instead of a cross-sectional design, this study exclusively examines time-series data from nine countries. Four cases – Nigeria, Zimbabwe, India, and Pakistan – produce evidence that either FDI or FPI adversely affect growth or savings rates, while two cases produce some evidence of a benevolent effect – Uganda and Sri Lanka. The data for Kenya, Zambia, and Bangladesh largely produce ambiguous results, and in fact, the vast majority of models across all cases indicate no significant relation. The preponderance of negative effects is largely consistent with the notion that lower income countries lack sufficient 'absorptive capacity' to harness foreign investment.

December 2000

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1. Introduction

The literature on international capital flows is long on policy prescriptions but comparatively short on empirical evidence. Several studies examine the effects of capital controls and the implications of sterilisation strategies, but surprisingly, comparatively few examine the effect of general financial openness.[1] Even fewer studies examine the real effects of flows using exclusively time-series data.

Economists are divided regarding the effects of open capital accounts. One view suggests that the evidence on asset trade will eventually reflect benevolent data on goods trade (Fischer, 1999), and a few recent studies report positive effects of capital flows, foreign direct investment (FDI) or foreign portfolio investment (FPI), on macroeconomic indicators. A more skeptical view notes the frequency of 'financial crisis' and 'boom-and-bust' cycles following financial liberalisation. For example, Bhagwati (1998, p. 9), assesses the costs simply as 'the probability of running into a crisis', and a growing empirical literature links banking and currency crises to financial liberalisation.

The paper largely focuses on theory and evidence that flows and financial liberalisation have benevolent real effects. In particular, the analyses considers the 'absorptive capacity' perspective on flows, which suggests that the effects of foreign investment is contingent on some key characteristics of the recipient country, including initial income, education rates, the trade regime, or measures of financial development. Therefore, given lower income countries in this study, the prior is that measures of flows should largely have an ambiguous or negative effect on growth and savings rates. Notably, empirical measures of absorptive capacity large relate to cross-sectional differences, and some of the proxies – particularly initial income, have precious little proscriptive relevance. Therefore,

[1] Similarly, Fischer (1999) suggests that the literature on financial liberalisation is clear not as advanced as the empirical study of goods trade.

the use of time-series data is perhaps useful for future work in teasing out testable propositions.

The organisation of the paper is as follows. The following section briefly outlines the existing literature on the effects of capital flows on the real economy. Section 3 describes the data and research design for these nine cases in more detail. Section 4 presents the results case by case, and Section 5 examines the effects of stock market liberalisation for those cases (India, Pakistan, Nigeria, and Zimbabwe) for which data are available. Section 5 concludes.

2. Literature review: Flows and 'Absorptive Capacity'

This section very briefly reviews the literature on both foreign direct investment (FDI) and foreign portfolio investment (FPI). In particular, the following discussion addresses the growing perspective on 'absorptive capacity', which suggests that flows more likely have benevolent effects if certain initial conditions obtain in the recipient country. Notably, the lower income countries addressed in this paper fail to reach implied 'thresholds' based on these factors. Therefore, the implication for poorer areas regarding financial openness is less optimistic. Empirically speaking, if the 'absorptive capacity' perspective is broadly accurate, then time-series analysis of the poorest countries should indicate ambiguous if not negative real effects. The discussion now briefly summarises specific arguments on FDI and FPI.

2.1. Empirical Evidence: FDI

Conventional wisdom suggests that FDI is the most favourable form of flow because it exhibits positive externalities through the dissemination of advanced technological and managerial practices. Also, FDI flows tend to be more stable compared to alternatives, as it is purportedly more costly to reverse and less sensitive to global shocks than FPI. Some empirical literature suggests that FDI generally correlates positively with growth. For example, given a sample of eight Asian countries from 1976 to 1997, Ito (1999) finds a

positive link between one-year lagged FDI and annual growth rates, controlling only for contemporaneous expansion in the United States and Japan.

However, more extensive studies with augmented growth specifications do not report significant unqualified statistical relations between FDI flows and real variables. Rather, whether FDI enhances growth is contingent on additional factors within the host country. For example, while his fixed effects panel regressions do not isolate specific characteristics, de Mello (1999) suggests that several factors can influence the 'absorptive capacity' of host countries to successfully harness FDI toward sustained expansion.

Perhaps most discouraging for the poorest countries, Blomström et al. (1992) argue that higher income emerging markets are more likely to effectively absorb FDI flows. In short, they suggest that the lowest income countries 'may learn little from the multinationals, because local firms are too far behind in their technological levels to be either imitators or suppliers to the multinationals' (p. 16). They find that FDI has a significantly positive coefficient in the higher-income groups but an ambiguous effect in lower income groups. Also, Borensztein et al. (1998) find that the productivity gains associated with FDI are contingent upon the initial level of human capital development. They more precisely identify education as the requisite 'infrastructure' because the application of such advanced production methods 'requires the presence of a sufficient level of human capital in the host economy' (p. 117). They empirically estimate the 'threshold' of human capital development using an interaction term and find that FDI has a positive direct effect on growth, but notably only for certain education levels. Finally, Balaubramanyam et al. (1996) support Bhagwati's notion that lower income countries that follow export promoting (EP) growth strategies more likely use FDI productively than countries that follow import substituting (IS) strategies. The argument reasons that EP countries have fewer market distortions than IS countries. They

find that pure cross-sectional regressions using only EP country samples produce significant relations between FDI and growth, while models of IS countries produce ambiguous results.[2]

Therefore, comparatively fully specified empirical studies of FDI on growth do not produce a direct, unmitigated correlation between (lagged) FDI and growth. Substantial levels of FDI are not enough – host countries must either additionally exhibit capacity to effectively absorb flows. The implications for emerging markets are therefore mixed, because poorer countries, particular those in this sample, are less likely to exhibit the proper initial absorptive characteristics.[3]

2.2. Empirical Evidence: FPI and Equity capital

Some economists also advance the virtues of cross-border equity investment. For example, in the context of a more optimal 'international financial architecture', 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 signaling.

With respect to empirical evidence, Bekaert and Harvey (1998) suggest that private equity flows have a positive direct effect on macroeconomic performance in emerging markets, using data on 17 emerging markets from 1977 to 1996.[4] Also, in a related study, Bekaert and Harvey (2000) find that growth increases in 14 of 19 liberalising countries. The coefficient for their official liberalisation indictor in pooled regressions is positive and significant.

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[2] Several authors note that growth and FDI might be simultaneously determined. Just as FDI purportedly affects development, higher growth rates might conceivably affect FDI. Blomström et al. (1992), Borensztein et al. (1998), and Balasubramanyam et al. (1996) all find that simultaneity bias does not affect their inferences.

[3] With respect to overall investment, Borensztein et al. (1998) report some evidence that FDI 'crowds in' and does not substitute for domestic investment, but their positive findings are sensitive to specification (pp. 117-18).

[4] Their results are notably sensitive to sample selection. For example, analysis that excludes the Philippines suggests that per capita GDP growth increases from 2.73 to 2.93 after flow break points (p. 17). On the other hand, GDP does not significantly change in countries with significant breaks.

More germane to the 'absorptive capacity' perspective and given level flow measures as opposed to liberalisation breaks, Durham (2000c) finds some evidence that suggests the effect FPI is largely contingent on the initial level of financial development, with respect to stock markets and banking sector. For example, these data indicate that gross equity flows have a more positive effect on growth depending on the initial level of stock market capitalisation and liquidity, and the interaction between bond flows and overall financial development is similarly significant. Therefore, similar to the literature on FDI, this result implies that flows in lower income countries may have ambiguous or even deleterious effects.

3. Data organisation and design

Some researchers suggest that cross-country empirical studies of economic growth (and other real variables) such as those discussed in Section 2 suffer from 'regression fatigue', and others explore the advantages of individual cases studies as opposed to primarily cross-sectional econometric inquiries (Fischer, 1993; Temple, 1999). While this study does not purport to provide detailed qualitative case studies, it attempts to examine the effect of flows on the real economy case by case, without eschewing econometric estimates altogether.

The following empirical section provides a very brief summary of the main financial reform measures during recent decades in five African countries – Nigeria, Zimbabwe, Kenya, Zambia, and Uganda – and two South Asian cases – India and Pakistan. In general, the discussion explores the commonly perceived trajectory in lower income countries from relatively closed economies to partially open financial systems in recent years. Of course, none of the trajectories examined below fit any simple coherent linear pattern, and indeed, the discussion also highlights the important developments, particularly with respect to political instability, that have tempered or complicated liberalisation. More concretely, the analysis considers major reforms but examines two quantitative variables. The first regards market

perceptions of country risk – simply, do overseas investors in fact have more favorable views of reforming nations? Second, the discussion examines the time-series properties of flows, FDI as well as FPI, in each country. That is, again considering various liberalisation initiatives, do the data on flows themselves (particularly those from OECD countries) reflect discernable trends? For example, if liberalisation is credible and effective, flow series should not be stationary, and therefore simple unit root provide some indicate of technical trends.

Finally, time series econometrics are essential, however limited annual figures, in order to estimate the real effects of flows. The analysis includes both growth and (total) savings equations to examine the real effects of flows, whatever the underlying trends in flows or (formal) liberalisation. In addition to measures of FDI and FPI, the growth regressions include standard controls such as the investment ratio, population growth, the growth rate of trade partners, and a trend variable.[5] Savings regressions include other variables in the literature (Edwards, 1995), including total private credit to GDP, the age dependency ratio, government spending to GDP, lagged real GDP per capita growth, the GDP deflator, and a trend variable.

4. Empirical results

This section includes the summaries of each case following the outline in Section 3, turning first to Africa – Nigeria, Zimbabwe, Kenya, Uganda, and Zambia – and then, more briefly, South Asia – India and Pakistan.

4.1. African Cases

This section discusses five African cases. While the remainder of the section discusses these issues in greater detail, the African cases differ considerably from countries in

[5] Some 'base' growth regressors seem less relevant in a time-series context, including factors such as education rates and the initial level of income.

South Asia in terms of the growth rate during the past three decades. Very generally, each case experienced significant liberalisation reforms, but the extent of political instability, overseas investor perception, and pattern of flows differed notably.

4.1.1. Nigeria

Similar to the remaining cases examined in this paper, Nigeria was a relatively closed economy in the late 1970s and early 1980s. For example, in August 1979 the government nationalized British Petroleum's activities and imposed strict foreign exchange controls as late as April 1989. But also in early 1989, the revised Nigerian Enterprises Promotion Decree allowed foreigners to acquire a 100 percent ownership in any Nigerian enterprise. Exceptions included banking, insurance, petroleum prospecting, and mining (in which foreign ownership was limited to 40 percent participation). In 1991, the government initiated a large privatisation scheme, which netted approximately U.S.$91 million from the sale of public enterprises, as well as a capital market reform program, which increased the number of shareholders by 55 percent (Bekaert and Harvey, 1998).

Liberalisation accelerated in the mid-1990s. In the 1995 budget, the government repealed the Exchange Control Act of 1962 as well as the Enterprise Promotion Act of 1989, which cleared the way for the stock market to be opened to foreign investment.[6] In August of the same year, the government issued the Nigerian Investment Promotion, Foreign Exchange monitoring, and Miscellaneous Provision decrees, all of which indeed facilitated FDI and FPI. The push toward privatisation continued in early 1997, as Finance Minister Anthony Ani reiterated the government's objective to switch from restoring economic stability to expanding privatisation and promoting growth.

[6] Bekaert and Harvey (1998) consider August 1995 the official stock market liberalisation date for Nigeria.

But how credible were these reforms? Despite these formal measures, foreign investors' perceptions of Nigeria did not considerably improve during the period. In fact, the *Institutional Investor* measure of country risk decreased dramatically since 1981, the year in which the figure was the highest among every country examined in this study (55.246) and notably before substantial liberalisation measures. By 1985, the figure had more than halved (26.179), and the value in 1998 (15.888) was the lowest among all countries in this paper.

The actual time series of flows is also telling. Perhaps considerable political instability, marked by military coups in December 1983 and August 1985 as well as continued intervention throughout the 1990s, explains the failure of financial liberalisation to affect improved investor perception or substantial increases in foreign investment.[7] Considering the data, Table 1A indicates that the average FDI to GDP ratio was 0.7509 percent during the period, and the series was clearly stationary according to all unit root tests listed in Table 2A, which seems to suggest that reform measures did not impress investors. Similarly, FPI averaged only -0.0754 during the period, and the unit root test that include both a lag term and a trend variable suggest that the series is non-stationary. However, the remaining tests indicate no discernable trends.

What were the effects of flows, however mean-reverting, on the real economy during the period? Nigeria achieved the highest growth rate among the African cases, as annual expansion averaged 2.1852 percent from 1968 through 1998. Also, growth was comparatively steady, with a coefficient of variation of approximately 4.7241, the second lowest value among these African cases (next to Zambia). Turning to causation, no evidence in Table 3A suggests that flows affected economic growth. The model for OECD FDI (Table 3A, Model 1) produces a negative coefficient, and the equation for OECD FPI (Model 3) suggests a positive effect, but neither parameter estimate is statistically significant.

[7] Formal modeling of the effects of political variables on flows is beyond the scope of this paper, which mainly purports to examine the (exogenous) effect of flows on the real economy.

However, some evidence indicates that FDI had a negative effect on savings. While the degrees of freedom are low (21 observations), the equation using the IFS FDI data (Model 5) suggests than a one percentage point increase in flows corresponds with an approximate 1.2761 percent decrease in the savings ratio. The figure is safely significant (t statistic = -3.9618). However, the OECD data indicate no relation, as both the FDI and FPI data fail to produce a significant estimate.

But nonetheless, these results suggest that financial flows during the period had no positive effect on the Nigerian real economy. In fact, liberalisation measures in recent years do not seem to have attracted increased flows, and some evidence indicates negative wealth effects.

4.1.2. Zimbabwe

Following the formal end of white rule in 1979, Robert Mugabe transformed Zimbabwe's multiparty democracy to single party rule and formed a constitution generally based on Marxist-Leninist principles in August 1984. By 1989, the government announced that the economy would be gradually de-regulated, as, for example, the 1988-99 Budget announced that the Zimbabwe Stock Exchange (ZSE) would be re-opened. A 'one-stop' investment center was to be created to help attract overseas capital and foreign companies were to be able to borrow domestically up to 25 percent of their shareholders' funds (Bekaert and Harvey, 1998). The government eased restrictions on the payment of dividends to foreign investors and gave special tax concessions to firms expected to be major foreign exchange earners.

Most commentators suggest that liberalisation increased considerably in 1993. In April, Finance Minister Chidzero announced new investment guidelines and export

incentives that effectively opened the ZSE to FPI.[8] Conditions were as follows. Foreign investors would finance the purchase of shares by inward transfer of foreign currency through normal banking channels. The purchase of shares were limited to 25 percent of the total company equity (excluding existing foreign shareholdings prior to May 1993), with a single investor limited to 5 percent of total shares. Also, investments would qualify for a 100 percent remitability after taxes, and capital gains were freely remittable after capital gains deductions. Foreign investors were not required to obtain exchange control approval and could register share purchases in their own names or those of nominee companies. The reforms went further the following year, as the Reserve Bank removed most remaining restrictions on current account transactions. The limits on foreign participation in the ZSE were gradually lifted from 25 percent to 35 percent in December 1995 and further to 40 percent in September 1996.

But this trajectory toward liberalisation coincided with growing political instability in the country. In August 1989, plans began to revise the constitution to allow for the confiscation and redistribution of white farmland. Zimbabwe signed an investment protect agreement with the United States in July 1990, which insured American companies against political risk. But in December of that year, Parliament authorized the government to confiscate factories, farms, and private residences, with payment being 'whatever the regime finds fit' (Bekeart and Harvey, 1998). In November 1998, Mugabe announced a plan to forcibly acquire 841 primarily white-owned farms as part of the land redistribution scheme. By February 1999, reports suggested that the military was torturing journalists and that Mugabe was attacking judges who questioned his governments' commitment to the rule of law.

[8] Bekaert and Harvey (1998) consider April 1993 the official stock market liberalisation date for Zimbabwe.

Therefore, perhaps similar to the Nigerian case, the general path from a Maxist-Leninist regime to greater financial openness notably coincided with increasing political tension. Therefore, the question of investor perceptions seems instructive. Unlike Nigeria, the *Institutional Investor* data do not show dramatic changes in country credit rating for Zimbabwe. The ending value in 1998 (31.275) was somewhat greater than the beginning value in 1980 (25.296), but certainly more recent events surrounding the re-election campaign of Mugabe will result in considerably lower values.[9] While a formal analysis is beyond the scope of this paper, perhaps increased political instability and the encroachment on property rights offset formal financial liberalisation measures.

Indeed, the data do not clearly indicate whether capital flows were mean-reverting during the period. More specifically, the OECD measure of FDI averaged 0.8832 percent of GDP during the period, but whether the series exhibits any formal trends is ambiguous. That is, the unit root tests (Table 2A) suggest that the series is stationary (non-stationary) for all specifications that exclude (include) the trend variable.[10] Similar to the remaining cases, FPI was considerably lower than FDI, as the OECD measure had a mean of 0.0205 percent of GDP, and the series is stationary according to all Dickey-Fuller tests.

Unfortunately, the degrees of freedom are somewhat limited for econometric estimates of real effects, as the equations only include 18 observations. Growth in Zimbabwe did not match the average rate in Nigeria, as expansion averaged 0.6837 percent from 1968 through 1998, with a coefficient of variation of 8.3031, nearly twice the size of Nigeria. Nonetheless, the growth equation produces a statistically significant (t statistic = -3.44) and negative estimate for FPI (Table 3A, Model 9). The coefficient suggests that a one-percentage point increase in the share of FPI to GDP decreased the growth rate by approximately 6.9082 percent during the period. The equations that include OECD (IFS)

[9] Instead, the figure declined to 25.1 in the September 1999 survey.

data on FDI indicate a positive (negative) effect, both the estimate(s) are insignificant. With respect to savings, FDI and FPI similarly seem to have positive and negative effects, respectively, but both parameter estimates are clearly insignificant. Therefore, similar to Nigeria, some data indicate deleterious effects of financial openness, namely FPI with respect to growth.

4.1.3. Kenya

Given dramatic declines in the price of two of its main commodity exports, tea and coffee, Kenya experience considerable economic decline in the late 1980s. Fiscal and current accounts widened and foreign exchange reserves dwindled. Some commentators characterize Kenya in the 1980s as having a highly regulated and poorly supervised financial system as well as a closed trading regime.

Again, similar to other African cases, key reforms began in the early 1990s. In 1991, the government introduced foreign exchange bearer certificates of deposits that permitted the redemption of foreign exchange for any cross-border transaction. In 1995, the government eliminated remaining foreign exchange controls and most restrictions on the capital account. Also, with respect to monetary policy, the central bank removed differentiated credit ceilings and interest rate controls.

Schneider (2000) argues that Kenya's reform program failed to attract significant inflows of foreign capital. Output declined and inflation accelerated following 'inconsistent' policies, which coincided with the first democratic elections in late 1992. Weaknesses persisted in the financial system, and regulation and enforcement remained lax, as, for example, banks regularly breached legal reserve ratios. Notably, Kenya experienced rapid monetary expansion in the early 1990s, as M2 to GDP rose from 27.23 percent to 33.01

[10] Unfortunately, the trend variable in the unit root tests can capture global or idiosyncratic country-specific trends. Of course, the latter are of interest.

percent in 1993. Perhaps these developments are consistent with perceived country credit. According to *Institutional Investor*'s survey, international investors' perception of Kenya seems to have steadily decreased from 1980 through 1998. The peak value (44.038) was observed in 1980, the nadir occurred in 1994 (23.396), and the figure slightly recoved by 1998 to approximately 26.196.

Some argue that rapid and extensive liberalisation increased Kenya's vulnerability to capital inflows by providing legal channels for capital flight. On the other hand, the reforms generally failed to attract substantial inflows. Schneider (2000) argues that the Kenyan case shows that liberalisation is not a sufficient condition for economic recovery, as capital account reform should instead proceed in a larger context of adequate institutional capacity to enhance regulation and enforcement.

But what do the data say, more precisely? FDI averaged 0.6367 percent of GDP during the period, with a maximum value of 1.7492 percent in 1969. Perhaps indicative of the failure of reforms to attract capital and consistent with Schneider's (2000) assessment, the unit root tests indicate that FDI was stationary during the period, as all p values are safely significant. FPI averaged only -0.0029 during the period and reached 1.2934 percent of GDP in 1993. Similar to FDI, FPI seems to be stationary according to all Dickey-Fuller tests, which again implies mean-reversion rather than reform-induced trends.

Turning to econometric estimates, Kenya achieved an average growth rate of 0.9397 from 1968 through 1998, with a standard deviation of 6.7669, and time-series regressions do not produce significant estimates of real effects. For example, the model that includes OECD FDI data produces a negative but statistically insignificant estimate, and the regressions that uses IFS FDI data produces a positive but insignificant coefficient. Moreover, the negative parameter estimate for OECD data on FPI is clearly not significant. Flows did not seem to affect the savings rate in Kenya during the period, either. While each coefficient using

OECD and IFS data are positive, none is significant. Therefore, this general analysis suggests that the reform effect in Kenya did not result in increased flows, and the level of such flows did not seem to have any impact on macroeconomic performance.

4.1.4. Zambia

Zambia has witnessed considerable economic decline during recent decades. Before major political and economic reforms in the early 1990s, real per capita income was nearly half its value 20 years earlier. Most commentators link the decline with dependence on the production and export of copper and misguided policy responses to the decline in prices in the 1970s. As Adam (1999, p. 271) explains, the government expected that the decline in the terms of trade would be temporary, and officials increased external borrowing and decreased investment to maintain consumption levels. Unfortunately, the decline in terms of trade persisted and the cost of sustaining aggregate consumption rose as the capital stock deteriorated and external debt sharply increased.

The process of liberalisation can perhaps be usefully couched in this context. In 1985, government strategy focused on an auction for foreign exchange, but pressure from within the ruling UNIP party, which received rents from the previous exchange rate premium, ended the policy. In May 1987, President Kaunda introduced the New Economic Recovery Programme, and Zambia suspended financial relations with the IMF and reversed previous liberalisation. Among other measures, a moratorium on external debt was introduced, import licences and other trade restrictions were reinstated, and the nominal exchange rate was fixed. Adam (1999, p. 272) suggests that the private sector did not view the NERP credibly, as speculative activity increased. Capital flight ensued in 1989, and Kaunda turned again to the IMF and an orthodox adjustment programme.

Political change in Zambia was critical, as the incoming Movement for Multiparty Democracy (MMD) moved quickly to liberalise asset as well as goods markets and to halve the domestic budget deficit by 1993. Compared to other African countries, Zambia pursued financial sectors reforms and liberalisation late, but the government proceded very quickly, as 'the transition to a fully liberalised asset market (took) just over two years' (Adam, 1999, p. 273). The MMD achieved capital account liberalisation and full foreign exchange convertibility in January 1994, and commercial banks provided full foreign exchange retail and corporate banking to the private sector the following March.

In contrast to the Nigerian, Zimbabwean, and Kenyan cases, liberalisation measures in Zambia seem to have affected investors' perception. According to the country credit data, international investor perception of Zambia did not considerably change from 1980 (18.000) to 1998 (17.183). However, recent trends perhaps reflect the MMD's policy initiatives, as the figure has nearly doubled since 1992 from approximately 9.821.

With respect to realised flows, the average value of FDI to GDP during the period was 0.8476 with a maximum value of 3.0799 in 1968, and the series is clearly stationary according to all unit root tests. With respect to FPI, the average was 0.1025 percent of GDP, with a maximum value of 2.7806 in 1986. FPI was similarly stationary according to all augmented Dickey-Fuller tests. Therefore, these limited data do not indicate that economic liberalisation coincided with trends in financial flows in Zambia.

Again, as Table 1A indicates, economic growth in Zambia was the lowest among all cases during the 1968 to 1998 period, with an averaged contraction of –1.8342 percent and a standard deviation of 5.0201. The econometrics produce some robust estimates of real effects. For example, the equation that includes OECD data suggests that a one percent increase in FDI corresponds with a 2.0486 decrease in the real growth rate (Table 3A, Model 19), which is significant at the 10 percent level (t statistic = -1.6728). The (revised) IFS

(FitzGerald, 2000) data do not corroborate this result, as the coefficient is positive and insignificant. The OECD data also produce a negative coefficient for FPI, but the parameter is not significant.

The results for savings rates are somewhat contradictory. The OECD data (Table 3A, Model 22) suggest that a one percent increase in FDI to GDP corresponds with 3.5150 percent decrease in the savings ratio, and the estimate is safely significant (t statistic = -2.8988). However, the (revised) IFS data suggest that there is no effect (and the coefficient is positive). Also, the OECD data (Model 24) indicate that FPI has a positive effect on savings, as a one-percent increase corresponds with a 2.5882 increase in the savings rate, which is significant within the 10 percent confidence interval (t statistic = 1.7183).

But all in all, despite the result for FPI and savings, the data hardly suggest that flows had positive real effects in Zambia during the period. In fact, FDI, at least using OECD figures, was deleterious to both growth and investment.

4.1.5. Uganda

The current administration in Uganda, which came to power in 1986, initiated the Economic Reform Program (ERP) in 1987 that included stabilisation and structural adjustment policies. Most commentators characterise Ugandan reform as 'gradual,' as the government inherited an extensively controlled economy, perhaps crudely similar to the remaining African cases. More specifically, the government first liberalised prices in the goods market (with the notable exception of oil), and financial sector reform began in 1988 and continued in 1994. In 1993, Uganda accepted Article VIII obligations to allow for unrestricted capital account transactions. The government fully liberalised the capital account in 1997, but most commentators suggest that an open *de facto* account previously existed (Schneider, 2000). With respect to monetary policy, which is closely coordinated

with fiscal policy in Uganda, the central bank increased the use of indirect measures since 1993. Regardless, inflation was comparatively subdued in Uganda from 1994 through 1998 and averaged 7.088 percent (GDP deflator) (51.751 percent in Zambia, and 15.481 in Kenya).

Most economists regard the recent Ugandan reform process quite positively, especially compared to Africa as a whole. Indeed, the *Institutional Investor* data largely reflect an increase in investor perception of Uganda, which had the lowest country credit rating among this sample of African countries in 1983 (4.108). By 1998, the credit rating (20.483) had surpassed that of Zambia and Nigeria, notably increasing more sharply after 1992.

According to the IFS statistics, FDI to GDP averaged 0.6068 percent with a maximum value of 2.7787 percent in 1997. The clear break after 1992 reflects the Dickey-Fuller tests that indicate a non-stationary series. In contrast, the ERP does not seem to coincide with higher levels of FPI, as the average for the period was 0.0218, and the maximum value of 0.2419 occurred in 1993. Also, all unit root tests indicate that the series is stationary during the period within the 10 percent confidence interval. Whether this reflect a coherent 'sequencing' strategy to substitute FDI for FPI on the part of the Ugandan government is unclear.

But nonetheless, given recent gradual reforms and sustain economic growth in the 1990s, is there a statistical correlation between flows and performance? The growth rate in Uganda averaged 1.0975 period during the 1980 to 1997 period, but with a standard deviation of 20.666 percent. However, since 1993, real expansion has averaged 4.496, with a standard deviation of 2.152. Unfortunately, the data for Uganda are somewhat limited, but despite the low number of degrees of freedom, the equation that includes IFS data on FDI produces a statistically significant and highly positive estimate. The equation (Table 3A, Model 25) suggests that a one percent increase in FDI to GDP corresponds on average with a 25.6838

percent increase in real growth, and the estimate is safely significant (t statistic = 2.5234). The OECD data on FPI suggests a similarly dramatic positive effect, but the estimate is clearly not statistically significant.

Given the limited data, the savings regressions do not include the GDP deflator, the government spending ratio, or total credit to the private sector. The data suggest that flows did not affect savings rates, as all coefficients using OECD and IFS sources are insignificant. Therefore, the time-series econometrics seem to indicate that Uganda is somewhat unique among the African cases, as the ERP seems to coincide with an improved country credit rating and higher levels of FDI, which in term appears to have boosted expansion.

4.2. South Asian cases

With the exception of the notable case of Uganda, the data over the last three decades covering African cases – particularly Nigeria, Zimbabwe, and Kenya – in general suggests that financial flows did not positively affect the real economy. Moreover, despite noteworthy liberalisation programs, the time-series properties of the flow data seem to indicate that the series are stationary. Given significant regional dummy variables in (mostly cross-sectional) growth regressions, the question is whether similar low-income countries in South Asia exhibit these patterns. Also, more detailed data on the composition of FPI should be instructive.

4.2.1. India

After 1991, India initiated a liberalisation process to reverse decades of interventionist and protectionist policies, which included industrial licensing and external tariffs. For example, stricter enforcement of the foreign investment code resulted in the expulsion of IBM and Coca-Cola in 1978, and in 1980 the government nationalised the six largest

remaining private banks. Capital account liberalisation proceeded gradually by most accounts, as officials have generally placed emphasis on domestic financial liberalisation as a precondition to openness.

Although India signed Article VIII in 1994, the 1997 Tarapore Committee on Capital Account Convertibility recommended a cautious approach that outlined preconditions for liberalisation, which included fiscal consolidation, an inflation target, and general strengthening of the domestic financial system. Sequencing in India has entailed liberalisation of more stables flows such as FDI, followed by partial liberalisation of debt instruments and derivatives. Despite these reforms, India maintains considerable capital controls, which have been quantity-based (rather than market-based) and administratively enforced. Controls aim to limit India's exposure to short-term foreign debt, and the government closely monitors the external exposure of pension funds and insurance companies as well as the external assets of banks.

Schneider (2000) notes that controls effectively shifted the duration of India's foreign debt, and notably, limited trade and financial links with the global economy – a policy stance that purportedly insulated India from the 1997 Asia crisis. However, extensive controls of the 1970s and 1980s did not prevent India from experiencing high levels of general external indebtedness and balance of payment crises in 1980 and 1991. Moreover, as in some cases, evidence suggests that there is evasion and avoidance of controls through trade mis-invoicing. These caveats might reflect the perception of foreign investors over the period. That is, despite these reforms, the *Institutional Investor* country credit rating has not considerably increased in India from 1980 through 1998. The greatest value (51.042) occurred in 1980, while the lowest value (37.671) was observed in 1992. The measure has increased since the nadir, with an ending average value of approximately 45.617.

Turning to the patterns in flow data in Table 1A, the mean value of FDI to GDP was 0.0737, with the maximum value of 0.2471 occurring in 1997. Unit root tests seem to indicate a clear trend in the FDI series (Table 2B), as all Dickey-Fuller tests statistics suggests that the hypothesis of a unit root cannot be rejected. In contrast, the FPI series, which averaged 0.0569 percent of GDP and reached 0.5521 in 1997, does not technically exhibit any trend, as all p values are significant with the 10 percent interval. Therefore, the data seem to indeed reflect sequencing in India from longer-term FDI to (purportedly) more volatile FPI.

Fortunately, TIC data on bond and equity FPI flows to and from the United States are available from 1977 through 1998. Gross bond flows averaged 0.0314 percent of GDP during the period, with a peak of 0.2377 in 1997. Net fixed income flows averaged 0.0068 percent of GDP and reached 0.2087 percent in 1997. Whether gross and net flows are stationary is somewhat ambiguous, as the unit root tests that include endogenous lagged values for both series suggests that the series have unit roots, but the alternative specifications indicate otherwise. With respect to equity flows, gross flows averaged 0.0472 percent of GDP, with a maximum value of 0.3116 in 1997. Net flows averaged 0.0255 during the period and reached 0.1642 in 1997. Also, the unit root tests clearly reflect the upward trend in both gross and net flows after 1992, as all augmented Dickey-Fuller tests indicate that the series are not stationary. Similar to the aggregate OECD data on FDI and FPI, this again reflects the Indian governments objective to permit direct and equity investment before fixed income flows.

How effective was this general ‘gradual strategy’? The real growth rate in India from 1968 through 1998 averaged 2.8497, and the standard deviation for the 31-year period was 2.9043, considerably superior to the African cases. But turning to causation, the data seem to suggest that aggregate measures of both FDI and FPI have ambiguous effects on growth. For

example, the coefficient for OECD data on FDI is positive but insignificant, and the parameter for IFS data on FDI is negative but insignificant. Also, aggregate OECD data on FPI produces a negative but insignificant estimate.

However, more specific data suggest that (lagged) bond flows had a deleterious effect on growth in India during the period. For example, the regression (Table 3B, Model 4) that includes TIC data on gross bond flows produces a negative coefficient that implies an approximate 7.1279 decrease in the real growth rate given the sample range of TIC gross inflows (0 to 0.2377 percent of GDP from 1977 to 1998). The estimate is significant within the 10 percent confidence interval (t statistic = -1.8116). Also, data on the volatility of net bond flows similarly suggests a negative impact, as a one-unit increase in the coefficient of variation of annual flows implies 0.1631 decrease in the real growth rate (Model 9). The parameter estimate is clearly significant within the 5 percent confidence interval (t statistic = -2.3397). None of the remaining six TIC FPI measures, including data on equity flows, produces a statistically significant estimate.

The savings regressions produce more robust estimates of deleterious real effects. For example, both the OECD (Model 12) and IFS measures (Model 13) of FDI indicate a negative impact, as a one-percentage point increase in FDI implies approximate 13.1959 and 4.5291 percent decreases in real output, respectively. Both measures are statistically significant (t statistics = -2.6730 and –1.9024, respectively).

Also, while the aggregate OECD data on FPI suggests an ambiguous overall effect, some TIC data produce negative coefficients. In fact, both (lagged) gross and net bond flows adversely affected savings during the period, as the statistically significant coefficients imply a 2.9213 and 6.3228 percent decrease given the sample range in flows, (Models 15 and 16) respectively. Equity flows similarly indicate negative effects, as the coefficients of gross and net flows suggest respective 4.6291 and 2.3098 percent real growth decreases, which are

safely significant (Models 17 and 18). Interestingly, the volatility measures of gross and net bond and equity flows indicate no significant effect.

In general, these results provide support for the Indian strategy of sequencing, however unrelated FDI and equity flows to expansion. In other words, Indian reforms did not seem to attract growth-enhancing FDI or equity FPI, but the sequencing strategies seems soundly motivated, insofar as fixed income flows had a deleterious effect on investment. But then again, some data indicate that FDI equity FPI had adverse wealth effects.[11]

4.2.2. Pakistan

Again, similar to the other cases examined in this paper, the past few decades have witnessed formal financial liberalisation measures in Pakistan, starting from a relatively closed economy. To begin, the Foreign Private Investment Act in 1976 decreed that foreigners could not directly invest in Pakistan, unless the State Bank of Pakistan and the Ministry of Finance granted permission.

But by the early 1990s, several liberalisation moves were announced that eased both domestic and foreign investment. In fact, multiple studies consider February 1991 as a key liberalisation date (i.e. Bekaert and Harvey, 1998; Kim and Singal, 1999). More specifically, by February 1991 there were no restrictions on foreigners purchasing shares of listed companies or subscribing to public share offerings. However, some approvals were still necessary from the Investment Promotion Bureau, the government's sanctioning and foreign investment regulatory body, and the exchange control restrictions of the State Bank of Pakistan were imposed in certain circumstances. Nevertheless, foreigners had indeed invested in shares the following month, and the Pakistan Fund launched on the Hong Kong Stock Exchange in July 1991 (with net asset value of $33.5 million as of December 1991).

Further liberalisation and other reform measures continued toward the end of the decade. For example, in August 1996, the government privatised the national telecommunications company, and in September, capital gains on trading of shares of listed companies became tax exempt. Also, in March 1997 the general sales tax was reduced from 18 percent to 12.5 percent, and the government announced plans to narrow personal income tax brackets from 10-35 percent to 5-20 percent, and in April custom duties and import tariffs were cut considerably.

One should note, however, that liberalisation did not proceed smoothly, as recent political developments suggest. Considerable unrest began in the fall of 1997, as in November the Supreme Court held Prime Minister Nawaz Sharif and other government official in contempt. President Farooq Ahmad Leghari resigned the following month, and notably, both Standard and Poors as well as Moody's downgraded Pakistani debt in January 1998. Nuclear tests along in response to India's similar measures in May 1998 and the October 1999 coup have also increased political tensions and investors' concerns.

The data on country credit risk generally reflect subdued improvements in investor perceptions of Pakistan. The *Institutional Investor* credit rating reached its nadir in 1983 (20.992) and its zenith in 1988 (31.004). The figure at the end of the sample period had notably declined to 25.888. Perhaps related, the cycle of flows did not change dramatically, despite reforms. More specifically, the OECD measure of FDI to GDP averaged 0.0883 during the period, and reached a peak of 0.5002 percent of GDP in 1997. However, most Dickey-Fuller tests suggest that the series is stationary during the period, as only the test that includes a lag and excludes a trend indicates a unit root. Also, interestingly, Pakistan is the only case among those considered in this study that had a greater average of FPI to GDP

[11] The negative effect of FDI on savings might reflect the difficulty associated with discrete categories of flows. That is, perhaps the fungible nature of FDI relates to adverse wealth effects. Such fungability might complicate a simple application of sequencing.

during the period, as the OECD mean was 0.1011 percent. The figure reached a peak of 1.4381 percent in 1989, and the series is clearly stationary according to all unit root tests.

TIC data on bond and equity flows vis-a-vis the United States are available from 1978 through 1998 for Pakistan. With respect to fixed income, gross bond flows averaged 0.0285 percent of GDP during the period, with a peak of 0.3396 in 1997. Notably, net fixed income flows were only slightly lower than average inflows, as the mean was 0.0234 percent of GDP, which similarly peak in 1997 at 0.292 percent. Similar to the data on India, the stationary nature of these series is somewhat ambiguous. That is, all tests indicate that net flows have a unit root, but the data on gross inflows is inconclusive – only the test that includes a lag and exclude a trend variable suggests that the series is non-stationary.

With respect to equity, gross inflows from the United States averaged 0.0774 percent of GDP, with a maximum value of 0.5570 in 1997. In contrast to Pakistani bond outflows, net equity flows followed the conventional pattern, averaging 0.0244 during the period and reached 0.2729 in 1997. Neither series seems to be conclusively non-stationary. Inflows are mean-reverting according to three tests, but net equity flows are non-stationary in each test that includes a one-period lag.

Turning to causal relations, most regressions indicate no robust effects on growth, which averaged 1.5861 from 1968 through 1998, nearly half the rate in India (2.8297).[12] The sole exception is the equation that includes the IFS measure of FDI (Table 3B, Model 24), which suggests that a one-percentage point increase in FDI to GDP corresponds with an approximate 6.7362 percent lower growth rate. However, the equation is limited to 22 observations and retains a low Durbin-Watson statistic (1.1074), even after the Prais-Winsten transformation. Also, the equation that includes OECD data also indicates a negative effect,

[12] Also, macroeconomic volatility was approximate twice the figure in India (coefficient of variation of 2.0366 versus 1.0264).

but the estimate is not statistically significant. The equation that includes OECD data on FPI indicates a positive but statistically insignificant effect.

Again, the TIC data are somewhat limited and cover only 21 years. All regressions for either gross or net fixed income or equity flows indicate a positive effect, but none of the estimates are statistically significant. Curiously, the coefficients of variation for bond flows also produce positive parameter estimates, but the figures are insignificant. As expected, the volatility measures for both gross and net equity flows produce negative coefficients, but again, the estimates are not significant.

Similar to the case of India, more robust evidence suggests that FDI had a negative effect on savings rates in Pakistan. For example, the equation that includes the OECD (Table 3B, Model 34) measure produces a negative and safely significant estimate – the coefficient suggests that a one-percentage point increase in FDI led to an approximate -4.5691 percent lower savings ratio. This result is notably not sensitive to data source, as the equation using the IFS figures (Model 35) similarly produces a negative estimate, with a coefficient of -5.3116.

The aggregate (OECD) measure of FPI similarly suggests a negative effect, but the parameter is not significant. However, the more specific TIC data do produce robust estimates, as the regressions indicate a negative correlation between both gross as well as net equity inflows and the savings ratio. For example, the net measure produces the most pronounced effect, as the coefficient suggests (Model 40) that a one-percent point increase in net stock flows from the United States lowers the savings ratio by approximately -14.1328 percent. However, given the very low Durbin-Watson statistics (1.0750 and (1.0677) for both regressions and the low number of observations (18), one should interpret the results cautiously. Also, no other regression produces a significant estimate using either gross or net bond inflows or any volatility measure for either fixed income or equities.

But in general, these data hardly indicate that flows had a positive real effect in Pakistan during the period. In fact, similar to the Indian case, while the direct evidence on growth is somewhat ambiguous – adverse wealth effects seem particularly robust and acute.

4.2.3. Additional cases: Sri Lanka and Bangladesh

While data on remaining South Asian cases is somewhat limited, the experiences of Sri Lanka and Bangladesh are noteworthy.

According to the *Institutional Investor* survey, the perception of Sri Lanka declined in the 1980s, but rebounded in the 1990s, as the lowest value occurred in 1991 (22.125), and the greatest value was observed in 1996 (33.113). Moreover, considering the four South Asian cases, FDI was greatest in Sri Lanka, with an average of 0.1440 during the period and a maximum value of 1.55 percent of GDP in 1997. However, the FDI series does not exhibit any technical trends, as all p values for each unit root tests suggests a stationary mean and variance. With respect to FPI, Sri Lanka represents the lowest level among the cases, with an average of –0.0410 during the period and a maximum value of 0.2995 in 0.2995 in 1984.[13] Whether FPI is stationary during the period is somewhat ambiguous, as the two Dickey-Fuller tests that include lagged endogenous values suggest that the series is non-stationary.

The real growth rate in Sri Lanka averaged 2.7287 during the 1968 to 1997 period, with a standard deviation of 3.0367. The time-series regressions indicate that FDI had an ambiguous effect on growth during the period, as both the OECD and IFS data produce positive but insignificant coefficients. Also, the FPI data produce a negative but statistically insignificant effect.

However, some data indicate that, in contrast with India and Pakisan, FDI actually enhanced savings rates. For example, the OECD data (Table 3B, Model 48) suggest that a

[13] The figure reached 0.4855 percent of GDP in 1998 (but data on real per capita GDP are not available).

one-percent increase in FDI corresponds with a 3.0149 percent increase in real growth, and the estimate is significant (t statistic = 2.4021). However, albeit with fewer degrees of freedom (23 observations), the IFS data produce a positive but insignificant estimate (t statistic = 0.1690). Finally, the OECD FPI data indicate a positive but insignificant effect.

With respect to Bangladesh, the perception among international investors seems to have steadily improved according to the *Institutional Investor* survey. The lowest average value (12.975) occurred in 1980 (the beginning of the series), while the most favorable rating (27.867) occurred in 1997. The average ratio of FDI to GDP averaged 0.0704 percent, with a peak of 0.3640 in 1998. The augmented Dickey-Fuller tests seem to confirm an upward trend in the series, as every possible p value indicates a unit root. FPI in Bangladesh averaged 0.0037 during the period, and the unit root tests indicate that the series is stationary within the 10 percent confidence interval for all tests. Therefore, similar to India, the data in general reflect the notion of sequencing FDI and FPI.

The real growth rate in Bangladesh from 1976 through 1998 averaged 2.8645, with a standard deviation of 4.1558. While the degrees of freedom are some limited, the time-series regressions indicate that flows had ambiguous real effects in Bangladesh during the period. The OECD data on both FDI and FPI generally suggest that flows have a negative impact on growth, but the coefficients are not statistically significant (t statistics = -0.2924 and -0.5438, respectively). To further suggest an ambiguous effect, alternative IFS data, which limits the degrees of freedom (from 24 observations to 22) on FDI suggests a positive but clearly statistically insignificant effect. With respect to savings rates, the coefficients using both OECD and IFS data on FDI are positive, in contrast to Pakistan and India. However, each parameter estimate is statistically insignificant, and the coefficient for FPI is negative but insignificant.

5. Stock Market Liberalisation in India, Bangladesh, Nigeria, and Zimbabwe

Section 4 examines the evidence with respect to the level of flows, as opposed to structural breaks or liberalisation events. Therefore, this section examines an important argument with respect equity market reform. That is, recent literature argues that stock market liberalisation – the decision of domestic authorities to allow foreigners to purchase domestic shares – has positive long- and short-run real effects. The long-run perspective (Levine and Zervos, 1998b), which is beyond the scope of this paper and not easily amenable to time-series analysis, argues that liberalisation leads to increased stock market development, which in turn boosts economic growth. The remainder of this section addresses recent views on the short-run mechanism as well as evidence with respect to four stock markets – India, Pakistan, Nigeria, and Zimbabwe – for which there is sufficient information.

5.1. Previous literature

As outlined elsewhere, Henry (2000a, 2000b) documents temporary increases in private investment growth rates among a sample of 11 developing countries[14] that liberalised their stock markets during 1977 to 1994. He argues that stock market liberalisation lowers the cost of capital, *k*,[15] and therefore increases aggregate stock prices in emerging markets.[16]

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[14] 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.

[15] 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…(r)ather…stock market liberalisation may *change* the liberalising country's cost of capital, with attendant implications for physical investment' (p. 13, emphasis added).

[16] 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

Given the decrease in *k* and holding expected cash flows constant, some investment projects with negative NPVs before liberalisation exhibit positive NPVs afterwards, [17] which induces increased private investment. Therefore, the short-run benevolent mechanism from reform to the real economy follows:

(1)

$$Liberalization \Rightarrow \downarrow k, \uparrow Aggregate\ \Pr ices \Rightarrow \uparrow \Pr ivateInvestment\ .$$

The policy implication is simply that officials should drop restrictions on foreign ownership of stocks and expect private investment booms.

Mechanism (1) implies two regularities. First, liberalisation must positively correlate with stock prices, and, second, such valuation changes should increase private investment. First, without tracing the effects ultimately to private investment, some studies report a positive impact of flows on stock prices using distinct data sets as well as different observation frequencies. For example, with varying degrees of qualification, Bekaert and Harvey (2000) and Henry (2000b) find that equity market liberalisation and/or flows lowers the cost of capital, as measured by ex post returns and/or dividend yields, in emerging markets.

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,

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

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.

and his regressions indicate that lagged one-year stock returns are significant determinants of private investment growth rates.[18]

But as argued elsewhere, shortcomings complicate (1). First, Henry (2000b) notably uses cross-sectional variance to inform the estimates, which is not wholly germane to the particular channel from domestic prices to private investment. That is, if domestic managers indeed increase investment upon share price increases, it would seem that appreciation vis-à-vis previous prices in the domestic market (time-series variance), rather than relative performance of shares with respect to foreign markets (cross-sectional variance), are relevant. In point of fact, Durham (2000d) shows that only two cases in Henry's original data set produce positive and significant time series estimates. Also, previous results are highly sensitive to alternative liberalisation dates regarding when the 'event' in fact occurred, and panel regressions using alternative conventions do not corroborate previous hypotheses. Finally, reform is only one of several factors that supposedly affect stock market returns, and sensitivity analysis (namely, extreme bound analysis) of alternative event dates suggests that the factor is not in fact robust. Similar to other event studies, this suggests that market participants in general do not in fact view reform measures entirely credibly.[19]

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[17] 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.

[18] Durham (2000e) 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 high- but not low-income markets.

[19] Perhaps the apparent lack of correlation between certain reform measures and country credit ratings, discussed in Section 4, is analogous.

5.2. Time-Series results:

Reform, valuation, and private investment in India, Pakistan, Nigeria, and Zimbabwe

Therefore, this section re-examines whether these particular cases, three of which neither Henry (2000a, 2000b) nor Durham (2000d) consider, are consistent with (1).[20] Simply, did stock market liberalisation boost prices and private investment in India, Pakistan, Nigeria, and Zimbabwe? This section examines, first, the effect of reform on valuation and, second, the effect of valuation on private investment growth.

5.2.1. Stock Prices

Toward that end, Table 4 summarizes valuation regressions that consider various measures of the liberalisation event in question. Following convention, the analysis considers alternative event windows – 8-month, 5-month, 2-month, and contemporaneous reform. Also, as Table 4 indicates, the regresssions also use alternative dates from three separate sources, and following Henry (2000a), each model controls for the MSCI USA index, the MSCI EAFE index, and the IFC index of emerging markets.

Turning to results, the data for India clearly do not suggest that reform boosted stock prices – even given alternative event windows and liberalisation dates. None of the five positive coefficients among the 12 possible models are statistically significant. Moreover, two measures actually suggest that reform produced lower prices,[21] as the 8- and 2-month event windows using the dates from Bekaert and Harvey (2000) are safely significant (t-statistics = -2.6172 and –2.6334, respectively). These data indicate that stock prices decreased by 7.59 and 14.71 percent, respectively. Also, none of the eight models for Pakistan produce a robust estimate, and five coefficients are negative (albeit insignificant).

[20] Henry (2000) includes India in his sample, and Durham (2000d) only examines time series regressions that use the 8-month window for India.

[21] In this case, theory would suggest that the variance on the Indian market was lower than its covariance with the world market.

Also, three of the four possible models for Zimbabwe are negative, and no estimate is statistically significant.

However, some data support the hypothesis for Nigeria. The regression that includes the 5-month event window (Bekaert and Harvey, 2000) suggests that stock prices increased on average 16.97 percent, and the figure is safely significant (t statistic = 2.2293). Curiously, however, none of the remaining specifications produce significant estimates, and the conventional 8-month window actually has a negative estimate, but nonetheless, even though only one study includes event dates for Nigeria (Bekaert and Harvey, 2000), the data seem to support the hypothesis. Then again, liberalisation is only one of several purported correlates of return. Therefore, following Durham (2000a, 2000b), extreme bound analysis (EBA) of the result casts some doubt on the robustness of the relation. That is, considering 14 other factors that purportedly help explain valuation, reform is not robust according to the more stringent EBA decision rules and only passes one test.[22]

5.2.2. Private investment

Therefore, (1) does not seem to conform to the pattern of stock prices in India, Pakistan, or Zimbabwe. The first link in the benevolent transmission mechanism for these cases breaks down. Again, some data support the hypothesis regarding Nigeria, but whatever the true effect of reform on prices, the second link is also critical. In other words, what is the effect of valuation changes, driven by reform or not, on private investment in these countries?

Some studies suggest that lagged valuation changes increase investment in high-income countries, notably the United States (Barro, 1990), and the results in Durham (2000e) suggest that there is a positive interaction between valuation changes and initial GDP per

[22] More specifically, the reform measure passes the CDF decision rule, but not the extreme or R^2 tests. Notably, in a separate application, a number of variables are robust to the R^2 decision rule using data for Nigeria, including lagged local return, population demographics, market capitalisation, and the January effect. The

capita (as well as country credit ratings). Therefore, the remainder of this section examines the correlation between stock prices and investment in these four cases.

As Table 5A indicates, the data for Nigeria are very restricted, as the correlation matrix for private investment growth, contemporaneous valuation changes, and lagged valuation changes only includes nine observations from 1986 through 1994. However, the correlation between lagged returns and private investment in Nigeria is sizeable and suggests a strong positive relation (0.688). Therefore, duly noting these severe data limitations, the evidence from Nigeria is broadly consistent with (1) – liberalisation had a positive effect on prices (again, according to some specifications), and private investment growth seemed to respond positively to share price appreciation. (This evidence also seems somewhat inconsistent with the finding in Table 3A (Model 5), which suggests that FDI has adverse wealth effects.)

The remaining cases do not support any link between share prices and private investment, even though lagged valuation has a positive univariate correlation with investment growth in each – India (0.019), Pakistan (0.282), and Zimbabwe (0.495). However, valuation changes are not the only purported determinant of private investment growth. Therefore, Table 5B summarizes the results for multivariate regresssions that include lagged real per capita GDP growth rate, the lagged real growth rate in total private credit, lagged government spending, and lagged foreign exchange reserves to GDP.[23] The models also alternatively include contemporaneous and lagged returns as well as both variables simultaneously.[24] While the degrees of freedom are somewhat limiting, all three equations for each country produce clearly insignificant estimates for valuation changes, despite the positive simple correlation statistics. These results for India, Pakistan, and

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details of EBA and results for other emerging and developed markets can be found elsewhere (Durham 2000a, 2000b).

[23] Data on all variables come from the World Bank's World Development Indicators (2000).

Zimbabwe are therefore broadly consistent with the view that valuation changes are more likely to affect private investment in higher-income countries.

6. Conclusions

The empirical literature on the effects of international asset trade clearly lags behind the study of goods trade. However, some studies suggest that the effectiveness of capital flows is mitigated by various factors that capture the 'absorptive capacity' of countries to harness overseas investment, and these include the initial level of GDP per capita, human capital levels, the trade regime, and the initial level of financial development. Unfortunately, insofar as these factors represent thresholds, the implications for the poorest countries are less than positive.

Turning to the results in this study, perhaps the most accurate general conclusion, which is consistent with broad cross-sectional studies on financial flows (Durham 2000c), is that the effect of capital flows on lower income countries is largely ambiguous. Indeed, considering the 85 growth and savings regressions summarised in Table 3A and 3B, only 20 are statistically significant within the 10 percent confidence interval. However, more pessimistically, 17 of those significant results suggest that FDI and (equity and fixed income) FPI have negative real effects. These results are therefore consistent with the absorptive capacity perspective, but then again, only five of the nine cases produce at least one significant regression that indicate a negative real effect.

Perhaps a very brief case by case review of the time-series results is instructive. The data for Nigeria largely suggest an ambiguous effect, but the IFS measure of FDI seems to have adverse wealth effects. FPI seemed to lower growth in Zimbabwe, while FDI seemed to enhance growth in Uganda, at least using the OECD measure. The case of Zambia is

[24] Given the considerable data limitations, the regressions for Zimbabwe only include lagged GDP per capita growth and lagged real private credit growth.

somewhat contradictory, as the OECD measure of FDI lowers growth as well as savings, but FPI seems to increase savings. The data for Kenya largely suggest no effect. Turning to South Asia, gross bond flows and the volatility of gross bond flows seemed to slow growth in India, and FDI as well as gross and net bond and equity flows had adverse wealth effects. Similarly, the IFS measure of FDI slowed growth in Pakistan, and FDI as well as growth and net equity correlated negatively with savings. In contrast, some data indicate that FDI enhanced savings in Sri Lanka, but no regression produced a significant effect for Bangladesh.

Table 1A: Summary Statistics, African Countries, 1968-1998

Country	Variable	Mean (μ)	Std. Dev. (σ)	Minimum	Maximum	σ/μ	Obs.
Nigeria	Growth	2.1852	10.3231	-16.4530	31.8809	4.7241	31
Nigeria	FDI (OECD)	0.7509	1.6046	-1.7453	5.0189	2.1370	31
Nigeria	FDI (IFS)	2.5633	2.4637	-1.1509	8.2795	0.9611	21
Nigeria	FPI (OECD)	-0.0754	0.7394	-2.0698	1.7175	9.8069	31
Zimbabwe	Growth	0.6837	5.6769	-12.2284	12.5603	8.3031	31
Zimbabwe	FDI (OECD)	0.8832	0.4737	-0.2679	1.7717	0.5363	31
Zimbabwe	FDI (IFS)	0.0207	0.2174	-0.4531	0.5034	10.4926	18
Zimbabwe	FPI (OECD)	0.0205	0.4470	-0.9329	1.2566	21.7854	31
Kenya	Growth	0.9397	6.7669	-19.3353	24.5419	7.2008	31
Kenya	FDI (OECD)	0.6367	0.3789	-0.0291	1.7492	0.5951	31
Kenya	FDI (IFS)	0.4825	0.4209	0.0046	1.3475	0.8722	23
Kenya	FPI (OECD)	-0.0029	0.5681	-2.3907	1.2934	194.9742	31
Zambia	Growth	-1.8342	5.0201	-11.4488	6.9505	2.7369	31
Zambia	FDI (OECD)	0.8476	0.7974	-0.9024	3.0799	0.9408	31
Zambia	FDI (IFS)	1.8947	1.7372	-0.9583	6.1666	0.9169	14
Zambia	FDI (IFS revision)	1.7251	1.3420	-0.9581	6.1733	0.7780	24
Zambia	FPI (OECD)	0.1025	0.6893	-1.6135	2.7806	6.7274	31
Uganda	Growth	1.0975	20.6664	-64.2402	51.3070	18.8297	18
Uganda	FDI (OECD)	0.4093	0.9754	-0.1373	3.7684	2.3832	15
Uganda	FDI (IFS)	0.6068	1.0083	0.0000	2.7787	1.6618	18
Uganda	FDI (IFS revision)	0.6123	1.0188	-0.1137	2.8581	1.6638	18
Uganda	FPI (OECD)	0.0218	0.1294	-0.2888	0.2419	5.9452	18

Table 1B: Summary Statistics, South Asian Countries, 1968-1998

Country	Variable	Mean (μ)	Std. Dev. (σ)	Minimum	Maximum	σ/μ	Obs.
India	Growth	2.8297	2.9043	-5.2368	6.9646	1.0264	31
India	FDI (OECD)	0.0737	0.0647	-0.0297	0.2471	0.8779	31
India	FDI (IFS)	0.1303	0.2432	-0.0105	0.7964	1.8666	24
India	FPI (OECD)	0.0569	0.1327	-0.0971	0.5521	2.3313	31
India	Gross Bond (TIC)	0.0314	0.0538	0.0000	0.2377	1.7167	22
India	Net Bond (TIC)	0.0068	0.0495	-0.0503	0.2087	7.2793	22
India	Gross Equity (TIC)	0.0472	0.0901	0.0000	0.3116	1.9094	22
India	Net Equity (TIC)	0.0255	0.0530	-0.0058	0.1642	2.0773	22
Pakistan	Growth	1.5861	3.2303	-7.9186	8.4100	2.0366	31
Pakistan	FDI (OECD)	0.0883	0.1072	-0.0138	0.5002	1.2141	31
Pakistan	FDI (IFS)	0.4997	0.3694	0.0614	1.4360	0.7392	22
Pakistan	FPI (OECD)	0.1011	0.3098	-0.2244	1.4381	3.0646	31
Pakistan	Gross Bond (TIC)	0.0285	0.0809	0.0000	0.3396	2.8374	21
Pakistan	Net Bond (TIC)	0.0234	0.0727	-0.0125	0.2920	3.1085	21
Pakistan	Gross Equity (TIC)	0.0774	0.1468	0.0000	0.5570	1.8955	21
Pakistan	Net Equity (TIC)	0.0244	0.0621	-0.0022	0.2729	2.5453	21
Sri Lanka	Growth	2.7287	3.0367	-5.1672	9.3526	1.1129	30
Sri Lanka	FDI (OECD)	0.1440	0.4308	-0.9012	1.5500	2.9926	30
Sri Lanka	FDI (IFS)	0.8141	0.6804	-0.0297	2.8498	0.8358	23
Sri Lanka	FPI (OECD)	-0.0410	0.2274	-0.5416	0.2995	5.5486	30
Bangladesh	Growth	2.8645	4.1558	-10.0574	8.5704	1.4508	23
Bangladesh	FDI (OECD)	0.0704	0.1048	-0.0519	0.3640	1.4888	23
Bangladesh	FDI (IFS)	0.0236	0.0727	-0.0029	0.3443	3.0852	22
Bangladesh	FDI (IFS revision)	0.0229	0.0695	-0.0031	0.3287	3.0317	22
Bangladesh	FPI (OECD)	0.0037	0.0929	-0.2916	0.1696	25.4176	23

Table 2A: Unit Root Tests, Flow Variables, African Countries

Nigeria

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0000	0.0008	0.0000	0.0030
FDI (IFS)	0.1139	0.4993	0.0014	0.0471
FPI (OECD)	0.0150	0.0998	0.0528	0.2510

Zimbabwe

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0830	0.0560	0.2759	0.2364
FDI (IFS)	0.7249	0.8294	0.8950	0.9680
FPI (OECD)	0.0000	0.0011	0.0004	0.0080

Kenya

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0000	0.0011	0.0000	0.0086
FDI (IFS)	0.1283	0.1586	0.0089	0.0770
FPI (OECD)	0.0000	0.0193	0.0000	0.0678

Zambia

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0000	0.0049	0.0000	0.0053
FDI (IFS)	0.1781	0.7799	0.0285	0.3103
FPI (OECD)	0.0000	0.0000	0.0000	0.0002

Uganda

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (IFS)	0.9841	0.9718	0.9331	0.8904
FPI (OECD)	0.0013	0.0098	0.0104	0.0555

Table 2B: Unit Root Tests, Flow Variables, South Asian Countries

India

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.5773	0.7890	0.3378	0.6039
FDI (IFS)	0.9261	0.9530	0.8324	0.9563
FPI (OECD)	0.0030	0.0128	0.0035	0.0097
Gross Bond (TIC)	0.0077	0.4328	0.0033	0.3006
Gross Equity (TIC)	0.6208	0.7083	0.5137	0.6936
Net Bond (TIC)	0.0118	0.9042	0.0018	0.7546
Net Equity (TIC)	0.2715	0.3772	0.3677	0.4520

Pakistan

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0131	0.4827	0.0004	0.0782
FDI (IFS)	0.8960	0.8922	0.5712	0.3818
FPI (OECD)	0.0000	0.0000	0.0000	0.0000
Gross Bond (TIC)	0.0002	0.5201	0.0000	0.0551
Gross Equity (TIC)	0.6757	0.9784	0.3281	0.9450
Net Bond (TIC)	0.0000	0.2464	0.0000	0.0030
Net Equity (TIC)	0.0041	0.6644	0.0003	0.1838

Sri Lanka

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.0105	0.0501	0.0073	0.0208
FDI (IFS)	0.4364	0.1896	0.4401	0.1029
FPI (OECD)	0.0019	0.1168	0.0080	0.3149

Bangladesh

Lag?	No	Yes	No	Yes
Trend?	No	No	Yes	Yes
Flow Variable	p value	p value	p value	p value
FDI (OECD)	0.3370	0.3357	0.2939	0.1627
FDI (IFS)	1.0000	0.9867	0.9987	0.9426
FPI (OECD)	0.0000	0.0240	0.0003	0.0747

Table 3A: Time-Series Regressions, African Countries

Model:	Country	Dep. Variable	Flow Variable	β	t statistic	Adjusted R^2	Durbin-Watson	Obs.
1	Nigeria	Growth	FDI (OECD)	-1.0107	-1.0861	0.5308	1.8359	29
2	Nigeria	Growth	FDI (IFS)	0.5074	0.7187	0.2808	1.7326	20
3	Nigeria	Growth	FPI (OECD)	2.1849	0.9202	0.5493	1.8654	29
4	Nigeria	Savings	FDI (OECD)	-0.2798	-0.5309	0.4507	1.8274	31
5	Nigeria	Savings	FDI (IFS)	-1.2761	-3.9618	0.9465	2.4016	21
6	Nigeria	Savings	FPI (OECD)	0.0505	0.0388	0.4824	1.8524	31
7	Zimbabwe	Growth	FDI (OECD)	2.5286	1.1369	0.0844	2.1434	18
8	Zimbabwe	Growth	FDI (IFS)	-3.0561	-0.4028	-0.0719	2.0952	15
9	Zimbabwe	Growth	FPI (OECD)	-6.9082	-3.4400	0.5055	2.5457	18
10	Zimbabwe	Savings	FDI (OECD)	0.9599	0.9084	0.7560	1.9519	20
11	Zimbabwe	Savings	FDI (IFS)	2.0412	0.3725	0.3558	1.8961	16
12	Zimbabwe	Savings	FPI (OECD)	-1.0377	-0.8831	0.7615	1.9984	20
13	Kenya	Growth	FDI (OECD)	-4.0482	-1.1579	-0.0775	2.2032	30
14	Kenya	Growth	FDI (IFS)	2.7932	0.9885	-0.1842	1.8692	23
15	Kenya	Growth	FPI (OECD)	-0.0227	-0.0086	-0.1277	2.2542	30
16	Kenya	Savings	FDI (OECD)	2.4138	1.3721	0.4718	1.9881	31
17	Kenya	Savings	FDI (IFS)	0.8801	0.3026	0.1218	1.9097	23
18	Kenya	Savings	FPI (OECD)	1.1526	0.8866	0.4327	1.9480	31
19	Zambia	Growth	FDI (OECD)	-2.0486	-1.6728	0.1877	2.0262	30
20	Zambia	Growth	FDI (IFS)	84.4198	0.9000	-0.1003	1.9874	24
21	Zambia	Growth	FPI (OECD)	-0.2123	-0.1533	0.0976	1.9836	30
22	Zambia	Savings	FDI (OECD)	-3.5150	-2.8988	0.9174	1.9474	30
23	Zambia	Savings	FDI (IFS)	1.1982	1.0912	0.7926	1.8299	23
24	Zambia	Savings	FPI (OECD)	2.5882	1.7183	0.9011	1.9033	30
25	Uganda	Growth	FDI (IFS)	25.6838	2.5234	0.2944	1.9400	18
26	Uganda	Growth	FPI (OECD)	37.4165	0.9212	-0.0894	1.7684	19
27	Uganda	Savings	FDI (OECD)	0.1265	0.2566	0.1979	1.6426	17
28	Uganda	Savings	FDI (IFS)	1.6641	1.1805	-0.0530	1.6491	18
29	Uganda	Savings	FPI (OECD)	-2.6619	-0.6473	0.0593	1.4059	20

Table 3B: Time-Series Regressions, South Asian Countries

Model:	Country	Dep. Variable	Flow Variable	β	t statistic	Adjusted R^2	Durbin-Watson	Obs.
1	India	Growth	FDI (OECD)	6.5697	0.5231	-0.0546	1.9356	30
2	India	Growth	FDI (IFS)	-0.0483	-0.0136	-0.1224	1.9801	23
3	India	Growth	FPI (OECD)	-1.1697	-0.2279	-0.0662	1.9462	30
4	India	Growth	Gross Bond (TIC)	-29.9928	-1.8116	0.0673	1.9082	21
5	India	Growth	Net Bond (TIC)	-14.8007	-0.8363	-0.1211	1.9661	21
6	India	Growth	Gross Equity (TIC)	-0.8860	-0.0900	-0.1703	1.9750	21
7	India	Growth	Net Equity (TIC)	2.5910	0.1546	-0.1672	1.9722	21
8	India	Growth	σ/μ Net Bond (TIC)	1.0385	1.3641	-0.0417	1.9883	21
9	India	Growth	σ/μ Gross Bond (TIC)	-0.1631	-2.3397	0.1923	1.9649	21
10	India	Growth	σ/μ Net Equity (TIC)	-0.1020	-0.2355	-0.1671	1.9709	21
11	India	Growth	σ/μ Gross Equity (TIC)	0.3187	1.0908	-0.0544	1.9790	21
12	India	Savings	FDI (OECD)	-13.1959	-2.6730	0.4791	1.9230	31
13	India	Savings	FDI (IFS)	-4.5291	-1.9024	0.6663	2.0512	24
14	India	Savings	FPI (OECD)	-1.8550	-0.9135	0.2027	1.9047	31
15	India	Savings	Gross Bond (TIC)	-12.2924	-1.9186	0.8519	2.0922	22
16	India	Savings	Net Bond (TIC)	-20.2939	-2.6527	0.9178	2.1693	22
17	India	Savings	Gross Equity (TIC)	-17.8777	-4.7389	0.9639	2.4439	22
18	India	Savings	Net Equity (TIC)	-13.5843	-1.8830	0.6908	1.9821	22
19	India	Savings	σ/μ Net Bond (TIC)	0.0412	0.1275	0.2340	2.0540	22
20	India	Savings	σ/μ Gross Bond (TIC)	0.0384	1.0619	0.3576	2.0781	22
21	India	Savings	σ/μ Net Equity (TIC)	0.2328	1.1056	0.6072	2.1528	22
22	India	Savings	σ/μ Gross Equity (TIC)	-0.0690	-0.9401	0.0684	1.9650	22
23	Pakistan	Growth	FDI (OECD)	-2.7362	-0.3244	-0.0864	1.3914	30
24	Pakistan	Growth	FDI (IFS)	-6.7362	-2.7505	0.4532	1.1074	22
25	Pakistan	Growth	FPI (OECD)	0.9975	0.4716	-0.0817	1.4102	30
26	Pakistan	Growth	Gross Bond (TIC)	10.1455	1.2151	0.1009	1.3047	20
27	Pakistan	Growth	Net Bond (TIC)	12.0221	1.4266	0.1349	1.3050	20
28	Pakistan	Growth	Gross Equity (TIC)	8.6462	1.1056	0.0708	1.4117	20
29	Pakistan	Growth	Net Equity (TIC)	9.4082	0.7500	0.0375	1.3129	20
30	Pakistan	Growth	σ/μ Net Bond (TIC)	0.3005	0.5989	0.0431	1.2746	20
31	Pakistan	Growth	σ/μ Gross Bond (TIC)	0.3101	1.4180	0.1690	1.2417	20
32	Pakistan	Growth	σ/μ Net Equity (TIC)	-0.1918	-0.1833	0.0216	1.2729	20
33	Pakistan	Growth	σ/μ Gross Equity (TIC)	-0.1086	-0.3371	0.0278	1.2787	20
34	Pakistan	Savings	FDI (OECD)	-4.5691	-2.3275	0.9368	1.6675	28
35	Pakistan	Savings	FDI (IFS)	-5.3116	-2.4297	0.9276	1.6915	19
36	Pakistan	Savings	FPI (OECD)	-0.0784	-0.1129	0.8780	1.7609	28
37	Pakistan	Savings	Gross Bond (TIC)	-5.7944	-1.0679	0.7875	1.1769	18
38	Pakistan	Savings	Net Bond (TIC)	-4.8062	-0.7645	0.7417	1.1383	18
39	Pakistan	Savings	Gross Equity (TIC)	-9.4026	-2.3420	0.7946	1.3138	18
40	Pakistan	Savings	Net Equity (TIC)	-14.1328	-2.2946	0.8278	1.0750	18
41	Pakistan	Savings	σ/μ Net Bond (TIC)	0.2517	0.6742	0.6518	1.0677	18
42	Pakistan	Savings	σ/μ Gross Bond (TIC)	0.1070	0.5288	0.6372	1.0599	18
43	Pakistan	Savings	σ/μ Net Equity (TIC)	-0.0755	-0.0839	0.6669	1.0941	18
44	Pakistan	Savings	σ/μ Gross Equity (TIC)	0.0195	0.6255	0.7013	1.1466	18

Table 3B (Continued)

Model:	Country	Dep. Variable	Flow Variable	β	t statistic	Adjusted R^2	Durbin-Watson	Obs.
45	Sri Lanka	Growth	FDI (OECD)	0.0554	0.0279	-0.0734	1.9873	28
46	Sri Lanka	Growth	FDI (IFS)	1.3546	0.6965	-0.1112	1.9310	22
47	Sri Lanka	Growth	FPI (OECD)	-2.4544	-0.8567	-0.0080	1.9883	28
48	Sri Lanka	Savings	FDI (OECD)	3.0148	2.4021	0.1769	1.7023	29
49	Sri Lanka	Savings	FDI (IFS)	0.1883	0.1690	0.1173	1.4877	23
50	Sri Lanka	Savings	FPI (OECD)	2.0875	0.8757	0.0822	1.5791	29
51	Bangladesh	Growth	FDI (OECD)	-3.4531	-0.2429	-0.1279	2.2008	22
52	Bangladesh	Growth	FDI (IFS)	2.4906	0.1695	-0.1276	2.2159	22
53	Bangladesh	Growth	FPI (OECD)	-6.9886	-0.5438	0.1147	1.9072	26
54	Bangladesh	Savings	FDI (OECD)	4.9234	1.2593	0.8905	1.9831	24
55	Bangladesh	Savings	FDI (IFS)	0.8005	0.0917	0.8310	1.9875	22
56	Bangladesh	Savings	FPI (OECD)	-1.9622	-0.3692	0.8240	2.0730	25

Table 4: Stock Market Liberalisation and Total Returns

Country	Liberalisation Variable	β	t stat.	R^2	Durbin-Watson	Obs.*
India	8-month window (Henry, 2000)	0.0214	0.7215	0.0320	1.9838	264
India	8-month window (Bekaert and Harvey, 2000)**	-0.0759	-2.6172	0.0550	1.9874	264
India	8-month window (Levine and Zervos, 1998)	0.0023	0.0793	0.0301	1.9839	264
India	5-month window (Henry, 2000)	-0.0073	-0.1955	0.0302	1.9841	264
India	5-month window (Bekaert and Harvey, 2000)	-0.0411	-1.1182	0.0347	1.9831	264
India	5-month window (Levine and Zervos, 1995)	-0.0071	-0.1918	0.0302	1.9842	264
India	2-month window (Henry, 2000)	0.0029	0.0507	0.0300	1.9840	264
India	2-month window (Bekaert and Harvey, 2000)	-0.1471	-2.6334	0.0553	1.9864	264
India	2-month window (Levine and Zervos, 1998)	0.0141	0.2463	0.0303	1.9836	264
India	Liberalisation month (Henry, 2000)	-0.0151	-0.1959	0.0302	1.9839	264
India	Liberalisation month (Bekaert and Harvey, 2000)	-0.0974	-1.2698	0.0360	1.9852	264
India	Liberalisation month (Levine and Zervos, 1998)	0.0256	0.3280	0.0304	1.9832	264
Pakistan	8-month window (Bekaert and Harvey, 2000)	-0.0036	-0.1224	0.0333	1.9539	156
Pakistan	8-month window (Levine and Zervos, 1998)	0.0080	0.2679	0.0337	1.9540	156
Pakistan	5-month window (Bekaert and Harvey, 2000)	-0.0165	-0.4465	0.0345	1.9542	156
Pakistan	5-month window (Levine and Zervos, 1995)	0.0109	0.2966	0.0338	1.9542	156
Pakistan	2-month window (Bekaert and Harvey, 2000)	-0.0314	-0.5752	0.0354	1.9545	156
Pakistan	2-month window (Levine and Zervos, 1998)	0.0002	0.0042	0.0332	1.9540	156
Pakistan	Liberalisation month (Bekaert and Harvey, 2000)	-0.0543	-0.7547	0.0369	1.9540	156
Pakistan	Liberalisation month (Levine and Zervos, 1998)	-0.0158	-0.2171	0.0335	1.9542	156
Nigeria	8-month window (Bekaert and Harvey, 2000)	-0.0533	-0.8770	0.0155	1.9966	156
Nigeria	5-month window (Bekaert and Harvey, 2000)	0.1697	2.2293	0.0430	1.9964	156
Nigeria	2-month window (Bekaert and Harvey, 2000)	0.1516	1.3061	0.0212	1.9978	156
Nigeria	Liberalisation month (Bekaert and Harvey, 2000)	0.0876	0.5343	0.0123	1.9968	156
Zimbabwe	8-month window (Bekaert and Harvey, 2000)	-0.0281	-0.6547	0.0160	1.9715	264
Zimbabwe	5-month window (Bekaert and Harvey, 2000)	-0.0042	-0.0801	0.0144	1.9719	264
Zimbabwe	2-month window (Bekaert and Harvey, 2000)	0.0049	0.0635	0.0144	1.9714	264
Zimbabwe	Liberalisation month (Bekaert and Harvey, 2000)	-0.0254	-0.2582	0.0146	1.9728	264

*The data for India and Zimbabwe cover January 1976 through December 1997 (264 months). The data for Pakistan and Nigeria cover January 1985 through December 1997 (156 months). Following Harvey (2000), all regressions control for the total return indices for the United States and EAFE as well as the (IFC emerging markets index).

** The Bekaert and Harvey (2000) codes are the same as (Kim and Singal, 1999) for India.

Table 5A: Correlation Matrices, Valuation and Private Investment

India (1971-1998, 28 Obs.)

	Private Investment Growth	Return	Lag Return
Private Investment Growth	1.000		
Return	-0.067	1.000	
Lag Return	0.019	-0.165	1.000

Pakistan (1971, 1974-1990, 1993-1998, 24 Obs.)

	Private Investment Growth	Return	Lag Return
Private Investment Growth	1.000		
Return	0.083	1.000	
Lag Return	0.282	0.204	1.000

Nigeria (1986-1994, 9 Obs.)

	Private Investment Growth	Return	Lag Return
Private Investment Growth	1.000		
Return	0.058	1.000	
Lag Return	0.688	0.327	1.000

Zimbabwe (1980-1994, 15, Obs.)

	Private Investment Growth	Return	Lag Return
Private Investment Growth	1.000		
Return	0.141	1.000	
Lag Return	0.495	-0.063	1.000

Table 5B: Time-Series Private Investment Growth Regressions

Country	Return β	t stat.	Lag Return β	t stat.	R^2	Durbin-Watson	Obs.
India	-0.0488	-0.5384			0.0624	1.9377	28
India			-0.0086	-0.1044	0.0525	1.9599	28
India	-0.0532	-0.5622	-0.0186	-0.2165	0.0637	1.9340	28
Pakistan	-0.1095	-0.8637			0.2373	1.6274	26
Pakistan			0.0454	0.3341	0.2596	1.8284	26
Pakistan	-0.1127	-0.8595	-0.0015	-0.0102	0.2846	1.7982	24
Zimbabwe	0.0217	0.1268			0.4942	2.2028	14
Zimbabwe			0.1151	0.9316	0.5090	2.2782	14
Zimbabwe	0.0039	0.0220	0.1150	0.8727	0.5082	2.2787	14

Appendix 1: Unit Root Tests, Country Credit Ratings (*Institutional Investor*)

Lag?		No	Yes	No	Yes
Trend?		No	No	Yes	Yes
Country	Obs.	p value	p value	p value	p value
Nigeria	18	0.0312	0.0000	0.9333	0.0000
Zimbabwe	18	0.8846	0.4585	0.6236	0.0096
Kenya	18	0.0004	0.0053	0.0967	0.0000
Zambia	18	0.5799	0.6825	0.0655	0.4402
Uganda	17	1.0000	0.9950	0.9984	0.9989
India	18	0.4230	0.1377	0.8618	0.1203
Pakistan	18	0.4317	0.1817	0.9893	0.7932
Sri Lanka	14	0.9300	0.3733	0.6218	0.6453
Bangladesh	15	0.9049	0.4090	0.8770	0.1057

References

Adam, Christopher (1999), "Financial Liberalisatoin and Currency Demand in Zambia," *Journal of African Economies*, Vol. 8 No. 3, pp. 268-306.

Balasubramanyam,V.N., M. Salisu, D., Sapsford (1996), "Foreign Direct Investment and Growth in EP and IS Countries," *Economic Journal*, Vol. 106 (January), pp. 92-105.

Bekaert G. and C. Harvey (1998), "Capital Flows and the Behaviour of Emerging Market Equity Returns," NBER Working Paper Series No. 6669.

Bekaert G. and C. Harvey (2000), "Foreign Speculators and Emerging Equity Markets," *Journal of Finance* (April).

Bhagwati, J. (1998), "The Capital Myth: The Difference between Trade in Widgets and Dollars," *Foreign Affairs*, Vol. 77 No. 3 (May/June), pp. 7-12.

Blomström, M., R. E. Lipsey, and M. Zejan (1992), "What Explains Developing Country Growth," NBER Working Paper Series No. 4132.

Borensztein, E., J. De-Gregorio, Lee, J. W., (1998), "How Does Foreign Direct Investment Affect Economic Growth?," *Journal of International Economics*, Vol. 45 No. 1 (June), pp. 115-35.

de Mello, L. R. (1999), "Foreign Direct Investment-Led Growth: Evidence from Time Series and Panel Data," *Oxford Economic Papers*, Vol. 51 No. 1, (January), pp. 133-51.

Durham, J. Benson (2000a), "Extreme Bound Analysis of Emerging Stock Market Anomalies: Nothing is Robust," *Journal of Portfolio Management*, Vol. 26 No. 2 (Winter), pp. 95-103.

Durham, J. Benson (2000b), "Which Anomalies are Robust in Emerging and Developed Stock Markets?" *Emerging Markets Quarterly*, Vol. 4 No. 3, pp. 50-68.

Durham, J. Benson (2000c), "Econometrics of the Real Effects of Cross-Border Capital Flows in Emerging Markets, "Queen Elizabeth House Working Paper No. 52, University of Oxford.

Durham, J. Benson (2000d), "Emerging Stock Market Liberalisation, Total Returns, and Real Effects: Some Sensitivity Analyses," Queen Elizabeth House Working Paper No. 51, University of Oxford.

Durham, J. Benson (2000e), "Econometrics of the Effects of Stock Market Development on Growth and Private Investment in Lower Income Countries," Queen Elizabeth House Working Paper No. 53, University of Oxford.

Dutt, A. K. (1997), "The Pattern of Direct Foreign Investment and Economic Growth," *World Development*, Vol. 25 No. 11 (November), pp. 1925-36.

Edwards, S. (1995), "Why Are Savings Rates So Different Across Countries? An International Comparative Analysis," NBER Working Paper Series No. 5097.

Fischer. S. (1999), "On the Need for an International Lender of Last Resort," *Journal of Economic Perspectives*, Vol. 13 No. 4 (Fall), pp. 85-104.

Grier, K. and G. Tullock (1989), "An Empirical Analysis of Cross-National Economic Growth, 1951-1980," *Journal of Monetary Economics*, Vol. 24 No. 2 (September), pp. 259-76.

Henry, P. H. (2000a), "Do Stock Market Liberalisations Cause Investment Booms?" *Journal of Financial Economics.*

Henry, P. H. (2000b), "Stock Market Liberalisation, Economic Reform, and Emerging Market Equity Prices," *Journal of Finance*, (April).

Ito, T. "Capital Flows in Asia" (1999), NBER Working Paper Series.

Levine, R. (2000), "Bank-Based or Market-Based Financial Systems: Which is Better?" Carlson School of Management, University of Minnesota)

Levine, R., and D. Renelt (1992) "A Sensitivity Analysis Of Cross-Country Growth Regressions," *American Economic Review*, Vol. 82, pp. 942-63.

Levine. R. and S. Zervos (1998a), "Stock Markets, Banks, and Economic Growth," *American Economic Review*, Vol. 88 No. 3 (June), pp. 537-558.

Levine. R. and S. Zervos (1998b), "Global Capital Liberalisation and Stock Market Development," *World Development*, Vol. 26 No. 7, pp. 1169-1183.

Rodrik, D. (1998), "Who Needs Capital-Account Convertibility?" in *Should the IMF Pursue Capital-Account Convertibility?* Princeton Essays in International Finance No. 207.

Rogoff, K. (1999), "International Institutions for Reducing Global Financial Instability," *Journal of Economic Perspectives*, Vol. 13 No. 4 (Fall), pp. 21-42.

Sala-i-Martin, X. (1997a), "I Just Ran Two Million Regressions," *American Economic Review*, Vol. 87 (January), pp. 178-183.

Sala-i-Martin, X. (1997b), "I Just Ran Four Million Regressions," NBER Working Papers Series 6252.

Schneider, Benu (2000), "Issues in Capital Account Convertibility in Developing Countries," Working Paper, Overseas Development Institute (19/6/00).