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EMERGING EQUITY MARKETS AND ECONOMIC DEVELOPMENT

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ABSTRACT

We provide an analysis of real economic growth prospects in emerging markets after financial liberalizations. In contrast with previous research, we identify the financial liberalization dates and examine the influence of liberalizations while controlling for a number of other macroeconomic and financial variables. Our work also introduces an econometric methodology that allows us to use extensive time-series as well as cross-sectional information for our tests. We find across a number of different specifications that financial liberalizations are associated with significant increases in real economic growth.

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1 Introduction

We present new evidence on the relation between financial market liberalizations and economic growth for a collection of emerging economies. We find that average real economic growth increases between 1 and 2% per annum after a financial liberalization. Our results are robust across a number of different economic specifications. This analysis, of course, reveals no causality. However, even after we control for a comprehensive set of macroeconomic and financial variables, our financial liberalization indicator retains significance.

There is a substantial literature that tries to explain the cross-sectional determinants of economic growth. Barro (1991) and Barro and Sala-i-Martin (1995) explore the ability of a large number of macroeconomic and demographic variables to explain the cross-sectional characteristics of economic growth rates. More recent research in the growth literature has focused on the potential benefits of economic integration (the degree to which trade flows are free) and general financial development. For example, Rodrik (1999) examines the relation between openness to trade and economic growth with a standard cross-country regression methodology. With a proxy for the general openness to trade, the evidence suggests that the relation between economic growth and openness is statistically weak.

Following the development of endogenous growth models where financial intermediation plays an important role, there is also an interest in determining the influence of the financial sector on the cross-section of economic growth. King and Levine (1993) focus on several measures of banking development, and find that banking sector development is an important factor in explaining the cross-sectional characteristics of economic growth. Levine and Zervos (1998) explore the degree to which both stock market and banking sector development can explain the cross-section of economic growth rates. They find evidence in support of the claim that equity market liquidity is correlated with rates of economic growth. Additionally, they argue that banking and stock market development independently influence economic growth. They also find that there is little empirical evidence to support the claim that financial integration is positively correlated with economic growth.

Unlike previous work, we focus exclusively on the relation between real economic growth and financial liberalization. Our work is partially motivated by Bekaert and Harvey (2000) who examine the relation between financial liberalization and the dividend yield. While the dividend yield contains information about the cost of capital, it also houses information about growth prospects. A reduction in the cost of capital and/or an improvement in growth opportunities are the most obvious channels through which financial liberalization can increase economic growth. Consequently, for countries that undergo financial liberalization, Bekaert and Harvey also examine the relationship between economic growth and liberalization at very short horizons and find a positive association.

Our work is also distinguished by the extensive use of time-series as well as cross-sectional information. Indeed, the advent of financial liberalization suggests a temporal dimension to the growth debate that is not captured by the standard cross-country estimation methodology. Typically, the growth literature focuses on either a purely cross sectional analysis or a time-series dimension that is limited to at most three time-series observations per country. We employ a time-series cross-sectional estimation methodology using Hansen's (1982) generalized method of moments (GMM). Our estimation strategy is considerably different from the existing literature in that we exploit the information in overlapping time-series data. Given the novelty of this approach, the econometric methodology is discussed extensively. Furthermore, we conduct several Monte Carlo experiments to assess the properties of our estimation strategy in this economic environment. Levine and Renelt (1993) discuss the caution one must exercise when interpreting cross-country regressions. They demonstrate that the estimated coefficients are extremely sensitive to the conditioning variables employed. For this reason, we also consider a variety of different specifications.

The paper is organized as follows. Section 2 introduces the variables we employ in our empirical work. Section 3 explains the econometric methodology, and discusses the results of a Monte Carlo analysis. Section 4 details the empirical results, and Section 5 concludes.

2 Financial Liberalization and Economic Growth

Our empirical design is to explore the relation between real per capita GDP growth over various horizons and an indicator of official financial liberalization. The data are at the annual frequency from 1980 through 1997. We provide the official liberalization dates in the data appendix. These financial liberalization dates mainly represent the dates at which the local equity market was opened up to foreign investors. A detailed analysis of these dates and alternative sets of dates are provided in Bekaert and Harvey (2000).[1]

The set of variables that control for variation in economic growth rates across countries not accounted for by equity market liberalization fall into three categories: macroeconomic influences, banking development, and equity market development. More detailed information on the control variables, including data sources, are contained in data appendix.

The first set of variables are linked to the condition and stability of the macroeconomy: government consumption divided by GDP, the size of the trade sector divided by GDP, the annual rate of inflation, and the secondary school enrollment. Barro and Sala-i-Martin (1995) argue that government consumption divided by GDP proxies for political corruption, nonproductive public expenditures, or taxation. Bekaert and Harvey (1995, 1997, 2000) and Levine and Zervos (1998) employ the size of the trade sector as imports plus exports divided by GDP. This variable is employed as a measure of the openness of the particular economy to trade. Barro (1997) provides evidence suggesting a negative relationship between inflation and economic activity. Finally, Barro and Sala-i-Martin (1995) demonstrate the positive relationship between education and economic growth.

Following the evidence presented in King and Levine (1993), we include a control variable for the relationship between development in the banking sector and economic growth. In this capacity, we employ private credit divided by gross domestic product. King and Levine (1993) argue that this measure of banking development isolates the credit issued by private banks, in contrast to that issued by a central bank. Furthermore, Levine and Zervos (1998)

[1] A chronology of important events related to financial market integration is available on the Internet in the country risk analysis section of http://www.duke.edu/~charvey.

provide evidence that the effects the banking sector and stock market development have upon economic growth are separate, and they use this variable to capture the former.

The focus of this paper is on the relation between economic growth and equity market liberalization. We examine three variables to proxy for the more general development of the equity market: a measure of equity market size, the log of the number of domestic companies, and equity market turnover as a measure of market liquidity. Both Bekaert and Harvey (1997) and Levine and Zervos (1998) use the ratio of the equity market capitalization to gross domestic product as a measure of the size of the local equity market. Large markets relative to the size of the economy in which they reside potentially indicate market development. Bekaert and Harvey (2000) employ the log of the number of companies as a measure of market development. Atje and Jovanovic (1993) and Levine and Zervos (1998) provide evidence for a strong relationship between economic growth and stock market liquidity, and, therefore, we employ value traded divided by market capitalization in this capacity.

2.1 Summary statistics

Table 1 describes the sample of 30 countries that we employ in estimation, classified as either emerging or frontier by the International Finance Corporation (IFC), for which there are annual data extending from 1980 to 1997. Table 2 presents the summary statistics for the macro economic variables. This includes average real per capita GDP growth rates across the 30 countries in our sample across two decades. For this variable, we provide means over the 1980's and 1990's, as well as the full sample. The average growth rates differ substantially across time for many of the economies considered. Additionally, the rates of economic growth vary widely across the economies included. This paper focuses on the extent to which the time-series and cross-sectional differences can be explained by differing states of financial liberalization of the equity market.

Figure 1 presents evidence on the rates of economic growth both before and after the official liberalization date. Of the 21 economies that undergo financial liberalization in sample, 17 exhibit larger average GDP growth rates after the official liberalization dates. While this evidence implies no causality, it motivates the exploration of the relationship between economic growth and equity market liberalization. Tables 2 and 3 present average values for the various macroeconomic and financial, respectively, control variables across these economies. As the average values of these control variables vary substantially in the cross-section, the problem in examining the economic growth rates across these economies before and after equity market liberalization is that the differences may be related to phenomena not related to the liberalization itself, but captured by the control variables. For example, in many countries macroeconomic reforms (including trade liberalization) happened simultaneously or preceded financial liberalization (see Henry (2000a)). Also, as Table 3 shows, the nineties displayed a marked increase in the size of stock markets of all countries. The number of domestic companies and turnover also increased for most countries. It is potentially true that these variables are correlated with our financial liberalization indicator. Consequently, we include in the regression specifications a set of variables, consistent with the existing growth literature, that control for variation in economic growth rates across economies and time potentially not accounted for by financial liberalizations.

3 Methodology

3.1 *Econometrics Framework*

The primary quantity of interest is the growth rate in the real per capita gross domestic product (GDP):

$$y_{i,t+k,k} = \frac{1}{k}\sum_{j=1}^{k} y_{i,t} \; i = 1, \ldots, N, \tag{1}$$

where $y_{i,t} = \ln(\frac{\text{GDP}_{i,t}}{\text{POP}_{i,t}} / \frac{\text{GDP}_{i,t-1}}{\text{POP}_{i,t-1}})$, POP is the population, and N is the number of countries in our sample. Then, $y_{i,t+k,k}$ represents the annual, k-year compounded growth rate of real per capita GDP. In the growth literature, k is often chosen to be as large as possible. Our framework differs significantly in that we use overlapping data, facilitating the employment of the time-dimension in addition to the cross-sectional.

Our regression specification is as follows:

$$y_{i,t+k,k} = \beta' \mathbf{x}_{\mathrm{i,t}} + \epsilon_{i,t+k,k}, \tag{2}$$

for $i = 1, \ldots, N$ and $t = 1, \ldots, T$. Denote the independent (right-hand side) variables employed, as discussed in Section 2, as $\mathbf{x}_{i,t}$. While the error terms are serially correlated for $k > 1$, $E[\epsilon_{i,t+k,k} \otimes \mathbf{x_{i,t}}] = \mathbf{0}$. The vector $\mathbf{x}_{i,t}$ includes the country-specific logged real per-capita GDP for 1980, which we call initial GDP hereafter. This variable is included to capture the "conditional convergence" discussed extensively in Barro (1997). To estimate the restricted system, consider the following stacked orthogonality conditions:

$$g_{t+k} = \begin{bmatrix} \epsilon_{1,t+k,k} \otimes \mathbf{x}_{1,t} \\ \vdots \\ \epsilon_{N,t+k,k} \otimes \mathbf{x}_{N,t} \end{bmatrix}, \tag{3}$$

With L the dimension of the β, the system has $L \times N$ orthogonality conditions, but only L parameters to estimate. This procedure differs from ordinary least squares, as β is restricted to be identical across all countries, resulting in a system estimation that potentially corrects for heteroskedasticity across time, heteroskedasticity across countries, and correlation among country specific shocks (*seemingly unrelated regression* (SUR)).

Define $\mathbf{Z_t}$, an $N \times (LN)$ matrix, as follows:

$$\mathbf{Z_t} = \begin{bmatrix} \mathbf{x}'_{1,t} & 0 & \cdots & 0 \\ 0 & \mathbf{x}'_{2,t} & \cdots & 0 \\ \vdots & & & \\ 0 & 0 & \cdots & \mathbf{x}'_{N,t} \end{bmatrix}. \tag{4}$$

Then, one can rewrite the $(LN) \times 1$ vector of orthogonality conditions in the following manner:

$$g_{t+k} = \mathbf{Z}'_{\mathbf{t}} \epsilon_{t+k}, \tag{5}$$

where

$$\epsilon_{t+k} = \begin{bmatrix} \epsilon_{1,t+k,k} \\ \vdots \\ \epsilon_{N,t+k,k} \end{bmatrix}. \tag{6}$$

To derive the GMM estimator (Hansen, 1982), it is useful to express these quantities in matrix notation. Let

$$\mathbf{X_i} = [\mathbf{x}'_{\mathbf{i,t}}],\ \mathbf{Y_i} = [y_{i,t+k,k}],\ \text{and}\ \epsilon_{\mathbf{i}} = [\epsilon_{i,t+k,k}]. \tag{7}$$

Also,

$$\mathbf{X} = \begin{bmatrix} \mathbf{X_1} \\ \vdots \\ \mathbf{X_N} \end{bmatrix}, \mathbf{Y} = \begin{bmatrix} y_1 \\ \vdots \\ y_N \end{bmatrix}, \text{ and } \epsilon = \begin{bmatrix} \epsilon_1 \\ \vdots \\ \epsilon_N \end{bmatrix}, \tag{8}$$

where $\mathbf{X}$ is a $TN \times L$ matrix and $\mathbf{Y}$ and ϵ are $TN \times 1$ matrices. Also, let

$$\mathbf{Z} = \begin{bmatrix} \mathbf{X}_1 & 0 & \cdots & 0 \\ 0 & \mathbf{X}_2 & \cdots & 0 \\ \vdots & & & \\ 0 & 0 & \cdots & \mathbf{X}_N \end{bmatrix}, \tag{9}$$

a $TN \times LN$ matrix. It follows,

$$\epsilon = \mathbf{Y} - \mathbf{X}\beta. \tag{10}$$

Additionally,

$$\begin{aligned} \mathbf{g}_T &= \frac{1}{T}\sum_{t=1}^{T} g_{t+k} \\ &= \frac{1}{T}\{\mathbf{Z}'(\mathbf{Y} - \mathbf{X}\beta)\}. \end{aligned} \tag{11}$$

Employing this notation, the GMM estimator satisfies

$$\hat{\beta} = \arg\min_{\beta}[\mathbf{g}_T' \mathbf{S}_T^{-1} \mathbf{g}_T], \tag{12}$$

where $\mathbf{S}_T$ is the inverse of the GMM weighting matrix (see below). The First Order Condition associated with this optimum is as follows:

$$\frac{\partial \mathbf{g}_T{}'}{\partial \beta} S_T^{-1} \mathbf{g}_T = 0. \tag{13}$$

Note that

$$\frac{\partial \mathbf{g}_T}{\partial \beta} = \frac{\mathbf{Z}'\mathbf{X}}{T}. \tag{14}$$

Hence, to set the first order condition to zero, we choose

$$\hat{\beta} = [(\mathbf{X}'\mathbf{Z})\mathbf{S}_T^{-1}(\mathbf{Z}'\mathbf{X})]^{-1}[(\mathbf{X}'\mathbf{Z})\mathbf{S}_T^{-1}(\mathbf{Z}'\mathbf{Y})]. \tag{15}$$

This is a well-known result from IV-estimators in a GMM framework. We optimally choose the GMM weighting matrix to minimize the variance-covariance matrix of the estimated parameter vector; $\mathbf{S}_T$ is the estimated variance covariance matrix of $(\frac{1}{T}\sum_{t=1}^{T} g_t)$, taking all possible autocovariances into account:

$$\mathbf{S}_T = \sum_{j=-\infty}^{\infty} E[g_{t+k} g'_{t+k-j}]. \tag{16}$$

Using the identity matrix as the weighting matrix, first step parameter estimates are obtained as follows:

$$\hat{\beta}_1 = [(\mathbf{X'Z})(\mathbf{Z'X})]^{-1}[(\mathbf{X'Z})(\mathbf{Z'Y})]. \tag{17}$$

Then, construct the first step residuals as follows:

$$\hat{\epsilon} = \mathbf{Y} - \mathbf{X}\hat{\beta}_\mathbf{1}. \tag{18}$$

For the second step estimation, we use $\hat{\epsilon}$ to construct the optimal weighting matrix $\hat{\mathbf{S}}_T^{-1}$. In the case of overlapping data ($k > 1$), the residuals follow an MA(k-1) process. This structure allows the consideration of four different specifications for the weighting matrix that facilitate increasingly restricted variance-covariance structures across the residuals in (2).

- Weighting Matrix I:

  The most general specification facilitates temporal heteroskedasticity, cross-sectional heteroskedasticity, and SUR effects.

$$\hat{\mathbf{S}}_T = \frac{1}{T}\sum_t \mathbf{Z_t}'\epsilon_{t+k}\epsilon'_{t+k}\mathbf{Z_t} + \sum_{j=1}^{K}[1 - \frac{j}{K+1}](\sum_{t=j+1}^{T}(\mathbf{Z_{t-j}}'\epsilon_{t+k-j}\epsilon'_{t+k}\mathbf{Z_t} + \mathbf{Z_t}'\epsilon_{t+k}\epsilon'_{t+k-j}\mathbf{Z_{t-j}})). \tag{19}$$

  In order to ensure that the variance-covariance matrix is positive-definite, the Newey-West (1987) estimator is employed. K ($> k$) is chosen to be large enough to ensure consistency. As the time dimension in our sample, T, is small, we do not consider this weighting matrix specification in practice. In the interest of parsimony, we consider three restricted variance-covariance structures.

- Weighting Matrix II:

  This specification facilitates cross-sectional heteroskedasticity and SUR effects, but not temporal heteroskedasticity. Define the $N \times N$ matrix $\hat{\Omega}_j$ as follows:

$$\hat{\Omega}_j = \frac{1}{T}\sum_{t=j+1}^{T}(\epsilon_{t+k}\epsilon'_{t+k-j}). \tag{20}$$

  Then, the restricted variance-covariance matrix can be written as follows:

$$\hat{\mathbf{S}}_T = \frac{1}{T}\sum_t \mathbf{Z_t}'\hat{\Omega}_0\mathbf{Z_t} + \sum_{j=1}^{K}[1-\frac{j}{K+1}](\sum_{t=j+1}^{T}(\mathbf{Z_{t-j}}'\hat{\Omega}_j\mathbf{Z_t} + \mathbf{Z_t}'\hat{\Omega}_{-j}\mathbf{Z_{t-j}})). \tag{21}$$

  Given the small time dimension in our sample, the small sample properties of the estimator in this environment is questionable (see below). As a result, we restrict the non-diagonal terms of $\hat{\Omega}_j$ to be identical:

$$\hat{\Omega}_j = \begin{bmatrix} \hat{\sigma}_{11,j} & \hat{\sigma}_j & \cdots & \hat{\sigma}_j \\ \hat{\sigma}_j & \hat{\sigma}_{22,j} & \cdots & \hat{\sigma}_j \\ \vdots & & & \\ \hat{\sigma}_j & \hat{\sigma}_j & \cdots & \hat{\sigma}_{NN,j} \end{bmatrix}. \tag{22}$$

  This structure greatly reduces the number of parameters in the weighting matrix structure, but retains some of the SUR flavor. When we refer to weighting matrix II in the estimation results section, this restricted form is employed.

- Weighting Matrix III:

  This specification facilitates cross-sectional (groupwise) heteroskedasticity, but neither temporal heteroskedasticity nor SUR effects. First, let the non-diagonal terms in $\hat{\Omega}_j$ equal zero:

$$\hat{\Omega}_j = \begin{bmatrix} \hat{\sigma}_{11,j} & 0 & \cdots & 0 \\ 0 & \hat{\sigma}_{22,j} & \cdots & 0 \\ \vdots & & & \\ 0 & 0 & \cdots & \hat{\sigma}_{NN,j} \end{bmatrix}, \tag{23}$$

  where $\hat{\sigma}_{ii,j}$ is defined as follows:

$$\hat{\sigma}_{ii,j} = \frac{1}{T}\sum_{t=j+1}^{T}(\epsilon_{i,t+k,k}\epsilon'_{i,t+k-j,k}). \tag{24}$$

Given the restricted form for $\hat{\Omega}_j$, let $\hat{S}_T$ be determined as in (21). If GDP growth rates across the countries in our sample are idiosyncratic, then this assumption is plausible.

- Weighting Matrix IV:

  The final specification facilitates neither temporal heteroskedasticity, groupwise (country-specific) heteroskedasticity, nor SUR effects. In this case, the estimated parameters are equivalent to those obtained from a standard pooled OLS estimation methodology, correcting for the MA residual structure. From $\hat{\Omega}_j$ defined in (23),

$$\hat{\sigma}_j = \frac{1}{N}\text{trace}(\hat{\Omega}_j)\ \forall j. \tag{25}$$

  Then, define the restricted variance covariance matrix in the following manner:

$$\hat{\mathbf{S}}_T = \frac{1}{T}\sum_t \hat{\sigma}_0^2 \mathbf{Z_t}'\mathbf{Z_t} + \sum_{j=1}^{K}[1 - \frac{j}{K+1}](\sum_{t=j+1}^{T}(\hat{\sigma}_j \mathbf{Z_{t-j}}'\mathbf{Z_t} + \hat{\sigma}_{-j}\mathbf{Z_t}'\mathbf{Z_{t-j}})). \tag{26}$$

Given the construction of the weighting matrix as in one of the preceeding specifications, the GMM estimator is as follows:

$$\hat{\beta}_{GMM} = [(\mathbf{X'Z})\hat{\mathbf{S}}_T^{-1}(\mathbf{Z'X})]^{-1}[(\mathbf{X'Z})\hat{\mathbf{S}}_T^{-1}(\mathbf{Z'Y})]. \tag{27}$$

The standard errors of $\hat{\beta}_{GMM}$ are determined from the variance-covariance matrix:

$$T[[\mathbf{X'Z}]\hat{\mathbf{S}}_T^{-1}[\mathbf{Z'X}]]^{-1}. \tag{28}$$

3.2 *Monte Carlo Experiment*

We explore the finite-sample properties of the GMM estimator in this economic environment. We consider three separate Monte Carlo experiments, one for each of the latter three weighting matrix specifications, II, III and IV detailed above. We also started an experiment using the more general SUR specification of weighting matrix II in (20) but the finite sample properties of the estimator were quite poor.

3.2.1 *Explanatory Variables*

The first step of the Monte Carlo exercise is to generate the right hand side variables, $\mathbf{x}_{i,t}$. The first element of $\mathbf{x}_{i,t}$ is the logged initial real per capita GDP. We first identify the range for this variable in the observed data, and then draw a simulated initial GDP from a uniform distribution over this range for every country.

For the other right hand side variables, we follow a very different strategy. The macroeconomic and financial variables demonstrate significant serial and cross-correlation. We fit a restricted VAR to the following variables: Government consumption to GDP ratio, Trade to GDP ratio, Inflation, secondary school enrollment, Private credit to GDP ratio, market capitalization to GDP ratio, the logged number of domestic companies, and turnover. These are the control variables that we consider in our most general specification. As the time dimension, T, is small in our sample, we restrict the VAR coefficients to be identical across countries, but we allow for country specific intercepts. The restricted coefficient matrix, reported in Appendix Table A, is estimated using pooled OLS. (We also report the standard errors of the restricted VAR.) Given the restricted VAR coefficients, for each country we begin the variables at their unconditional means from the observed data. We simulate $100 + T$ values from the VAR for each country, and discard the initial 100 simulated observations. Now, we have simulated observations for the right hand side variables, $\mathbf{x}_{i,t}$, excluding the official liberalization indicator, to which we will deal with below.

3.2.2 *The Dependent Variable*

The real per capita GDP growth is determined according to the model as a function of the right hand side variables, $\mathbf{x}$ and the residuals, ϵ. The null model is as follows:

$$\tilde{y}_{i,t+k,k} = \beta' \tilde{\mathbf{x}}_{i,t} + \tilde{\epsilon}_{i,t+k,k}, \tag{29}$$

with no official liberalization indicator included in the right hand side variables. The β-vector comes from our growth model specification prior to introducing the indicator variables presented in Table 7. As there are three separate Monte Carlo designs, that is, one for each of the three weighting matrices under consideration, β is chosen from Table 7 for each of the three to reflect the particular weighting matrix under consideration. Given the use of overlapping data, the residuals follow an MA(k-1) process. To mimic this environment, we estimate a restricted MA(k-1) model for each of the residuals from the estimations performed in Table 7, depending upon the length k. The restriction lies in the fact that we jointly estimate the MA(k-1) process for each country, restricting the MA coefficients to be identical across countries. This restriction is motivated in precisely the same way the VAR's are restricted given the limited time series dimension. The restricted MA coefficients, reported in Table A for $k = 2, \ldots, 5$, are estimated using QMLE which assumes uncorrelated errors across countries and normal shocks in the likelihood. Then, we construct the simulated residuals as follows:

$$\tilde{\epsilon}_{i,t+k,k} = \sigma_i (\sum_{j=0}^{k-1} \theta_j u_{t+k-j,i}), \tag{30}$$

where the $u_{t+k-j,i}$ are drawn from a standard normal distribution, σ_i is the estimated standard deviation for country i (given as the sample standard deviation of the residuals from the regressions reported in Table 7), and the θ_j are the cross-sectionally restriction MA coefficients, where $\theta_0 = 1$.[2] Notice that the error terms are independent of the right-hand side control variables.

3.2.3 *Official Liberalization Indicator*

The construction of the liberalization indicator is very important to our Monte Carlo design. We generate series for each country that are zeros and ones, to mimic the properties of the observed liberalization indicator. First, we generate simulated liberalization dates drawn from a uniform distribution over the time series dimension, i.e. from 1 to T, for each country, so that each economy, as in our observed sample, liberalizes at some random time in our simulated sample. Then, the liberalization indicator values for that country are fixed at zeros prior to the simulated liberalization date and ones thereafter.

[2] One extension is to allow the errors to be correlated – This would better reflect the SUR estimation structure, where as the groupwise heteroskedasticity estimation structure is related to σ_i.

The next step is to estimate the model:

$$\tilde{y}_{i,t+k,k} = \beta' \tilde{\mathbf{x}}^{\star}_{i,t} + \tilde{\epsilon}_{i,t+k,k}, \tag{31}$$

where $\bar{\mathrm{x}}^{\star}_{\mathrm{i,t}}$ includes both the original control variables, $\bar{\mathbf{x}}_{\mathrm{i,t}}$, and the liberalization indicator. We retain the estimated coefficient on the liberalization indicator and the corresponding t-statistic. Under the null hypothesis of the constructed Monte Carlo model, this coefficient should not be significantly different from zero. We perform this procedure a total of 1000 times, for each of the three weighting matrix specifications. As can be seen in Appendix Table B, we report the summary statistics for the estimated coefficient and the t-statistic. For weighting matrix IV, the asymptotic distribution appears to be a good approximation to the Monte Carlo distribution for the t-statistic. For weighting matrices III and IV, there appears to be some excess kurtosis in the t-statistic, indicating some differences from the asymptotic distribution. For all statistics, the small sample distribution is more dispersed than the normal distribution. We also report the 2.5% and 97.5% percentiles for comparison with the critical values we obtain in our regression specifications. For weighting matrices III and IV, these values are substantially larger than the $\pm$ 1.96 implied by the normal critical values. This indicates that 5% statistical significance is only reached for T-statistics larger than three (when k is larger than one). In all, the Monte Carlo analysis demonstrates that this econometric methodology is a reasonable strategy to evaluate the effect upon GDP growth in this economic environment, provided we account for the finite-sample nature of the econometric environment.

4 Empirical Results

4.1 *The Liberalization Effect Without Control Variables*

Table 4 presents our estimates of the relation between real economic growth rates at various horizons and an official liberalization indicator and initial real per capita GDP without any additional control variables. Effectively, this is analogous to exploring the mean growth rate before and after financial liberalization. Consistent with the evidence on the pre and post-liberalization average growth rates presented in Section 2, these estimates demonstrate a positive and statistically significant relation between financial liberalization and economic growth across a variety of specifications and horizons.

In each case, the estimated coefficient is presented when the GMM weighting matrix is constructed as in either specification II, III or IV in the previous section. Specification II is the most general that we consider in that it allows for cross-sectional heteroskedasticity and (restricted) SUR effects, whereas the latter two are more restricted versions. Regardless of weighting matrix specification, the estimated coefficient is positive and significant in all cases. The evidence implies that real GDP per capita growth rates increase following financial liberalization by anywhere from 1.5% to as large as 2.3% per annum, on average. For example, with a three-year horizon using weighting matrix II, the impact on real economic growth rates is 2.0%. The evidence presented in Table 4 suggests that, on average, real economic growth rates increase roughly 1.9% per annum following financial liberalization.

Next, we present evidence on how this relation changes when additional variables are employed to control for various phenomena unrelated to the financial liberalization. Interestingly, the initial GDP appear to be positively related to the level of economic growth, in contrast to the convergence theory; however, much like the purely cross-sectional growth regressions, this relationship will change dramatically as additional control variables are added, lending credence to the concept of "conditional convergence" presented in Barro (1997).[3]

4.2 *Allowing For Control Variables*

The shortcoming of exploring the changes in real economic growth rates before and after financial liberalization is that the observed change may be related to various economic and political phenomena unrelated to the financial liberalization. For example, periods of financial liberalization may be contemporaneous with periods of political reform or economic

[3]The idea is that once you control for the variables that potentially reflect the different steady states across countries, the relationship should be negative. In this sense, the convergence across countries is conditional on the approach of each one to differing steady states (and these additional variables potentially account for this). See Barro (1997).

restructuring. When estimating the relation between growth and financial liberalization, it is important to account for these potentially confounding effects. Consequently, we develop a hierarchical estimation strategy that evaluates the ability of incrementally increasing control groups to explain the cross-sectional *and* time-series characteristics of real economic growth.

First, we begin by estimating the relation between economic growth rates and several macroeconomic variables that are commonly employed in the literature to explain cross-sectional differences. Second, given the evidence presented in King and Levine (1993), we then add control variables which represent banking development. Third, we add equity market variables. These control variables encompass many of the variables deemed important in explaining the cross-section of economic growth rates in Atje and Jovanovic (1993) and Levine and Zervos (1998). Finally in section 4.3, we add the official liberalization indicator, and reexamine the relation between financial liberalization and economic growth having controlled for unrelated effects using variables employed frequently in the literature.

In accordance with our tiered strategy, the first set of regressions we consider involve the use of three macroeconomic conditioning variables and a human capital variable: government consumption as a share of GDP, the size of the trade sector as a share of GDP, the annual inflation rate, and secondary school enrollment.

Table 5 presents evidence on the relation between these variables and economic growth. As before, we present the evidence obtained using the different GMM weighting matrix specifications. While the estimated relation between these variables and real economic growth is not entirely consistent across samples and estimation specifications, several patterns do emerge. First, as in Barro and Sala-i-Martin (1995), high levels of government consumption are negatively (significantly) related to economic growth rates, suggesting that the instabilities or taxation associated with government consumption are obstacles to economic development. However, this relationship is statistically insignificant for weighting matrix II. Second, the relation between the size of the trade sector and economic growth is statistically weak, and varies across the weighting matrix specifications which is consistent the result in Rodrik (1999) [also see Edwards (1998)]. The relation between inflation and economic growth generally is mostly statistically insignificant and switches signs. Moreover, the measured effect is very small from an economic perspective. Additionally, secondary school enrollment is generally positively and significantly related to economic growth across all weighting matrix specifications. Finally, the relationship between initial GDP and economic growth is negative for weighting matrices II and III, indicating "conditional convergence" once these additional control variables are included.

Based upon the evidence presented in King and Levine (1993), we augment the previous set of conditioning variables by including a measure of banking sector development, the level of private credit as a share of gross domestic product. In Table 6, we present the regressions that include this measure. We find that the relation between the three macroeconomic variables, secondary school enrollment and initial GDP and economic growth is generally unaffected by the inclusion of private credit divided by GDP. The one notable change is that inflation is now significantly predicts lower growth. Interestingly, the relation between banking sector development and real economic growth is fairly weak. Across the GMM weighting matrix specifications, the relationship is statistically insignificant, which is in sharp contrast to the evidence presented by King and Levine (1993) and Levine and Zervos (1998).

Levine and Zervos (1998) explore the degree to which banking and stock market development explain the cross-sectional characteristics of economic growth. They find that two measures of stock market liquidity are positively related to economic growth, and that stock market and banking development have separate effects upon growth. We employ equity market turnover as our development indicator. Additionally, they find a positive, but statistically weak, relationship between stock market size and GDP growth. We employ the number of domestic companies and the equity market capitalization divided by GDP as measures of stock market size. These variables can also proxy for market development.

In Table 7, we present the estimated regression coefficients when we add these three measures of equity market development to the control variables presented above, including the measure of banking development. The estimated relation between the macro economic variables and economic growth is qualitatively and quantitatively affected by the inclusion of the three equity market variables. The government/GDP and trade/GDP variables have now generally a larger sign, and are economically and statistically significant. The inflation effect has lost robustness across specifications. The enrollment variables is still important, but its effect is weaker both in an economic and statistical sense. The relation between initial GDP and economic growth is now negative and significant across almost all specifications. Additionally, the measure of banking development is now positively and significantly related to growth at longer horizons, which is consistent with the evidence presented in King and Levine (1993) and Levine and Zervos (1998). The coefficient on equity market size is generally negative and significant. Additionally, the relation between the logged number of companies and the rate of economic growth is positive and significant. In accordance with the evidence presented in Levine and Zervos (1998), the relationship between turnover and economic growth is positive and significant in nearly all cases.

4.3 *The Liberalization Effect with Control Variables*

Having potentially controlled for unrelated phenomena by using the macroeconomic, banking sector, and equity market variables employed in the existing growth literature, we return to the relationship between economic growth and financial liberalization, where again the latter is measured using the official liberalization indicator. Table 8 presents the regressions with the financial liberalization indicator and all the control variables. The results in Table 8 show that the estimated relation between the control variables and economic growth are generally unaffected by the inclusion of the liberalization indicator. As before, the relation between economic growth and banking sector development is positive and significant only at longer horizons. The enrollment variable now proves fragile. However, it is striking that across all weighting matrix specifications, financial liberalization is associated with a higher level of real economic growth. The evidence implies that real GDP per capita growth rates increase following financial liberalization by anywhere from 0.7% to as large as 1.4% per annum. Despite the large Monte Carlo critical values presented in Appendix Table B, these estimates retain statistical significance at the 95% confidence level in many of the specifications considered.

Overall, the evidence presented in Table 8 suggests that on average real economic growth rates increase roughly 1.1% per annum following financial liberalization. This finding is consistent with that presented in Table 4, when no control variables are employed, suggesting the relation between financial liberalization and economic growth is robust across weighting matrix specifications and conditioning variables. Levine and Renelt (1994) demonstrate that the estimated coefficients in cross-country regressions require extreme caution in interpretation, as they are sensitive to the set of control variables employed. Consequently, the evidence presented in Table 8 strengthens the argument that financial liberalization explains an important part of the cross-sectional and time-series characteristics of real economic growth.

4.4 *Regional Integration*

We consider an alternative specification that allows for regional differences in the measured effect of financial liberalization on economic growth. In particular, the high level of economic growth observed in Latin American countries after the debt crisis may significantly affecting the relationship between liberalization and growth discussed above. Although this higher growth after the "lost decade" may be due in part to financial liberalization, this is open to debate. Therefore, we explore whether Latin American countries drive our results by estimating the following regional regression equation:

$$y_{i,t+k,k} = \beta' \mathbf{x}_{\mathbf{i},\mathbf{t}} + \delta_1(\text{lib indicator}_i \cdot \text{Latin}_i) + \delta_2(\text{lib indicator}_i \cdot (\text{1-Latin}_i)) + \epsilon_{i,t+k,k}, \quad (32)$$

where Latin_i takes the value of 1 if country i is a Latin American country, and 0 otherwise. This specification allow the relationship between financial liberalization and economic growth to differ across Latin American and non-Latin American countries.

Given the evidence presented in Table 9 for these estimated regressions, the regional effect is negligible. If anything, the growth affect appears considerably weaker in Latin American countries relative to other countries. This suggests that the observed liberalization effect discussed above (and presented in Table 8) is not being driven by regional economic success in Latin America during our sample period.

5 Conclusions

The goal of the paper is to explore the relation between financial liberalization and real economic growth. While considerable effort in the past has been expended on the economic and financial fundamentals that explain the cross-section of economic growth, we focus on financial liberalizations. We emphasize the time-series component of growth in addition to the cross-sectional relation. Our results suggest that financial market liberalizations are associated with higher real growth, in the range of one percent per annum. The impact of financial market liberalizations is robust to the inclusion of the usual set of control variables representing the macroeconomic environment, banking development and stock market development.

Although this empirical result is intriguing, it warrants further analysis. First, we have focused only on emerging financial markets. In the standard cross-sectional growth literature, larger cross-sections are used including developed countries. Second, dating financial liberalization is problematic (see Bekaert, Harvey, and Lumsdaine (1999)), and we should consider further robustness checks on the financial liberalization dates we consider.[4] Finally, the results remain inherently empirical. How do financial liberalizations result in higher economic growth? Bekaert and Harvey (2000) and Henry (2000a and 2000b) provide evidence that the cost of capital may have decreased and investment increased after capital market liberalization. Table 8 reveals that the turnover coefficient decreases when the liberalization indicator is introduced, suggesting perhaps a liquidity/efficiency mechanism for enhanced growth. We plan to carefully examine all of these research questions in future work.

[4]We performed one robustness check reestimating the model without control variables using the 16 countries that Bekaert and Harvey (2000) show have breaks in their net capital flows. The results using this alternative indicator or liberalization are broadly consistent with what we have reported.

6 Data Appendix

In the system estimation described in econometric methodology section, all data are employed at the annual frequency.

GDP growth. Growth of real per capita gross domestic product. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Trade. Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Government Consumption. Government Consumption divided by gross domestic product. General government consumption includes all current expenditures for purchases of goods and services by all levels of government, excluding most government enterprises. It also includes capital expenditure on national defense and security. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Inflation. Inflation as measured by the annual growth rate of the gross domestic product implicit deflator. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Secondary School Enrollment. Secondary School Enrollment Ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Private Credit. Private credit divided by gross domestic product. Credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment. Available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM.

Market Capitalization. Equity market capitalization divided by gross domestic product. Equity market capitalization is from the *International Finance Corporation*'s Emerging Stock Markets Factbook. The gross domestic product data are from the World Bank Development Indicators CD-ROM. Data are available from 1980 through 1997.

Number of Companies. The log of the number of domestic companies covered taken from the *International Finance Corporation*'s (IFC) Emerging Stock Markets Factbook. The data are available from 1980 through 1997.

Turnover. The ratio of equity market value traded to the market capitalization. Both are available from the *International Finance Corporation*'s Emerging Stock Markets Factbook. The data are available from 1980 through 1997.

Official Liberalization Indicator. The variable takes a value of one when the equity market is liberalized, and zero otherwise. Liberalization dates are based upon the chronology presented in Bekaert and Harvey (2000) for the markets covered by the *International Finance Corporation*'s Global Indices. These dates are as follows:

Country	Official Liberalization Date
Argentina	1989
Bangladesh	NL
Brazil	1991
Chile	1992
Colombia	1991
Cote d'Ivoire	NL
Greece	1987
Egypt	1997
India	1992
Indonesia	1989
Israel	1996
Jamaica	NL
Jordan	1995
Kenya	NL
Korea	1992
Malaysia	1988
Mexico	1989
Morocco	1997
Nigeria	1995
Pakistan	1991
Philippines	1991
Portugal	1986
South Africa	1992
Sri Lanka	1992
Thailand	1987
Trinidad & Tobago	NL
Tunisia	NL
Turkey	1989
Venezuela	1990
Zimbabwe	1993

NL denotes that the financial market has not liberalized. For the (frontier) markets not covered in Bekaert and Harvey (1998), the inclusion date in the *International Financial Corporations* Global Indices is taken as the inclusion date.

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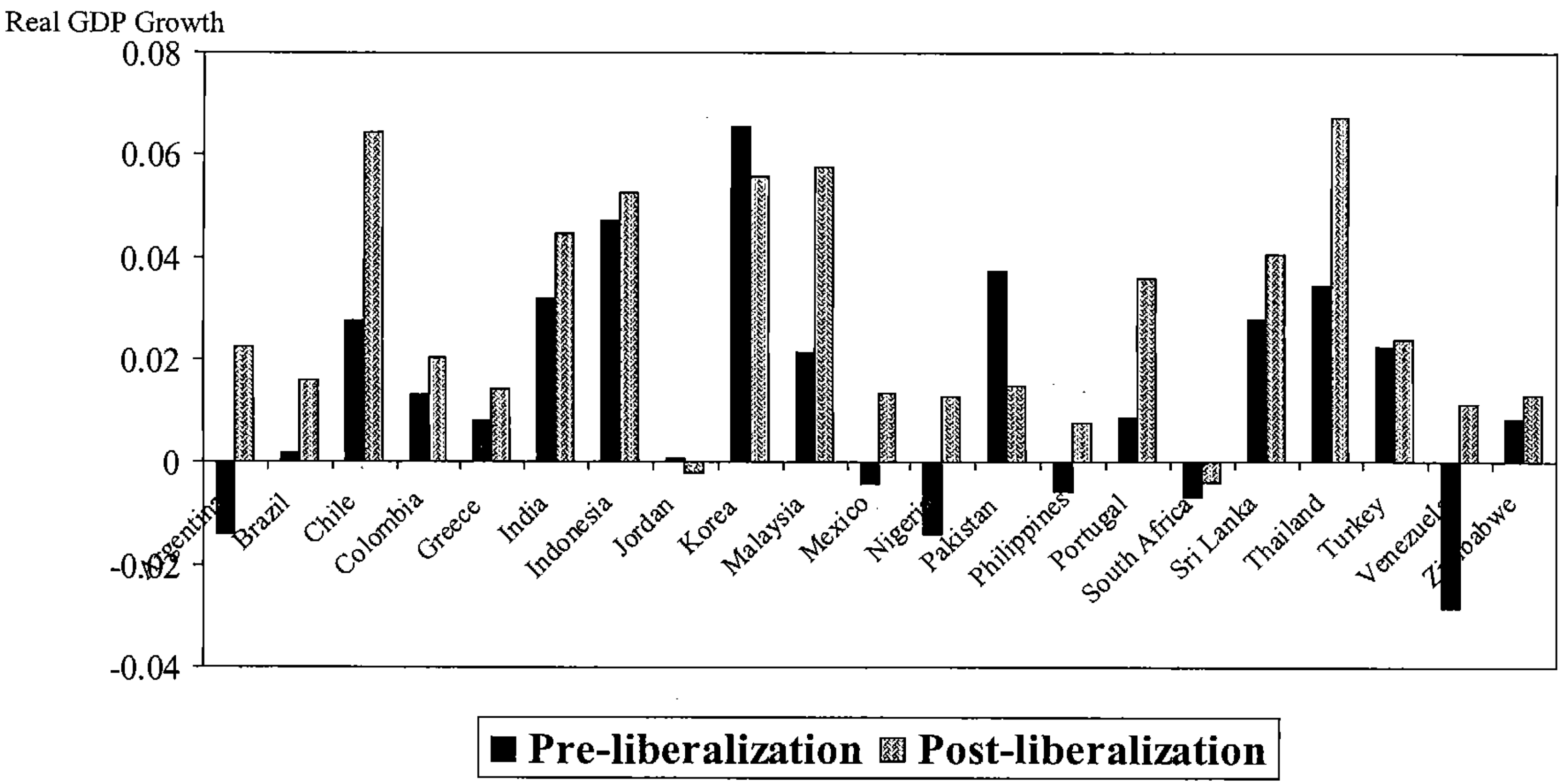
Figure 1

Real Economic Growth
Before and After Financial Liberalizations



Liberalization dates from Bekaert and Harvey (2000).

Table 1

Sample Specification

1980-1997 IFC (30 countries)

Country	Code	Country	Code
Argentina	ARG	Malaysia	MYS
Bangladesh	BGD	Mexico	MEX
Brazil	BRA	Morocco	MAR
Chile	CHL	Nigeria	NGA
Colombia	COL	Pakistan	PAK
Cote d'Ivoire	CIV	Philippines	PHL
Egypt, Arab Rep.	EGY	Portugal	PRT
Greece	GRC	Sri Lanka	LKA
India	IND	South Africa	ZAF
Indonesia	IDN	Thailand	THA
Israel	ISR	Trinidad and Tobago	TTO
Jamaica	JAM	Tunisia	TUN
Jordan	JOR	Turkey	TUR
Kenya	KEN	Venezuela	VEN
Korea, Rep.	KOR	Zimbabwe	ZWE

Table 2

Summary statistics for macroeconomic variables

	Argentina	Bangla-desh	Brazil	Chile	Colombia	Cote d'Ivoire	Egypt, Arab Rep.	Greece	India	Indonesia	Israel	Jamaica	Jordan	Kenya	Korea, Rep.
Real per capita GDP growth (annual) US$															
1980-1989															
Mean	-0.021	0.017	0.008	0.025	0.012	-0.039	0.032	0.012	0.036	0.043	0.018	0.001	-0.001	0.005	0.063
Std. dev.	*0.051*	*0.022*	*0.047*	*0.064*	*0.015*	*0.049*	*0.025*	*0.018*	*0.018*	*0.024*	*0.021*	*0.045*	*0.081*	*0.020*	*0.043*
1990-1997															
Mean	0.036	0.032	0.006	0.058	0.020	-0.004	0.020	0.011	0.036	0.056	0.024	-0.001	0.003	-0.006	0.061
Std. dev.	*0.052*	*0.010*	*0.034*	*0.025*	*0.014*	*0.036*	*0.016*	*0.013*	*0.024*	*0.012*	*0.015*	*0.022*	*0.056*	*0.020*	*0.016*
1980-1997															
Mean	0.004	0.023	0.007	0.040	0.016	-0.024	0.027	0.012	0.036	0.049	0.021	0.000	0.000	0.000	0.062
Std. dev.	*0.058*	*0.019*	*0.040*	*0.052*	*0.015*	*0.046*	*0.021*	*0.015*	*0.020*	*0.020*	*0.018*	*0.036*	*0.069*	*0.020*	*0.033*
Inflation (GDP deflator -- or CPI if unavailable) 1980-1997															
Mean	4.548	0.083	6.502	0.179	0.237	0.068	0.151	0.166	0.094	0.091	0.777	0.233	0.065	0.155	0.074
Std. dev.	*8.506*	*0.041*	*8.696*	*0.082*	*0.040*	*0.064*	*0.052*	*0.057*	*0.024*	*0.030*	*1.071*	*0.176*	*0.062*	*0.105*	*0.068*
Trade/GDP 1980-1997															
Mean	0.156	0.211	0.177	0.556	0.311	0.700	0.558	0.420	0.191	0.499	0.872	1.113	1.245	0.589	0.676
Std. dev.	*0.022*	*0.043*	*0.022*	*0.074*	*0.040*	*0.095*	*0.115*	*0.025*	*0.046*	*0.040*	*0.100*	*0.160*	*0.171*	*0.089*	*0.064*
Gov Consumption/GDP 1980-1997															
Mean	0.066	0.033	0.140	0.114	0.116	0.156	0.137	0.140	0.109	0.094	0.327	0.159	0.259	0.173	0.105
Std. dev.	*0.037*	*0.011*	*0.042*	*0.019*	*0.022*	*0.021*	*0.033*	*0.009*	*0.008*	*0.015*	*0.044*	*0.031*	*0.021*	*0.015*	*0.006*
Secondary School Enrollment 1980-1997															
Mean	0.226	0.198	0.203	0.199	0.175	0.136	0.238	0.225	0.216	0.258	0.213	0.257	0.285	0.195	0.326
Std. dev.	*0.023*	*0.016*	*0.022*	*0.043*	*0.016*	*0.052*	*0.057*	*0.029*	*0.016*	*0.022*	*0.022*	*0.067*	*0.066*	*0.018*	*0.038*
Private Credit/GDP 1980-1997															
Mean	0.212	0.118	0.493	0.488	0.292	0.340	0.293	0.395	0.254	0.296	0.615	0.307	0.602	0.295	0.572
Std. dev.	*0.068*	*0.063*	*0.183*	*0.209*	*0.085*	*0.072*	*0.083*	*0.046*	*0.065*	*0.167*	*0.110*	*0.054*	*0.155*	*0.042*	*0.121*

Table 2 (continued)

Summary statistics for macroeconomic variables

	Malaysia	Mexico	Morocco	Nigeria	Pakistan	Phili-ppines	Portugal	South Africa	Sri Lanka	Thailand	Trinidad and Tobago	Tunisia	Turkey	Venez-uela	Zim-babwe
Real per capita GDP growth (annual) US$															
1980-1989															
Mean	0.028	-0.002	0.021	-0.024	0.039	-0.007	0.029	-0.002	0.026	0.052	-0.010	0.010	0.018	-0.028	0.017
Std. dev.	*0.032*	*0.057*	*0.049*	*0.075*	*0.014*	*0.052*	*0.031*	*0.039*	*0.013*	*0.030*	*0.056*	*0.032*	*0.030*	*0.049*	*0.050*
1990-1997															
Mean	0.058	0.012	0.004	0.008	0.015	0.007	0.025	-0.010	0.040	0.058	0.011	0.030	0.030	0.011	0.001
Std. dev.	*0.006*	*0.040*	*0.067*	*0.026*	*0.023*	*0.023*	*0.017*	*0.021*	*0.010*	*0.032*	*0.072*	*0.022*	*0.050*	*0.038*	*0.056*
1980-1997															
Mean	0.041	0.005	0.013	-0.010	0.029	-0.001	0.027	0.032	-0.006	0.055	-0.001	0.019	0.023	-0.011	0.010
Std. dev.	*0.028*	*0.050*	*0.057*	*0.059*	*0.022*	*0.041*	*0.025*	*0.014*	*0.031*	*0.030*	*0.062*	*0.029*	*0.039*	*0.048*	*0.052*
Inflation (GDP deflator -- or CPI if unavailable) 1980-1997															
Mean	0.037	0.479	0.065	0.289	0.089	0.128	0.128	0.126	0.129	0.055	0.095	0.069	0.631	0.358	0.180
Std. dev.	*0.023*	*0.378*	*0.034*	*0.222*	*0.029*	*0.108*	*0.079*	*0.057*	*0.032*	*0.043*	*0.041*	*0.019*	*0.247*	*0.265*	*0.087*
Trade/GDP 1980-1997															
Mean	1.400	0.366	0.550	0.588	0.350	0.622	0.685	0.714	0.508	0.671	0.787	0.842	0.341	0.491	0.534
Std. dev.	*0.329*	*0.122*	*0.041*	*0.219*	*0.020*	*0.169*	*0.043*	*0.083*	*0.058*	*0.161*	*0.112*	*0.083*	*0.091*	*0.074*	*0.141*
Gov Consumption/GDP 1980-1997															
Mean	0.145	0.095	0.167	0.136	0.127	0.095	0.156	0.095	0.182	0.111	0.161	0.164	0.102	0.096	0.191
Std. dev.	*0.021*	*0.010*	*0.012*	*0.031*	*0.018*	*0.015*	*0.018*	*0.011*	*0.025*	*0.016*	*0.050*	*0.008*	*0.019*	*0.022*	*0.032*
Secondary School Enrollment 1980-1997															
Mean	0.341	0.195	0.225	0.178	0.152	0.227	0.270	0.251	0.207	0.336	0.196	0.265	0.210	0.192	0.184
Std. dev.	*0.061*	*0.026*	*0.020*	*0.044*	*0.016*	*0.040*	*0.036*	*0.029*	*0.043*	*0.062*	*0.050*	*0.039*	*0.048*	*0.033*	*0.034*
Private Credit/GDP 1980-1997															
Mean	0.772	0.209	0.300	0.113	0.263	0.348	0.649	0.848	0.201	0.703	0.405	0.564	0.183	0.368	0.223
Std. dev.	*0.370*	*0.081*	*0.103*	*0.042*	*0.034*	*0.123*	*0.132*	*0.275*	*0.037*	*0.369*	*0.111*	*0.094*	*0.026*	*0.153*	*0.076*

Table 3

Summary statistics for financial variables

	Argentina	Bangla-desh	Brazil	Chile	Colombia	Cote d'Ivoire	Egypt, Arab Rep.	Greece	India	Indonesia	Israel	Jamaica	Jordan	Kenya	Korea, Rep.
Market cap./GDP															
1980-1989															
Mean	0.024	0.008	0.094	0.222	0.028	0.040	0.037	0.048	0.062	0.003	0.288	0.123	0.475	0.056	0.190
Std. dev.	*0.016*	*0.007*	*0.054*	*0.087*	*0.009*	*0.007*	*0.016*	*0.027*	*0.019*	*0.007*	*0.145*	*0.088*	*0.074*	*0.001*	*0.213*
1990-1997															
Mean	0.122	0.032	0.204	0.933	0.155	0.067	0.122	0.157	0.305	0.194	0.386	0.451	0.695	0.174	0.352
Std. dev.	*0.052*	*0.035*	*0.110*	*0.291*	*0.066*	*0.028*	*0.081*	*0.034*	*0.101*	*0.129*	*0.222*	*0.250*	*0.120*	*0.123*	*0.124*
1980-1997															
Mean	0.067	0.019	0.143	0.538	0.084	0.052	0.075	0.096	0.170	0.088	0.332	0.269	0.573	0.108	0.262
Std. dev.	*0.061*	*0.026*	*0.098*	*0.413*	*0.078*	*0.023*	*0.069*	*0.063*	*0.141*	*0.128*	*0.184*	*0.241*	*0.147*	*0.099*	*0.193*
Log no. companies															
1980-1989															
Mean	5.417	3.983	6.272	5.403	4.890	3.185	5.379	4.744	8.264	2.939	5.410	3.662	4.540	3.994	5.945
Std. dev.	*0.140*	*0.602*	*0.113*	*0.082*	*0.387*	*0.048*	*0.814*	*0.023*	*0.375*	*0.637*	*0.313*	0.093	*0.156*	*0.021*	*0.214*
1990-1997															
Mean	5.083	5.089	6.319	5.557	4.766	3.318	6.488	5.152	8.370	5.250	6.119	3.864	4.646	4.021	6.566
Std. dev.	*0.107*	*0.152*	*0.028*	*0.121*	*0.410*	*0.145*	*0.078*	*0.265*	*0.364*	*0.297*	*0.478*	*0.059*	*0.121*	*0.029*	*0.053*
1980-1997															
Mean	5.268	4.475	6.293	5.471	4.835	3.244	5.872	4.925	8.311	3.966	5.725	3.752	4.587	4.006	6.221
Std. dev.	*0.211*	*0.722*	*0.087*	*0.126*	*0.390*	*0.120*	*0.821*	*0.270*	*0.363*	*1.284*	*0.527*	*0.129*	*0.148*	*0.027*	*0.355*
Turnover															
1980-1989															
Mean	0.267	0.008	0.502	0.057	0.100	0.028	0.064	0.041	0.495	0.091	0.524	0.065	0.122	0.022	0.692
Std. dev.	*0.080*	*0.004*	*0.119*	*0.028*	*0.073*	*0.044*	*0.026*	*0.032*	*0.155*	*0.078*	*0.555*	*0.038*	*0.072*	*0.000*	*0.149*
1990-1997															
Mean	0.320	0.091	0.514	0.089	0.085	0.019	0.118	0.283	0.322	0.480	0.700	0.109	0.182	0.028	1.503
Std. dev.	*0.235*	*0.084*	*0.152*	*0.034*	*0.034*	*0.008*	*0.084*	*0.157*	*0.162*	*0.422*	*0.543*	*0.094*	*0.109*	*0.014*	*1.074*
1980-1997															
Mean	0.291	0.045	0.507	0.072	0.093	0.024	0.088	0.149	0.418	0.264	0.602	0.084	0.148	0.025	1.053
Std. dev.	*0.164*	*0.069*	*0.130*	*0.034*	*0.058*	*0.033*	*0.064*	*0.161*	*0.177*	*0.341*	*0.541*	*0.070*	*0.093*	*0.010*	*0.811*

Table 3 (continued)

Summary statistics for financial variables

	Malaysia	Mexico	Morocco	Nigeria	Pakistan	Phili-ppines	Portugal	South Africa	Sri Lanka	Thailand	Trinidad and Tobago	Tunisia	Turkey	Venez-uela	Zim-babwe
Market cap./GDP															
1980-1989															
Mean	0.634	0.044	0.021	0.060	0.045	0.085	0.063	0.065	1.208	0.090	0.113	0.067	0.020	0.032	0.100
Std. dev.	*0.166*	*0.030*	*0.003*	*0.028*	*0.014*	*0.076*	*0.087*	*0.009*	*0.301*	*0.100*	*0.044*	*0.003*	*0.017*	*0.008*	*0.070*
1990-1997															
Mean	2.096	0.332	0.148	0.073	0.169	0.547	0.184	0.174	1.599	0.583	0.198	0.117	0.159	0.133	0.243
Std. dev.	*0.971*	*0.105*	*0.110*	*0.028*	*0.050*	*0.331*	*0.089*	*0.052*	*0.400*	*0.319*	*0.144*	*0.074*	*0.079*	*0.053*	*0.098*
1980-1997															
Mean	1.284	0.172	0.077	0.066	0.100	0.290	0.117	0.113	1.382	0.309	0.151	0.089	0.082	0.077	0.164
Std. dev.	*0.981*	*0.164*	*0.096*	*0.028*	*0.072*	*0.322*	*0.105*	*0.065*	*0.392*	*0.333*	*0.107*	*0.054*	*0.088*	*0.062*	*0.109*
Log no. companies															
1980-1989															
Mean	5.366	5.246	4.322	4.573	5.872	5.080	3.860	5.146	6.318	4.629	3.491	2.565	4.821	4.548	4.041
Std. dev.	*0.107*	*0.175*	*0.034*	*0.062*	*0.113*	*0.184*	*0.909*	*0.014*	*0.240*	*0.270*	*0.078*	*0.000*	*1.057*	*0.278*	*0.070*
1990-1997															
Mean	6.097	5.282	4.037	5.101	6.494	5.222	5.164	5.327	6.494	5.842	3.283	3.017	5.134	4.477	4.128
Std. dev.	*0.320*	*0.040*	*0.172*	*0.130*	*0.178*	*0.136*	*0.095*	*0.123*	*0.053*	*0.258*	*0.090*	*0.361*	*0.288*	*0.063*	*0.042*
1980-1997															
Mean	5.691	5.262	4.195	4.808	6.149	5.143	4.440	5.226	6.396	5.168	3.398	2.766	4.960	4.517	4.080
Std. dev.	*0.434*	*0.132*	*0.185*	*0.286*	*0.348*	*0.176*	*0.942*	*0.122*	*0.200*	*0.671*	*0.134*	*0.327*	*0.807*	*0.209*	*0.073*
Turnover															
1980-1989															
Mean	0.151	0.629	0.044	0.006	0.123	0.221	0.066	0.012	0.048	0.384	0.095	0.050	0.031	0.043	0.077
Std. dev.	*0.051*	*0.482*	*0.019*	*0.003*	*0.037*	*0.132*	*0.073*	*0.006*	*0.011*	*0.222*	*0.053*	*0.000*	*0.039*	*0.032*	*0.063*
1990-1997															
Mean	0.556	0.386	0.131	0.013	0.334	0.274	0.328	0.113	0.087	0.768	0.085	0.080	0.996	0.237	0.082
Std. dev.	*0.456*	*0.107*	*0.128*	*0.011*	*0.332*	*0.153*	*0.109*	*0.067*	*0.047*	*0.288*	*0.032*	*0.050*	*0.664*	*0.074*	*0.080*
1980-1997															
Mean	0.331	0.521	0.083	0.009	0.217	0.245	0.183	0.057	0.065	0.554	0.090	0.063	0.460	0.129	0.079
Std. dev.	*0.360*	*0.378*	*0.094*	*0.008*	*0.240*	*0.140*	*0.160*	*0.067*	*0.037*	*0.314*	*0.044*	*0.035*	*0.653*	*0.112*	*0.069*

Table 4

Financial liberalization and economic growth - no control variables

	Horizon in years														
	k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Official liberalization indicator	0.0201	0.0189	0.0200	0.0194	0.0176	0.0193	0.0182	0.0191	0.0182	0.0163	0.0229	0.0220	0.0210	0.0183	0.0153
Std. error	*0.0035*	*0.0042*	*0.0051*	*0.0055*	*0.0058*	*0.0032*	*0.0044*	*0.0050*	*0.0051*	*0.0052*	*0.0042*	*0.0052*	*0.0060*	*0.0061*	*0.0062*
Log(GDP)	0.0015	0.0014	0.0013	0.0013	0.0014	0.0016	0.0015	0.0014	0.0014	0.0013	0.0012	0.0014	0.0015	0.0017	0.0018
Std. error	*0.0003*	*0.0003*	*0.0004*	*0.0004*	*0.0004*	*0.0002*	*0.0003*	*0.0003*	*0.0003*	*0.0003*	*0.0003*	*0.0004*	*0.0004*	*0.0004*	*0.0005*

Table 5

Macroeconomic control variables and economic growth

	Horizon in years														
	k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Govt/GDP	-0.0593	-0.0277	-0.0204	-0.0030	-0.0014	-0.0760	-0.0711	-0.0543	-0.0304	-0.0232	-0.1469	-0.1457	-0.1396	-0.1308	-0.1201
Std. error	*0.0289*	*0.0274*	*0.0297*	*0.0302*	*0.0294*	*0.0312*	*0.0385*	*0.0352*	*0.0346*	*0.0327*	*0.0382*	*0.0465*	*0.0498*	*0.0494*	*0.0443*
TRADE/GDP	-0.0035	-0.0063	-0.0117	-0.0206	-0.0208	0.0006	0.0023	-0.0021	-0.0091	-0.0118	0.0138	0.0211	0.0229	0.0213	0.0153
Std. error	*0.0061*	*0.0062*	*0.0065*	*0.0062*	*0.0062*	*0.0065*	*0.0083*	*0.0076*	*0.0074*	*0.0071*	*0.0083*	*0.0101*	*0.0109*	*0.0108*	*0.0099*
Inflation	-0.0006	-0.0001	0.0002	0.0004	0.0002	-0.0005	0.0001	0.0004	0.0004	0.0002	-0.0002	0.0006	0.0009	0.0010	0.0006
Std. error	*0.0008*	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0007*	*0.0007*	*0.0006*	*0.0004*	*0.0006*
Enrollment	0.1907	0.2086	0.2131	0.2289	0.2194	0.1708	0.1658	0.1769	0.1885	0.1874	0.1077	0.0787	0.0598	0.0393	0.0712
Std. error	*0.0243*	*0.0248*	*0.0254*	*0.0234*	*0.0231*	*0.0255*	*0.0312*	*0.0283*	*0.0273*	*0.0265*	*0.0333*	*0.0402*	*0.0419*	*0.0404*	*0.0379*
Log(GDP)	-0.0018	-0.0031	-0.0033	-0.0037	-0.0034	-0.0010	-0.0012	-0.0017	-0.0021	-0.0022	0.0005	0.0008	0.0010	0.0016	0.0010
Std. error	*0.0009*	*0.0009*	*0.0009*	*0.0009*	*0.0008*	*0.0010*	*0.0012*	*0.0011*	*0.0010*	*0.0009*	*0.0011*	*0.0014*	*0.0014*	*0.0014*	*0.0013*

Table 6

Macroeconomic and banking control variables and economic growth

	Horizon in years														
	k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Govt/GDP	-0.0642	-0.0340	-0.0338	-0.0188	-0.0227	-0.0814	-0.0792	-0.0661	-0.0473	-0.0371	-0.1533	-0.1510	-0.1492	-0.1304	-0.1143
Std. error	*0.0301*	*0.0290*	*0.0307*	*0.0301*	*0.0277*	*0.0318*	*0.0388*	*0.0352*	*0.0339*	*0.0309*	*0.0385*	*0.0465*	*0.0486*	*0.0473*	*0.0455*
TRADE/GDP	-0.0022	-0.0042	-0.0087	-0.0176	-0.0211	0.0003	0.0020	-0.0019	-0.0086	-0.0127	0.0119	0.0189	0.0229	0.0187	0.0143
Std. error	*0.0062*	*0.0064*	*0.0068*	*0.0064*	*0.0063*	*0.0066*	*0.0084*	*0.0077*	*0.0074*	*0.0071*	*0.0085*	*0.0102*	*0.0108*	*0.0105*	*0.0100*
Inflation	-0.0006	0.0000	0.0002	0.0004	0.0004	-0.0006	0.0000	0.0003	0.0003	0.0001	-0.0003	0.0004	0.0008	0.0009	0.0006
Std. error	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0007*	*0.0007*	*0.0006*	*0.0004*	*0.0004*
Enrollment	0.1855	0.1963	0.1960	0.2107	0.2175	0.1661	0.1562	0.1646	0.1746	0.1759	0.1000	0.0689	0.0313	0.0334	0.0231
Std. error	*0.0250*	*0.0255*	*0.0263*	*0.0245*	*0.0231*	*0.0259*	*0.0314*	*0.0285*	*0.0273*	*0.0262*	*0.0340*	*0.0404*	*0.0405*	*0.0389*	*0.0361*
Log(GDP)	-0.0015	-0.0028	-0.0029	-0.0033	-0.0033	-0.0008	-0.0010	-0.0015	-0.0021	-0.0023	0.0005	0.0007	0.0014	0.0012	0.0013
Std. error	*0.0009*	*0.0009*	*0.0010*	*0.0009*	*0.0009*	*0.0010*	*0.0012*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0014*	*0.0014*	*0.0014*	*0.0013*
Priv Credit/GDP	-0.0022	0.0004	0.0038	0.0084	0.0073	0.0021	0.0055	0.0080	0.0130	0.0160	0.0098	0.0109	0.0118	0.0145	0.0208
Std. error	*0.0077*	*0.0085*	*0.0095*	*0.0097*	*0.0090*	*0.0079*	*0.0104*	*0.0101*	*0.0104*	*0.0100*	*0.0095*	*0.0116*	*0.0117*	*0.0111*	*0.0109*

Table 7

Macroeconomic, banking, and stock market control variables and economic growth

	Horizon in years														
	k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Govt/GDP	-0.1532	-0.1577	-0.1593	-0.1529	-0.1474	-0.1583	-0.1652	-0.1638	-0.1590	-0.1492	-0.1583	-0.1652	-0.1638	-0.1590	-0.1492
Std. error	*0.0329*	*0.0326*	*0.0324*	*0.0317*	*0.0303*	*0.0334*	*0.0335*	*0.0333*	*0.0324*	*0.0309*	*0.0334*	*0.0335*	*0.0333*	*0.0324*	*0.0309*
TRADE/GDP	0.0241	0.0311	0.0334	0.0321	0.0306	0.0254	0.0337	0.0357	0.0342	0.0311	0.0254	0.0337	0.0357	0.0342	0.0311
Std. error	*0.0076*	*0.0078*	*0.0080*	*0.0079*	*0.0075*	*0.0077*	*0.0080*	*0.0081*	*0.0081*	*0.0076*	*0.0077*	*0.0080*	*0.0081*	*0.0081*	*0.0076*
Inflation	-0.0006	0.0001	0.0004	0.0005	0.0004	-0.0006	0.0001	0.0004	0.0005	0.0003	-0.0006	0.0001	0.0004	0.0005	0.0003
Std. error	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*
Enrollment	0.0638	0.0439	0.0292	0.0267	0.0196	0.0511	0.0250	0.0118	0.0126	0.0111	0.0511	0.0250	0.0118	0.0126	0.0111
Std. error	*0.0310*	*0.0309*	*0.0307*	*0.0298*	*0.0287*	*0.0307*	*0.0308*	*0.0308*	*0.0300*	*0.0288*	*0.0307*	*0.0308*	*0.0308*	*0.0300*	*0.0288*
Log(GDP)	-0.0016	-0.0020	-0.0022	-0.0023	-0.0023	-0.0015	-0.0019	-0.0022	-0.0023	-0.0023	-0.0015	-0.0019	-0.0022	-0.0023	-0.0023
Std. error	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0010*	*0.0010*
Priv Credit/GDP	0.0029	0.0071	0.0117	0.0162	0.0220	0.0042	0.0098	0.0144	0.0186	0.0247	0.0042	0.0098	0.0144	0.0186	0.0247
Std. error	*0.0100*	*0.0100*	*0.0099*	*0.0098*	*0.0094*	*0.0101*	*0.0102*	*0.0102*	*0.0100*	*0.0096*	*0.0101*	*0.0102*	*0.0102*	*0.0100*	*0.0096*
MCAP/GDP	-0.0077	-0.0133	-0.0176	-0.0204	-0.0291	-0.0077	-0.0134	-0.0174	-0.0201	-0.0294	-0.0077	-0.0134	-0.0174	-0.0201	-0.0294
Std. error	*0.0056*	*0.0056*	*0.0053*	*0.0050*	*0.0051*	*0.0056*	*0.0058*	*0.0055*	*0.0051*	*0.0052*	*0.0056*	*0.0058*	*0.0055*	*0.0051*	*0.0052*
ln(# of stocks)	0.0042	0.0049	0.0054	0.0054	0.0055	0.0045	0.0054	0.0058	0.0058	0.0058	0.0045	0.0054	0.0058	0.0058	0.0058
Std. error	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0011*	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0011*
Turnover	0.0223	0.0184	0.0177	0.0143	0.0115	0.0221	0.0186	0.0180	0.0150	0.0119	0.0221	0.0186	0.0180	0.0150	0.0119
Std. error	*0.0055*	*0.0053*	*0.0055*	*0.0052*	*0.0053*	*0.0055*	*0.0054*	*0.0056*	*0.0054*	*0.0054*	*0.0055*	*0.0054*	*0.0056*	*0.0054*	*0.0054*

Table 8

Liberalization and growth controling for macroeconomic, banking and stock market development control variables

	Horizon in years k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Govt/GDP	-0.1313	-0.1357	-0.1286	-0.1287	-0.1367	-0.1327	-0.1357	-0.1273	-0.1306	-0.1358	-0.1518	-0.1564	-0.1390	-0.1291	-0.1427
Std. error	*0.0332*	*0.0333*	*0.0327*	*0.0315*	*0.0300*	*0.0336*	*0.0339*	*0.0333*	*0.0321*	*0.0302*	*0.0396*	*0.0391*	*0.0421*	*0.0405*	*0.0384*
TRADE/GDP	0.0259	0.0344	0.0399	0.0408	0.0395	0.0258	0.0345	0.0397	0.0411	0.0390	0.0297	0.0360	0.0361	0.0326	0.0283
Std. error	*0.0074*	*0.0075*	*0.0075*	*0.0072*	*0.0067*	*0.0074*	*0.0076*	*0.0075*	*0.0073*	*0.0068*	*0.0095*	*0.0093*	*0.0098*	*0.0097*	*0.0095*
Inflation	-0.0006	0.0002	0.0006	0.0007	0.0006	-0.0006	0.0001	0.0005	0.0006	0.0005	-0.0005	0.0003	0.0008	0.0007	0.0005
Std. error	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0005*	*0.0008*	*0.0007*	*0.0006*	*0.0005*	*0.0005*	*0.0007*	*0.0006*	*0.0004*	*0.0004*	*0.0005*
Enrollment	0.0613	0.0330	0.0108	0.0093	-0.0006	0.0562	0.0255	0.0040	0.0003	-0.0059	0.0194	0.0015	-0.0195	-0.0136	0.0147
Std. error	*0.0308*	*0.0313*	*0.0312*	*0.0303*	*0.0291*	*0.0306*	*0.0311*	*0.0311*	*0.0302*	*0.0289*	*0.0372*	*0.0361*	*0.0365*	*0.0351*	*0.0342*
Log(GDP)	-0.0026	-0.0028	-0.0034	-0.0036	-0.0034	-0.0024	-0.0027	-0.0033	-0.0035	-0.0034	-0.0025	-0.0029	-0.0026	-0.0025	-0.0030
Std. error	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0013*	*0.0013*	*0.0015*	*0.0015*	*0.0014*
Priv Credit/GDP	0.0025	0.0075	0.0112	0.0143	0.0252	0.0035	0.0086	0.0126	0.0157	0.0269	0.0068	0.0126	0.0093	0.0147	0.0265
Std. error	*0.0097*	*0.0097*	*0.0093*	*0.0092*	*0.0089*	*0.0098*	*0.0098*	*0.0095*	*0.0093*	*0.0090*	*0.0112*	*0.0110*	*0.0107*	*0.0103*	*0.0108*
MCAP/GDP	-0.0107	-0.0158	-0.0191	-0.0206	-0.0295	-0.0109	-0.0159	-0.0190	-0.0205	-0.0297	-0.0081	-0.0121	-0.0064	-0.0083	-0.0204
Std. error	*0.0054*	*0.0052*	*0.0047*	*0.0043*	*0.0046*	*0.0055*	*0.0053*	*0.0048*	*0.0044*	*0.0047*	*0.0068*	*0.0066*	*0.0058*	*0.0056*	*0.0077*
ln(# of stocks)	0.0043	0.0051	0.0057	0.0058	0.0062	0.0044	0.0053	0.0059	0.0060	0.0063	0.0051	0.0059	0.0063	0.0060	0.0059
Std. error	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0011*	*0.0015*	*0.0015*	*0.0017*	*0.0017*	*0.0016*
Turnover	0.0173	0.0133	0.0130	0.0125	0.0088	0.0168	0.0133	0.0125	0.0124	0.0090	0.0161	0.0128	0.0049	0.0041	0.0057
Std. error	*0.0057*	*0.0055*	*0.0056*	*0.0052*	*0.0054*	*0.0057*	*0.0056*	*0.0057*	*0.0053*	*0.0055*	*0.0068*	*0.0062*	*0.0050*	*0.0046*	*0.0052*
Official Liberalization Indicator	0.0135	0.0119	0.0114	0.0107	0.0073	0.0123	0.0116	0.0118	0.0111	0.0081	0.0142	0.0138	0.0100	0.0072	0.0072
Std. error	*0.0034*	*0.0035*	*0.0036*	*0.0036*	*0.0034*	*0.0032*	*0.0033*	*0.0034*	*0.0034*	*0.0033*	*0.0046*	*0.0046*	*0.0044*	*0.0042*	*0.0044*

Table 9

Regional Liberalization and growth controling for macroeconomic, banking and stock market development control variables

	Horizon in years														
	k = 1	2	3	4	5	k = 1	2	3	4	5	k = 1	2	3	4	5
Sample: 30 countries	Weighting matrix II					Weighting matrix III					Weighting matrix IV				
1981-1997															
Govt/GDP	-0.1364	-0.1475	-0.1425	-0.1414	-0.1555	-0.1376	-0.1475	-0.1407	-0.1416	-0.1520	-0.1509	-0.1565	-0.1584	-0.1594	-0.1440
Std. error	*0.0334*	*0.0332*	*0.0329*	*0.0316*	*0.0298*	*0.0336*	*0.0336*	*0.0329*	*0.0315*	*0.0294*	*0.0400*	*0.0399*	*0.0403*	*0.0400*	*0.0395*
TRADE/GDP	0.0263	0.0338	0.0389	0.0396	0.0403	0.0261	0.0340	0.0384	0.0394	0.0386	0.0299	0.0360	0.0372	0.0337	0.0280
Std. error	*0.0074*	*0.0074*	*0.0074*	*0.0071*	*0.0065*	*0.0074*	*0.0075*	*0.0074*	*0.0071*	*0.0064*	*0.0096*	*0.0095*	*0.0097*	*0.0097*	*0.0098*
Inflation	-0.0007	0.0002	0.0006	0.0008	0.0006	-0.0007	0.0002	0.0006	0.0007	0.0005	-0.0005	0.0003	0.0006	0.0007	0.0005
Std. error	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*	*0.0009*	*0.0008*	*0.0007*	*0.0006*	*0.0006*	*0.0007*	*0.0007*	*0.0006*	*0.0005*	*0.0005*
Enrollment	0.0592	0.0296	0.0063	0.0015	-0.0198	0.0549	0.0235	0.0042	0.0010	-0.0093	0.0208	0.0013	-0.0089	0.0007	0.0133
Std. error	*0.0309*	*0.0311*	*0.0307*	*0.0293*	*0.0271*	*0.0306*	*0.0307*	*0.0305*	*0.0294*	*0.0279*	*0.0378*	*0.0370*	*0.0368*	*0.0356*	*0.0353*
Log(GDP)	-0.0026	-0.0025	-0.0028	-0.0030	-0.0028	-0.0024	-0.0024	-0.0028	-0.0030	-0.0029	-0.0026	-0.0029	-0.0030	-0.0028	-0.0028
Std. error	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0011*	*0.0010*	*0.0010*	*0.0011*	*0.0011*	*0.0011*	*0.0014*	*0.0014*	*0.0014*	*0.0014*	*0.0014*
Priv Credit/GDP	0.0042	0.0087	0.0116	0.0144	0.0260	0.0050	0.0095	0.0123	0.0145	0.0256	0.0074	0.0125	0.0176	0.0222	0.0260
Std. error	*0.0098*	*0.0097*	*0.0094*	*0.0092*	*0.0088*	*0.0098*	*0.0098*	*0.0094*	*0.0092*	*0.0088*	*0.0115*	*0.0114*	*0.0112*	*0.0110*	*0.0111*
MCAP/GDP	-0.0112	-0.0159	-0.0187	-0.0197	-0.0293	-0.0114	-0.0159	-0.0186	-0.0197	-0.0290	-0.0084	-0.0120	-0.0143	-0.0145	-0.0203
Std. error	*0.0054*	*0.0052*	*0.0047*	*0.0043*	*0.0047*	*0.0055*	*0.0053*	*0.0047*	*0.0043*	*0.0046*	*0.0069*	*0.0068*	*0.0065*	*0.0062*	*0.0080*
ln(# of stocks)	0.0044	0.0052	0.0057	0.0059	0.0066	0.0045	0.0053	0.0058	0.0058	0.0063	0.0052	0.0059	0.0062	0.0059	0.0058
Std. error	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0010*	*0.0015*	*0.0015*	*0.0016*	*0.0016*	*0.0016*
Turnover	0.0179	0.0147	0.0148	0.0142	0.0113	0.0175	0.0147	0.0145	0.0144	0.0120	0.0162	0.0127	0.0110	0.0087	0.0058
Std. error	*0.0057*	*0.0055*	*0.0057*	*0.0054*	*0.0058*	*0.0057*	*0.0055*	*0.0057*	*0.0054*	*0.0058*	*0.0069*	*0.0063*	*0.0061*	*0.0056*	*0.0054*
Official Liberalization Indicator (Latin)	0.0154	0.0089	0.0044	0.0009	-0.0009	0.0136	0.0081	0.0048	0.0014	-0.0004	0.0161	0.0137	0.0102	0.0058	0.0037
Std. error	*0.0074*	*0.0084*	*0.0085*	*0.0081*	*0.0085*	*0.0073*	*0.0084*	*0.0085*	*0.0082*	*0.0085*	*0.0078*	*0.0078*	*0.0080*	*0.0079*	*0.0079*
Official Liberalization Indicator (Non-Latin)	0.0125	0.0108	0.0108	0.0110	0.0092	0.0117	0.0107	0.0114	0.0116	0.0095	0.0135	0.0138	0.0145	0.0116	0.0088
Std. error	*0.0034*	*0.0035*	*0.0037*	*0.0038*	*0.0037*	*0.0033*	*0.0034*	*0.0037*	*0.0038*	*0.0038*	*0.0053*	*0.0053*	*0.0054*	*0.0053*	*0.0053*

Appendix Table A

Monte Carlo Structure

Cross Sectionally Restricted VAR used in Monte Carlo for constructing control variables.

Dependent Variable

	Govt/GDP	TRADE/GDP	Inflation	Enrollment	Priv Credit/GDP	MCAP/GDP	ln(# of stocks)	Turnover	Standard error of regressions
Govt/GDP	0.7988	-0.1783	-2.3019	-0.0852	0.1893	-0.1034	0.2191	0.3057	0.0140
Std. error	*0.0277*	*0.1190*	*4.0191*	*0.0423*	*0.1313*	*0.3332*	*0.4771*	*0.3251*	
TRADE/GDP	-0.0167	0.8419	0.2663	0.0202	-0.0103	0.3277	0.0275	0.0625	0.0600
Std. error	*0.0072*	*0.0310*	*1.0478*	*0.0110*	*0.0342*	*0.0869*	*0.1244*	*0.0848*	
Inflation	0.0002	-0.0007	0.4115	0.0001	-0.0073	-0.0005	-0.0038	-0.0007	0.1727
Std. error	*0.0003*	*0.0012*	*0.0413*	*0.0004*	*0.0013*	*0.0034*	*0.0049*	*0.0033*	
enrollment	0.0450	-0.1816	1.4580	0.7489	0.1481	-0.2998	0.2667	0.1919	0.0213
Std. error	*0.0176*	*0.0755*	*2.5479*	*0.0268*	*0.0832*	*0.2112*	*0.3024*	*0.2061*	
Priv Credit/GDP	0.0014	0.0711	3.7194	-0.0149	0.8204	0.0791	0.0378	-0.0271	0.0661
Std. error	*0.0058*	*0.0249*	*0.8395*	*0.0088*	*0.0274*	*0.0696*	*0.0997*	*0.0679*	
MCAP/GDP	0.0018	0.0358	-1.0816	0.0158	0.0640	0.6374	0.1365	0.0954	0.1679
Std. error	*0.0035*	*0.0148*	*0.5005*	*0.0053*	*0.0163*	*0.0415*	*0.0594*	*0.0405*	
ln(# of stocks)	0.0043	0.0310	0.2683	0.0091	0.0158	0.0403	0.4857	0.0966	0.1638
Std. error	*0.0032*	*0.0136*	*0.4579*	*0.0048*	*0.0150*	*0.0380*	*0.0543*	*0.0370*	
Turnover	-0.0029	-0.0018	-0.1983	-0.0039	0.0124	0.0109	0.0633	0.8694	0.2404
Std. error	*0.0016*	*0.0067*	*0.2246*	*0.0024*	*0.0073*	*0.0186*	*0.0267*	*0.0182*	

Estimated using Pooled OLS

Cross Sectionally Restricted MA coefficient used in Monte Carlo for constructing residuals

	MA(1)	MA(2)	MA(3)	MA(4)
k = 2	0.778			
Std. error	*0.043*			
k = 3	0.786	0.494		
Std. error	*0.166*	*0.142*		
k = 4	0.695	0.498	0.337	
Std. error	*0.186*	*0.155*	*0.156*	
k = 5	0.900	0.685	0.317	0.008
Std. error	*0.289*	*0.301*	*0.339*	*0.294*

Estimated using QMLE

Appendix Table B
Monte Carlo Analysis

MONTE CARLO: 1000 Replications
Weighting Matrix IV

Coefficient on Liberalization Indicator

	Horizon in years k = 1	2	3	4	5
Mean	0.0000	-0.0002	0.0000	0.0003	0.0002
Median	0.0001	-0.0002	0.0001	0.0002	0.0003
Std. Dev.	0.0035	0.0047	0.0050	0.0053	0.0054
Skewness	0.0312	0.0099	0.0539	0.0363	-0.1494
Kurtosis	3.0587	3.0957	3.1887	2.8061	3.0049
2.50%	-0.0069	-0.0092	-0.0099	-0.0101	-0.0112
97.50%	0.0065	0.0092	0.0103	0.0105	0.0105
Jarque-Bera	0.3056	0.3976	1.9689	1.7873	3.7216
Probability	0.8583	0.8197	0.3737	0.4092	0.1555

T-statistic on Null Hypothesis

	Horizon in years k = 1	2	3	4	5	N(0,1)
Mean	-0.0050	-0.0426	-0.0018	0.0607	0.0362	0.000
Median	0.0373	-0.0486	0.0142	0.0355	0.0605	0.000
Std. Dev.	1.0169	1.1727	1.1301	1.1443	1.1404	1.000
Skewness	0.0355	-0.0248	0.0015	0.0768	-0.1244	0.000
Kurtosis	3.0170	3.2067	3.1956	2.7769	3.0323	3.000
2.50%	-1.9710	-2.3223	-2.3009	-2.1631	-2.2771	-1.960
97.50%	1.9040	2.2696	2.2023	2.2280	2.3086	1.960
Jarque-Bera	0.2220	1.8831	1.5949	3.0569	2.6235	
Probability	0.8950	0.3900	0.4505	0.2169	0.2694	

MONTE CARLO: 1000 Replications
Weighting Matrix III

Coefficient on Liberalization Indicator

	k = 1	2	3	4	5
Mean	0.0001	-0.0001	-0.0001	0.0002	0.0001
Median	0.0001	-0.0001	-0.0001	0.0001	0.0000
Std. Dev.	0.0025	0.0034	0.0035	0.0034	0.0036
Skewness	-0.0055	-0.0992	-0.0667	0.0280	0.0206
Kurtosis	3.0509	2.9859	3.0140	2.9323	3.0311
2.50%	-0.0049	-0.0067	-0.0074	-0.0064	-0.0070
97.50%	0.0049	0.0064	0.0070	0.0068	0.0069
Jarque-Bera	0.1131	1.6469	0.7503	0.3216	0.1111
Probability	0.9450	0.4389	0.6872	0.8515	0.9460

T-statistic on Null Hypothesis

	k = 1	2	3	4	5	N(0,1)
Mean	0.0339	-0.0661	-0.0219	0.0953	0.0340	0.000
Median	0.0660	-0.0470	-0.0372	0.0531	0.0151	0.000
Std. Dev.	1.0888	1.6476	1.6387	1.7479	1.7790	1.000
Skewness	-0.0294	-0.0790	-0.0266	-0.0166	0.0675	0.000
Kurtosis	3.0403	2.9542	3.0376	3.0797	2.8988	3.000
2.50%	-2.0612	-3.2345	-3.2844	-3.2361	-3.2532	-1.960
97.50%	2.1193	3.1524	3.2914	3.1836	3.2184	1.960
Jarque-Bera	0.2122	1.1282	0.1771	0.3107	1.1869	
Probability	0.8993	0.5689	0.9153	0.8561	0.5524	

MONTE CARLO: 1000 Replications
Weighting Matrix II

Coefficient on Liberalization Indicator

	k = 1	2	3	4	5
Mean	-0.0001	0.0001	0.0000	0.0003	0.0002
Median	0.0000	0.0000	0.0000	0.0000	0.0000
Std. Dev.	0.0027	0.0049	0.0065	0.0070	0.0077
Skewness	-0.0193	0.2424	0.1579	-0.0837	0.0925
Kurtosis	3.5391	3.9869	3.2411	2.9376	2.8046
2.50%	-0.0040	-0.0099	-0.0126	-0.0138	-0.0152
97.50%	0.0039	0.0108	0.0132	0.0140	0.0162
Jarque-Bera	12.1708	50.3718	6.5785	1.3312	3.0155
Probability	0.0023	0.0000	0.0373	0.5140	0.2214

T-statistic on Null Hypothesis

	k = 1	2	3	4	5	N(0,1)
Mean	-0.0002	0.0250	-0.0168	0.0891	0.1017	0.0000
Median	0.0000	0.0000	-0.0188	0.0817	0.0688	0.0000
Std. Dev.	1.2006	1.6480	1.6548	1.8059	1.8076	1.0000
Skewness	-0.1564	-0.0301	0.0712	-0.0563	0.1424	0.0000
Kurtosis	3.7899	3.5564	3.3945	3.1604	3.8650	3.0000
2.50%	-2.4329	-3.2895	-3.2882	-3.4898	-3.3569	-1.9600
97.50%	2.3986	3.2754	3.2947	3.4111	3.5064	1.9600
Jarque-Bera	30.0764	13.0491	7.3291	1.5998	34.5577	
Probability	0.0000	0.0015	0.0256	0.4494	0.0000	