NBER WORKING PAPER SERIES

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Working Paper 8245
http://www.nber.org/papers/w8245

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
April 2001

We appreciate the helpful comments of Peter Henry, Graciela Kaminsky, Je®rey Wurgler, and the participants at the Conference on Financial Systems and Crises at the Yale School of Management. The views expressed are those of the authors, and do not necessarily re˚ect the views of the Federal Reserve System. Send correspondence to: Campbell R. Harvey, Fuqua School of Business, Duke University, Durham, NC 27708. Phone: +1 919.660.7768, E-mail: cam.harvey@duke.edu . The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research.

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NBER Working Paper No. 8245
April 2001
JEL No. O1, O4, G0, G1, F0, F3

ABSTRACT

We show that equity market liberalizations, on average, lead to a one percent increase in annual real economic growth over a five-year period. The liberalization effect is not spuriously accounted for by macro-economic reforms and does not reflect a business cycle effect. Although financial liberalizations further financial development, measures of financial development fail to fully drive out the liberalization effect. The investment/GDP ratio increases post liberalization, with the investment partially financed by foreign capital inducing worsened trade balances. Differentiating across liberalizing countries, a large secondary school enrollment, a small government sector and an Anglo-Saxon legal system tend to enhance the liberalization effect. Finally, the conditional convergence effect is larger once financial liberalization is accounted for.

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1 Introduction

One of the most fundamental national policy decisions of the past 25 years has been the financial liberalization of a country's equity market. We will present evidence, some dramatic, that financial liberalizations are important for economic growth prospects. One might think that financial liberalizations may be subsumed by other variables that are commonly used in the economic growth literature. We find that this is not the case. Indeed, one could view much of our paper as an exercise to drive out the liberalization effect. In the end, we cannot.

In order to investigate the impact of liberalization on economic growth, we need to understand how our contribution fits into the recent economic development literature. Much of the current research on economic growth has been framed in the context of the debate about 'convergence' between low-income and high-income countries. Early investigations found that there was a positive unconditional relation between the initial level of income and subsequent growth - which suggested that wealthy countries would enjoy higher growth rates in the future, i.e. convergence did not appear to materialize. Barro (1997a) and Barro and Sala-i-Martin (1995) argue that this type of exercise is misspecified. It is important to control for determinants of the long-run level of per capita GDP. That is, if one holds constant initial levels of human capital and other determinants of the steady state level of per capita GDP, poorer countries do grow faster per capita than wealthy countries. This is called 'conditional convergence.' Sachs and Warner (1995a) emphasize that policy choices, such as respect for private property rights and open international trade, are particularly important determinants of long-run growth prospects. This suggests that poor countries can become part of the 'convergence club' by implementing appropriate policies.

Recently, endogenous growth theory has sought to potentially explain why rich countries may continue to outgrow poorer countries [see for example Aghion and Hewitt (1992), Rebelo (1991)], since technological advance exhibits increasing returns to scale. In these models, government policies also play a large role ensuring a climate in which the creation of ideas and technological advances can thrive. In his seminal paper on endogenous economic growth, Lucas (1988) wrote: "Is there some action the government of India could take that would

lead the Indian economy to grow like Indonesia's or Egypt's? If so, what, exactly? The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else."

Our paper is related to the literature on policy impacting economic growth. We examine one of the most profound policy reforms: the financial liberalization process of developing economies' equity markets. There are many ways in which the liberalization process may contribute to increased growth. Improved risk sharing may lower the cost of capital enticing additional investment. Improved risk sharing may also lead to investments in riskier higher expected return projects [see Obstfeld (1994)], but it may also lead to lower precautionary savings and reduce growth [Devereux and Smith (1994)]. Open capital markets may mean more efficient markets, and generally increase financial development. There is now a large literature documenting how improved financial intermediation can enhance growth [see e.g. Greenwood and Jovanovic (1990); Bencivenga and Smith (1991), St.-Paul (1992) and Bencivenga, Smith and Starr (1996)]. Just as the adoption of better policies and an improvement of institutions permits countries to benefit from frontier technology (Klenow and Rodriguez-Clare (1997), financial liberalization may permit countries to benefit from frontier financial technology that the endogenous growth literature has shown may lead to increased growth.

Although there has been substantial research on the relation between financial development and economic growth, both the finance and development literature lacks a comprehensive analysis of the effects of the liberalization process on economic growth. Levine and Zervos (1995) include a market integration measure in their cross-sectional growth regression, but it is not clear how the measure relates to the liberalization process and the regression omits the temporal dimension of financial liberalization. Bekaert and Harvey (2000) and Henry (2000a,b) find that liberalizations have tended to reduce the cost of capital and increase investment. Sachs and Warner (1995a) find that one of the openness variables most significantly affecting economic growth is the black market exchange rate premium, but this measure is probably correlated with the existence of capital controls (Bekaert (1995)), and hence related to capital market liberalizations. Finally, Bekaert, Harvey and Lundblad

(2000) establish that economic growth increases after liberalizations in 30 emerging markets, even when controlling for a number of standard determinants of economic growth.

Our study addresses four questions using a large cross-section of countries similar to the set of countries used in the empirical growth literature.

(i) Did financial liberalizations spur economic growth?

Our paper begins by adding a financial liberalization indicator variable to a standard growth regression. Since financial liberalization has a temporal dimension, our econometric methodology uses a General Method of Moments estimator (Hansen (1982)) on panel data with overlapping observations. We find a significant liberalization effect that is distinct from the impact of financial development.

(ii) How did liberalization increase growth?

Using aggregate data, it is difficult to establish how liberalization leads to increased growth. However, our analysis provides some new insights. First, we decompose GDP into the proportions due to investment, consumption, government and the trade sector. We find that investment to GDP rises after capital market liberalizations. In most of our samples, we find that the consumption to GDP ratio decreases and the trade balance becomes more negative. There is little evidence that the size of the government sector changes around financial liberalization. Our analysis suggests that the capital flowing in after liberalization was not squandered on increased consumption as has been claimed in the literature on the recent Mexico and South-East Asian crises.

Second, increased investment may be due to better growth opportunities and/or a lower cost of capital. We introduce some cost of capital proxies to our regressions to investigate whether they drive out the liberalization effect, but they fail to do so.

Third, if markets are imperfect and financing constraints exist (see e.g. Hubbard (1998) and Gilchrist and Himmelberg (1998)), external finance is more costly than internal finance, and investment will be sensitive to cash flow. Financial liberalization may affect economic growth by reducing capital market imperfections, which might in turn reduce the external finance premium. Rajan and Zingales (1998) show that financially constrained industries

grow faster in more financially developed countries, whereas Love (2000) shows that the sensitivity of investment to cash flow, an indicator of financing constraints, depends negatively on financial development. Laeven (2000) shows that liberalization of the banking sector reduces the imperfections firms face when dealing with financial markets. Equity market liberalization has a double effect, it directly reduces financing constraints in the sense that more foreign capital becomes available, and foreign investors may insist on better corporate governance that indirectly reduces the wedge between internal finance and external finance. Hence, the cost of capital may go down because of improved risk sharing or because of the reduction in financing constraints or both. Although it is difficult to distinguish between the two effects, we shed indirect light on this in two ways. First, we introduce an instrument for imperfections in capital markets using the insider trading rule dummy developed by Bhattacharya and Daouk (2000). The inclusion of this variable does not subsume the liberalization effect. Second, we suspect that external financing constraints will be more likely to be relaxed through foreign investment when the financial system is Anglo-Saxon (La Porta et al. (1997, 1998)). Hence, when we examine country-specific liberalization effects (see iii), we investigate whether the magnitude of the liberalization effect depends on the legal system.

(iii) What drives cross-country differences in the liberalization effect?

As is typical in cross-country growth regressions, the coefficient on liberalization measures an average growth effect. However, local conditions or policies will likely cause some deviation from the average liberalization effect. We investigate whether the presence of schooling, a small government sector, the legal system [see La Porta et al. (1997, 1998)], and democratic institutions help differentiate the magnitude of the liberalization effect across countries. Alternatively, the strength of the liberalization effect may be due to forces outside the control of the government, such as the diversification potential of the local equity market for world investors. We test the importance of this channel as well. Finally, it is difficult to measure how comprehensive liberalizations are across countries, but we attempt to measure their intensity by their effects on capital flows.

(iv) What is the effect of liberalization on convergence?

One of the main debating points in the growth literature is the rate of convergence between poor and rich countries. Barro and Sala-i-Martin (1992) show that relatively homogeneous countries or regions which should have similar long-run growth levels (such as the OECD countries or American states) display much stronger convergence that the countries in the world at large. Sachs and Warner (1995a) show that convergence is faster among open economies (in terms of trade policy). Our estimates show that adding the liberalization variable increases the convergence coefficient in our largest sample by almost one third. Finally, a large difference between the neoclassical models and endogenous growth theory is that endogenous growth theory is likely to imply divergence of income levels across time. Therefore, we also investigate how the drive towards liberalization over the last two decades has affected the dispersion of incomes across countries.

The paper is organized as follows. The second section describes both the data we use and the econometric framework. Some summary statistics are presented in this section. The third part of the paper examines the determinants of economic growth and the role of financial liberalizations. The fourth section explores the channels of growth. Next, we examine country specific liberalization effects. Then, we summarize our results on convergence. Some concluding remarks are offered in the final section.

2 Empirical Model and Data Description

2.1 *Econometric framework*

Define the logarithmic growth in real GDP per capita for country i between t and $t+k$ as follows:

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

where $y_{i,t} = \ln(\frac{\text{GDP}_{i,t}}{\text{POP}_{i,t}} / \frac{\text{GDP}_{i,t-1}}{\text{POP}_{i,t-1}})$ and N is the number of countries in our sample. Let the initial level of log GDP per capita be denoted as Q_{it} and the country's long-run (steady state) per capita GDP as Q_i^*. Taking a first-order approximation to the neoclassical growth

model [see e.g. Mankiw (1995)], we can derive: $y_{i,t+k,k} = -\lambda[Q_{it} - Q_i^*]$, where λ is a positive convergence parameter. The literature often implicitly models Q_i^* as a linear function of a number of structural variables such as the initial level of human capital.[1] If human capital is very low in a particular poor country, then this poor country need not grow faster than a rich country with much higher human capital; it depends on whether its initial GDP level is higher or lower than its long-run level appropriate for this level of human capital. Hence, a prototypical growth regression can be specified as

$$y_{i,t+k,k} = -\lambda Q_{i,t} + \gamma' \mathbf{X}_{it} + \epsilon_{i,t+k,k}, \tag{2}$$

where $\mathbf{X}_{it}$ are the variables controlling for different levels of the long-run per capita GDP level across countries. Our main addition to the literature is to examine the effect of adding a financial liberalization, in particular equity market liberalization variable, $\text{Lib}_{i,t}$, to the growth regression.

There are a number of important methodological considerations. First, most of the empirical growth literature relies on purely cross-sectional regressions, where the structural variables $\mathbf{X}_i$ are often taken contemporaneously with the growth rates y_i. The estimation methods are OLS or instrumental variables, the latter typically using past levels of the variables as instruments.[2] An example of this approach is Sachs and Warner (1995a,b) who try to assess the effect of trade openness on growth using this regression framework. However, in our context, this methodology misses the important temporal dimension of the liberalization process.[3] Since so many countries recently liberalized their equity markets, most of the power of our test may derive from the temporal dimension. Hence, we use panel techniques, combining time-series with cross-sectional information.

Islam's (1995) main motivation in using panel techniques is the fact that allowing for fixed effects will mitigate the omitted variable problem that plagues the usual regression setup.

[1] In the basic neo-classical model, long-run growth is zero; in generalized versions there is growth, equal across all countries, driven by technological progress (see Jones (2000)).

[2] An exception is Frankel and Romer (1999).

[3] Slaughter (1998) criticizes the Sachs and Warner (1995a) work on trade liberalization for missing the intertemporal dimension.

Harrison (1996) uses panel techniques to look at the effect of trade policy on economic growth, finding weaker results than Sachs and Warner (1995b). Caselli, Esquivel and Lefort (1996) criticize the endogeneity problems that plague many standard regressions. They use a GMM instrumental panel estimator on differenced data. Barro (1997c) criticizes these methods for losing critical cross-sectional information by differencing and allowing measurement error dominate the results. He demonstrates how SUR panel results (albeit with only three time series observations) closely replicate the cross-sectional results, and are quite different from the panel regressions with fixed effects. Our method attempts to combine the best of both of these techniques.

Our main regression is specified as:

$$y_{i,t+k,t} = \beta Q_{i,1980} + \gamma' \mathbf{X}_{i,t} + \alpha \text{Lib}_{i,t} + \epsilon_{i,t+k,k} \tag{3}$$

where $Q_{i,1980}$ represents the logarithm of GDP in 1980.

To maximize the time-series content in our regression, we use overlapping data and deal with the resulting moving average component in the residuals by adjusting the standard errors as a cross-sectional extension to Newey and West (1987). However, we do not include fixed effects, nor do we first-difference the data – we simply estimate a level regression. Since the time-series observations are over a relatively short time span, we include initial log GDP per capita (in 1980), $Q_{i,1980}$, as one of the regressors. This avoids the econometric problems introduced by resetting the initial GDP for every time-series observation. When we examine convergence as implied by our estimates, we examine robustness to this particular assumption using a number of alternative specifications.

Note that our regressors are all pre-determined. We identify the parameters by assuming $E[g_{t+k}] = 0$, with

$$g_{t+k} = \begin{bmatrix} \epsilon_{1,t+k,k} \otimes \mathbf{x}_{1,t} \\ \vdots \\ \epsilon_{N,t+k,k} \otimes \mathbf{x}_{N,t} \end{bmatrix} \tag{4}$$

where $\mathbf{x}_{i,t} = [Q_{i,1980}, \mathbf{X}'_{i,t}, \text{Lib}_{i,t}]'$. The estimator of $\theta = [\beta, \gamma', \alpha]'$ can then be written as:

$$\hat{\theta} = [(\mathbf{X}'\mathbf{Z})\mathbf{S}_T^{-1}(\mathbf{Z}'\mathbf{X})]^{-1}[(\mathbf{X}'\mathbf{Z})\mathbf{S}_T^{-1}(\mathbf{Z}'\mathbf{Y})] \tag{5}$$

where, given $\mathbf{X_i} = [\mathbf{x'_{i,t}}]$ and $\mathbf{Y_i} = [y_{i,t+k,k}]$,

$$\mathbf{X} = \begin{bmatrix} \mathbf{X_1} \\ \vdots \\ \mathbf{X_N} \end{bmatrix}, \mathbf{Z} = \begin{bmatrix} \mathbf{X}_1 & 0 & \cdots & 0 \\ 0 & \mathbf{X}_2 & \cdots & 0 \\ \vdots & & & \\ 0 & 0 & \cdots & \mathbf{X}_N \end{bmatrix} \tag{6}$$

and $\mathbf{S}_T$ is the estimated variance covariance matrix of the sample orthogonality conditions, g_{t+k}, taking all possible autocovariances into account.

This estimator looks like an instrumental variable estimator, but it reduces to pooled OLS under simplifying assumptions on the weighting matrix. A more detailed discussion of this estimator is found in Bekaert, Harvey and Lundblad (2000). Since the system is over-identified, the procedure also yields a natural specification test. In particular, a test of overidentifying restrictions can be constructed as follows:

$$T \cdot [\mathbf{g}'_T \mathbf{S}_T^{-1} \mathbf{g}_T] \sim \chi^2[N(K-1)] \tag{7}$$

where $\mathbf{g}_T = \frac{1}{T} \sum_{t=1}^{T} g_{t+k}$.[4]

Second, growth regressions have been criticized for being contaminated by multicollinearity [see Mankiw (1995), Elliot (1993)]. In a pure cross-sectional regression, the regressors may be highly correlated (highly developed countries score well on all proxies for long-run growth), the data may be measured with error, and every country's observation is implicitly viewed as an independent draw. It is therefore likely that standard errors underestimate the true sampling error. In our panel methods, we can accommodate heteroskedasticity both across countries and across time and correlation between country residuals by choosing the appropriate weighting matrix W. In the tables, we report results using the method that accommodates overlapping observations, groupwise heteroskedasticity but does not allow for temporal heteroskedasticity nor SUR effects. Results reported in the appendix demonstrate that the main results remain largely robust to accommodating these effects. Moreover, Bekaert, Harvey and Lundblad (2000) report a Monte Carlo experiment that shows that for

[4]For simplicity of notation, we do not distinguish between population and sample constructs.

the simplest possible weighting matrix choice standard t-tests are well behaved (are correctly sized) for a sample smaller than the one considered here. For more intricate weighting matrices, including the one used here, there is slight over-rejection at the asymptotic critical values, which should be taken into account in judging the evidence.

Third, we have to choose k. Since our sample is relatively short, starting only in 1980, and many liberalizations only occurred in the 1990s, the use of $k = 10$, which is typical in the literature, is problematic. Whereas Rodriguez and Rodrik (1999) criticize the use of shorter intervals because of the noise introduced by business cycle variation in GDP, both Islam (1995) and Caselli, Esquivel and Lefort (1996) find very similar results using $k = 5$ versus $k = 10$. This motivates us to use $k = 5$ for most of our tables, but we ran the data through for $k = 3$, $k = 7$ and $k = 10$ as well, finding the main results to be resilient to the choice of k. Moreover, in one robustness experiment, we introduce variables controlling for the world business cycle.

Fourth, there is a growing literature on the robustness of variables in standard growth regressions. Levine and Renelt (1991) find that most variables are in a particular sense "fragile." Recently, Dopelhoffer, Miller and Sala-i-Martin (2000) have criticized this study as being too harsh for some of the standard righthand side variables. One danger generated by all the studies trying to find the strongest regressors is that statistical inference is devoid of meaning by data-mining bias. For our purposes, we are primarily interested in the robustness of any effect the liberalization dummy may have on growth. Therefore we start by a simple regression that closely mimics the regression in Barro (1997c).

At first, we exclude the macro-variables in Barro (1997c)[5] and the financial development variables used in studies such as King and Levine (1993a,b) and Atje and Jovanovic (1992) because we want to separately assess whether these variables drive out the liberalization effect. Henry (2000a) and Mathieson and Rojas-Suarez (1992) discuss how policy reforms in

[5]We never include investment/GDP, since, as Levine and Renelt (1991) also admit, the influence on growth of most variables we include as independent variables, works through investment/GDP and it is clearly endogenous. Basically, higher growth can come about by higher investment or by a more efficient resource allocation.

developing countries typically involve domestic macro-reforms (including for example trade openings) and financial market reform so that our equity market liberalization indicator may be partially subsumed by the variables measuring macro-economic performance, trade openness or financial development.

Fifth, perhaps the main methodological issue regarding our sample is the construction of the financial liberalization indicator variable and the question whether liberalization of the equity market is a truly exogenous event or not. Our liberalization indicator builds on the work of Bekaert and Harvey (2000) who consider a number of different definitions of financial liberalization. They examine 'official liberalizations' based on the dates of regulatory changes, as well as the dates by which foreigners could access the local market with closed end funds or ADRs. Bekaert and Harvey also examine a date implied by a sharp upward movement in equity capital flows. We choose to focus on the 'official liberalization' date. We have augmented Bekaert and Harvey (2000) by adding the inclusion date for a number of markets that the International Finance Corporation recently added to the IFC composite index. We also added liberalization dates for three developed countries: Japan, Spain and New Zealand (all dates can be found in Appendix Table A1). Although timing capital market reforms is prone to errors, the use of annual data helps in that small timing errors are inconsequential. Nevertheless, we conduct several robustness experiments to increase our confidence that the liberalization effect is not spurious.

As with the effect of financial development on growth, endogeneity issues loom large. Is the liberalization decision an exogenous political decision, or do countries liberalize when they expect improved growth opportunities? These concerns are highly relevant for countries that joined a free market area like Spain and Portugal in the European Union, where membership simultaneously requires relaxing capital controls and favorable growth conditions. Such liberalizations are rare in our sample (Spain and perhaps Mexico) and we believe, as do Sachs and Warner (1995a) for trade liberalizations, that we can take the liberalization decision as an exogenous event. Our test design definitely suffers less from endogeneity concerns than earlier tests of the links between general financial development and growth. Nevertheless, sections 3.3 and 3.4 consider a number of robustness experiments that further enhance our

confidence that it is liberalization driving growth and not vice versa.

2.2 Data and Summary Statistics

The detailed description of our data is provided in the appendix Table A1. We employ four different data samples, largely determined by data availability. Economic growth rates, the components of GDP (consumption, government, investment and trade), and the official financial liberalization indicator are available for all samples. The samples are divided primarily by control (additional right-hand side) variable availability. Samples I and II, our largest, include 95 and 75 countries, respectively, and employ primarily macroeconomic and demographic data. Samples III and IV, on the other hand, include 50 and 28 countries, respectively, and employ, in addition to the macroeconomic and demographic data, data describing the state of general equity market financial development in each country. Appendix Table A2 describes the different sets of control variables that we use.

Table 1 (panel A) presents evidence on the rates of economic growth averaged over varying horizons both before and after the official equity market liberalization date for those countries that undergo liberalization in our sample. Regardless of the horizon, most countries exhibit larger average real GDP growth after liberalization. For example, 16 of 22 countries exhibit larger real economic growth in the five years after liberalization than in the five years before, the difference being 1.6% on average.

Panel B of Table 1 presents some summary information about the cross-sectional differences between countries that have always been liberalized (17 developed countries) and those that have never experienced a liberalization (51 countries). The differences are stark. The average real growth rate for the countries that have always been liberalized (in our sample) is about 2.3%. The growth rate for the countries that have never liberalized is approximately zero.

However, this type of analysis is unconditional in that it does not control for other influences on growth. Next, we will examine the relationship between liberalization and growth after controling for a range of demographic, economic and financial conditions.

3 Liberalization and Economic Growth

3.1 *The liberalization effect in a classic growth regression*

Panel A of Table 2 describes the results of a standard growth regression which includes a constant, initial GDP (1980), government consumption to GDP, secondary school enrollment, population growth, and life expectancy as explanatory variables. We present results for $k = 5$, for the four samples.

The results are broadly consistent with the previous literature. Initial GDP enters with a very significant negative coefficient suggesting that low initial GDP levels imply higher growth rates - conditional on the other variables. This is the so-called conditional convergence result. In most of the samples, the secondary school enrollment variable is significant and positive suggesting that countries with high human capital will benefit from higher growth rates. Similarly, life expectancy has a positive coefficient suggesting that long life expectancy is associated with higher economic growth. Barro (1997a,c) documents analogous results for these variables. Population growth has a significantly negative coefficient in the regression. It is also the case that countries with large government sectors are more likely to have lower growth rates - although this is not significant in all the samples. This result is consistent with Barro and Sala-i-Martin (1995).

The introduction of the liberalization indicator to the classic growth regression in panel B of Table 2 does not significantly change the coefficients nor the significance of the usual macro economic variables. However, the liberalization coefficient is positive and significant in all four samples and four to nine standard errors from zero. For example, in sample III (50 countries), the liberalization coefficient is 0.0113 and five standard errors from zero. This suggests that, on average, a liberalization is associated with a 1.13% increase in the real per capita growth rate in GDP. The effect ranges from 0.95% in sample I to 1.30% in sample IV. The one coefficient that does change significantly relative to its standard error in three of the four samples is the coefficient on intial GDP. We find stronger evidence of conditional convergence, once we control for liberalization. We further analyze this result in Section 6.

We also conducted the test of the over-identifying restrictions, described in equation

(7). The test does not reject for any of the samples with p-values over 0.6. When the liberalization indicator is introduced, the p-values increase even further. Consequently, the regressions appear well-specified and we do not report the test for our other specifications.

3.2 *Robustness*

At this point, we have introduced financial liberalization in the standard cross-sectional growth regression frequently examined in macroeconomics. We find that liberalization appears to increase growth by 1.1% a year. How robust is this result?

We carry out a number robustness experiments. First, we use an alternative set of liberalization dates from Bekaert and Harvey (2000). This set of dates is what they refer to as the 'first sign' dates. This is the earliest of the dates representing: official liberalizations, first American Depositary Receipt (ADR) listing and first country fund launch. The results in panel A of Table 3 suggest that both the coefficients on the main control variables and the coefficient on the liberalization indicator are robust to using the 'first sign' dates.

Another robustness exercise focuses on the role of Latin American countries. Indeed, it is important to know whether the impact of liberalization is simply a local rather than global phenomenon. One might argue that since many of the liberalizations occurred in the late 1980s and early 1990s and given the poor economic performance of Latin American countries during the debt crises in the 1980s, that most of the positive impact of liberalizations is being driven by Latin American economies performing better in the 1990s. To test this, we augment our regressions with an indicator variable for Latin American countries to see if the liberalization effect holds for both Latin American countries and non-Latin American countries. The results presented in panel B of Table 4 are surprising. For both Latin American and non-Latin American countries, the liberalization effect is positive and significant. What is striking is that both the statistical and economic impact of liberalizations is stronger in non-Latin American countries. Hence, we can safely conclude that our results are not being driven by a small number of Latin American countries.

Given that our growth horizon is fairly short (five years) and that the financial liberalizations are clustered during a particular period, we investigated, following Henry (2000b),

whether our result was due to a correlation with the world business cycle. Panel C adds the lagged OECD GDP growth rate as well as the lagged GDP-weighted world real interest rate to the benchmark regression model. While the world growth and interest rate variable enter the regression significantly in some of our samples, there is little impact on the liberalization coefficients. The lagged interest rate variable also controls for "capital push" effects. It has been argued that low interest rates in the U.S. in the early nineties led to massive U.S. capital outflows, much of it benefitting emerging markets. Since many liberalization dates are close to this period of low interest rates, the liberalization effect may have partially captured this exogenous capital flow effect. However, the interest rate variable does not even have the right sign. Panel D contains a stronger test for a spurious business cycle effect in that the contemporaeous values of the world growth and interest rate variables are included. While the world real interest rate is only significant in the largest sample, the contemporaneous OECD growth is strongly associated with country growth. It enters the regression with coefficients more than four standard errors from zero. However, the inclusion of this variable has no significant impact on the liberalization coefficients. Indeed, the coefficients in all four samples are slighly higher than the benchmark regression (Table 2) and the standard errors are the same.

The clustering of the liberalization dates towards the end of the sample for a number of countries leads to additional questions. Is it just that developing countries are doing better in the second set of the sample but the actual liberalization and hence the liberalization event itself is immaterial? To address this critique, we conduct a small Monte Carlo analysis that randomizes the liberalization dates across countries.

It is important to realize that our liberalization effect both incorporates a cross-sectional dimension (the growth of liberalized versus closed economies) and a temporal effect (the growth of liberalizing economies after versus before the liberalization). Unreported results suggest that both components are important,[6] therefore, the Monte Carlo fully randomizes

[6]These results are available on request. We considered a regression making all closed economies open and vice versa, leaving the liberalization dates intact, to attempt to differentiate cross-sectional from temporal effects. See also Table 10 for related results.

the liberalization dates. Consistent with proportions in the overall sample (95 countries), there is a 54% chance of being a totally closed economy, a 18% chance of being a totally liberalized economy, and a 28% chance of being a liberalizing economy with a liberalization date corresponding to one of the dates occurring in sample. For each Monte Carlo replication, we draw 95 uniform random numbers on the interval 1 to 95, and randomly assign one of the existing liberalization dummies to each country. Since this is done with replacement, the design only replicates the actual frequencies present in the sample when the number of observations is large. We retain all the other variables for the various countries and we re-run the regression. We repeat this experiment 1000 times. Hence, the regressions have purely random liberalization events but are otherwise identical to the regressions run previously.

Table 4 presents some relevant quintiles of the empirical distribution for the coefficients and for the t-statistics. The first columns confirm the robustness of the other coefficients to the presence of random liberalization events. The final column is the one of interest. It shows that the liberalization effect we find is very unlikely to be a lucky constellation of liberalization dates. The median coefficient is -0.0003 with a t-statistic of 0.13. The 97.5th percentile of the distribution shows a coefficient of 0.0051 and a t-statistic of 3.14. This is well below our estimated coefficient of 0.0095 and t-statistic of 5.84 reported in Table 2. Hence, the empirical p-value is less than 0.001. In fact, none of the simulated samples displays a t-statistic larger than the one found in the data. We interpret the Monte Carlo evidence as showing that the impact of the liberalization indicator is not by chance and not simply associated with the clustering of liberalizations in the late 1980s and 1990s.

We also investigated the sensitivity of our results to the choice of time horizon for economic growth. Our results might be specific to the five year intervals. Appendix Table A3 presents the classic growth regression with the liberalization indicator for four time horizons: three, five, seven and 10 years. For sample III, the coefficient ranges from 0.0082 for the 10-year horizon to 0.0137 for the three year horizon. The coefficients are always more than five standard errors from zero. However, these represent annual growth rates. The total logarithmic growth due to liberalization is obtained by multiplying these coefficients by the growth interval, making the total growth 4.1% over three years, 5.7% over five years, and

8.2% over ten years. Hence, 70% of the liberalization effect on growth takes place in the five years following the liberalization. This suggests that the growth effect is not permanent, a conclusion more consistent with the neoclassical growth model than with endogenous growth theory.

Our final robustness exercise assesses whether our choice of weighting matrix impacted our results (see Appendix Table A4). We examine two additional weighting matrices. Matrix 1 refers to a correction for cross-sectional heteroskedasticity and restricted SUR effects.[7] Weighting matrix 2 refers to a correction for cross-sectional heteroskedasticity (this matrix is used in the main tables). Weighting matrix 3 refers to a simple pooled OLS. Focussing on sample III, we find that the coefficient on the liberalization indicator is slightly smaller with weighting matrix 1 (0.0091 versus 0.0113 reported in text). While the standard error is slightly larger, the coefficient is still almost four standard errors from zero. For sample II however, the liberalization coefficient is positive but not significant. Similarly, the coefficient using weighting matrix 3 is slightly smaller (0.0104 versus 0.0113) but in this case the standard error is much larger than in the base case (0.0034 versus 0.0020 reported in the text). Nevertheless, even with weighting matrix 3, the liberalization effect is statistically significant in all but one of the samples.

3.3 *Macro-economic reforms versus financial liberalizations*

Next, we add two macroeconomic variables to the regression that are often included as regressors in cross-country regressions. The first variable is inflation. Barro (1997a,c) finds a significant negative relation between inflation and economic growth, and finds that the result is primarily due to a strong negative relation between very high inflation rates (over 15%) and economic growth. We include inflation in two different specifications, one in levels and one as a range. The inflation spread is the high-low range (subtract lowest value from highest) over the previous five years of inflation rates and proxies for the inflation variability.[8]

Given that the extreme skewness in inflation is primarily due to inflation in Latin-

[7] Given the small sample and the large number of non-diagnonal terms, we restrict them to be the same.

[8] See Alizadeh, Brandt and Diebold (1999) for an analysis of range based estimators for variability.

American countries, we introduce a dummy for Latin America in both inflation specifications.

Our second variable is a measure of trade openness, the ratio of exports plus imports to GDP. The effect of trade integration and trade liberalization on growth is the subject of a large literature. Dollar (1992), Lee (1993), Edwards (1998), Sachs and Warner (1995a) and, more recently, Wacziarg (2000) have established that lower barriers to trade induce higher growth. Rodriguez and Rodrik (1999) have recently criticized these studies on many grounds. However, Rodriguez and Rodrik primarily question whether trade policy rather than trade volume has affected growth. In our study, we are interested in the effect of financial market liberalization not in testing the impact of trade policy. Indeed, we introduce these variables at this stage because both trade volume and inflation may be affected by macro-economic reforms aimed at stabilizing an economy. That is, the usual economic reform package involves trade reform and inflation-reducing measures. Since such macro-economic reforms are often part of the same reform package that also liberalizes capital controls and opens up the equity market to foreign investment, our liberalization effect may simply be proxying for the macro-economic effect.

Table 5 augments the regressions in Table 2 by adding the trade and inflation variables. In all samples, the coefficient on trade openness is highly significant and positive suggesting countries that are open will have higher growth than countries that are relatively closed. These results are consistent with the case made by Edwards (1998) and Sachs and Warner (1995a).

The results for the inflation variable are mixed. While Barro (1997) finds a consistently negative relation between inflation and economic growth, we find that most of the coefficients on inflation are not significantly different from zero. However, in sample IV (28 countries), inflation has a significantly negative coefficient for non-Latin American countries. The results of the inflation spread variable are often significant with an unexpected positive coefficient.[9]

[9]We also estimated a regression without the Latin American indicator. The coefficient on the single inflation variable was not significantly different from zero. We also considered a regression with dummies for Brazil and Argentina only, the largest outliers in inflation data. Here, we find negative but insignificant coefficients, whereas the effect for Argentina and Brazil is negative and significant.

The addition of the two reform variables has a dramatic impact on the coefficients on the size of the government sector and secondary school enrollments. For example, comparing Table 2 to Table 3, the coefficient on government consumption to GDP is more negative and significant in samples I, II and III but the negative effect of government on GDP is decreased in sample IV and is insigificant in the specification that includes the inflation spread variable. Secondary school enrollment is now only significant in the regression with 28 countries (sample IV). For example, in Table 2 enrollment had a coefficient of 0.0305 in the regression with 95 countries and was four standard errors from zero. In Table 3, the coefficient is 0.0100 and is not significantly different from zero. These results are consistent with Islam (1995) who points out the lack of robustness of the human capital effect on growth. The other coefficients are not affected.

Importantly, the liberalization variable is not impacted by the inclusion of the trade and inflation variables. In Table 2, the coefficient on the liberation indicator is 0.0113 for the 50 country sample. The coefficient is 0.0112 in the regression with the reform variables. The standard error is similar across the two different specifications with the coefficient being about five standard errors from zero. Only in sample IV does the liberalization effect visibly decrease from 1.3% to around 0.80%.

3.4 *Financial development versus financial liberalization*

There is a significant literature that studies the relation between financial development and growth (see, e.g. McKinnon (1973) and Patick (1966)). Interestingly, it possible to learn something from the time when the U.S. was an emerging market. Rousseau and Sylla (1999) show that early U.S. growth in the 1815-1840 period was finance led. One of their proxies for financial development is the number of corporations - which is similar to one of our financial development variables.

King and Levine (1993a) study the impact of banking sector development on growth prospects.[10] Panel A of Table 6 examines the role of the banking sector by adding private

[10] Jayarathne and Strahan (1996) find that banking deregulation led to higher regional economic growth in the U.S.

credit to GDP to the growth regression. Higher private credit is associated with higher economic growth which is consistent with King and Levine's main results. In all the samples, the variable is at least three standard errors from zero. There is little impact on the other variables by including the private credit variable. The liberalization indicator remains highly significant in all but the sample with the smallest number of countries. Its value drops respectively by 0.15%, 0.24%, 0.10% and 0.13% in the four samples.

Atje and Jovanovic (1989), Demurgüç-Kunt and Levine (1996a,b), Demurgüç-Kunt and Maksimovic (1996) and Levine and Zervos (1996, 1998) examine the effect of stock market development on economic growth. In panel B, we add equity turnover (a measure of trading activity) and the log of the number of companies qualifying for the country index (reflects the size of the equity market).[11] These financial variables are only available for the two smaller sets of countries: 50 and 28 countries. The results show that both the turnover and number of companies variables are significant and positive implying a positive relation between stock market development and economic growth. The turnover results are consistent with Levine and Zervos. No one has previously examined the number of stocks included in the index.

The presence of the financial development variables does not knock out the liberalization effect. The liberalization indicator is highly significant in the sample with 50 countries (four standard errors from zero). The liberalization indicator, while positive, is not significantly different from zero in the smallest sample of countries. Taken together, financial development variables do have a non-neglible effect on our liberalization indicator. For sample III, we started with an equity market liberalization driving up economic growth by 1.15%. After taking into account financial development indicators, the effect is down to 0.83%. Our interpretation is that less than 30% of the liberalization effect can be attributed to the beneficial effects it has on financial development.

We do not believe our original effect spuriously reflects a financial development effect.

[11] We do not consider market capitalization to GDP, since this variable is hard to interpret. Having a measure of overall equity value in the numerator, it may simply be a forward looking indicator of future growth or it may be related to the cost of capital. In addition, Rousseau and Wachtel (2000) find market capitalization to GDP to have a weaker impact than value traded in their cross-country analysis of growth.

To marshall evidence in favor of this interpretation, we regressed our financial development variables onto the independent variables in the classic growth regression. The findings are reported in Table 7.

Our left hand side variables in the regressions are future turnover and the future number of companies in the index as indicators for stock market development and future private credit to GDP as the proxy for bank development, where we take averages exactly as in the growth regressions. The independent variables are the same regressors as in our basic growth regression. We focus the discussion on the $k = 3$ results (averages over three years). We are not much interested in the relations between the financial development indicators and most right hand side variables, since any significant relation may reflect the joint development of the economy and the financial sector. For example, it is not surprising that initial log GDP is a positive significant predictor of turnover and private credit to GDP. Although positive, in the number of companies regression, the coefficient on initial log GDP is insignificant. Of main interest is the coefficient on the liberalization indicator. The coefficient is positive in all the regressions we run and at least 7.5 standard errors from zero. Private credit/GDP increases by between 0.13 and 0.23 (the mean value of the variable in sample III is 0.591) whereas the log of number of stocks increases by almost 0.47 (mean value is 5.33)[12] Perhaps the most striking effect is on turnover, which increases by 0.166 (mean value is 0.299). Indeed, in 16 of the 20 markets, turnover increases. More precisely, in 13 of these markets, turnover increases by more than 50%. In nine of the markets, turnover more than doubles.

Although this does establish that liberalization predicts future financial development, it does not establish causality and it does not exclude the possibility that only highly developed financial markets liberalize. To investigate the plausibility of the latter argument, we consider a number of cross-sectional probit analyses. Our dependent variable is now the liberalization event, 1 for a liberalized market, zero for a non-liberalized market and our independent variables are the growth indicators and the financial development indicators, averaged over the 5 previous years. That is, the regression is:

[12] $\Delta log(x)/\Delta Lib_t = 0.4681$, so $\frac{\Delta x}{x}/\Delta(Lib_t) = 0.4681$, that is, this represents a 47% increase in the number of stocks.

$$Lib_{i,t} = f(\mathbf{B}'\mathbf{X}_{i,t-1}) + \epsilon_{i,t}$$

where $Lib_{i,t}$ is a $\{0, 1\}$ variable indicating liberalization and $\mathbf{X}_{i,t-1}$ includes the average over the past five years of turnover, private credit to GDP and the number of companies in the index, all measured starting the year before liberalization. We also include initial GDP and the size of the government sector.

Panel B of Table 7 reports purely cross sectional probit models using quasi-maximum likelihood estimation (QMLE) methods (with robust standard errors) for several different years. Since the number of non-liberalized countries in the sample with financial data is rather limited, the estimation is noisy. Nevertheless, there does not appear to be a significant relation between financial development and future liberalization. Moreover, the signs are not consistently positive across samples. Furthermore, the past log GDP level only enters significantly in the 1987 panel, although its coefficient is always positive. Taken together, we feel that liberalization can be taken to be an exogenous event that enhances financial development but is not a by-product of financial development.

Of course, we must realize that a country cannot liberalize its financial markets when it does not have financial markets. Although our previous exercises controlled for financial development, we selected countries for which we had data on financial markets and therefore were already somewhat financially developed. Hence, by comparing samples I and II with samples III and IV, we basically exclude countries without financial markets and part of the effect that we measure for samples I and II may be a financial under-development phenomenon. Since the liberalization effect is in fact larger for samples III and IV (see panel B of Table 2), this problem does not appear to bias our results towards finding large liberalization effects for our largest samples.

Clayton, Jorgensen and Kavajecz (2000) examine the impact of the existence of financial exchanges on a 16 macroeconomic and financial variables. They find that there is no significant association between the existence of a financial exchange and increased GDP growth prospects. These results are consistent with the theme of our paper. The existence of a capital market is not sufficient for higher growth prospects – the market needs to function

efficiently. Financial market liberalization increases the probability that markets operate effectively.

4 The sources of the liberalization effect

4.1 *Liberalization and the components of GDP*

Bekaert and Harvey (2000) and Henry (2000b) argue that liberalizations impact investment. Both of these studies use a very small number of countries. Panel A of Table 8 examines the classic growth regression with investment to GDP as the dependent variable, and then introduces the financial liberalization indicator. The results suggest that liberalizations are associated with significantly higher investment to GDP ratios. In each of the samples, the liberalization indicator is more than two standard errors above zero.[13] Overall, the investment to GDP ratio appears to increase by at least one percent after liberalization. The 0.79% in sample III effect is the only coefficient below one percent that we find in the four regressions. Interestingly, Wacziarg (2000) has established that trade openness affects growth by mainly raising the ratio of investment to GDP.

If investment to GDP increases, some other components of GDP must decrease. In the rest of the table, we look at the other components, private consumption, government consumption and the trade balance. A standard macro-economic interpretation of the recent currency crises in Mexico and South-East Asia is that these countries ran large current account deficits, and used the capital to go on an unproductive consumption and investment binge, which eventually led to pressure on their currencies. Since financial liberalization made borrowing from abroad easier, the proponents of this interpretation typically advocate some form of capital controls. Our results here can indirectly shed light on this.

Panel B of Table 8 shows that the impact on consumption is inconsistent across the different samples, using the official liberalization indicator. In sample II (75 countries), there is

[13] We also investigated the sensitivity to the alternative liberalization dates. The liberalization effect is even larger given these alternative dates. For example, in sample III the coefficient on the official liberalization indicator is 0.0079 while the first sign indicator has a coefficient of 0.0119.

a strong negative impact on consumption which is statistically significant. In the other samples, the estimated coefficient is not significant at conventional levels. Interestingly, when the first sign liberalization indicator is used (not reported), the impact on the consumption ratio is negative in all samples. In samples I, II and III, it is significantly negative. These results are inconsistent with the hypothesis that most of the capital flowing in after liberalizations was squandered on consumption.

The final panels of Table 8 detail the impact of liberalizations on the government sector and the relative trade balance. Liberalizations have an inconsistent impact on the size of the government sector. The coefficient is negative for the largest sample, but positive and significant for the smallest sample. The trade balance is negatively affected by financial liberalization, and significantly so, worsening between 0.6% and 2.3% of GDP. On average, financial liberalization has helped to bring in foreign capital that financed additional investment with a worsened current account as a result.

In the neo-classical growth model, one important channel to increased growth is increased savings rates, and hence investment. Bonser-Neal and Dewenter (1999) do not find a significant effect of financial development on savings rates in a sample of 16 developing countries. Despite the links we find between liberalization and financial development, our strong results for higher investment rates are not necessarily inconsistent with the results of Bonser-Neal and Dewenter since our trade balance findings demonstrate the importance of foreign savings fueling increased investment.

4.2 *Liberalization and the cost of capital*

Section 4.1 established that investment increases substantially after liberalizations. An obvious channel for increased investment is a lower cost of capital, brought about by reduced prices of risk and risk exposures (see Errunza and Losq (1985), Bekaert and Harvey (1995) and Stulz (1995)). Bekaert and Harvey (2000) and Henry (2000) argue that financial liberalizations led to lower costs of capital. However, the cost of capital is notoriously difficult to measure. Since financial integration constitutes a major structural break, the use of an asset-pricing model such as the CAPM to compute the cost of capital is fraught with difficulty

(see Bekaert and Harvey (1995, 2000)). We use two proxies for the cost of capital.

Erb, Harvey and Viskanta (1996a) argue that country credit ratings have the ability to explain both the cross-section of expected returns and of volatility. They argue that in emerging, segregated markets, the credit rating is a useful proxy for the cost of equity capital. If this is correct, liberalization should reduce the cost of capital and improve credit ratings, not only because of a reduction in political risk, but also because of the standard integration effect. Nevertheless, although we expect this measure to be positively related to economic growth, the mechanism is not necessarily a reduced cost of capital. The standard empirical growth literature has shown political unrest to be negatively related to growth. Our credit ratings will obviously be negatively correlated with political unrest measures (see e.g. Barro (1997a)).[14]

Panel A of Table 9 adds the log of the credit rating to the benchmark regression. The rating is highly significant in the group of 75 countries (10 standard errors from zero) and the group of 50 countries (4 standard errors from zero) but it is not significant for the smallest group of countries. The significant coefficients are positive suggesting the higher the rating the better the growth prospects. Although this result is subject to multiple interpretations, the main point of interest is to see whether the liberalization effect survives. We find that the liberalization indicator is strongly significant in samples III and IV but no longer significant in sample II.[15]

Our second proxy builds on Bekaert and Harvey (2000) who suggest that dividend yields are a reasonable way to examine the impact on the cost of capital. Even though dividend yields reflect both expected growth and the cost of capital, they may be valuable in picking

[14]Erb, Harvey and Viskanta (1996b) show that the correlation between the International Country Risk Guide measure of political risk and the Institutional Investor Country Credit Rating (the measure we use) is 30.0%.

[15]To explore the sample II results further, we estimated a model that included the liberalization indicator, the country credit rating and the interaction between the credit rating and the liberalization indicator. All three of these coefficients are highly significant with the coefficient on the liberalization indicator being four standard errors from zero. The interaction specification suggests that the impact of credit rating on growth is greatly diminished once you liberalize.

up permanent changes in the cost of capital. Unfortunately, we have only the smallest sample to work with for the dividend yield regression. Moreover, there is quite a bit of cross-country variation in dividend yields due to country-specific corporate and tax policies. Since we are only interested in the change in the cost of capital after liberalization, we control for these country-specific factors, by country-specific demeaning of the dividend yields.[16] Hence, we measure whether growth is large after periods of low dividend yields.

When we add the dividend yield variable to the benchmark regression, we find an insignificant coefficient. We do not report the results for this regression. The specification we report in panel B of Table 9 also includes an interaction term between the dividend yield and the liberalization indicator. Whereas the dividend yield remains insignificant in the growth regression, the interaction of the dividend yield and the liberalization indicator has a negative effect on growth. The interaction term weights the countries that underwent the largest decreases in the dividend yield with a larger negative weight. The negative, marginally significant, coefficient then means that the lower the cost of capital, the larger economic growth is subsequently. Nevertheless, despite the inclusion of the dividend yield, the liberalization effect remains strongly significant. It enters the regression reported in panel B of Table 9 with a coefficient of 0.016 and is more than three standard errors from zero. Interestingly, the coefficient on the liberalization indicator is larger than the 0.013 reported in the benchmark regression in Table 2.

Since the cost of capital affect should operate through increased investment, panels C and D repeat our analysis of panels A and B but with investment to GDP on the left-hand side. In panel C, the credit rating variable is no longer significant in sample II but highly significant in sample III and marginally significant in sample IV. The liberalization variable is always positive and strongly or marginally significant. When we compare its magnitude to the original investment effect in Table 8, it is apparent that the inclusion of the credit rating only marginally reduces the liberalization effect. In panel D, we record both a strong liberalization affect (over 2%) and a very strong interaction effect with dividend yields (the

[16] For the countries that liberalize, we demean using the pre-liberalization data to calculate the mean. For countries that do not liberalize, we use all the data to demean.

lower the dividend yield, the larger the liberalization effect). Moreover, the sign on the dividend yield variable itself has the right (negative sign) and is almost significant (t-statistic of 1.78). We interpret this to mean that lower costs of capital provided a channel for more investment and larger economic growth. Of course, we cannot exclude the possibility that the decrease in the dividend yield can also be a direct indication of growth opportunities.

4.3 *Insider trading and financial liberalizations*

Section 4.1 established that investment increased substantially post liberalization, whereas section 4.2 showed that the cost of capital may have mattered in increasing the rate of physical investment. However, both cost of capital proxies have multiple interpretations. The credit rating may simply reflect political risk and the dividend yield growth opportunities. Moreover, the liberalization effect is not fully driven out by including these variables in the regression. Hence, we have not been able to conclusively establish that it is the cost of capital rather than perhaps the availability of (foreign) capital that led to increased investment, and subsequently growth.

The recent literature on financing constraints stresses both the availability of capital and its cost. If capital markets are imperfect, external capital is likely to be more costly than internal capital and a shortage of internal capital will reduce investment below first-best optimal levels. Recent empirical work by Rajan and Zingales (1998), Love (2000) and Laeven (2000) shows that financial development may help relax these financing constraints and increase investment. Financial liberalization will make available more foreign capital but this does not necessarily resolve the market imperfections that lead to a wedge between the internal and external finance cost of capital. However, since we have established that liberalizations bring about financial development, they should also reduce financing constraints and the external finance cost of capital premium. At our aggregate data level, it is difficult to ascribe part of the liberalization effect to this factor. Our only attempt relies on the work of Bhattacharya and Daouk (2000).

Bhattacharya and Daouk (2000) argue that the enforcement of insider trading laws makes developing markets more attractive to international investors. They present evidence that

associates insider trading laws with a lower cost of capital in a sample of 95 countries. Importantly, Bhattacharya and Daouk distinguish between enactment of insider trading laws and the enforcement of these laws. [These dates are provided in appendix A3.]

Insider trading laws, and especially their enforcement, may be quite closely related to the corporate governance problems that lead to the external finance premium. Enforcement of insider trading laws may be a good instrument for reduced external financing constraints. It is possible that the enactment of such rules are particularly valued and perhaps demanded by foreigners before they risk investing in emerging markets. By adding the Bhattacharya and Daouk dummy, we can see whether these laws matter for economic growth and whether they drive out the liberalization effect.

Panels A and B of Table 10 examine the impact of the enactment and enforcement of insider trading laws on economic growth. The existence of these laws has no significant effect on economic growth, as evidenced in panel A. However, insider trading prosecutions present a different story. In all of the samples, the coefficient on insider trading prosecution is positive suggesting higher growth prospects. The coefficient is more than three standard errors from zero in all but the smallest sample, where it is 1.3 standard errors above zero. The magnitude of the effect varies between 0.15% (sample IV) and 0.37% (sample III).

The financial liberalization impact survives the inclusion of the insider trading variable. In the three largest samples, the liberalization variable is more than four standard errors above zero. In the smallest sample, the coefficient is positive and three standard errors from zero.[17] The coefficients on the liberalization indicator are remarkably similar to those reported in the benchmark regression in Table 2. The coefficients are never more than 0.03% lower than those reported in Table 2. For example, in the largest sample the coefficient drops from 0.95% in Table 2 to 0.92% in panel B of Table 10. Consequently, the liberalization effect we find does not appear to be driven by the relaxation of financing constraints as proxied by the insider trading variables.[18]

[17]Bhattacharya and Daouk (2000) examine the differential impact of insider trading laws and financial liberalizations on the cost of capital. While they find that both factors are important, the liberalization effect is more prominent.

[18]When we use investment to GDP as the left-hand side variable, the liberalization effect remains intact

4.4 *Financial liberalizations and the efficiency of investment*

Apart from increasing investment, financial liberalizations may have improved the efficiency of capital allocation. An obvious channel through which this could occur is the financial development (see section 3.4) and improved market efficiency (see previous section) liberalizations might bring about. In a recent paper, Wurgler (2000) demonstrates an empirical link between financial development and the efficiency of capital allocation. He shows that countries with developed financial sectors increase investment more in their growing industries and decrease investment more in their declining industries than those with undeveloped financial sectors.

Our empirical setup is not well suited to address this question since we do not have investment/GDP on the right-hand side of our regressions. Ideally, we would like to investigate whether the same investment/GDP rate at time t increases future growth more for liberalized countries than for closed countries. One simple regression that accomplishes this is the one in which we replace the secondary school enrollment and government sector variables, which are highly correlated with investment/GDP, by investment/GDP and we introduce an interaction variable between investment/GDP and our liberalization variable.

We do indeed find that the interaction variable is positive – it is always larger than 0.03 – and highly significant. This result suggests that in addition to driving up investment/GDP, liberalizations also contributed to the efficiency of investment. When we introduce a separate liberalization indicator in this regression, the interaction result remains significant in three of our samples and drives out the independent liberalization effect. But in sample IV, our smallest sample, the direct liberalization effect survives and drives out the interaction effect.

and the insider trading variables carry negative coefficients. On interpretation is that the liberalization effect subsumes the insider trading effect, since the two variables are highly correlated with liberalizations often preceding insider trading prosecutions.

5 Cross-country differences in the liberalization effect

Our battery of regressions suggest that it is difficult to diminish the impact of liberalizations on economic growth. But our framework, by construction, forces a common coefficient relating liberalizations to growth in every country. The coefficient is best interpreted as an average effect, conditioning on a number of control variables. It makes sense that there are country-specific deviations from the average. It is of great interest to investigate what might make a country have a greater (or lesser) response to a financial liberalization. In his book on trade openness, Rodrik (1999) argues that openness may not be suitable for all countries. Likewise financial liberalization may not bring the anticipated benefits depending on the strength of the domestic institutions and other factors.

Our method involves interacting the liberalization indicator with country-specific variables that potentially could enhance or diminish the liberalization effect. We examine six different variables. First, we examine the role of human capital. Bekaert, Harvey and Lundblad (2000) present evidence on a small group of countries that the impact of liberalization is enhanced for those countries with high secondary school enrollment. The second variable is the size of the government sector. Is it the case that countries with small government sectors are more likely to benefit from financial liberalizations? For these two first variables, we have already used data on government/GDP and secondary school enrollment. To test whether a more educated work force and smaller government sector enhance the effects of liberalization, we look at the cross-sectional distribution of the 5-year average of these variables before the liberalization. We then consider different coefficients for three groups of countries: always liberalized, liberalizing countries with small government sectors or secondary enrollments preliberalization and liberalizing countries with large governments sectors or secondary enrollment. The median liberalizing country(ies) get a value of 0.5 for both groups.

The results of these experiments are contained in Table 11. In panel A, it is clear that education is a crucial factor in harvesting the benefits of a liberalization. The countries with a high secondary school enrollment have significant positive coefficients on the liberalization

indicator in all the samples. However, the countries with low secondary school enrollment have negative but insignificant coefficients in all the samples. We can reject the equality of the coefficients at the 1% level in all four samples. It is also the case that the size of the government sector appears to matter (see Panel B). Countries with smaller government sectors had positive significant coefficients on the liberalization indicator in all but the smallest sample. The coefficients on the countries with larger government sectors were never more than two standard errors from zero. However, we can reject the equality of the coefficients across small and large government sectors at the 5% level in all four samples.

Third, we follow Barro (1997b) and look at the structure of government. The effects of democracy on growth are not obviously positive (see Barro (1997b) and Tavares and Wacziarg (2000)). It is possible, however, that democratic countries get a larger boost from financial liberalizations since non-democratic countries may be less amenable to foreign investors. To measure democracy, we use the [0,1] index developed by Barro (1997b) and scale the liberalization variable with this index.[19] If democratic countries record much larger liberalization effects than non-democratic countries, our liberalization coefficient should increase and be interpreted as the growth effect for a fully democratic country.[20]

The results are contained in panel C of Table 11. In all of the samples, the liberalization indicator interacted with the democracy indicator is positive and significantly different from zero. However, the magnitude of the coefficient to the liberalization indicator is lower than the one reported in the benchmark regression in Table 2 in all four of the samples. The main reason is that among the liberalized and liberalizing countries these is little variation in the democracy index: most of the values are 1.0 or close to 1.0.

Fourth, we revisit the literature on the rule of law and finance. La Porta et al. (1997, 1998) assert that countries with an Anglo-Saxon legal system tend to protect investors much better than do countries with a French civil law system. We examine whether different types of legal systems lead to a differential impact of liberalizations across countries. We

[19] A value of 1 means represents a fully democratic country and a value of zero represents an undemocratic country.

[20] Barro's classification did not extend to all of our countries. There was only one liberalized country that we were missing, Nigeria, and we assigned a value based on the African average.

primarily differentiate between the French and the Anglo-Saxon systems. We also have another category, that includes countries with the German or Scandinavian legal origins and a few countries we could not classify.[21] Since corporate governance may be an important factor in financial markets, it is conceivable that Anglo-Saxon countries record larger gains from liberalization.

The results are presented in panel D of Table 11. The strongest growth effects are found for English law systems. The next most important legal systems are the 'others' category. The Wald test rejects the equality of the coefficients across different legal systems at the 1% level of significance. The weakest impact on economic growth arises from countries with French legal origins. This is consistent with the argument in La Porta et al. (1998) that French law provides little investor protection, which may also result in keeping foreign investors out.

In addition, we examine the role of capital flows directly. One might enact financial liberalizations but if no capital flows in, there is unlikely to be much benefit in terms of lower costs of capital. To differentiate countries according to capital flows, we use the recent high-quality data on U.S. foreign holdings computed by Warnock and Mason (2000), who report estimates of U.S. holdings of foreign stocks. We compute these holdings as a fraction of local market capitalization for these countries for which we have that information and as a percent of GDP. For the U.S., we use the fraction of the US stock market held by foreigners. Unfortunately, we only have data for 1997.[22] Since these data are percentages, we can again scale the liberalization dummy with this "foreign holdings" variable. We again expect the liberalization coefficient to be much larger than our previously estimated coefficients, indicating that it is important to actually attract foreign capital. Of course, foreign capital will be attracted by good growth opportunities, so a positive effect is not surprising.

The results are contained in panels E and F of Table 11. When scaling by holdings to GDP (in panel E), the coefficients on the liberalization dummy decrease in samples II

[21] Our classification by the origin of legal systems is taken from Levine, Loayza and Beck (1999) who extend the original La Porta et al. (1997) sample.

[22] Holdings data are from the U.S. Treasury Department's comprehensive survey of U.S. holdings of foreign equities, conducted as of December 31, 1997.

through IV and the t-statistics invariably decrease relative to the results in Table 2. When the liberalization indicator is scaled by U.S. holdings to market capitalization, we find that the liberalization indicator has roughly the same t-statistics as those obtained in the benchmark regression. However, the coefficients are much larger in magnitude, as we would expect if foreign ownership is important.

Finally, we examine the role of global portfolio diversification. Is it the case that countries with low correlations with the world market return receive more capital after liberalizations and grow more? We rescale the correlations to be between zero and one with one representing perfect negative correlation.[23]

The results are presented in panel G of Table 11. For this scaling factor, we needed equity returns and hence could work with only the smallest sample. The standard error is large relative to the coefficient. There is no evidence that global diversification plays a role in the relation between liberalization and growth.

6 Convergence and Financial Liberalization

One of the primary coefficients we estimate from the perspective of the empirical growth literature is the λ parameter, which measures the speed of convergence for poor countries. Table 12 summarizes the estimates of the λ parameter over our various different samples and distinguishes the estimates with and without a liberalization indicator variable.

The main idea behind conditional convergence is that countries only show convergence once we control for the determinants of steady state per capita GDP level. This also implies that if the regression omits important determinants of the steady state development level, the convergence speed may be underestimated.

Many of the patterns we see in the convergence coefficients are consistent with intuition.

[23] We compute total return correlations with the world MSCI portfolio return for in the following two ways. For liberalizing countries, we use the five years (or most recently available) pre-liberalization to estimate correlations. For fully liberalized countries, we use the first five-years (1980-1984) correlations. We then scale the correlations to fall between zero and one using the following transformation: scaling = ln(2-correlation)/ln(3).

When we move from sample I to sample IV, we increase the data requirements, inadvertently making the group of countries we consider more homogeneous with respect to steady state levels of GDP. As the results in Barro and Sala-i-Martin (1997c) would suggest, we indeed find stronger convergence for the smaller sets of countries.

Table 12 shows that for all samples convergence is stronger when the liberalization indicator is included reaching a maximum of 0.0104 in the largest sample for the model that includes banking development indicators. This is consistent with the Sachs and Warner (1995a) argument that efficient economic institutions are necessary for economic growth and therefore for economic convergence. In other words, they believe that efficient economic institutions are important determinants of long-run growth and that the failure to observe convergence for the poorest countries is reversible by adopting the right policies. Although they focus on trade openness, we show that financial liberalization may be equally important.

Sachs and Warner (1995a) also show that trade-liberalized countries as a group show stronger convergence than closed economies. In our regression framework, this suggests an interaction variable between the liberalization indicator and initial GDP. The result is reported in panel A of Table 13. The convergence coefficient for the liberalized countries equals the coefficient on the initial GDP plus the coefficient on the interaction variable. For samples I and II, the interaction variable is significantly negative suggesting stronger convergence among liberalized economies than among segmented ones. For samples III and IV, there is no significant effect, perhaps because these samples are somewhat more homogeneous to start with, containing only economies with a certain level of equity market development.

Our regression differs from the usual empirical growth literature, in that we kept initial GDP constant at the 1980 level. To check the importance of this assumption, we consider two additional experiments. In the first, we reset initial GDP just once in the beginning of 1990 (panel B of Table 13). In the second, we re-set initial GDP when countries liberalize, at the GDP level at liberalization (panel C of Table 13). The results of these experiments suggest that there is little sensitivity to adjusting the initial level of GDP. The coefficient on initial GDP is similar to the results presented in Table 2.

There is also a substantial literature on σ-convergence, the idea that the dispersion of income across countries should fall with development. Although Barro and Sala-i-Martin (1995) clearly show that the neoclassical model does not necessarily imply σ–convergence, many find the hypothesis of independent interest, also because endogenous growth models typically imply the divergence of incomes (see Klenow and Rodriguez-Clare (1997)). Ben-David (1993) and Sachs and Warner (1995a) have demonstrated σ-convergence for trade-liberalized countries but their work has been severely criticized by Slaughter (1998). In our framework, we simply test the hypothesis whether the number of liberalized countries has resulted in lower dispersion of incomes across countries. The regression is a pure times series regression of the following form:

$$\sigma_t^2 = a + bt + c\text{CUMLIB}_t + e_t$$

where t represents a time dummy, σ is the cross-sectional standard deviation of the log GDP per capita levels and CUMLIB is the number of liberalized countries.

Panel D, Table 13 shows that dispersion is increasing over time in our sample (the b coefficient is significantly positive) which is consistent with the results in, for example, Quah (1993). The c coefficient is negative and almost three standard errors below zero indicating that liberalizations counteract the dispersion of incomes.

7 Conclusions

Our research demonstrates that financial liberalization did increase economic growth. We augment the standard set of variables used in economic development research with an indicator variable for financial liberalization. We find that a financial liberalization leads to a one percent increase in annual real per capita GDP growth over a five year period, and find this increase to be statistically significant. This result is robust to a wide variety of experiments including: an alternative set of liberalization dates, different groupings of countries, regional indicator variables, different weighting matrices for the calculation of standard errors and four different time-horizons for measuring economic growth.

The liberalization effect is also economically important. Consider the following exercise. Using the classic growth regression framework, we examine the impact on growth for a developing country that liberalizes. We assume that the human capital variables (education and life expectancy) move from the 25th percentile of all countries to the median. We also move the size of the government sector and the population growth from the 75th percentile to the cross-sectional median. We calculate the predicted positive impact on growth given the changes in these four variables. We compare this to the impact of a liberalization. In the sample with 50 countries, the rather dramatic changes in the classic regression variables add 1.9% to real economic growth. The liberalization indicator adds 1.1%. Hence, the liberalization is contributing close to 40% of the total growth increment.

Our analysis also investigates the channels whereby liberalizations impact economic growth. We establish that the liberalization effect is not spuriously accounted for by macroeconomic reforms and does not reflect a business cycle effect. Although financial liberalizations further financial development, measures of financial development fail to fully drive out the liberalization effect. We do find that the investment/GDP ratio increases, with investment partially financed by foreign capital inducing worsened trade balances post liberalization. However, we fail to convincingly attribute the increased growth to a direct cost of capital effect or the relaxation of financing constraints.

The liberalization effect that we measure is an average effect. Our paper also sheds light on country-specific conditions that might lead a particular country to benefit more or less than average after experiencing a financial liberalization. We find that large secondary school enrollment, as well as a small government sector and an Anglo-Saxon legal system enhance the liberalization effect.

Although our regressions are predictive, it is important to keep in mind that they reveal association not causality. While our analysis describes a number of plausible channels through which the liberalization effect may have occurred, the answer to the question 'does' rather than 'did' financial liberalization affect economic growth? remains somewhat elusive. The best way to address this question is to model the transition process and use finer data than the country level to explore the decisions of firms in liberalizing countries. We are

currently pursuing this research direction. Also, we measure an average growth effect. If true, the distribution of the welfare gain is an important social issue. Das and Mohapatra (2000) show that the gains from increased growth are unequally distributed, accruing mostly to the top quintile of the population.

8 Bibliography

Aghion, P. and P. Howitt, 1992, A Model of Growth Through Creative Destruction, *Econometrica*, 60, 323-351.

Alizadeh, S., and M. Brandt and F. Diebold, 1999, Range-Based Estimation of Stochastic Volatility Models, or Exchange Rate Dynamics are More Interesting Than You Think, manuscript, New York University.

Atje, R., and B. Jovanovic, 1989, Stock Markets and Development, *European Economic Review* 37, 632-640.

Barro, R., 1997a, *Determinants of Economic Growth*, MIT Press: Cambridge, MA.

Barro, R. J., 1997b, Determinants of Democracy, Harvard Institute for International Development, Development Discussion Paper No. 570.

Barro, R. J., 1997c, Determinants of Economic Growth: A Cross-Country Empirical Study, Harvard Institute for International Development, Development Discussion Paper No. 579.

Barro, R. J. and X. Sala-i-Martin, 1992, Convergence, *Journal of Political Economy* 100 (2:223-251).

Barro, R. and X. Sala-i-Martin, 1995, *Economic Growth* McGraw-Hill, New York, NY.

Bekaert, G., 1995, Market Integration and Investment Barriers in Emerging Equity Markets, *World Bank Economic Review* 9, 75-107.

Bekaert, G. and C. R. Harvey, 1995, Time-varying World Market Integration, *Journal of Finance* 50, 403-444.

Bekaert, G. and C. R. Harvey, 2000, Foreign Speculators and Emerging Equity Markets, *Journal of Finance* 55, 565-614.

Bekaert, G., C. R. Harvey and C. Lundblad, 2000, Emerging Equity Markets and Economic Development, *Journal of Development Economics*, forthcoming. Also available as NBER working paper #7763.

Ben-David, D., 1993, Equalizing Exchange: Trade Liberalization and Income Convergence, *Quarterly Journal of Economics* 103, 653-679.

Bencivenga, V. R., and B. D. Smith, 1991, Financial Intermediation and Endogenous Growth, *Review of Economic Studies* 58, 195-209.

Bencivenga, V. R., B. D. Smith and R. M. Starr, 1996, Equity Markets, Transactions Costs, and Capital Accumulation: An Illustration, *The World Bank Economic Review* 10, 241-265.

Bhattacharya, U. and H. Daouk (2000), The World Price of Insider Trading, working paper, Indiana University.

Bonser-Neal, C. and K. L. Dewenter, 1999, Does Financial Market Development Stimulate

Savings? Evidence from Emerging Markets, *Contemporary Economic Policy*, 370-380.

Caselli, F., G. Esquivel and F. Lefort, 1996, Reopening the Convergence Debate: A New Look at Cross-Country Growth Empirics, *Journal of Economic Growth* 1, 363-389.

Clayton, M. J., B. N. Jorgensen, and K. A. Kavajecz, 2000, On the Formation and Structure of International Exchanges, Working paper, New York University.

Das, M., and S. Mohapatra, 2000, Income Inequality: The Aftermath of Stock Market Liberalization in Emerging Markets, manuscript, Columbia University.

Demurgüç-Kunt, A., and R. Levine. 1996a. Stock Markets, Corporate Finance, and Economic Growth: An Overview, *World Bank Economic Review*, 10, 223-240.

Demurgüç-Kunt, A. and R. Levine, 1996b, Stock Market Development and Financial Intermediaries: Stylized Facts, *World Bank Economic Review*, 291-322.

Demurgüç-Kunt, A., and V. Maksimovic. 1996. Stock Market Development and Financing Choices of Firms, *World Bank Economic Review*, 10, 341-370.

Devereux, M. B. and G. W. Smith, 1994, International Risk Sharing and Economic Growth, *International Economic Review* 35, 535-551.

Dollar, David, 1992, Outward-Oriented Developing Countries Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976-85, *Economic Development and Cultural Change*, April, 523-544.

Doppelhofer, G., R. I. Miller and X. Sala-i-Martin, 2000, Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach, NBER Working Paper 7750.

Elliot, G., 1993, Spatial Correlation and Cross-Country Regressions, manuscript, Harvard University.

Edwards, S., 1998, Openness, Productivity, and Growth: What Do We Really Know?, *Economic Journal*, 108, 383-398.

Erb, C., C. R. Harvey and T. Viskanta, 1996a, Expected Returns and Volatility in 135 countries, *Journal of Portfolio Management*, 22, Spring, 46-58.

Erb, C., C. R. Harvey and T. Viskanta, 1996b, Political Risk, Economic Risk and Financial Risk, *Financial Analysts Journal* November/December, 29-46.

Errunza, V. R., and E. Losq, 1985, International Asset Pricing Under Mild Segmentation: Theory and Test, *Journal of Finance* 40, 105–124.

Frankel, J. and D. Romer, 1999, Does Trade Cause Growth, *American Economic Review* 89, 379-399.

Gilchrist, S. and C. Himmelberg, 1998, *Investment, Fundamentals and Finance*, NBER Macroeconomics Annual, MIT Press.

Greenwood, J., and B. Jovanovic, 1990, Financial Development, Growth, and the Distribution of Income, *Journal of Political Economy*, 1076-1107.

Hansen L., 1982, Large Sample Properties of Generalized Method of Moments Estimators, *Econometrica*, 50, 1029-1054.

Harrison, A., 1996, Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries, *Journal of Development Economics* 48, 419-447.

Henry, P., 2000a, Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices, *Journal of Finance* 55, 529-564

Henry, P., 2000b, Do Stock Market Liberalizations Cause Investment Booms, *Journal of Financial Economics*

Hubbard, G., 1997, Capital Market Imperfections and Investment, *Journal of Economic Literature* 36, 3.

Islam, N. 1995, Growth Empirics: A Panel Data Approach, *Quarterly Journal of Economics* 107, 1127-1170.

Jayaratne, J. and P. E. Strahan, 1996, The Finance-Growth Nexus: Evidence from Bank Branch Deregulation, *Quarterly Journal of Economics* CXI, 639-670.

Jones, C. I., 2000, *Introduction to Economic Growth*, Norton.

Kaminsky, G. L. and C. Reihart, 1998, Financial Crises in Latin America: Then and Now, *American Economic Review* 88, 444-449.

Kaminsky, G. L. and C. Reihart, 1999, Papers on Crises and Contagion The Twin Crises: The Causes of Banking and Balance of Payments Problems, *American Economic Review* 89, 473-500.

King, R. G., and R. Levine. 1993a. Finance, Entrepreneurship and Growth. *Journal of Monetary Economics* 32, 513-542.

King, R. and R. Levine, 1993b, Finance and Growth: Schumpeter Might Be Right, *Quarterly Journal of Economics* 108, 717-738.

Klenow, P. J. and A. Rodriquez-Clare, 1997, Economic Growth: A Review Essay, *Journal of Monetary Economics* 40, 597-617.

La Porta, R., F. Lopez-de-Silanes; A. Shleifer, and R. W. Vishny, 1997, Legal Determinants of External Finance, *Journal of Finance*, 52, 1131-1150.

La Porta, R., F. Lopez-de-Silanes; A. Shleifer, and R.W. Vishny, 1998, Law and Finance, *Journal of Political Economy* 106, 1113-1155.

Laeven, L., 2000, Financial Liberalization and Financing Constraints: Evidence from Panel Data on Emerging Economies, Working paper, World Bank.

Lee, J.W., 1993, International Trade, Distortions and Long-run Economic Growth, *IMF Staff Papers* 40, 299-328.

Levine, R., N. Loayza and T. Beck, 1999, Financial Intermediation and Growth: Causality and Causes, manuscript, World Bank.

Levine, R. and D. Renelt, 1991, A Sensitivity Analysis of Cross-Country Growth Regressions, *American Economic Review* 82, 942-963.

Levine, R., 1991 Stock Markets, Growth, and Tax Policy, *Journal of Finance* 46, 1445-1465.

Levine, R. and S. Zervos, 1996, Stock Market Development and Economic Growth, *World Bank Economic Review* 10, 323-340.

Levine, R. and S. Zervos, 1998, Stock Markets, Banks, and Economic Growth, *American Economic Review* 88:3, 537–558.

Love, I., 2000, Financial Development and Financing Constraints: International Evidence from the Structural Investment Model, manuscript, Columbia University.

Lucas, R. 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics* 22, 3-42.

Mankiw, N. G., 1995, The Growth of Nations, *Brookings Papers on Economic Activity*, 1, 275-310.

Mathieson, D. and L. Rojaz-Suarez, 1992, Liberalization of the Capital Account: Experiences and Issues, Staff papers, International Monetary Fund, Washington, D.C.

McKinnon, R. I. 1973. *Money and Capital in Economic Development*, Washington, D.C.: Brookings Institution.

Newey, W., and K. West, 1987, A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix, *Econometrica*, 55, 703-708.

Obstfeld, M., 1994, Risk Taking, Global Diversification and Growth, *American Economic Review* 84, 1310-1329.

Pagano, M. 1993, Financial Markets and Growth: An Overview, *European Economic Review* 37, 613-622.

Patrick, H., 1966, Financial Development and Economic Growth in Underdeveloped Countries, *Economic Development Cultural Change* 14, 174-89.

Quah, D., 1993, Galton's Fallacy and Tests of the Convergence Hypothesis, *Scandinavian Journal of Economics* 95, 427-443.

Rajan, R. G. and L. Zingales, 1998, Financial Dependence and Growth, *American Economic Review* 88, 559-586.

Rebelo S., 1991, Long-Run Policy Analysis and Long-Run Economic Growth, *Journal of Political Economy*, 99, 500-521.

Rodriguez, F. and D. Rodrik, 1999, Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence, NBER Working Paper 7081.

Rodrik, D., 1999, *Determinants of Economic Growth*, Overseas Development Council, Washington, DC.

Rousseau, P. L. and R. Sylla, 1999, Emerging financial markets and early U.S. growth, Working

paper, New York University.

Rousseau, P. L., and P. Wachtel, 2000, Equity markets and growth: Cross-country evidence on timing and outcomes, 1980–1995, *Journal of Banking and Finance* 1933-1958.

Sachs, J. D. and A. M. Warner, 1995a, Economic Reform and the Process of Global Integration, *Brookings Papers on Economic Activity*, 1-118.

Sachs, J. D. and A. M. Warner, 1995c, Economic Convergence and Economic Policies, Harvard University and Harvard Institute for International Development.

Saint-Paul, G. 1992. Technological Choice, Financial Markets and Economic Development, *European Economic Review* 36, 738-781.

Slaughter, M. J., 1998, International Trade and Per Capital Income Convergence: A Difference in Difference Analysis, NBER working paper.

Stiglitz, J. E. 1989, Financial Markets and Development, *Oxford Review of Economic Policy* 5, 55-68.

Stulz, R. M., 1995, International Asset Pricing: An Integrative Survey, *Handbook of Modern Finance*, R. Jarrow, M. Maksimovic and W. Ziemba, eds., North Holland-Elsevier, 201-223.

Tavares, J. and R. Wacziarg, 2000, How Democracy Affects Growth, *European Economic Review*, forthcoming.

Warnock, F. and M. Mason, 2001, The Reliability of U.S. Data on Transactions in Foreign Equities, *Emerging Markets Quarterly*, forthcoming.

Wacziarg, R., 2000, Measuring the Dynamic Gains From Trade, *World Bank Economic Review*, forthcoming.

Wurgler, J., 2000, Financial Markets and the Allocation of Capital, *Journal of Financial Economics* 58, 187-214.

Appendix Table A1: Data for Growth Analysis

Country	Sample	GDP (Consumption, Invest, Gov't, Trade)	Enrollment	Pop Growth	Log(Life Expectancy)	Inflation	Priv Credit/ GDP	ln(# of stocks)	Turnover	Dividend Yield	Log(Credit Rating)	Insider Trading Law	Insider Trading Prosecution	Official Financial Liberalization
Algeria	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Argentina	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1991	1995	1989
Australia	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1991	1996	1980*
Austria	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1993		1980*
Bangladesh	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1995	1996	
Barbados	(I)	✔	✔	✔	✔	✔	✔					1987		
Belgium	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1990	1994	
Benin	(I)	✔	✔	✔	✔	✔	✔							
Botswana	(I)	✔	✔	✔	✔	✔	✔							
Brazil	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1976	1978	1991
Burkina Faso	(I)	✔	✔	✔	✔	✔	✔							
Cameroon	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Canada	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1966	1976	1980*
Central African Republic	(I)	✔	✔	✔	✔	✔	✔							
Chad	(I)	✔	✔	✔	✔	✔	✔							
Chile	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1981	1996	1992
Colombia	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1990		1991
Congo, Rep.	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Costa Rica	(I,II)	✔	✔	✔	✔	✔	✔				✔	1990		
Cote d'Ivoire	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔			
Denmark	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1991	1996	1980*
Dominican Republic	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Ecuador	(I,II)	✔	✔	✔	✔	✔	✔				✔	1993		
Egypt, Arab Rep.	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1992		1997
El Salvador	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Fiji	(I)	✔	✔	✔	✔	✔	✔							
Finland	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1989	1993	1980*
France	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1967	1975	1980*
Gabon	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Gambia, The	(I)	✔	✔	✔	✔	✔	✔							
Germany	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1994	1995	1980*
Ghana	(I)	✔	✔	✔	✔	✔	✔					1993		
Greece	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1988	1996	1987
Guatemala	(I,II)	✔	✔	✔	✔	✔	✔				✔	1996		
Guyana	(I)	✔	✔	✔	✔	✔	✔							
Haiti	(I)	✔	✔	✔	✔	✔	✔							
Honduras	(I,II)	✔	✔	✔	✔	✔	✔				✔	1988		
Iceland	(I,II)	✔	✔	✔	✔	✔	✔				✔	1989		
India	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1992	1996	1992
Indonesia	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1991	1996	1989
Iran, Islamic Rep.	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Ireland	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1990		1980*

Appendix Table A1 (continued)

Country	Sample	Log(GDP)	Enrollment	Pop Growth	Log(Life Expectancy)	Inflation	Priv Credit/ GDP	ln(# of stocks)	Turnover	Dividend Yield	Log(Credit Rating)	Insider Trading Law	Insider Trading Prosecution	Official Financial Liberalization
Israel	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1981	1989	1996
Italy	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1991	1996	1980*
Jamaica	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1993		
Japan	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1988	1990	1983
Jordan	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔			1995
Kenya	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1989		
Korea	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔			1992
Kuwait	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Lesotho	(I)	✔	✔	✔	✔	✔	✔							
Madagascar	(I)	✔	✔	✔	✔	✔	✔							
Malawi	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Malaysia	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1973	1996	1988
Mali	(I)	✔	✔	✔	✔	✔	✔							
Malta	(I)	✔	✔	✔	✔	✔	✔					1990		
Mauritius	(I,II)	✔	✔	✔	✔	✔	✔				✔	1988		
Mexico	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1975		1989
Morocco	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1993		1997
Nepal	(I)	✔	✔	✔	✔	✔	✔							
Netherlands	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1991		1980*
New Zealand	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1988		1987
Nicaragua	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Niger	(I)	✔	✔	✔	✔	✔	✔							
Nigeria	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1979		1995
Norway	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1985	1990	1980*
Oman	(I,II)	✔	✔	✔	✔	✔	✔				✔	1989	1999	
Pakistan	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1995		1991
Paraguay	(I,II)	✔	✔	✔	✔	✔	✔				✔	1999		
Peru	(I,II)	✔	✔	✔	✔	✔	✔				✔	1991	1994	
Philippines	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1982		1991
Portugal	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1986		1986
Rwanda	(I)	✔	✔	✔	✔	✔	✔							
Saudi Arabia	(I,II)	✔	✔	✔	✔	✔	✔				✔	1990		
Senegal	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Sierra Leone	(I,II)	✔	✔	✔	✔	✔	✔				✔			
Singapore	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1973	1978	1980*
South Africa	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1989		1992
Spain	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1994	1998	1985
Sri Lanka	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔			1992
Swaziland	(I)	✔	✔	✔	✔	✔	✔							
Sweden	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1971	1990	1980*
Switzerland	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1988	1995	1980*
Syrian Arab Republic	(I,II)	✔	✔	✔	✔	✔	✔				✔			

Appendix Table A1 (continued)

Country	Sample	Log(GDP)	Enrollment	Pop Growth	Log(Life Expectancy)	Inflation	Priv Credit/ GDP	ln(# of stocks)	Turnover	Dividend Yield	Log(Credit Rating)	Insider Trading Law	Insider Trading Prosecution	Official Financial Liberalization
Thailand	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1984	1993	1987
Togo	(I)	✔	✔	✔	✔	✔	✔							
Trinidad and Tobago	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1981		
Tunisia	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1994		
Turkey	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1981	1996	1989
United Kingdom	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1980	1981	1980*
United States	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	1934	1961	1980*
Uruguay	(I,II)	✔	✔	✔	✔	✔	✔				✔	1996		
Venezuela	(I,II,III)	✔	✔	✔	✔	✔	✔	✔	✔		✔	1998		1990
Zambia	(I,II)	✔	✔	✔	✔	✔	✔				✔	1993		
Zimbabwe	(I,II,III,IV)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔			1993
Totals		95	95	95	95	95	95	50	50	28	75	60	29	27

Notes:

Note: 16 full liberalized and 52 not liberalized

(1) The macroeconomic data are available for all countries from 1980 through 1997 from the World Bank Development Indicators CD-ROM. These are listed in columns (1)-(6)

(2) The financial data are available from 1980 through 1997 from either Morgan Stanley Capital Market International or Standard and Poor's Emerging Stock Markets Factbook. These are listed in columns (7)-(10).

(3) Country Credit Ratings. These are listed in column (11)

(4) Insider trading laws established (column (12)), and the first prosecution under these laws (column (13)). From Bhattacharya and Daouk (2000)

(5) The official liberalization 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).

Developed markets are assumed liberalized before 1980 unless otherwise noted (denoted 1980*), and frontier markets are assumed not to have liberalized.

Appendix Table A2

Control Variables in the Growth Regressions

	Source	Expected Effect on Growth
Classic Growth Regression		
Log(GDP)	World Bank	(-)
Govt/GDP	World Bank	(-)
Enrollment	World Bank	(+)
Pop Growth	World Bank	(-)
Log(Life Expectancy)	World Bank	(+)
The Liberalization Effect in a Classic Growth Regression		
add Official Financial Liberalization	Bekaert and Harvey (2000)	(+)
Macroeconomic Reforms versus Financial Liberalization		
add Trade/GDP	World Bank	(+)
and Inflation or Inflation Spread	World Bank	(-)
Financial Development versus Financial Liberalization		
add Priv Credit/GDP	World Bank	(+)
and ln(# of stocks) (when available)	S&P EMDB	(+)
and Turnover (when available)	S&P EMDB	(+)
The Sources of the Liberalization Effect		
add Log(Credit Rating)	CCR	(+)
or Dividend Yield	S&P EMDB	(-)
or Insider Trading Law	Bhattacharya and Daouk (2000)	(+)
or Insider Trading Prosecution	Bhattacharya and Daouk (2000)	(+)

Appendix Table A3: The Liberalization Effect at Various Horizons

The Liberalization Effect in a Classic Growth Regression

Panel A: Annual Average Real GDP Growth Rate

	Sample I				II				III				IV			
	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10
Constant	-0.2033	-0.2281	-0.2395	-0.2266	-0.2006	-0.2374	-0.2399	-0.2242	-0.1102	-0.1493	-0.1468	-0.1518	-0.1819	-0.2018	-0.2257	-0.3264
Std. error	*0.0214*	*0.0179*	*0.0161*	*0.0145*	*0.0273*	*0.0214*	*0.0195*	*0.0183*	*0.0364*	*0.0286*	*0.0240*	*0.0259*	*0.0738*	*0.0658*	*0.0583*	*0.0555*
Log(GDP)	-0.0106	-0.0094	-0.0094	-0.0080	-0.0100	-0.0088	-0.0087	-0.0069	-0.0113	-0.0115	-0.0132	-0.0127	-0.0152	-0.0158	-0.0177	-0.0200
Std. error	*0.0007*	*0.0007*	*0.0006*	*0.0005*	*0.0008*	*0.0007*	*0.0007*	*0.0006*	*0.0008*	*0.0008*	*0.0006*	*0.0006*	*0.0013*	*0.0011*	*0.0011*	*0.0011*
Govt/GDP	0.0089	-0.0039	-0.0074	-0.0168	-0.0054	-0.0178	-0.0184	-0.0315	-0.0102	-0.0187	-0.0330	-0.0431	-0.0123	-0.0301	-0.0399	-0.0224
Std. error	*0.0103*	*0.0087*	*0.0074*	*0.0061*	*0.0116*	*0.0098*	*0.0082*	*0.0066*	*0.0130*	*0.0105*	*0.0092*	*0.0077*	*0.0197*	*0.0165*	*0.0146*	*0.0129*
Enrollment	0.0348	0.0305	0.0295	0.0403	0.0207	0.0112	0.0144	0.0375	0.0292	0.0243	0.0287	0.0603	0.0552	0.0566	0.0746	0.1232
Std. error	*0.0095*	*0.0077*	*0.0066*	*0.0048*	*0.0117*	*0.0097*	*0.0080*	*0.0053*	*0.0135*	*0.0116*	*0.0094*	*0.0068*	*0.0198*	*0.0171*	*0.0150*	*0.0125*
Population Growth	-0.6637	-0.5594	-0.6287	-0.4713	-0.6841	-0.5731	-0.6764	-0.5274	-0.8156	-0.8159	-0.9900	-1.0103	-1.1144	-1.1013	-1.0647	-1.0548
Std. error	*0.0682*	*0.0621*	*0.0581*	*0.0446*	*0.0802*	*0.0691*	*0.0649*	*0.0483*	*0.1001*	*0.0835*	*0.0700*	*0.0582*	*0.1384*	*0.1151*	*0.1004*	*0.0914*
Log(Life Expectancy)	0.0711	0.0755	0.0792	0.0727	0.0706	0.0781	0.0794	0.0712	0.0521	0.0627	0.0665	0.0662	0.0766	0.0838	0.0926	0.1192
Std. error	*0.0058*	*0.0049*	*0.0044*	*0.0040*	*0.0072*	*0.0056*	*0.0051*	*0.0048*	*0.0096*	*0.0076*	*0.0063*	*0.0069*	*0.0188*	*0.0167*	*0.0146*	*0.0140*
Official Liberalization Indicator	0.0123	0.0095	0.0066	0.0071	0.0115	0.0083	0.0049	0.0041	0.0137	0.0113	0.0123	0.0082	0.0146	0.0130	0.0145	0.0089
Std. error	*0.0017*	*0.0016*	*0.0015*	*0.0012*	*0.0019*	*0.0017*	*0.0016*	*0.0014*	*0.0022*	*0.0020*	*0.0017*	*0.0016*	*0.0037*	*0.0036*	*0.0034*	*0.0032*

Panel B: Annual Average Investment/GDP

	Sample I				II				III				IV			
	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10
Constant	-0.2055	-0.3370	-0.3971	-0.4537	-0.2136	-0.3165	-0.4345	-0.4568	-0.3117	-0.4205	-0.4305	-0.5335	0.2280	0.1725	0.0079	-0.2363
Std. error	*0.0211*	*0.0287*	*0.0232*	*0.0230*	*0.0243*	*0.0326*	*0.0267*	*0.0261*	*0.0573*	*0.0632*	*0.0628*	*0.0638*	*0.0906*	*0.1188*	*0.1118*	*0.1187*
Log(GDP)	-0.0103	-0.0157	-0.0185	-0.0213	-0.0089	-0.0130	-0.0148	-0.0155	-0.0103	-0.0148	-0.0185	-0.0218	-0.0068	-0.0109	-0.0179	-0.0231
Std. error	*0.0006*	*0.0011*	*0.0008*	*0.0006*	*0.0007*	*0.0010*	*0.0008*	*0.0007*	*0.0011*	*0.0015*	*0.0012*	*0.0012*	*0.0015*	*0.0020*	*0.0023*	*0.0026*
Govt/GDP	-0.0362	-0.0147	0.0067	0.0166	-0.0406	-0.0285	-0.0470	-0.0572	-0.0033	0.0023	0.0078	-0.0091	-0.0947	-0.1097	-0.1271	-0.1489
Std. error	*0.0107*	*0.0149*	*0.0111*	*0.0086*	*0.0121*	*0.0152*	*0.0125*	*0.0112*	*0.0159*	*0.0207*	*0.0186*	*0.0131*	*0.0253*	*0.0315*	*0.0316*	*0.0138*
Enrollment	0.8350	0.7288	0.6549	0.6045	0.7878	0.6498	0.5297	0.4812	0.8256	0.7024	0.5995	0.5254	0.8718	0.7951	0.7396	0.6857
Std. error	*0.0138*	*0.0156*	*0.0148*	*0.0123*	*0.0160*	*0.0187*	*0.0184*	*0.0174*	*0.0203*	*0.0232*	*0.0266*	*0.0203*	*0.0254*	*0.0303*	*0.0361*	*0.0311*
Population Growth	0.1183	0.2270	0.0867	-0.0881	0.2666	0.2899	0.4689	0.2925	0.1838	0.0554	-0.3714	-0.5290	-0.6030	-0.8799	-1.2529	-1.3109
Std. error	*0.1008*	*0.0796*	*0.0797*	*0.0679*	*0.0615*	*0.0759*	*0.0870*	*0.0649*	*0.1611*	*0.1637*	*0.1813*	*0.1155*	*0.1473*	*0.2153*	*0.1934*	*0.1674*
Log(Life Expectancy)	0.0778	0.1230	0.1463	0.1688	0.0791	0.1175	0.1551	0.1666	0.1021	0.1428	0.1592	0.1965	-0.0296	-0.0029	0.0550	0.1280
Std. error	*0.0058*	*0.0083*	*0.0068*	*0.0066*	*0.0070*	*0.0092*	*0.0079*	*0.0078*	*0.0148*	*0.0166*	*0.0159*	*0.0169*	*0.0237*	*0.0302*	*0.0289*	*0.0305*
Official Liberalization Indicator	0.0097	0.0141	0.0141	0.0115	0.0096	0.0116	0.0131	0.0072	0.0071	0.0079	0.0060	0.0015	0.0131	0.0127	0.0123	0.0078
Std. error	*0.0015*	*0.0025*	*0.0018*	*0.0015*	*0.0015*	*0.0026*	*0.0023*	*0.0017*	*0.0026*	*0.0034*	*0.0038*	*0.0030*	*0.0044*	*0.0053*	*0.0071*	*0.0077*

Appendix Table A3: The Liberalization Effect at Various Horizons (continued)

Panel C: Annual Average Consumption/GDP

	Sample I				II				III				IV			
	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10
Constant	1.4604	1.7627	1.7613	1.6852	0.8899	0.9759	1.0462	1.1279	0.5105	0.5343	0.6491	0.6550	1.1956	0.6856	0.9807	0.8971
Std. error	*0.0272*	*0.0429*	*0.0156*	*0.0109*	*0.0504*	*0.0642*	*0.0348*	*0.0268*	*0.0518*	*0.0811*	*0.0379*	*0.0378*	*0.0488*	*0.1171*	*0.0712*	*0.0863*
Log(GDP)	-0.0377	-0.0418	-0.0399	-0.0445	-0.0267	-0.0270	-0.0294	-0.0306	-0.0228	-0.0206	-0.0181	-0.0164	-0.0055	-0.0093	-0.0002	0.0046
Std. error	*0.0006*	*0.0017*	*0.0006*	*0.0005*	*0.0011*	*0.0020*	*0.0010*	*0.0010*	*0.0011*	*0.0021*	*0.0012*	*0.0014*	*0.0006*	*0.0017*	*0.0011*	*0.0015*
Govt/GDP	-0.5441	-0.4817	-0.4092	-0.2823	-0.5826	-0.4814	-0.4372	-0.3582	-0.4134	-0.4089	-0.3700	-0.3278	-0.7584	-0.8128	-0.7402	-0.7256
Std. error	*0.0099*	*0.0269*	*0.0138*	*0.0110*	*0.0218*	*0.0292*	*0.0198*	*0.0168*	*0.0208*	*0.0259*	*0.0175*	*0.0165*	*0.0160*	*0.0283*	*0.0148*	*0.0164*
Enrollment	-0.3266	-0.2665	-0.2455	-0.2503	-0.5782	-0.5038	-0.4829	-0.4902	-0.4446	-0.4503	-0.4103	-0.3525	-0.7241	-0.7622	-0.7245	-0.7224
Std. error	*0.0109*	*0.0227*	*0.0097*	*0.0073*	*0.0180*	*0.0266*	*0.0150*	*0.0143*	*0.0223*	*0.0276*	*0.0156*	*0.0145*	*0.0168*	*0.0376*	*0.0252*	*0.0291*
Population Growth	-0.9893	-2.5579	-2.7676	-3.1305	-0.7182	-1.8045	-1.8509	-2.2612	0.3717	0.4181	0.3312	0.5175	-0.0789	0.0178	0.3283	0.2671
Std. error	*0.1232*	*0.1410*	*0.0523*	*0.0423*	*0.1159*	*0.1917*	*0.1090*	*0.0933*	*0.1113*	*0.1986*	*0.1160*	*0.1256*	*0.0941*	*0.2088*	*0.1007*	*0.1115*
Log(Life Expectancy)	-0.0802	-0.1442	-0.1491	-0.1244	0.0462	0.0247	0.0103	-0.0064	0.1110	0.1006	0.0665	0.0574	-0.0609	0.0692	-0.0218	-0.0112
Std. error	*0.0063*	*0.0118*	*0.0040*	*0.0028*	*0.0124*	*0.0168*	*0.0083*	*0.0071*	*0.0125*	*0.0208*	*0.0087*	*0.0086*	*0.0126*	*0.0292*	*0.0175*	*0.0207*
Official Liberalization Indicator	0.0062	0.0082	-0.0023	-0.0101	-0.0088	-0.0246	-0.0208	-0.0317	-0.0100	-0.0085	-0.0170	-0.0230	0.0084	0.0123	-0.0035	-0.0162
Std. error	*0.0011*	*0.0043*	*0.0012*	*0.0009*	*0.0016*	*0.0046*	*0.0015*	*0.0018*	*0.0029*	*0.0049*	*0.0025*	*0.0021*	*0.0033*	*0.0071*	*0.0058*	*0.0078*

Panel D: Annual Average (Exports-Imports)/GDP

	Sample I				II				III				IV			
	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10
Constant	-0.3146	-0.1833	-0.2057	-0.1964	0.3422	0.4063	0.4321	0.4289	1.0018	1.0657	1.0784	1.0559	-0.1510	0.1080	0.4258	0.3702
Std. error	*0.0231*	*0.0192*	*0.0154*	*0.0142*	*0.0454*	*0.0350*	*0.0198*	*0.0095*	*0.0731*	*0.0652*	*0.0558*	*0.0602*	*0.0572*	*0.0565*	*0.0513*	*0.0738*
Log(GDP)	0.0387	0.0433	0.0477	0.0496	0.0324	0.0326	0.0365	0.0340	0.0343	0.0354	0.0362	0.0346	0.0156	0.0196	0.0238	0.0207
Std. error	*0.0007*	*0.0007*	*0.0006*	*0.0006*	*0.0009*	*0.0008*	*0.0007*	*0.0007*	*0.0010*	*0.0009*	*0.0009*	*0.0009*	*0.0009*	*0.0008*	*0.0006*	*0.0011*
Govt/GDP	-0.2159	-0.2353	-0.3379	-0.3838	-0.1549	-0.1624	-0.2499	-0.2150	-0.3567	-0.3058	-0.3067	-0.2676	-0.0841	-0.0580	-0.0395	0.0043
Std. error	*0.0068*	*0.0074*	*0.0096*	*0.0064*	*0.0188*	*0.0173*	*0.0178*	*0.0172*	*0.0281*	*0.0261*	*0.0218*	*0.0268*	*0.0135*	*0.0119*	*0.0091*	*0.0150*
Enrollment	-0.4177	-0.3607	-0.3125	-0.2463	-0.0507	0.0080	0.0430	0.1000	-0.2282	-0.1525	-0.1383	-0.1102	-0.0995	-0.0222	0.0294	0.0768
Std. error	*0.0109*	*0.0102*	*0.0115*	*0.0089*	*0.0133*	*0.0104*	*0.0088*	*0.0058*	*0.0210*	*0.0179*	*0.0145*	*0.0150*	*0.0151*	*0.0146*	*0.0119*	*0.0228*
Population Growth	0.5653	0.4565	1.4112	1.5194	0.0744	-0.0973	0.3062	0.2080	-0.4449	-0.4199	-0.2451	-0.1708	0.7476	0.6206	0.5288	0.2790
Std. error	*0.1413*	*0.1452*	*0.0478*	*0.0420*	*0.1290*	*0.0991*	*0.0747*	*0.0700*	*0.1534*	*0.1428*	*0.1030*	*0.1112*	*0.1287*	*0.1112*	*0.0884*	*0.1319*
Log(Life Expectancy)	0.0229	-0.0179	-0.0235	-0.0319	-0.1378	-0.1557	-0.1701	-0.1687	-0.2788	-0.3016	-0.3086	-0.3044	0.0161	-0.0582	-0.1459	-0.1305
Std. error	*0.0057*	*0.0045*	*0.0044*	*0.0043*	*0.0115*	*0.0090*	*0.0053*	*0.0029*	*0.0178*	*0.0157*	*0.0131*	*0.0144*	*0.0153*	*0.0152*	*0.0135*	*0.0194*
Official Liberalization Indicator	-0.0117	-0.0211	-0.0163	-0.0102	-0.0108	-0.0107	-0.0077	-0.0038	-0.0040	-0.0061	-0.0012	0.0057	-0.0251	-0.0231	-0.0171	-0.0146
Std. error	*0.0016*	*0.0017*	*0.0014*	*0.0013*	*0.0015*	*0.0013*	*0.0014*	*0.0019*	*0.0030*	*0.0029*	*0.0029*	*0.0037*	*0.0022*	*0.0024*	*0.0028*	*0.0044*

Appendix Table A3: The Liberalization Effect at Various Horizons (continued)

Panel E: Annual Average Government/GDP

	Sample I				II				III				IV			
	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10	k = 3	5	7	10
Constant	0.0173	0.0275	0.0076	-0.0401	0.0049	0.0123	0.0125	-0.0446	0.0624	0.0911	0.1287	0.2355	0.1786	0.2702	0.4531	0.8280
Std. error	*0.0110*	*0.0109*	*0.0129*	*0.0142*	*0.0128*	*0.0130*	*0.0173*	*0.0192*	*0.0158*	*0.0204*	*0.0229*	*0.0230*	*0.0209*	*0.0292*	*0.0341*	*0.0267*
Log(GDP)	0.0038	0.0069	0.0094	0.0113	0.0030	0.0055	0.0076	0.0095	0.0011	0.0014	0.0016	0.0016	0.0029	0.0040	0.0067	0.0110
Std. error	*0.0005*	*0.0006*	*0.0005*	*0.0008*	*0.0005*	*0.0007*	*0.0007*	*0.0011*	*0.0003*	*0.0004*	*0.0006*	*0.0006*	*0.0003*	*0.0005*	*0.0005*	*0.0005*
Govt/GDP	0.9045	0.8426	0.7892	0.6969	0.9209	0.8756	0.8380	0.7580	0.9525	0.9187	0.8846	0.8404	0.9816	0.9701	0.9385	0.8983
Std. error	*0.0099*	*0.0113*	*0.0081*	*0.0097*	*0.0092*	*0.0111*	*0.0070*	*0.0078*	*0.0058*	*0.0072*	*0.0072*	*0.0071*	*0.0076*	*0.0099*	*0.0112*	*0.0053*
Enrollment	0.0331	0.0377	0.0225	0.0192	0.0200	0.0258	0.0139	-0.0018	0.0217	0.0169	0.0097	-0.0181	0.0268	0.0330	0.0238	-0.0019
Std. error	*0.0035*	*0.0046*	*0.0049*	*0.0054*	*0.0038*	*0.0052*	*0.0065*	*0.0063*	*0.0055*	*0.0076*	*0.0092*	*0.0087*	*0.0063*	*0.0100*	*0.0127*	*0.0108*
Population Growth	0.1355	0.2806	0.5992	0.9696	0.1303	0.2772	0.5909	1.1894	-0.0827	-0.0861	-0.0970	-0.2117	0.0796	0.1707	0.0808	-0.0609
Std. error	*0.0862*	*0.0853*	*0.0534*	*0.0649*	*0.1026*	*0.1075*	*0.0608*	*0.0694*	*0.0317*	*0.0309*	*0.0362*	*0.0375*	*0.0448*	*0.0558*	*0.0584*	*0.0287*
Log(Life Expectancy)	-0.0101	-0.0168	-0.0156	-0.0062	-0.0059	-0.0117	-0.0154	-0.0051	-0.0164	-0.0228	-0.0309	-0.0535	-0.0490	-0.0733	-0.1203	-0.2156
Std. error	*0.0024*	*0.0025*	*0.0035*	*0.0040*	*0.0029*	*0.0032*	*0.0048*	*0.0058*	*0.0041*	*0.0054*	*0.0061*	*0.0059*	*0.0053*	*0.0074*	*0.0086*	*0.0069*
Official Liberalization Indicator	-0.0016	-0.0027	-0.0012	0.0023	0.0004	0.0006	0.0037	0.0124	0.0019	0.0053	0.0088	0.0123	0.0012	0.0041	0.0053	0.0109
Std. error	*0.0006*	*0.0006*	*0.0006*	*0.0011*	*0.0008*	*0.0009*	*0.0010*	*0.0019*	*0.0009*	*0.0013*	*0.0017*	*0.0021*	*0.0011*	*0.0019*	*0.0022*	*0.0019*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is either the k-year average growth rate of real per capita gross domestic product, investment/GDP, consumption/GDP, government/GDP, or trade balance/GDP ratios. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Appendix Table A4: The Liberalization Effect with Various Weighting Matrices

The Liberalization Effect in a Classic Growth Regression

Annual Average Real GDP Growth Rate (k=5)

	Panel A: Weighting Matrix 1				**Panel B: Weighting Matrix 2**				**Panel C: Weighting Matrix 3**			
	Sample I	II	III	IV	Sample I	II	III	IV	Sample I	II	III	IV
Constant	-0.1971	-0.1679	-0.0934	-0.3154	-0.2281	-0.2374	-0.1493	-0.2018	-0.3292	-0.3419	-0.3063	-0.4314
Std. error	*0.0268*	*0.0313*	*0.0487*	*0.1040*	*0.0179*	*0.0214*	*0.0286*	*0.0658*	*0.0428*	*0.0535*	*0.0774*	*0.1457*
Log(GDP)	-0.0080	-0.0077	-0.0107	-0.0169	-0.0094	-0.0088	-0.0115	-0.0158	-0.0079	-0.0074	-0.0098	-0.0182
Std. error	*0.0010*	*0.0013*	*0.0012*	*0.0020*	*0.0007*	*0.0007*	*0.0008*	*0.0011*	*0.0016*	*0.0018*	*0.0018*	*0.0025*
Govt/GDP	0.0047	0.0225	-0.0043	-0.0202	-0.0039	-0.0178	-0.0187	-0.0301	-0.0139	-0.0345	-0.0459	-0.0069
Std. error	*0.0119*	*0.0135*	*0.0181*	*0.0286*	*0.0087*	*0.0098*	*0.0105*	*0.0165*	*0.0190*	*0.0223*	*0.0256*	*0.0359*
Enrollment	0.0397	0.0083	0.0693	0.0601	0.0305	0.0112	0.0243	0.0566	0.0213	0.0041	0.0287	0.0913
Std. error	*0.0128*	*0.0128*	*0.0200*	*0.0297*	*0.0077*	*0.0097*	*0.0116*	*0.0171*	*0.0165*	*0.0227*	*0.0234*	*0.0298*
Population Growth	-0.6900	-0.8364	-0.8771	-1.0310	-0.5594	-0.5731	-0.8159	-1.1013	-0.0276	-0.0701	-0.2163	-0.8516
Std. error	*0.0798*	*0.0883*	*0.1149*	*0.1727*	*0.0621*	*0.0691*	*0.0835*	*0.1151*	*0.0444*	*0.0551*	*0.1420*	*0.2870*
Log(Life Expectancy)	0.0655	0.0609	0.0457	0.1123	0.0755	0.0781	0.0627	0.0838	0.0954	0.0994	0.0957	0.1407
Std. error	*0.0076*	*0.0090*	*0.0131*	*0.0270*	*0.0049*	*0.0056*	*0.0076*	*0.0167*	*0.0124*	*0.0148*	*0.0206*	*0.0367*
Official Liberalization Indicator	0.0055	0.0017	0.0091	0.0112	0.0095	0.0083	0.0113	0.0130	0.0117	0.0108	0.0104	0.0057
Std. error	*0.0023*	*0.0027*	*0.0026*	*0.0046*	*0.0016*	*0.0017*	*0.0020*	*0.0036*	*0.0037*	*0.0040*	*0.0034*	*0.0044*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The weighting matrices we employ in our GMM estimation provide a correction for cross-sectional heteroskedasticity and SUR effects (Matrix 1), cross-sectional heteroskedasticity (Matrix 2), and no cross-sectional error structure (Matrix 3 –pooled OLS). All standard errors account for the overlapping nature of the data.

Table 1: Unconditional Analysis of GDP Growth Before and After Financial Liberalization

Panel A: Annual Average Real GDP Growth Rate

Years -10	-7	-5	-3	Country	3	5	7	10
-0.0054	-0.0104	-0.0102	0.0105	Argentina	-0.0100	0.0182	0.0143	*
-0.0042	0.0139	0.0019	-0.0216	Brazil	0.0031	0.0160	0.0160	*
0.0237	0.0507	0.0527	0.0541	Chile	0.0631	0.0663	*	*
0.0126	0.0206	0.0245	0.0179	Colombia	0.0187	0.0261	0.0204	*
0.0151	0.0082	0.0116	0.0207	Greece	0.0214	0.0157	0.0105	0.0131
0.0301	0.0315	0.0323	0.0209	India	0.0420	0.0468	*	*
-0.0185	-0.0294	0.0057	0.0498	Jordan	-0.0021	*	*	*
*	*	0.0344	0.0357	Japan	0.0211	0.0265	0.0272	0.0336
0.0783	0.0800	0.0813	0.0699	Korea	0.0535	0.0580	*	*
0.0279	0.0176	0.0097	-0.0114	Malaysia	0.0583	0.0566	0.0574	0.0575
0.0010	-0.0258	-0.0085	-0.0231	Mexico	0.0252	0.0187	0.0054	*
0.0207	0.0169	0.0182	0.0102	New Zealand	-0.0025	-0.0097	0.0012	0.0052
0.0152	0.0188	0.0051	-0.0143	Nigeria	0.0128	*	*	*
0.0343	0.0315	0.0303	0.0294	Pakistan	0.0240	0.0221	0.0149	*
-0.0092	-0.0156	0.0192	0.0249	Philippines	-0.0169	-0.0017	0.0076	*
-0.0174	-0.0161	-0.0074	-0.0177	South Africa	-0.0152	-0.0045	*	*
0.0412	0.0345	0.0352	0.0359	Thailand	0.0936	0.0869	0.0808	0.0757
-0.0284	-0.0184	-0.0111	-0.0248	Venezuela	0.0459	0.0144	0.0087	*
-0.0070	-0.0042	0.0011	-0.0186	Zimbabwe	0.0013	0.0131	*	*
0.0407	0.0341	0.0369	0.0392	Indonesia	0.0685	0.0622	0.0614	*
0.0197	0.0139	0.0039	-0.0010	Portugal	0.0597	0.0558	0.0472	0.0363
0.0174	0.0302	0.0354	0.0393	Turkey	0.0118	0.0268	0.0157	*
0.0125	0.0083	0.0051	0.0068	Spain	0.0315	0.0374	0.0346	0.0254
0.0258	0.0229	0.0203	0.0296	Sri Lanka	0.0427	0.0390	*	*
0.0142	0.0136	0.0178	0.0151	Average	0.0271	0.0334	0.0277	0.0432
				# of increases	16 (of 24 valid)	16 (of 22)	11 (of 15)	4 (of 6)

Panel B: Cross-Sectional Comparison
Annual Average Real GDP Growth Rate

	k = 3	5	7	10
Full Liberalized	0.0234	0.0226	0.0213	0.0204
Never Liberalized	-0.0008	0.0014	0.0018	0.0032

The variable we explore in this table is the k-year average growth rate of real per capita gross domestic product. Official liberalization means that the equity market is liberalized. Full Liberalized denotes countries that are fully liberalized throughout our sample, whereas Never Liberalized denotes countries that never undergo financial liberalization.

Table 2: Classic Growth Regression and the Impact of Liberalization

Annual Average Real GDP Growth Rate (k=5)

Panel A: Classic Growth Regression

	Sample I	II	III	IV
Constant	-0.2369	-0.2581	-0.1559	-0.3438
Std. error	*0.0181*	*0.0216*	*0.0295*	*0.0538*
Log(GDP)	-0.0071	-0.0069	-0.0093	-0.0156
Std. error	*0.0006*	*0.0006*	*0.0007*	*0.0011*
Govt/GDP	-0.0044	-0.0175	-0.0212	-0.0158
Std. error	*0.0085*	*0.0096*	*0.0105*	*0.0164*
Enrollment	0.0277	0.0059	0.0162	0.0624
Std. error	*0.0079*	*0.0098*	*0.0119*	*0.0174*
Population Growth	-0.5978	-0.6037	-0.9389	-1.2056
Std. error	*0.0577*	*0.0642*	*0.0791*	*0.1121*
Log(Life Expectancy)	0.0746	0.0806	0.0624	0.1182
Std. error	*0.0049*	*0.0057*	*0.0079*	*0.0140*

Panel B: Classic Growth Regression with Liberalization Indicator

	Sample I	II	III	IV
Constant	-0.2281	-0.2374	-0.1493	-0.2018
Std. error	*0.0179*	*0.0214*	*0.0286*	*0.0658*
Log(GDP)	-0.0094	-0.0088	-0.0115	-0.0158
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0011*
Govt/GDP	-0.0039	-0.0178	-0.0187	-0.0301
Std. error	*0.0087*	*0.0098*	*0.0105*	*0.0165*
Enrollment	0.0305	0.0112	0.0243	0.0566
Std. error	*0.0077*	*0.0097*	*0.0116*	*0.0171*
Population Growth	-0.5594	-0.5731	-0.8159	-1.1013
Std. error	*0.0621*	*0.0691*	*0.0835*	*0.1151*
Log(Life Expectancy)	0.0755	0.0781	0.0627	0.0838
Std. error	*0.0049*	*0.0056*	*0.0076*	*0.0167*
Official Liberalization Indicator	0.0095	0.0083	0.0113	0.0130
Std. error	*0.0016*	*0.0017*	*0.0020*	*0.0036*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 3: Robustness of the Liberalization Effect

Annual Average Real GDP Growth Rate (k=5)

Panel A: Sensitivity to Alternative Liberalization Dates

	Sample I	II	III	IV
Constant	-0.2240	-0.2344	-0.1373	-0.2351
Std. error	*0.0178*	*0.0213*	*0.0290*	*0.0653*
Log(GDP)	-0.0093	-0.0088	-0.0105	-0.0150
Std. error	*0.0006*	*0.0006*	*0.0007*	*0.0012*
Govt/GDP	-0.0019	-0.0158	-0.0236	-0.0229
Std. error	*0.0088*	*0.0099*	*0.0107*	*0.0165*
Enrollment	0.0304	0.0108	0.0224	0.0572
Std. error	*0.0078*	*0.0098*	*0.0116*	*0.0173*
Population Growth	-0.5531	-0.5682	-0.7913	-1.1104
Std. error	*0.0620*	*0.0686*	*0.0838*	*0.1183*
Log(Life Expectancy)	0.0742	0.0772	0.0582	0.0900
Std. error	*0.0048*	*0.0056*	*0.0077*	*0.0170*
First Sign Liberalization Indicator	0.0102	0.0091	0.0105	0.0094
Std. error	*0.0015*	*0.0016*	*0.0018*	*0.0033*

Panel B: Sensitivity to Regional Influences

	Sample I	II	III	IV
Constant	-0.2268	-0.2347	-0.1571	-0.2095
Std. error	*0.0180*	*0.0214*	*0.0288*	*0.0645*
Log(GDP)	-0.0096	-0.0090	-0.0117	-0.0158
Std. error	*0.0007*	*0.0007*	*0.0007*	*0.0011*
Govt/GDP	-0.0049	-0.0197	-0.0236	-0.0318
Std. error	*0.0088*	*0.0099*	*0.0106*	*0.0169*
Enrollment	0.0305	0.0110	0.0225	0.0553
Std. error	*0.0078*	*0.0098*	*0.0115*	*0.0171*
Population Growth	-0.5454	-0.5569	-0.7493	-1.0934
Std. error	*0.0631*	*0.0706*	*0.0857*	*0.1158*
Log(Life Expectancy)	0.0754	0.0777	0.0649	0.0854
Std. error	*0.0049*	*0.0057*	*0.0077*	*0.0164*
Official Liberalization Indicator (Latin)	0.0089	0.0075	0.0068	0.0138
Std. error	*0.0034*	*0.0034*	*0.0035*	*0.0071*
Official Liberalization Indicator (Not-Latin)	0.0108	0.0099	0.0136	0.0133
Std. error	*0.0016*	*0.0017*	*0.0019*	*0.0035*

Panel C: Sensitivity to Business Cycle: Lagged World Growth and Real Interest Rates

	Sample I	II	III	IV
Constant	-0.2334	-0.2453	-0.1654	-0.2437
Std. error	*0.0185*	*0.0220*	*0.0304*	*0.0678*
Log(GDP)	-0.0095	-0.0089	-0.0118	-0.0162
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0011*
Govt/GDP	-0.0053	-0.0188	-0.0211	-0.0293
Std. error	*0.0088*	*0.0099*	*0.0107*	*0.0165*
Enrollment	0.0322	0.0117	0.0244	0.0559
Std. error	*0.0077*	*0.0098*	*0.0116*	*0.0169*
Population Growth	-0.5503	-0.5553	-0.7864	-1.0202
Std. error	*0.0627*	*0.0701*	*0.0853*	*0.1195*
Log(Life Expectancy)	0.0762	0.0793	0.0656	0.0924
Std. error	*0.0049*	*0.0057*	*0.0079*	*0.0170*
OECD GDP growth (lagged)	0.0614	0.0349	0.0444	0.0424
Std. error	*0.0317*	*0.0342*	*0.0334*	*0.0413*
World real interest rate (lagged)	0.0337	0.0473	0.0834	0.1069
Std. error	*0.0325*	*0.0352*	*0.0350*	*0.0434*
Official Liberalization Indicator	0.0101	0.0089	0.0123	0.0133
Std. error	*0.0016*	*0.0017*	*0.0020*	*0.0036*

Panel D: Sensitivity to Business Cycle: Contemporaneous World Growth and Real Interest Rates

	Sample I	II	III	IV
Constant	-0.2241	-0.2371	-0.1536	-0.2240
Std. error	*0.0185*	*0.0220*	*0.0309*	*0.0670*
Log(GDP)	-0.0093	-0.0087	-0.0115	-0.0161
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0011*
Govt/GDP	-0.0084	-0.0203	-0.0233	-0.0307
Std. error	*0.0087*	*0.0098*	*0.0107*	*0.0165*
Enrollment	0.0367	0.0174	0.0302	0.0634
Std. error	*0.0076*	*0.0098*	*0.0115*	*0.0164*
Population Growth	-0.5574	-0.5619	-0.7824	-1.0136
Std. error	*0.0623*	*0.0699*	*0.0855*	*0.1240*
Log(Life Expectancy)	0.0744	0.0778	0.0631	0.0883
Std. error	*0.0050*	*0.0057*	*0.0081*	*0.0168*
OECD GDP growth (contemporaneous)	0.1469	0.1177	0.1435	0.1695
Std. error	*0.0301*	*0.0328*	*0.0315*	*0.0394*
World real interest rate (contemporaneous)	-0.0625	-0.0484	-0.0132	-0.0182
Std. error	*0.0282*	*0.0309*	*0.0300*	*0.0372*
Official Liberalization Indicator	0.0097	0.0085	0.0124	0.0141
Std. error	*0.0016*	*0.0017*	*0.0020*	*0.0036*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The first sign liberalization indicator takes the value of one after the first of the following events: the officially liberalization date, the introduction of an ADR, or the introduction of a country fund. Latin refers to an indicator that takes the value of one if the country is in Latin America. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 4: Monte Carlo Analysis of the Liberalization Effect

Annual Average Real GDP Growth Rate (k=5)
1000 Replications

	Randomized Lib Indicator		**Intercept**	
	Coefficient	T-stat	Coefficient	T-stat
Mean	-0.0002	-0.1305	-0.2396	-10.7595
Median	-0.0003	-0.1924	-0.2389	-10.7420
2.50%	-0.0057	-3.1250	-0.2626	-11.6792
5.00%	-0.0048	-2.8700	-0.2555	-11.4214
95.00%	0.0043	2.8300	-0.2267	-10.1928
97.50%	0.0051	3.1353	-0.2219	-10.0328

	Log(GDP)		**Gov/GDP**	
	Coefficient	T-stat	Coefficient	T-stat
Mean	-0.0069	-11.4466	-0.0077	-0.6372
Median	-0.0069	-11.4953	-0.0078	-0.6453
2.50%	-0.0074	-12.5111	-0.0162	-1.0363
5.00%	-0.0073	-12.1652	-0.0111	-0.9087
95.00%	-0.0066	-10.6587	-0.0033	-0.2659
97.50%	-0.0065	-10.3595	-0.0025	-0.2101

	Enrollment		**Population Growth**	
	Coefficient	T-stat	Coefficient	T-stat
Mean	0.0272	4.5188	-0.5897	-13.5067
Median	0.0273	4.5373	-0.5920	-13.5972
2.50%	0.0222	3.6523	-0.6247	-14.5933
5.00%	0.0233	3.8723	-0.6158	-14.1923
95.00%	0.0305	5.1040	-0.5594	-12.5882
97.50%	0.0318	5.3153	-0.5491	-12.2674

	Log(Life Expectancy)	
	Coefficient	T-stat
Mean	0.0753	12.9693
Median	0.0751	12.9638
2.50%	0.0705	12.1558
5.00%	0.0716	12.3863
95.00%	0.0797	13.6292
97.50%	0.0806	13.9367

This Table presents evidence from a Monte Carlo procedure (with 1000 replications) that mimics the GMM estimation presented in Table 2, for our largest sample of 95 countries. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the randomized "liberalization" variable is simulated based upon the procedure documented in the text. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. We present the 2.5%, 5.0%, 50%, 95%, and 97.5% percentile for the estimated coefficients and t-statistics.

Table 5: Macroeconomic Reforms and Financial Liberalization

Annual Average Real GDP Growth Rate (k=5)

Panel A: Inflation

	Sample I	II	III	IV
Constant	-0.2447	-0.2628	-0.1494	-0.1717
Std. error	*0.0181*	*0.0216*	*0.0294*	*0.0631*
Log(GDP)	-0.0094	-0.0088	-0.0120	-0.0167
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0011*
Govt/GDP	-0.0122	-0.0263	-0.0303	-0.0344
Std. error	*0.0091*	*0.0103*	*0.0109*	*0.0134*
Enrollment	0.0100	-0.0167	0.0057	0.0574
Std. error	*0.0083*	*0.0103*	*0.0121*	*0.0169*
Population Growth	-0.4966	-0.4954	-0.8100	-1.1441
Std. error	*0.0589*	*0.0684*	*0.0842*	*0.1167*
Log(Life Expectancy)	0.0789	0.0840	0.0638	0.0775
Std. error	*0.0049*	*0.0057*	*0.0078*	*0.0159*
Trade	0.0095	0.0108	0.0090	0.0084
Std. error	*0.0011*	*0.0012*	*0.0012*	*0.0013*
Inflation (Latin)	0.0001	0.0001	0.0005	0.0003
Std. error	*0.0002*	*0.0002*	*0.0003*	*0.0004*
Inflation (Non-Latin)	0.0030	0.0021	0.0042	-0.0492
Std. error	*0.0022*	*0.0024*	*0.0039*	*0.0134*
Official Liberalization Indicator	0.0102	0.0084	0.0112	0.0088
Std. error	*0.0016*	*0.0017*	*0.0020*	*0.0034*

Panel B: Inflation High-Low Spread

	I	II	III	IV
Constant	-0.2368	-0.2549	-0.1564	-0.3184
Std. error	*0.0183*	*0.0218*	*0.0292*	*0.0708*
Log(GDP)	-0.0095	-0.0089	-0.0120	-0.0170
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0011*
Govt/GDP	-0.0207	-0.0339	-0.0318	-0.0251
Std. error	*0.0093*	*0.0104*	*0.0107*	*0.0169*
Enrollment	0.0128	-0.0146	0.0066	0.0364
Std. error	*0.0083*	*0.0104*	*0.0119*	*0.0171*
Population Growth	-0.5210	-0.5098	-0.8138	-1.1565
Std. error	*0.0595*	*0.0686*	*0.0839*	*0.1207*
Log(Life Expectancy)	0.0775	0.0825	0.0656	0.1133
Std. error	*0.0050*	*0.0057*	*0.0078*	*0.0180*
Trade	0.0092	0.0105	0.0087	0.0089
Std. error	*0.0011*	*0.0012*	*0.0012*	*0.0013*
Inflation Spread (Latin)	0.0002	0.0002	0.0005	0.0006
Std. error	*0.0001*	*0.0001*	*0.0002*	*0.0003*
Inflation Spread (Non-Latin)	0.0050	0.0041	0.0081	0.0651
Std. error	*0.0019*	*0.0020*	*0.0030*	*0.0207*
Official Liberalization Indicator	0.0113	0.0094	0.0115	0.0074
Std. error	*0.0016*	*0.0017*	*0.0019*	*0.0036*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; Trade/GDP is the sum of exports and imports of goods and services measured as a share of GDP; Inflation as measured by the annual growth rate of the GDP implicit deflator; Inflation Spread is the high-low spread of observed annual inflation over the previous 5-years; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. Latin refers to an indicator that takes the value of one if the country is in Latin America. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 6: Financial Development versus Financial Liberalization

Annual Average Real GDP Growth Rate (k=5)

Panel A: Banking Sector Development

	Sample I	II	III	IV
Constant	-0.2288	-0.2481	-0.1450	-0.3366
Std. error	*0.0182*	*0.0216*	*0.0291*	*0.0708*
Log(GDP)	-0.0104	-0.0099	-0.0133	-0.0186
Std. error	*0.0007*	*0.0008*	*0.0008*	*0.0013*
Govt/GDP	-0.0233	-0.0371	-0.0323	-0.0124
Std. error	*0.0095*	*0.0108*	*0.0110*	*0.0188*
Enrollment	0.0067	-0.0248	-0.0080	0.0226
Std. error	*0.0086*	*0.0107*	*0.0126*	*0.0182*
Population Growth	-0.5323	-0.5195	-0.8594	-1.2297
Std. error	*0.0587*	*0.0684*	*0.0848*	*0.1290*
Log(Life Expectancy)	0.0768	0.0825	0.0651	0.1203
Std. error	*0.0050*	*0.0058*	*0.0077*	*0.0180*
Trade	0.0092	0.0107	0.0096	0.0102
Std. error	*0.0011*	*0.0011*	*0.0012*	*0.0014*
Inflation Spread (Latin)	0.0002	0.0002	0.0006	0.0008
Std. error	*0.0001*	*0.0001*	*0.0002*	*0.0003*
Inflation Spread (Non-Latin)	0.0053	0.0042	0.0087	0.0736
Std. error	*0.0019*	*0.0020*	*0.0031*	*0.0215*
Private Credit	0.0086	0.0100	0.0087	0.0066
Std. error	*0.0020*	*0.0021*	*0.0022*	*0.0026*
Official Liberalization Indicator	0.0098	0.0076	0.0104	0.0061
Std. error	*0.0016*	*0.0017*	*0.0019*	*0.0036*

Panel B: Banking Sector and Equity Market Development

	Sample III	IV
Constant	-0.1373	-0.3304
Std. error	*0.0309*	*0.0746*
Log(GDP)	-0.0126	-0.0180
Std. error	*0.0008*	*0.0013*
Govt/GDP	-0.0387	-0.0127
Std. error	*0.0109*	*0.0185*
Enrollment	-0.0069	0.0143
Std. error	*0.0127*	*0.0184*
Population Growth	-0.8127	-1.3198
Std. error	*0.0901*	*0.1419*
Log(Life Expectancy)	0.0606	0.1155
Std. error	*0.0083*	*0.0187*
Trade	0.0110	0.0119
Std. error	*0.0012*	*0.0015*
Inflation Spread (Latin)	0.0005	0.0009
Std. error	*0.0002*	*0.0003*
Inflation Spread (Non-Latin)	0.0075	0.0961
Std. error	*0.0024*	*0.0226*
Private Credit	0.0051	0.0059
Std. error	*0.0022*	*0.0026*
Turnover	0.0076	0.0078
Std. error	*0.0023*	*0.0023*
Log(# of dom companies)	0.0010	0.0014
Std. error	*0.0004*	*0.0006*
Official Liberalization Indicator	0.0083	0.0036
Std. error	*0.0019*	*0.0036*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; Trade/GDP is the sum of exports and imports of goods and services measured as a share of GDP; Inflation as measured by the annual growth rate of the GDP implicit deflator; Inflation Spread is the high-low spread of observed annual inflation over the previous 5-years; PrivCredit/GDP is private credit divided by GDP; log(# of stocks) is the log of the number of domestic companies; Turnover is the ratio of equity market value traded to the MCAP; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. Latin refers to an indicator that takes the value of one if the country is in Latin America.

The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 7: Financial Liberalization and Financial Development

Panel A: Effects of Financial Liberalization on Financial Development

Sample III: 50 countries Dependent Variable: Average Turnover	k = 1	2	3
Constant	-1.3634	-1.4573	-1.5860
Std. error	*0.2319*	*0.2121*	*0.1982*
Log(GDP)	0.0211	0.0200	0.0161
Std. error	*0.0062*	*0.0058*	*0.0057*
Govt/GDP	-0.3103	-0.3185	-0.3387
Std. error	*0.1012*	*0.0909*	*0.0843*
Enrollment	0.1094	0.1109	0.0808
Std. error	*0.0903*	*0.0819*	*0.0805*
Population Growth	0.9376	1.1719	1.3368
Std. error	*0.7442*	*0.6752*	*0.6314*
Log(Life Expectancy)	0.3183	0.3431	0.3839
Std. error	*0.0606*	*0.0558*	*0.0530*
Official Liberalization Indicator	0.1611	0.1605	0.1660
Std. error	*0.0157*	*0.0147*	*0.0144*

Sample III: 50 countries Dependent Variable: Average Log(# of stocks)	k = 1	2	3
Constant	-1.2640	-1.1084	-0.9963
Std. error	*1.0370*	*1.0100*	*0.9699*
Log(GDP)	0.0058	0.0048	0.0017
Std. error	*0.0261*	*0.0260*	*0.0259*
Govt/GDP	-1.2926	-1.3743	-1.4821
Std. error	*0.3406*	*0.3320*	*0.3160*
Enrollment	0.1441	0.0992	-0.0221
Std. error	*0.3707*	*0.3682*	*0.3593*
Population Growth	-3.5210	-4.0686	-4.2086
Std. error	*2.5320*	*2.4068*	*2.1532*
Log(Life Expectancy)	1.5207	1.4988	1.4925
Std. error	*0.2681*	*0.2609*	*0.2515*
Official Liberalization Indicator	0.4675	0.4566	0.4681
Std. error	*0.0585*	*0.0589*	*0.0599*

Sample I: 95 countries Dependent Variable: Average Private Credit/GDP	k = 1	2	3
Constant	-0.9338	-0.8889	-0.8891
Std. error	*0.0699*	*0.0718*	*0.0721*
Log(GDP)	0.0850	0.0878	0.0870
Std. error	*0.0041*	*0.0041*	*0.0042*
Govt/GDP	0.2554	0.2068	0.1757
Std. error	*0.0478*	*0.0465*	*0.0454*
Enrollment	0.5231	0.5822	0.5971
Std. error	*0.0445*	*0.0452*	*0.0457*
Population Growth	-0.1110	0.0049	0.0848
Std. error	*0.1996*	*0.2000*	*0.2002*
Log(Life Expectancy)	0.1196	0.1025	0.1039
Std. error	*0.0223*	*0.0229*	*0.0231*
Official Liberalization Indicator	0.2223	0.2226	0.2285
Std. error	*0.0091*	*0.0093*	*0.0095*

Sample III: 50 countries Dependent Variable: Average Private Credit/GDP	k = 1	2	3
Constant	-0.7842	-0.7317	-0.7002
Std. error	*0.2572*	*0.2517*	*0.2475*
Log(GDP)	0.1303	0.1300	0.1291
Std. error	*0.0066*	*0.0066*	*0.0066*
Govt/GDP	0.2000	0.1869	0.1703
Std. error	*0.1127*	*0.1096*	*0.1062*
Enrollment	1.2484	1.2502	1.2397
Std. error	*0.0916*	*0.0902*	*0.0904*
Population Growth	2.4165	2.5392	2.6223
Std. error	*0.7425*	*0.7276*	*0.7205*
Log(Life Expectancy)	-0.0262	-0.0386	-0.0438
Std. error	*0.0665*	*0.0651*	*0.0640*
Official Liberalization Indicator	0.1144	0.1227	0.1290
Std. error	*0.0139*	*0.0142*	*0.0146*

Table 7 (continued)

Panel B: Effects of Financial Development on Probability of Financial Liberalization

Dependent Variable: 1996 Official Liberalization Indicator
Independent Variables are average of previous 5 years
50 countries

Dependent Variable: 1996 Official Liberalization Indicator	
Constant	-11.773
Std. error	*16.468*
Log(GDP)	0.669
Std. error	*1.484*
Govt/GDP	14.476
Std. error	*23.590*
Private Credit	-2.561
Std. error	*6.957*
Turnover	7.376
Std. error	*11.816*
Log(# of dom companies)	0.939
Std. error	*0.862*

Dependent Variable: 1993 Official Liberalization Indicator	
Constant	-6.044
Std. error	*4.260*
Log(GDP)	0.720
Std. error	*0.654*
Govt/GDP	-11.585
Std. error	*4.929*
Private Credit	0.438
Std. error	*3.111*
Turnover	0.175
Std. error	*1.848*
Log(# of dom companies)	0.537
Std. error	*0.300*

Dependent Variable: 1990 Official Lib Indicator	
Constant	-6.908
Std. error	*2.507*
Log(GDP)	1.370
Std. error	*0.741*
Govt/GDP	-14.068
Std. error	*12.733*
Private Credit	1.264
Std. error	*1.829*
Turnover	0.258
Std. error	*1.291*
Log(# of dom companies)	-0.360
Std. error	*0.451*

Dependent Variable: 1987 Official Lib Indicator	
Constant	-11.137
Std. error	*3.909*
Log(GDP)	1.405
Std. error	*0.515*
Govt/GDP	-4.910
Std. error	*7.734*
Private Credit	1.774
Std. error	*3.091*
Turnover	-0.335
Std. error	*2.327*
Log(# of dom companies)	-0.145
Std. error	*0.429*

I and III refers to samples of 95 and 50 countries detailed in appendix table A1. In Panel A, the dependent variable is the 1, 2, or 3-year average of either equity markets turnover, log number of companies, or private credit to GDP ratio. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors are robust, accounting for the overlapping nature of the data. In Panel B, the dependent variable is the official liberalization indicator. A cross-sectional Probit model is estimated for 1987, 1990, 1993, 1996 using Quasi-Maximum Likelihood Methods (BHHH algorithm), with QMLE-adjusted robust standard errors. In this case, each right-hand side variables is the preceding 5-year average of the relevant quantities.

Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; PrivCredit/GDP is private credit divided by GDP; log(# of stocks) is the log of the number of domestic companies; Turnover is the ratio of equity market value traded to the MCAP; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise.

Table 8: The Sources of the Liberalization Effect

Liberalization and the Components of GDP

Panel A: Annual Average Investment/GDP Ratio (k=5)

	Sample I	II	III	IV
Constant	-0.3370	-0.3165	-0.4205	0.1725
Std. error	*0.0287*	*0.0326*	*0.0632*	*0.1188*
Log(GDP)	-0.0157	-0.0130	-0.0148	-0.0109
Std. error	*0.0011*	*0.0010*	*0.0015*	*0.0020*
Govt/GDP	-0.0147	-0.0285	0.0023	-0.1097
Std. error	*0.0149*	*0.0152*	*0.0207*	*0.0315*
Enrollment	0.7288	0.6498	0.7024	0.7951
Std. error	*0.0156*	*0.0187*	*0.0232*	*0.0303*
Population Growth	0.2270	0.2899	0.0554	-0.8799
Std. error	*0.0796*	*0.0759*	*0.1637*	*0.2153*
Log(Life Expectancy)	0.1230	0.1175	0.1428	-0.0029
Std. error	*0.0083*	*0.0092*	*0.0166*	*0.0302*
Official Liberalization Indicator	0.0141	0.0116	0.0079	0.0127
Std. error	*0.0025*	*0.0026*	*0.0034*	*0.0053*

Panel B: Annual Average Consumption/GDP Ratio (k=5)

	Sample I	II	III	IV
Constant	1.7627	0.9759	0.5343	0.6856
Std. error	*0.0429*	*0.0642*	*0.0811*	*0.1171*
Log(GDP)	-0.0418	-0.0270	-0.0206	-0.0093
Std. error	*0.0017*	*0.0020*	*0.0021*	*0.0017*
Govt/GDP	-0.4817	-0.4814	-0.4089	-0.8128
Std. error	*0.0269*	*0.0292*	*0.0259*	*0.0283*
Enrollment	-0.2665	-0.5038	-0.4503	-0.7622
Std. error	*0.0227*	*0.0266*	*0.0276*	*0.0376*
Population Growth	-2.5579	-1.8045	0.4181	0.0178
Std. error	*0.1410*	*0.1917*	*0.1986*	*0.2088*
Log(Life Expectancy)	-0.1442	0.0247	0.1006	0.0692
Std. error	*0.0118*	*0.0168*	*0.0208*	*0.0292*
Official Liberalization Indicator	0.0082	-0.0246	-0.0085	0.0123
Std. error	*0.0043*	*0.0046*	*0.0049*	*0.0071*

Panel C: Annual Average Government/GDP Ratio (k=5)

	Sample I	II	III	IV
Constant	0.0275	0.0123	0.0911	0.2702
Std. error	*0.0109*	*0.0130*	*0.0204*	*0.0292*
Log(GDP)	0.0069	0.0055	0.0014	0.0040
Std. error	*0.0006*	*0.0007*	*0.0004*	*0.0005*
Govt/GDP	0.8426	0.8756	0.9187	0.9701
Std. error	*0.0113*	*0.0111*	*0.0072*	*0.0099*
Enrollment	0.0377	0.0258	0.0169	0.0330
Std. error	*0.0046*	*0.0052*	*0.0076*	*0.0100*
Population Growth	0.2806	0.2772	-0.0861	0.1707
Std. error	*0.0853*	*0.1075*	*0.0309*	*0.0558*
Log(Life Expectancy)	-0.0168	-0.0117	-0.0228	-0.0733
Std. error	*0.0025*	*0.0032*	*0.0054*	*0.0074*
Official Liberalization Indicator	-0.0027	0.0006	0.0053	0.0041
Std. error	*0.0006*	*0.0009*	*0.0013*	*0.0019*

Panel D: Annual Average (Export-Imports)/GDP Ratio (k=5)

	Sample I	II	III	IV
Constant	-0.1833	0.4063	1.0657	0.1080
Std. error	*0.0192*	*0.0350*	*0.0652*	*0.0565*
Log(GDP)	0.0433	0.0326	0.0354	0.0196
Std. error	*0.0007*	*0.0008*	*0.0009*	*0.0008*
Govt/GDP	-0.2353	-0.1624	-0.3058	-0.0580
Std. error	*0.0074*	*0.0173*	*0.0261*	*0.0119*
Enrollment	-0.3607	0.0080	-0.1525	-0.0222
Std. error	*0.0102*	*0.0104*	*0.0179*	*0.0146*
Population Growth	0.4565	-0.0973	-0.4199	0.6206
Std. error	*0.1452*	*0.0991*	*0.1428*	*0.1112*
Log(Life Expectancy)	-0.0179	-0.1557	-0.3016	-0.0582
Std. error	*0.0045*	*0.0090*	*0.0157*	*0.0152*
Official Liberalization Indicator	-0.0211	-0.0107	-0.0061	-0.0231
Std. error	*0.0017*	*0.0013*	*0.0029*	*0.0024*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is either the 5-year average investment/GDP, consumption/GDP, government/GDP, or trade balance/GDP ratios. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 9: The Cost of Capital and the Liberalization Effect

Panel A: Growth, Liberalization and the Cost of Capital (Credit Rating)

	Sample II	III	IV
Constant	-0.2877	-0.1304	-0.2026
Std. error	*0.0145*	*0.0247*	*0.0671*
Log(GDP)	-0.0104	-0.0121	-0.0160
Std. error	*0.0005*	*0.0005*	*0.0011*
Govt/GDP	-0.0263	-0.0271	-0.0304
Std. error	*0.0082*	*0.0083*	*0.0120*
Enrollment	-0.0306	0.0173	0.0547
Std. error	*0.0067*	*0.0093*	*0.0163*
Population Growth	-0.4485	-0.8004	-1.0901
Std. error	*0.1027*	*0.1013*	*0.0860*
Log(Life Expectancy)	0.0871	0.0551	0.0831
Std. error	*0.0035*	*0.0066*	*0.0174*
Official Liberalization Indicator	0.0010	0.0105	0.0127
Std. error	*0.0013*	*0.0017*	*0.0047*
Log(Credit Rating)	0.0102	0.0054	0.0014
Std. error	*0.0010*	*0.0013*	*0.0032*

Panel B: Growth, Liberalization and the Cost of Capital (Dividend Yield)

	Sample IV
Constant	-0.2025
Std. error	*0.0671*
Log(GDP)	-0.0159
Std. error	*0.0010*
Govt/GDP	-0.0355
Std. error	*0.0122*
Enrollment	0.0499
Std. error	*0.0181*
Population Growth	-1.1259
Std. error	*0.0884*
Log(Life Expectancy)	0.0842
Std. error	*0.0175*
Official Liberalization Indicator	0.0163
Std. error	*0.0049*
Dividend Yield	0.0376
Std. error	*0.0412*
Div Yield*Lib Indicator	-0.0682
Std. error	*0.0440*

Panel C: Investment, Liberalization and the Cost of Capital (Credit Rating)

	Sample II	III	IV
Constant	-0.3678	-0.4247	0.2109
Std. error	*0.0264*	*0.0571*	*0.1139*
Log(GDP)	-0.0142	-0.0157	-0.0123
Std. error	*0.0008*	*0.0011*	*0.0024*
Govt/GDP	-0.0305	0.0035	-0.1002
Std. error	*0.0109*	*0.0177*	*0.0316*
Enrollment	0.6134	0.6876	0.8051
Std. error	*0.0203*	*0.0259*	*0.0336*
Population Growth	0.2600	0.1188	-0.8640
Std. error	*0.0406*	*0.1831*	*0.1715*
Log(Life Expectancy)	0.1342	0.1374	-0.0193
Std. error	*0.0079*	*0.0154*	*0.0293*
Official Liberalization Indicator	0.0098	0.0051	0.0132
Std. error	*0.0020*	*0.0032*	*0.0066*
Log(Credit Rating)	0.0003	0.0097	0.0095
Std. error	*0.0014*	*0.0024*	*0.0069*

Panel D: Investment, Liberalization and the Cost of Capital (Dividend Yield)

	Sample IV
Constant	0.2246
Std. error	*0.0992*
Log(GDP)	-0.0107
Std. error	*0.0021*
Govt/GDP	-0.1305
Std. error	*0.0283*
Enrollment	0.7497
Std. error	*0.0329*
Population Growth	-0.9631
Std. error	*0.1638*
Log(Life Expectancy)	-0.0112
Std. error	*0.0262*
Official Liberalization Indicator	0.0213
Std. error	*0.0071*
Dividend Yield	-0.0719
Std. error	*0.0403*
Div Yield*Lib Indicator	-0.2209
Std. error	*0.0538*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable in panels A and B is the 5-year average growth rate of real per capita gross domestic product. In panels C and D, the dependent variable is the Investment to GDP ratio. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; Log(Credit Rating) is the log of the Institutional Investor country credit rating; and Dividend yield is the equity market dividend yield. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 10: Insider Trading and the Liberalization Effect

Annual Average Real GDP Growth Rate (k=5)

Panel A: Liberalization and Insider Trading Law

	Sample I	II	III	IV
Constant	-0.2340	-0.2465	-0.1616	-0.2138
Std. error	*0.0190*	*0.0237*	*0.0238*	*0.0689*
Log(GDP)	-0.0093	-0.0086	-0.0114	-0.0157
Std. error	*0.0005*	*0.0006*	*0.0006*	*0.0010*
Govt/GDP	-0.0009	-0.0149	-0.0191	-0.0306
Std. error	*0.0074*	*0.0095*	*0.0080*	*0.0128*
Enrollment	0.0301	0.0104	0.0241	0.0584
Std. error	*0.0061*	*0.0080*	*0.0102*	*0.0183*
Population Growth	-0.5312	-0.5340	-0.7517	-1.0438
Std. error	*0.1329*	*0.1593*	*0.1036*	*0.0949*
Log(Life Expectancy)	0.0765	0.0796	0.0654	0.0861
Std. error	*0.0043*	*0.0053*	*0.0061*	*0.0181*
Official Liberalization Indicator	0.0093	0.0079	0.0117	0.0129
Std. error	*0.0016*	*0.0019*	*0.0018*	*0.0046*
Insider Trading Law	0.0001	0.0004	-0.0005	-0.0004
Std. error	*0.0006*	*0.0006*	*0.0008*	*0.0009*

Panel B: Liberalization and Insider Trading Prosecution

	Sample I	II	III	IV
Constant	-0.2319	-0.2413	-0.1584	-0.1971
Std. error	*0.0181*	*0.0228*	*0.0226*	*0.0680*
Log(GDP)	-0.0096	-0.0090	-0.0119	-0.0158
Std. error	*0.0005*	*0.0006*	*0.0005*	*0.0010*
Govt/GDP	-0.0011	-0.0143	-0.0178	-0.0314
Std. error	*0.0075*	*0.0100*	*0.0079*	*0.0124*
Enrollment	0.0315	0.0135	0.0292	0.0564
Std. error	*0.0058*	*0.0077*	*0.0095*	*0.0164*
Population Growth	-0.5544	-0.5710	-0.8047	-1.0766
Std. error	*0.1378*	*0.1722*	*0.1011*	*0.0864*
Log(Life Expectancy)	0.0765	0.0791	0.0653	0.0824
Std. error	*0.0040*	*0.0049*	*0.0057*	*0.0179*
Official Liberalization Indicator	0.0092	0.0080	0.0116	0.0138
Std. error	*0.0016*	*0.0019*	*0.0017*	*0.0044*
Insider Trading Prosecution	0.0036	0.0031	0.0037	0.0015
Std. error	*0.0008*	*0.0009*	*0.0010*	*0.0012*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; Insider Trading Law and Insider Trading Prosecution are indicators representing either the introduction of laws prohibiting insider trading or actual prosecutions, respectively; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 11: Financial Liberalization and Preconditions

Annual Average Real GDP Growth Rate (k=5)

Panel A: Financial Liberalization and Education

	Sample I	II	III	IV
Constant	-0.2453	-0.2619	-0.1624	-0.3074
Std. error	*0.0181*	*0.0216*	*0.0296*	*0.0617*
Log(GDP)	-0.0094	-0.0087	-0.0111	-0.0161
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0012*
Govt/GDP	0.0051	-0.0064	-0.0170	-0.0214
Std. error	*0.0088*	*0.0098*	*0.0106*	*0.0179*
Enrollment	0.0216	-0.0029	-0.0029	0.0410
Std. error	*0.0081*	*0.0102*	*0.0121*	*0.0181*
Population Growth	-0.5288	-0.5281	-0.8576	-1.1904
Std. error	*0.0607*	*0.0673*	*0.0792*	*0.1129*
Log(Life Expectancy)	0.0798	0.0840	0.0672	0.1115
Std. error	*0.0050*	*0.0057*	*0.0080*	*0.0157*
Official Liberalization Indicator*Fully Liberalized	0.0085	0.0066	0.0081	0.0037
Std. error	*0.0017*	*0.0018*	*0.0017*	*0.0022*
Official Liberalization Indicator*High Enrollment	0.0165	0.0157	0.0150	0.0103
Std. error	*0.0029*	*0.0030*	*0.0028*	*0.0043*
Official Liberalization Indicator*Low Enrollment	-0.0019	-0.0030	-0.0034	-0.0061
Std. error	*0.0021*	*0.0022*	*0.0024*	*0.0036*
Wald Test: High Enrollment = Low Enrollment	97.475	93.284	66.317	14.643
p-value	0.000	0.000	0.000	0.000

Panel B: Financial Liberalization and Government Size

	Sample I	II	III	IV
Constant	-0.2312	-0.2454	-0.1505	-0.3059
Std. error	*0.0180*	*0.0215*	*0.0295*	*0.0618*
Log(GDP)	-0.0089	-0.0081	-0.0108	-0.0163
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0012*
Govt/GDP	-0.0012	-0.0134	-0.0202	-0.0261
Std. error	*0.0088*	*0.0100*	*0.0109*	*0.0182*
Enrollment	0.0294	0.0087	0.0173	0.0584
Std. error	*0.0078*	*0.0099*	*0.0118*	*0.0178*
Population Growth	-0.5696	-0.5821	-0.9180	-1.2250
Std. error	*0.0624*	*0.0697*	*0.0819*	*0.1141*
Log(Life Expectancy)	0.0755	0.0790	0.0631	0.1111
Std. error	*0.0049*	*0.0057*	*0.0079*	*0.0158*
Official Liberalization Indicator*Fully Liberalized	0.0072	0.0053	0.0072	0.0038
Std. error	*0.0017*	*0.0019*	*0.0018*	*0.0023*
Official Liberalization Indicator*Big Government	0.0039	0.0028	0.0017	-0.0027
Std. error	*0.0024*	*0.0026*	*0.0024*	*0.0036*
Official Liberalization Indicator*Small Government	0.0103	0.0090	0.0086	0.0049
Std. error	*0.0026*	*0.0026*	*0.0027*	*0.0045*
Wald Test: Big Government = Small Government	5.397	3.892	4.308	4.796
p-value	0.020	0.049	0.038	0.029

Panel C: Financial Liberalization and Democracy

	Sample I	II	III	IV
Constant	-0.2327	-0.2445	-0.1625	-0.2639
Std. error	*0.0179*	*0.0214*	*0.0283*	*0.0606*
Log(GDP)	-0.0091	-0.0084	-0.0116	-0.0162
Std. error	*0.0007*	*0.0007*	*0.0008*	*0.0012*
Govt/GDP	-0.0058	-0.0193	-0.0191	-0.0267
Std. error	*0.0087*	*0.0097*	*0.0105*	*0.0165*
Enrollment	0.0305	0.0108	0.0250	0.0621
Std. error	*0.0078*	*0.0098*	*0.0118*	*0.0173*
Population Growth	-0.5818	-0.5941	-0.8692	-1.1447
Std. error	*0.0614*	*0.0681*	*0.0825*	*0.1146*
Log(Life Expectancy)	0.0765	0.0795	0.0666	0.0996
Std. error	*0.0049*	*0.0057*	*0.0076*	*0.0154*
Official Liberalization Indicator*Democracy	0.0079	0.0063	0.0099	0.0087
Std. error	*0.0017*	*0.0018*	*0.0020*	*0.0033*

Panel D: Financial Liberalization and Legal Origin

	Sample I	II	III	IV
Constant	-0.2320	-0.2475	-0.1638	-0.2960
Std. error	*0.0206*	*0.0261*	*0.0249*	*0.0696*
Log(GDP)	-0.0089	-0.0081	-0.0107	-0.0148
Std. error	*0.0005*	*0.0006*	*0.0006*	*0.0009*
Govt/GDP	-0.0095	-0.0269	-0.0296	-0.0525
Std. error	*0.0080*	*0.0109*	*0.0080*	*0.0152*
Enrollment	0.0280	0.0037	0.0131	0.0342
Std. error	*0.0063*	*0.0087*	*0.0105*	*0.0223*
Population Growth	-0.5742	-0.5793	-0.8941	-1.3499
Std. error	*0.1528*	*0.1897*	*0.1183*	*0.1016*
Log(Life Expectancy)	0.0761	0.0803	0.0666	0.1087
Std. error	*0.0045*	*0.0057*	*0.0062*	*0.0180*
Official Liberalization Indicator*French Law	0.0050	0.0031	0.0029	-0.0057
Std. error	*0.0018*	*0.0021*	*0.0020*	*0.0052*
Official Liberalization Indicator*English Law	0.0091	0.0077	0.0098	0.0046
Std. error	*0.0015*	*0.0018*	*0.0018*	*0.0048*
Official Liberalization Indicator*Law (Other)	0.0081	0.0072	0.0079	0.0000
Std. error	*0.0022*	*0.0028*	*0.0022*	*0.0052*
Wald Test: French Law = English Law = Law (Other)	28.356	37.564	36.985	29.073
p-value	0.000	0.000	0.000	0.000

Table 11: Financial Liberalization and Preconditions (continued)

Annual Average Real GDP Growth Rate (k=5)

Panel E: Financial Liberalization and U.S. Holdings/GDP

	Sample I	II	III	IV
Constant	-0.2333	-0.2543	-0.1583	-0.3505
Std. error	*0.0181*	*0.0218*	*0.0298*	*0.0582*
Log(GDP)	-0.0075	-0.0071	-0.0097	-0.0157
Std. error	*0.0006*	*0.0006*	*0.0008*	*0.0012*
Govt/GDP	-0.0047	-0.0182	-0.0196	-0.0142
Std. error	*0.0088*	*0.0099*	*0.0110*	*0.0177*
Enrollment	0.0297	0.0077	0.0215	0.0663
Std. error	*0.0079*	*0.0099*	*0.0121*	*0.0187*
Population Growth	-0.6007	-0.6061	-0.9259	-1.1828
Std. error	*0.0587*	*0.0650*	*0.0813*	*0.1196*
Log(Life Expectancy)	0.0742	0.0799	0.0633	0.1197
Std. error	*0.0049*	*0.0057*	*0.0080*	*0.0151*
Official Liberalization Indicator*(U.S. Holdings/GDP)	0.0118	0.0051	0.0103	0.0021
Std. error	*0.0075*	*0.0074*	*0.0073*	*0.0065*

Panel F: Financial Liberalization and U.S. Holdings/MCAP

	Sample I	II	III	IV
Constant	-0.2320	-0.2487	-0.1487	-0.3031
Std. error	*0.0180*	*0.0216*	*0.0295*	*0.0578*
Log(GDP)	-0.0082	-0.0077	-0.0099	-0.0152
Std. error	*0.0006*	*0.0006*	*0.0007*	*0.0011*
Govt/GDP	-0.0037	-0.0184	-0.0192	-0.0140
Std. error	*0.0088*	*0.0099*	*0.0108*	*0.0166*
Enrollment	0.0283	0.0064	0.0195	0.0667
Std. error	*0.0078*	*0.0098*	*0.0119*	*0.0180*
Population Growth	-0.5741	-0.5780	-0.8795	-1.1750
Std. error	*0.0600*	*0.0664*	*0.0825*	*0.1148*
Log(Life Expectancy)	0.0747	0.0795	0.0609	0.1071
Std. error	*0.0049*	*0.0057*	*0.0079*	*0.0151*
Official Liberalization Indicator*(U.S. Holdings/MCAP)	0.0352	0.0325	0.0291	0.0173
Std. error	*0.0067*	*0.0067*	*0.0067*	*0.0073*

Panel G: Financial Liberalization and Equity Market Correlation

	Sample IV
Constant	-0.3418
Std. error	*0.0549*
Log(GDP)	-0.0155
Std. error	*0.0011*
Govt/GDP	-0.0168
Std. error	*0.0174*
Enrollment	0.0612
Std. error	*0.0185*
Population Growth	-1.1952
Std. error	*0.1241*
Log(Life Expectancy)	0.1177
Std. error	*0.0142*
Official Liberalization Indicator*(market correlation with world)	0.0010
Std. error	*0.0051*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. Fully Liberalized takes the value of one for countries that are liberalized throughout the sample. Of those countries that liberalize in sample, Big Government takes the value of one for the country has a larger than median gov/GDP ratio and High Enrollment takes the value of one for the country has a larger than median secondary school enrollment ratio. Democracy is a [0,1] indicator reflecting the degree of institutional democracy.

French and English Law take the value of one if the legal tradition of the country is either French civil or common law, respectively; whereas Other takes the value of one with the legal tradition is German, Scandinavian or any others. U.S. Holdings/MCAP and U.S. Holdings/GDP are the amount of 1997 U.S. holdings of local equities as a percentage of either local market capitalization or local GDP. For the U.S, we take the total amount of foreign holding of equities divided by either U.S. MCAP or GDP. Market correlations is the scaled ln(rho-2)/ln(3) correlation between the local equity market and world returns; for liberalizing countries this is computed in the five years before liberalization and for fully liberalized this is computed in the first five years of the sample. The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.

Table 12: Convergence

Summary of λ Parameter

	Sample I	II	III	IV
Max λ	0.0104	0.0099	0.0133	0.0193
Mean λ	0.0091	0.0086	0.0114	0.0163
Min λ	0.0071	0.0069	0.0093	0.0148
Classic Growth Regression	0.0071	0.0069	0.0093	0.0156
Classic Growth Regression with Liberalization Indicator	0.0094	0.0088	0.0115	0.0158
Inflation	0.0094	0.0088	0.0120	0.0167
Inflation High-Low Spread	0.0095	0.0089	0.0120	0.0170
Sensitivity to Alternative Liberalization Dates	0.0093	0.0088	0.0105	0.0150
Sensitivity to Regional Influences	0.0096	0.0090	0.0117	0.0158
Banking Sector Development	0.0104	0.0099	0.0133	0.0186
Banking Sector and Equity Market Development			0.0126	0.0180
Liberalization and the Cost of Capital (Credit Rating)		0.0093	0.0128	0.0160
Liberalization and the Cost of Capital (Dividend Yield)				0.0159
Liberalization and Insider Trading Law	0.0093	0.0086	0.0114	0.0157
Liberalization and Insider Trading Prosecution	0.0096	0.0090	0.0119	0.0158
Financial Liberalization and Education	0.0094	0.0087	0.0111	0.0161
Financial Liberalization and Government Size	0.0089	0.0081	0.0108	0.0163
Financial Liberalization and Democracy	0.0091	0.0084	0.0116	0.0162
Financial Liberalization and Legal Origin	0.0089	0.0081	0.0107	0.0148
Financial Liberalization and U.S. Holdings/GDP	0.0075	0.0071	0.0097	0.0157
Financial Liberalization and U.S. Holdings/MCAP	0.0082	0.0077	0.0099	0.0152
Financial Liberalization and Equity Market Correlation				0.0155
log(GDP) --- 1980 or 1990	0.0096	0.0093	0.0118	0.0179
log(GDP) --- 1980 or liberaliation year	0.0096	0.0094	0.0125	0.0193

This Table presents our estimates for the degree of convergence in each experiment we consider throughout the paper as measured by the estimated coefficients on log initial (1980) GDP.

Table 13: Liberalization and Convergence

Annual Average Real GDP Growth Rate (k=5)

Panel A: Log(GDP) Interaction

	Sample I	II	III	IV
Constant	-0.2270	-0.2418	-0.1575	-0.1936
Std. error	*0.0199*	*0.0247*	*0.0246*	*0.0647*
Log(GDP)	-0.0086	-0.0077	-0.0118	-0.0170
Std. error	*0.0006*	*0.0006*	*0.0007*	*0.0013*
Govt/GDP	-0.0010	-0.0137	-0.0186	-0.0314
Std. error	*0.0075*	*0.0101*	*0.0076*	*0.0117*
Enrollment	0.0320	0.0121	0.0244	0.0606
Std. error	*0.0061*	*0.0080*	*0.0095*	*0.0164*
Population Growth	-0.5434	-0.5520	-0.7758	-1.0977
Std. error	*0.1392*	*0.1717*	*0.1051*	*0.0884*
Log(Life Expectancy)	0.0737	0.0770	0.0651	0.0836
Std. error	*0.0046*	*0.0056*	*0.0064*	*0.0171*
Official Liberalization Indicator	0.0233	0.0284	0.0021	-0.0011
Std. error	*0.0068*	*0.0073*	*0.0077*	*0.0157*
Official Liberalization Indicator*Log(GDP)	-0.0016	-0.0023	0.0011	0.0017
Std. error	*0.0008*	*0.0009*	*0.0009*	*0.0017*

Panel B: Log(GDP) --- 1980 or 1990

	Sample I	II	III	IV
Constant	-0.2276	-0.2400	-0.1547	-0.2915
Std. error	*0.0170*	*0.0210*	*0.0256*	*0.0685*
Log(GDP) - time adjusted	-0.0096	-0.0093	-0.0118	-0.0179
Std. error	*0.0005*	*0.0006*	*0.0007*	*0.0010*
Govt/GDP	0.0005	-0.0120	-0.0128	-0.0097
Std. error	*0.0064*	*0.0078*	*0.0068*	*0.0106*
Enrollment	0.0342	0.0137	0.0215	0.0440
Std. error	*0.0058*	*0.0071*	*0.0087*	*0.0146*
Population Growth	-0.4196	-0.4312	-0.5619	-0.6653
Std. error	*0.0992*	*0.1131*	*0.0852*	*0.0908*
Log(Life Expectancy)	0.0746	0.0785	0.0634	0.1070
Std. error	*0.0041*	*0.0050*	*0.0068*	*0.0181*
Official Liberalization Indicator	0.0096	0.0090	0.0119	0.0133
Std. error	*0.0014*	*0.0015*	*0.0018*	*0.0038*

Panel C: Log(GDP) --- 1980 or liberalization year

	Sample I	II	III	IV
Constant	-0.2263	-0.2346	-0.1374	-0.2213
Std. error	*0.0158*	*0.0196*	*0.0269*	*0.0715*
Log(GDP) - liberalization adjusted	-0.0096	-0.0094	-0.0125	-0.0193
Std. error	*0.0005*	*0.0006*	*0.0008*	*0.0013*
Govt/GDP	0.0055	-0.0073	-0.0033	-0.0084
Std. error	*0.0059*	*0.0074*	*0.0075*	*0.0111*
Enrollment	0.0323	0.0124	0.0173	0.0466
Std. error	*0.0058*	*0.0072*	*0.0097*	*0.0165*
Population Growth	-0.4157	-0.4309	-0.6115	-0.8642
Std. error	*0.0938*	*0.1103*	*0.0952*	*0.0901*
Log(Life Expectancy)	0.0742	0.0773	0.0605	0.0928
Std. error	*0.0039*	*0.0047*	*0.0071*	*0.0190*
Official Liberalization Indicator	0.0088	0.0082	0.0116	0.0158
Std. error	*0.0013*	*0.0014*	*0.0017*	*0.0045*

Panel D: Dispersion of Log GDP Across Countries

Dependent Variable: Cross-Sectional Variance of Log(GDP) at t across all 95 countries

Constant	2.3115	Constant	3.5118
Std. error	*0.1092*	*Std. error*	*0.6573*
TIME	0.0939	TIME	0.0991
Std. error	*0.0101*	*Std. error*	*0.0137*
CUMLIB	-0.0197	LOG(CUMLIB)	-0.5436
Std. error	*0.0077*	*Std. error*	*0.2417*

I, II, III, and IV refer to samples of 95, 75, 50 and 28 countries detailed in appendix table A1. The dependent variable is the 5-year average growth rate of real per capita gross domestic product. Log(GDP) is the log real per capita GDP level in 1980. Log(GDP)-time adjusted is the log real per capita GDP level in 1980, then reset at 1990. Log(GDP)-time adjusted is the log real per capita GDP level in 1980, then resets for each country at liberalization date. Govt/GDP is the ratio of government consumption to GDP; Enrollment is the secondary school enrollment ratio; Population growth is the growth rate of total population; Log(Life Expectancy) is the log life expectancy of the total population; and the official liberalization variable takes a value of one when the equity market is liberalized, and zero otherwise. In Panel D, cumlib is the total number of liberalized countries. The dependent variable is the purely cross-sectional variance for each year of either 5-year average GDP growth or log(GDP). The weighting matrix we employ in our GMM estimation provides a correction for cross-sectional heteroskedasticity. All standard errors account for the overlapping nature of the data.