

<sup>20</sup> M. S. Gaynor, D. Haas-Wilson, and W. B. Vogt, "Are Invisible Hands Good Hands? Moral Hazard, Competition, and the Second Best in Health Care Markets," NBER Working Paper No. 6865, December 1998, and *Journal of Political Economy*, 108 (5) (October 2000), pp. 992-1005.

<sup>21</sup> D. P. Kessler and M. A. McClellan, "How Liability Law Affects Medical Productivity," NBER Working Paper No. 7533, February 2000.

<sup>22</sup> D. P. Kessler and M. A. McClellan, "Medical Liability, Managed Care, and Defensive Medicine," NBER Working Paper No. 7537, February 2000.

<sup>23</sup> D. P. Kessler and M. A. McClellan, "Is Hospital Competition Socially Wasteful?,"

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<sup>24</sup> D. Lakdawalla and T. J. Philipson, "Nonprofit Production and Competition," NBER Working Paper No. 6377, January 1998.

<sup>25</sup> W. H. Dow, T. J. Philipson, and X. Sala-I-Martin, "Longevity Complementarities under Competing Risks," *American Economic Review*, 89 (5) (1999), pp. 1357-72. This paper won the Kenneth J. Arrow Award for 2000, given by the International Health Economics Association for the best health economics paper of the year.

<sup>26</sup> D. Lakdawalla and T. J. Philipson, "Aging and the Growth of Long-Term Care," NBER Working Paper No. 6980,

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<sup>27</sup> F. A. Sloan, V. K. Smith, and D. H. Taylor, "Longevity Expectations and Death: Can People Predict Their Own Demise?," forthcoming in the *American Economic Review*.

<sup>28</sup> F. A. Sloan, V. K. Smith, and D. H. Taylor, "Do Smokers Respond to Health Shocks?," forthcoming in the *Review of Economics and Statistics*.

<sup>29</sup> F. A. Sloan, E. M. Stout, K. Whetten-Goldstein, and L. Liang, *Drinkers, Drivers, and Bartenders: Balancing Private Rights and Public Accountability*, Chicago: University of Chicago Press, 2000.

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## Research Summaries

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### Economic Growth and Financial Liberalization

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From 1980 to 1997, Chile experienced average real GDP growth of 3.8 percent per year while the Ivory Coast had negative real growth of 2.4 percent per year. Why? Attempts to explain differences in economic growth across countries have taken center stage in the macroeconomic literature again.<sup>1</sup> Although there is no agreement on what determines economic growth, most of the literature points out evidence of conditional convergence. Poorer countries grow faster than richer countries, once it is taken into account that poor coun-

tries tend to have lower long-run per capita GDP, for example, because of the poor quality of their capital stock (both physical and human). Jeffrey Sachs and Andrew Warner<sup>2</sup> have argued that policy choices, such as respect for property rights and open international trade, are important determinants of long-run growth.

There are some interesting differences between the two countries we mentioned. First, the Ivory Coast has a larger trade sector than Chile, but the role of trade openness remains hotly debated.<sup>3</sup> Second, Chile liberalized its capital markets, in particular its equity market, to foreign investment in 1992. After the liberalization, it grew by 6.4 percent a year. The 1980s and 1990s witnessed a number of financial liberalizations. Given the recent currency crises and their adverse economic consequences, what is the role of financial liberalizations and foreign capital flows in the economic welfare of developing countries? What effect did they have on growth? Our recent work with Christian Lundblad tries to answer this question.

#### Why Would Financial Liberalization Affect Economic Growth?

There are a number of channels through which financial liberalization may affect growth. First, foreign investors, enjoying improved benefits of diversification, will drive up local equity prices permanently, thereby reducing the cost of capital. We and Peter Henry<sup>4</sup> show that the cost of capital goes down after major regulatory reforms. Writing with Robin L. Lumsdaine,<sup>5</sup> we also show that a capital inflow leads to a permanent positive effect on equity prices. Moreover, our work and Henry's<sup>6</sup> indicates that investment increases. If this additional investment is efficient, then economic growth should increase. However, in the aftermath of the recent crises, some economists feel that foreign capital has been wasted on frivolous consumption and inefficient investment, undermining the benefits of financial liberalization.

Second, there is now a large literature on how improved financial

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markets and intermediation can enhance growth<sup>7</sup> and how financial liberalization may promote financial development. Furthermore, foreign investors may also demand better corporate governance to protect their investments, reducing the wedge between the costs of external and internal financial capital, and further increasing investment.<sup>8</sup>

## Measuring the Liberalization Effect on Economic Growth

Most of the literature on growth implements purely cross-sectional techniques for measuring growth. The nature of our question forces us to introduce a temporal dimension into the econometric framework. In work with Lundblad,<sup>9</sup> we propose a time series panel methodology that fully exploits all the available data to measure how much a financial liberalization increases growth. We regress future growth (in logarithmic form), averaged over periods ranging from three years to five years, on a number of predetermined determinants of long-run steady state per capita GDP, including secondary school enrollment, the size of the government sector, inflation, and trade openness, and on initial GDP (measured in logarithms) in 1980. The right-hand side variables also include an indicator of liberalization based primarily on the analysis of regulatory reforms in our most recent work.<sup>10</sup>

To maximize the time-series content in our regressions, we use overlapping data. For example, we use growth from 1981 to 1986 and from 1982 to 1987 in the same regression. We correct for the resulting correlation in the model's residuals in the standard errors. Estimating the model by the Generalized Method of Moments, we can allow adjustments for correlations of residuals across countries and different variances of residuals both across countries and

over time (heteroskedasticity).

We are mainly interested in the t-statistic on the liberalization indicator variable. Since we have so little time-series data, we also conduct a Monte Carlo analysis to examine how well this statistic behaves in sample sizes similar to those available for our analysis, under the null of a zero liberalization effect. We do find that we have to raise the normal cut-off values of the t-statistics somewhat before we can conclude that there truly is a statistically significant rejection of the null hypothesis of no liberalization effect.

## The Liberalization Effect: Magnitude and Robustness

In work with Lundblad,<sup>11</sup> we consider the liberalization effect in a small sample of 30 emerging and frontier markets as defined by the IFC. We confirm many of the results in the literature. For example, we only observe convergence (a negative coefficient on initial GDP) when variables used to control for long-run per capita GDP are included in the regression. We also observe that many variables have the wrong sign and seem to lack robustness across

per year. When we factor in a host of other variables that might also boost economic performance, improvements associated with financial liberalization still remain strong, 0.7 to 1.4 percent per year.

In more recent work with Lundblad,<sup>13</sup> we expand our sample to 95 countries, including countries that may not even have financial markets, as well as developed countries. The liberalization effect now has a cross-sectional component that measures the difference in growth between segmented and financially open countries, as well as a temporal component (countries before and after liberalization). It is this cross-sectional dimension that has been the main focus of the trade openness literature.

Expanding our sample of countries strengthens our results. In examining a number of different samples (whose size depends on the availability of control variables), we find that the financial liberalization effect is robust. We also consider an alternative set of liberalization dates. The main results are robust to these alternative dates. Further, we carry out a Monte Carlo experiment whereby one country's liberalization date is assigned randomly to another

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specifications, confirming the analysis of Ross Levine and David Renelt.<sup>12</sup> One variable delivers a consistently positive and mostly statistically significant coefficient: the liberalization indicator variable. Taken by itself, financial liberalization leads to an increase in average annual per capita GDP growth of anywhere from 1.5 percent to as much as 2.3 percent

country. This allows us to test whether we are picking up some overall growth effect in the late 1980s and early 1990s (when the liberalization dates are concentrated). The Monte Carlo exercise shows that the liberalization dates do not really explain economic growth when they are decoupled from the specific country to which they apply. We also

show that the effect is not related to the world business cycle during these years.

## **The Channels of Growth**

### ***Components of GDP***

In work with Lundblad,<sup>11</sup> we attempt to discover what drives the liberalization effect. First we confirm the results of our earlier work and Henry's, showing that the ratio of investment to GDP actually increases. We also find that the ratio of consumption to GDP does not increase after liberalization. Indeed, in a number of specifications, consumption decreases significantly. Given that we establish that GDP growth increases, the claims about frivolous consumption and inefficient investment cannot be generally true. We find that the trade balance decreases across all specifications. Both imports and exports increase after financial liberalizations, but imports increase more than exports. Interestingly, in our broadest sample, we find a smaller government sector after liberalization. However, with more limited samples, there is little evidence that a financial liberalization is associated with a change in the size of the government sector. In the remainder of the paper, we try to determine what variables capture the liberalization effect.

### ***Financial Liberalization and Macroeconomic Reforms***

It is possible that financial liberalizations typically coincide with other more macro-oriented reforms<sup>15</sup> that provide the source of increased growth — not the financial liberalizations. However, when we add variables capturing macroeconomic reforms, such as inflation and trade openness, the liberalization effect is mostly not affected.

### ***Financial Liberalization and Financial Market Development***

A second possibility is that financial liberalization is the natural outcome of a financial development process, and that, consistent with many endogenous growth theories, it is financial development that leads to increased growth. However, when we add a number of banking and stock market development indicators to our regressions, the liberalization effect is only reduced marginally. Moreover, we find that financial liberalization strongly predicts additional financial development, but that the decision to liberalize does not seem to be affected by the degree of financial development. Hence, it is likely that one channel through which financial liberalization increases growth is by its impact on financial development.

### ***Financial Liberalization and the Cost of Capital***

A third possibility is that the growth effect is a pure cost-of-capital effect. Unfortunately, the cost-of-capital effect is very difficult to measure. First, liberalization induces a structural break in most financial data, making the use of a financial model to measure the change in the cost of capital after liberalization very difficult.<sup>16</sup> We use two imperfect proxies. Our first is the dividend yield minus its mean before liberalization (to capture cross-country differences in tax regimes). We have also argued that the change in the dividend yield is a good measure of the permanent price effect that induces the lower cost of capital after liberalization.<sup>17</sup> However, it also may measure improved growth opportunities. When we add the modified dividend yield to our explanatory variables, we find that the liberalization effect is unchanged. The dividend yield variable has the correct sign (decreases in the cost of capital

lead to more economic growth), but it is only marginally significant.

Our second proxy for the cost of capital is the credit rating of the various countries. Claude Erb, Harvey, and Tadas Viskanta argue that this measure captures the cross-section of expected returns well, especially in emerging markets.<sup>18</sup> Unfortunately, it is also a measure of political instability, which has been shown to be related to economic growth in numerous studies. When we add the credit rating to our regressions, the liberalization effect declines, but not by much. The credit rating variable does have the expected sign and is highly significant.

### ***Functional Capital Markets***

A final possibility acknowledges the imperfection of capital markets, which drives a wedge between the cost of internal and external capital<sup>19</sup> and makes investment sensitive to the presence of cash flows. Foreigners may demand better corporate governance that in turn reduces the wedge between external and internal costs of capital and drives up investment. To capture this, we use a variable constructed by Utpal Bhattacharya and Hazem Daouk,<sup>20</sup> who trace the implementation and enforcement of insider trading laws in a large number of countries. We find that the enforcement of insider trading laws has a positive effect on growth and is statistically significant in three of our four largest samples. Importantly, it does not diminish the impact of financial liberalizations on economic growth. Another reason to suspect that corporate governance matters for growth prospects is that we find larger liberalization effects for countries with an Anglo-Saxon legal system. Rafael La Porta and his coauthors<sup>21</sup> analyze the link between corporate governance and legal systems.

## Conclusions

Many papers have examined the determinants of growth, especially focusing on the role of macroeconomic reforms and the development of the financial sector. Our research agenda has a simple message. It is not just the existence of capital markets that is important for growth prospects — it is crucial that these capital markets be liberalized to allow foreign investors to participate and local investors to diversify their portfolios across borders. Our research shows that the financial liberalization effect is not subsumed by economic reforms or proxies for the development of capital markets and financial intermediation.

It is remarkable that the impact of financial market liberalizations on growth prospects has not received more attention in the literature. Indeed, we conducted a simple experiment to assess the economic impact of liberalization. We considered a hypothetical country that moved from the 25th percentile to the median in the cross-sectional distribution of the variables that are usually associated with economic growth, for example, secondary school enrollment. We also assumed that the country experiences a financial liberalization. Given the results of our estimation, the financial liberalization alone contributes 30 percent of the total increased growth. This is a very substantial contribution, especially considering the dramatic assumption of a quartile advance in other variables associated with economic growth.

Finally, the conditional convergence effect documented in the literature is much stronger once you allow for a financial liberalization. Our results suggest that a financial liberalization allows many countries to join the "convergence club" much faster.

Our work on understanding the channels of economic growth has just begun. We believe the next step is to examine firm level data. With these data, we will be able to examine more closely the response of investment and capital structure to financial liberalization. With firm specific expected cash flows, we will be able to disentangle the cost of capital and growth opportunity effects after financial liberalizations.

<sup>1</sup> See R. Barro and X. Sala-i-Martin, *Economic Growth*, New York: McGraw-Hill, 1995; and C. I. Jones, Introduction to Economic Growth, New York: Norton, 2000.

<sup>2</sup> J. D. Sachs and A. M. Warner, "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity* (1995), pp. 1–118.

<sup>3</sup> See F. Rodriguez and D. Rodrik, "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence," *NBER Working Paper No. 7081*, April 1999.

<sup>4</sup> G. Bekaert and C. R. Harvey, "Foreign Speculators and Emerging Equity Markets," *NBER Working Paper No. 6312*, December 1997, and *Journal of Finance*, 55 (2000), pp. 565–614; and P. Henry, "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices," *Journal of Finance*, 55 (2000), pp. 529–64.

<sup>5</sup> G. Bekaert, C. R. Harvey, and R. L. Lumsdaine, "The Dynamics of Emerging Market Equity Flows," *NBER Working Paper No. 7219*, July 1999.

<sup>6</sup> G. Bekaert and C. R. Harvey, "Foreign Speculators and Emerging Equity Markets," and P. Henry, "Do Stock Market Liberalizations Cause Investment Booms?," *forthcoming in the Journal of Financial Economics*.

<sup>7</sup> For example, see V. R. Bencivenga and B. D. Smith, "Financial Intermediation and Endogenous Growth," *Review of Economic Studies*, 58 (1991), pp. 195–209.

<sup>8</sup> For an analysis of the link between financial development and these "financing constraints," see R. G. Rajan and L. Zingales, "Financial Dependence and Growth," *NBER Working Paper No. 5758*, September 1996, and *American Economic Review*, 88 (3) (1998), pp. 559–86; and I. Love, "Financial Development and Financing Constraints:

*International Evidence from the Structural Investment Model*," manuscript, Columbia University, 2000.

<sup>9</sup> G. Bekaert, C. R. Harvey, and C. Lundblad, "Emerging Equity Markets and Economic Development," *NBER Working Paper No. 7763*, June 2000, and *forthcoming in the Journal of Development Economics*.

<sup>10</sup> G. Bekaert and C. R. Harvey, "Foreign Speculators and Emerging Equity Markets" and "Capital Flows and the Behavior of Emerging Market Equity Returns," in *Capital Inflows to Emerging Markets*, S. Edwards, ed., Chicago: University of Chicago Press, 2000, pp. 159–94.

<sup>11</sup> G. Bekaert, C. R. Harvey, and C. Lundblad, "Emerging Equity Markets and Economic Development."

<sup>12</sup> R. Levine and D. Renelt, "A Sensitivity Analysis of Cross-Country Growth Regressions," *American Economic Review*, 82 (1991), pp. 942–63.

<sup>13</sup> G. Bekaert, C. R. Harvey, and C. Lundblad, "Does Financial Liberalization Spur Economic Growth?," *forthcoming as an NBER Working Paper*.

<sup>14</sup> *Ibid.*

<sup>15</sup> See P. Henry, "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices."

<sup>16</sup> See G. Bekaert and C. R. Harvey, "Time-Varying World Market Integration," *NBER Working Paper 4843*, August 1994, and *Journal of Finance*, 50 (1995), pp. 403–44; and G. Bekaert, C. R. Harvey, and R. L. Lumsdaine, "Dating the Integration of World Capital Markets," *NBER Working Paper No. 6724*, September 1998.

<sup>17</sup> G. Bekaert and C. R. Harvey, "Foreign Speculators and Emerging Equity Markets."

<sup>18</sup> C. Erb, C. R. Harvey, and T. Viskanta, "Expected Returns and Volatility in 135 Countries," *Journal of Portfolio Management*, 22 (Spring 1996), pp. 46–58.

<sup>19</sup> See, for example, G. Hubbard, "Capital Market Imperfections and Investment," *Journal of Economic Literature*, 36 (1997), p. 3; or S. Gilchrist and C. Himmelberg, "Investment, Fundamentals and Finance," in *NBER Macroeconomics Annual*, Cambridge, MA: MIT Press, 1998.

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<sup>21</sup> R. La Porta, F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny, "Law and Finance," *Journal of Political Economy*, 106 (1998), pp. 1113–55.