Stock Market Development And Economic Growth:
Preliminary Evidence From African Countries

Sumit Agarwal

Abstract

This study examines the relationship between stock market development and economic growth for nine African countries. Results suggest a positive relationship between several indicators of the stock market performance and economic growth. Thus they lend support both to the financial intermediation literature as well as to the traditional growth literature.

Introduction

As the global equity markets have experienced their most explosive growth over the past decade, emerging equity markets have experienced an even more rapid growth, taking on an increasingly larger share of this global boom. For example, while overall capitalization rose from $4.7 trillion to $15.2 trillion globally, the share of emerging markets jumped from less than 4 percent to 13 percent in this period. Trading activity in these markets surged equally fast: the value of shares traded in emerging markets climbed from less than 3 percent of the $1.6 trillion world total in 1985 to 17 percent of the $9.6 trillion shares traded in all world's exchanges in 1994. Both the global boom and the involvement of the emerging markets in it, have attracted the interest of academics and policymakers. As a result, a plethora of studies now focus on how to measure the benefits of globally-diversified portfolios, while a large number of countries expound regulatory reforms to foster capital market development and attract foreign portfolio flows.

Yet, there exists very little empirical evidence on the importance of stock market development to economic growth and almost none exists regarding the African countries. Theoretically, the traditional growth theory could not explore the relationship between financial intermediation and economic growth because it focused on steady-state *level* of capital stock per worker or productivity, but not on the *rate* of growth (which was attributed to exogenous technical progress).

The recent revival of interest in the link between financial development and growth stems from the insights of endogenous growth models, in which growth is self-sustaining without exogenous technical progress and is influenced by various initial attributes of the economy. In this framework, financial intermediation is shown to not only have level effects, but also growth effects (e.g, Levine, 1991).

However, even in the new framework a raging debate has flared. On the one hand, a growing strand of the literature suggests that stock markets promote long-run growth. For example, Greenwood and Smith (1996) show that large stock markets lower the cost of mobilizing savings, facilitating investments in the most productive technologies. Obstfeld (1994) shows that international risk-sharing through internationally integrated stock markets improves resource allocation and can accelerate growth. Focusing on liquidity—i.e., the ability to trade equity easily-- Bencivenga, et. al. (1996) and Levine (1991) argue that stock market liquidity plays a key role in economic growth: Although many profitable investments require long run commitment to capital savers prefer not to relinquish control of their savings for long periods. Liquid equity markets ease this tension by providing assets to savers that are easily liquidated at any time, while simultaneously allowing firms permanent access to capital raised through equity issues. Liquidity has also been argued to increase investor incentive to acquire information on firms and improve corporate governance (Kyle, 1984; Holmstrom and Tirole, 1993), thereby facilitating growth.

On the other hand, the very role of information in this process has been questioned by Stiglitz (1985) who argues that developed stock markets quickly reveal information through price changes, creating a free rider problem and reducing investor incentives to spend resources to conduct costly search. Besides information, the role of liquidity *itself* in promoting long-term growth has been questioned. Demirguc-Kunt and Levine (1996) point out that increased liquidity can deter growth through at least three channels. First, by increasing returns to investments, greater stock market liquidity may reduce saving rates through income and substitution effects. If savings rates fall enough and if there is an externality attached to capital accumulation, greater stock market liquidity may slow economic growth. Second, by reducing the uncertainty associated with investment, greater stock market liquidity may reduce saving rates because of

the ambiguous effects of uncertainty on savings. Third, stock market liquidity encourages investor myopia, adversely affecting corporate governance and thereby reduces economic growth.

In the framework of the new growth theory, surprisingly few empirical studies of the relation between stock market development and investment growth are available. The one important study is by Levine and Zervos (1998), who are among the first to ask whether stock markets are merely burgeoning casinos or a key link to economic growth. They examine this issue empirically, finding a positive and significant correlation between stock market development and long run growth.

This paper explores the impact of stock markets on investment, looking at simple correlations across these variables for the African countries. Specifically, we have a sample of 9 African countries over a 6 years (1992-1997) period. Not only is this the first such study but it is also the first panel study to examine this question. These features have been possible by the use of the Emerging Market Database (EMDB) from the International Financial Cooperation (IFC). We include several measures of stock market development (as opposed to a single composite measure used by Levine and Zevros). This more disaggregated approach is also recommended by Demirguc_Kunt and Levine (1996).

In what follows, Section 2 discusses the measures of the stock market development and economic growth; Section 3 presents the correlation results; and Section 4 presents concluding remarks.

Data

Measurement of Stock Market and Other Variables

In this section we describe the various measures of stock market development and other macro variables.

Market Capitalization Ratio (MCR): This measure equals the value of listed shares divided by GDP. The assumption behind this measure is that overall market size is positively correlated with the ability to mobilize capital and diversify risk on an economy-wide basis.

Total Value of Shares Traded Ratio (STR): This measure equals total value of shares traded on the stock market exchange divided by GDP. The total-value-traded ratio measures the organized trading of firm equity as a share of national output and therefore should positively reflect liquidity on an economy-wide basis. The total-value-traded ratio complements the market capitalization ratio: although a market may be large, there may be little trading.

Turnover Ratio (TR): This ratio equals the value of total shares traded divided by market capitalization. Though it is not a direct measure of theoretical definitions of liquidity, high turnover is often used as an indicator of low transaction costs. The turnover ratio complements the market capitalization ratio. A large but inactive market will have a large market capitalization ratio but a small turnover ratio. Turnover also complements the total value traded ratio. While the total-value-traded ratio captures trading relative to the size of the economy, turnover measures trading relative to the size of the stock market. A small liquid market will have a high turnover ratio but a small total value traded ratio.

Growth: This measure is constructed from the World Development Indicators data set.

Foreign Direct Investment (FDI): Flow of foreign direct investment to and from the country is used as a control variable since we believe that FDI is an important determinant of economic growth

Investment (INV): This measure is also used as a control variable since we believe that Investment is an important determinant of economic growth

Primary School Enrollment (PE): Primary school enrollment is used as a control variable since we believe that human capital is an important determinant of economic growth.

Data Sources

Historical yearly data on MCR, STR, and TR data for the nine African markets are obtained from the Emerging Markets Database (EMDB) provided by the International Financial Corporation (IFC). The African markets exchange rates are from the EMDB as well. Table 1, provides some summary statistics on the African markets. Growth, Domestic Investment as a share of GDP, Foreign Direct Investment, and Primary School Enrollment are from the World Development Indicators data set.

Correlation Results

The study looks both at the Pearson and Hoeffding correlation cœfficient test on both the stock market variables and the macro economic variables, Tables 2A and 2B report these results. The tables yield some very interesting results, certainly with respect to Market Capitalization and Investment, both for the Pearson and Hoeffding tests. For one, among the three stock market variables, both MCR and STR variables are significant. Recall that MCR is the total market capitalization as a percentage of GDP and so should be highly correlated to investment. The results also show that Value of Shares Trades as a percentage of GDP is also significant. This implies that as the investment is directly correlated to STR It is also pertinent to recall that TR is the least suitable indicator of liquidity in the stock market and hence this variable is uncorrelated to investment.

There is also direct correlation between investment and growth. Even though we do not pick up any correlation between stock market variables and growth, the results do imply that stock market variables indirectly are correlated to growth. There are some other interesting observations; foreign direct investment is highly correlated with domestic investment and growth and GDP variables are also highly correlated.

Conclusion and Policy Implications

This paper provides some simple correlation between some stock market variables and investment in order to evaluate the relationship between stock market development and economic growth. A time series cross-section data for nine African countries from 1992-1997 suggests that stock market development is correlated with investment and in turn with economic growth.

The results also suggest that value-of-shares-traded ratio (TR) is not an effective measure of stock market liquidity. This may be especially so in the contest of African countries where stock markets are highly volatile, causing the turnover ratio to be a misleading indicator of liquidity.

Much work remains to be done to better understand the relationship between stock market development and economic growth. Although the paper sheds light on the role of stock market development on economic growth, it does not conduct any regression analysis to establish this

causality. This was mainly due to the lack of data since there are not sufficient number of countries in Africa with a stock market.

This leaves us with the obvious question, what can the government do to attract and encourage the creation and active participation of stock markets? Does the state have any role in such a sector?

In the more recent past, "milking" of the capital markets by the state has taken the more humane form that McKinnon (1973) has called "repressed financial markets," using bank nationalization and portfolio requirements to preempt for the state the funds that would otherwise go to entrepreneurs. Such practices, with a hefty dose of corruption, have been widely used in most African countries which have only recently developed stock markets.

In view of these past practices and in light of the above results, we can say that stock market development is positively correlated to economic growth. Hence, this paper suggests that the government should play a more positive role in order to foster stock markets. Even though, having recognized the importance of financial markets for economic growth many developing countries have increased their efforts towards improving the financial systems of their countries to stimulate economic growth, they have mainly focused on banking systems reforms - removing interest rate controls, reducing government involvement in credit allocation, minimizing taxation of financial intermediaries, managing bank insolvency, now they need to focus on stock markets. Policymakers should encourage stock market development. They should remove impediments to stock markets, such as tax, legal, and regulatory barriers.

References

Bencivenga, V.R., and B. Smith., and R.M. Starr. 1996. *Equity Markets, Transaction Costs, and Capital Accumulation: An Illustration.* The World Bank Economic Review, Vol. 10: 241-65.

Demirguch-Kunt, A., and R. Levine. 1996. *Stock Market Development and Financial Intermediaries: Stylized Facts.* The World Bank Economic Review, Vol. 10: 291-321.

Greenwood, J., and B. Smith. 1996. *Financial Markets in Development and the Development of Financial Markets.* Journal of Economic Dynamics and Control, Vol. 21: 145 -81.

Holmstrom, B., and J. Tirole. 1993. *Market Liquidity and Performance Monitoring.* Journal of Political Economy, Vol. 101: 678-709 .

World Bank. 2000. *World Development Indicators CD-ROM.* (The World Bank, Washington D.C.)

Kyle, A.S. 1984. *Market Structure, Information, Futures Markets, and Price Formation.* In Gary G. Storey, Andrew Schmitz, and Alexander H. Sarris, eds*., International Agricultural Trade: Advanced Reading in Price Formation, Market Structure, and Price Instability, Westview (Boulder, Colo)*

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

Levine, R., and S. Zervos. 1998. *Stock Markets, Banks, and Economic Growth American Economic Review, Vol.* 88:537-58.

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

Obstfeld, M. 1994. *Risk-Taking, Global Diversification, and Growth.* American Economic Review, Vol. 84:1310-29.

Stiglitz, J.E. 1985. *Credit Markets and the Control of Capital.* Journal of Money, Credit and Banking.

Table 1: Descriptive statistics - averages over six years (1992-97)

Country	Growth	GDP	Investment	Primary School	FDI	MCR	STR	TR
	Rate	Mil of $	% of GDP	Educatioon	Mil of $	% of GDP	% of GDP	
Botswana	4.39%	4,761	27.94%	89%	-10	1%	1%	8%
Egypt	2.99%	59,619	17.34%	95%	722	12%	2%	16%
Ghana	4.15%	488,269	18.18%	-	115	15%	1%	3%
Kenya	2.16%	82,159	17.15%	76%	12	19%	2%	3%
Morocco	1.62%	114,458	20.95%	74%	498	15%	2%	18%
Namibia	3.31%	3,936	19.60%	103%	64	7%	1%	8%
Nigeria	2.68%	93,031	17.45%	93%	1,402	6%	1%	1%
South Africa	1.80%	160,491	16.47%	104%	739	177%	17%	9%
Zimbabwa	2.60%	9,433	20.66%	103%	41	23%	1%	8%

Table 2A: Hoeffding Correlation Coefficients

	Growth	GDP	INV	PE	FDI	MCR	STR	TR
Growth	1							
	(0.01)*							
GDP	0.01	1						
	(0.14)**	(0.01)*						
INV	0.01	0.09	1					
	(0.04)*	(0.01)*	(0.01)*					
PE	-0.02	0.01	-0.01	1				
	(0.99)	(0.11)**	(0.42)	(0.01)*				
FDI	0.01	0.04	0.02	-0.01	1			
	(0.13)**	(0.01)*	(0.04)*	(0.61)	(0.01)*			
MCR	-0.01	0.01	0.01	0.01	-0.01	1		
	(0.66)	(0.18)	(0.06)*	(0.20)	(0.96)	(0.01)*		
STR	-0.01	0.02	0.01	0.03	0.01	0.22	1	
	(0.56)	(0.01)*	(0.09)**	(0.03)*	(0.32)	(0.01)*	(0.01)*	
TR	0.01	-0.01	-0.01	-0.01	0.01	0.03	0.31	1
	(0.26)	(0.84)	(0.48)	(0.43)	(0.11)**	(0.01)*	(0.01)*	(0.01)*

Table 2B: Pearson Correlation Coefficients

	Growth	GDP	Inv	PE	FDI	MCR	STR	TR
Growth	1							
	(0.01)*							
GDP	0.02	1						
	(0.06)*	(0.01)*						
Inv	0.12	-0.33	1					
	(0.08)*	(0.01)*	(0.01)*					
PE	0.03	0.12	0.18	1				
	(0.86)	(0.49)	(0.29)	(0.01)*				
FDI	0.02	-0.01	-0.23	-0.01	1			
	(0.84)	(0.90)	(0.10)*	(0.95)	(0.01)*			
MCR	-0.03	0.03	-0.22	0.32	0.20	1		
	(0.77)	(0.82)	(0.04)*	(0.07)*	(0.15)	(0.01)*		
STR	-0.04	0.02	-0.21	0.22	0.46	0.87	1	
	(0.74)	(0.87)	(0.09)**	(0.21)	(0.01)*	(0.01)*	(0.01)*	
TR	-0.07	-0.10	0.02	-0.12	0.10	0.06	0.32	1
	(0.61)	(0.46)	(0.84)	(0.49)	(0.47)	(0.65)	(0.01)*	(0.01)*

* Significant at the 1% level

** Significant at the 5% level