

Does Better Corporate Governance lead to Stock Market Development and Capital Accumulation? A Case Study of India

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Abstract

In the present LPG (Liberalisation, Privatisation and Globalisation) regime the stock market has been assigned to play an important role. There is now a call for better corporate governance in order to protect the interests of the shareholders. The paper analyses a new leximetric dataset for India prepared by a team of lawyers of Centre for Business Research, University of Cambridge and examines the existing data on stock market developments and capital accumulation to answer whether better corporate governance leading to higher shareholder protection influences the stock market and whether stock market developments are related to private capital accumulation.

Keywords: Stock Market, Corporate Governance, Development, leximetrics and India

JEL Classifications: O16, K22, O53

Introduction

In the present LPG (Liberalisation, Privatisation and Globalisation) regime the stock market has been assigned to play an important role in promoting capital accumulation and growth. There are many studies that support this policy of promoting stock market in less developed countries (Levine and Zervos, 1998; Levine 1991 and 2003; Henry, 2000; Bekaert *et al* 2005). There is now a call for better corporate governance in order to protect the interests of the shareholders leading to stock market developments and capital accumulation. In a well-known paper La Porta *et al* (1998) – nicknamed LLSV - observed that countries with a ‘common law origin’ (such as UK) have a higher level of shareholder protection than countries with a civil law origin (such as France) and accordingly, the former group of countries has a lower concentration of stock ownership. In a subsequent paper (Djankov *et al* 2005), the similar line of reasoning is used to explain a positive correlation between the level of shareholder protection and stock market developments. One of the underlying assumptions is that firm financing in the form of equity capital will be higher in countries with better shareholder protection.

In this perspective the Centre for Business Research (at Judge Business School, University of Cambridge)- CBR- has produced a comprehensive time series dataset for corporate governance with reference to shareholder protection for a number of countries including India over the period 1970-2005 and questions the LLSV thesis (Lele and Siems.2007; Fagernas, Sarkar and Singh, 2007).

The present paper examines this CBR dataset for India to answer the question whether the government concern for corporate governance is misplaced – whether more and more reliance on private sector for capital accumulation and development through popularisation of stock market works.

II

Changes in Shareholder Protection Laws in India, 1970-2005

The CBR dataset has been constructed by a team of legal scholars based on the “law on the books”. It takes into account company law, and some areas of securities law. There are 28 broad categories and altogether 60 legal variables (only 8 of these are very similar to those considered in the LLSV approach) relating to shareholder protection (details in Lele et al 2007). Each of the variables takes a value between 0 and 1, and many take intermediate values, since it was considered inaccurate and in many cases impossible to describe the level of a certain type of protection simply with a binary variable. A value of 1 relates to the highest level of protection and a 0 to the lowest, so if a country were to have the maximum level of protection, the indicators would sum up to 60.

Out of the sixty legal variables considered, India experienced no change in 42 variables over the period of the study (1970-2005). Out of these 42 variables, 17 variables had the maximum possible value (= 1) and 13 variables had the minimum value (= zero). The remaining 12 variables assumed some intermediate values. Only 18 (two of these are considered in the LLSV study) variables showed some variations – some variables (numbering 13, 21, 41, 47, 53) declined but the most (13 variables) increased between the two dates 1970 and 2005 (Table 1). By 2001, 23 variables attained the level of perfection (assuming the value 1) and another 10 variables reached close to perfection (assuming the value close to 0.8).

The over-all picture is that the shareholders protection level (unweighted¹ average of the sixty variables) increased slightly in the 1970s and the 1980s: it rose from 0.47 during 1970-74 to 0.49 during 1975-84, to 0.5 during 1985-89. Major changes took place in the early 1990s and in the early 2000s: the average index rose to 0.54 during 1990-99 and finally to 0.61 during 2000-5. The behaviour of the average of all the 60 variables (hereafter CBR60) along with the average of those 18 variables (out of 60) that actually varied

during 1970-2005 ((hereafter CBR18) and the average LLSV index² is shown in Figure 1. Regression analysis of CBR60 and CBR18 index showed that these had statistically significant rising trends (Table 2).

Behaviour of India's Stock Market since 1950

From the on-line data source of IMF (International Financial Statistics) annual data (that smooth out short-term volatility and seasonality) on stock (share) and wholesale price indices are available over a long period, 1950-2005. These show that the growth in wholesale price index showed a steady growth since the mid-1950s while stock or share price index showed a sharp rise (sharper than price rise) since the mid-1970s after a quarter century of very slow growth. The process slowed down in the 1990s. In real terms (i.e. the ratio of stock price to wholesale price), the share price declined till the mid-1970s and thereafter rose sharply amidst fluctuations till the early 1990s (Figure 2). The picture doesn't change much if real share prices are derived by deflating the nominal share prices by the consumer price indexes.

Regression analysis (without bothering for the tests of trend-stationarity for the time being) shows that the share price rose at a statistically significant rate of 9 percent per annum over the whole period 1950-2005; during 1950-75, the growth was not statistically significant but afterwards there was a rapid growth of 15 percent per annum. In real terms there was no significant growth over the whole period; actually it declined at the rate of 4 percent during 1950-75 followed by a rise of around 9 percent per annum in the subsequent period (Table 2).

To ascertain whether share prices are trend-stationary or random walk with drift we have conducted Augmented Dickey-Fuller (ADF) tests and Perron tests (in view of structural shifts), orders being chosen on the basis of the data-dependent General-to-Specific (GS) criterion (for details see Table 2 note 3) as advocated by Ng-Perron (1995) and Perron (1997). In no case can we reject the null hypothesis of unit root with drift.

From the Financial Structure Dataset constructed by Thorsten Beck of World Bank (available on-line), a number of indicators of Indian stock market development are available over the period 1976-2005: average real stock market capitalisation relative to GDP (RMKAPGDP), total shares traded on the stock exchanges relative to GDP (VALTRDGDP) and the turnover ratio – the ratio of the value of total shares traded to average real market capitalization (TURN).³ Their log-values are plotted in Figure 3. It shows that stock market capitalisation (RMKAGDP) and the value of traded stocks (VALTRAD) rose over the whole period amidst much fluctuation since the early 1990s. The turnover ratio (TURN) showed a tendency to decline till the mid-1990s; thereafter it moved together with VALTRD – rising rapidly with a sharp fall in 2001. So the first two indicators show statistically significant trend growth and the turnover ratio shows no such trend growth.

Shareholder Protection and India’s Stock Market Behaviour, 1970-2005

Does the change in legal variable influence developments in the stock market? La Porta *et al* (2005) argued in favour of a positive influence of the shareholder protection on stock market developments (see also Beck *et al.*, 2003). In the Indian context we seek an answer to this question on the basis of Autoregressive Distributive Lag (ARDL) approach to cointegration developed by Pesaran and Shin (1999). This technique can be used to test for the existence of a long run relationship between two variables irrespective of whether they are stationary or stochastic (having unit root).

The ARDL equation fitted here is the following

$$(1) \quad Y_t = a + b.t + \sum_{i=1}^m c_i Y_{t-i} + \sum_{j=0}^n d_j X_{t-j}$$

where X_t is the independent variable – legal index, Y_t is the dependent variable –the log of nominal or real share price index in period t (LSHARE or LRSHARE) or the log of other share market development indicators such as RMKAPGDP, VALTRDGDP and TURN, t is the time trend which captures the effect of

other explanatory variables and m, n are unknown lags (with the maximum value = 12) to be determined by Schwarz Bayesian criterion (SBC) as suggested by Pesaran and Shin (1999).

The long run coefficients estimated through the ARDL approach are reported in Table 2. In no case do we get a positive long-term relationship between the share market development indicators (chosen one at a time) and the legal variable – CBR60 or CBR18 (Table 3). Rather the legal variable has a negative relationship with the value of trade and perhaps with the turnover ratio. It could be the result of the bubble of 2001. So we tried spike dummy for 2001 and got no long-term relationship instead of the negative relationship (details are skipped).

Capital Accumulation and Stock Market Changes: Long-term Relationships

The avowed objective of government concern for a proper legal environment in the stock market is promotion of growth through capital formation. This is particularly true in a less developed country such as India especially in a liberalisation regime with more and more reliance on private sector (rather than public sector) for economic development. In this context we have examined the long-term relationship between private fixed capital formation and different stock market variables.

For nominal and real share price we have data for more than half a century. From Government of India (Economic Survey, 2005-6), data on gross private and public fixed capital formation as percentage of GDP (PVTGDP and PUBGDP, respectively) are available over the period 1950-2004. PUBGDP showed a tendency to decline since the mid-1980s while PVTGDP accelerated indicating the start of the present regime with a declining importance of public sector much before the D-day of 1991 (Figure 4 and Table 2).

Following the same ARDL approach to cointegration we have examined the relationship between each of the stock market variables for which we have long time-series data and private fixed capital formation. We have left out the public fixed capital accumulation (PUBGDP) and so the total fixed capital formation (GKFGDP) for obvious reasons.

The long run coefficients estimated through the ARDL approach are reported in Table 4. These show no long-term relationship between (log values of) gross fixed private capital formation as percentage of GDP (LPVTGDP) and (log values of) nominal or real share price (LSHARE or LRSHARE). Nor do we get any long-term relationship between other share market development indicators and private fixed capital formation (PVTGDP). We have estimated a number of alternative ARDL equations by adding intercept and slope dummies for each of the periods 1985-2004 and 1991-2004 keeping in mind the two possible dates of regime change in favour of the present LPG regime. In none of the cases we get a significant long-term relationship.

In view of the fact that all the variables excepting share prices are found to be stationary we have used also the simple regression analysis (with due care to the problem of autocorrelation) and found no significant relationship (details are skipped) between the share market variables and private capital formation (for share prices we have used the first log-difference and all other variables are in level terms).

This finding supports our earlier conclusion (Sarkar, 2006) and the contention of some economists such as Singh (1997). Our earlier analysis of a sample of 31 less developed countries shows that in the majority of cases (including India) there exist no meaningful relationship between stock market capitalization as a percentage of GDP and growth of gross fixed capital formation. Thus both of our studies discount the importance of stock market development in promoting industrial growth through capital accumulation in less developed countries such as India. Hence the concern for better corporate governance for protection of the interests of the shareholders is misplaced so far as stock market developments and their impact on capital accumulation in an LDC such as India is concerned.

III

Concluding Observations

Once Keynes (1936) compared stock market with casino and discounted the importance of stock market for capital accumulation. Joan Robinson held the view that financial development (that includes stock market development) follows growth but not the other way round. The study of World Bank (1993) pointed out that stock markets have played little role in the post-war industrialisation of Japan, Korea and Taiwan. So Singh (1997) argued that the recent move towards stock market liberalisation is ‘unlikely to help in achieving quicker industrialisation and faster long-term economic growth’ in most of the LDCs. Nevertheless in the present LPG regime the stock market has been assigned to play an important role for the capitalist development of the LDCs. Its theoretical and empirical support comes from a large number of mainstream economists.

In this context this study examines Indian experience of shareholder protection and its impact on stock market developments and the impact of stock market developments on private fixed capital formation. In both cases our conclusion is in favour of non-existent long-term relationship. The scope of the present study is limited – particularly we did not deal with the question of law enforcement. The CBR index is based on the law on the books – not the actual implementation. There is a view that the rule of law is at a very miserable stage in many LDCs including India because of corruption and other imperfections. That could explain our finding of no relationship between shareholder protection and stock market developments. But such no relationship has been found in four developed countries such as USA, UK, France and Germany (Fagernas et al 2007).

Furthermore in the Indian context the controlled regime since the 1950s till the mid-1980s or the beginning of the 1990s was identified in many circles as the root cause of all the crises of development India faced and so there was a call for de-controls leading to the present LPG regime. This contradicts the view of poor rule of law. The fact is that imperfection (in the form of corruption, bribery, dilly-dallying etc) exists in India but not at that level as to say that law does not matter. In the context of corporate governance

concerning shareholder protection we observed that the law does not matter for stock market developments. The possible explanation is that in most of the cases shares are bought only to sell at a later date to appropriate capital gains. Buying and selling in the stock market are often governed by speculation and/or cornering the market to make quick money. These are the dominant activities in the share market influencing share prices, stock market capitalisation etc – almost unrelated to the state of shareholder protection and long-term capital formation. So the findings of our econometric study are not counter-intuitive. This leaves a scope of further study concerning the finance of capital formation – debt, equity or other things that is most important for LDCs such as India. This is beyond the scope of the present paper.

END NOTES

- 1 It is difficult to give weights to different indices to derive the composite index. Instead of giving arbitrary weights, we have given equal weight to each index. It implies all the sixty legal variables are equally important for shareholder protection.
- 2 Based on Lele and Siems (2007) coding of the original LLSV variables.
- 3 In the Financial Structure Dataset constructed by Thorsten Beck of World Bank, the following definitions are used:

MKAPGDP: Value of listed shares to GDP is calculated using the following deflation method: $\{(0.5) * [F_t/P_{e_t} + F_{t-1}/P_{e_{t-1}}]\} / [GDP_t/P_{a_t}]$ where F is stock market capitalization, P_e is end-of period CPI, and P_a is average annual CPI;

VALTRDGDP: Total shares traded on the stock market exchange to GDP;

TURNOVER: Ratio of the value of total shares traded to average real market capitalization. It is calculated using the following method: $T_t/P_{a_t} / \{(0.5) * [M_t/P_{e_t} + M_{t-1}/P_{e_{t-1}}]\}$ where T is total value traded, M is stock market capitalization, P_e is end-of period CPI, P_a is average annual CPI.

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Table 1: India's Shareholder Protection Law: Changes during 1970-2005¹

NO.	Broad Categories	Changes
	<i>I. Powers of the general meeting [0.61]</i>	
1		No Change(1)
2		No Change(1)
3		No Change(0.5)
4		No Change(0.25)
5		No Change(0.5)
6		No Change(1)
7		No Change(0)
	<i>II. Agenda setting power[0.29]</i>	
8		No Change(0)
9		Declined from 1 to 0.75 in 1988;
10		slightly improved to 0.8 in
11		2001(0.88)
12		No Change(0)
	<i>III. Extraordinary shareholder meeting[0.75]</i>	
11*		No Change(0.5)
12		No Change(1)
	<i>IV. Anticipation of shareholder decision[0.26]</i>	
13		Declined from 0.5 to 0.38 in 1988
14*		(0.44)
15		Improved in 1985 from 0 to 0.5 and
14*		further to 0.88 in 2001(0.35)
15		No Change(0)

	<i>V. Information in the run-up of the general meeting</i>	
	<i>[0.88]</i>	
16		No Change(0.75)
17		No Change(1)
18*	<i>VI. Shares not blocked before general meeting [1]</i>	No Change(1)
	<i>VII. Individual information rights [0]</i>	
19		No Change(0)
20		No Change(0)
	<i>VIII. Communication with other shareholders[0.94]</i>	
21		Improved in 1975 from 0.75 to 1 and worsened to 0.5 in 2000(0.88)
22		No Change(1)
	<i>IX. Board composition [0.13]</i>	
23		Improved from 0 to 1 in 2000(0.14)
24		Improved from 0 to 0.25 in 1998 and further to 0.75 in 2001(0.12)
25		Improved from 0 to 0.34 in 2000, further to 0.75 in 2001 and further to 0.888 in 2002(0.13)
	<i>X. No excessive remuneration for non-executive and executive directors[0.78]</i>	
26		No Change(1)
27		Improved from 0.25 to 1 in 2001(0.35)
28		No Change(1)
29	<i>XI. Performance based remuneration [0.5]</i>	Improved from 0 to 1 in 1988(0.5)

	<i>XII. Duration of director's appointment</i>	
	<i>[0.38]</i>	
30		No Change(0)
31		No Change(0.75)
	<i>XIII. Directors' duties [0.75]</i>	
32		No Change(0.75)
33		No Change(1)
34		No Change(0.5)
	<i>XIV. Shareholder supremacy [0.47]</i>	
35		No Change(0.5)
36		Improved from 0 to 1 in 1990(0.44)
37*	<i>XV. Pre-emptive rights [1]</i>	No Change(1)
38	<i>XVI. Director's disqualification [0.08]</i>	Improved from 0 to 0.5 in 2000(0.83)
	<i>XVII. Corporate governance code [0.16]</i>	
39		Improved from 0 to 0.25 in 1998 and further to 1 in 2001(0.16)
	<i>XVIII. Public enforcement of company law[0.84]</i>	
40		Improved from 0.5 to 1 in 1975(0.93)
41		Improved from 0.75 to 1 and worsened to 0.25 in 1988(0.59)
42		No Change(1)
43	<i>XIX. Quorum [0]</i>	No Change(0)
44	<i>XX. Supermajority requirements [1]</i>	No Change(1)
	<i>XXI. One share – one vote[0.85]</i>	
45*		No Change(1)
46		No Change(1)
		Worsened from 0.67 to 0 in 2000
47		(0.56)

48*	XXII. Cumulative voting [0.03]	Improved from 0 to 0.25 in 2001 (0.03)
49	XXIII. Voting by interested shareholders prohibited [0]	No Change (0)
50	XXIV. No squeeze out (freeze out) [0]	No Change (0)
51*	XXV. Right to exit [0.11]	No Change (0)
52		No Change (0)
53		Improved from 0 to 1 in 1990 and worsened to 0.5 in 1997 (0.32)
54	XVI. Disclosure of major share ownership [0.36]	Improved from 0 to 0.25 in 1986 and further to 0.75 in 1990 (0.36)
55	XXVII. Oppressed minority [0.75]	No Change (0.75)
56*		No Change (0.75)
57	XXVIII. Shareholder protection is mandatory [0.63]	No Change (1)
58		No Change (1)
59		No Change (0)
60		No Change (0.5)
	ALL (1 to 60) [0.52]	It rose from 0.47 during 1970-74 to 0.49 during 1975-84, to 0.5 during 1985-89, to 0.54 during 1990-99 and finally to 0.61 during 2000-5.

1 Indices averaged over 1970-2005 in parentheses (maximum value is 1 and the minimum is 0).

* Lele and Siems (2006) identified that these variables constituted the original LLSV index.

Source: Lele and Siems (2007).

Table 2: India's Capital Accumulation, Stock Market Developments and Shareholder Protection Law Indices' Trends¹ since 1950

Dependent Variables ² / Period & Process	Intercept	Time	Intercept Dummy	Slope Dummy	Adj. R Sq.	D-W Stat.	ADF Stat. ³
Share Holder Protection Law (CBR60) 1970-2005							
AR (1)	0.38**	0.004**			0.92	1.86	-2.318(0) ^{\$}
Share Holder Protection Law (CBR18) 1970-2005							
AR (1)	-0.07	0.01**			0.92	1.86	-2.318(0) ^{\$}
Gross Private Fixed Capital Formation-GDP Ratio(LPVTGDP) 1950-2004							
AR (1)	1.7**	0.02**			0.96	1.58	-3.612(0) ^{\$}
AR(2)	1.8**	0.02**	-0.38**	0.01**	0.97	2.08	
Gross Public Fixed Capital Formation-GDP Ratio(LPUBGDP) 1950-2004							
AR (1)	1.79**	0.004			0.81	1.8	-3.692(0) [‡]
AR (2)	0.86**	0.04**	2.56**	-0.07**	0.89	1.71	
Nominal Share Price (LSHARE) 1950-2005							
AR (1)	-0.31	0.09**			0.99	1.74	-1.371(0)
AR (1)	0.27	0.01	-3.96**	0.15**	0.99	1.85	-2.306 (0)
Real Share Price (LRSHARE) 1950-2005							
AR (1)	2.95**	0.03			0.93	1.77	-0.952(0)
AR (1)	3.67**	-0.04**	-3.43**	0.13**	0.94	1.83	-2.805(0)
Real Stock Market Capitalisation to GDP (LRMKAPGDP) 1976-2005							
AR (1)	-7.22**	0.12**			0.95	1.89	-2.489(11) ^{\$}
Total Shares Traded to GDP							

(VALTRDGDGDP) 1976-2005							
AR (1)	-8.29**	0.14**			0.72	1.99	-5.404(0) ^{\$}
Turnover Ratio (LTURN) 1976-2005							
OLS	-0.95	0.01			-0.01	1.88	-4.9141(0) ^{\$}
OLS	-0.41**				0.00	1.84	-4.842(0) [‡]

1 The fitted equation is:

$$Y = a + b.t$$

where Y is the dependent variable, t = time.

In the appropriate cases this linear trend equation is re-estimated with intercept and slope dummies (D and SD respectively). For LSHARE and LRSHARE, D= 0 for 1950-75 and = 1 for the rest. For LPVTDGDP and LPUBGDGDP, D= 0 for 1950-85 and =1 for the rest. SD = t.D

Initially the regression equations are fitted through the ordinary least square (OLS) technique. A twelve-order Lagrange Multiplier test is conducted to ascertain the lag structure of the autoregressive (AR) error process and the parameters and their t-values are re-estimated (as needed) through the maximum likelihood process.

2 Excepting the legal index all other dependent variables are log-values.

3 The tests are based on OLS. To correct for our small sample, the Boot-strapping method (1000 simulations) is used for testing the unit root hypothesis (through the EASYREG programme). The data-dependent General-to-specific (GS) criterion is used to choose the optimum lag structure of the error process of the Dickey-Fuller equation as advocated by Ng-Perron (1995) and Perron (1997). Under this process, the specific order is chosen out of the general order (we considered here 12 lags) on the basis of the standard t-tests of significance of the lag terms. If out of 12 lag terms considered here, the 8th lag (say) term is statistically significant but all higher order lag terms are insignificant we run an 8th order ADF equation and check whether 8th order lag is significant. If now (say) the 6th order lag term is significant but the higher order lag terms are

insignificant, we fit a 6th order ADF equation and check the maximum order significant lag terms. If the 6th order lag term is significant the appropriate ADF model is taken to be 6th order. If not, the process continues until we arrive at the zero-order ADF (i.e. DF) equation.

* Significant at 5 per cent level.

** Significant at 1 per cent level.

\$ The null hypothesis of unit root is rejected at 5 per cent level (based on 1000 simulations through the boot-strapping method).

£ The null hypothesis of unit root is rejected at 5 per cent level (based on 1000 simulations through the boot-strapping method). In view of the insignificant time trend, it is dropped so that the alternative hypothesis accepted is mean-stationarity.

The null hypothesis of unit root is rejected at 10 per cent level (based on 1000 simulations through the boot-strapping method).

Table 3: Shareholder Protection Law and Stock Market Developments:
Estimates of the Long-run Coefficients through ARDL Method¹, 1970-2005

Dependent Variable(Y_t)/ Period	ARDL Model	Share Holder Protection Law-CBR60 (X_t): Long-run coefficients
Nominal Share Price (LSHARE) 1970-2005 ²	(1,0)	0.28
Real Share Price (LRSHARE) 1970-2005 ²	(1,0)	-1.44
Real Stock Market Capitalisation to GDP (LRMKAPGDP), 1976-2005	(6,6)	-126.06
Total Shares Traded to GDP (LVALTRDGDP), 1976-2005	(0,1)	-17.77*
Turnover Ratio (LTURN), 1976-2005 ³	(0,1)	-13.8

* Significant at 5 per cent level.

1 The fitted ARDL (m, n) equation is

$$Y_t = a + b.t + \sum_{i=1}^m c_i Y_{t-i} + \sum_{j=0}^n d_j X_{t-j}$$

where X_t is the independent variable – legal index (CBR60 or CBR18), Y_t is the dependent variable - the log of different share market variables such as SHARE, LSHARE, RMKAPGDP, VALTRDGDP, TURN, t is the time trend which captures the effect of other explanatory variables and m, n are unknown lags determined by the Schwarz Bayesian criterion (SBC) as suggested by Pesaran and Shin (1999). We have reported only the estimates relating to CBR60 as estimates relating to CBR18 do not tell a different story.

2 In view of structural changes in the share prices since 1975 (possibly unrelated to law changes), intercept and slope dummies are added to the original equation to re-estimate the long-term coefficients but the basic conclusion remains.

3 In view of trendlessness of TURN, the ARDL model is fitted without time trend. The negative long-run coefficient is marginally significant at 5.1 per cent level.

Table 4: Capital Formation and Stock Market Developments: Estimates of Long-term Relationships through ARDL Method¹

Independent Variable (X _t)/ Period (Model)	Private Fixed Capital Formation, LPVTGDP (Y _t) (ARDL Model in parentheses)		
	(a)	(b)	(c)
Nominal Share Price (LSHARE) 1950-2004	0.06 (1,0)	-0.04 (1,0)	0.01 (1,0)
Real Share Price (LRSHARE) 1950-2004	0.06 (1,0)	-0.06 (1,0)	0.01 (1,0)
Real Stock Market Capitalisation to GDP (LRMKAPGDP), 1976-2004	0.05 (0,0)	-0.09 (0,5)	-0.01 (0,0)
Total Shares Traded to GDP (LVALTRDGDP), 1976-2004	-0.002 (0,0)	-0.003 (0,0)	-0.005 (0,0)
Turnover Ratio (LTURN), 1976-2004	-0.01 (0,0)	-0.01 (0,0)	-0.004 (0,0)

1 The fitted equation is

$$Y_t = a + b.t + \sum_{i=1}^m c_i Y_{t-i} + \sum_{j=0}^n d_j X_{t-j}$$

where Y_t is the dependent variable – the share of gross private fixed capital formation in GDP– log values (LPVTGDP) in period t, X_t is the log values of different stock market variables (LSHARE, LRSHARE, LRMKAPGDP, LVALTRDGDP and LTURN) and m, n are unknown lags determined by the Schwarz Bayesian criterion (SBC).

In column (a), the estimates of long-run coefficients of Y_t are presented by fitting the original equation through the ARDL method (with the aid of the Microfit 4.1 programme). In column (b), the coefficients are estimated after adding intercept and slope dummies for the period 1985-04 to the original equation. In column (c), the coefficients are estimated after adding intercept and slope dummies for the period 1991-04 to the original equation.

Figure 1:

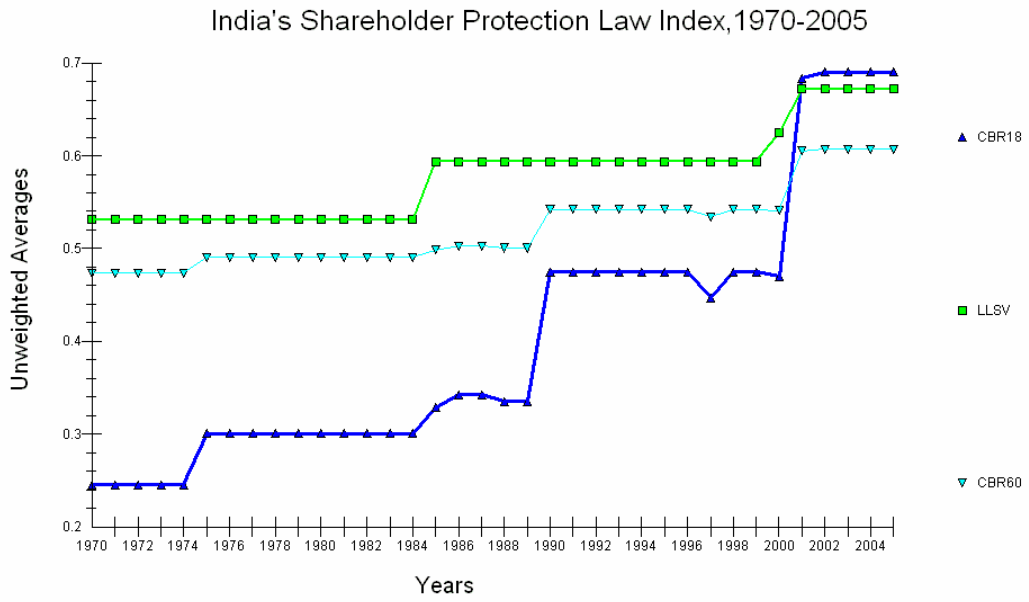


Figure 2:

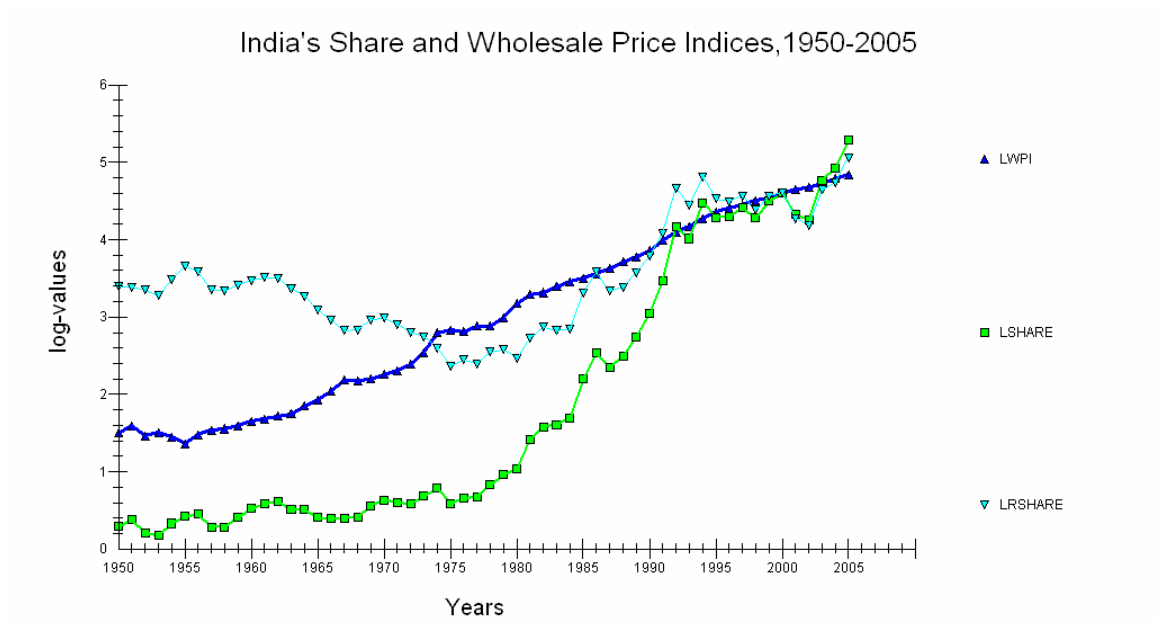


Figure 3:

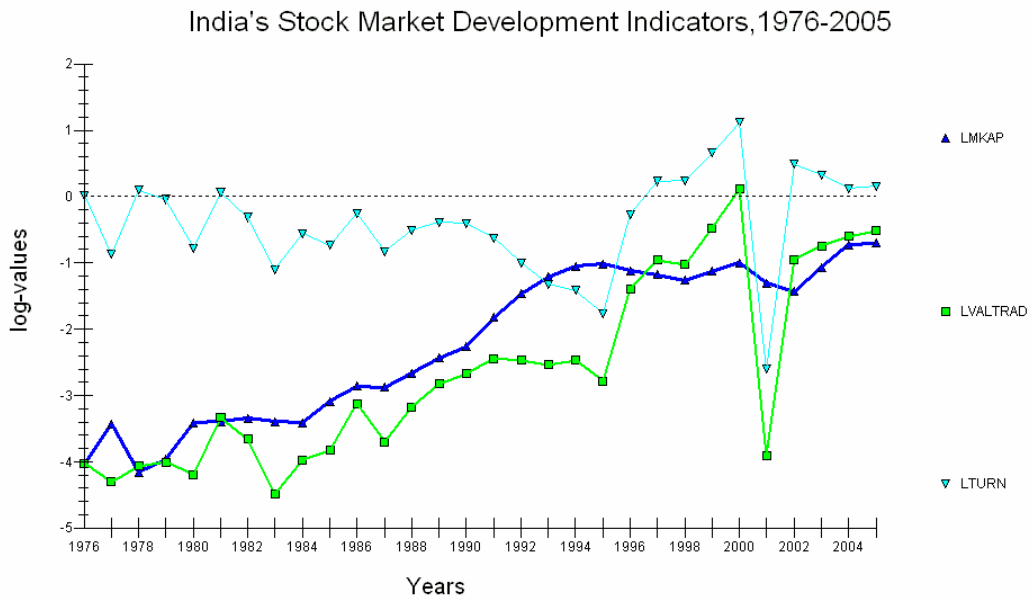


Figure 4:

