

Stock Market Liberalization in Pakistan

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Objectives

To examine the trends in the market as well as in various sectors of the market covering both the pre and post liberalization periods.

To examine the impact of stock market liberalization on macro variables like Gross Domestic Product, investment, etc.

To examine the integration of the Pakistani market with the regional as well as with the major international capital markets such as Stock Exchanges of New York, London, and Tokyo

To examine the role of Badla financing in the Stock Exchange

Pakistan

Three Stock Exchanges

Karachi Stock Exchange

Established in 1947

Liberalized in 1991

Ranked 3rd in 1991

Best Performing 2002

Table 1: Karachi Stock Exchange over the Decades				
End of	Listed	Market	SBGI	Volume
Period	Companies	Capitalization	(b.1959-60)	(mill)
	(No.)	(mill Rs.)		
1950	15			
1960	81	1,871.4	93.52	4.805
1970	291	5,658.1	133.11	25.838
1980	314	9,767.3	235.59	25.785
1990	487	61,750.0	767.27	255.397
2000	762	382,730.4	1,211.98	46,157.593
2004	661	1,723,454.4	3,839.62	85,640.019
	percentage changes over the decades			
1950				
1960				
1970	259.26	202.35	42.33	437.73
1980	7.90	72.63	76.99	-0.21
1990	55.10	532.21	225.68	890.49
2000	56.47	519.81	57.96	17,972.88
2004	-13.25	350.31	216.81	85.54

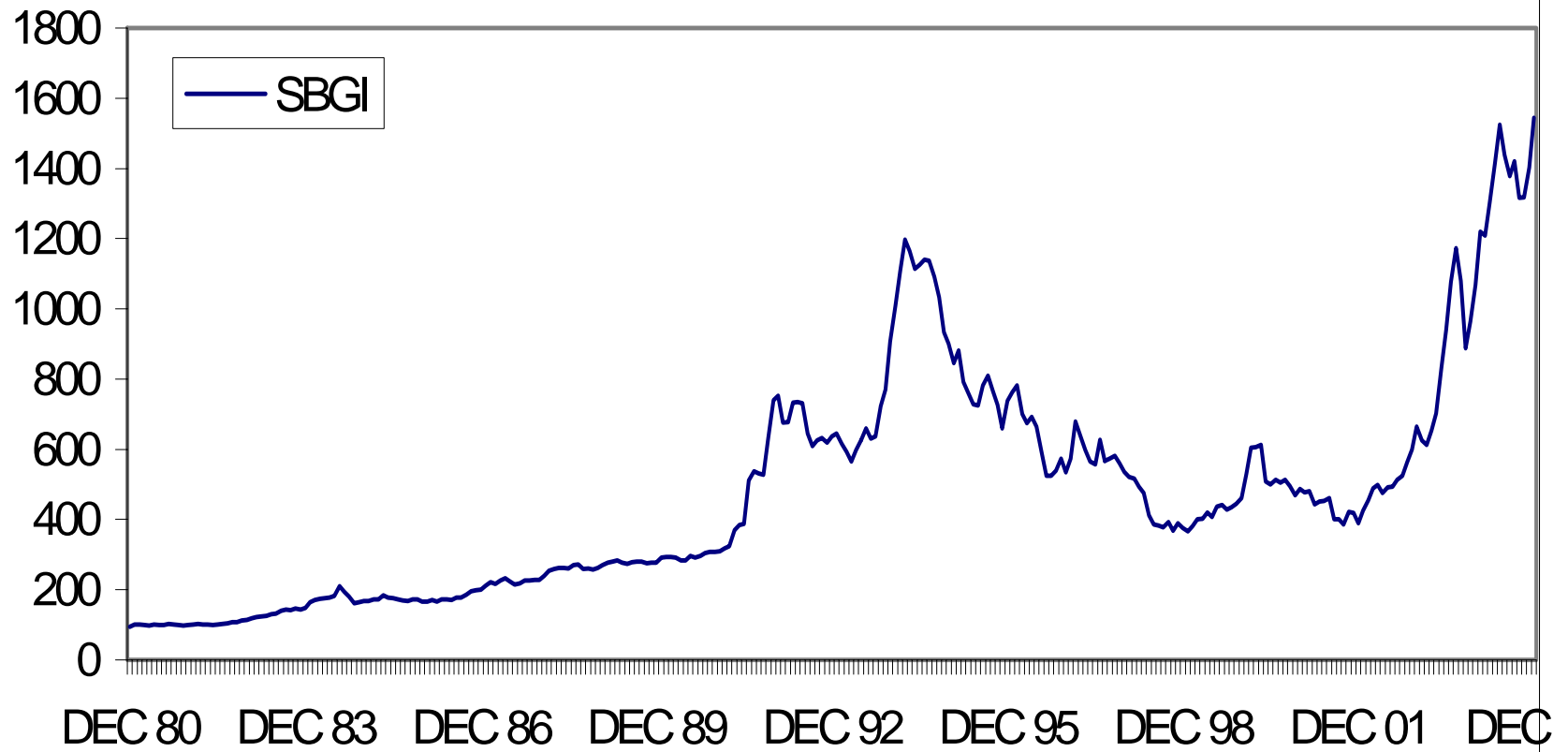
Table 2(a): Annual Stock Market Indicators for Pakistan (Karachi Stock Exchange)

Years	Listed Companies (No.)	Market Capitalization (Mill Rs.)	Shares Traded (Mill. No.)	Trading Volume (Mill Rs.)	Turn over Ratio	SBGI 1980-81=100	KSE 100 Nov. 91=1000	IFC Return Dec 84=100
1980	314	6,361	25.785			94.0		
1981	311	8,554	35.282			99.4		
1982	326	11,267	50.236			114.8		
1983	327	15,201	76.028			148.3		
1984	347	18,834	96.834	2,523	14.8	168.3		100.0
1985	362	21,900	84.265	3,757	18.4	166.5		117.8
1986	361	29,491	114.088	2,583	10.0	199.9		142.9
1987	379	34,300	157.298	2,813	8.8	228.4		152.4
1988	404	45,508	169.263	3,181	8.0	262.7		173.4
1989	440	52,207	214.572	3,910	8.0	277.3		184.5
1990	487	61,900	255.397	4,979	8.7	308.5		205.0
1991	542	180,222	616.914	15,232	12.6	718.2	1,672.8	557.8
1992	628	204,723	794.342	24,435	12.7	637.5	1,243.7	455.1
1993	653	347,829	1,276.393	51,579	18.7	907.8	2,164.3	710.8
1994	724	377,333	1,816.077	97,472	26.9	901.2	2,049.1	650.3
1995	764	317,732	3,051.091	101,446	29.2	737.1	1,497.8	447.8
1996	782	426,400	6,732.650	218,210	58.6	535.1	1,339.9	360.4
1997	781	482,555	13,306.145	471,339	103.7	536.6	1,753.8	454.6
1998	773	265,624	18,497.050	427,444	114.3	375.8	945.2	200.5
1999	765	361,293	31,344.287	1,081,970	345.2	460.7	1,408.9	298.6
2000	762	379,087	46,157.593	1,760,090	475.5	487.3	1,507.6	272.9
2001	747	296,144	19,788.455	765,606	226.8	389.0	1,273.1	206.4
2002	712	595,206	37,692.233	1,542,996	346.2	664.1	2,701.4	495.3
2003	701	951,447	76,380.080	3,846,378	497.4	1,068.7	4,471.6	806.5
2004	661	1,723,454	85,640.019	4,313,945	322.6	1,543.9	6,218.4	1,029.6

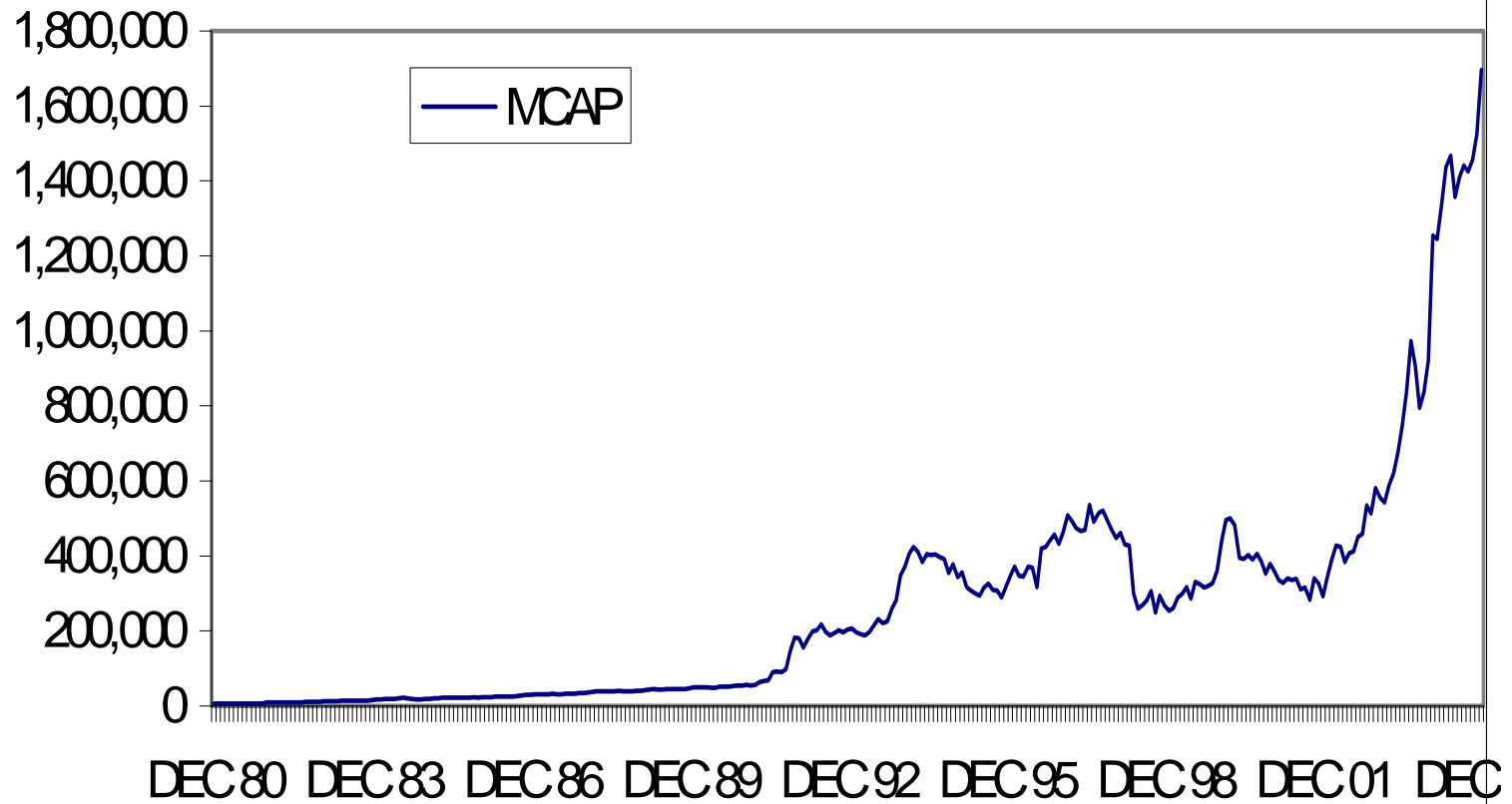
Table 2(b): Percentage changes in Stock Market Indicators for Pakistan

Years	Listed Companies (No.)	Market Capitalization (Mill Rs.)	Shares Traded (Mill. No.)	Trading Volume (Mill Rs.)	Turn over Ratio	SBGI 1980-81=100	KSE 100 Nov. 91=1000	IFC Return Dec 84=100
1981	-0.96	34.48	36.83			5.74		
1982	4.82	31.72	42.38			15.49		
1983	0.31	34.92	51.34			29.18		
1984	6.12	23.90	27.37			13.49		
1985	4.32	16.28	-12.98	48.91	24.32	-1.07		17.80
1986	-0.28	34.66	35.39	-31.24	-45.65	20.06		21.31
1987	4.99	16.31	37.87	8.90	-11.79	14.26		6.65
1988	6.60	32.68	7.61	13.05	-9.64	15.02		13.78
1989	8.91	14.72	26.77	22.94	0.41	5.56		6.40
1990	10.68	18.57	19.03	27.34	9.05	11.25		11.11
1991	11.29	191.15	141.55	205.91	44.17	132.80		172.10
1992	15.87	13.60	28.76	60.42	0.90	-11.24	-25.65	-18.41
1993	3.98	69.90	60.69	111.09	47.06	42.40	74.02	56.19
1994	10.87	8.48	42.28	88.98	43.99	-0.73	-5.32	-8.51
1995	5.52	-15.80	68.00	4.08	8.58	-18.21	-26.90	-31.14
1996	2.36	34.20	120.66	115.10	100.91	-27.40	-10.54	-19.52
1997	-0.13	13.17	97.64	116.00	76.83	0.28	30.89	26.14
1998	-1.02	-44.95	39.01	-9.31	10.18	-29.97	-46.11	-55.90
1999	-1.03	36.02	69.46	153.13	202.09	22.59	49.06	48.93
2000	-0.39	4.93	47.26	62.67	37.75	5.77	7.01	-8.61
2001	-1.97	-21.88	-57.13	-56.50	-52.31	-20.17	-15.55	-24.37
2002	-4.69	100.99	90.48	101.54	52.67	70.72	112.19	139.97
2003	-1.54	59.85	102.64	149.28	43.67	60.92	65.53	62.83
2004	-5.71	81.14	12.12	12.16	-35.14	44.47	39.06	27.66

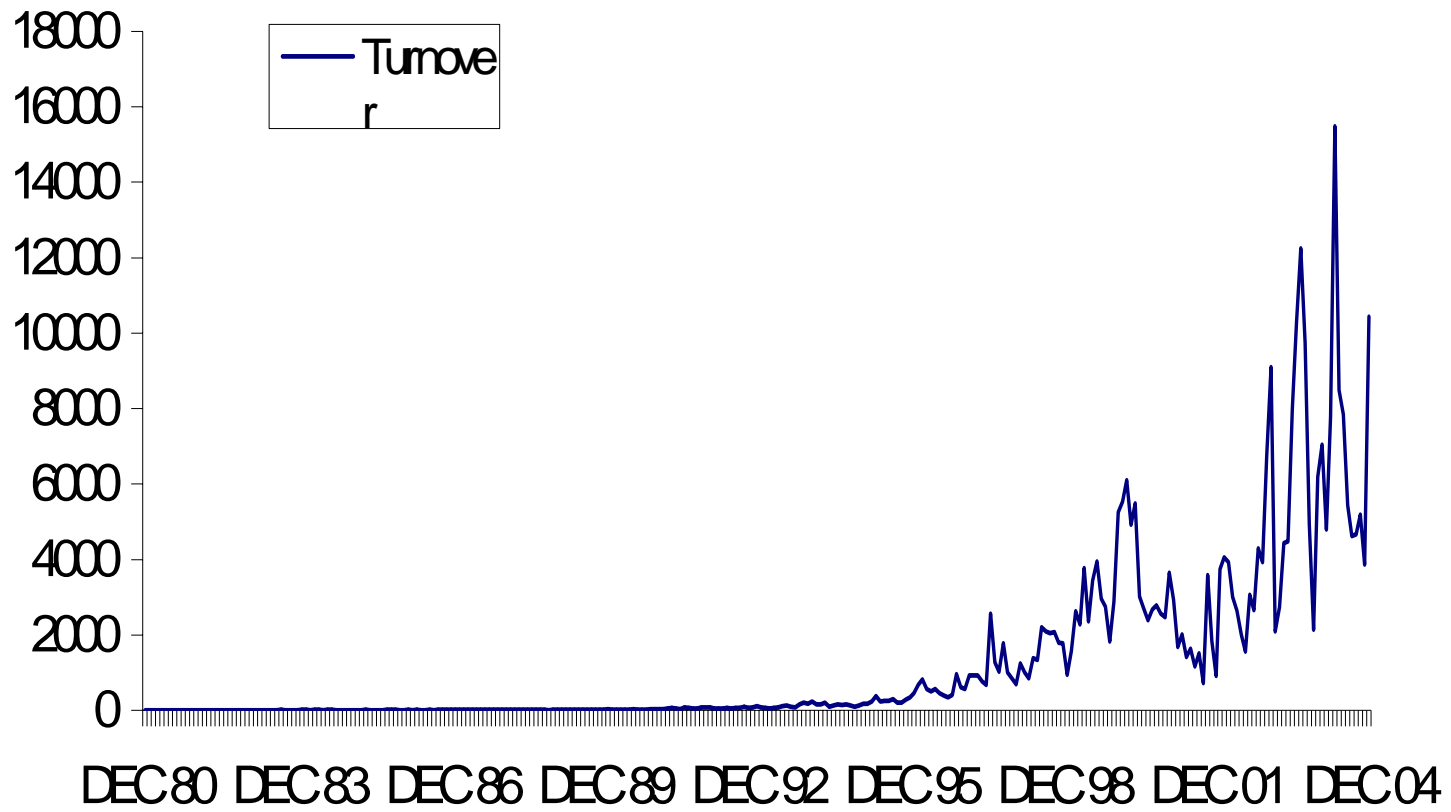
SBGI



MCAP



Turnover



Index Numbers at the end of Period by Sectors (1980-81)

Years	Textiles	Chemicals & Pharmaceuticals	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Transport & Communication	Finance
1980	91.67	85.93	91.01	84.70	97.25	99.35	112.59	97.55
1981	102.67	113.52	99.42	116.20	81.51	93.35	85.86	88.84
1982	119.95	130.23	176.62	132.34	93.29	112.87	70.57	102.43
1983	165.29	169.23	196.60	177.63	97.60	143.07	81.78	142.04
1984	160.85	209.25	180.47	195.26	144.49	171.94	106.04	236.58
1985	131.54	242.98	172.07	196.07	117.81	200.93	113.03	239.40
1986	167.65	283.27	237.70	211.76	167.50	245.79	145.61	296.80
1987	233.40	275.43	290.45	251.55	197.07	259.77	169.66	340.82
1988	287.87	316.30	391.49	266.08	243.04	300.04	156.22	390.09
1989	285.44	346.63	385.28	260.41	206.23	331.39	157.34	373.07
1990	312.38	387.09	435.73	279.64	174.41	393.18	124.92	452.70
1991	797.37	1,057.96	616.00	478.90	457.83	1,190.27	278.02	944.32
1992	618.16	1,101.28	558.51	393.17	791.75	902.48	252.33	697.33
1993	643.03	1,765.09	594.97	559.86	1,888.07	1,633.28	304.81	1,117.96
1994	546.41	1,896.51	484.24	555.93	1,927.74	1,809.29	204.27	1,345.65
1995	407.35	1,801.42	386.28	443.49	966.50	1,388.06	142.31	709.84
1996	333.76	1,312.18	311.16	363.51	401.65	1,173.03	114.55	479.63
1997	326.26	1,300.03	331.42	338.56	266.23	1,393.77	101.47	525.11
1998	292.79	1,001.24	291.45	282.41	132.66	751.44	76.95	397.65
1999	324.51	1,020.75	302.09	314.58	199.44	1,051.00	96.70	421.57
2000	401.97	1,040.93	341.26	359.29	232.06	1,016.37	88.08	422.94
2001	340.65	1,078.18	320.91	377.87	178.43	724.21	53.78	329.62
2002	465.39	1,738.47	477.04	581.45	265.45	1,350.12	112.12	538.28
2003	624.68	2,836.46	642.36	770.10	564.07	1,918.91	168.32	981.24
2004	1,098.77	3,849.43	1,285.19	1,079.69	897.81	3,062.77	250.55	1,376.12

	Percentage Changes in Index Numbers by Sectors								
Years	Textiles	Chemicals & Pharmaceuticals	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Transport & Communication	Finance	
1980									
1981	12.00	32.11	9.24	37.19	-16.19	-6.04	-23.74	-8.93	
1982	16.83	14.72	77.65	13.89	14.45	20.91	-17.81	15.30	
1983	37.80	29.95	11.31	34.22	4.62	26.76	15.88	38.67	
1984	-2.69	23.65	-8.20	9.93	48.04	20.18	29.66	66.56	
1985	-18.22	16.12	-4.65	0.41	-18.46	16.86	6.59	1.19	
1986	27.45	16.58	38.14	8.00	42.18	22.33	28.82	23.98	
1987	39.22	-2.77	22.19	18.79	17.65	5.69	16.52	14.83	
1988	23.34	14.84	34.79	5.78	23.33	15.50	-7.92	14.46	
1989	-0.84	9.59	-1.59	-2.13	-15.15	10.45	0.72	-4.36	
1990	9.44	11.67	13.09	7.38	-15.43	18.65	-20.61	21.34	
1991	155.26	173.31	41.37	71.26	162.50	202.73	122.56	108.60	
1992	-22.48	4.09	-9.33	-17.90	72.93	-24.18	-9.24	-26.16	
1993	4.02	60.28	6.53	42.39	138.47	80.98	20.80	60.32	
1994	-15.03	7.45	-18.61	-0.70	2.10	10.78	-32.98	20.37	
1995	-25.45	-5.01	-20.23	-20.23	-49.86	-23.28	-30.33	-47.25	
1996	-18.06	-27.16	-19.45	-18.03	-58.44	-15.49	-19.51	-32.43	
1997	-2.25	-0.93	6.51	-6.86	-33.71	18.82	-11.42	9.48	
1998	-10.26	-22.98	-12.06	-16.59	-50.17	-46.09	-24.16	-24.27	
1999	10.83	1.95	3.65	11.39	50.33	39.86	25.66	6.02	
2000	23.87	1.98	12.97	14.21	16.36	-3.30	-8.91	0.32	
2001	-15.26	3.58	-5.96	5.17	-23.11	-28.75	-38.95	-22.06	
2002	36.62	61.24	48.65	53.87	48.77	86.43	108.50	63.30	
2003	34.23	63.16	34.66	32.44	112.49	42.13	50.13	82.29	
2004	75.89	35.71	100.07	40.20	59.17	59.61	48.85	40.24	

Percentage Distribution of Listed Companies at Karachi Stock Exchange by Sectors										
Years	Textiles	Chemicals & Pharmaceuticals	Engineering	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Transport & Communication	Finance	Misc.
1980	36.94	6.05	7.96	6.37	3.50	1.59	4.78	0.96	10.51	21.34
1981	37.30	5.79	8.04	6.11	3.54	1.61	4.18	0.96	10.61	21.86
1982	35.89	6.44	8.59	6.13	3.37	1.53	4.29	0.92	11.35	21.47
1983	35.17	7.03	8.56	6.12	3.36	1.53	4.28	0.92	11.93	21.10
1984	33.72	7.78	8.93	6.63	3.17	1.73	4.03	0.86	11.53	21.61
1985	32.96	8.03	10.25	6.37	3.32	1.94	3.32	0.83	12.19	20.78
1986	31.11	8.61	10.83	6.39	3.33	1.94	3.33	0.83	13.06	20.56
1987	29.89	8.73	11.11	6.88	3.17	1.85	3.17	0.79	14.02	20.37
1988	30.52	8.44	10.92	6.45	2.98	1.99	2.98	0.74	13.90	21.09
1989	32.19	7.76	10.50	6.16	2.74	2.28	2.51	0.68	14.61	20.55
1990	34.29	7.19	9.65	5.95	2.67	2.05	2.26	0.62	15.81	19.51
1991	35.98	6.27	8.67	5.72	2.40	1.85	2.03	0.55	18.45	18.08
1992	36.94	5.73	8.44	5.41	2.23	2.07	1.91	0.48	20.70	16.08
1993	35.68	5.51	8.27	5.36	2.30	2.14	2.30	0.61	22.66	15.16
1994	35.77	5.39	8.01	5.25	2.07	2.21	2.49	0.69	23.76	14.36
1995	35.08	5.24	7.59	4.97	1.96	2.36	2.88	0.92	24.74	14.27
1996	34.27	5.24	7.29	4.86	1.92	2.56	3.58	0.90	25.45	13.94
1997	34.19	5.25	7.30	4.87	1.92	2.69	3.46	0.90	25.74	13.70
1998	34.15	5.30	7.24	4.92	1.94	2.59	3.62	0.91	25.49	13.84
1999	33.99	5.10	7.32	4.97	1.96	2.61	3.66	0.92	25.62	13.86
2000	33.73	5.12	7.35	4.99	1.97	2.62	3.54	1.05	25.85	13.78
2001	33.47	5.22	7.36	5.09	1.87	2.81	3.48	1.07	26.10	13.52
2002	32.58	5.20	7.02	5.34	1.97	3.09	3.51	1.26	26.26	13.76
2003	32.67	5.42	6.99	5.42	1.85	3.14	3.57	1.57	26.25	13.12
2004	32.83	5.75	7.41	5.60	1.97	3.18	3.93	2.12	23.75	13.46

Years	Banks & Inv. Companies	Modarabas	Leasing	Insurance
1991	31.00	30.00	9.00	30.00
1992	35.38	29.23	11.54	23.85
1993	35.81	30.41	12.84	20.95
1994	37.21	29.65	14.53	18.60
1995	39.15	27.51	14.81	18.52
1996	39.20	26.13	15.08	19.60
1997	38.81	25.87	15.92	19.40
1998	39.59	24.37	16.24	19.80
1999	39.80	23.98	16.33	19.90
2000	40.10	23.86	16.24	19.80
2001	40.51	23.08	16.41	20.00
2002	40.64	22.99	15.51	20.86
2003	41.30	22.83	15.22	20.65
2004	36.94	25.48	14.01	23.57

Percentage Distribution of Market Capitalization by Sectors										
Years	Textiles	Chemicals & Pharmaceuticals	Engineering	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Transport & Communication	Finance	Misc.
1980	16.14	13.06	7.41	7.90	3.58	3.89	23.26	5.37	3.33	16.06
1981	14.59	14.35	6.85	7.62	4.95	3.92	23.84	4.46	2.96	16.47
1982	13.05	14.28	7.64	9.01	4.62	3.42	23.48	2.74	2.92	18.83
1983	12.70	15.57	7.82	8.08	4.73	2.61	19.96	7.80	3.14	17.59
1984	10.28	15.56	8.32	5.88	4.39	3.10	21.46	8.18	5.19	17.64
1985	7.95	17.08	7.99	6.11	3.63	2.52	23.15	10.60	5.60	15.39
1986	8.24	17.89	7.58	6.58	3.06	4.04	22.52	10.21	5.66	14.21
1987	10.47	17.67	7.69	7.63	2.94	4.13	20.49	10.22	5.52	13.26
1988	12.68	17.13	7.55	8.79	2.69	4.51	20.28	8.28	5.14	12.95
1989	14.10	16.85	7.31	8.00	2.24	3.59	21.04	6.96	5.03	14.87
1990	16.28	17.17	6.31	8.36	2.40	3.28	20.13	4.03	6.23	15.80
1991	23.36	10.96	5.03	3.86	1.64	2.06	19.40	4.77	19.01	9.92
1992	21.68	17.90	6.55	3.92	1.96	4.88	13.94	3.56	15.05	10.47
1993	17.34	21.43	5.79	2.57	1.82	7.64	16.06	3.07	16.18	8.10
1994	16.26	19.04	4.76	1.84	1.73	7.47	17.42	7.75	16.70	7.03
1995	14.71	17.64	4.12	1.83	1.49	8.79	21.21	7.97	14.53	7.72
1996	7.90	14.88	2.80	1.01	0.75	3.55	22.81	32.59	8.41	5.31
1997	6.64	15.26	2.19	0.96	0.72	2.27	29.51	26.80	8.81	6.83
1998	9.56	18.45	3.38	1.53	0.93	1.86	17.91	28.07	10.25	8.07
1999	10.00	17.20	3.23	1.14	1.09	2.16	23.20	24.11	9.38	8.49
2000	12.41	13.71	3.30	1.14	1.31	2.53	22.98	22.92	10.28	9.41
2001	12.05	14.29	3.65	1.43	1.62	3.31	21.66	18.26	12.01	11.72
2002	8.27	14.20	4.32	0.93	1.36	3.46	27.73	18.22	12.76	8.76
2003	7.20	14.74	5.54	0.80	1.49	4.91	24.39	17.25	15.27	8.41
2004	6.44	11.24	3.86	0.84	1.05	4.20	39.31	11.95	14.39	6.71

Years	Banks & Inv. Companies	Modarabas	Leasing	Insurance
1991	41.96	32.48	10.82	14.75
1992	52.98	19.37	12.81	14.85
1993	55.73	13.91	12.59	17.77
1994	63.21	12.53	11.89	12.37
1995	61.87	9.59	14.17	14.37
1996	59.94	9.68	11.96	18.42
1997	63.81	7.57	11.04	17.58
1998	56.00	9.88	12.05	22.06
1999	57.32	9.64	10.08	22.96
2000	56.69	8.96	8.89	25.46
2001	54.10	11.20	9.53	25.16
2002	67.89	6.86	5.71	19.55
2003	73.78	5.21	4.84	16.16
2004	81.19	3.14	3.26	12.41

Turnovers					
Company	2002	Company	2003	Company	2004
Hub Power	0.30216	Hub Power	0.15610	Oil&Gas Dev.	0.10303
P.T.C.L.A	0.20433	P.T.C.L.A	0.13787	P.T.C.L.A	0.08066
P.S.O.	0.07948	P.S.O.	0.06125	D.G.K.Cement	0.06775
Sui North Gas	0.05118	Fauji Fert Bin	0.05942	Fauji Fert Bin	0.05750
FFC JORDAN	0.03787	D.G.K.Cement	0.05157	Fauji Cement	0.05570
National Bank	0.03160	Sui North Gas	0.04515	National Bank	0.04513
Engro Chem	0.03019	Pak Oilfields	0.03029	Lucky Cement	0.04106
I.C.I.	0.02615	National Bank	0.02829	Hub Power	0.03767
Dewan Salman	0.02163	Dewan Salman	0.02747	Sui North Gas	0.03576
M.C.B.	0.02034	Fauji Cement	0.02638	Sui South Gas	0.03048
	0.80491		0.62380		0.55475

Market Capitalization					
Company	2002	Company	2003	Company	2004
P.T.C.L.A	0.15684	P. T. C. L "A"	0.14538	Oil & Gas Development Co.	0.17213
Hub Power	0.07417	Pakistan State Oil	0.05202	P. T. C. L "A"	0.08907
K. E. S. C.	0.06893	Hub Power	0.04676	Pakistan Petroleum Limited	0.05279
P. S. O.SPOT	0.05799	Pakistan Oilfields	0.03257	Pakistan State Oil	0.02626
Fauji Fert.	0.02997	Fauji Fertilizer	0.02575	National Bank	0.02113
Unilever Bros.	0.02571	National Bank	0.02338	Fauji Fertilizer	0.02526
Pak Oil Fields	0.02143	Sui Northern Gas	0.02162	Pakistan Oilfields	0.01730
Engro Chem.XD	0.02046	Pakistan PTA	0.02125	Hub Power	0.01983
Shell Pak	0.01981	Unilever Pakistan Ltd.	0.02023	Sui Northern Gas	0.01575
Sui North Gas	0.01971	Sui Southern Gas	0.02007	Fauji Fertilizer Bin Qasim	0.01526
	0.49501		0.40901		0.45480

	Descriptive Statistics by Sectors (July 81 - December 04)								
	General	Textiles	Chemicals	Sugar	Paper	Cement	Fuel	Transport	Finance
Mean	0.0097	0.0085	0.0129	0.0091	0.0084	0.0078	0.0121	0.0033	0.0093
Std. Dev.	0.0601	0.0566	0.0583	0.0565	0.0527	0.1000	0.0809	0.0901	0.0745
Skewness	0.2428	1.2653	0.9162	0.9481	0.3783	0.6752	-0.1487	0.4341	0.4774
Kurtosis	5.0761	6.4941	7.4527	6.1852	3.6486	5.4441	6.2991	4.1655	5.7786
Jarque-Bera	53.42	218.70	272.42	161.46	11.67	91.62	128.93	24.82	101.43
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observations	282	282	282	282	282	282	282	282	282
	Descriptive Statistics by Sectors (July 81 - March 91)								
	General	Textiles	Chemicals	Sugar	Paper	Cement	Fuel	Transport	Finance
Mean	0.0101	0.0103	0.0119	0.0122	0.0094	0.0052	0.0120	0.0025	0.0137
Std. Dev.	0.0323	0.0490	0.0418	0.0529	0.0427	0.0716	0.0425	0.0622	0.0498
Skewness	-0.0305	0.9909	1.1137	0.4361	0.1686	1.1268	-0.0899	0.8688	0.9728
Kurtosis	6.5662	4.7284	10.2784	6.4619	3.6243	11.8402	5.3088	7.3944	5.3061
Jarque-Bera	62.02	33.71	282.44	62.13	2.45	405.73	26.14	108.86	44.38
Probability	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00
Observations	117	117	117	117	117	117	117	117	117
	Descriptive Statistics by Sectors (April 91 - December 04)								
	General	Textiles	Chemicals	Sugar	Paper	Cement	Fuel	Transport	Finance
Mean	0.0095	0.0072	0.0137	0.0068	0.0078	0.0096	0.0122	0.0038	0.0062
Std. Dev.	0.0739	0.0615	0.0677	0.0589	0.0589	0.1162	0.0997	0.1057	0.0879
Skewness	0.2349	1.3587	0.7965	1.2308	0.4359	0.5234	-0.1332	0.3256	0.4460
Kurtosis	3.6624	6.7080	5.9503	6.1187	3.3290	3.9085	4.5703	3.1488	4.7555
Jarque-Bera	4.53	145.29	77.29	108.52	5.97	13.21	17.44	3.07	26.66
Probability	0.10	0.00	0.00	0.00	0.05	0.00	0.00	0.22	0.00
Observations	165	165	165	165	165	165	165	165	165
Mean (t-value)	0.0941	0.4727	-0.2836	0.7950	0.2627	-0.3869	-0.0197	-0.1373	0.9118
Variances (F)	5.223**	1.579**	2.632**	1.240**	1.900**	2.639**	5.505**	2.887**	3.122**

Macroeconomic Indicators for Pakistan

Years	Growth (% per anum)			(as a % of GDP)					
	Real GDP Capita	Real Per Capita	Real Invest. Invest.	GDP deflator	Money (M2)	Savings	Invest.	Budget Balance	Current Account
1981	7.9	4.9	20.5	9.9	11.6	8.1	18.8	-6.1	-3.3
1982	6.5	3.7	19.5	9.4	21.7	7.4	19.3	-5.9	-3.0
1983	6.8	3.9	9.7	5.3	21.0	7.7	18.8	-6.9	0.1
1984	5.1	2.3	12.0	9.7	4.6	6.7	18.3	-6.0	-4.0
1985	7.6	4.7	12.8	4.5	14.7	5.9	18.3	-7.8	-4.8
1986	5.5	2.7	11.7	3.3	14.8	8.0	18.8	-8.1	-2.3
1987	6.5	3.7	13.4	4.5	13.7	11.4	19.1	-8.2	-1.7
1988	7.6	4.8	11.1	9.6	12.2	9.9	18.0	-8.5	-3.8
1989	5.0	2.3	19.6	8.6	4.6	11.0	18.9	-7.4	-3.6
1990	4.5	1.8	11.3	6.5	12.6	11.1	18.9	-6.5	-4.1
1991	5.1	2.4	19.4	13.1	16.3	14.2	19.0	-8.7	-3.1
1992	7.7	5.0	26.1	10.1	30.3	17.0	20.2	-7.4	-3.8
1993	1.8	-0.8	13.8	8.7	18.0	12.8	20.8	-8.0	-5.7
1994	3.7	1.2	10.0	12.9	18.1	15.4	19.5	-5.9	-3.8
1995	5.0	2.4	13.4	13.9	17.2	13.6	18.5	-5.6	-3.5
1996	4.8	2.3	16.4	8.4	13.8	12.0	19.0	-7.0	-6.8
1997	1.0	-1.4	8.0	13.4	12.2	12.8	17.9	-6.3	-5.6
1998	2.6	0.1	9.0	7.5	14.5	15.7	17.7	-7.6	-2.7
1999	3.7	1.2	-3.6	5.9	6.2	12.9	15.6	-6.1	-3.0
2000	4.3	1.8	10.2	2.7	9.4	17.1	17.4	-6.6	-0.4
2001	2.6	0.5	4.3	6.1	9.0	17.8	17.2	-5.2	0.5
2002	2.8	0.8	-0.2	3.1	15.4	18.1	16.8	-5.2	4.0
2003	5.8	3.8	5.0	4.6	18.0	17.6	16.9	-4.5	5.1
2004	6.0	4.0	12.4	6.8	19.6	16.4	17.3	-3.9	2.0

Impact of changes in Market Capitalization on Growth in Real variables

GDP Growth

Investment Growth

Pakistan

Const.	4.8486***	6.1896***	4.8172***	11.8403***	13.7023***	14.6493*
MCAP	0.0018	0.0039	0.057	0.015	0.0179	-0.0188
D		-2.5692***	-1.1706		-3.5672	-4.5324
D*MCAP			-0.054			0.0372

Descriptive Statistics				
(1960/61 - 2003/04)				
	SP	GDP	CS	IN
Mean	0.0831**	0.0534***	0.0474***	0.0449***
Std. Dev.	0.2304	0.0211	0.0427	0.0777
Skewness	0.4381	-0.0536	0.4162	0.3284
Kurtosis	3.5800	2.8862	3.8081	3.3312
Jarque-Bera	2.0243	0.0448	2.4672	0.9917
Probability	0.3634	0.9778	0.2912	0.6090
Observations	44	44	44	44
(1960/61 - 1990-91)				
	SP	GDP	CS	IN
Mean	0.0757**	0.0596**	0.0548**	0.0544**
Std. Dev.	0.1434	0.0190	0.0439	0.0803
Skewness	0.0059	-0.0934	0.3940	0.3761
Kurtosis	2.1778	3.5543	3.7342	3.3460
Jarque-Bera	0.8734	0.4419	1.4983	0.8855
Probability	0.6462	0.8017	0.4728	0.6423
Observations	31	31	31	31
(1991/92 - 2003/04)				
	SP	GDP	CS	IN
Mean	0.1009	0.0386**	0.0297**	0.0222**
Std. Dev.	0.3719	0.0188	0.0350	0.0688
Skewness	0.2571	0.2422	-0.1098	-0.1967
Kurtosis	1.8074	2.4129	2.8174	2.0025
Jarque-Bera	0.9136	0.3138	0.0442	0.6228
Probability	0.6333	0.8548	0.9781	0.7324
Observations	13	13	13	13
Mean (t-value)	-0.237	3.376***	2.005**	1.346
Variance (F)	6.724**	0.149	1.024	1.5702

Correlation Coefficients				
(1960/61 - 2003/04)				
	SP	GDP	CS	IN
SP	1.0000			
GDP	0.1964	1.0000		
CS	-0.1516	0.3586**	1.0000	
IN	0.1546	0.2501	-0.3207**	1.0000
(1960/61 - 1990-91)				
	SP	GDP	CS	IN
SP	1.0000			
GDP	-0.0763	1.0000		
CS	-0.1070	0.3130	1.0000	
IN	-0.0118	0.0150	-0.4915***	1.0000
(1991/92 - 2003/04)				
	SP	GDP	CS	IN
SP	1.0000			
GDP	0.6222***	1.0000		
CS	-0.2438	0.1536	1.0000	
IN	0.4256	0.6931***	-0.0395	1.0000

	Descriptive Statistics					
	(Dec 1985-June 2004)		(Dec 1985-Mar 1991)		(Apr 1991-June 2004)	
	SBGI	IIP	SBGI	IIP	SBGI	IIP
Mean	0.0097	0.0070	0.0106	0.0040	0.0094	0.0082
Std. Dev.	0.0636	0.1209	0.0248	0.0917	0.0736	0.1310
Skewness	0.0540	1.0285	-0.0566	-0.2180	0.0621	1.1491
Kurtosis	4.2060	7.9597	2.7043	2.6117	3.2749	7.8210
Jarque-Bera	13.56	266.67	0.26	0.89	0.60	188.97
Probability	0.0011	0.0000	0.8767	0.6394	0.7397	0.0000
Observations	222	222	63	63	159	159
	Correlation Coefficients					
	(Dec 1985-June 2004)		(Dec 1985-Mar 1991)		(Apr 1991-June 2004)	
	SBGI	IIP	SBGI	IIP	SBGI	IIP
SBGI	1.0000	0.0492	1.0000	-0.0687	1.0000	0.0614
IIP	0.0492	1.0000	-0.0687	1.0000	0.0614	1.0000

Table 16: Descriptive Statistics (monthly returns) by Markets

	IN	PK	SL	US	UK	JP
Mean	0.0017	-0.0041	-0.0041	0.0072	0.0038	-0.0037
Median	-0.0055	-0.0121	-0.0027	0.0129	0.0043	-0.0061
Maximum	0.2038	0.3050	0.3202	0.0924	0.0940	0.1781
Minimum	-0.1910	-0.4339	-0.2281	-0.1576	-0.1108	-0.1760
Std. Dev.	0.0811	0.1166	0.0940	0.0460	0.0422	0.0669
Skewness	0.0300	-0.1632	0.4076	-0.7214	-0.3245	0.1211
Kurtosis	2.4653	4.6073	4.2326	3.5592	2.6744	2.6502
Jarque-Bera	1.4473	13.4489	10.9202	11.9707	2.6366	0.9048
Probability	0.4850	0.0012	0.0043	0.0025	0.2676	0.6361
Observations	120	120	120	120	120	120

Correlation Matrix for Returns (monthly) among the Markets

	IN	PK	SL	US	UK	JP
IN	1.0000	0.3903	0.3237	0.2442	0.2121	0.3499
PK	0.3903	1.0000	0.3093	0.1097	0.1078	0.0696
SL	0.3237	0.3093	1.0000	0.1077	0.1443	0.1637
US	0.2442	0.1097	0.1077	1.0000	0.7542	0.4530
UK	0.2121	0.1078	0.1443	0.7542	1.0000	0.4122
JP	0.3499	0.0696	0.1637	0.4530	0.4122	1.0000

Error Correction Functions

Error Correction:	D(IN)	D(PK)	D(SL)	D(US)	D(UK)	D(JP)
CointEq1	-0.0656 -0.0209 (-3.13196)	-0.0733 -0.0316 (-2.32015)	0.0818 0.0242 3.3749	0.0034 0.0130 0.2624	-0.0095 -0.0118 (-0.80431)	-0.0033 -0.0183 (-0.18148)
D(IN(-1))	-0.1238 -0.1037 (-1.19439)	0.0346 0.1565 0.2213	0.0935 0.1200 0.7795	-0.0471 -0.0645 (-0.73069)	-0.0606 -0.0585 (-1.03606)	0.0241 0.0907 0.2656
D(PK(-1))	0.1270 0.0674 1.8858	-0.0338 -0.1017 (-0.33225)	-0.0710 -0.0780 (-0.91062)	-0.0060 -0.0419 (-0.14426)	-0.0190 -0.0380 (-0.50020)	0.0497 0.0589 0.8439
D(SL(-1))	-0.0269 -0.0864 (-0.31122)	-0.0247 -0.1304 (-0.18942)	0.1332 0.1000 1.3324	0.0177 0.0537 0.3304	-0.0126 -0.0487 (-0.25971)	0.0151 0.0756 0.1998
D(US(-1))	-0.1292 -0.2382 (-0.54237)	-0.5970 -0.3595 (-1.66057)	0.1242 0.2757 0.4504	-0.0819 -0.1481 (-0.55279)	0.1075 0.1343 0.8004	-0.0467 -0.2083 (-0.22420)
D(UK(-1))	0.4656 0.2592 1.7961	0.3507 0.3913 0.8961	-0.1419 -0.3000 (-0.47287)	0.2229 0.1612 1.3828	-0.0089 -0.1461 (-0.06057)	0.0056 0.2268 0.0245
D(JP(-1))	0.0134 0.1253 0.1066	0.2472 0.1891 1.3077	0.4657 0.1450 3.2126	-0.0537 -0.0779 (-0.68901)	-0.0293 -0.0706 (-0.41515)	0.0645 0.1096 0.5889
R-squared	0.1454	0.0929	0.1612	0.0092	0.0272	0.0131
Adj. R-squared	0.0996	0.0443	0.1163	-0.0439	-0.0249	-0.0398
Sum sq. resids	0.6442	1.4680	0.8629	0.2491	0.2047	0.4929
S.E. equation	0.0758	0.1145	0.0878	0.0472	0.0428	0.0663
F-statistic	3.1764	1.9120	3.5870	0.1736	0.5226	0.2476
Log likelihood	141.6660	92.6611	124.2768	198.2138	209.8715	157.5941
Akaike AIC	-2.2633	-1.4397	-1.9710	-3.2137	-3.4096	-2.5310
Schwarz SC	-2.0998	-1.2762	-1.8076	-3.0502	-3.2461	-2.3675
Mean dependent	0.0003	-0.0043	-0.0053	0.0070	0.0035	-0.0053
S.D. dependent	0.0799	0.1171	0.0934	0.0462	0.0422	0.0651

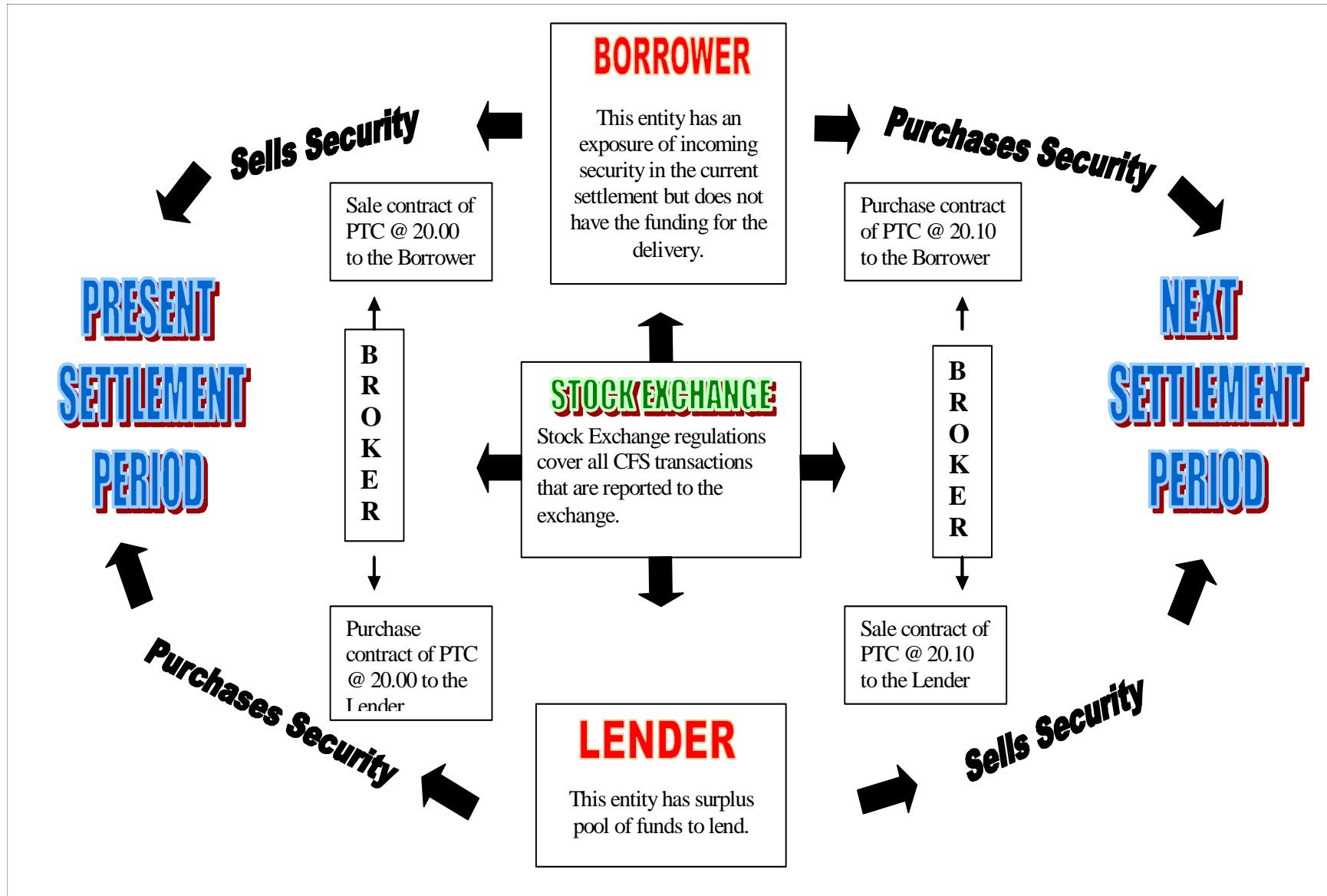
Badla

a transaction where the borrower, in order to avoid funding/delivery for a purchase/sale transaction, carries forward his security exposure from the current settlement cycle to the next settlement cycle by sale in the present week and repurchase in the subsequent settlement week at a predetermined differential price

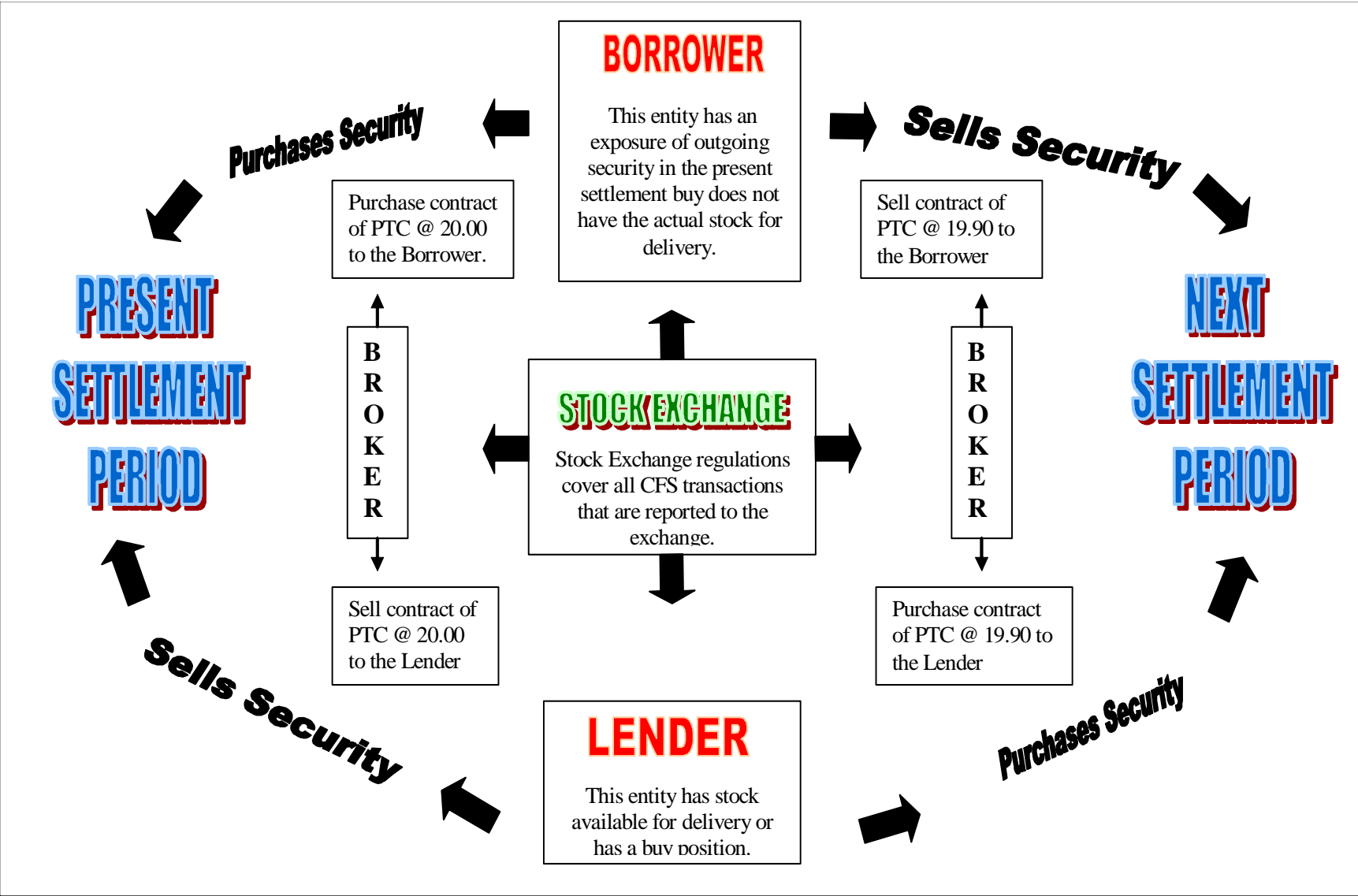
Different modes of Badla

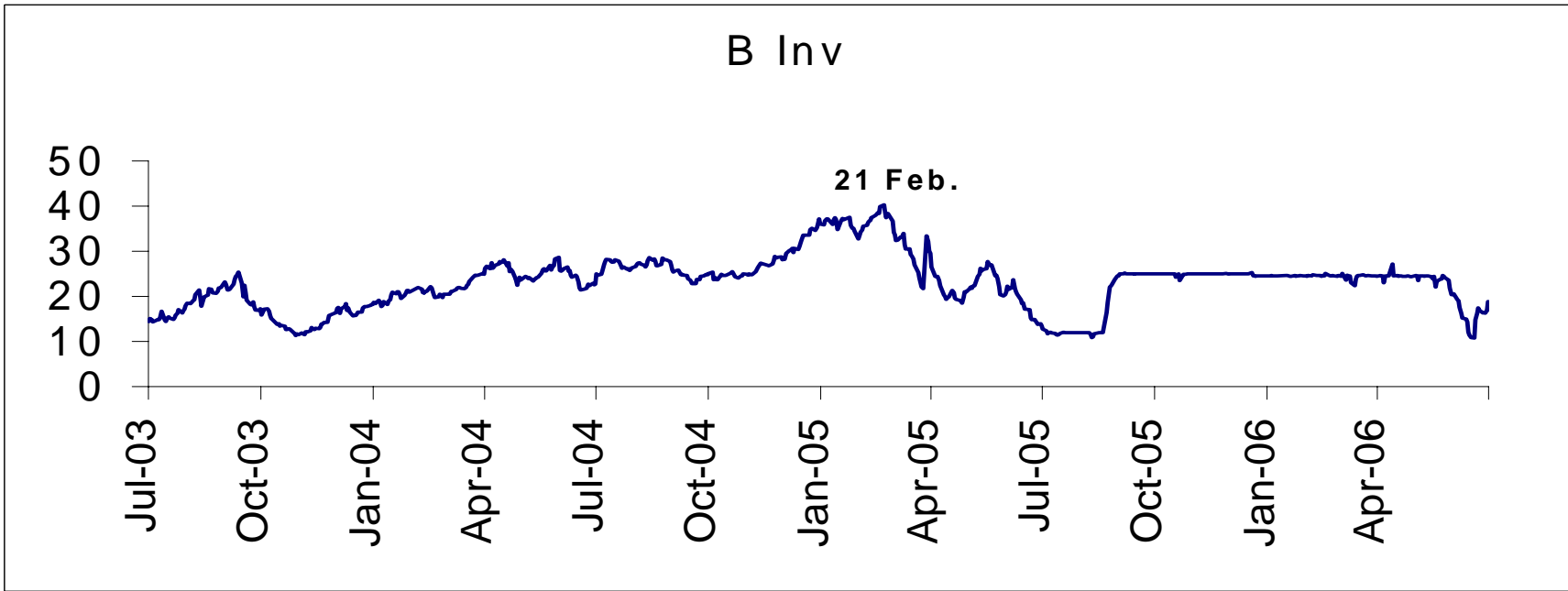
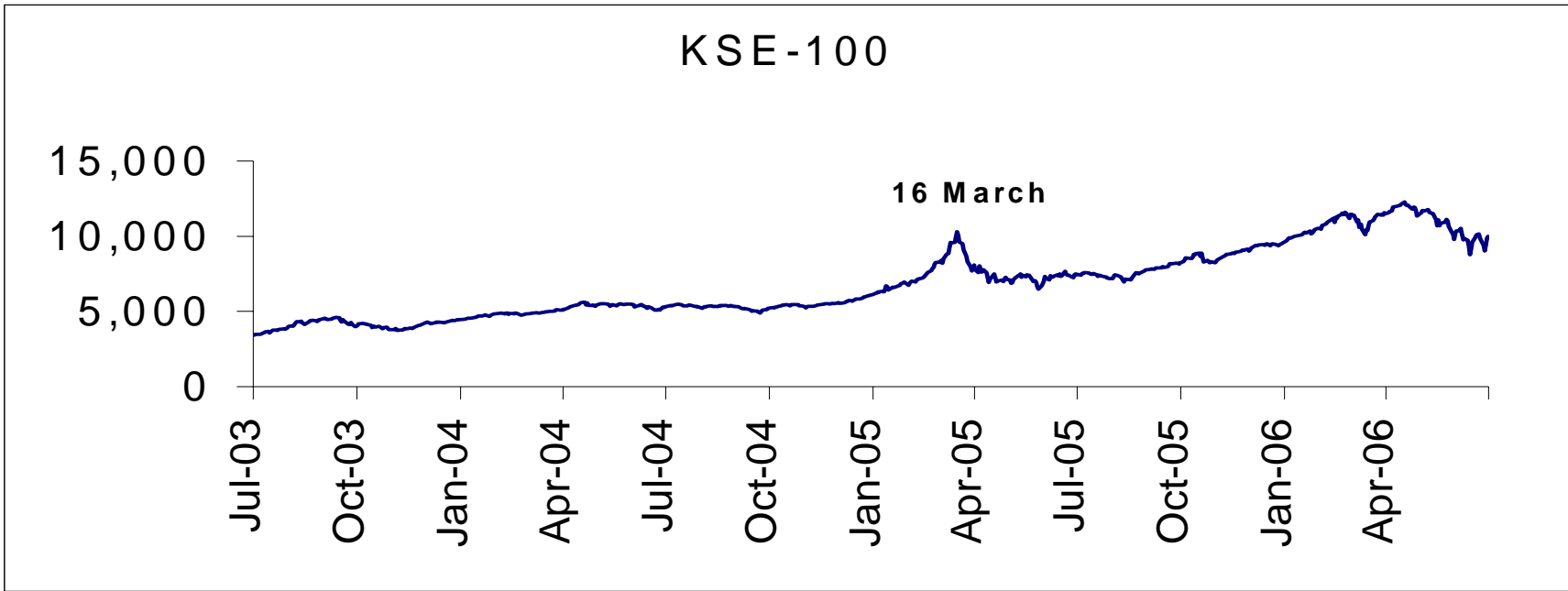
- Normal or Straight
- Reverse
- Par - Par

Straight Badla

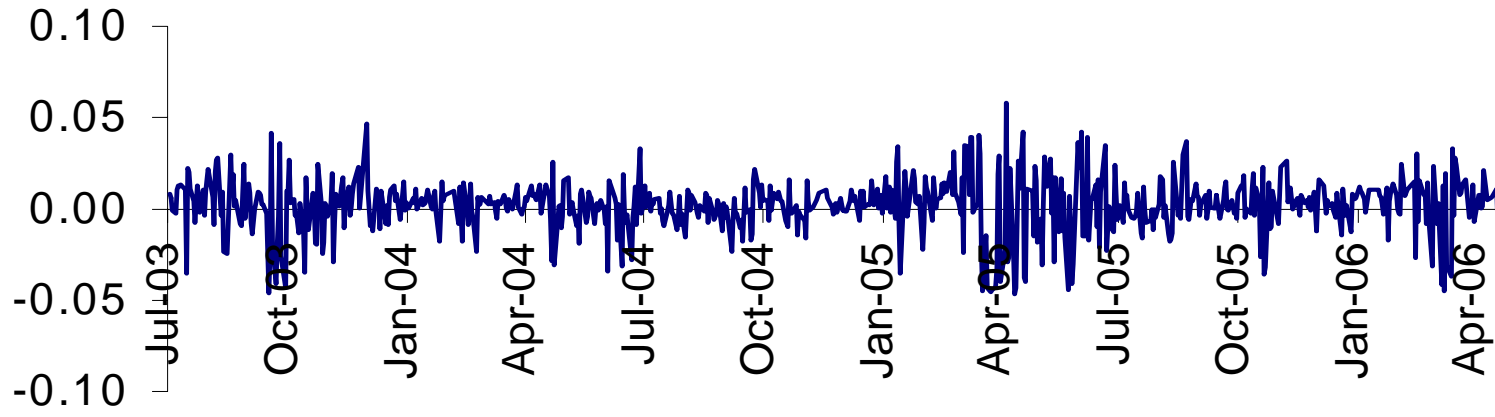


Reverse Badla

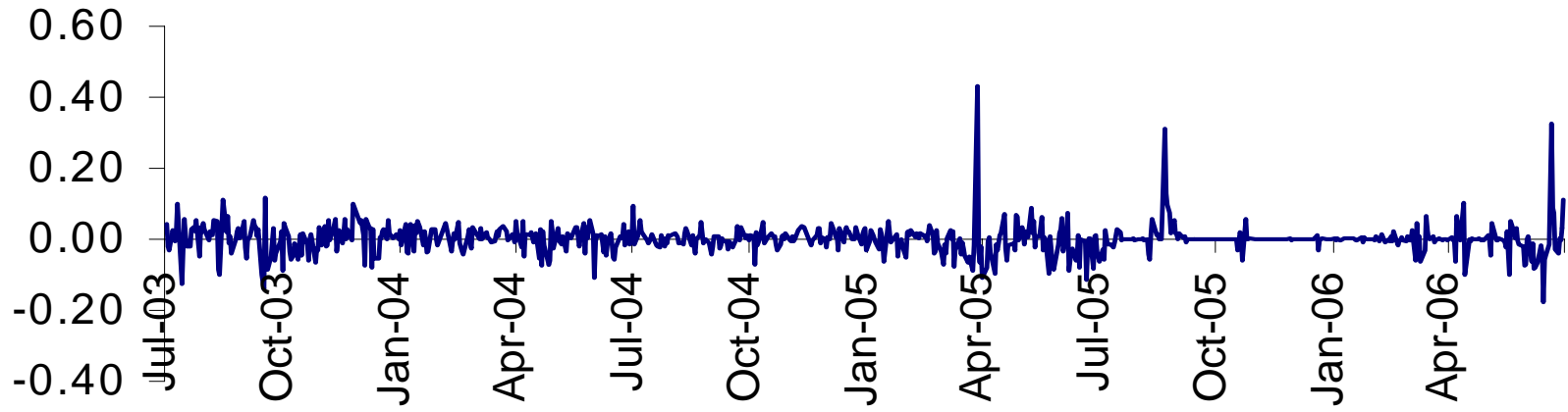


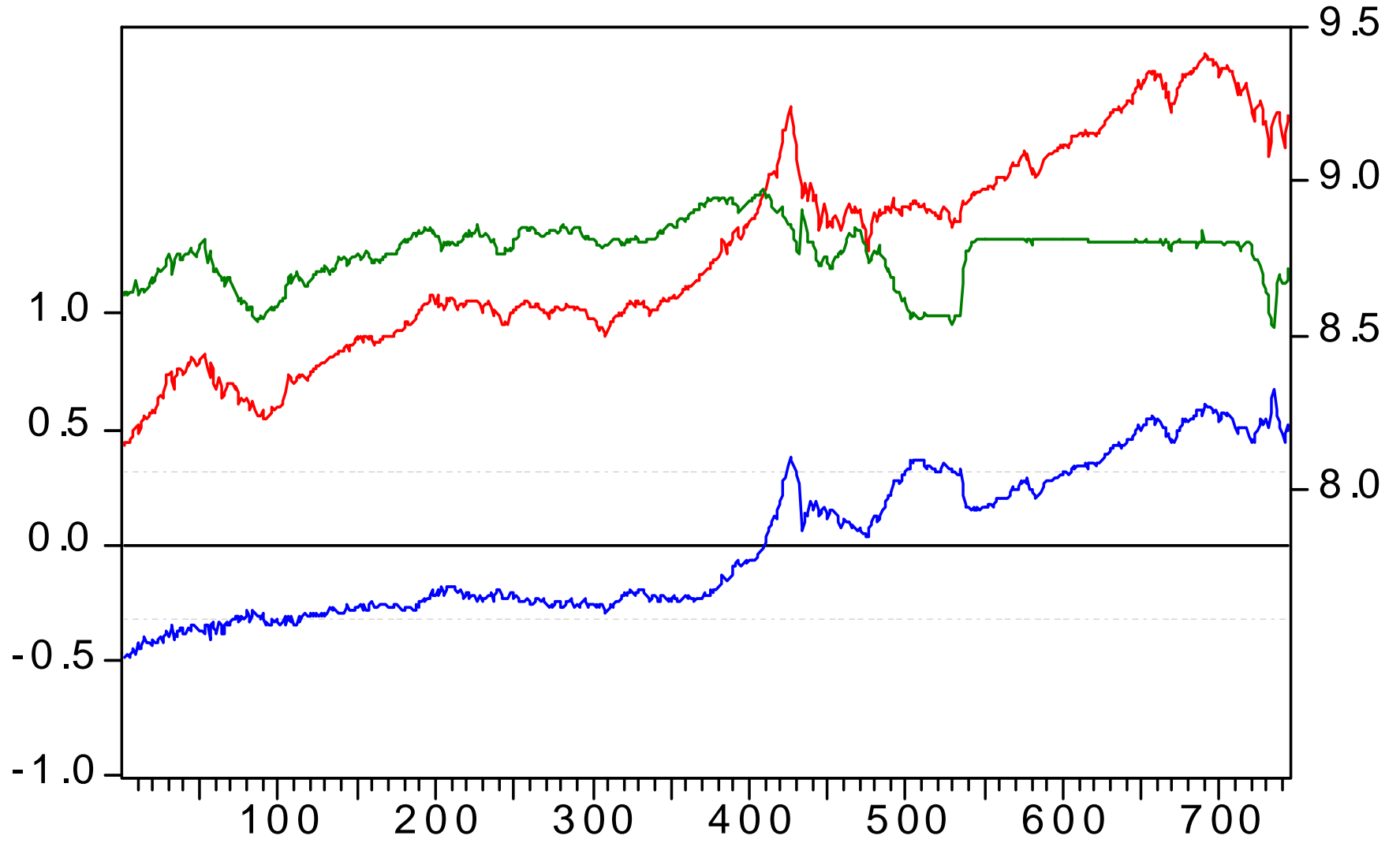


K100



BI





— Residual — Actual — Fitted

Descriptive Statistics

	FULL		Before March 05		After March 05	
	DKSE	DBI	DKSE	DBI	DKSE	DBI
Mean	0.0014	0.0004	0.0020	0.0025	0.0008	-0.0023
Std. Dev.	0.0162	0.0414	0.0123	0.0334	0.0200	0.0494
Skewness	-0.4835	2.3889	-0.5301	-0.5341	-0.3609	3.4259
Kurtosis	4.4619	27.8280	5.2152	5.0525	3.3525	30.1350
Jarque-Bera Probability	95.11 0.00	19790.31 0.00	102.53 0.00	91.01 0.00	9.01 0.01	10932.94 0.00
Observations	743	743	408	408	335	335

Correlations

	FULL		Before March 05		After March 05	
	DKSE	DBI	DKSE	DBI	DKSE	DBI
DKSE	1.0000	0.2767	1.0000	0.1936	1.0000	0.3169
DBI	0.2767	1.0000	0.1936	1.0000	0.3169	1.0000

Pairwise Granger Causality Tests

Lags: 11

Null Hypothesis:

Obs F-Statistic Probability

D(BI) does not Granger Cause D(KSE)

732 4.7746952 0.00000

D(KSE) does not Granger Cause D(BI)

1.3119257 0.21285

GARCH Estimation

	Mean			Variance		
	Const.	AR(1)	MA(1)	Const.	ARCH(1)	GARCH(1)
KSE	0.002***	-0.715***	0.776***	0.000***	0.215***	0.751***
BI	-0.001	-0.086**		0.000***	0.381***	0.754***

Volatility from Badla

	Mean			Variance			
	Const.	AR(1)	MA(1)	Const.	ARCH(1)	GARCH(1)	B Volatility
KSE	0.002***	-0.675***	0.746***	0.000***	0.251***	0.692***	0.004***

Conclusions

The analysis indicates significant development in the stock market in Pakistan after liberalization

These developments do not seem to influence the economy, in general

The Pakistani Market is integrated with major regional and international capital markets

The Badla seems to affect the index and volatility significantly