

Table I: Summary Statistics of daily stock futures contracts

This table reports daily summary statistics of the first lot listed @ 9 November 2001 and last lot listed @ 29 December 2006 of single stock futures (SSF) contracts traded in the National Stock Exchange of India (NSE). The study periods are November 2001-December 2008 for first lot and December 2006-December 2008 for last lot. For last lot, I use 29 December 2006 lot as proxy due to data sufficiency reason. Spot and futures prices represent closing prices of stock and futures contract in Rupee. Spot and futures returns are calculated as daily logarithm of price changes in percentage term. Spot returns = $\ln(\text{spot price}_t / \text{spot price}_{t-1})$. Futures returns = $\ln(\text{futures price}_t / \text{futures price}_{t-1})$. Spot trading quantity represents daily trading volume of stock in number of shares. Futures trading quantity represents daily trading quantity of futures in number of contracts. Spot and futures returns volatilities are calculated as standard deviation of spot and futures returns. An Indian crore is equal to 100 lakh or 10,000,000.

Company Name	Average Price		Average Returns		Average Trading Volume		Return Volatility	
	Spot (Rupee)	Futures (Rupee)	Spot (%)	Futures (%)	Spot (Shares)	Futures (Contracts)	Spot (%)	Futures (%)
<u>First lot @ 9 Nov 2001</u>								
ACC	490	493	0.07	0.07	1,272,063	777	2.37	2.41
BAJAJ-AUTO	1,358	1,361	0.01	0.01	175,623	302	3.76	4.46
BHEL	1,124	1,127	0.12	0.12	714,810	999	3.09	3.62
BPCL	343	343	0.04	0.04	831,854	294	2.79	3.30
CIPLA	521	526	-0.10	-0.10	760,522	311	4.82	5.07
DRREDDY	865	870	-0.05	-0.04	298,701	309	2.75	3.06
GRASIM	1,449	1,456	0.08	0.08	187,916	439	2.24	2.86
HDFC	1,156	1,158	0.04	0.04	441,970	450	3.00	3.83
HINDALCO	584	584	-0.14	-0.14	1,971,475	922	6.03	6.19
HINDPETRO	297	298	0.04	0.04	1,395,061	517	2.86	3.11
HINDUNILVR	192	192	0.01	0.01	2,349,223	759	2.06	2.10
INFOSYSTCH	2,822	2,831	-0.05	-0.05	1,085,167	1,992	4.38	4.35
ITC	598	598	-0.08	-0.08	2,958,672	772	6.51	6.61
M&M	452	453	0.06	0.06	867,259	447	3.12	3.17
MTNL	131	132	-0.03	-0.03	1,811,083	789	2.77	3.02
RANBAXY	658	660	-0.06	-0.06	1,077,062	805	3.12	3.17
RELIANCE	958	966	0.09	0.09	4,793,199	5,891	2.41	2.39
SATYAMCOMP	404	405	0.01	0.01	7,489,264	1,660	3.43	3.39
SBIN	835	841	0.10	0.10	2,241,625	2,660	2.44	2.52
TATAPOWER	475	474	0.10	0.10	796,037	462	2.78	2.93
TATASTEEL	392	394	0.06	0.05	4,392,165	2,863	3.12	3.15
TATATEA	528	532	0.07	0.07	193,309	191	2.27	2.99
Mean			0.02	0.02	1,732,003	1,119	3.28	3.53

Note: Data of first lot of SSF includes 1,788 observations, 86 contracts, for period from 9 November 2001 - 31 December 2008

Table I (Cont.): Summary Statistics of daily stock futures contracts

Company Name	Average Price		Average Returns		Average Trading Volume		Return Volatility	
	Spot (Rupee)	Futures (Rupee)	Spot (%)	Futures (%)	Spot (Shares)	Futures (Contracts)	Spot (%)	Futures (%)
<u>Last Lot @ 29 Dec 2006</u>								
ABAN	2,848	2,868	-0.13	-0.15	197,065	778	4.14	4.11
AMTEKAUTO	307	311	-0.34	-0.34	199,371	111	3.42	5.88
BAJAJHIND	172	174	-0.22	-0.22	2,420,990	802	5.28	6.74
BALRAMCHIN	76	77	-0.11	-0.11	4,300,556	545	4.69	4.87
BATAINDIA	168	172	-0.13	-0.13	302,350	139	3.80	6.37
BEML	1,057	1,093	-0.21	-0.22	79,377	114	2.85	7.34
BOMDYEING	596	605	-0.26	-0.28	476,619	409	4.47	4.74
CROMPGREAV	261	268	-0.08	-0.09	604,060	142	3.66	5.89
GDL	129	130	-0.18	-0.18	505,272	175	3.21	4.09
GTL	214	217	0.09	0.07	543,846	583	2.26	2.75
GUJALKALI	149	155	-0.15	-0.16	261,905	178	3.42	7.41
HCC	124	125	-0.21	-0.22	2,239,308	604	4.59	4.75
JPASSOCIAT	538	542	-0.43	-0.44	7,192,547	2,092	9.01	9.18
JSWSTEEL	717	723	-0.10	-0.11	704,376	708	4.31	4.69
KOTAKBANK	673	679	-0.01	-0.02	1,081,285	787	4.11	4.27
LUPIN	625	629	0.00	0.00	158,471	371	2.52	3.25
MCDOWELL-N	1,322	1,339	0.00	0.00	324,119	373	3.97	5.89
NAGARCONST	191	194	-0.22	-0.22	1,086,711	246	4.32	4.71
PRAJIND	235	237	-0.21	-0.22	1,680,535	769	5.49	5.60
RENUKA	463	468	-0.36	-0.37	2,401,356	573	11.48	11.56
SESAGOA	2,161	2,173	-0.56	-0.57	1,440,324	1,148	13.69	13.96
TRIVENI	87	88	-0.01	-0.02	1,910,443	207	5.07	5.64
TTML	30	31	0.03	0.02	16,211,503	867	3.98	4.15
ULTRACEMCO	779	801	-0.21	-0.21	87,088	242	2.84	5.41
VOLTAS	137	139	-0.13	-0.13	1,472,027	354	3.73	4.41
Mean			-0.17	-0.17	1,915,260	533	4.81	5.91

Note: Data of last lot of SSF includes 496 observations, 25 contracts, for period from 29 December 2006 - 31 December 2008

Table II: Unit root tests and the Optimal Number of Lags

This table shows the Augmented Dickey and Fuller (ADF) test statistics for unit root tests of the variables, used in Error Correction Models (ECM) and Vector Autoregressive Models (VAR), i.e. spot price, spot's first difference, futures price, futures' first difference, number of futures contract traded and futures returns at daily frequencies as well as their optimal number of lags. The results show only the test with intercept & Trend. St and Ft denote the spot and futures prices. ΔSt and ΔFt denote first difference of the spot and futures prices. FVOL and FRET represent the number of futures contracts traded and futures returns. To determine the optimal number of lags, I specify a VAR order p and obtain the optimal numbers of lags according to Schwarz information criterion (SIC). Critical values are based on MacKinnon (1996); The critical values for the test with intercept&trend are -3.128, -3.412, -3.963. Respectively, ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Company Name	ADF test Statistics						Optimal Number of Lags	
	St	ΔSt	Ft	ΔFt	FVOL	FRET	ΔSt & ΔFt	FVOL & FRET
<u>First lot @ 9 Nov 2001</u>								
ACC	-1.11	-38.084***	-0.96	-30.512***	-5.691***	-40.34***	4	1
BAJAJ-AUTO	-0.32	-40.908***	-0.35	-39.886***	-3.759***	-31.959***	3	1
BHEL	-2.20	-38.852***	-2.04	-40.511***	-3.021	-42.824***	5	1
BPCL	-3.21	-40.806***	-3.70	-44.870***	-7.317***	-43.882***	6	1
CIPLA	-2.67	-40.602***	-2.89	-15.886***	-4.346***	-42.291***	7	1
DRREDDY	-2.54	-42.03***	-2.75	-44.849***	-4.062***	-45.894***	6	1
GRASIM	-0.12	-42.728***	-0.09	-33.377***	-4.871***	-34.347***	8	1
HDFC	-1.84	-22.695***	-1.93	-22.734***	-1.679	-16.177***	1	1
HINDALCO	-2.08	-42.131***	-2.18	-43.584***	-4.839***	-42.523***	1	1
HINDPETRO	-3.61	-38.534***	-3.54	-39.849***	-6.430***	-40.470***	4	1
HINDUNILVR	-2.66	-42.231***	-2.68	-42.549***	-6.149***	-42.421***	4	2
INFOSYSTCH	-3.62	-41.888***	-3.58	-41.943***	-5.248***	-42.245***	4	1
ITC	-2.52	-41.881***	-2.58	-42.677***	-5.901***	-42.302***	3	2
M&M	-1.14	-38.674***	-0.89	-39.739***	-5.154***	-39.178***	4	1
MTNL	-2.70	-30.876***	-2.84	-31.354***	-4.064***	-31.611***	6	1
RANBAXY	-2.20	-40.558***	-2.27	-41.47***	-16.822***	-40.968***	1	1
RELIANCE	-1.31	-26.229***	-1.29	-26.147***	-5.982***	-41.118***	6	1
SATYAMCOMP	-1.41	-31.861***	-1.38	-41.777***	-10.78***	-42.308***	4	3
SBIN	-2.30	-39.391***	-2.18	-40.432***	-5.78***	-40.53***	2	1
TATAPOWER	-2.22	-12.03***	-2.10	-11.854***	-5.956***	-31.606***	7	1
TATASTEEL	-0.84	-40.167***	-0.89	-40.873***	-6.466***	-39.466***	3	1
TATATEA	-1.68	-39.033***	-1.96	-32.761***	-4.672***	-33.551***	2	2

Table II (Cont.): Unit root tests and the Optimal Number of Lags

Company Name	ADF test Statistics						Optimal Number of Lags	
	St	ΔSt	Ft	ΔFt	FVOL	FRET	ΔSt & ΔFt	FVOL & FRET
<u>Last Lot @ 29 Dec 2006</u>								
ABAN	-0.97	-20.048***	-0.96	-20.036***	-11.179***	-18.665***	3	1
AMTEKAUTO	-1.58	-22.195***	-1.88	-21.009***	-9.426***	-20.4***	2	2
BAJAJHIND	-2.14	-19.141***	-2.20	-28.426***	-11.261***	-25.193***	11	1
BALRAMCHIN	-2.04	-23.666***	-2.04	-23.597***	-11.527***	-23.689***	6	1
BATAINDIA	-1.80	-21.938***	-2.74	-23.628***	-15.712***	-13.903***	0	1
BEML	-1.14	-17.077***	-2.35	-23.582***	-11.197***	-22.895***	0	1
BOMDYEING	-1.21	-20.647***	-1.25	-21.252***	-9.693***	-20.732***	0	2
CROMPGREAV	-1.24	-21.628***	-2.14	-23.738***	-10.482***	-23.007***	1	1
GDL	-2.92	-20.795***	-3.288*	-23.544***	-11.922***	-23.839***	1	1
GTL	-1.59	-21.195***	-1.92	-22.79***	-12.218***	-23.189***	0	1
GUJALKALI	-1.18	-21.366***	-2.63	-18.447***	-9.643***	-21.996***	0	1
HCC	-1.28	-20.176***	-1.33	-20.123***	-10.409***	-20.175***	4	1
JPASSOCIAT	-2.63	-22.921***	-2.66	-23.052***	-9.304***	-22.216***	2	1
JSWSTEEL	-0.81	-20.216***	-1.06	-24.423***	-11.312***	-21.344***	2	1
KOTAKBANK	-1.44	-19.668***	-1.44	-20.039***	-10.85***	-20.364***	1	1
LUPIN	-2.43	-22.285***	-2.56	-26.427***	-9.307***	-26.473***	3	1
MCDOWELL-N	-1.19	-17.585***	-1.63	-25.702***	-12.367***	-25.133***	1	1
NAGARCONST	-1.11	-21.458***	-1.41	-18.619***	-12.411***	-21.654***	2	1
PRAJIND	-2.91	-22.044***	-2.91	-22.161***	-10.523***	-22.212***	3	1
RENUKA	-2.04	-23.352***	-2.07	-23.824***	-13.915***	-22.932***	4	1
SESAGOA	-1.39	-21.793***	-1.41	-21.74***	-10.325***	-22.378***	4	1
TRIVENI	-1.27	-22.522***	-1.46	-22.668***	-10.391***	-21.665***	1	1
TTML	-1.66	-20.163***	-1.71	-20.581***	-11.122***	-21.108***	3	1
ULTRACEMCO	-1.64	-22.209***	-2.68	-23.316***	-9.963***	-22.461***	0	1
VOLTAS	-0.64	-21.644***	-0.77	-21.382***	-9.671***	-13.989***	1	1

Table III: Cointegration test

This table reports the results of cointegration test by using Johansen Trace test statistics for cointegration of Spot and futures prices. r denotes the number of cointegrating vectors. The Cointegration test includes the optimal lag length of each company for both series. The results from trace test indicate one cointegrating equation at the 0.05 level.

Company Name	Trace Statistics	
	$r = 0$	$r \leq 1$
<u>First lot @ 9 Nov 2001</u>		
ACC	77.271	1.668
BAJAJ-AUTO	97.207	1.438
BHEL	135.034	2.315
BPCL	120.923	9.955
CIPLA	152.013	3.776
DRREDDY	140.467	4.008
GRASIM	77.182	1.948
HDFC	138.187	1.887
HINDALCO	123.376	1.728
HINDPETRO	121.261	11.194
HINDUNILVR	90.464	3.742
INFOSYSTCH	60.534	3.772
ITC	123.446	3.665
M&M	62.564	2.881
MTNL	106.386	7.575
RANBAXY	67.603	1.604
RELIANCE	42.907	1.048
SATYAMCOMP	70.982	3.008
SBIN	58.938	1.806
TATAPOWER	33.020	1.689
TATASTEEL	58.706	2.831
TATATEA	153.610	2.297

Note:

0.05 Critical Value of $r=0$ is 15.495.

0.05 Critical Value of $r \leq 1$ is 3.841.

Company Name	Trace Statistics	
	$r = 0$	$r \leq 1$
<u>Last Lot @ 29 Dec 2006</u>		
ABAN	49.214	0.541
AMTEKAUTO	53.490	0.209
BAJAJHIND	43.671	0.913
BALRAMCHIN	29.610	2.965
BATAINDIA	90.083	2.130
BEML	56.028	0.003
BOMDYEING	57.019	0.560
CROMPGREAV	58.313	1.136
GDL	66.096	3.080
GTL	57.086	3.221
GUJALKALI	57.932	0.933
HCC	46.452	1.122
JPASSOCIAT	109.453	3.474
JSWSTEEL	104.242	0.850
KOTAKBANK	129.248	1.585
LUPIN	53.603	4.966
MCDOWELL-N	76.055	1.907
NAGARCONST	109.842	0.336
PRAJIND	86.646	0.847
RENUKA	69.744	1.769
SESAGOA	22.776	0.997
TRIVENI	85.489	2.010
TTML	46.488	2.832
ULTRACEMCO	56.049	0.570
VOLTAS	83.187	0.380

Table IV: Error correction model results

This table reports results of Error Correction Model (ECM) results for daily spot and futures prices and Granger causality test of both series. Panel A and Panel B reports the result of spot prices and futures prices equations, respectively. ΔS_t and ΔF_t denotes first difference of the spot and futures prices.

$\hat{u}_{t-1}$ is the one-period lagged value of the error from the cointegrating regression (equilibrium error). Obs. Represents numbers of observation. The error correction model includes optimal lag length of each company for both series (as in table II). t-statistics are in blankets. Only the parameters of first two lags are reported here. For companies whose optimal number of lags are zero, conservatively, error correction models are estimated by using lag length of one. Respectively, ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
<u>First lot @ 9 Nov 2001</u>								
ACC	1783	-0.089* [-1.16877]	0.047 [0.48758]	-0.270*** [-2.76286]	0.065 [0.66269]	0.211** [2.10767]	0.018468	4.052***
BAJAJ-AUTO	1739	-0.027 [-0.63082]	0.142** [2.16005]	-0.156** [-2.41666]	-0.105 [-1.57086]	0.113* [1.69923]	0.007057	5.542***
BHEL	1782	-0.007 [-0.06381]	-0.065 [-0.58242]	0.009 [0.07916]	0.153 [1.34198]	-0.072 [-0.65405]	0.008329	0.787
BPCL	1781	-0.064 [-1.54618]	0.001 [0.02575]	-0.025 [-0.57557]	0.041 [0.83617]	0.030 [0.62995]	0.003493	1.504
CIPLA	1780	-0.304*** [-3.55751]	-0.429*** [-5.05385]	-0.499*** [-6.10479]	0.578*** [6.75823]	0.492*** [5.73875]	0.276722	95.373***
DRREDDY	1781	-0.057 [-0.87661]	0.052 [0.77811]	0.020 [0.32250]	-0.040 [-0.57491]	-0.037 [-0.55215]	-0.00131	1.245

Table IV (Cont.): Error correction model results

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
GRASIM	1779	0.051 [0.76797]	-0.013 [-0.17804]	-0.013 [-0.18932]	-0.008 [-0.11042]	-0.019 [-0.25551]	0.005476	1.069
HDFC	1786	-0.012 [-0.32666]	0.086 [1.43077]		0.086 [1.43077]		0.003795	0.016
HINDALCO	1786	0.012 [0.30414]	0.026 [0.38578]		-0.024 [-0.38224]		-0.001481	0.257
HINDPETRO	1783	0.030 [0.55764]	0.153** [2.32728]	-0.001 [-0.02111]	-0.055 [-0.79299]	-0.001 [-0.00911]	0.011457	3.111
HINDUNILVR	1783	0.028 [0.66828]	0.036 [0.59716]	0.043 [0.76120]	-0.036 [-0.57344]	-0.056 [-0.96463]	-0.001637	0.419
INFOSYSTCH	1783	-0.317** [-2.21013]	-0.105 [-0.48569]	-0.404* [-1.81674]	0.116 [0.54104]	0.381* [1.73146]	0.002589	1.304
ITC	1784	0.136 [1.46878]	0.025 [0.22234]	0.181* [1.66083]	-0.018 [-0.16018]	-0.216* [-1.95543]	0.00032	0.938
M&M	1783	-0.060 [-0.91034]	-0.019 [-0.20939]	-0.075 [-0.82334]	0.111 [1.20122]	0.059 [0.63861]	0.006466	1.127
MTNL	1781	-0.061 [-0.94028]	-0.080 [-1.11955]	0.023 [0.33803]	0.171** [2.28946]	-0.090 [-1.25898]	0.014553	0.986
RANBAXY	1786	-0.026 [-0.84594]	-0.097 [-1.40903]		0.136* [1.90693]		0.001262	1.573

Table IV (Cont.): Error correction model results

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
RELIANCE	1781	0.169 [1.10840]	0.167 [0.71637]	-0.643*** [-2.66506]	-0.095 [-0.40345]	0.651*** [2.68156]	0.027848	2.735**
SATYAMCOMP	1783	0.307** [2.24679]	0.365* [1.85792]	0.007 [0.03536]	-0.357* [-1.81700]	-0.091 [-0.44486]	0.00789	1.358
SBIN	1785	-0.139 [-1.62574]	-0.367** [-2.40124]	-0.538*** [-3.70974]	0.445*** [2.81912]	0.503*** [3.35046]	0.01225	6.092***
TATAPOWER	1780	0.057 [0.70520]	0.464*** [4.14107]	0.268** [2.18663]	-0.365*** [-3.24549]	-0.365*** [-2.97482]	0.043825	7.165***
TATASTEEL	1784	0.024 [0.35830]	0.100 [0.73634]	0.017 [0.12368]	-0.049 [-0.35265]	-0.020 [-0.14848]	-0.000933	0.172
TATATEA	1785	0.020 [1.11423]	0.047* [1.81753]	0.064** [2.52048]	0.036 [1.06611]	-0.085*** [-2.59446]	0.008556	3.396**

Table IV (Cont.): Error correction model results

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
<u>Last Lot @ 29 Dec 2006</u>								
ABAN	502	-0.302 [-1.04836]	0.166 [0.59565]	-0.127 [-0.48675]	-0.032 [-0.11457]	0.147 [0.55838]	0.024079	2.313*
AMTEKAUTO	503	-0.014 [-0.54577]	0.018 [0.64672]	-0.050* [-1.93025]	0.016 [0.31997]	0.122** [2.48408]	0.01103	2.764*
BAJAJHIND	494	-0.257 [-1.39370]	-0.287* [-1.68812]	-0.338** [-2.08141]	0.424** [2.41070]	0.352** [2.07130]	0.1095	2.441***
BALRAMCHIN	499	-0.708* [-1.69398]	-0.397 [-0.95743]	-0.651 [-1.63772]	0.342 [0.81354]	0.615 [1.52408]	0.016549	0.814
BATAINDIA	504	0.079** [2.30779]	-0.003 [-0.06908]		0.015 [0.22521]		0.007304	1.157
BEML	504	0.021 [1.45419]	0.005 [0.21399]		0.115** [2.31407]		0.014459	0.061
BOMDYEING	504	-0.144*** [-2.81258]	-0.181** [-2.26831]		0.248*** [2.99974]		0.020340	2.087
CROMPGREAV	504	0.041* [1.74999]	0.098*** [2.98502]		-0.052 [-0.97696]		0.014114	6.368**
GDL	504	0.043 [0.78668]	-0.004 [-0.07033]		0.073 [0.95911]		0.001114	0.205

Table IV (Cont.): Error correction model results

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
GTL	504	-0.041 [-1.50171]	0.008 [0.18335]		0.056 [1.00448]		0.00262	0.461
GUJALKALI	504	0.023 [1.34117]	0.042 [1.46200]		0.008 [0.14711]		0.002423	1.180
HCC	501	0.117 [0.39128]	0.363 [1.23229]	0.050 [0.17844]	-0.275 [-0.90400]	0.033 [0.11282]	0.03158	3.325**
JPASSOCIAT	503	1.108* [1.95626]	0.492 [0.97500]	0.268 [0.62747]	-0.526 [-1.02105]	-0.317 [-0.72700]	0.000799	0.166
JSWSTEEL	503	-0.092 [-0.78611]	0.141 [1.37650]	0.163** [2.06514]	-0.029 [-0.27140]	-0.160* [-1.86062]	0.026185	5.798***
KOTAKBANK	504	-0.003 [-0.01417]	-0.080 [-0.46761]		0.212 [1.18510]		0.012238	0.307
LUPIN	502	-0.151** [-2.39734]	-0.107 [-1.62154]	-0.087 [-1.47377]	0.118* [1.64791]	0.016 [0.23367]	0.003783	0.116
MCDOWELL-N	504	-0.002 [-0.05667]	-0.016 [-0.39007]		0.054 [0.90135]		-0.004152	0.163
NAGARCONST	503	-0.155* [-1.66678]	-0.0004 [-0.00538]	0.006 [0.09239]	0.059 [0.66863]	-0.016 [-0.22299]	0.004471	1.724

Table IV (Cont.): Error correction model results

Panel A: Results for $\Delta S_t = \delta_s + \alpha_s \hat{u}_{t-1} + \sum_{i=1}^l \beta_{si} \Delta F_{t-i} + \sum_{i=1}^l \gamma_{si} \Delta S_{t-i} + e_{s,t}$

Company Name	Obs.	α_s	β_{s1}	β_{s2}	γ_{s1}	γ_{s2}	Adjusted R-square	Granger Causality F-statistic Null: ΔF_t not Granger cause ΔS_t
PRAJIND	502	-0.485 [-0.86793]	-0.434 [-0.87341]	-0.411 [-0.93549]	0.457 [0.90567]	0.444 [0.99365]	-0.007324	0.171
RENUKA	501	-1.037* [-1.80266]	-0.937* [-1.84113]	-0.956** [-2.08934]	0.901* [1.75592]	0.920** [1.99864]	0.000875	0.934
SESAGOA	501	0.141 [0.42356]	0.324 [0.89011]	-0.233 [-0.64914]	-0.291 [-0.78626]	0.232 [0.63402]	-0.000416	1.428
TRIVENI	504	0.111 [1.28370]	0.036 [0.39027]		-0.048 [-0.46539]		-0.002589	0.045
TTML	502	0.243 [0.72880]	-0.135 [-0.38350]	-0.164 [-0.49140]	0.261 [0.71724]	0.091 [0.26191]	0.010408	0.653
ULTRACEMCO	504	-0.005 [-0.27193]	0.007 [0.22107]		0.008 [0.16230]		-0.005549	0.099
VOLTAS	504	0.029 [0.26994]	0.220* [1.87751]		-0.182 [-1.45181]		0.00341	3.914**

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔSt not Granger cause ΔFt
<u>First lot @ 9 Nov 2001</u>								
ACC	1783	0.108 [1.37901]	0.503*** [4.97040]	0.472*** [4.58572]	-0.377*** [-3.79944]	-0.523*** [-5.22337]	0.043999	15.493***
BAJAJ-AUTO	1739	0.140*** [3.21508]	0.085 [1.25637]	0.183*** [2.72659]	-0.031 [-0.47327]	-0.214*** [-3.27604]	0.01967	6.883***
BHEL	1782	0.322*** [3.06764]	0.356*** [3.03343]	-0.002 [-0.01746]	-0.271** [-2.35702]	-0.060 [-0.54328]	0.031289	9.446***
BPCL	1781	0.263*** [5.66563]	0.295*** [5.41857]	0.193*** [3.61314]	-0.237*** [-4.66567]	-0.191*** [-3.87187]	0.119309	33.305***
CIPLA	1780	0.194** [2.08440]	0.781*** [8.39025]	0.573*** [6.14301]	-0.632*** [-6.83922]	-0.590*** [-6.64148]	0.333369	109.371***
DRREDDY	1781	0.331*** [4.81648]	0.123* [1.65240]	0.024 [0.34398]	-0.135* [-1.90053]	-0.053 [-0.78838]	0.047652	11.523***
GRASIM	1779	0.356*** [4.92539]	0.252*** [3.10527]	0.312*** [3.91518]	-0.279*** [-3.62650]	-0.339*** [-4.50269]	0.115922	23.624***
HDFC	1786	0.162*** [4.38072]	0.194*** [3.10695]		-0.107* [-1.79332]		0.023694	21.525***
HINDALCO	1786	0.180*** [4.24630]	0.229*** [3.32527]		-0.225*** [-3.43433]		0.022527	24.069***

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔS_t not Granger cause ΔF_t
HINDPETRO	1783	0.280*** [4.86411]	0.238*** [3.26050]	0.196*** [2.71091]	-0.126* [-1.81556]	-0.190*** [-2.74977]	0.049075	17.130***
HINDUNILVR	1783	0.192*** [4.59135]	0.114* [1.82961]	-0.012 [-0.20280]	-0.106* [-1.73780]	0.006 [0.11079]	0.031742	9.645***
INFOSYSTCH	1783	-0.184 [-1.29598]	0.509*** [2.40388]	0.625*** [2.87115]	-0.506** [-2.36786]	-0.646*** [-2.93834]	0.002736	2.337*
ITC	1784	0.377*** [4.03384]	0.244** [2.10576]	-0.060 [-0.53482]	-0.234** [-2.04813]	0.030 [0.27258]	0.022057	9.802***
M&M	1783	0.095 [1.41979]	0.478*** [5.10603]	0.376*** [4.03065]	-0.391*** [-4.24235]	-0.384*** [-4.17772]	0.032177	14.497***
MTNL	1781	0.233*** [3.36100]	0.299*** [3.77121]	0.185** [2.42264]	-0.185** [-2.42816]	-0.219*** [-3.00500]	0.057737	14.305***
RANBAXY	1786	0.060* [1.89570]	0.272*** [3.71587]		-0.227** [-3.20378]		0.010565	17.836***
RELIANCE	1781	0.280* [1.83518]	0.304 [1.29337]	0.858*** [3.52712]	-0.234 [-0.99953]	-0.836*** [-3.45819]	0.032144	4.215***
SATYAMCOMP	1783	0.450*** [3.31819]	0.049 [0.25395]	0.157 [0.77909]	-0.047 [-0.24316]	-0.233 [-1.15354]	0.013774	2.879**

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔS_t not Granger cause ΔF_t
SBIN	1785	-0.041 [-0.46521]	0.933*** [5.69959]	0.727*** [4.66787]	-0.847*** [-5.34960]	-0.751*** [-4.98906]	0.023485	20.355***
TATAPOWER	1780	0.168** [2.10257]	0.250** [2.23181]	0.019 [0.15311]	-0.146 [-1.30804]	-0.092 [-0.75016]	0.045721	7.845***
TATASTEEL	1784	0.114* [1.67864]	0.116 [0.82949]	0.070 [0.50133]	-0.077 [-0.55953]	-0.066 [-0.48238]	0.00034	0.849
TATATEA	1785	0.227*** [9.89106]	0.095** [2.23469]	-0.049 [-1.18771]	0.017 [0.52457]	-0.045 [-1.39537]	0.077112	17.255***

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔSt not Granger cause ΔFt
Last Lot @ 29 Dec 2006								
ABAN	502	0.163 [0.55687]	0.432 [1.51000]	0.387 [1.44746]	-0.289 [-1.02205]	-0.360 [-1.36696]	0.027851	3.491**
AMTEKAUTO	503	0.305*** [6.85275]	0.232*** [2.59237]	0.296*** [3.43031]	-0.065 [-1.32746]	-0.208*** [-4.56601]	0.217851	26.571***
BAJAJHIND	494	0.618*** [2.62200]	0.613*** [2.72153]	0.612*** [2.81241]	-0.515** [-2.36910]	-0.570*** [-2.74300]	0.399842	19.563***
BALRAMCHIN	499	-0.322 [-0.75569]	0.744* [1.73100]	0.988** [2.39773]	-0.795* [-1.87687]	-1.035** [-2.54890]	0.018808	1.528
BATAINDIA	504	0.392*** [8.09210]	-0.036 [-0.38819]		0.049 [0.78403]		0.1229	5.622**
BEML	504	0.210*** [7.19800]	0.044 [0.43288]		0.019 [0.39440]		0.098048	4.107**
BOMDYEING	504	0.076 [1.42715]	0.249*** [2.91049]		-0.138* [-1.66891]		0.024998	12.376***
CROMPGREAV	504	0.271*** [7.37177]	0.084 [1.00221]		0.001 [0.01607]		0.112387	9.495***
GDL	504	0.356*** [5.58329]	0.237*** [2.68429]		-0.150** [-2.06307]		0.105938	28.378***

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔSt not Granger cause ΔFt
GTL	504	0.156*** [4.59856]	0.070 [1.00114]		-0.004 [-0.06565]		0.04397	4.659**
GUJALKALI	504	0.230*** [7.37449]	-0.064 [-0.68349]		0.101** [1.96703]		0.093956	0.703
HCC	501	0.576* [1.85797]	0.062** [0.19711]	0.209 [0.69599]	0.052 [0.17164]	-0.119 [-0.41126]	0.048899	3.927***
JPASSOCIAT	503	1.751*** [3.04065]	-0.526 [-1.00316]	-0.253 [-0.57069]	0.491 [0.95655]	0.207 [0.47705]	0.016398	1.320
JSWSTEEL	503	0.615*** [4.60257]	0.052 [0.42212]	-0.096 [-0.97033]	0.013 [0.11029]	0.113 [1.24820]	0.082759	11.531***
KOTAKBANK	504	0.605*** [3.03262]	0.271 [1.48440]		-0.125 [-0.71864]		0.052719	14.694***
LUPIN	502	0.264*** [3.86725]	0.354*** [4.56707]	0.315*** [4.32761]	-0.358*** [-5.01352]	-0.28*** [-4.39448]	0.233914	37.609***
MCDOWELL-N	504	0.334*** [6.82315]	0.092 [1.11356]		-0.085 [-1.47123]		0.117551	11.957***
NAGARCONST	503	0.571*** [5.37482]	0.113 [1.13061]	0.012 [0.14754]	-0.043 [-0.47784]	-0.094 [-1.30983]	0.138625	21.255***

Table IV (Cont.): Error correction model results

Panel B: Results for $\Delta F_t = \delta_f + \alpha_f \hat{u}_{t-1} + \sum_{i=1}^l \beta_{fi} \Delta S_{t-i} + \sum_{i=1}^l \gamma_{fi} \Delta F_{t-i} + e_{f,t}$

Company Name	Obs.	α_f	β_{f1}	β_{f2}	γ_{f1}	γ_{f2}	Adjusted R-square	Granger Causality F-statistic Null: ΔS_t not Granger cause ΔF_t
PRAJIND	502	0.206 [0.36273]	0.592 [1.15676]	0.454 [1.00128]	-0.565 [-1.11896]	-0.415 [-0.92969]	0.001163	1.945
RENUKA	501	-0.334 [-0.57157]	1.047** [2.00966]	1.109** [2.37205]	-1.086** [-2.10048]	-1.151** [-2.47659]	0.021996	3.682***
SESAGOA	501	0.394 [1.15761]	0.195 [0.51691]	0.690* [1.85313]	-0.152 [-0.40998]	-0.685* [-1.87285]	0.012041	2.581**
TRIVENI	504	0.495*** [5.33314]	0.053 [0.47470]		-0.028 [-0.28049]		0.067479	10.324***
TTML	502	0.598* [1.70903]	0.576 [1.50951]	0.232 [0.63859]	-0.427 [-1.15987]	-0.299 [-0.85672]	0.030777	4.277***
ULTRACEMCO	504	0.191*** [6.69423]	0.000 [0.00589]		0.026 [0.55380]		0.082923	2.542
VOLTAS	504	0.418*** [3.56894]	-0.047 [-0.35037]		0.125 [0.98695]		0.024617	1.642

Table V: Information share

This table reports the mid-point, upper, and lower bounds of information share of spot and futures prices of each company.

Company Name	Information Share					
	Spot			Futures		
	Lower Bound	Upper Bound	Mid-point	Lower Bound	Upper Bound	Mid-point
<u>First lot @ 9 Nov 2001</u>						
ACC	87%	37%	62%	63%	13%	38%
BAJAJ-AUTO	22%	99%	61%	1%	78%	39%
BHEL	7%	100%	54%	0%	93%	46%
BPCL	64%	95%	80%	5%	36%	20%
CIPLA	23%	33%	28%	67%	77%	72%
DRREDDY	31%	99%	65%	1%	69%	35%
GRASIM	19%	100%	59%	0%	81%	41%
HDFC	18%	100%	59%	0%	82%	41%
HINDALCO	11%	100%	55%	0%	89%	45%
HINDPETRO	14%	100%	57%	0%	86%	43%
HINDUNILVR	14%	100%	57%	0%	86%	43%
INFOSYSTCH	0%	99%	50%	1%	100%	50%
ITC	3%	100%	51%	0%	97%	49%
M&M	47%	81%	64%	19%	53%	36%
MTNL	31%	98%	64%	2%	69%	36%
RANBAXY	31%	94%	62%	6%	69%	38%
RELIANCE	1%	100%	50%	0%	99%	50%
SATYAMCOMP	1%	100%	50%	0%	99%	50%
SBIN	0%	99%	49%	1%	100%	51%
TATAPOWER	4%	100%	52%	0%	96%	48%
TATASTEEL	2%	100%	51%	0%	98%	49%
TATATEA	46%	99%	73%	1%	54%	27%
Mean	22%	92%	57%	8%	78%	43%

Table V (Cont.): Information share

Company Name	Information Share					
	Spot			Futures		
	Lower Bound	Upper Bound	Mid-point	Lower Bound	Upper Bound	Mid-point
<u>Last Lot @ 29 Dec 2006</u>						
ABAN	6%	80%	43%	20%	94%	57%
AMTEKAUTO	94%	99%	97%	1%	6%	3%
BAJAJHIND	82%	77%	79%	23%	18%	21%
BALRAMCHIN	0%	98%	49%	2%	100%	51%
BATAINDIA	34%	97%	66%	3%	66%	34%
BEML	69%	97%	83%	3%	31%	17%
BOMDYEING	19%	28%	23%	72%	81%	77%
CROMPGREAV	56%	97%	77%	3%	44%	23%
GDL	30%	99%	65%	1%	70%	35%
GTL	90%	90%	90%	10%	10%	10%
GUJALKALI	62%	98%	80%	2%	38%	20%
HCC	3%	100%	52%	0%	97%	48%
JPASSOCIAT	0%	100%	50%	0%	100%	50%
JSWSTEEL	34%	99%	66%	1%	66%	34%
KOTAKBANK	6%	100%	53%	0%	94%	47%
LUPIN	100%	62%	81%	38%	0%	19%
MCDOWELL-N	60%	100%	80%	0%	40%	20%
NAGARCONST	62%	94%	78%	6%	38%	22%
PRAJIND	1%	95%	48%	5%	99%	52%
RENUKA	0%	99%	49%	1%	100%	51%
SESAGOA	1%	100%	51%	0%	99%	49%
TRIVENI	13%	99%	56%	1%	87%	44%
TTML	1%	100%	50%	0%	99%	50%
ULTRACEMCO	88%	100%	94%	0%	12%	6%
VOLTAS	11%	100%	55%	0%	89%	45%
Mean	37%	92%	65%	8%	63%	35%

Table VI: Single Stock Futures Price-Volume Relationship

This table reports summary result for a vector autoregression (VAR) analysis and Granger causality test of the relation between price changes (returns) and volume (number of contracts traded) of SSFs of each company. Panel A and Panel B reports the result of futures trading volume and futures return equations, respectively. FRET represents futures returns, calculated from $\ln(\text{futures price}_t / \text{futures price}_{t-1})$, and FVOL represent futures returns and numbers of futures contracts traded. The VAR model include optimal number of lag of FVOL and FRET of each company (as in table II). t-statistics are in blankets. Respectively, ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
<u>First lot @ 9 Nov 2001</u>							
ACC	1786	267.733*** [8.27583]	0.657*** [36.6983]	-267.651 [-0.22061]	674.8285	0.430196	0.049
BAJAJ-AUTO	1741	78.735*** [5.58123]	0.739*** [45.7778]	-147.258 [-0.49629]	1047.902	0.546143	0.246
BHEL	1786	263.798*** [5.62864]	0.744*** [46.2439]	-1442.278 [-1.18369]	1069.577	0.544893	1.401
BPCL	1786	120.581*** [9.74814]	0.591*** [30.8752]	102.059 [0.30474]	478.2568	0.348424	0.093
CIPLA	1786	104.420*** [6.77361]	0.665*** [37.5681]	-98.036 [-0.34501]	706.1775	0.441377	0.119
DRREDDY	1786	102.203*** [7.46229]	0.670*** [38.0796]	-324.521 [-0.78960]	725.222	0.447957	0.623

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
GRASIM	1786	148.855*** [8.28211]	0.662*** [37.3043]	-265.121 [-0.46880]	695.8731	0.43775	0.220
HDFC	1786	128.180*** [5.02629]	0.725*** [43.2500]	-371.026 [-0.58266]	935.3002	0.511441	0.339
HINDALCO	1786	262.374*** [7.08775]	0.718*** [43.4218]	-110.697 [-0.20317]	942.9478	0.513478	0.041
HINDPETRO	1786	195.752*** [9.05714]	0.622*** [33.4881]	409.582 [0.65717]	564.2203	0.386901	0.432
HINDUNILVR	1785	265.562*** [8.05590]	0.524*** [22.3367]	-320.406 [-0.23247]	265.147	0.371961	2.445*
INFOSYSTCH	1786	565.051*** [8.29041]	0.718*** [43.4743]	-501.737 [-0.36516]	945.4461	0.514139	0.133
ITC	1785	257.600*** [7.15787]	0.503*** [21.5109]	-813.768* [-1.66960]	273.6057	0.379354	1.395
M&M	1786	161.126*** [8.36933]	0.642*** [35.2459]	-657.595 [-1.19355]	621.7047	0.410192	1.425
MTNL	1786	210.623*** [6.79625]	0.734*** [45.5595]	26.997 [0.02882]	1039.052	0.537697	0.00083

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
RANBAXY	1786	242.940*** [7.23810]	0.701*** [41.3114]	-692.885 [-0.71628]	853.4753	0.488531	0.513
RELIANCE	1786	1583.122*** [6.41611]	0.739*** [45.4033]	- 11,486.380 [-1.20782]	1030.814	0.535716	1.459
SATYAMCOMP	1784	415.109*** [5.42165]	0.573*** [24.3810]	-4922.400** [-2.44644]	339.1034	0.53222	3.402**
SBIN	1785	838.579*** [7.25752]	0.654*** [27.5875]	-8002.405* [-1.94525]	373.0038	0.45477	1.893
TATAPOWER	1786	132.985*** [7.04355]	0.715*** [43.0010]	-392.192 [-0.66361]	927.8811	0.509449	0.440
TATASTEEL	1786	1039.609*** [9.01082]	0.640*** [34.9413]	477.236 [0.14604]	612.6208	0.40663	0.02133
TATATEA	1785	76.579*** [7.63837]	0.517*** [21.8724]	-90.423 [-0.29689]	212.4502	0.321622	0.219

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
Last Lot @ 29 Dec 2006							
ABAN	504	288.858*** [5.62309]	0.621*** [17.7596]	-817.448 [-0.76866]	158.7772	0.385502	0.591
AMTEKAUTO	503	44.215*** [4.96329]	0.466*** [10.4908]	66.089 [0.51189]	53.45944	0.294783	0.133
BAJAJHIND	504	318.494*** [5.18392]	0.598*** [16.6852]	404.540 [0.49884]	139.6946	0.35545	0.249
BALRAMCHIN	504	224.624*** [5.43383]	0.582*** [16.0251]	377.177 [0.50513]	129.0211	0.337323	0.255
BATAINDIA	504	87.006*** [5.03901]	0.355*** [8.43020]	-62.891 [-0.24459]	35.8258	0.12163	0.060
BEML	504	33.974*** [3.61218]	0.689*** [21.2718]	27.422 [0.22993]	226.4028	0.472639	0.053
BOMDYEING	503	184.130*** [4.49953]	0.796*** [18.2728]	163.081 [0.20720]	97.36553	0.434342	0.276
CROMPGREAV	504	49.211*** [4.40567]	0.645*** [18.8635]	-29.698 [-0.17130]	178.1652	0.413295	0.029
GDL	504	74.128*** [3.41819]	0.562*** [15.0951]	-120.896 [-0.25006]	115.0794	0.312051	0.063

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
GTL	504	247.347*** [5.86422]	0.563*** [15.2479]	446.729 [0.33578]	116.295	0.314331	0.113
GUJALKALI	504	54.224*** [3.66809]	0.689*** [21.2347]	1.577 [0.00855]	227.0284	0.47333	7.30E-05
HCC	504	206.615*** [4.63390]	0.649*** [19.0812]	-198.527 [-0.23801]	182.2096	0.418779	0.057
JPASSOCIAT	504	451.162*** [3.64850]	0.780*** [27.8470]	-518.157 [-0.43754]	387.7843	0.605975	0.191
JSWSTEEL	504	283.877*** [5.67102]	0.593*** [16.4841]	902.340 [0.97317]	137.5704	0.351922	0.947
KOTAKBANK	504	282.573*** [4.91378]	0.633*** [18.2303]	-1082.238 [-0.90733]	166.2664	0.396544	0.823
LUPIN	504	102.622*** [3.52200]	0.719*** [23.1632]	375.881 [0.45232]	269.8508	0.516672	0.205
MCDOWELL-N	504	165.877*** [4.70187]	0.544*** [14.4331]	-219.046 [-0.39502]	104.5342	0.291617	0.156
NAGARCONST	504	106.707*** [4.95050]	0.561*** [15.1885]	772.959* [1.93401]	116.2147	0.314181	3.74*

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel A: Results for $FVOL_t = \alpha_0 + \sum_{i=1}^l \alpha_i FVOL_{t-i} + \sum_{i=1}^l \beta_i FRET_{t-i} + \varepsilon_{FVOL,t}$

Company Name	Obs.	α_0	α_1	β_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FRET not Granger cause FVOL
PRAJIND	504	262.228*** [4.46225]	0.650*** [19.0831]	-947.420 [-1.00430]	182.0844	0.418611	1.009
RENUKA	504	312.259*** [4.70611]	0.446*** [11.1558]	-16.570 [-0.03043]	62.3304	0.19605	0.001
SESAGOA	504	397.274*** [4.65662]	0.649*** [19.0834]	228.306 [0.41485]	183.3751	0.42034	0.172
TRIVENI	504	69.736*** [3.64822]	0.656*** [19.4022]	-49.624 [-0.15514]	188.9332	0.427672	0.024
TTML	504	340.278*** [5.21158]	0.603*** [16.7965]	489.723 [0.34663]	144.7841	0.363749	0.120
ULTRACEMCO	504	121.647*** [6.45105]	0.487*** [12.4306]	219.629 [0.77913]	77.27551	0.232707	0.607
VOLTAS	504	109.291*** [4.36250]	0.686*** [21.0440]	31.135 [0.06152]	222.8953	0.468732	0.004

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_l	δ_l	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
First lot @ 9 Nov 2001							
ACC	1786	4.37E-05 [0.06923]	7.41E-07 [2.12287]	0.044 [1.85373]	4.188756	0.00356	4.507**
BAJAJ-AUTO	1741	1.24E-04 [0.10902]	-2.04E-07 [-0.15643]	0.022 [0.92208]	0.437198	-0.000647	0.024
BHEL	1786	1.27E-03 [1.39172]	-2.82E-08 [-0.09018]	-0.013 [-0.55815]	0.162303	-0.000939	0.008
BPCL	1786	2.08E-04 [0.23714]	8.71E-07 [0.64292]	-0.039* [-1.64887]	1.518354	0.00058	0.413
CIPLA	1786	-9.74E-04 [-0.75834]	-2.61E-08 [-0.01772]	-1.57E-03 [-0.06612]	0.002323	-0.001119	0.0003
DRREDDY	1786	-8.17E-04 [-1.03967]	9.88E-07 [0.97884]	-0.082 [-3.49851]	6.583823	0.006217	0.958
GRASIM	1786	2.84E-04 [0.38091]	1.51E-06 [2.04788]	-0.141 [-6.01614]	19.92616	0.020765	4.194**
HDFC	1786	2.59E-04 [0.27300]	3.68E-07 [0.58995]	-3.31E-04 [-0.01396]	0.174024	-0.000926	0.348

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_l	δ_l	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
HINDALCO	1786	-1.82E-03 [-1.13249]	4.53E-07 [0.63073]	-6.73E-03 [-0.28400]	0.235751	-0.000857	0.398
HINDPETRO	1786	-2.71E-05 [-0.03300]	7.91E-07 [1.12005]	0.041* [1.74772]	2.27836	0.00143	1.255
HINDUNILVR	1785	-3.15E-04 [-0.55605]	-3.31E-08 [-0.08211]	-5.12E-03 [-0.21615]	0.75797	-0.000543	1.453
INFOSYSTCH	1786	-8.21E-04 [-0.69821]	1.38E-07 [0.48578]	-5.67E-04 [-0.02392]	0.118037	-0.000989	0.236
ITC	1785	-1.19E-03 [-0.67731]	-6.64E-07 [-0.58421]	-2.08E-03 [-0.08769]	0.328152	-0.001509	0.577
M&M	1786	2.96E-04 [0.35810]	6.60E-07 [0.84297]	0.076*** [3.21186]	5.710136	0.00525	0.711
MTNL	1786	-4.98E-04 [-0.63545]	2.51E-07 [0.61550]	0.037 [1.54765]	1.420622	0.000471	0.379
RANBAXY	1786	-7.45E-04 [-0.90660]	2.39E-07 [0.57525]	0.030 [1.27651]	0.982873	-0.000019	0.331
RELIANCE	1786	6.98E-04 [1.13645]	2.08E-08 [0.51290]	0.027 [1.12510]	0.774863	-0.000252	0.263
SATYAMCOMP	1784	-1.36E-03 [-1.50896]	3.60E-07 [1.30020]	-6.33E-03 [-0.26670]	2.963968	0.006566	4.865***

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_l	δ_l	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
SBIN	1785	5.05E-04 [0.76151]	-2.63E-07** [-1.93590]	0.043275** [1.83411]	5.065662	0.009033	6.117***
TATAPOWER	1786	2.42E-04 [0.31937]	1.65E-06** [2.47175]	0.027 [1.14827]	3.950357	0.003295	6.110**
TATASTEEL	1786	6.44E-05 [0.07720]	1.42E-07 [1.07409]	0.069*** [2.93526]	5.074997	0.004545	1.154
TATATEA	1785	1.49E-04 [0.19185]	4.08E-07 [0.22324]	0.014 [0.57379]	8.135013	0.015746	2.501*

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_1	δ_1	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
Last Lot @ 29 Dec 2006							
ABAN	504	-2.20E-03 [-1.05805]	5.57E-07 [0.39437]	0.215*** [5.01295]	12.58443	0.044033	0.156
AMTEKAUTO	503	-6.58E-03** [-2.17076]	2.91E-05* [1.92476]	-0.127*** [-2.89003]	7.197941	0.047062	1.853
BAJAJHIND	504	-5.71E-03* [-1.70188]	3.38E-06* [1.72841]	-0.118*** [-2.67685]	4.943004	0.015436	2.987*
BALRAMCHIN	504	-1.45E-03 [-0.58655]	6.02E-07 [0.27681]	-0.058 [-1.29248]	0.861237	-0.000552	0.077
BATAINDIA	504	-3.00E-03 [-0.99851]	8.28E-06 [1.13141]	-0.105** [-2.35311]	3.136251	0.008423	1.280
BEML	504	-3.03E-03 [-0.86070]	8.55E-06 [0.70589]	-0.019 [-0.43701]	0.339884	-0.002632	0.498
BOMDYEING	503	-2.88E-03 [-1.22631]	-9.34E-08 [-0.03730]	0.079* [1.73894]	0.857023	-0.001141	0.006
CROMPGREAV	504	-3.32E-03 [-1.15696]	1.65E-05* [1.87368]	-0.030 [-0.67484]	1.928419	0.003678	3.511*
GDL	504	-2.11E-03 [-1.04784]	1.62E-06 [0.46900]	-0.065 [-1.44350]	1.087809	0.000349	0.220

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_l	δ_l	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
GTL	504	2.99E-04 [0.21121]	8.49E-07 [0.68654]	-0.033 [-0.73771]	0.508869	-0.001957	0.471
GUJALKALI	504	-3.57E-03 [-0.99641]	1.27E-05 [1.62005]	0.013 [0.27986]	1.398574	0.001582	2.625
HCC	504	-2.87E-03 [-1.20912]	1.49E-06 [0.82007]	0.103** [2.32633]	3.12885	0.008394	0.673
JPASSOCIAT	504	-6.90E-03 [-1.47919]	1.05E-06 [0.99206]	6.92E-03 [0.15479]	0.508751	-0.001957	0.984
JSWSTEEL	504	-3.66E-03 [-1.52239]	3.68E-06** [2.13061]	0.055 [1.23531]	3.180985	0.008597	4.540**
KOTAKBANK	504	-7.21E-04 [-0.33322]	1.96E-07 [0.14979]	0.096** [2.13082]	2.317384	0.005211	0.022
LUPIN	504	-3.18E-04 [-0.20543]	4.48E-07 [0.27193]	-0.167*** [-3.78066]	7.148242	0.023863	0.074
MCDOWELL-N	504	-6.05E-04 [-0.21330]	1.18E-06 [0.38875]	-0.114*** [-2.56738]	3.309352	0.009099	0.151
NAGARCONST	504	-2.73E-03 [-1.13147]	8.42E-07 [0.20377]	0.037 [0.83702]	0.364735	-0.002532	0.042

Table VI (Cont.): Single Stock Futures Price-Volume Relationship

Panel B: Results for $FRET_t = \gamma_0 + \sum_{i=1}^l \gamma_i FVOL_{t-i} + \sum_{i=1}^l \delta_i FRET_{t-i} + \varepsilon_{FRET,t}$

Company Name	Obs.	γ_0	γ_l	δ_l	F-statistic	Adjusted R-square	Granger Causality F-statistic Null: FVOL not Granger cause FRET
PRAJIND	504	-3.02E-03 [-1.08827]	4.76E-07 [0.29592]	0.016 [0.35250]	0.111369	-0.003546	0.088
RENUKA	504	-4.23E-03 [-0.77720]	7.20E-07 [0.21928]	-0.023 [-0.52306]	0.156119	-0.003367	0.048
SESAGOA	504	-7.75E-03 [-1.11759]	1.66E-06 [0.59993]	3.23E-03 [0.07217]	0.185975	-0.003247	0.360
TRIVENI	504	-1.12E-03 [-0.41835]	4.66E-06 [0.98688]	0.032 [0.70898]	0.790545	-0.000834	0.974
TTML	504	-1.54E-04 [-0.07403]	3.99E-07 [0.34901]	0.059 [1.31905]	1.01536	0.000061	0.122
ULTRACEMCO	504	-1.56E-03 [-0.51954]	-1.59E-06 [-0.25545]	-4.16E-03 [-0.09292]	0.035329	-0.00385	0.065
VOLTAS	504	-3.22E-03 [-1.45678]	4.50E-06 [1.56727]	0.056 [1.25939]	2.1892	0.004706	2.456

Table VI:**Stock Trading Volume and Stock Returns Volatility Pre and Post the Single Stock Futures Market**

This table compares standardized trading volume and standardized return volatility for the stock of each company pre- and post- SSFs listing in different event windows starting from (-10,+10) days to (-250,+250) days. For instance, (-10,+10) days represent event window 10 days before single stock futures listing and after 10 days after single stock futures listing. Stock returns is calculated from $\ln(\text{spot price}_t / \text{spot price}_{t-1})$. Standardized trading volume is calculated from the ratio between trading volume of each stock and stock market. Standardized return volatility is calculated from the ratio between standard deviation of stock returns and stock market returns. Difference in means is tested using t-test and difference in medians is tested using a Wilcoxon signed ranks test. P-value represents the p-value of difference in the test. Respectively, ***, **, and * indicate significance at the 1%, 5%, and 10% level.

Company Name	Standardized Trading Volume						Standardized Return Volatility					
	Pre		Post		p-Value of Difference		Pre		Post		p-Value of Difference	
	Mean (%)	Median (%)	Mean (%)	Median (%)	Mean	Median	Mean (%)	Median (%)	Mean (%)	Median (%)	Mean	Median
<u>(-10,+10) Days</u>												
First lot @ 9 Nov 2001	1.09	0.35	0.76	0.26	0.0165**	0.0012***	195.56	183.74	172.00	156.85	0.2364	0.2113
Last Lot @ 29 Dec 2006	0.26	0.11	0.28	0.16	0.6851	0.7402	221.44	206.47	169.60	170.16	0.1159	0.0716*
<u>(-20,+20) Days</u>												
First lot @ 9 Nov 2001	1.13	0.35	0.73	0.21	0.0123**	0.0001***	281.63	215.55	199.25	176.14	0.1368	0.0203**
Last Lot @ 29 Dec 2006	0.26	0.12	0.25	0.13	0.9189	0.3810	198.22	168.44	222.50	219.98	0.2614	0.1080
<u>(-30,+30) Days</u>												
First lot @ 9 Nov 2001	1.23	0.36	0.70	0.24	0.0193**	0.0001***	255.11	210.87	199.83	202.58	0.1649	0.1154
Last Lot @ 29 Dec 2006	0.26	0.10	0.26	0.12	0.9564	0.4454	216.79	190.17	225.44	219.44	0.6839	0.4264
<u>(-60,+60) Days</u>												
First lot @ 9 Nov 2001	1.22	0.35	0.88	0.29	0.0466**	0.0030***	203.45	179.66	209.00	196.77	0.8014	0.2914
Last Lot @ 29 Dec 2006	0.26	0.14	0.26	0.13	0.8884	0.7019	248.04	244.60	189.78	183.55	0.0007***	0.0004***
<u>(-125,+125) Days</u>												
First lot @ 9 Nov 2001	1.13	0.33	0.88	0.38	0.0373**	0.0440**	211.44	196.18	195.87	183.15	0.3308	0.6612
Last Lot @ 29 Dec 2006	0.27	0.17	0.29	0.13	0.7633	0.4713	367.41	249.12	200.01	193.86	0.0497**	0.0050***
<u>(-250,+250) Days</u>												
First lot @ 9 Nov 2001	1.16	0.46	0.90	0.36	0.0487**	0.0058***	213.15	193.68	200.53	188.23	0.4235	0.3720
Last Lot @ 29 Dec 2006	0.23	0.18	0.32	0.11	0.4692	0.4203	268.58	214.34	216.92	188.90	0.2685	0.0824*

Appendix

Table AI: Company Overview

Company Name	Company Full Name	Industry
<u>First lot @ 9 Nov 2001</u>		
ACC	Associated Cement Co. Ltd.	Cement
BAJAJ-AUTO	Bajaj Auto Limited	Automobiles - 2 & 3 Wheelers
BHEL	Bharat Heavy Electricals Ltd.	Electrical Equipment
BPCL	Bharat Petroleum Corporation Ltd.	Refineries
CIPLA	Cipla Ltd.	Pharmaceuticals
DRREDDY	Dr. Reddy'S Laboratories Ltd.	Pharmaceuticals
GRASIM	Grasim Industries Ltd.	Diversified
HDFC	Housing Development Finance Corporation Ltd.	Finance - Housing
HINDALCO	Hindalco Industries Ltd.	Aluminium
HINDPETRO	Hindustan Petroleum Corporation Ltd.	Refineries
HINDUNILVR	Hindustan Unilever Ltd	Diversified
INFOSYSTCH	Infosys Technologies Ltd.	Computers - Software
ITC	Ite Ltd.	Cigarettes
M&M	Mahindra & Mahindra Ltd.	Automobiles - Cars & Jeeps
MTNL	Mahanagar Telephone Nigam Ltd.	Telecommunications - Services
RANBAXY	Ranbaxy Laboratories Ltd.	Pharmaceuticals
RELIANCE	Reliance Industries Ltd.	Refineries
SATYAMCOMP	Satyam Computer Services Ltd.	Computers - Software
SBIN	State Bank Of India	Banks
TATAPOWER	Tata Power Co. Ltd.	Power
TATASTEEL	Tata Steel Ltd.	Steel - Large
TATATEA	Tata Tea Ltd.	Tea and Coffee

Table AI (Cont.): Company Overview

Company Name	Company Full Name	Industry
<u>Last Lot @ 29 Dec 2006</u>		
ABAN	Aban Offshore Ltd.	Oil Exploration/Production
AMTEKAUTO	Amtek Auto Ltd.	Automobiles - Ancillaries
BAJAJHIND	Bajaj Hindustan Ltd.	Sugar
BALRAMCHIN	Balrampur Chini Mills Ltd.	Sugar
BATAINDIA	Bata India Ltd.	Leather Products
BEML	Bharat Earth Movers Ltd.	Engineering
BOMDYEING	Bombay Dyeing & Mfg. Co Ltd.	Petrochemicals
CROMPGREAV	Crompton Greaves Ltd.	Electric Equipment
GDL	Gateway Distriparks Ltd.	Transportation
GTL	Gtl Ltd.	Telecommunication - Services
GUJALKALI	Gujarat Alkalies & Chem	Chemicals
HCC	Hindustan Construction Co	Construction & Contracting - Civil
JPASSOCIAT	Jaiprakash Associates Ltd.	Diversified
JSWSTEEL	Jsw Steel Ltd.	Steel - Large
KOTAKBANK	Kotak Mahindra Bank Ltd.	Banks
LUPIN	Lupin Ltd.	Pharmaceuticals
MCDOWELL-N	United Spirits Ltd.	Brew/Distilleries
NAGARCONST	Nagarjuna Constrn. Co. Ltd.	Construction & Contracting - Civil
PRAJIND	Praj Industries Ltd.	Engineering - Heavy
RENUKA	Shree Renuka Sugars Ltd.	Sugar
SESAGOA	Sesa Goa Ltd.	Mining
TRIVENI	Triveni Engg. & Inds. Ltd.	Sugar
TTML	Tata Teleserv(Maharashtra)	Telecommunication - Services
ULTRACEMCO	Ultratech Cement Ltd.	Cement
VOLTAS	Voltas Ltd.	Diversified