

DOES INVESTOR ATTENTION MATTER'S?

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Abstract *The purpose of the study is to examine the effect of investor attention on profitability, liquidity and volatility of a firm. Forty two firms listed on Karachi Stock Exchange are investigated. Data with monthly frequency from November 2009 to October 2013 is analyzed to inspect the relationship. It is found that the investor attention partially affect profitability, liquidity and volatility. Liquidity of a firm is more affected by investor attention as compared to profitability and volatility.*

Keywords: *Google search volume, Investor Attention, liquidity, profitability; volatility.*

INTRODUCTION

It is often said that investors have infinite cognitive resources with high attention toward the stock market activities. On the other hand investors have in reality limited cognitive capabilities (Kaheman, 1973). Previous studies show that there are limits to the essential cognitive processing capability of the human brain. Sometime huge amount of information is available but investor collect specific information for their decision purpose, and also shows that attention have vital role in investors learning and trading behavior.

In the advancement of information technology the world is going in the digital era and internet is becoming an essential research tool. It provide us the easiest way to access information from different sources and people are more dependent on search engines to get their desired results from the internet, with respect to other search engine Google become the most frequently using search engine as worldwide and now in Pakistan, if someone do search on Google so he is paying attention to it (Da, Engelberg, & Gao, In Search of Attention, 2011), and without any biasness Google trend is the most reliable source of measuring Pakistani investors' attention so irrelevant and noisy information is ignorable or negligible.

Our research contributes and somehow relates to the stream of literature that analyze the "investor attention hypothesis" (e.g., (Fang & Peress, 2009), (Grullon, Kanatas, & Weston, 2004) and (Tetlock, 2010). Investor frequently gather information on stocks that are traded in market, they pay high attention toward every piece of

information which is related to the specific stock, because as we discuss before human brain has a limited central cognitive processing capability. Sometimes incomplete or asymmetric information become a problem for investors and it could be risky for them to make decisions. When investor pay a high level of attention toward the stock by searching actively on search engine, so they receive specific information on the stock which decreases level of asymmetric and incomplete information problems. It result, the stocks with more investor attention have a high rate of liquidity.

This paper is divided in to following steps. First, we examined the case of Pakistani stock market while previous studies emphasize on the US and French stock markets (Ding & Hou, 2011) (Vlastakis & Markellos, 2012) and (Aouadi, Arouri, & Teulon, 2013). Second, the paper analyzes empirically that does investor attention matters? And we follow Google search volume as a proxy on monthly basis for knowing investors' attention for stocks in KES 100-index.

And third, we considered Investor Attention as independent variable and profitability, liquidity and volatility as dependent variable.

Our results may help for stakeholders of institutions like financial markets (e.g. stock brokers and liquidity traders) from this they can efficiently learn investors trading behaviors. Finally, our findings may also benefit to search engine firms to develop a business model and standardize the search data on individuals searching behavior in terms of accuracy and timeliness, and then they are able to sell this information to concerned participants those who need such information.

The rest of the paper is arranged as follows. Section 2 demonstrates relevant literature review. Section 3 describes data and methodology. Section 3 presents empirical results, interpretation and relevant discussion. Section 4 will draw conclusion.

LITERATURE REVIEW

The concept "recognition of investor" was initially introduced by (Merton, 1987) and suggests that investor attention may be relevant to the stock market activities. Human brain is bounded in its information processing capability, attention plays a vital role in learning, selecting, decision making, and also effects trading behavior of investors (Hou, Xiong, & Peng, 2009). Asset pricing model speculate that investor attention is an essential part of stock price to fully integrate the public information, as an investor has to be conscious about information before he can observe and respond to this specific stock information. (Peng, Xiong, & Bollerslev, 2007) They find out that investors shift their limited attention to process market level information, an increase in market wide uncertainty and then subsequently divert their attention back to asset specific information.

According to Merton the firm should be well recognized or front line investors should be aware to the firm before investments, this shows investor attention is obligatory condition for a company to be recognized, also stated that increment in search volume increases the trading activities like stock prices, liquidity and temporary returns (Merton, 1987).

(Barber, Odean, & Zhu, 2006) Investors only focus on those stocks which are more familiar in the stock market and that information may not enough to determine

attraction of investors. This study indirectly indicates that limited attention toward direct determination is so effected because it is very difficult to measure human attention especially in stock market, For directly measures researchers have to go back in that particular time period which is very hard to do.(Barber & Odean, 2008) Individual investors locates the information about the firm's environment, product, history and strategies and they are more conscious to search for information when they are buying since they have to choose from a large set of available alternatives. (Fehle, Tsyplakov, & Zdorovtsov, 2005)Examine that most of the firms create and then increase investor attention through advertising techniques. (Della Vigna & Pollet, 2009)They find out that volume and two day stock price reaction to Friday news released media is relatively weaker than the other days of week. (Huberman & Regev, 2001)They find that newspaper can affect the stock prices even contents don't have genuine information thus prove the important role exercised by investor attention. (Della Vigna & Pollet, 2009). They find out that volume and two day stock price reaction to Friday news released media is relatively weaker than the other days of week. Mostly investor's intentions toward buying of stocks or grabbing stocks, high intention toward specific stock is due to its familiar reputation like headlines news, extreme or high returns and high abnormal trading volume. The result of attention is not restricted to the retail investors; High attention increases the level of unaccepted trading and uninformed investors (Yuan, 2008). (Chemmanur & Yan, 2009)Find that an increase in the level of investor intension is related with a higher cotemporary stock return and a lower future return. Stock market related news cause the investor's ignorant or attentive behavior towards frequently switching process (Andrei & Hasler, 2011).In good law enforcement countries investors pay more attention to firm's specific information which leads to higher momentum returns (Gavrilov, 2013). (Da, Engelberg, & Gao, The sum of all fears: investor sentiment and asset prices, 2010)Show that investor attention is correlated with the high first-day return and the long-run underperformance of IPO stocks. We emphasize from these studies that investor attention is almost depended on the way investor react on specific information and they are restricted to limited stocks and there information. Attention to stock market rises in times of high market activities, Moreover an increase in investor attention is followed by high volatility (Dimpfl & Jank, 2011).There are lots of tools and techniques through investor attention can be measured, like in previous studies researchers uses different indirect methods to measure investor attention. Such as business cycle activities (Kita & Wang, 2012), media coverage (Fang & Peress, 2009), abnormal trading volume (Hou, Xiong, & Peng, 2009) and advertising expense (Lou, 2009), extreme or high returns (Barber & Odean, 2008). (Grullon, Kanatas, & Weston, 2004)Examine that advertising expense is positively related to the number of investors and stock market liquidity. (DellaVigna & Pollet, 2009)Find that news can be the sources through stock prices reacts. (Fang & Peress, 2009) Report that there is a negative relationship between stock returns and media coverage.

Internet search volume proxies can be the most reliable sources because researcher can get highly relevant results. According to (Ding & Hou, 2011) when people pay more attention to trading activities by actively searching on the internet they receive relevant information on stocks and may eventually become investors of it, and this enable

the firm stocks and name to be better recognized as a result stocks with increased investor attention become more liquid. GSV first introduced by (Mondria, Wu, & Zhang, 2010) and (Da, Engelberg, & Gao, In Search of Attention, 2011) in their financial literatures as a direct measure of investor attention and show that it is more efficient than the previous measure of investor attention. (Aouadi, Arouri, & Teulon, 2013) Successfully measure the attention through Google search volume proxy, (Now onward Google search volume is called GSV) inspired by them and especially for avoiding any biasness GSV has been used in this paper. Most frequently used search engine Google, online search volume data was released on 2008 but search data is available from 2004 and onward. GSV captures information demand among investor and most of the searches have been performed during the period of earning announcement (Drake, Jennings, Roulstone, & Thornock, 2012). Higher GSV leads to increase greater stock liquidity, trading activities and greater the future returns in short term period (Bank, Larch, & Peter, 2011), (Da, Engelberg, & Gao, In Search of Attention, 2011), (Vlastakis & Markellos, 2012), (Dimpfl & Jank, 2011), and (Kita & Wang, 2012) These researcher use GSV on firms tickers, names and other related terms to determine investor attention as the information is available publicly, all these articles suggest that investor's online behavior is strongly time varying and larger in times of high volatility. Moreover (Vlastakis & Markellos, 2012) define that GSV explain about 50% of the variability in the Market Volatility Index.

Facts and figures suggest that GSV is the most reliable proxy source for measuring Pakistan's investor's attention. Useful and reliable information is perceived more valuable in Pakistan's financial markets, use of search engines is increasing rapidly day by day, and most of the investors and brokers are aware of it. All credit goes to information technology and then internet system because it decreases the cost of data gathering and increases the flow of information, still most of people are not the regular users of internet but in recent decades they are showing high interest towards it. Regarding GSV previous researches show positive results for different empirical studies in stock market activities. As we discuss below, the empirical question (Does investor attention matters?) can be examined.

DATA AND METHODOLOGY

Companies listed on KSE 100 index are used to measure the effect of investor attention on liquidity, profitability and volatility. 42 companies are filtered out of 100 stock firms based on the availability of data. Time duration for the analysis range from November 2009 to October 2013 with monthly frequency, stock firms are listed in the KSE 100 index which is chosen for our sample period and reason for selection of stocks from KSE 100 index is that they are the upfront representatives of Karachi Stock Exchange. To measure the investor attention we use Google Search volume and it considered as a proxy Index because it better as compare to other proxies of measure used in the previous literatures e.g. Advertisement expenditure, media coverage (Grullon, Kanatas, & Weston, 2004), (DellaVigna & Pollet, 2009). To measure the profitability of stock we convert individual stock price into return by using this equation

$r = \frac{pn}{pn-1} - 1$. We follow the (Ascioglu, Comerton-Forde, & McInish, 2007) (Chae, 2005) (Barnea & Logue, 1975) to measure the monthly volatility in the returns of a firm is calculated with the help of standard deviation of the daily returns. Turnover is used as a proxy of measure for liquidity of a firm by following (Fong, Holden, & Trzcinka, 2011) as representative of liquidity; a high ratio indicates a more liquid stock (low price impact of trades).

Table 1 show the queries used in the analysis. The combination of words in any search query is of very much importance. In Pakistan mostly the firms are searched by their names rather than the tickers as it is easy to remember the names. Also symbols of tickers may be used in different meaning than required.

To investigate the effect of investor attention on Turnover, profitability and volatility all the series are tested for stationary. The returns and volatility are found to be stationary at level for all the 42 firms. But for some companies it is observe that the series of turnover and Investor attention showed a unit root at level that's why ARDL is applied for that series. The results of Augmented Dickey Fuller test are shown in table 2 while Table 3 reports descriptive statistics for Turnover, profitability and volatility.

EMPIRICAL RESULTS

The results of regression are shown in table 4 estimates of ARDL are marked as *italic* whereas estimates of ordinary least square are non-*italic*. From the table we observe that turnover of 26% firms are significantly affected by investor attention, the results also indicates that 17% firms and volatility of 9% firms are also affected by investor attention at 5% Confidence Interval. At 1% Confidence Interval 19% firms in case of turnover, 12% firms in case of returns and 5% firms in case of volatility are found to be affected by investor attention.

Similar when 10% confidence interval is considered that 36% firms in case of turnover, 19% in case of returns and 14% firms in case of volatility are found to be affected by investor attention.

From these results it is observed that liquidity is most affected variable by investor attention and volatility is the least variable in our observation.

CONCLUSION

The research conclude that Investor Attention that investor attention partially affected liquidity, volatility and returns but the effect of Investor Attention is more in the case of liquidity it means that when a stock receive more investor attention investors tend to trade the stock with accelerating frequency. Returns and volatility are effected by investor attention, it suggest that when investor pay more attention to particular stock it doesn't means that the attention is due to its profitability or volatility.

Table 1 List of stocks in the sample and search queries

Sr#	Companies Name	Stock Ticker	Search Query	Sr#	Companies Name	Stock Ticker	Search Query
1	Adamjee Ins.XD	AICL	"adamjee insurance"	22	National Bank.	NBP	"national bank"
2	Allied BankXD	ABL	"allied bank limited"	23	National Refin XD	NRL	"national refinery"
3	Askari Bank Attock	AKBL	"askari bank"	24	Nestle Pak.SPOT Netsol Tech.	NESTLE	"nestle pakistan"
4	Cement Attock	ACPL	"attock cement"	25	XDXB	NETSOL	"netsol"
5	Petroleum Attock	APL	"attock petroleum"	26	Nishat (Chunian)XDXB	NCL	"nishat chunian"
6	RefineryXD	ATRL	"attock refinery"	27	Nishat PowerXD	NPL	"nishat power"
7	B.O.Punjab	BOP	"bank of punjab"	28	Oil & Gas Devel	OGDC	"ogdc"
8	Bank Al-Falah Bata	BAFL	"bank al falah"	29	P.S.O. XD	PSO	"pso"
9	(Pak)SPOT	BATA	"bata pakiatn"	30	P.T.C.L.A	PTC	"ptcl"
10	Century Paper Cherat	CEPB	"century paper"	31	Pace (Pak) Ltd.	PACE	"pace pakistan" "pakistan"
11	CementXD Fauji	CHCC	"cherat cement"	32	Pak Petroleum	PPL	"petroleum"
12	CementXD Faysal	FCCL	"fauji cement"	33	Pak Services Pak Suzuki	PSEL	"pakistan services" "pak suzuki"
13	BankSPOT Habib Bank	FABL	"faysal bank"	34	Motor	PSMC	"motors"
14	LtdSPOTXD	HBL	"hbl"	35	Pak TobaccoXD Shell Pakistan	PAKT	"pakistan tobacco"
15	ICI Pakistan Kohat	ICI	"ici pakistan"	36	Ltd. Shifa Int.Hosp	SHEL	"shell"
16	CementXDXB Kohinoor	KOHC	"kohat cement" "kohinoor textile"	37	XD	SHFA	"shifa"
17	Textile Lucky Cement	KTML	"mills"	38	Siemens Pakistan	SIEM	"siemens pakistan" "standard"
18	XD Maple Leaf	LUCK	"lucky cement" "maple leaf"	39	St.Chart.BankXD	SCBPL	"chartered"
19	Cement MCB Bank	MLCF	"cement"	40	Sui North Gas TRG Pakistan	SNGP	"sngpl"
20	Ltd. Meezan Bank	MCB	"mcb"	41	Ltd.	TRG	"trg"
21	Ltd.XD	MEBL	"meezan bank"	42	United BankXD	UBL	"united bank"

Table 2 Unit root tests on Turnover Returns Volatility and GSV

stocks	Turnover		Returns		Volatility		GSV	
	t-Stats	P-Value	t-Stats	P-Value	t-Stats	P-Value	t-Stats	P-Value
AICL	-3.511	0.0119	-8.48368	0.0000	-4.41208	0.0010	-5.18484	0.0001
ABL	-4.464	0.0008	-7.74367	0.0000	-3.91823	0.0040	-4.49484	0.0007
AKBL	-3.049	0.0376	-8.15957	0.0000	-3.97912	0.0034	-3.20389	0.0260
ACPL	-3.949	0.0036	-7.94602	0.0000	-4.85803	0.0003	-5.15953	0.0001
APL	-2.931	0.0493	-8.20006	0.0000	-4.71654	0.0004	-5.00334	0.0001
ATRL	-4.21	0.0017	-7.93353	0.0000	-4.78707	0.0003	-4.99829	0.0002
BOP	-3.657	0.0082	-7.97323	0.0000	-3.64792	0.0085	-4.95558	0.0002
BAFL	-3.696	0.0073	-8.18108	0.0000	-3.71785	0.0070	-4.93248	0.0002
BATA	-17.99	0.0000	-4.28949	0.0014	-7.76625	0.0000	-5.37058	0.0000
CEPB	-2.12	0.2362	-7.5355	0.0000	-8.6368	0.0000	-4.9633	0.0002
CHCC	-2.92	0.0508	-7.8014	0.0000	-4.2062	0.0018	-4.0727	0.0025
FCCL	-1.98	0.2925	-7.9395	0.0000	-3.4831	0.0130	-2.0359	0.2710
FABL	-3.71	0.0070	-8.06507	0.0000	-4.49287	0.0008	-5.9405	0.0000
HBL	-3.189	0.0269	-4.88883	0.0002	-8.29139	0.0000	-4.13218	0.0021
ICI	-3.317	0.0196	-8.11935	0.0000	-8.2131	0.0000	-4.08704	0.0026
KOHC	-0.14	0.9387	-8	0.0000	-3.4254	0.0151	-3.5877	0.0097
KTML	-2.932	0.0493	-9.38139	0.0000	-8.19302	0.0000	-4.3063	0.0013
LUCK	-3.008	0.0414	-8.43506	0.0000	-3.9005	0.0042	-5.58844	0.0000
MLCF	-2.06	0.2615	-9.2486	0.0000	-3.4981	0.0125	-7.3265	0.0000
MCB	-3.141	0.0302	-8.10795	0.0000	-4.73773	0.0004	-4.74675	0.0004
MEBL	-7.95	0.0000	-7.7852	0.0000	-4.529	0.0007	-1.5062	0.5212
NBP	-3.42	0.0153	-7.7677	0.0000	-8.2472	0.0000	-1.0688	0.7200
NRL	-2.706	0.0806	-8.18252	0.0000	-4.42603	0.0010	-3.12138	0.0317
NESTLE	-4.405	0.0009	-8.21907	0.0000	-4.61597	0.0005	-2.94451	0.0479
NETSOL	-5.24	0.0001	-8.9676	0.0000	-4.5481	0.0007	-1.9751	0.2965
NCL	-3.237	0.0239	-7.64976	0.0000	-8.32995	0.0000	-6.52849	0.0000
NPL	-2.53	0.1150	-8.216	0.0000	-4.6531	0.0005	-6.5723	0.0000
OGDC	-1.98	0.2925	-7.9395	0.0000	-3.4831	0.0130	-2.0359	0.2710
PSO	0.602588	0.9882	-7.9004	0.0000	-3.8913	0.0044	-1.8921	0.3331
PTC	-3.82	0.0052	-7.8984	0.0000	-4.8859	0.0002	-2.3242	0.1689
PACE	-4.916	0.0002	-7.31777	0.0000	-7.2529	0.0000	-2.92776	0.0497
PPL	-3.705	0.0071	-8.86145	0.0000	-7.87531	0.0000	-1.79075	0.3805
PSEL	7.734881	1.0000	-7.7417	0.0000	-4.9929	0.0002	-1.2406	0.6491
PSMC	-4.365	0.0011	-8.23041	0.0000	-7.95315	0.0000	-3.43871	0.0144
PAKT	-3.092	0.0340	-3.54672	0.0111	-8.05154	0.0000	-3.75858	0.0061
SHEL	-2.8	0.0658	-9.0505	0.0000	-5.1604	0.0001	-1.915	0.3228
SHFA	-6.27	0.0000	-8.0231	0.0000	-5.1514	0.0001	-2.4058	0.1458
SIEM	1.696488	0.9995	-7.6456	0.0000	-8.6044	0.0000	-3.0061	0.0416
SCBPL	-5.14	0.0001	-8.5033	0.0000	-4.6503	0.0005	-1.207	0.6639
SNGP	-1.3	0.6227	-7.8534	0.0000	-4.7179	0.0004	-3.9811	0.0033
TRG	-3.58	0.0099	-7.6064	0.0000	-4.315	0.0013	-0.9018	0.7768
UBL	-3.71	0.0070	-4.94033	0.0002	-8.12874	0.0000	-4.70634	0.0004

Table 3(continued) Descriptive statistics of Turnover Returns Volatility and GSV

Turnover					
stocks	Mean	Jarque-Bera	Kurtosis	Skewness	Std. Dev.
AICL	798063.0	14.33063	4.059018	1.229207	708917.2
ABL	176629.5	25.75995	4.642567	1.595458	169573.0
AKBL	0.400179	6.182611	2.437698	0.832935	0.013684
ACPL	80292.09	3.514641	2.412158	0.594088	54703.09
APL	102259.3	134.4750	9.695050	2.367160	118550.6
ATRL	1188495.	11.88431	4.075774	1.093716	643140.8
BOP	4225349.	55.86246	6.312172	2.059171	5046376.
BAFL	3265016.	9.753648	3.208549	1.099242	2212156.
BATA	1526.392	3095.145	40.39499	6.107113	4691.242
CEPB	147797.9	43.93824	6.113907	1.751621	154041.0
CHCC	292133.4	23.13941	4.726317	1.465395	377468.9
FCCL	6183904.	12.68649	3.208244	1.254978	8194501.
FABL	439763.6	969.6128	23.34101	4.214548	734188.9
HBL	220996.9	20.15008	4.397005	1.425080	190321.9
ICI	179792.7	16.98338	4.103538	1.348508	176591.4
KOHC	229826.5	177.8458	11.00833	2.489457	253693.3
KTML	184150.5	25.48729	4.674341	1.576406	234232.8
LUCK	1552636.	12.83654	4.083625	1.144992	880830.9
MLCF	3379325.	12.46701	3.024716	1.248288	4598190.
MCB	864813.8	12.24451	3.594516	1.200917	524456.8
MEBL	146550.1	46.05376	6.254205	1.763309	113126.4
NBP	4033543.	20.78474	4.555395	1.411835	2647161.
NRL	140764.1	5.960986	2.607678	0.840621	93482.21
NESTLE	618.3645	52.36149	6.164350	2.010450	763.3882
NETSOL	711833.8	12.98621	3.841205	1.202651	493543.4
NCL	1667289.	29.36292	5.394323	1.495717	1588355.
NPL	840752.3	86.27298	7.689961	2.298954	910211.3
OGDC	6183904.	12.68649	3.208244	1.254978	8194501.
PSO	1256756.	275.3139	12.99857	3.069426	1577078.
PTC	5429660.	35.01185	5.538502	1.662974	5372380.
PACE	2015344.	35.89145	5.501792	1.709296	2103527.
PPL	998811.5	57.98809	6.812737	1.901123	758312.1
PSEL	1768.313	865.1203	21.84630	4.398211	6066.590
PSMC	59417.97	18.11810	4.344133	1.346510	50159.76
PAKT	17095.90	5.758856	2.977117	0.848367	14674.92
SHEL	72412.33	243.4937	12.50914	3.025581	117742.4
SHFA	4846.941	110.2998	8.573247	2.454018	6779.693
SIEM	3268.185	3279.051	41.52353	6.234239	13661.35
SCBPL	82341.81	2818.694	38.62795	5.915997	233031.4
SNGP	1005247.	61.56525	6.610473	2.106366	1482762.
TRG	4168846.	26.77990	4.839025	1.581766	4573417.
UBL	897092.1	2.618096	2.656933	0.545746	525840.8

Table 3 (continued) b Descriptive statistics of Turnover Returns Volatility and GSV Returns

stocks	Mean	Jarque-Bera	Kurtosis	Skewness	Std. Dev.
AICL	0.200114	7.628205	2.740274	0.967813	0.020234
ABL	0.199809	6.997954	2.521156	0.904114	0.019917
AKBL	0.200079	7.503071	2.506552	0.936489	0.019697
ACPL	0.199552	6.104271	2.553403	0.844495	0.019670
APL	0.199752	8.143460	2.636549	0.992426	0.019582
ATRL	0.198996	6.387857	2.577179	0.868209	0.020611
BOP	0.199682	5.924215	2.731796	0.850026	0.021021
BAFL	0.199154	7.037443	2.606191	0.917011	0.019886
BATA	0.199492	3.361790	2.475807	0.592899	0.021489
CEPB	0.198831	6.257811	2.756183	0.875994	0.020424
CHCC	0.198649	5.215287	2.576114	0.779096	0.020465
FCCL	0.199491	5.935432	2.432216	0.813225	0.020629
FABL	0.200169	5.099386	2.431908	0.746151	0.019967
HBL	0.199654	6.833408	2.673340	0.909670	0.019763
ICI	0.199597	7.139529	2.532590	0.915327	0.019702
KOHC	0.197979	6.443223	2.552928	0.869157	0.021224
KTML	0.198717	5.075302	2.372671	0.732139	0.020200
LUCK	0.198762	7.110066	2.551909	0.915730	0.019828
MLCF	0.198436	6.555235	2.595129	0.882284	0.021116
MCB	0.199376	6.961021	2.549129	0.905155	0.020167
MEBL	0.198932	6.626990	2.483107	0.872685	0.019414
NBP	0.200237	6.116240	2.716428	0.862802	0.020630
NRL	0.199852	6.619954	2.393432	0.857621	0.019738
NESTLE	0.198506	6.765248	2.701437	0.907398	0.019497
NETSOL	0.199566	6.671003	2.615239	0.892673	0.020055
NCL	0.198249	5.391170	2.489310	0.780189	0.020096
NPL	0.198732	6.635325	2.494309	0.874920	0.020057
OGDC	0.199491	5.935432	2.432216	0.813225	0.020629
PSO	0.200030	6.719364	2.580257	0.892118	0.020854
PTC	0.199465	7.076774	2.736439	0.931252	0.020413
PACE	0.198460	2.725151	2.768954	0.572100	0.021640
PPL	0.199613	6.115624	2.441682	0.828567	0.019662
PSEL	0.199380	5.422774	2.789443	0.816556	0.020988
PSMC	0.199636	7.617887	2.701348	0.964333	0.019517
PAKT	0.199603	4.390212	2.528386	0.702262	0.020983
SHEL	0.200458	5.861802	2.357655	0.813284	0.019675
SHFA	0.199719	6.996694	2.888667	0.933535	0.019999
SIEM	0.200345	4.040696	2.679999	0.692450	0.019393
SCBPL	0.198775	7.835403	2.673002	0.976060	0.018637
SNGP	0.199765	6.395425	2.536120	0.863500	0.020804
TRG	0.197490	5.817292	2.597165	0.828609	0.021002
UBL	0.199324	7.387635	2.582010	0.937963	0.019408

Table 3 (continued) Descriptive statistics of Turnover Returns Volatility and GSV

Volatility					
stocks	Mean	Jarque-Bera	Kurtosis	Skewness	Std. Dev.
AICL	0.400098	6.309905	2.426275	0.840505	0.013527
ABL	0.400100	6.554987	2.522109	0.873086	0.013403
AKBL	32.37813	36.38106	5.907839	1.560049	9.307300
ACPL	0.400335	7.403876	2.639383	0.944973	0.013616
APL	0.400056	6.601297	2.513587	0.875221	0.013614
ATRL	0.400647	7.081592	2.765791	0.933534	0.013444
BOP	0.400771	5.009316	2.397413	0.731701	0.013358
BAFL	0.400526	6.736464	2.490513	0.881569	0.013630
BATA	0.400536	5.930011	2.649770	0.842963	0.013439
CEPB	0.400897	6.196487	2.361763	0.820198	0.013443
CHCC	0.401196	5.884432	2.605540	0.834658	0.013876
FCCL	0.400639	6.184556	2.578049	0.853557	0.013546
FABL	0.400195	8.661856	2.749148	1.032957	0.013647
HBL	0.400190	6.341078	2.503755	0.855026	0.013526
ICI	0.400215	6.275320	2.477183	0.846215	0.013562
KOHC	0.401439	5.004783	2.445991	0.740855	0.013473
KTML	0.401813	7.482505	2.881898	0.965311	0.014324
LUCK	0.400618	6.863684	2.555113	0.899155	0.013544
MLCF	0.401659	10.51835	3.600266	1.106668	0.014239
MCB	0.400341	6.653927	2.509305	0.878377	0.013302
MEBL	0.400626	6.733926	2.543992	0.888682	0.013856
NBP	0.400180	6.240506	2.522218	0.850291	0.013333
NRL	0.400107	7.030653	2.623153	0.918329	0.013632
NESTLE	0.400892	6.690737	2.480487	0.876852	0.013924
NETSOL	0.400555	5.334575	2.384576	0.756396	0.013819
NCL	0.401213	7.577511	2.622281	0.954736	0.013750
NPL	0.400711	7.072009	2.656924	0.924433	0.013533
OGDC	0.400639	6.184556	2.578049	0.853557	0.013546
PSO	0.399985	6.262872	2.516436	0.851117	0.013048
PTC	0.400466	5.933476	2.376144	0.802736	0.013357
PACE	0.402225	5.116258	2.237135	0.702881	0.014005
PPL	0.400150	7.469731	2.571815	0.942274	0.013473
PSEL	0.400536	5.789653	2.431267	0.801774	0.013267
PSMC	0.400257	5.761346	2.378033	0.789593	0.013830
PAKT	0.400318	6.117149	2.485753	0.835782	0.013245
SHEL	0.400280	6.643007	2.524768	0.900010	0.013857
SHFA	0.400456	7.550393	2.829341	0.967739	0.013708
SIEM	0.400037	7.167419	2.569452	0.921729	0.014103
SCBPL	0.400990	6.631872	2.582034	0.886177	0.014261
SNGP	0.400289	6.617363	2.605072	0.887794	0.013241
TRG	0.402752	9.640495	3.353319	1.083445	0.014717
UBL	0.400370	6.278017	2.475078	0.846089	0.013687

Table 3 (continued) Descriptive statistics of Turnover Returns Volatility and GSV

stocks	Mean	Jarque-Bera	Kurtosis	Skewness	Std. Dev.
AICL	36.85104	11.36793	4.487799	-0.93145	12.93061
ABL	13.18542	9.008738	3.722690	-0.99776	5.473077
AKBL	1051040.	20.42869	4.452097	1.423531	928063.3
ACPL	34.31250	137.2062	10.01643	2.200726	14.71742
APL	4.375000	2.424873	2.662347	0.524029	1.423586
ATRL	40.33333	2.016052	2.031539	0.132391	9.001970
BOP	2.595833	76.67181	7.575705	2.085595	2.381262
BAFL	25.38958	6.702364	3.765184	-0.83152	10.56892
BATA	34.84792	18.76393	5.943098	0.424305	8.365424
CEPB	30.17813	1.587797	3.246190	0.428162	5.383801
CHCC	32.45833	4.884897	3.370832	0.759100	8.530193
FCCL	21.97917	27.11752	4.622415	1.652765	22.08830
FABL	17.95000	21.48438	5.146479	1.238428	8.396954
HBL	25.05833	142.6060	10.32403	2.101283	5.771199
ICI	24.91667	79.17814	7.790870	2.039402	18.06705
KOHC	47.04167	2.913394	3.311204	-0.58306	21.59783
KTML	43.14583	34.16342	5.874894	1.484646	14.84529
LUCK	29.65104	55.62798	7.271287	1.546779	11.85419
MLCF	50.37500	6.449125	3.851460	0.790503	14.46290
MCB	35.50625	6.778124	2.519921	0.888621	16.52799
MEBL	27.46771	16.31411	4.121316	1.313365	10.59248
NBP	17.55417	6.990004	2.913326	0.933741	9.538722
NRL	34.72813	1.792196	2.499237	0.401664	6.183763
NESTLE	48.50000	0.648299	2.467855	0.101207	9.056219
NETSOL	22.82500	2.993825	1.988137	0.343892	3.483563
NCL	64.85417	0.224745	2.753980	0.113849	15.10388
NPL	36.35625	12.44227	4.906851	0.803905	6.970635
OGDC	21.97917	27.11752	4.622415	1.652765	22.08830
PSO	26.74583	11.65161	3.814548	1.136037	14.62348
PTC	46.26458	13.30284	4.007473	1.187057	16.87485
PACE	20.54167	11.05727	4.584557	-0.86859	5.757357
PPL	4.566667	453.9470	16.27675	3.560246	1.992655
PSEL	25.24583	8.964167	2.761637	1.051816	11.60573
PSMC	24.94479	6.601326	4.645006	0.385558	13.40089
PAKT	21.75208	5.628243	4.090535	0.637349	5.919261
SHEL	20.18370	33.52590	5.758060	1.572011	10.06510
SHFA	64.76458	18.09588	4.822447	-1.19652	15.48638
SIEM	34.52604	1.335962	2.427803	0.291793	9.040300
SCBPL	43.91042	2.667205	3.881789	0.372844	14.08257
SNGP	16.22500	20.47864	5.689054	0.867224	5.519424
TRG	4.550000	87.55416	8.179401	2.058573	4.163928
UBL	3.637500	29.76155	5.735032	1.360182	2.802668

Table 4 Least square regression on turnover, returns volatility and GSV

stocks	Turnover				Returns			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
AICL	-11575.3	7901.242	-1.46499	0.1497	5.93E-05	0.000231	0.257391	0.798

ABL	-13672.7	4099.338	-3.33535	0.0017***	0.00022	0.000536	0.411152	0.6829
AKBL	18617.73	14443.41	1.289012	0.2038	0.000135	0.000311	0.432633	0.6673
ACPL	967.1147	529.1501	1.827676	0.0741*	-5.8E-05	0.000197	-0.29218	0.7715
APL	11610	12158.47	0.95489	0.3446	0.001525	0.002016	0.756377	0.4533
ATRL	8370.735	10461.36	0.800158	0.4277	-0.00034	0.000334	-1.00527	0.32
BOP	-196722	311110.2	-0.63232	0.5303	0.001868	0.001272	1.468254	0.1488
BAFL	-1.5E-05	0.000277	-0.05261	0.9583	-1.5E-05	0.000277	-0.05261	0.9583
BATA	-180.037	78.30704	-2.29911	0.0261**	-0.00071	0.000364	-1.95713	0.0564*
CEPB	5101.7	1417.1	3.6	0.001***	-0.00049	0.000555	-0.88308	0.3818
CHCC	8331.7	4316.8	1.9301	0.06	0.000464	0.000347	1.338283	0.1874
FCCL	83666.4	133637.7	0.62607	0.534	0.005925	0.003567	1.6611	0.104
FABL	-9696.2	12812.09	-0.7568	0.453	0.000445	0.000344	1.292561	0.2026
HBL	-1415.87	4857.841	-0.29146	0.772	8.16E-05	0.000505	0.161679	0.8723
ICI	3692.251	1334.351	2.767075	0.0081***	1.62E-06	0.000161	0.010079	0.992
KOHC	4733.6	1035.8	4.5699	0***	5.74E-05	0.000145	0.397187	0.6931
KTML	-6.4E-05	0.0002	-0.31824	0.7517	-1047.37	2321.247	-0.45121	0.654
LUCK	12542.34	10798.54	1.161484	0.2514	-1.3E-05	0.000247	-0.05147	0.9592
MLCF	59464	51490.1	1.1549	0.254	-0.00026	0.000212	-1.22613	0.2264
MCB	18157	3836.912	4.732192	0***	0.000102	0.000179	0.568786	0.5723
MEBL	7296.3	12000.5	0.608	0.546	0.006053	0.002358	2.5665	0.014*
NBP	149538.7	60982.9	2.4521	0.018**	0.005405	0.009985	0.54129	0.591
NRL	-390.525	2228.19	-0.17527	0.8616	-0.00025	0.000469	-0.53254	0.5969
NESTLE	-3.56318	12.41742	-0.28695	0.7754	0.000288	0.000315	0.914697	0.3651
NETSOL	27850.3	2886.2	9.6496	0***	0.007798	0.001595	4.8898	0***
NCL	22531.7	15145.23	1.48771	0.1437	8.38E-05	0.000196	0.428194	0.6705
NPL	24714.7	9071.6	2.7244	0.009***	-9.2E-05	0.000424	-0.21649	0.8296
OGDC	19442.6	8177	2.3777	0.022	0.005272	0.000815	6.4687	0***
PSO	46329.8	41542	1.1153	0.271	0.00492	0.003808	1.2921	0.203
PTC	-49.5399	120.5612	-0.41091	0.683	0.003971	0.000717	5.5417	0***
PACE	6080.984	53862.43	0.112898	0.9106	-0.00025	0.000553	-0.44981	0.655
PPL	-88659.8	54565.58	-1.62483	0.111	-0.00098	0.001448	-0.67811	0.5011
PSEL	-49.5399	120.5612	-0.41091	0.683	0.006197	0.002525	2.4544	0.018**
PSMC	913.6336	535.1849	1.707136	0.0945*	0.000315	0.00021	1.504234	0.1394
PAKT	-87.4755	365.3076	-0.23946	0.8118	-5.4E-05	0.000523	-0.10287	0.9185
SHEL	3001.9	2325.9	1.2906	0.204	-9.4E-05	0.000168	-0.55576	0.5811
SHFA	74.4628	11.5945	6.4222	0***	0.002932	0.000232	12.6265	0***
SIEM	72.775	55.1685	1.3191	0.194	0.000289	0.000313	0.921657	0.3615
SCBPL	52723.7	26606.6	1.9816	0.054*	0.004063	0.000806	5.0403	0***
SNGP	1077.5	1000	1.0774	0.287	-0.0002	0.000555	-0.36696	0.7153
TRG	420759.8	416898.9	1.0093	0.318	0.024499	0.02134	1.1481	0.257
UBL	-35524.2	27162.9	-1.30782	0.1974	0.000505	0.001018	0.496258	0.6221

Table 4 (continued) Least square regression on turnover, returns volatility and GSV

Volatility				
Stocks	Coefficient	Std. Error	t-Statistic	Prob.
AICL	3.38E-05	0.000154	0.219401	0.8273
ABL	0.000144	0.00036	0.400146	0.6909
AKBL	0.000242	0.000214	1.132841	0.2632
ACPL	-4.2E-05	0.000136	-0.31125	0.757
APL	0.000545	0.001408	0.387282	0.7003
ATRL	-0.00029	0.000216	-1.32468	0.1918
BOP	0.001206	0.000808	1.493037	0.1423
BAFL	-56129.3	29730.39	-1.88795	0.0654*
BATA	-0.00024	0.000234	-1.01129	0.3172
CEPB	-0.00026	0.000366	-0.70552	0.484
CHCC	0.000385	0.000233	1.653412	0.1051
FCCL	0.010059	0.019492	0.51603	0.608
FABL	0.000469	0.000229	2.045197	0.0466**
HBL	5.62E-05	0.000345	0.16275	0.8714
ICI	-2.2E-05	0.000111	-0.20268	0.8403
KOHC	4.66E-05	9.17E-05	0.508225	0.6137
KTML	-0.00016	0.00014	-1.13715	0.2614
LUCK	2.37E-05	0.000168	0.140727	0.8887
MLCF	-6.4E-05	0.000145	-0.441	0.6613
MCB	6.09E-05	0.000118	0.514289	0.6095
MEBL	0.010651	0.013132	0.81112	0.422
NBP	0.033164	0.075047	0.44191	0.661
NRL	-4.1E-05	0.000325	-0.12696	0.8995
NESTLE	0.000312	0.000222	1.407141	0.1661
NETSOL	0.019682	0.017356	1.134	0.263
NCL	0.000205	0.000131	1.571222	0.123
NPL	4.36E-05	0.000286	0.152325	0.8796
OGDC	0.010838	0.00215	5.041	0***
PSO	0.007283	0.030967	0.2352	0.815
PTC	0.007809	0.003429	2.2775	0.028**
PACE	0.000239	0.000357	0.66872	0.507
PPL	-0.00053	0.000994	-0.52885	0.5995
PSEL	0.010631	0.019709	0.53941	0.592
PSMC	0.000246	0.000148	1.665788	0.1026
PAKT	3.97E-05	0.00033	0.120333	0.9047
SHEL	-5.3E-05	0.00012	-0.43974	0.6622
SHFA	0.005934	0.000747	7.9395	0***
SIEM	0.000225	0.000228	0.989697	0.3275
SCBPL	0.007977	0.004047	1.9711	0.055
SNGP	1.09E-05	0.000354	0.030794	0.9756
TRG	0.048462	0.10206	0.47484	0.637

UBL 0.000308 0.000719 0.428654 0.6702

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