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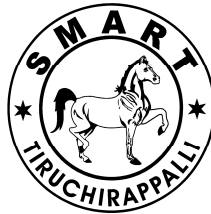
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EQUITY MARKET VOLATILITY -A COMPREHENSIVE STUDY ON SELECTED COUNTRIES WORLD WIDE

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Abstract

The equity market is the measure to identify the strength or weakness of any economy and the ups and downs in the market results in upward or downward spiral of the market capitalization in terms of billions. It is worthwhile to study in depth the reasons for such a volatility in the Equity Market. While going into the study of volatility in the Equity Market, factors that influence the volatility would give a more realistic picture surrounding such volatility. This study takes into account two such major factors and tends to arrive at the correlation of the factors to the volatility in the market. The two factors taken into consideration in this study come under institutional arrangement viz., Investors' Protection and Transparency Level. The study was conducted with respect to 55 countries across the globe.

Key Words - Market Volatility, Investors Protection, Transparency Level.

1.0 Introduction

In today's emerging economies, Equity Market plays a vital role. But only a small percentage of the literate community dares to venture into the Equity Market. The major concern for all the investing groups like the Individual Investors, Institutional Investors and also the Foreign Investors, is the inherent risk involved in the Equity Market. The risk is due to the volatility of the Equity Market. The market reacts to anything and everything. The market reacts right after a natural calamity happening in one corner of the globe, to the political situations or overtones of a political leader of that particular country. The market is even influenced by the exchange rate of that particular currency, reacts at the will of the Bull/Bear cartel working overtime and also the spillover

investment from a particular zone to the other areas. We can go on counting the reasons for the reactions and the resulting volatility. Volatility in Equity Market refers to the amount of uncertainty or risk about the size of changes in a security's value.

Based on extant literature review, the major factors that are supposedly effecting volatility in an Equity Market are: Investors' Trade, Exchange Rate, Stock Market Liberalisation, Major Political Changes etc. Existing literature records very limited analysis on the role played by institutional arrangements and its impact on the volatility of equity markets. Hence the purpose of this study is to identify the impact of Institutional Arrangements on equity market Volatility.

Institutional arrangements will be analysed from the following perspectives:

- ♦ Investors Protection - which will be further analysed in terms of Extent of Disclosure Index (EDI), Extent of Director Liability Index (EDLI), Ease of Shareholder Suits Index (ESSI).
- ♦ Transparency - which will be proxied by Corruption Index (CI).

Since the Equity Market of any country is very much affected by the respective country's Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Inflation Rate (IR) and Interest Rate (IRR), these variables have been identified and used as control variables in this study.

The main objectives of this study are

- 1) To identify the difference in the level of equity market volatility in the developing, developed and undeveloped markets.
- 2) To identify the impact of investors' protection on the volatility of equity markets.
- 3) To identify the impact of transparency levels on the volatility of equity markets.

2.0 Literature Review

Bae, K.H et al., (2008) examined the relationship between market volatility and investor trades, by identifying the supplies and demands in market on the Tokyo Stock Exchange. Because the different trading patterns of various investor types such as individual investors, institutional investors, and foreign investors affect market liquidity differently, they found that market volatility is significant and different for different investor types in trade. Similar studies were undertaken by Choe, Kho, and Stulz (1999) in the Korean Market; Richards (2005) in six Asian emerging markets; Karolyi (2002) and Kamesaka, Nofsinger, and Kawakita (2003).

Daigler and Wiley (1999) examined the volatility-volume relation in the futures market

and found that volatility is more sensitive to the trades of individual speculators and small hedgers rather than to the trades of floor traders.

In addition to investor trades, S. Jayasurya (2005) examined the effect of stock market liberalization on stock return volatility for eighteen emerging markets and found that there was no specific correlation between the liberalization and stock return volatility. He linked post-liberalization volatility with market characteristics and quality of institutions. Interestingly, countries that experienced lower post-liberalization volatility are in general characterized by favorable market characteristics such as higher market transparency and investor protection and better quality of institutions such as a higher regard for rule of law and lower levels of corruption.

Tatsuyoshi Miyakoshi (2002) examined the magnitude of return and volatility spillovers from Japan and the US to seven Asian equity markets. The study emphasizes that only the influence of the US is important for Asian market returns and there is no influence from Japan. But, the volatility of the Asian market is influenced more by the Japanese market than by the US and also that there exists an adverse influence of volatility from the Asian market to the Japanese market.

Jirasakuldech B., Dudney D.M., Zorn T.S., Geppert J.M. (2011) examined the relationship between financial opacity, investor protection and stock market behavior for sixteen countries using the 1995 CIFAR Corporate Disclosure Ratings and the 2006 World Bank Investor Protection Index to measure a country's relative level of financial transparency and legal protection for investors and results show no significant differences between high and low disclosure countries. However, high disclosure countries appear to be associated with a lower level of stock market volatility.

Monica Billio and Lorian Pelizzon (2003) analyzed whether deregulation, globalization, recent financial crises, the convergence of European economies and the introduction of the Euro have produced some effects on the return distribution of the world market index and on the volatility spillover from the world index to European stock markets. Using multivariate switching regime models, they had tested these issues for the world equity index and some European capital market indices and suggested that in the last 5 years, the world index volatility has increased as has the idiosyncratic German risk factor. Moreover, the volatility spillovers from both the world index and the German market have increased after the EMU for most European stock markets.

Jussi Nikkinen, Mohammad M. Omran, Petri Sahlström, Janne Aijo (2006) studied whether September 11 attacks mattered, if not, why not? As the globalization has integrated financial markets, the magnitude of the effect of the September 11 attacks on global markets was expected to be pervasive. They used data from 53 equity markets to investigate the short term impact of the September 11 attacks on markets' returns and volatility and their findings indicate that the impact of the attacks resulted in significant increases in volatility across regions and over the period. However, stock returns experienced significant negative returns in the short-run but recovered quickly afterwards. The impact of the attacks on financial markets varied across regions.

Yji Cai, Ray Yeutien Chou b, Dan Li (2009) have investigated the dynamic correlations among six international stock market indices and their relationship to inflation fluctuation and market volatility. Their findings reveal that international stock correlations are significantly time-varying and the evolution among them was related to cyclical fluctuations of inflation rates and stock volatility. The higher/lower correlations emerged between countries

when both countries experienced a contraction/expansion phase or higher/lower volatilities.

Juncal Cunado Eizaguirre, Javier Gomez Biscarri, Fernando Perez de Gracia Hidalgo (2004) reviewed the factors that led to changes in stock market volatility of the Spanish Stock Market which had changed significantly over the period 1941-2001, the period which corresponds to years of profound development of both the financial and the productive sides of the economy in that country. The analysis of the Spanish Stock Market suggests that volatility had behaved in a varying manner over the period 1941-2001. After three decades of low volatility, a structural break in volatility was detected in 1972, coinciding with the opening of the Spanish economy. From 1972 to 2001, the years of more intense financial development, the stock market presents a higher level of volatility and lower persistence. This effect was partly attributable to the increased growth of trading volume brought about by the economic development process.

Mark and Mingyi (2004) defined investor protection as the extent of the laws that protect investor rights and the strength of the legal institutions that facilitate law enforcement. Since mandatory disclosure of information and liability standards against issuers, accountants, directors and distributors are very important for the development of a capital market, the investors protection level enforced by a country is very important (La Porta et al., 2006). The studies of La Porta, Lopez de Silanes, Shleifer and Vishny (LLSV, 1997, 1998, 2000 and 2002) show that countries offering better investor protection have larger equity and debt markets. Mitton (2002), Claessens et al. (2002) and LLSV (2002) found a clear relationship between investor protection and corporate valuation.

Jan Barton and Gregory Waymire (2004) examined whether availability of higher quality financial information lessens investor losses during a period seen as a stock market crash. The result shows that firms with higher

quality financial reporting experienced smaller stock price declines during the market crash. Alexander Kurov (2010) showed that investor sentiment also plays a significant role in the effect of monetary policy on the stock market.

Though there are several studies looking into the factors affecting volatility in an equity market, very minimal study focuses on the impact of institutional arrangement (investor's protection & transparency levels) on the equity market volatility. This study attempts to identify the effect of investors' protection with respect to the variables like Extent of Disclosure Index (EDI), Extent of Director Liability Index (EDLI), Ease of Shareholder Suits Index (ESSI) on the volatility of equity markets.

Statement of the Problem

The equity market forms the back bone of any economy as it draws the necessary investment for growth. It also normally showcases the strength and weakness of the economy of the country, based on the market capitalization. Such an important arm of the economy has a very major disadvantage for retail investors. At this stage, it becomes imperative to study from an angle that has not been dealt with by the earlier studies. Hence the Authors chose to study the correlation between equity market volatility and the institutional arrangements, represented by two factors- Investors' Protection and Transparency.

The primary aim of this research is to elicit answers for the following Research Questions:

1. Do the the developing, developed and undeveloped equity markets have different levels of volatility?
2. Does Investors Protection have an impact on the volatility of an equity market in the selected countries?
3. Does Transparency Level (proxied by Corruption Perception Index) have an impact on the volatility of equity markets in the selected countries ?

3.0 Methodology

Data for this study were obtained mainly from OSIRIS, CEIC and EMIS on selected 55 countries from Asia Pacific, Organization for Economic Co-operation and Development (OECD) and Organization of Islamic Co-operation Countries (OIC) based on the data availability. The data used for the study covered a period of five years from 2006 -2010.

There are two main independent variables, i.e., Investors' Protection and Transparency Level. Investors' Protection will be analyzed from the following perspectives; - EDI, EDLI, ESSI, CPI while Transparency Levels will be represented by Corruption Perception Index. These indices were obtained from the World Bank Website. The dependent variable was the market volatility in the countries studied, which was obtained based on the standard deviation of the daily closing indices of the respective countries. To ensure robustness of the study, the following control variables were identified; Foreign Direct Investment Inflows, Interest Rate (Lending Rate), GDP and Inflation Rate. The Maximum Likelihood Estimation (MLE) and the AMOS software were used for the study to arrive at the conclusion.

4.0 Data Analysis and Discussion

This study analyses the impact of Investors' Protection and Transparency Levels on fifty five countries from 2006-2010. The dependent variable was the volatility in the market indices while independent variables were the Investor Protection Indices (EDI, EDLI, ESSI) and the Transparency Index (proxied by Corruption Perception Index). **Table -1** depicts the descriptive statistics for the sample used.

Based on the results presented in **Table -1**, some differences were identified in the equity market volatility between the developing, developed and undeveloped countries, over the years. For all years compared, the developing countries registered

the highest volatility, followed by the developed countries while the undeveloped countries recorded the least volatility. Equality of variance assumption was not met during the study period. Thus, decision was made based on nonparametric tests based on ranking. Results are shown in **Table- 2**. From 2006 to 2010, the equity market volatility for developing countries was significantly higher compared to the developed countries. During the period 2006 and 2010, the values among developing countries were higher compared to the developed countries. But in 2007, 2008 and 2009, equity market was more volatile in the developing countries compared to the undeveloped countries. Thus, it is inferred that the developing market experienced high volatility as compared to developed market during the study period.

In the following section, institutional arrangement factors, which may contribute towards the volatility in the equity market, were also identified and tested. Based on the results recorded in **Table- 3**, all the independent variables ((EDI, EDLI, ESSI and Corruption Perception Index) did not have any significant impact on the market volatility, as the p-values were more than 0.05. This suggests that Investors' Protection and Transparency Levels in a country did not have any impact on the volatility of the equity market. To further elaborate on the findings, a stepwise regression was done to identify if any of the above mentioned variables had influenced the market volatility but the results thus obtained, failed to establish any relationship.

As widely documented in academic literature, equity market of a country is very much dependent on the macro economic factors. As such, to enhance the robustness of this study, several economic indicators were used as control variables to further determine empirically the presence of any significant relationship between institutional arrangement (Investors' Protection and Transparency) and market

volatility. The macro economic variables used in this study were Interest Rate (IR), Inflation Rate (IFR), Foreign Direct Investments (FDI) and Gross Domestic Product (GDP). The results are documented in the Table.

As the results in **Table-4** indicate, Investors' Protection and Transparency Levels did not have any significant impact on the market volatility even after controlling macro-economic factors as independent variables as all the p-values were more than 0.05.

5.0 Conclusion

This study did not show any significant correlation between the investor protection indices and the market volatility. Even after giving credence to certain macroeconomic factors like Interest Rate Fluctuations, Inflation Rate and Foreign Direct Investment in the sample countries, the result shows that there was no significant correlation between the Equity Market Volatility and the Institutional Arrangements. One more interesting conclusion that could be drawn from the study is that in general, the equity market is more volatile in a developing economy than in a developed economy. The study also warrants further research from several other perspectives such as other proxies for investors' protection and transparencies and other variables which may have an impact on the volatility of equity market.

Scope for further research

Since none of the selected predictors proved to be significant, this study warrants further research to identify the main contributors of equity market volatility because a resilient market creates investors' confidence and high liquidity. This indicates that market volatility may be affected by other factors such as political conditions, investors behavior on the economic outlook (also known as investors' sentiments), world economic conditions, to mention a few. A highly volatile market is regarded as high risk, which could negatively impact any market. Against this background, it would also be

interesting to determine the correlation between volatility, investors' protection and transparency amongst countries with different economic status. Hence other factors must be considered to further understand the causes of market volatility.

References

- Bae, K.H., and Keiichi, T.Y., (2008). Interaction of investor trades and market volatility: Evidence from the Tokyo Stock Exchange, *Pacific-Basin Finance Journal* 16, 370-388
- Choe, H. K., and Stulz, R., (1999). Do foreign investors destabilize stock markets? The Korean experience in 1997, *Journal of Financial Economics* 54, 227-264
- Claessens, S., Djankov, S., Fan, J.P.H., and Lang, L.P.H., (2002). Dientangling the incentive and Entrenchment Effects of Large Shareholdings, *Journal of Fiance*, Vol. 57(6), 2741-2771
- Eizaguirre, J.C., Biscarri, J.G, and Hidalgo, C., (2004). Structural Changes in Volatility and Stock Market Development: Evidence for Spain, *Journal of Banking and finance* 28, 1745-1773
- Jayasuriya, S., (2005), Stock Market Liberalisation and volatility in the presence of favourable market characteristics and institutions of emerging markets *Review* 6, 170-191
- Kamesaka, A., Nofsinger, J.R., Kawakita, H., (2003). Investment patterns and performance of investor groups in Japan, *Pacific-Basin Finance Journal* 11,1-22
- Karolyi, G.A., (2002) Did the Asian Financial Crisis Scare Foreign Investors out of Japan? *Pacific Basin Finance Journal* 10, 411-442
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A. (2006), What works in securities Laws?, *Journal of Finance*, 61,1-32
- La Porta Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, (2002) Investor Protection and Corporate Valuation, *Journal of Finance* 57:3:1147-1170
- La Porta R., Lopez-de-Silanes, F., Shleifer A., Vishny, R., (1997), Legal determinants of external finance, *Journal of Fiance*, 52, 1131-1150
- La Porta R., Lopez-de-Silanes, F., Shleifer A., Vishny, R., (1998), Law and Finance, *Journal of Political Economy*, 1113-1155
- La Porta R., Lopez-de-Silanes, F., Shleifer A., Vishny, R., (2000), Agency Problems and Dividend Policies around the world, *Journal of Finance*, 55, 1-33
- La Porta R., Lopez-de-Silanes, F., Shleifer A., Vishny, R., (2000), Investor protection and Corporate Governance, *Journal of Financial Economics*, 58, 3-27
- Levis, M., (1993), The long run performance of Initial Public Offerings: The UK Experience 1980-1988, *Financial Management*, Vol.22, No.1 pp. 28-41
- Mark, D., Mingyi, H (2004), Investor Protection and Corportate Governance: Evidence from Worldwide CEO Turnover, *Journal of Accounting Research*
- Mitton, T., (2002), A cross-firm analysis of the impact of corporate governance on the East Asian Financial crisis, *Journal of Financial Economics* 64, 215-241
- Monica, B. A., and Lorian, P.B., (2003). Volatality and Stocks Spillover before and after EMU in European Stock Markets, *Journal of Multinational Financial Management* 13, 323-340
- Nikkinena, J., Omrnab, M.M., Sahlstomc, P., and Aijoa, J., (2008). Stock Return and Volatility following September 11 attacks: Evidence from 53 equity markets, *International review of Financial Analysis*, 17, 27-46
- Richards, A., (2005). Big fish in small ponds: The trading behaviour of Foreign Investors in Asian emerging equity markets, *Journal of Financial and Quantitative Analysis* 40, 1-27
- Tatsuyoshi Miyakoshi (2003), Spillovers of Stock Return Volatility to Asian Equity Markets from Japan and the US Int. *Financial Markets*, *Inst. And Money*, 13, 383-399
- Yijie Cai, A., Ray Yeutien Chou, B., Dan Lia, (2009), Explaining International Stock Correlations with CPI fluctuations and market volatility, *Journal of Banking and Finance* 33 2026-2035

Table -1**Descriptive Statistics For Volatility By Type Of Country From 2006 To 2010**

		N	Mean	Std. Deviation	Minimum	Maximum
S_2006	Undeveloped	15	301.6	563.9	3.7	2261.3
	Developing	20	1031.6	1298.1	32.3	4301.3
	Developed	20	236.1	281.1	20.9	1234.9
S_2007	Undeveloped	15	316.1	537.1	.0	1932.0
	Developing	20	1160.3	1325.0	79.6	4972.8
	Developed	20	371.2	776.9	20.6	3495.1
S_2008	Undeveloped	13	524.0	674.5	.0	2002.0
	Developing	20	1837.1	2152.0	155.6	7865.8
	Developed	20	694.0	962.2	65.9	4253.9
S_2009	Undeveloped	10	202.4	178.7	26.3	563.5
	Developing	20	1516.2	2400.5	113.2	9507.3
	Developed	20	490.6	864.8	31.9	3454.0
S_2010	Undeveloped	8	221.7	361.3	11.2	1076.8
	Developing	19	962.8	1382.1	81.9	5637.8
	Developed	20	177.9	284.9	11.1	1329.2

Source: Secondary Data

Table - 2**Non-Parametric Test Results Based On Ranking**

		Type	N	Mean Rank	p-value	Pair-wise difference
S_2006	Undeveloped	15	21.13	0.001	Developing> Developed	
	Developing	20	37.90			
	Developed	20	23.25			
S_2007	Undeveloped	15	20.73	<0.001	Developing> Undeveloped	
	Developing	20	39.30			
	Developed	20	22.15			
S_2008	Undeveloped	13	19.23		Developing> Undeveloped	
	Developing	20	36.05	0.003		
	Developed	20	23.00			
S_2009	Undeveloped	10	16.90	0.002	Developing>Un Developed	
	Developing	20	34.05			
	Developed	20	21.25			
S_2010	Undeveloped	8	16.63	0.001	Developing> Developed	
	Developing	19	33.16			
	Developed	20	18.25			

Source: Secondary Data

Table -3
Impact of Investors' Protection and Transparency on Market Volatility

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	p-value	Co linearity Statistics	
	B	Std. Error				Tolerance	VIF
1 (Constant)	701.183	502.499		1.395	.169		
EDI	90.443	49.190	.250	1.839	.072	.968	1.033
EDLI	-16.146	56.500	-.041	-.286	.776	.860	1.163
ESSI	-54.615	60.297	-.127	-.906	.369	.913	1.095
CPI	-61.130	54.668	-.161	-1.118	.269	.866	1.154

a. Dependent Variable: market volatility

Source: Secondary Data

Table -4
Impact of Investors' Protection and Transparency on Market Volatility, Controlled for Macro-Economic Factors

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	p-value	Co linearity Statistics	
	B	Std. Error				Tolerance	VIF
1 (Constant)	383.056	503.811		.760	.452		
EDI	56.148	49.109	.178	1.143	.260	.968	1.033
EDLI	-76.721	55.122	-.245	-1.392	.172	.754	1.326
ESSI	30.700	62.613	.082	.490	.627	.829	1.206
CPI	-21.095	54.371	-.066	-.388	.700	.815	1.227
2 (Constant)	1693.115	1116.507		1.516	.138		
EDI	47.633	50.323	.151	.947	.350	.927	1.079
EDLI	-71.618	58.033	-.229	-1.234	.225	.684	1.461
ESSI	45.727	71.643	.123	.638	.527	.637	1.570
CPI	-128.167	84.732	-.399	-1.513	.139	.337	2.963
FDI 2006	9.344E-6	.000	.106	.414	.681	.361	2.770
INF 2006	-124.166	79.341	-.420	-1.565	.127	.327	3.054
INT 2006	-13.328	35.757	-.081	-.373	.712	.493	2.027
LN.GDP 2006	-14.730	47.771	-.061	-.308	.760	.597	1.674

a. Dependent Variable: market volatility

Source: Secondary Data