

A Survey of Investors' Current Perceptions and Valuation Approaches at Jakarta Stock Exchange

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Abstract

This paper provides the results of a survey of investment practices and perceptions by major portfolio investors (fund managers) currently active at the Jakarta Stock Exchange (JSX) in Indonesia. The paper also proffers some initial interpretation and analysis of their perceptions of the most important metrics used in valuation and their observation on social, political, economic, regulatory, technological, environmental and legal (SPERTEL) factors that influence the fundamental factors (EM metric) and values of equity shares (EV) of LQ45 firms quoted at JSX. The findings of the survey help to shed light on the adequacy of the information, which JSX provides investors to improve the quality of their hold, sell or buy decisions on their LQ45 portfolio. Besides clarifying investors' perceptions, the findings of this survey also indicate favourable trading conditions in the JSX and the attraction to the stock market of foreign institutional investors after its revival following the success of democratic presidential election. Fund managers' consequent positive perception of the economy induced them to invest in equity shares of LQ45 for their expected future values. These investors firmly believed in the SPERTEL factors' significant positive influence on the future values of their investment. We found inter-relationships among SPERTEL, EM metric and value of equity shares of LQ45, as a basic analysis to support the needs of investors to predict the future value of their investment.

Keywords: Investors' perceptions, JSX, LQ45, Valuation, Enterprise Multiple, SPERTEL, Emerging Market

1. Introduction

1.1. Background

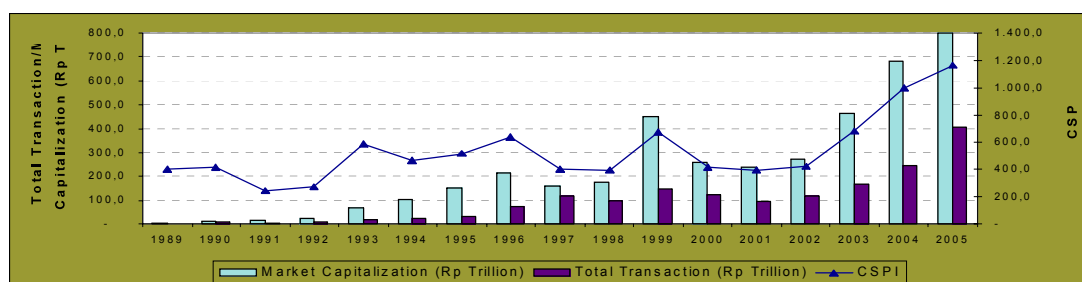
Beyond Indonesia's multidimensional crisis that shocked the JSX during 1997-2000, simultaneously the global portfolio investment industry went through rapid changes. These changes pose new

challenges and opportunities for all emerging equity markets, both from the perspective of policy-makers that regulate these markets and participants that invest in these markets. In particular, the substantial gains registered by the major developed equity markets in recent years are prompting a re-evaluation of the relative risks and rewards associated with emerging market equity investing, including the equity markets located in Jakarta. The performance of the JSX in 2006 was excellent. Fifty five point three percent increase in the Composite Stock Price Index (CSPI)¹ makes the JSX to be the 3rd best performing stock market in the world. This impressive performance is not business as usual phenomenon.

In Indonesia capital market sectors, the worsening of economic conditions in the several years after the 1997 crisis has contributed to the decline in the performance of JSX and brought about losses to investors and who consequently, withdrew their funds from Indonesia (JSX Watch, 2005). The degradation in performance is indicated by the decline in several stock market indicators such as market capitalization, value of transactions, and the CSPI as shown in figure 1. The figure illustrates quite clearly the extent to which the capitalization of JSX has contracted recently, in US dollar terms. Immediately prior to Indonesia's multidimensional crisis, JSX had a cumulative capitalization that was slightly over US\$ 90.26 billion, yet after the crisis; this value fell to below US\$ 34.38 billion within a year². Such a contraction has very important implications in terms of global index 'weightings' (on which a substantial proportion of institutional investors will base their global asset allocations) and the amount of resources fund managers will be prepared to assign in order to track and analyze equities in this market.

Even though in Rupiah/Rp (local currency) term, the market capitalization from 1997 to 1999 showed an increase, nonetheless in term of US dollars, the value of market capitalization has declined over the period by 24%. Besides macro economic condition, other factors causing the decline in performance of the Indonesian capital market included poor implementation of Good Corporate Governance (GCG) in the management of companies (Tabalujan, 2002 and Johnson, 2000). These circumstances cause the decreasing of investors' confidence toward the Indonesian capital market (Freeman, 2000). Recent political events, combined with the signs of economic recovery will contribute to restoring investors' confidence at the JSX.

Figure 1: JSX performance year 1989-2005



Source: www.jsx.co.id

In an era where modern portfolio theory has been popularized by the Nobel Prize winner for Economic, Harry Markowitz³, the academic community has developed Efficient Capital Market Theory (ECMT). According to the ECMT a capital market is categorized as efficient, if the value of particular equity shares reflect all necessary information. Consequently, the future value of equity shares will fluctuate randomly⁴. This in turn will negate all efforts to predict the future value of equity

¹ Comparable data from January 1, 2006 and December 31, 2006

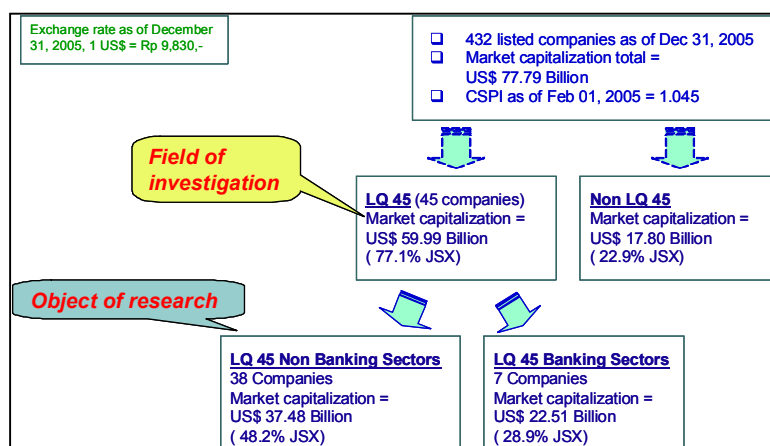
² Comparable data from January 1, 1997 (1US\$ = Rp 2,383) and December 31, 1997 (1US\$ = Rp 4,650).

³ Harry M. Markowitz, Portfolio Selection, Efficient Diversification of Investments (New York: John Wiley & Sons, Inc., 1959). The major elements of the theory first appeared in his article "Portfolio Selection," The journal of finance, XII (March 1952), 77-91.

⁴ Finance theorists refer to variations in returns as 'risk'. Some sources of risk are unique to particular corporations. See William F. Sharpe, Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk, Journal of Finance 19, 425, 427 (1964); John Lintner, The Valuation of Risk Assets

shares. This theory has been well supported by studies by Eugene Fama and his associates⁵ over the last 30 years since the 1970s of its existence as the prime theory in modern finance theory. Research has so far proven that it is very difficult to predict how stocks with identical estimated levels of market risk should trade at prices that imply identical expected rates of return. Is it not possible then to predict the value of equity shares as hypothesized by ECMT? Many practitioners disagree with ECMT and this issue has become more controversial since 2002 when Daniel Kahneman and Vernon Smith won the Nobel Prize for economic decision-making based on behavioral economics⁶.

Figure 2: Case of selection - LQ45



Source: www.jsx.co.id

The ECMT controversy becomes more interesting when it is observed in emerging market such as JSX. To investigate further, we did a research into the inter-relationships among fundamental and external factors, and investors' perception in predicting the future value of equity shares. EM represents the fundamental factors. External factors are represented by the SPERTEL.

Discussion of the challenges facing LQ45 portfolio and the prospect of investment inflows to JSX becomes a relevant issue (see figure 2) because of the need for substantial capital, some of which will have to be sourced from overseas. To attract the inflow of investment to the LQ45, research needs to be conducted to understand the investment decision-making behavior at the JSX.

1.2. Issues

In this research, we started with determining the investors' current perceptions and the valuation approaches in facing the challenges and gaining opportunities provided by LQ45 investment.

Indonesia's post-crisis recovery process is primarily, although not exclusively, one of corporate sector debt restructuring. Besides, most domestic banks are still struggling with non-performing loan levels that make new credit activities unduly onerous, while foreign banks are still contracting their loan portfolio exposure to this region. Plans to develop a regional bond market may also play a part in the refinancing of Indonesia, but only in the medium and long-term (Freeman, 2000). This leaves the

and the Selection of Risky Investments in Stock Portfolios and Capital Budgets, *The Review of Economics and Statistics*, Vol. 47, No. 1, 13-37 (Feb, 1965). Jack Treynor is a third individual often credited with developing the CAPM, although his article on the subject is not published.

⁵ Eugene F. Fama, Market Efficiency, Long-Term Returns, and Behavioural Finance, *Journal of Finance Economics* 49 (1998), 283-306; Alon Brav & J. D. Heaton, Competing Theories of Financial Anomalies (surveying and discussing various papers on behavioural finance); see, e.g., Robert J. Shiller, *Irrational Exuberance* (2000); Andrei Shleifer, *Inefficient Markets: An Introduction to Behavioural Finance* (2000).

⁶ For discussions of how equilibrium prices can be set under conditions of uncertainty. See William F. Sharpe, Disagreement, *supra* note 39; John Lintner, Diverse Judgments, *supra* note 39; Jack Treynor, *supra* note 39; Edward R. Miller, Risk, Uncertainty, and Divergence of Opinion, *32 Journal of Finance*, 1151 (1977); Joseph T. Williams, Capital Asset Prices with Heterogeneous Beliefs, *5 Journal of Finance Economics*, 219 (1977); Ramon Rabinovich and Joel Owen, Non-Homogeneous Expectations and Information in the Capital Asset Pricing Model, *33 Journal of Finance*, 575 (1979); and see also Lynn A. Stout, How Efficient Markets Undervalue Stocks: CAPM and ECMH under Conditions of Uncertainty and Disagreement, *19 Cardozo L. Rev.* 475 (1997).

JSX as one of the important vehicles by which Indonesia can attract and digest foreign capital inflows necessary to finance the post-crisis corporate recovery program. It is for this reason that an appreciation of the current practices and perceptions of foreign portfolio investors active in this equity market of the region is of significant importance.

How do investors investigate the inter-relationships between external and fundamental factors, and equity share values of LQ45, in order to predict the future value of equity shares? According to Bruner (1998), Freeman (2000) and Pereiro (2002), investors in both established and emerging markets require certain metrics and analytical tools to predict the equity share values. Such analytical tools must be closely related to their fundamental factors (i.e. EM), and adjusted by SPERTEL risks. By using the appropriate metrics as a reference, investors can more accurately understand the inter-relationships among equity shares value, fundamental factors and external risks prior to making their investment decisions.

As identified by Schneider (1999), the value today, in monetary terms, reflects the effects of the SPERTEL factors. The probability that the effect of the SPERTEL factors will, produce a change in apparent value is very high. The significance of that change in terms of real wealth can only be measured or estimated by making a comparison between today's values and a set of values established at some point in the past i.e., the monetary amount recorded by accountants, adjusted for the effects captured in the SPERTEL function. To properly evaluate and understand the causes and implications of the changes in reported values between periods, the past must be restated in terms of the values found in the SPERTEL related mapping function.

The SPERTEL factors, as identified by Schneider (1999) are the external components influencing the value of equity shares. Thus the adjusted Market Value of Invested Capital (MVIC) and EBITDA (McDonnell, 2001, the term is sometimes used interchangeably with "cash flow") are the two latest metrics representing the main drivers in the modelling of equity share values and are supposed to be the fundamental factors having together the impact on the value of equity shares (see figure 3). This indication expectedly will confirm or refute the positive effect of the MVIC and EBITDA on changing the value of equity shares at JSX, on which the research is focused. Our aim is to understand the investors' perceptions and now they modify their perspectives in the light of the inter-relationship between fundamental factors of LQ45, as identified by MVIC and EBITDA and the SPERTEL factors.

1.3. Research Questions

We stated the research question as follows: *Do the SPERTEL risks influence the EM metric and the value of equity shares of LQ45 quoted at the JSX, and if so, why?*

Thus, related to the aforementioned question, specific research questions to be investigated are as follows:

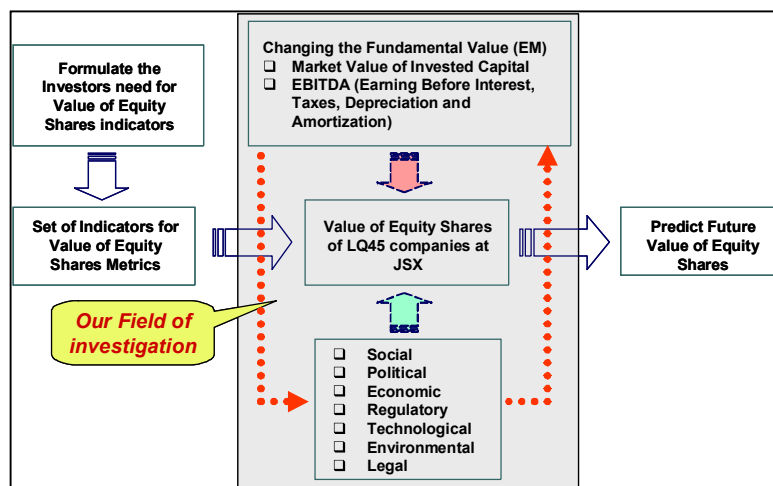
- What kind of EM metric is used by investors for predicting the value of equity shares of LQ45 quoted at JSX?
- Why EM is widely accepted as a closely watched metric to analyze the performance of companies at JSX?
- Which of the SPERTEL factors are more significant in influencing the EM metric and value of equity shares of LQ45 at JSX?
- How are the SPERTEL factors used by the market in equity shares valuation of LQ45 at the JSX?
- What variables influence the value of equity shares of the LQ45 quoted at the JSX?
- What variables influence the MVIC and EBITDA of the LQ45 quoted at the JSX?
- Is there any relationship between the MVIC and EBITDA, and if any, can it influence the value of equity shares of those companies?

2. Research Propositions

As can be seen in figure 3 and 4, our aim is to develop awareness and rational basis in the research model in order to test the validity and reliability of investors' perceptions, and the inter-relationship between MVIC/EBITDA (EM) metric adjusted by SPERTEL factors (Rappaport, 1983; Reimann, 1988; Knight and Pretty, 2000; Copeland, 2000 and Walters, 2002). This paper also examines the impact of using these inter-relationships to appraise the investors' perceptions in order to predict future value of equity shares. The future value of equity shares is closely related to the SPERTEL risk as illustrated on figure 3 and 4. Equity share values of LQ45 being the dependent variable, SPERTEL being the independent variable, and EM being the mediating variable.

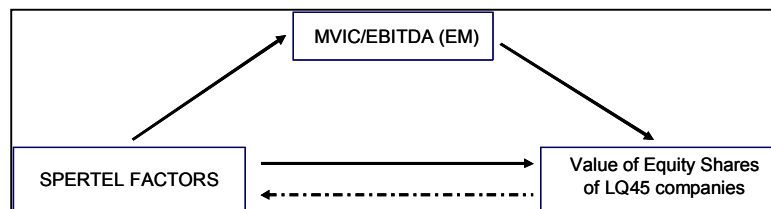
An investigation is needed to understand the nature of indicators of the JSX investor's needs and motivation to invest in equity shares and the use of fundamental factors in the predicting of equity share values. Similar to investors in developed markets, investors in emerging markets require certain metrics as tools to analyze and predict the value of equity shares. These are related to the fundamental factors, such as MVIC and EBITDA, and then adjusted for the effects captured in the SPERTEL risks. By using metric as a point of reference, investors impose a specific reason to explain the inter-relationships among the fundamental factors, external risk factors and value of equity shares of those firms that tend to influence the quality of investment decision.

Figure 3: Relationships among value of equity shares, external and internal factors



Source: Authors' Investigations

Figure 4: Inter-relationships among SPERTEL, EM and value of equity shares



Source: Adapted from Baron, 1986 (with modification)

Based on that figure, the extensive methodology and approaches, we postulated several propositions. As it is a quite complex one, we have broken down the propositions into readily measurable sub-components. We have done this in order to identify which specific factors play important role and allow for more accurate assessment of the specific nature of the factors which contributing to the value of equity shares. With this background in mind, we consider as our dependent variables, external factors, which may influence the value of equity shares of LQ45 following studies

by Copeland (2000), Cruces (2002), Damodaran (2003), Freeman (2000), James (2000), Keck (1998), Lockett (2002), Morck (1999), Pereiro (2002), and Schneider (1999).

We proposed main proposition as follows:

Proposition 1: *The value of equity shares of LQ45 will depend on the fundamental factors of the company, and external factors, such as social, political, economic, regulatory, technological, environmental, and legal (SPERTEL) factors.*

For clarity and analytical purposes, it is necessary to break down the above comprehensive proposition into minor propositions as follows:

Social factors: The additional risks include currency inconvertibility, civil unrest, institutional instability, expropriation, and widespread corruption influencing the equity share values for estimating a company's cash flows (Copeland, 2000; Cruces, 2002).

Proposition 1a: *The value of equity shares of LQ45 will be influenced by social factors.*

Political factors: Lack of adequate transparency is a major weakness in corporate communities in Indonesia. Other main weaknesses identified in the corporate sectors include poor governance, insufficient minority shareholder rights (transferred shareholding), inadequate banking sectors and political interference. JSX had worsened since the monetary crisis began in 1997 and the perceptions of the post-crisis reforms in Indonesia were much less favorable and most of the respondents were "very unimpressed" with Indonesia's political reforms (Freeman, 2000 and Pereiro, 2002).

Proposition 1b: *The value of equity shares of LQ45 will be influenced by political factors.*

Economic factors: Emerging markets are also more volatile than developed economies. Their business cycles are more intense, and inflation and currency risk are higher (Cruces, 2002). Indonesia is an economy which is most adversely impacted by the Asian economic crisis – has the highest ranking (Freeman, 2000). The equity share values tend to move together more in poor underdeveloped economies than in rich developed economies. This finding is not due to market size but is only partially explained by higher fundamental correlation in low-income economies. In emerging markets over 80% of stocks often move in the same direction in a given week (Morck, 1999).

Proposition 1c: *The value of equity shares of LQ45 will be influenced by economic factors.*

Regulatory factors: The lack of significant differences between the countries in the use of valuation and comparator/rule of thumb valuation methods suggests a commonality of professional approach that transcends cultural differences (Lockett, 2002).

Proposition 1d: *The value of equity shares of LQ45 will be influenced by regulatory factors.*

Technological factors: To value companies in emerging markets, the traditional valuation techniques must be carefully scrutinized, revised, and adapted to deal with the appraisal of both real and financial assets (Pereiro, 2002). Type of technology used in emerging equity markets influence equity share values of a company. JSX, by utilizing information technology developing trading system to facilitate remote access trading, develops cross border trading and listing, in conformity with established equity markets (www.bapepam.co.id).

Proposition 1e: *The value of equity shares of LQ45 will be influenced by technological factors.*

Environmental factors: The performances of the JSX is influenced by: the volume of capital flowing in and out, type of investor participation and the actual "fundamentals" of the companies listed (operating condition). With regard to market performance being driven by volume, JSX is either wholly or partly driven by volume. With regard to the importance of retail investors, this group of "punters" to be very important in the performance of JSX. With regard to company's fundamentals of listed firms on the equity market as very important in the performance of JSX (Freeman, 2000; Pereiro, 2002).

Proposition 1f: *The value of equity shares of LQ45 will be influenced by environmental factors.*

Legal factors: Other factors causing the decline in performance of Indonesian capital market is the poor implementation of corporate governance in the management of companies (Freeman, 2000).

Proposition 1g: *The value of equity shares of LQ45 will be influenced by legal factors.*

In addition to the main propositions we have already identified in relation to fundamental factors, there are also external factors, which may influence the EM (as mediator variable) of LQ45 (Rappaport, 1983; Reimann, 1988; Copeland, 1994; Knight and Pretty, 2000; and Walters, 2002). We state our next propositions as:

Proposition 2: EM of LQ45 will be mainly influenced by SPERTEL factors

Proposition 2a: EM of LQ45 will be influenced by Social factors

Proposition 2b: EM of LQ45 will be influenced by Political factors

Proposition 2c: EM of LQ45 will be influenced by Economic factors

Proposition 2d: EM of LQ45 will be influenced by Regulatory factors

Proposition 2e: EM of LQ45 will be influenced by Technological factors

Proposition 2f: EM of LQ45 will be influenced by Environmental factors

Proposition 2g: EM of LQ45 will be influenced by Legal factors

Other propositions in relation to the equity shares value of LQ45 are as follows:

Proposition 3: The value of equity shares of LQ45 will be influenced by SPERTEL factors through EM

Thus, for LQ45, the value of equity shares (as dependent variable) will be mainly influenced by several mediator variables:

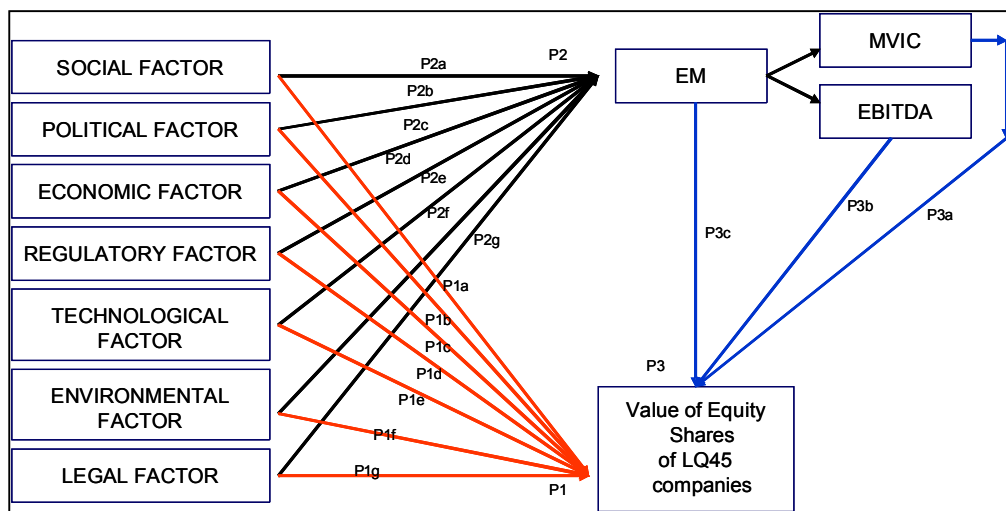
Proposition 3a: The value of equity shares of LQ45 will be influenced by SPERTEL factors through the changing of MVIC

Proposition 3b: The value of equity shares of LQ45 will be influenced by SPERTEL factors through the changing of EBITDA

Proposition 3c: The value of equity shares of LQ45 will be influenced by SPERTEL factors through the changing of EM

Thus, the inter-relationships model among those factors as shown at the following figure:

Figure 5: Propositions of the investors' perceptions of the inter-relationships among SPERTEL, EM and value of equity shares of LQ45



3. Methodology

3.1. Survey Methodology

The survey used the questionnaire, which was distributed in the first quarter of 2006, mailed to 100 investors, both global and local investors located in Jakarta that were identified as having investment concern at JSX. Identification of the relevant portfolio investors is based on the reference to various data sources. Breakdown of the sample – by local and foreign investors investing in JSX – are provided in table 1.

The response rate is 32%. The responses provide data that some would consider to be proprietary information on their choice of motivations on investing in equity shares of LQ45, methods of analysis, perceptions on SPERTEL factors that are likely to influence equity share values and fundamental factors of LQ45. They could have refused to provide such information. This may well have deterred some institutional investors from responding to the questionnaire. Nonetheless, we regard the response rate to be sufficiently significant for such an exploratory piece of empirical research. We believe that the respondents provided an indicative cross sample of the fund management industry as a whole, based on the information they gave about their perceptions and their investment approaches.

Table 1: Breakdown of samples – local and foreign investors

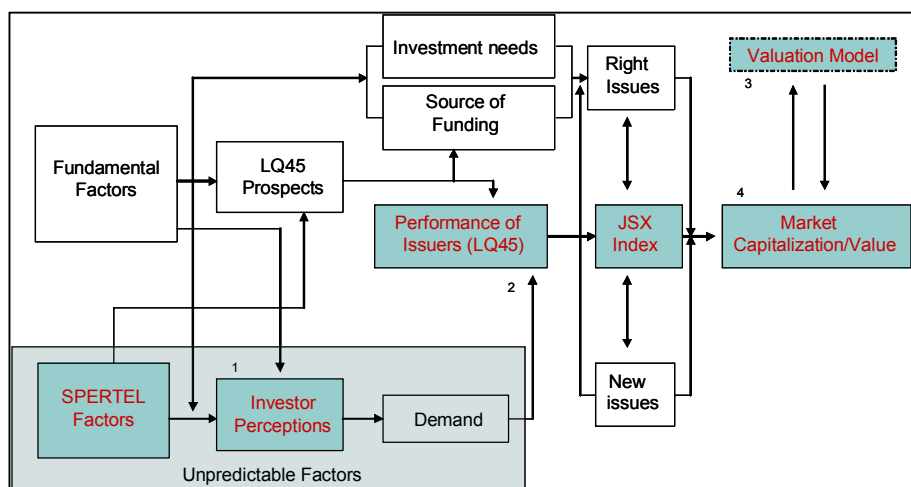
Sample of respondents	number of responses	percentage
Foreign	12	37,5%
Local	20	62,5%
Total responses	32	100,0%

Source: Computed from authors' questionnaire

As shown in figure 6, the detailed steps of our research are as follows:

1. Identifying the investors' perceptions, mostly computed from author's questionnaire, as to their priority in investing on the equity shares of LQ45, the most closely-watched metrics by JSX investors in investing on the equity shares, their perceptions of fundamental factor (metric) in relation to their perceptions on the SPERTEL factors also influenced by the value of equity shares and EM of LQ45,
2. Analyzing the secondary financial data to create the summary of LQ45 performance,
3. After identifying the most closely-watched metric by JSX investors and its SPERTEL risks in affecting the equity share values of LQ45 firms, the database, valuation and inter-relationship model can then be established,
4. Providing indication that investors' perceptions in investing on the LQ45's equity shares, EM and SPERTEL factors are inter-related to each other, in order to predict the future value of equity shares.

Figure 6: Flow diagram from the survey



Source: Authors' database

3.2. Structural Equation Modelling

We obtain the structural model of inter-relationships among the EM and the value of equity shares of each company as an object of study. Based on the 10-year projected of EM and equity share values of LQ45, we believe the DCF method and ARIMA⁷ are the most appropriate tools and provide most accurate inputs to the evaluation of the degree of inter-relationship among the factors previously identified.

By using LISREL 8.3, we have elaborated the suitable model of the inter-relationships between the influences of EM to the value of equity shares of LQ45⁸. The investors' perceptions obtained from our survey is placed as an inputs in the model that will evaluate the degree of influence on the EM, which then directly influence on the value of equity shares. Combinations of respondents' perceptions, EM and value of equity shares of LQ45, are able to create structural inter-relationship from each aforementioned variable. This can be explained in the form of the inter-relationship between those variables, which are the strong influential and/or least influential.

The first step is to formulate a measurement model, for individual latent exogenous (ξ) and endogenous (η) variables. At this analytical stage, the measurement model is customized for SPERTEL factors as a latent exogenous variable (ξ).

The employed indicators are known to have been used in measuring previous SPERTEL factors in several researches (Pereiro, 2002 and Freeman, 2000). These indicators are measured based on respondent feedback. The results as shown in appendix 2 are obtained by using LISREL 8.3, and indicated SPERTEL factors to be influential on the changing of value of equity shares and EM of LQ45.

The combinations of linkage among SPERTEL, EM and the value of equity shares of LQ45, can be written in the form of the following mathematical equations:

- Measurement equations:

$$x_i = \Lambda x \eta_1 + \delta_i$$

$$y_i = \Lambda y \xi_i + \varepsilon_i$$

- Structural equations:

$$\eta_1 = \Gamma \xi + \zeta_1$$

$$\eta_2 = B \eta_1 + \Gamma \xi + \zeta_2$$

Where:

ξ	=	latent exogenous variable (SPERTEL factors)
η	=	latent endogenous variable (value of equity shares and EM)
X	=	independent observed variable
Y	=	dependent observed variable
Λy	=	matrices loading factor for independent measurement model, Y
Λx	=	matrices loading factor for dependent measurement model, X
Γ	=	matrices loading factor for structural model
δ	=	error vector of independent measurement model
ε	=	error vector of dependent measurement model
ζ	=	error vector of structural model between η and ξ

With assumptions, that:

- $E(\xi) = 0, E(\eta) = 0$
- $\zeta, \varepsilon,$ and δ are mutually uncorrelated
- ζ is uncorrelated with ξ
- ε is uncorrelated with η

⁷ We used Discounted Cash Flow (DCF) and EM methods of valuation and Auto Regression Integrated Moving Average (ARIMA) method to forecast 10-year trend of value of equity shares of LQ45. Based on empirical survey in emerging markets, Pereiro (2002) and Freeman (2000) did the same study in South America and South East Asia (include in Indonesia).

⁸ We conducted a fine-tuning over the predicted value by employing SEM approach.

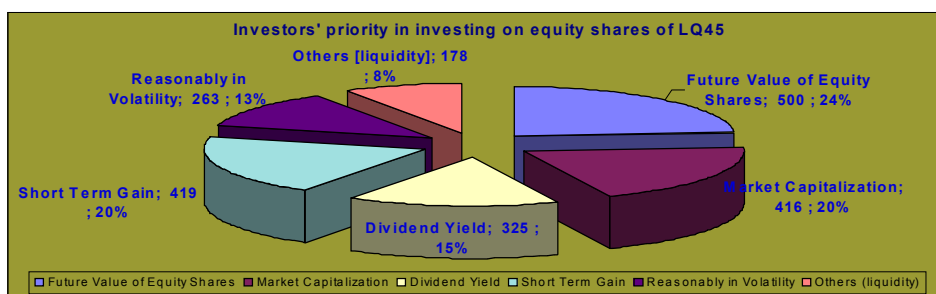
- δ is uncorrelated with ξ

4. Survey Results

4.1. Investment in Equity Shares of LQ45, Investors Perceptions

The respondents mostly reside in Jakarta. They indicated that the future value of equity shares is their main consideration in investing at JSX. The required information was grouped into priority scale scores as in figure 7. As can be seen in the figure (score time frequencies), the future value of equity shares were chosen by most investors as the highest priority (24%). The short-term gains were chosen by investors as high priority (20%), market capitalization were chosen as mid priority” (20%), followed by dividend yield (15%), reasonably in volatility (13%) and liquidity as lowest priority (8%).

Figure 7: Investors’ Priority in investing on equity shares of LQ45 at JSX



Source: Computed from authors’ questionnaire

4.2. Investors’ Choice on Metrics Used in Investing on Equity Shares of LQ45

The reason why most of the investors choose the future value of equity shares as their key motivation in investing on equity shares of LQ45 at JSX will be discussed later. But it is logical to assume that an investor’s choice is closely related to both external and fundamental risk factors which are inter-related and can influence the future value of equity shares of LQ45. As regards fundamental factors, metrics analysis can be used as a tool to aid investigation into such relationship. JSX investors determine the required critical metrics as a first step. Then, the chosen metrics will subsequently become the basic tool for analyzing the inter-relationships among external risk factors, the value of equity shares and fundamental factors.

Table 2, illustrates 8 popular metrics used by investors to value the equity shares. By using the score-based method shown in the table, we see that Price Earnings Ratio (PER) is the most popular metrics, followed by MVIC/EBITDA (EM), MVIC/Free Cash Flow, Price/Book Value, Dividend Ratio, MVIC/Book Value, MVIC/revenue and Price/Sales. Interestingly, none of the investors disagrees with or rejects MVIC/EBITDA and MVIC/Free cash Flow metrics. Although PER is the most popular metric, we believe that to relate the valuation of equity shares, investors can accept the use of EM as an option of metric analysis. Even though investors’ perceptions of the importance of PER was only slightly better than EM (59% strongly agree and 31% somewhat agree), around 7% and 3% regarded it to be ‘neither agree nor disagree’ and ‘somewhat disagree’.

Our analysis so far has indicated that EM as the most closely watched metrics by JSX investors. We will now examine the extent to which such metrics can be used as a tool to predict the value of equity shares of LQ45 and thereby improve the quality of investment decision.

Table 2: The most closely watched metrics by JSX investors (%)

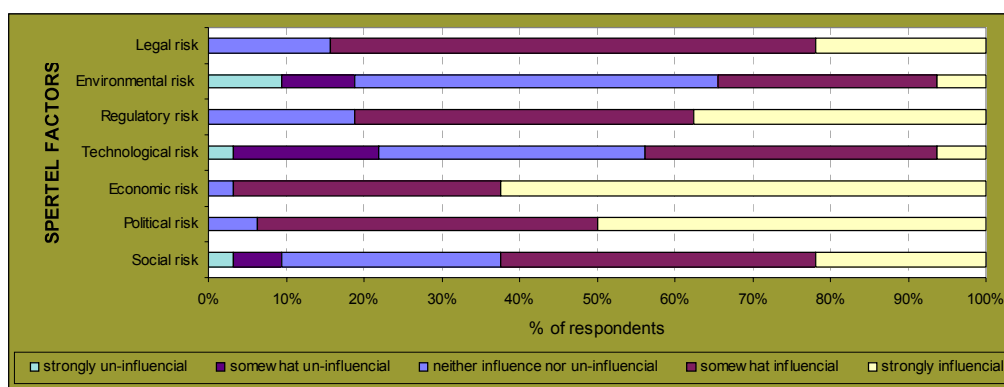
Description of Metrics	Most Closely-Watched by JSX investors				
	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
Enterprise Multiples (MVIC/EBITDA)	-	-	17	45	38
MVIC/Free Cash Flow	-	-	21	55	24
MVIC/Book Value	3	-	28	62	7
MVIC/Revenue	3	10	38	39	10
Price Earnings Ratio	-	3	7	31	59
Price Book Value Ratio	-	7	21	41	31
Price Sales Ratio	3	17	49	21	10
Dividend Ratio	3	-	41	25	31

Source: Computed from authors' questionnaire

4.3. SPERTEL Effect on EM and Value of Equity Shares of LQ45

Apart from internal fundamental factors of a company, the theory of corporate assessment tells us that SPERTEL as external risk factors also influence the value of equity shares. This leads to the question of which SPERTEL factors contribute significantly to the EM and the value of equity shares of LQ45.

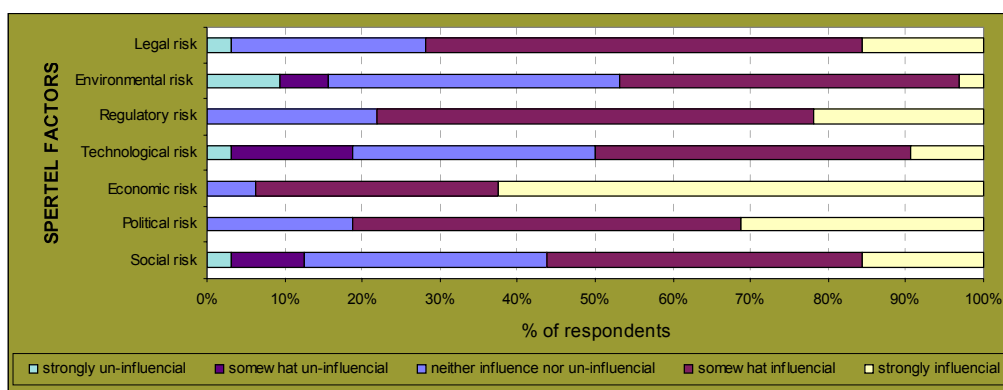
Figure 8 shows the survey results on investors' perceptions on seven external risk factors that significantly influence the EM and value of equity shares of LQ45. Results from respondents will be further processed and categorized into scoring scales in order to obtain other results based on the multiplication of score results and frequency. Responses were based on the following scales; 'strongly influential' or 'somewhat influential', 97% of respondents chooses the economic risk as the significant external risk factors influencing the value of equity shares of LQ45, this is followed by political risk (94%), legal risk (85%), regulatory risk (82%), social risk (63%), technological risk (44%) and environmental risk (34%).

Figure 8: SPERTEL risks influencing the value of equity shares of LQ45

Source: Computed from authors' questionnaire

Figure 9 shows responses based on the following scales; 'strongly influential' or 'somewhat influential', 94% of respondents chooses the economic risk factors as the significant external risk factors influencing the EM of LQ45, followed by political risk (81%), technological risk (78%), legal risk (72%), social risk (56%), regulatory risk (50%) and environmental risk (47%).

Figure 9: SPERTEL risks influencing the EM of LQ45



Source: Computed from authors' questionnaire

The above responses roughly to the SPERTEL risk factors, details of each factor contributed to influencing the value of equity shares and EM of LQ45 are as follows:

Social factors

At JSX, civil unrest was cited as a weakening influence on the value of equity shares of LQ45. Around 84% of our sample survey has categorized it as ‘strongly influential’ and ‘somewhat influential’ (see figure 10). The other three main weakening influences are under social factors with the following issues: institution instability (81%), corruption (65%) and expropriation (58%). Figure 11, shows the significant influence social factors have on EM of LQ45 as supported by the following: civil unrest (81%), institution instability (68%), expropriation (58%) and corruption (48%).

Political factors

The following are factors, which have strong influence in term of political risk:

The government political intervention that was cited as a major pitfall in influencing the value of equity shares of LQ45 is categorized as ‘strongly influential’ or ‘somewhat influential’, by at least 90% of our sample (see figure 10). 87% of the respondents states that bad governance is either ‘strongly influential’ or ‘somewhat influential’, 77% put the blame on the successes or failures of a presidential or legislative election, 71% hold the responsibility on the inadequate in banking sectors and 48% of respondents blames the insufficient minority shareholders.

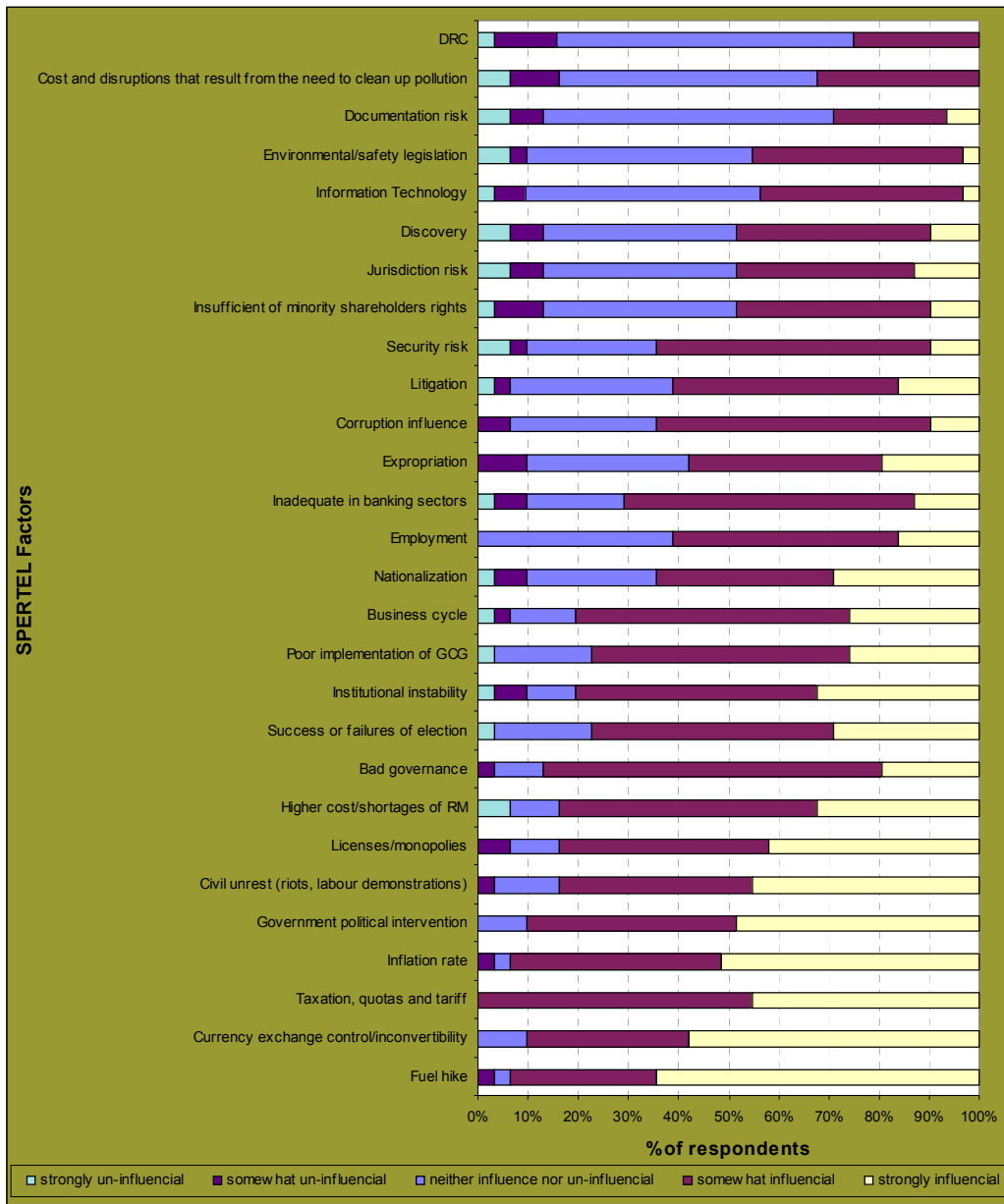
With regard to the political sub-factors that are likely to affect the performance of EM of LQ45, 71% of respondents regarded this group to be either ‘strongly influential’ or ‘somewhat influential’ for government political intervention, 68% for bad governance and success or failures of election, 61% for inadequate in banking sectors and 45% for insufficient minority shareholders (see figure 11).

Economic factors

With regard to the economic factor that is likely to influence the value of equity shares of LQ45, most respondents ‘strongly agree’ and ‘somewhat agree’ that the followings are factors of great significance (see figure 10). 94% of respondents said that the inflation rate and fuel hike are factors of great significant influence the value of equity shares, then followed by currency exchange control/inconvertibility (90%) and business cycle (81%).

With regard to the economic factor likely to influence the EM of LQ45, most respondents ‘strongly agree’ and ‘somewhat agree’ that the followings are factors of great significance (see figure 11). 90% of respondents agreed that the inflation rate and fuel hike have significant influence on the EM of LQ45, 87% for currency exchange control/inconvertibility, and 77% for business cycle.

Figure 10: Detail SPERTEL risks influencing the value of equity shares of LQ45



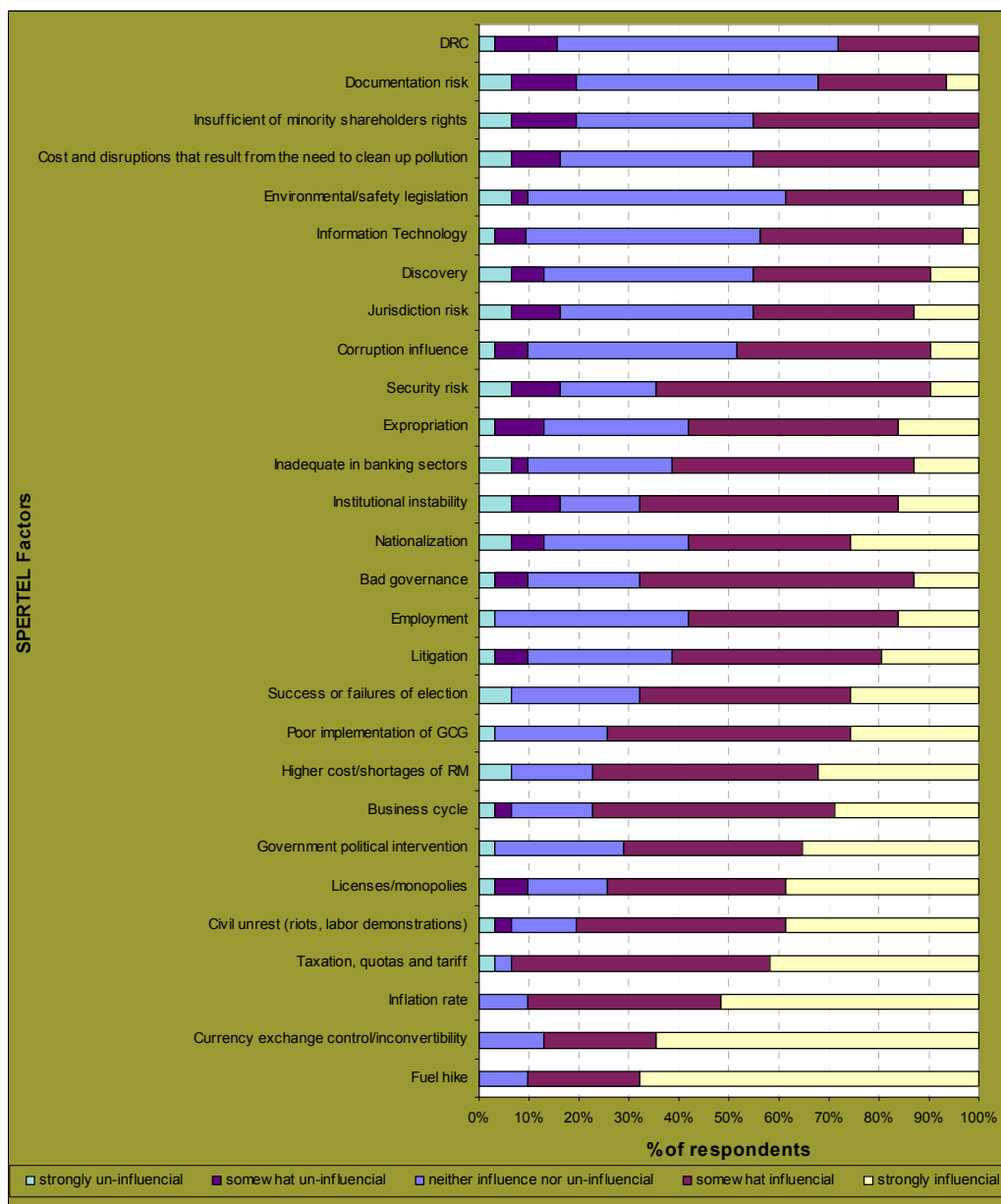
Source: Computed from authors' questionnaire

Regulatory factors

The respondents' collective views on changes of the value of equity shares of LQ45 caused by taxation, quotas and tariff showed that they were either 'strongly agree' or 'somewhat agree' by all of the respondents (see figure 10). Then followed by licenses/monopolies (84%), nationalization (65%) and employment (61%). Among those factors, only taxation, quotas and tariff are perceived as most influenced factors that are 'absolute'. In other words, the respondents perceive those factors being very dominant in driving the changing of value.

Figure 11 shows 94% of respondents said either 'strongly agree' or 'somewhat agree' that taxation, quotas and tariff that are likely to influence to the EM of LQ45 at JSX. Seventy-four percent consider licenses/monopolies as factors likely to influence to the EM of LQ45 at JSX, then followed by nationalization (58%) and employment (58%).

Figure 11: Detail SPERTEL risks influencing the EM of LQ45



Source: Computed from authors' questionnaire

Technological factors

Investors were asked to identify which technological factors they regarded to be under- and over-influenced in the value of equity shares and EM of LQ45 (see figures 10 and 11). There was a notable degree of consensus on this issue whereas IT and Disaster Recovery Centre (DRC) were cited by most of the respondents as under-influenced in the equity shares value of LQ45. On average, 44% of respondents said the IT industry was influenced, while 25% said the same thing about the DRC.

Environmental factors

On average, 84% of investors' 'strongly agree' or 'somewhat agree' that environmental factors, which are likely to influence the value of equity shares of LQ45 at JSX, are higher cost/shortages of raw material (see figure 10). About 45% of respondents regard the environmental/safety legislation factor to be influential and 32% said the same thing about the cost and disruptions that result from the need to clean up pollution.

When asked to identify which factors would potentially be the most influential in terms of the EM of LQ45 at JSX, respondents cited higher cost/shortages of raw material had either ‘strongly agree’ or ‘somewhat agree’ by 77% of the sample (see figure 11). About 39% of respondents regard the environmental/safety legislation factor to be influential, and 45% said the same thing about the cost and disruptions that result from the need to clean up pollution.

Legal factors

Results in figure 10 shows 77% of the respondents were either ‘strongly agree’ or ‘somewhat agree’ that poor implementation of good corporate governance influences the value of equity shares of LQ45. Not surprisingly, the above views broadly conform with the responses given to questions on how unimpressed respondents were to the post-crisis reforms and business transparency measures that the LQ45 have performed (Freeman, 2000). 65% of the respondents were either ‘strongly agree’ or ‘somewhat agree’ that security risk influences the value of equity shares of LQ45, followed by litigation risk (61%), jurisdiction risk (48%), discovery risk (48%) and documentation risk (29%).

In the case of influencing the EM of LQ45, the number of respondents perceptions that the poor implementation of good corporate governance had the highest ranking (74% either “strongly agree” or “somewhat agree”), followed by security risk (65%), litigation risk (61%), jurisdiction risk (45%), discovery risk (45%) and documentation risk (32%).

Table 3: SPERTEL Sub-factors influencing the EM & EV of LQ45 (rank based on score)

Sub Factors - SPERTEL influencing the EV of LQ45	Score	Rank	Sub Factors - SPERTEL influencing the EM of LQ45	Score	Rank
Fuel hike	455	1	Fuel hike	458	1
Currency exchange control/inconvertibility	448	2	Currency exchange control/inconvertibility	452	2
Taxation, quotas and tariff	445	3	Inflation rate	442	3
Inflation rate	442	4	Taxation, quotas and tariff	429	4
Government political intervention	439	5	Civil unrest (riots, labor demonstrations)	410	5
Civil unrest (riots, labour demonstrations)	426	6	Licenses/monopolies	400	6
Licenses/monopolies	419	7	Government political intervention	400	7
Higher cost/shortages of RM	403	8	Business cycle	397	8
Bad governance	403	9	Higher cost/shortages of RM	397	9
Success or failures of election	400	10	Poor implementation of GCG	394	10
Institutional instability	400	11	Success or failures of election	381	11
Poor implementation of GCG	397	12	Litigation	368	12
Business cycle	397	13	Employment	368	13
Nationalization	381	14	Bad governance	368	14
Employment	377	15	Nationalization	365	15
Inadequate in banking sectors	371	16	Institutional instability	361	16
Expropriation	368	17	Inadequate in banking sectors	358	17
Corruption influence	368	18	Expropriation	358	18
Litigation	368	19	Security risk	352	19
Security risk	358	20	Corruption influence	345	20
Insufficient of minority shareholders rights	342	21	Jurisdiction risk	335	21
Jurisdiction risk	342	22	Discovery	335	22
Discovery	339	23	Information Technology	334	23
Information Technology	334	24	Environmental/safety legislation	326	24
Environmental/safety legislation	332	25	Cost and disruptions that result from the need to clean up poll	323	25
Documentation risk	316	26	Insufficient of minority shareholders rights	319	26
Cost and disruptions that result from the need to clean up pollu	310	27	Documentation risk	313	27
DRC	306	28	DRC	309	28

Source: Computed from authors' questionnaire

As can be seen in the table 3 (score time frequencies), the fuel hike were chosen by most investors as the highest rank of sub factors – SPERTEL influencing the EV and EM of LQ45 with the

total score is 455 and 458, respectively, then followed by currency exchange control/convertibility as the second highest rank. The DRC were chosen as the lowest rank of sub factors - SPERTEL influencing the EV and EM of LQ45.

4.4. Discussion on the SPERTEL Effect on Equity Share Values and EM of LQ45

Issues relating to investors' perception of and preference on investing in equity shares of LQ45 are related with their motivation of future value of equity shares, SPERTEL and EM factors and association between them are worthy of careful consideration. We are discussing them from several cognitive points of views.

With the exception of another five preferences and considerations, why do they invest in LQ45 portfolio, it is conceivable that these spirits are getting to a stage where they are considered for use (as/with) the powerful metric to predict the relationship with SPERTEL factors. Not only may this be true of JSX as a whole, but also to LQ45 listed on the market, due to the majority of fund managers that are willing to hold as a majority in some cases of a firm's total outstanding shares.

The results of survey on investors' motivation to invest in equity shares relates with external and fundamental metric, shows that most of the surveyed fund managers are seeking greater disclosure for listed Indonesian firms, along with an improvement in the regulatory systems. Such improvements can reasonably be expected to increase the volition with which investors perceive JSX and LQ45 stocks, and it lies wholly within the capabilities of the relevant state bodies to make substantial positive advances in both of these areas.

Social factor is more dominant of influencing LQ45 in running their businesses. The strongest influential factor over the value of equity shares of LQ45 is the civil unrest factor (84%). This is quite a similar to the EM of LQ45 that is most influenced by the aforementioned factor (81%). Those factors affected each other due to the following reasons:

1. Until now, most investors consider that the 1998 simultaneous nation-wide riots and lootings as the major contributor to the JSX crash.
2. Labor demonstration/strike related to the implementation of new labor regulations may signal the degradation of future investors' performance.

Political factor is more dominant of influencing LQ45 in running their businesses. LQ45 themselves may find it useful to know that the majority of portfolio investors appears to be growth-oriented in their approach (either wholly or partially), giving some indication as to the sorts of business models and strategies that are likely to derive greatest interest from foreign fund managers. It is also worth noting that companies with good track records on general management ability, respect for minority shareholder rights, strategic focus, quality information disclosure and adhere to the corporate governance conduct, as well as being supported by the adequate banking sectors and less of political interference are likely to find greater favor with institutional investors.

The most influential factor on the value of equity shares of LQ45 is the government political intervention (90%), which is quite similar to the EM of LQ45 that are mostly influenced by the same factor (71%). Those factors influenced each other because of the following reasons:

1. Agency problems
In many countries, the role of government is to regulate policies related to the market, which certainly significantly influence investors to invest in JSX. As reported by Bapepam (2005), the Indonesian government always tries to interfere and regulate the market and JSX in order to create favorable conditions for the investors. However, such interference and regulations are always plagued with influential speculators and political parties hidden agendas (Tabalujan, 2002).
2. Political trade-off
Some of the problems emerged in law enforcement are caused by bad corporate governance. Compromise and win-lose situation sometimes happen in this case, resulted by the political trade off decision with substitute agenda, such as winning program in the next election, etc.

Besides the above factors, issues relating to minority shareholder rights became an issue during the financial crisis and it became a significant risk from the investors' perceptions. Looking ahead, foreign institutional investors are likely to focus on the firms' performance concerning the minority shareholders, and their performance in this regard could have a bearing on actual asset allocation or protection decisions.

Economic factor is a more dominant factor in influencing LQ45 in running their businesses. Notably the performances of equity shares of LQ45 seem surprisingly influenced by a number of factors other than the fundamental corporate factors of the listed companies. In terms of economic factor, the value of equity shares is mostly influenced by the inflation rate factor (94%). Although, it can reasonably be expected, the strength of influence of this factor is quite striking, and it shows that a fundamental analysis approach to investing at JSX is not adequate as the sole analytical tool. For listed companies or companies seeking to be listed, such reality poses some challenges to those who wish to see their share performance broadly reflects their own intrinsic business performance. Those factors influence each other due for the following reasons:

1. High inflation rates, which are rampant among many emerging countries has an impact of decreasing the purchasing power parity. The boundary of such purchasing power in turn influences the capitalization of the JSX market.
2. The uncertain cause and effect turbulent situation is a source of dreads to a majority of investors who are planning of investing in JSX market.

If JSX is to achieve its goal of becoming a major financial centre, it probably requires a 'corporate hinterland' that extends beyond JSX's state borders. While the regulatory body might have been expected to provide such role, the result of this survey shows that respondents are in doubt and consider that JSX capability to do it is somewhat limited, at least at present. In term of regulatory factor, the value of equity shares of LQ45 is mostly influenced by the taxation, quotas and tariff factors (100%). This is quite similar to the EM of LQ45 that is most influenced by the same factors (94%). We can see those factors influence each other due for the following reasons:

1. Issues such as taxation, quotas and tariffs are a potential burden for most investors. Previously mentioned potential burdens being cash flows constraint and underperforming companies
2. The vicinity of these factors need to be highly structured compared with established markets, in terms of the transformation plan and road map of JSX to extends the state borders and became magnitude by globally investors.

In term of the value of equity shares of LQ45, it is mostly influenced by technological factor. In this respect, significant issues that are becoming a concern is IT (44%) and DRC issues (25%). This condition also applies to the EM of LQ45. We can see those factors influence each other due to the following reasons:

1. The pace of IT life cycle is constantly increasing and continuously evolving. Consequently, companies are constantly forced to improve their IT systems and technologies.
2. Despite the fact, that most investors are aware of losses in transaction-generated income in case of system crash, until now, all LQ45 do not significantly use the DRC as a database back up (www.jsx.co.id).

Environmental factor is also influencing LQ45 in running their businesses. The value of equity shares of LQ45 is mostly influenced by the higher cost/shortages of raw material issues (84%). This is quite similar to the EM of LQ45 that is most influenced by the same issues (77%). Those factors influence each other due for the following reasons:

1. The issues of supply chain advantage today given more distress to the LQ45, and became considerable issue that carry to the excellent and successful operations.
2. The going concern supply of raw material gives the security package for most of investors in order to secure their future cash flows (Damodaran, 2003). However, the higher costs of this material given the same circumstances.

Legal factor also affects LQ45 in running their businesses. The value of equity shares of LQ45 is mostly influenced by the poor implementation of good corporate governance issues (77%). This is quite a similar to the EM of LQ45 that is most influenced by the same issues (74%). Those factors influence each other due for the following reasons:

1. Conformity, transparency and sound management decision are fundamental factors that will be taken into consideration by investors prior to investing. However, LQ45 rarely met this requirement.
2. Despite LQ45 company management compliance with good corporate governance, there is no assurance that conflict of interests could be eliminated, and the agenda behind decisions that are easily predicted.

4.5. How the SPERTEL Influence the Value of Equity Shares and EM of LQ45

We may hypothesize that the value of equity shares could be influenced directly or indirectly by external factors. We have already acknowledged that the EM metric is considered important by JSX investors. The influence of SPERTEL factors on EM must therefore be further investigated especially its relationship with the value of equity shares, although the value of equity shares itself is indirectly influenced by the SPERTEL through this metric.

The ECMT as popularized by Fama (1970) and CAPM, courtesy of William Sharpe (1964) are still controversial even for established markets⁹. Aside from this controversy, the reliability of ECMT and CAPM becomes more uncertain in emerging markets such as JSX. Consequently, we proposed the following model and approaches; the fundamental internal and external factors ought to be linked to investors' perceptions, which are consistent to the theory of behavioral economics as created by Daniel Kahneman, the Nobel Prize winner for Economics in 2002.

We now consider the impact of the EM on the value of equity shares of LQ45. We had earlier seen that EM metric is one of the company evaluation metrics that investors at JSX consider important. The influence of EM has to be further investigated, especially its inter-relationship with the value of equity shares aside from the value of equity shares that is directly influenced by the SPERTEL. It shows the SPERTEL – EM inter-relationship indicated influential and/or least influential each other. The equation and measurement model in this paper has shown the degree of inter-relationship among the SPERTEL and EM (Schumacker, 1996; Joreskog, 2000, 2005). The degrees of these variables are then linked to the expected future value of equity shares to support the investors' analysis in knowing the growth level of their future investment.

4.6. Confirmatory Factor Analysis (CFA) Model Testing

As shown in appendix 4, the Confirmatory Factor Analysis (CFA) assessed the factor structure and showed the goodness-of-fit index (GFI) (0.81), the root mean square error of approximation (RMSEA) (0.015), and the comparative fit index (CFI) (1.00) that is assumed results of the SEM analysis showed that path diagram SPERTEL – value of equity shares/EM model fits to the data, Chi-Square = 548.04, p-value= 0.34997, CFI = 1.00, ECVI = 3.92.

The GFI for the model is 0.81, indicating that model fit was adequate (Schumacker, 1996; Joreskog & Sorbom, 1993, 1996). The CFI is 0.90-1.00, suggesting a good fit (Bentler, 1990). The RMSEA value of 0.015 is well within the recommended range of acceptability (Byrne, 1998; Schumacker, 1996; Cudeck & Browne, 1993). The last goodness-of-fit statistic has been used is Hoelter's (1983) critical *N* (CN). Its purpose is to estimate a sample size that would be sufficient to yield an adequate model fit for test. Hoelter (1983) proposed that a value in excess of 200 is indicative of a model that adequately represents the sample data. Interpretation of this finding leads to the conclusion that the size of the sample (*N* = 100) was satisfactory according to Hoelter's benchmark that the CN should exceed 200.

⁹ This evidence is supported and discussed by Fama, 1992; Reiganum, 1981; Roll and Ross, 1992; Lakonishok, 1986; and Jagannathan, 1995

4.7. Valuation Model Testing

To carry out a model re-specification, we have to apply Modification Indices (MI) approaches. From 28 sub-factors initially identified, we have omitted three (3) indicators of which are: insufficient minority shareholders rights, success or failures of election, and government political intervention. According to the path diagram, the size of the standardized loading factors ranges from a minimum of 0.28 to a maximum of 0.74 (see table 4).

We can draw a number of conclusions from the statistical tests of the 38 companies (as shown in appendix 3 and 4). The range of statistical test results shows these tested models as fit models.

Table 4: Loading factors for each indicators – fittest model

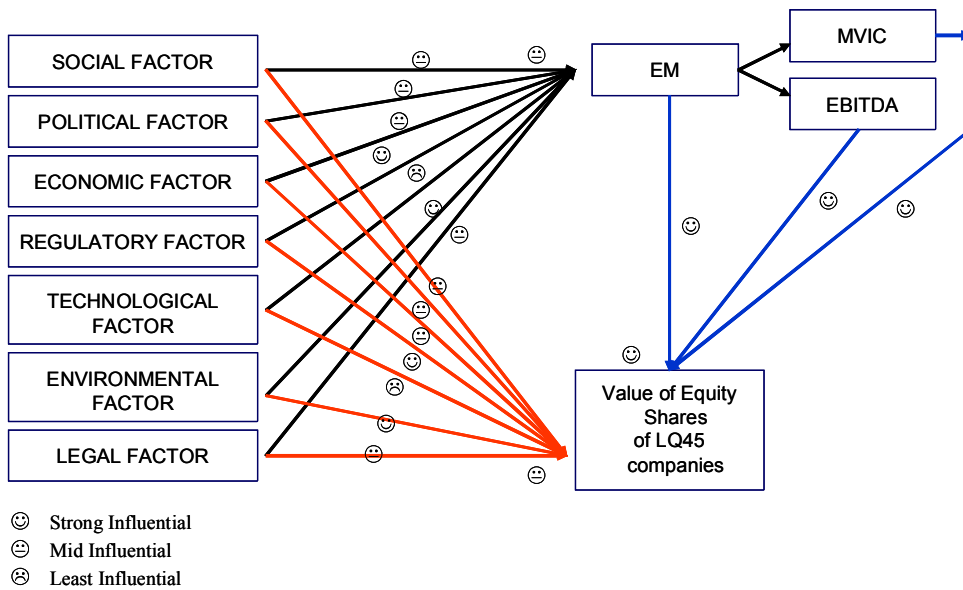
FACTORS	INDICATORS	EV	EM
SOCIAL	Civil unrest (riots, labor demonstration)	0.37	0.49
	Institutional instability	0.39	0.56
	Expropriation	0.64	0.64
	Corruption influence	0.47	0.61
POLITICAL	Bad governance	0.74	0.74
	Inadequate in banking sectors	0.32	0.70
ECONOMIC	Currency exchange control	0.28	0.51
	Fuel hike	0.69	0.69
	Inflation rate	0.60	0.64
	Business cycle	0.49	0.33
REGULATORY	Taxation, quotas and tariff	0.39	0.53
	Employment	0.38	0.68
	Licenses/monopolies	0.46	0.49
	Nationalization	0.50	0.52
TECHNOLOGY	Information technology	0.71	0.71
	DRC	0.72	0.68
ENVIROMENTAL	Environmental/safety legislation	0.71	0.71
	Higher cost/shortages of RM	0.34	0.27
	Cost and disruptions	0.68	0.58
LEGAL	Poor implementation of GCG	0.40	0.51
	Documentation risk	0.71	0.71
	Jurisdiction risk	0.65	0.61
	Security risk	0.65	0.62
	Litigation	0.66	0.62
	Discovery	0.54	0.58

Source: Database of the authors

5. Some Commentary and Analysis Stemming from the Results

From the results of measurement and structural model of inter-relationships among each factors in the SPERTEL, value of equity shares and EM of LQ45 (as shown in appendix 2, 3 and 4), the ranges of statistical test results show that these tested models are fit models, without exception. The next step is to conclude if there are any influences between the SPERTEL and the value of equity shares; between the SPERTEL factors and the EM; and between the EM and the value of equity shares. The conclusion is shown in the following figure:

Figure 12: Conclusion of inter-relationship among SPERTEL, EV and EM of LQ45



Source: Database of the authors

Upon the completion of tests of influences between the SPERTEL factors and the value of equity shares, the matrix analysis of influence of SPERTEL on the EM and the influence of EM on the value of equity shares are shown in the following figure 13. To support our analysis and interpretation for this results, we describe the following discussion and implications.

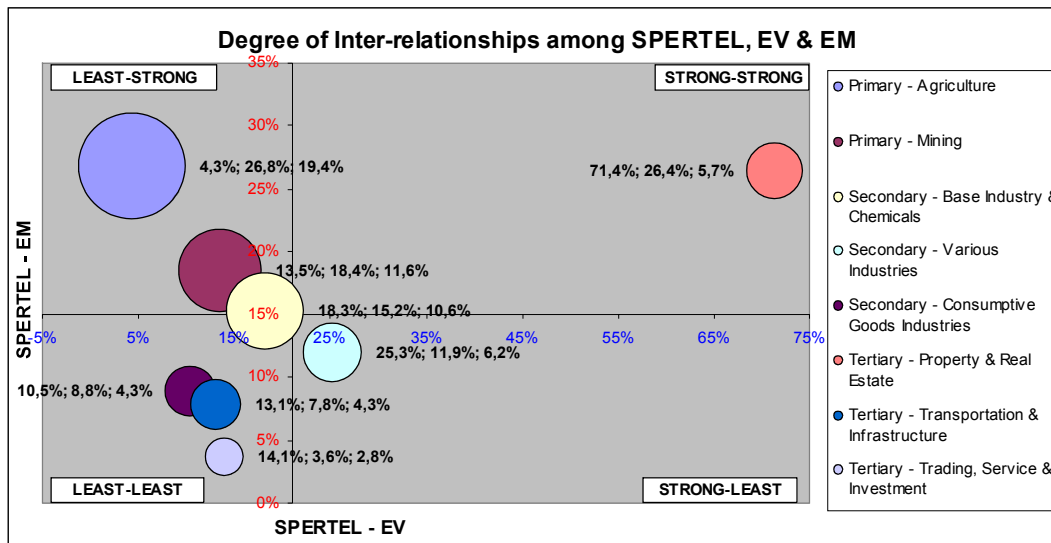
The above discussion is self-explanatory with regard to the simplification and comprehension of our further analysis and discussion of the LQ45. The LQ45 has been categorized under three sectors (eight business units) consisting of:

1. Primary sector/extractive (agriculture and mining),
2. Secondary sector/processing/manufacturing industry (base industry and chemicals; various industries; consumptive goods industry), and
3. Tertiary sector/service (property and real estate; transportation and infrastructure; trading, service and investment).

As seen in figure 13, we are grouping the degree of inter-relationships among SPERTEL, value of equity shares and EM for each sectors into 4 quadrants. Our explanations for each quadrant by sector are as follows:

The agriculture business unit has environmental/technological factor as the strongest influence over the EM, and social/regulatory factor as the strongest influence over the value of equity shares. Among these factors, the most significant factor is the sub-factor environmental/safety legislation/IT. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected (less than 10%), taking into account UNSP. As seen in figure 13, the matrix analysis for agriculture sector, the influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 4.3%, 26.8% and 19.4%, respectively (the position at least-strong quadrant).

Figure 13: Matrix analysis of inter-relationship-SPERTEL, EV and EM of LQ45



Source: Database of the authors

The mining business unit has environmental/regulatory factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/employment. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account ANTM, BUMI and TINS. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 13.5%, 18.4% and 11.6%, respectively.

The base industry and chemicals business unit has environmental/economic factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/fuel hike. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account BRPT, SMCB and TKIM. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 18.3%, 15.2% and 10.6%, respectively.

The various industries business unit has environmental/regulatory factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/ employment. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account GJTL. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 25.3%, 11.9% and 6.2%, respectively.

The consumptive goods industry unit has environmental/economic factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/fuel hike. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account UNVR, RMBA, KLBF, GGRM and HMSP. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 10.5%, 8.8% and 4.3%, respectively.

The property and real estate business unit has environmental/regulatory factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/ employment. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account CTRS, ELTY and JIHD. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 71.4%, 26.4% and 5.7%, respectively.

The transportation and infrastructure business unit has environmental/social factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/expropriation. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account ENRG, ISAT and TLKM. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 13.1%, 7.8% and 4.3%, respectively.

The trading, service and investment business unit has environmental/social factor as the strongest influence over the EM, and over the value of equity shares. Among these factors, the most significant is the sub-factor environmental/safety legislation/ expropriation. However, the EM influence over the value of equity shares that is driven by SPERTEL is not as strong as expected, taking into account ADHI, BFIN, BNBR, EMPT, RALS, TRIM and UNTR. The influence of SPERTEL on the EM, SPERTEL on value of equity shares and SPERTEL on value of equity shares through EM is 14.1%, 3.6% and 2.8%, respectively.

Thus, back to figure 13, related to the aim of this study and major research questions, the commentary for specific explained research questions are as follows:

1. Classified into eight sectors of the LQ45, the EM metric and value of equity shares of each sector is significantly influenced by the SPERTEL factors. Table 5 shows SPERTEL factors that most significantly influence the EM are as follows:

Table 5: SPERTEL factors that most significantly influence the EM of LQ45

SECTORS		SIGNIFICANT SPERTEL RISKS
A. Primary Sector (Extractive)	<ul style="list-style-type: none"> • Sector 1, Agriculture • Sector 2, Mining 	<ul style="list-style-type: none"> • Environmental & technology • Environmental & regulatory
B. B. Secondary Sector (Processing/ Manufacturing Industry)	<ul style="list-style-type: none"> • Sector 3, Base Industry and Chemicals • Sector 4, Various Industries • Sector 5, Consumptive Goods Industry 	<ul style="list-style-type: none"> • Environmental & economic • Environmental & regulatory • Environmental & economic
C. C. Tertiary Sector (Service)	<ul style="list-style-type: none"> • Sector 6, Property and Real Estate • Sector 7, Transportation and Infrastructure • Sector 8, Trading, Service and Investment 	<ul style="list-style-type: none"> • Environmental & regulatory • Environmental & social • Environmental & social

Source: Summary of analysis from database of the authors

From the abovementioned factors, there are 7 sub-factors respectively indicated as a dominant sub-factors forced the SPERTEL for each category, there are fuel hike for economic, bad governance (political), employment (regulatory), documentation risk (legal), expropriation (social), IT (technology) and environmental/safety legislation (environmental).

SPERTEL factors that most significantly influence the value of equity shares are shown in table 6.

Table 6: SPERTEL factors that most significantly influence the EV of LQ45

SECTORS		SIGNIFICANT SPERTEL RISKS
A. A.Primary Sector (Extractive)	<ul style="list-style-type: none"> • Sector 1, Agriculture • Sector 2, Mining 	<ul style="list-style-type: none"> • Social & regulatory • Environmental & regulatory
B. B.Secondary Sector (Processing/ Manufacturing Industry)	<ul style="list-style-type: none"> • Sector 3, Base Industry and Chemicals • Sector 4, Various Industries • Sector 5, Consumptive Goods Industry 	<ul style="list-style-type: none"> • Environmental & economic • Environmental & regulatory • Environmental & economic
C. C.Tertiary Sector (Service)	<ul style="list-style-type: none"> • Sector 6, Property and Real Estate • Sector 7, Transportation and Infrastructure • Sector 8, Trading, Service and Investment 	<ul style="list-style-type: none"> • Environmental & regulatory • Environmental & social • Environmental & social

Source: Summary of analysis from database of the authors

From the abovementioned factors, there are 7 of sub-factors respectively indicated as a dominant sub-factors forced the SPERTEL for each category, there are fuel hike for economic, bad governance (political), nationalization (regulatory), documentation risk (legal), expropriation (social), DRC (technology) and environmental/safety legislation (environmental).

- 2 Based on figure 13, inter-relationship between MVIC and EBITDA, only by the accounting and mathematical relationship. However, further inter-relationship can influence the value of equity shares of LQ45 because of the SPERTEL risks stimulate through those variables.
- 3 Based on the qualitative and quantitative analysis of respondents' perspective, the EM is widely accepted as a performance metric to analyze the performance of LQ45 due to strong correlation with the value of equity shares.

6. Summary of Results

The inter-relationship models among the SPERTEL, EM and EV are divided into four basic sub-models, which are SPERTEL-EV model, SPERTEL-EM model, EM-EV model and SPERTEL-EV-EM connection model. Our findings on the SPERTEL-EV model focuses on the influence of SPERTEL factors to the value of equity shares and indicated around **21.34%** of the movement of equity share values of LQ45 driven by the SPERTEL. The findings on the SPERTEL-EM model emphasizes the influence of SPERTEL factors to the EM metric and indicated around **14.31%** of the EM of LQ45 driven by the SPERTEL. The finding on the EM-EV model underlined the correlation of EM metric to the value of equity shares and indicated around **52.27%** movement of equity share values of LQ45 driven by the SPERTEL through the EM metric.

The SPERTEL, EV and EM connection model tests the inter-relationship among the SPERTEL risk factors to the EV through EM, indicated there are strong correlation between those factors. We believe with the result around **7.69%** of the influence of SPERTEL to the EV through EM, is evidence that can help the investors at JSX in order to support their decision in predicting the future value of equity shares of LQ45. Our main findings of these four models are summarized as follows:

6.1. Positive Linkages between SPERTEL and EV

The model in predicting value of equity shares is an interesting phenomenon to investors, especially in an emerging capital market. In this case, LQ45 investment performance is expected to improve through the balance of results and risks. Investors showed great interest in the influence of external risk factors on the value of equity shares of LQ45. Our first indication in the investment portfolio of LQ45 at the JSX shows investors in general, to be very concern about economic and political risks.

By using our model along with Fama's ECMT, Sharpe's CAPM and Kahneman's behavioral economics, to predict the value of equity shares of LQ45, we obtain results, which show that SPERTEL risk factors significantly influence the value of equity shares. It is expected that such method will pave the way to new horizons in increasing our understanding of the behavior of dynamic movements of equity shares price. Consequently, by using the above model, this may increase the degree of accuracy that investors require in predicting the value of equity shares of LQ45 quoted at JSX.

This leads to the conclusion that, the value of equity shares of LQ45 at JSX is greatly influenced by environmental and regulatory factors. In particular, the political and economic factors are most important factors influencing investors' perception on investment in equity shares at JSX. In the meantime, the future value of equity shares has been shown to play a key role in motivating the investors' decision on investing at JSX.

6.2. Positive Linkages between SPERTEL and EM

Results reveal that the 25 sub-variables of SPERTEL risk factors, which are initially driven by investors' perception, influence the changing of EM. In general, the influence of SPERTEL on the EM is relatively small. Based on each industrial sector analysis, an environmental factor has been a significant risk in influencing the EM of LQ45 in all sectors. The results shown indicated more similarity among the influencing of SPERTEL risks to the value of equity shares and EM. It means that the perceptions of investors on the SPERTEL factors to the EM and value of equity shares of LQ45 alike relatively. Environmental and regulatory factors have a positive impact on the EM of LQ45, and are stronger than the economic factor. Test of the SPERTEL-EM model has confirmed environmental factor to be significant in determining changes in EM.

6.3. Positive Linkages between EM and EV

After testing the SPERTEL-EM chain by focusing on external and internal factors respectively, in order to support the propositions #2, of a positive inter-relationship between SPERTEL and EM, and the joint impact of both on the value of equity shares has been obtained to complete the assessment of the EM-EV chain model. The results of the data analysis support the proposition that the future value of equity shares is positively correlated with the EM of the study companies. Due to the limited number of historical financial data, the assumption that the value of equity shares and EM has a joint impact on future value of equity shares is not statistically supported by the analysis. However, this inter-relationship and results analysis indicated a positive influence on future value of equity shares in the EM-EV model. Therefore, the positive impact of the value of equity shares and EM on future values of equity shares is still conceivable.

6.4. Positive Relationship between SPERTEL, EM and EV

After testing the SPERTEL-EM-EV chain by focusing on the EM and the value of equity shares factor respectively, the propositions #3, 3a, 3b and 3c of this research is supported by the positive inter-relationship between the EM and the value of equity shares. The joint impact of both variables on the fit model contributed to the predicting of future value of equity shares have been obtained in order to complete the assessment of the SPERTEL-EM-EV chain model. The results of the data analysis gave the support that the value of equity shares of LQ45 is positively correlated with SPERTEL and EM. The EM has a positive influence on the future value of LQ45 equity shares in the SPERTEL-EM-EV model, and the same holds true for the value of equity shares. The result shows that MVIC, EBITDA and EM also influence the value of equity shares of LQ45 because of SPERTEL factors influence over the previously mentioned fundamental factors. The correlation between the shifts in the value of equity shares of LQ45 and EM, which are in turn influenced by SPERTEL, logically leads to the conclusion that EM is strongly correlated with the value of equity shares of LQ45.

6.5. Towards the Valuation of Equity Shares in an Emerging Market

In the SPERTEL-EV and EM model, the inter-relationship among those variables has hypothesized to link with several numbers of variables, for example social factor influencing the EV, political factor influencing the EV, etc. The SPERTEL-EV and EM model recognizes the importance of understanding the relationships between external, internal and future value of equity shares performance. It is the most widely known example of a linkage model that measures different elements of equity shares performance. Since the development of the valuation of equity shares concept and method in emerging markets, it has been the subject of ongoing research and empirical testing.

As the use of the valuation of equity shares concept has developed, many inter-relationships between elements of the chain have been identified. However, in our research at least 12 companies (significant relationships more than 10%) have pointed out that few firms have related all the linkages in a fully comprehensive manner. That is because, firstly, implementation of the SPERTEL-EV-EM research is constrained by data availability. Equity share values and predicting of its future value do not only need to be measured as separate variables, but also need to be measured in a way that simultaneously links both of them to related external and internal factors. This calls for a mechanism that assembles and analyzes a database of sufficient depth, in order to examine all inter-relationships among them empirically.

Secondly, a common barrier to implementing research findings is their contextual variance. Unless all links can be put in the context of a single firm, it is hard to find acceptance for the inter-relationship among the SPERTEL-EV-EM. Therefore, the fund managers need to put the findings in their own context, in order to make meaningful decisions of investment in equity shares. In other words, the investors need to look at a comprehensive picture at the firm level to prioritize actions to hold, sell or buy decision.

Thirdly, time-series data are needed for tracing the effect of investment in equity shares for improvement of risk and return of the future value of equity shares.

This empirical study has applied the SPERTEL-EV-EM model of research framework at JSX. Despite of strong support for the causal links in the model, several issues need to be addressed further.

Firstly, SPERTEL risks perceptions have been measured by intended behaviour of fund managers (such as intentions to hold, sell or buy decisions at the period of survey) rather than actual behaviour. Secondly, SPERTEL and EM do not only positively influence future value of equity shares. Therefore, the emotional and behavioural investment in the emerging markets should also be taken into account as a factor influencing the future value of equity shares. Longitudinal data of behaviour and motivations of investors should be captured in order to deal with this concern. Thirdly, certain variables or factors with alleged clear links to future value of equity shares have not been taken into account in the research model, such as company's innovation, competition among the industry, and the corporate strategy. In reality, their influence on the value of equity shares cannot be ignored.

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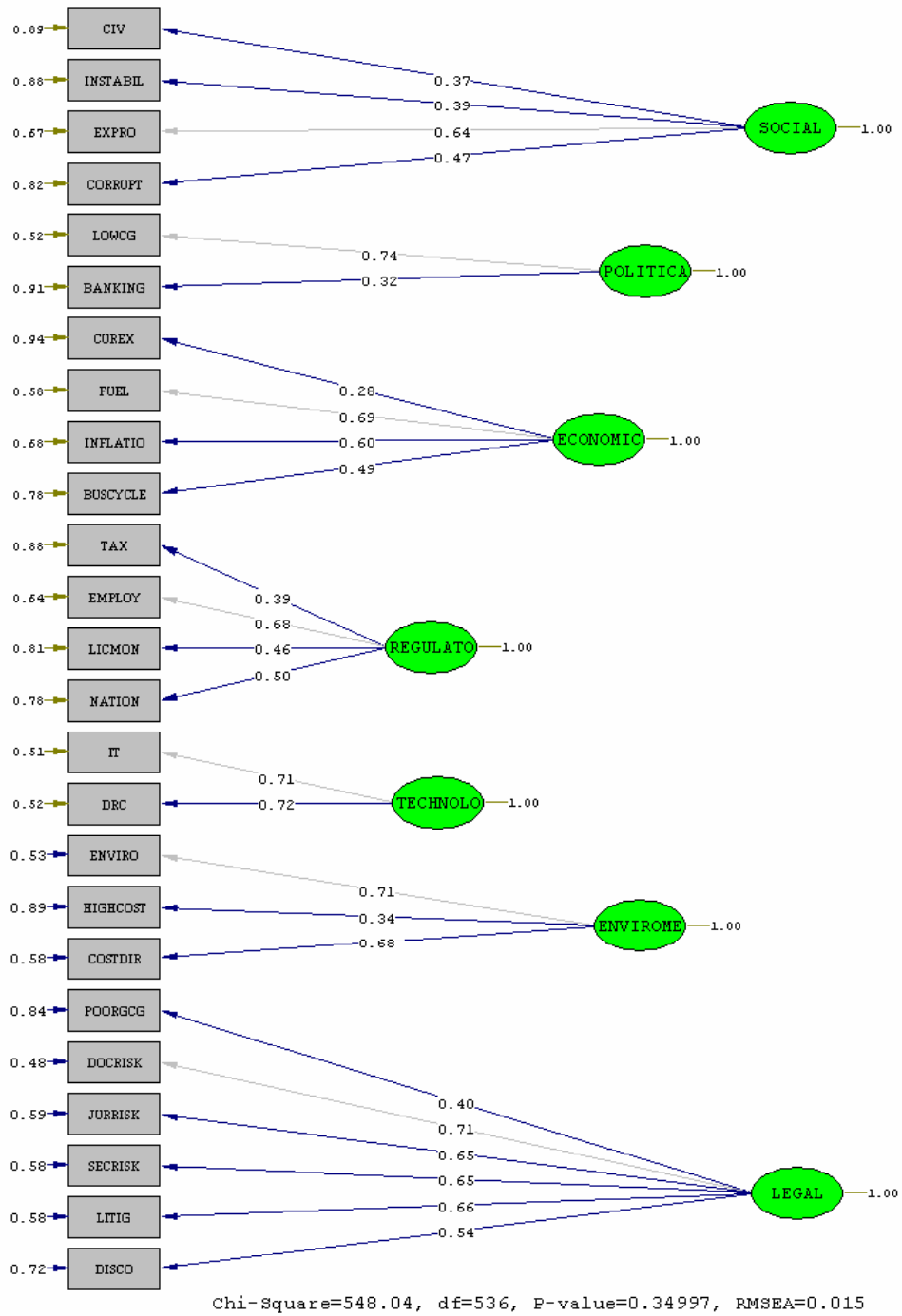
Appendix

Appendix 1: List of LQ45 (non-finance companies) as of February 1, 2005

NO	CODE	NAME	NO	CODE	NAME
1	AALI	Astra Agro Lestari	20	ISAT	Indosat
2	ADHI	Adhi Karya	21	JHHD	Jakarta Int'l Hotel
3	ANTM	Aneka Tambang	22	KIJA	Kawasan Industri J
4	ASII	Astra International	23	KLBF	Kalbe Farma
5	BFIN	BFI Finance	24	LSIP	PP London Sumatra
6	BNBR	Bakrie & Brothers	25	MEDC	Medco Energi Int
7	BRPT	Barito Pacific	26	PGAS	Perusahaan Gas N
8	BUMI	Bumi Resources	27	PLAS	Palm Asia Corpora
9	CTRS	Ciputra Surya	28	PTBA	Tambang Batubara
10	ELTY	Bakrieland Dev.	29	RALS	Ramayana Lestari
11	ENRG	Energi Mega P	30	RMBA	Bentoel International
12	EPMT	Enseval Putra	31	SMCB	Semen Cibinong
13	GGRM	Gudang Garam	32	TINS	Timah
14	GJTL	Gajah Tunggal	33	TKIM	Pabrik Kertas Tjiwi
15	HMSP	HM Sampoerna	34	TLKM	Telekomunikasi Ind
16	INCO	International Nickel	35	TRIM	Trimegah Securities
17	INDF	Indofood Sukses M	36	UNSP	Bakrie Sumatra P
18	INKP	Indah Kiat P & P	37	UNTR	United Tractors
19	INTP	Indocement T P	38	UNVR	Unilever Indonesia

Source data: www.jsx.co.id/issuers.asp

Appendix 2: SPERTEL – value of equity shares path diagram – fittest model



Source: Database of the authors

Appendix 3: Goodness of Statistical Fit Index – LQ45

	AALI [1]	ADHI [6]	ANTM [2]	ASIU [4]	BFIN [8]	BNBR [8]	BRPT [3]	BUMI [2]	CTRS [6]	ELTY [6]	ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSP [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]
Chi-Squl	6.23	5.89	5.91	6.99	12.78	10.78	15.72	6.02	5.95	6.38	6.78	10.89	6.91	28.85	36.59	18.79	6.01	10.55	6.53
RMSEA	0.03	0.03	0.00	0.06	0.06	0.05	0.03	0.05	0.00	0.00	0.00	0.07	0.06	0.05	0.16	0.00	0.01	0.03	0.05
p-value	0.46	0.47	0.50	0.40	0.43	0.44	0.50	0.41	0.51	0.56	0.58	0.38	0.40	0.47	0.02	0.68	0.48	0.46	0.43
ECVI	2.16	2.16	2.15	2.17	6.26	2.79	1.99	2.19	2.15	2.31	2.13	2.45	2.18	3.67	2.33	1.85	2.15	3.43	2.17
AIC	84.27	84.15	83.84	84.78	81.39	80.78	77.57	85.57	83.75	82.38	82.18	83.28	84.83	69.81	90.91	70.19	84.04	82.22	84.52
NFI	0.99	0.99	0.99	0.99	0.93	0.95	0.96	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.92	0.93	0.99	0.97	0.98
NNFI	1.00	1.00	1.00	0.99	0.90	0.92	0.98	0.98	1.00	1.00	1.00	0.97	0.98	0.83	0.88	0.99	1.00	0.96	0.99
PNFI	0.16	0.17	0.17	0.16	0.23	0.26	0.35	0.14	0.16	0.19	0.19	0.22	0.16	0.44	0.38	0.46	0.16	0.22	0.16
CFI	1.00	1.00	1.00	1.00	0.98	0.98	0.99	1.00	1.00	1.00	1.00	0.99	1.00	0.90	0.95	1.00	1.00	0.99	1.00
IFI	1.00	1.00	1.00	1.00	0.98	0.98	0.99	1.00	1.00	1.00	1.00	0.99	1.00	0.92	0.95	1.00	1.00	0.99	1.00
RFI	0.91	0.93	0.93	0.91	0.73	0.81	0.90	0.90	0.93	0.93	0.93	0.89	0.89	0.58	0.82	0.86	0.92	0.86	0.90
CN	106.21	112.24	112.00	94.86	23.05	43.89	69.70	98.67	111.21	104.29	107.35	63.70	95.83	26.64	33.60	73.22	110.09	46.71	101.46
RMR	0.01	0.02	0.04	0.01	0.04	0.13	0.09	0.03	0.03	0.04	0.04	0.05	0.01	0.07	0.07	0.03	0.02	0.05	0.02
GFI	0.97	0.97	0.97	0.96	0.86	0.92	0.93	0.97	0.97	0.96	0.97	0.94	0.96	0.80	0.85	0.92	0.97	0.93	0.96
AGFI	0.74	0.75	0.76	0.72	0.31	0.66	0.75	0.72	0.76	0.77	0.78	0.68	0.72	0.56	0.55	0.79	0.75	0.60	0.73
PGFI	0.13	0.13	0.13	0.13	0.17	0.21	0.27	0.11	0.13	0.15	0.15	0.17	0.13	0.37	0.28	0.37	0.13	0.17	0.13
ISAT [7]	JHHD [6]	KLJA [6]	KLBF [5]	LSIP [1]	MEDC [2]	PGAS [7]	PLAS [3]	PTBA [2]	RALS [8]	RMBA [5]	SMCB [3]	TINS [2]	TKIM [3]	TKLM [7]	TRIM [8]	UNSP [1]	UNTR [8]	UNVR [5]	
Chi-Squl	4.90	5.61	4.20	7.71	6.30	7.20	5.17	6.46	5.50	7.24	16.81	20.46	7.30	7.05	11.32	21.40	7.15	17.27	13.25
RMSEA	0.00	0.00	0.00	0.09	0.05	0.08	0.00	0.05	0.00	0.08	0.08	0.05	0.08	0.07	0.06	0.07	0.07	0.07	0.05
p-value	0.64	0.55	0.61	0.32	0.43	0.36	0.58	0.42	0.52	0.35	0.32	0.45	0.35	0.38	0.42	0.41	0.38	0.35	0.44
ECVI	2.15	2.15	2.18	2.20	2.17	2.50	2.15	2.17	2.15	2.19	2.08	4.34	2.19	2.16	5.09	3.55	2.50	2.05	6.11
AIC	82.71	83.40	83.92	85.69	84.51	85.14	83.17	84.59	83.67	85.31	81.00	73.74	85.40	85.06	81.50	74.65	84.97	79.80	79.38
NFI	0.98	0.99	0.99	0.98	0.98	0.98	0.99	0.98	0.98	0.98	0.96	0.91	0.98	0.98	0.95	0.92	0.98	0.96	0.93
NNFI	1.03	1.01	1.02	0.97	1.00	0.98	1.01	0.99	1.01	0.98	0.96	0.96	0.98	0.98	0.95	0.96	0.98	0.97	0.95
PNFI	0.16	0.16	0.14	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.32	0.43	0.16	0.16	0.24	0.43	0.16	0.35	0.28
CFI	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98	1.00	1.00	0.99	0.98	1.00	0.99	0.98
IFI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.98	1.00	1.00	0.99	0.98	1.00	0.99	0.99
RFI	0.88	0.91	0.91	0.87	0.91	0.88	0.93	0.90	0.93	0.89	0.88	0.82	0.88	0.88	0.78	0.83	0.88	0.88	0.77
CN	134.94	117.89	141.24	86.03	105.02	80.42	127.89	102.57	120.32	91.62	61.83	28.75	90.85	93.95	31.61	33.79	80.99	63.52	25.26
RMR	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.05	0.03	0.01	0.01	0.07	0.06	0.01	0.07	0.03
GFI	0.97	0.97	0.98	0.96	0.96	0.96	0.97	0.96	0.97	0.96	0.92	0.81	0.96	0.96	0.88	0.84	0.96	0.92	0.84
AGFI	0.80	0.78	0.80	0.69	0.73	0.67	0.79	0.73	0.77	0.70	0.70	0.50	0.70	0.71	0.42	0.56	0.67	0.71	0.33
PGFI	0.13	0.13	0.11	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.25	0.31	0.13	0.13	0.18	0.32	0.13	0.27	0.20

Note

[1] primary sector - agriculture

[2] primary sector - mining

[3] secondary sector - base industry and chemicals

[4]

secondary sector - various industries

[5] secondary sector - consumptive goods industries

[6] tertiary sector - property and real estate

[7]

tertiary sector - transportation and infrastructure

[8]

tertiary sector - trading, service and investment

Source: Database of the authors

Appendix 4: Structural model – Inter-relationships SPERTEL, Value of Equity Shares and EM

	LQ45	AALI [1]	ADHI [6]	ANTM [2]	ASII [4]	BFIN [8]	BNBR [8]	BRET [3]	BUMI [2]	CTRS [6]	ELTY [6]	ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSP [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]	
EXTERNAL FACTORS																					
SOCIAL	0.60	0.63	0.59	0.55	0.61	0.56	0.57	0.62	0.61	0.91	0.81	0.81	0.59	0.60	0.54	0.57	0.57	0.59	0.59	0.59	
POLITH	0.55	0.52	0.57	0.59	0.51	0.52	0.55	0.62	0.38	0.95	0.42	0.29	0.58	0.50	0.38	0.60	0.60	0.57	0.58	0.57	
ECONO	0.61	0.60	0.60	0.62	0.53	0.56	0.61	0.70	0.56	0.43	0.35	0.26	0.62	0.61	0.56	0.65	0.60	0.60	0.66	0.62	
REGUL	0.72	0.72	0.73	0.68	0.19	0.12	0.34	0.49	0.94	0.70	0.28	0.30	0.69	0.56	0.12	0.53	0.72	0.41	0.41	0.70	
TECHN	0.25	0.23	0.25	0.26	0.50	0.37	0.40	0.37	0.28	0.63	0.47	0.47	0.30	0.23	0.27	0.29	0.27	0.25	0.25	0.27	
ENVIRC	0.91	0.91	0.92	0.93	0.90	1.00	0.90	0.98	1.00	0.53	0.67	0.67	0.92	0.91	1.05	0.87	0.92	0.91	0.91	0.91	
LEGAL	0.70	0.69	0.70	0.71	0.91	0.82	0.76	0.78	0.79	0.56	0.51	0.50	0.71	0.78	0.83	0.62	0.70	0.77	0.77	0.70	
SPERTEL	EV	-0.03	0.32	0.31	0.21	-0.26	-0.23	0.85	0.79	0.96	1.57	0.51	0.50	-0.33	0.68	-0.20	0.03	-0.13	-0.05	0.00	
SPERTEL	EM	-0.67	-0.45	0.32	0.43	0.29	0.12	-0.19	-0.15	0.87	0.23	-0.01	0.00	-0.47	0.23	0.19	-0.49	-0.42	-0.46	-0.60	
EM	EV	-0.90	-0.67	0.75	0.82	0.93	-0.92	0.36	0.27	-0.21	-0.25	0.26	0.28	0.23	0.00	-0.93	-0.94	0.90	0.96	-0.87	
EXTERNAL FACTORS																					
LQ45																					
SOCIAL	0.54	0.58	0.48	0.60	0.62	0.60	0.60	0.62	0.62	0.62	0.48	0.50	0.62	0.61	0.54	0.53	0.57	0.46	0.46	0.73	
POLITH	0.56	0.57	0.61	0.56	0.54	0.57	0.56	0.55	0.54	0.54	0.56	0.76	0.54	0.56	0.29	0.28	0.58	0.46	0.46	0.53	
ECONO	0.59	0.61	0.60	0.63	0.62	0.63	0.58	0.62	0.62	0.62	0.61	0.82	0.62	0.62	0.49	0.46	0.64	0.61	0.61	0.54	
REGUL	0.69	0.72	0.62	0.67	0.69	0.65	0.80	0.70	0.74	0.70	0.38	0.66	0.69	0.69	0.27	0.39	0.66	0.17	0.17	0.53	
TECHN	0.28	0.28	0.31	0.29	0.27	0.35	0.20	0.28	0.24	0.27	0.85	0.58	0.28	0.29	0.57	0.61	0.28	1.63	1.63	0.48	
ENVIRC	0.92	0.97	1.05	0.91	0.90	0.93	0.92	0.91	0.91	0.90	1.06	0.68	0.90	0.90	1.09	1.14	0.91	1.05	1.05	0.97	
LEGAL	0.70	0.73	0.81	0.70	0.69	0.73	0.70	0.70	0.70	0.69	0.80	0.58	0.70	0.70	0.78	0.70	0.71	0.83	0.83	0.87	
SPERTEL	EV	-0.40	-0.27	-0.08	-0.47	0.14	0.00	0.20	0.14	0.11	-0.37	-0.44	-0.32	-0.28	0.50	0.25	-0.19	-0.33	0.55	0.22	
SPERTEL	EM	0.20	-0.28	0.48	0.06	-0.54	-0.39	-0.52	-0.54	-0.58	0.20	0.20	0.12	-0.50	-0.01	0.03	-0.13	0.25	-0.25	0.23	
EM	EV	-0.21	0.74	-0.71	-0.47	-0.80	0.88	-0.79	-0.73	-0.86	-0.72	0.83	0.83	0.47	0.47	0.94	-0.98	-0.72	0.86	0.92	

Note

[1] primary sector - agriculture

[2] primary sector - mining

[3] secondary sector - base industry and chemicals

[4]

secondary sector - various industries

[5]

secondary sector - consumptive goods industries

[6]

tertiary sector - property and real estate

[7] tertiary sector - transportation and infrastructure

[8] tertiary sector - trading, service and investment

Source: Database of the authors

Appendix 5: Degree of inter-relationship between SPERTEL and EV

		AALI [1]	ADHI [6]	ANTM [2]	ASII [4]	BFIN [8]	BNBR [8]	BRPT [3]	BUMI [2]	CTRS [6]	ELTY [6]
SPERTEL	EV	0,09%	10,24%	9,61%	4,41%	6,76%	5,29%	72,25%	62,41%	92,16%	246,49%
		ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSM [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]	ISAT [7]
SPERTEL	EV	26,01%	25,00%	10,89%	46,24%	4,00%	0,09%	1,69%	0,25%	0,00%	16,00%
		JHHD [6]	KIJA [6]	KLBF [5]	LSIP [1]	MEDC [2]	PGAS [7]	PLAS [3]	PTBA [2]	RALS [8]	RMBA [5]
SPERTEL	EV	7,29%	0,64%	22,09%	1,96%	0,00%	4,00%	1,96%	1,21%	13,69%	19,36%
		SMCB [3]	TINS [2]	TKIM [3]	TLKM [7]	TRIM [8]	UNSP [1]	UNTR [8]	UNVR [5]		
SPERTEL	EV	10,24%	7,84%	25,00%	6,25%	3,61%	10,89%	30,25%	4,84%		

Source: Database of the authors

Appendix 6: Degree of inter-relationship between SPERTEL and EM

		AALI [1]	ADHI [6]	ANTM [2]	ASII [4]	BFIN [8]	BNBR [8]	BRPT [3]	BUMI [2]	CTRS [6]	ELTY [6]
SPERTEL	EM	44,89%	20,25%	10,24%	18,49%	8,41%	1,44%	3,61%	2,25%	75,69%	5,29%
		ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSM [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]	ISAT [7]
SPERTEL	EM	0,01%	0,00%	22,09%	5,29%	3,61%	24,01%	17,64%	21,16%	36,00%	4,00%
		JHHD [6]	KIJA [6]	KLBF [5]	LSIP [1]	MEDC [2]	PGAS [7]	PLAS [3]	PTBA [2]	RALS [8]	RMBA [5]
SPERTEL	EM	7,84%	23,04%	0,36%	29,16%	15,21%	27,04%	29,16%	33,64%	4,00%	4,00%
		SMCB [3]	TINS [2]	TKIM [3]	TLKM [7]	TRIM [8]	UNSP [1]	UNTR [8]	UNVR [5]		
SPERTEL	EM	1,44%	25,00%	0,01%	0,09%	1,69%	6,25%	6,25%	5,29%		

Source: Database of the authors

Appendix 7: Degree of inter-relationship between EM and EV

		AALI [1]	ADHI [6]	ANTM [2]	ASII [4]	BFIN [8]	BNBR [8]	BRPT [3]	BUMI [2]	CTRS [6]	ELTY [6]
EM	EV	81,00%	44,89%	56,25%	67,24%	86,49%	84,64%	12,96%	7,29%	4,41%	6,25%
		ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSM [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]	ISAT [7]
EM	EV	6,76%	7,84%	5,29%	0,00%	86,49%	88,36%	81,00%	92,16%	75,69%	4,41%
		JHHD [6]	KIJA [6]	KLBF [5]	LSIP [1]	MEDC [2]	PGAS [7]	PLAS [3]	PTBA [2]	RALS [8]	RMBA [5]
EM	EV	54,76%	50,41%	22,09%	64,00%	77,44%	62,41%	53,29%	73,96%	51,84%	68,89%
		SMCB [3]	TINS [2]	TKIM [3]	TLKM [7]	TRIM [8]	UNSP [1]	UNTR [8]	UNVR [5]		
EM	EV	68,89%	22,09%	22,09%	88,36%	96,04%	51,84%	73,96%	84,64%		

Source: Database of the authors

Appendix 8: Degree of inter-relationship between SPERTEL, EV and EM

		AALI [1]	ADHI [6]	ANTM [2]	ASII [4]	BFIN [8]	BNBR [8]	BRPT [3]	BUMI [2]	CTRS [6]	ELTY [6]
SPERTEL	EM/EV	36,36%	9,09%	5,76%	12,43%	7,27%	1,22%	0,47%	0,16%	3,34%	0,33%
		ENRG [7]	EPMT [8]	GGRM [5]	GJTL [4]	HMSM [5]	INCO [2]	INDF [5]	INKP [3]	INTP [3]	ISAT [7]
SPERTEL	EM/EV	0,00%	0,00%	1,17%	0,00%	3,12%	21,22%	14,29%	19,50%	27,25%	0,18%
		JHHD [6]	KIJA [6]	KLBF [5]	LSIP [1]	MEDC [2]	PGAS [7]	PLAS [3]	PTBA [2]	RALS [8]	RMBA [5]
SPERTEL	EM/EV	4,29%	11,61%	0,08%	18,66%	11,78%	16,88%	15,54%	24,88%	2,07%	2,76%
		SMCB [3]	TINS [2]	TKIM [3]	TLKM [7]	TRIM [8]	UNSP [1]	UNTR [8]	UNVR [5]		
SPERTEL	EM/EV	0,99%	5,52%	0,00%	0,08%	1,62%	3,24%	4,62%	4,48%		

Source: Database of the authors