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Djoko Wintoro

Prasetiya Mulya Business school, dwintoro@yahoo.com

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Structural Model of the IDX Credibility

Djoko Wintoro

Indonesia Stock Exchange (IDX) needs to increase its credibility for the purpose of increasing favorable investment environment for both domestic and foreign investors. The perception of stockbrokers is used to develop structural model of the IDX credibility as measured by stock trading volume and frequency. Factor analysis overview has found three important group regulations: stock trading services, stock trading protection, and stock trading efficiency – which are influent to the credibility of IDX. Structural equation modeling analysis confirms that those three group regulations positively influence the credibility of IDX

Keywords: *credibility, structural equation model, stock exchange*

Introduction

As a firm, every stock exchange involves a competition to attract investors. Some studies of stock exchange competition have focused on the competition among the developed stock exchanges (Gresse, 2006; Foucault and Parlour, 2004; Coffee Jr and John, 2001; Gehrig, 1998; Gehrig, Stahl, and Vives, 1994). The increasing intensity of international competition among stock exchanges threatens the development of Indonesia Stock exchange (IDX) to increase its stock trading volume and frequency. The first reason, IDX needs to compete with developed stock exchange in providing credible regulation on investment. Second, advanced communication creates opportunities for investors in a developed

stock exchange to access market information and decide to invest or not to invest in IDX. Third, international competition among stock exchanges creates performance volatility of IDX because of the hot money behavior.

This paper argues that merger is not a good option for IDX to increase its ability to attract investors because of structural and political barriers. The best option is to increase the credibility of IDX and to use its credibility to attract good investors and improve stock trading volume and frequency. The main source of IDX credibility is a bundle of good regulation related to stock trading. For this reason, a research question proposed for this study is to explore what are the important regulations that have to be issued by IDX to increase its credibility.

*Correspondence to: Djoko Wintoro, Research Director Prasetiya Mulya Business School, Jl. R.A. Kartini, Cilandak Barat, Jakarta 12430, Indonesia, Email: dwintoro@yahoo.com

Literature Review

Stock Exchange

There are at least two function of a stock exchange: (i) stock exchange as a market, and (ii) stock exchange as a firm (DiNoia, 2003). If a stock exchange provides a floor for stock trading, its function is as a market (Macey and Kanda, 1990). As a market, a stock exchange provides stock trading system, stock prices information in the form of buy and sell quotation, and has many number of stockbrokers as its member. Stock exchange as a firm must pay attention on providing a number of regulations - listing, trading, and settlement services. As a firm, the stock exchange has to compete with other stock exchanges to provide high credible regulations offered to its customer - direct and indirect customers - in order to maintain its customers' confidence (Abeysekera, 2006). The most important direct customers of IDX are issuers who usually pay fees in order to be listed on a stock exchange and stockbrokers who usually pay fees in order to be admitted to trading. Indirect customers of IDX are all investors that send buy or sell orders to stockbrokers to be executed on IDX.

Market globalization and technological development are important driver to international competition that drive IDX to enter direct competition with developed stock exchanges and another emerging stock exchange. The nature of competition among stock exchanges is very dynamic. Stock trading volume will migrate to the lowest cost transaction and the most liquid stock exchange. The migration of stock volume may produce transaction costs war among stock exchanges this is because the higher the trading volume, the smallest the average transaction costs that can be offered by a stock exchange. In order to win a competition, a stock exchange need to exploit economies of scale and scope by

encouraging stockbrokers to increase their trading volume and trading efficiency.

The increasing competition among stock exchanges threatens the development of IDX that has characteristics: (i) small number of liquid stocks, (ii) small trading volume and frequency, (iii) small number of domestic investors, (iv) small amount of domestic companies stocks traded on a developed stock exchange, and (v) small numbers of listed companies. In the context of international competition among stock exchanges, the development of IDX should be focused on the building of its credibility in order to be able to attract investors and increase stock trading volume as well as trading frequency.

The Credibility of IDX

This paper borrows the concept of credibility that has been discussed by Grabel (1999), with the purpose for building structural model of the IDX credibility. The credibility of IDX can be derived directly from the perception of new-classical macroeconomic theory that combines the rational expectations hypothesis (e.g., Kydland and Prescott, 1977). A key premise of the concept of credibility is that all users of regulation always appraise a new regulation which is issued as a basis in forming their expectation. A good new regulation issued will create a positive expectation that reflect the credible regulation (McCallum, 1983).

Investors and stockbrokers always assess the credibility of new regulation issued by IDX when forming expectations and making decision about what investment actions must be taken. This means that the credibility of IDX depends on a kind of logic: IDX is credible if a number of regulation issued is deemed credible to the investors and stockbrokers (Blackburn and Christensen, 1989). From this logic, the credibility of IDX can not be predicted with certainty in advance. The credibility

of a number of regulations issued is needed to be evaluated regularly by investors and stockbrokers of IDX.

Stockbrokers play important function at IDX. The reaction of stockbrokers to a new regulation issued by IDX is a function of their perception to the information contained in the new regulation issued. In this paper, the credibility of IDX is defined as stockbrokers' perception of the effectiveness of a particular regulation issued by IDX. The important element of this definition is stockbroker's perception. The credibility of regulation issued by IDX refers to a perception held by stockbrokers, not an objective condition of the regulation. When a new regulation issued by the IDX, the stockbrokers unlikely recognize the credibility of this new regulation. The stockbrokers will base their reactions on their perceived credibility of regulation. Thus, the credibility of regulation issued by IDX is based on ex ante perception of stockbrokers.

A number regulations issued by an emerging stock exchange can be grouped in the form of a regulation that decrease transaction costs, increase liquidity, provide easier access to market, increase operational efficiency, and increase transparency. Transaction costs indicate the explicit costs that are paid as brokerage commissions and taxes for carrying out a transaction, plus implicit costs of the time required for its settlement. Liquidity can be viewed in two dimensions: (i) immediacy - the market's ability to provide immediate execution for an incoming market order, (ii) market depth - the ability to execute market orders without entailing significant changes in the market price. Access to markets is also crucial factor. Advances in technology and the trend of market deregulation make stock exchanges within reach for a greater number of investors. Investors also look for operational efficiency. They are concern about how well and at what cost a market

structure facilitate transactions by bringing buyers and seller together. Informational and operational efficiency are also fundamental for investor protection and market integrity. With transparency, all market participants would be operated under similar condition.

Hypotheses and Model

To the extent that a regulation issued by IDX is credible from the perception of stockbroker, we propose three hypotheses that:

- H1: A number credible regulations of stock trading service positively influences the credibility of IDX.
- H2: A number credible regulations of stock trading protection positively influences the credibility of IDX
- H3: A number credible regulations of stock trading efficiency positively influences the credibility of IDX.

From the proposed hypotheses, it can be developed a structural model the credibility of IDX as shown in Figure 1.

Each component of the structural model is defined as follows:

- **The Regulations of Stock Trading Services.** IDX may be issued a number regulation of stock trading as part of its service role to increase the activities of stockbrokers. The stock trading service regulations include a number regulations to increase the number of local individual investors (X1), help stockbrokers to increase their services quality to investors (X2), increase trading volume (X3), and increase trading frequency (X4)
- **The Regulations of Stock Trading Protection.** IDX may be issued a number of polices to protect stockbrokers' trading activities. The stock trading

protection regulations include a number of regulations to protect stockbrokers from unfair trading (X5), protect stockbrokers' customer from unfair initial public offering transaction (X6)

- **The Regulations of Stock Trading Efficiency.** IDX may be issued a number of regulations to increase the degree of stock exchange informational efficiency (X7) and stock exchange operational efficiency (X8)
- **The Credibility of IDX** is measured by increasing daily trading volume (Y1) and daily trading frequency (Y2). These are important performance measurement of IDX.

Methodology

Research Design

This research focuses on the Indonesia Stock Exchange (IDX) which is assembled by more than 120 stockbrokerage companies. In term of the number of listed companies, market capitalization and trade volume, IDX is categorized into an emerging stock market. Primary data for this study was collected from random sample of 110 stockbrokers, who work officially for stockbrokerage companies - as the member

of IDX, through sending questionnaires.

Each construct identified in Figure 1 was measured using likert-type scale. Each scale item was assigned values from one to seven based on agreement or disagreement with the statement. The questionnaires consist of 10 questions that are grouped into 3 sections. The limited questions are intended to encourage stockbroker to answer the questionnaires. Section 1 is about a stock trading service regulations that are measured using a four-item scale. Section 2, is on stock trading protection regulations are measured using a two-item scale and Section 3 contains a two-item scale to measure the credibility of stock trading efficiency regulations. Validity and reliability of instrument was assessed through exploratory factor analysis.

Results and Discussion

The Respondent Profile

The respondents are stockbrokers who work for stockbrokerage companies. Each stockbrokerage company has received only one questionnaire. Of these, 76 questionnaires were completed and returned by the stockbroker. Therefore, our sample

Figure 1. Structural Model of the IDX Credibility

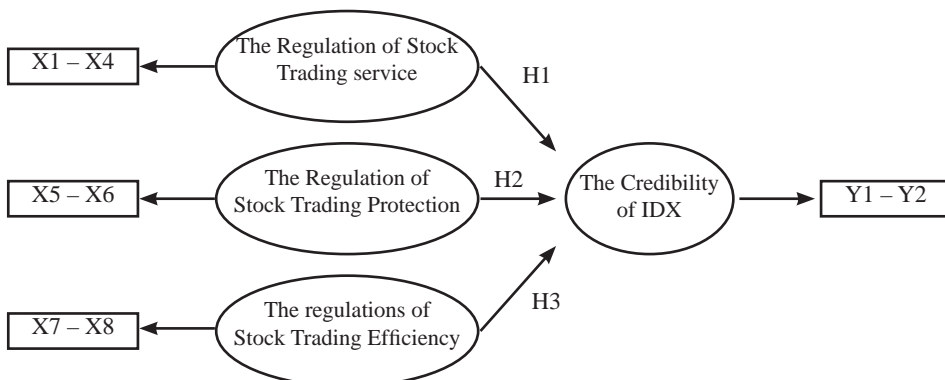


Table 1. Total Variance Explained

	Factor 1	Factor 2	Factor 3
Initial Eigenvalues			
• Total	7.049	1.625	1.436
• % of variance	46.991	10.833	9.577
• Cumulative %	46.991	57.824	67.401
Rotation Sums of Squared Loadings			
• Total	4.275	3.197	2.638
• % of variance	28.503	21.314	17.584
• Cumulative %	28.503	49.817	67.401

accounted for approximately 69% of total sample stockbrokers that were targeted as the respondents. The stockbrokerage companies consist of: (i) 58 local companies that their capital is fully supplied by local owner, and (ii) 18 joint-venture companies that is 23.7% of total stockbrokerage companies. The stockbrokerage companies provide a number of services including underwriting, investment management, and stockbroker services. Most of them provide a combination of stockbroker service and underwriter. It is only 28.9% of respondents providing stockbroker service. Stockbroker firms provide service to both domestic and foreign investors – individual and institutional investors. Most of stockbroker companies provide services to local investors as their majority customers. It is only 27.6% of stockbrokerage companies that provide services to foreign investor as their majority customers.

Exploratory Factor Analysis

Kaiser-Meyer-Olkin (KMO) and Bralett's test provide information about the overall results of the measurement model. The value of Kaiser-Meyer-Olkin measures of sampling adequacy that is equal to 0.803. This means that factor analysis is appropriate to analyses data in the form of matrix correlation. The Bartlett's test of Sphericity provides values for Chi-Square of 873.298 based on 120 degrees of freedom,

with significant value 0.000 indicating that the null hypothesis - the variables does not have correlation - is rejected.

As recommended by Anderson and Gerbing (1982), prior to testing the full research model, a series step of exploratory factor analyses (EFA) using the maximum likelihood method for extraction and principal component analysis for rotation were conducted on both the independents and dependent scale items. Consistent with the research model, three distinct factors emerged, accounted for 67.4% of the total variance (Table 1). The three factors are (i) the credible regulation of stock trading service (S), (ii) the credible regulation of stock trading protection regulations (P), and (iii) the credible regulation of stock trading efficiency (T). This EFA permitted the identification of factor with poor Eigenvalue that is less than 1.00. The factors with poor Eigenvalue are removed.

Structural Model

In structural model analysis, there is two important outputs: (i) measurement equation, and (ii) structural equations. Measurement equation analysis is the first step in the structural equation modeling technique (Anderson and Gerbing, 1982). The scale for each factor was set by fixing the factor loading to one of its observed variables. The measurement equations output provide information about the validity and reliability of observed variable to the construct which is identified in the structural model. The validity of observed variable is measured by factor loading. If the factor loading of observed variable is higher than 0.50, this variable is valid to explain the construct. The reliability of observed variable – internal consistency is measured by its R square. Table 2 provides information about the validity and reliability of all observed variables. Factor loading as validity measurement is in the range of 0.65

Table 2. Factor Loading

	Factor Loading	R Square	T-Value
F1: Stock Trading Service Regulations			
• to attract domestic investors	0.65	0.42	6.13
• to enhance quality of service	0.67	0.45	6.48
• to increase stock trading volume	0.99	0.99	11.77
• to increase trading frequency	0.97	0.94	11.23
F2: Stock Trading protection Regulations			
• to protect unfair daily trading	0.83	0.7	7.35
• to protect unfair IPO transaction	0.79	0.63	6.95
F3: Stock Trading Efficiency Regulations			
• to enhance operational efficiency	0.76	0.58	6.42
• to enhance informational efficiency	0.75	0.57	6.33

to 0.99 this means that all observed variable is important for explaining the construct variable. The R square of observed variable is in the range 0.42 to 0.99, these value indicate that all observed variable are reliable as explanatory variable of the construct identified in the research model.

The second important output of structural model analysis is structural equation that explains the relationship of independent latent variables to the dependent latent variable, as follow:

$$S_4 = 0.48 * S_1 + 0.35 * S_2 + 0.18 * S_3 + \epsilon$$

S₄ is the credibility of IDX; S₁ is stock trading service regulations; S₂ is stock trading protection regulations; S₃ is stock trading efficiency regulations. The overall relationship between the three factors to stock exchange credibility factor was strong, R square is 0.69. The value of a various variables show that the overall fit of the model is good that the observed variable can explain the research structural model. The value of minimum fit function Chi-square is 39.95, based on 29 degrees of freedom, with a probability of 0.086. The value of good indicators for the structural model is high. The Bentler-Bonett normed fit index (NFI) is 0.96 for the model. The Bentler-

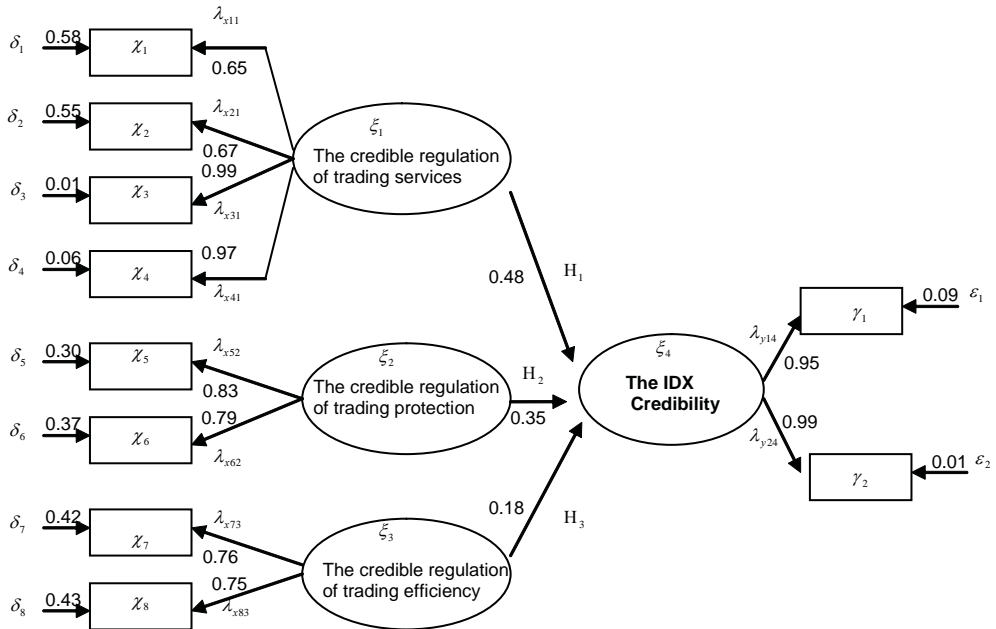
Bonett non-normed fit index (NNFI) takes into account the degrees of freedom in a model. This index is 0.98. The comparative fit index (CFI) for the model is 0.99 and the Goodness of Fit Index (GFI) is 0.90.

Figure 2, that is suggested by SEM, shows the final structural model of the credibility of IDX that consists of measurement model and structural model. Six factor loadings of eight variables were highly significant – that is above 0.70 - which supports the overall factor structure of the model. The relationship between the three independent latent variables and dependent latent variables is positive. The credibility of IDX is indicated by (i) daily trading volume – the loading factor is 0.95 and R square is 0.91; and (ii) daily trading frequency – the loading factor is 0.99 and the R square is 0.99. This finding suggests that the daily trading volume and daily trading frequency is a reflection of the IDX credibility.

Two hypotheses are supported and significant. One hypothesis is supported but insignificant. The standardized regression weights pertaining to all hypotheses are shown in Table 3.

H1, which states that the credible regulation of stock trading service positively influences the credibility of IDX, is

Figure 2. The Final Structural Model of The IDX Credibility



supported. The direct effect of the credible regulation of stock trading service on the credibility of IDX is positive and significant as indicated by coefficient influent and t-value. The value of coefficient influent is 0.48 and t-value is 4.4. The t-value is higher than the minimum requirement of t-value – that is 3.46 at the significant level, $p < 0.001$. This finding suggests that the quality services and a various number of services provided by stockbrokers can reflect the IDX credibility. As shown in Figure 2, the credible regulations of stock trading service issue is indicated by a number of regulations to (i) increase the number of domestic investors – the factor loading is 0.65 and R square is 0.42; (ii) help stockbrokers to increase their service quality – the factor loading is 0.67 and R square is 0.45; (iii) increase daily stock trading volume – the factor loading is 0.99 and R square is 0.99; and (iv) increase stock trading frequency – the factor loading is 0.97 and R square is 0.94

H2 asserts that the credible regulation of stock trading protection positively influences

the IDX credibility is supported. The direct influence of the credible regulation of stock trading protection is positive and significant as measured by coefficient influent and t-value. The value of coefficient influent is 0.35 and t-value is 3.17. The t-value is higher than the required minimum t-value that is 2.660 at the significant level, $p < 0.01$. This finding suggests that the high quality protection of stock trading executed by stockbrokers on behalf of themselves or their investors can reflect the credibility of IDX. As shown in Figure 2, the credible regulations of stock trading protection is indicated by a number of regulations issued to: (i) protect stockbrokers from unfair stock trading practices – the loading factor is 0.83 and R square is 0.70; and (ii) to protect the interest of stockbrokers from unfair initial public offering transaction – the loading factor is 0.79 and R square is 0.63

The statement of hypothesis that a number of credible regulations of stock trading efficiency positively influence the credibility of IDX is supported but it is not significant. The coefficient influent is

Table 3. Path & Hypothesis

Path	Hypothesis	Coefficient Influent	T-Value Minimum T-Value
F1-F4			
• Positive influence	0.48		
• Significance	supported	4.44	3.46(p<0.01)
F2-F4			
• Positive influence	0.35		
• Significance	supported	3.17	2.66(p<0.01)
F3-F4			
• Positive influence	0.18		
• Significance	not supported	1.35	2.0(p<0.05)

only 0.18 and t-value is 1.35 that is lower than required minimum t-value of 2.00 at the significant level, $p < 0.05$. This finding suggests that the credible regulations of stock trading efficiency do not much have impact on the performance of IDX so that these regulation has little influence to the credibility of IDX. As shown in Figure 2, the credible regulation of stock trading efficiency is indicated by a number of polices issued concerning with a regulations to increase the degree of informational – the loading factor is 0.76 and R square 0.58; and (ii) operational efficiency of IDX – the loading factor is 0.75 and R square is 0.57.

Conclusion

The study presented herein makes several contributions. First, the credibility of IDX can be measured in the form of increasing daily trading volume and

increasing daily trading frequency. Second, an exploratory factor analysis found three group regulations concerning with: (a) the services of stock trading, (b) the protection of stock trading, and (c) the efficiency of stock trading that are important determinants to the credibility of IDX. Both the credibility regulations of stock trading service and stock trading protection have significant influent to the credibility of IDX. The credibility regulation of stock trading efficiency has little influence to the credibility of IDX. Third, a structural equation model shows that the overall fit of the research model is good as measured by a goodness fit of index.

A suggestion for researcher is that stock exchange regulation credibility need to be further studied from the perception of investors - both individual and institutional and both domestic and foreign investors. Event study can be used to explore the credibility regulations of IDX.

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