The relationship between transparency and capital market efficiency in Iran Exchange market[1]

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ABSTRACT

The present study investigated the relationship between transparency and efficiency of capital markets and corporate governance has been conducted to determine the role of regulators. For access to this aims are selected 384 person of food and petrol affiliate. For gathering data is used of questionnaire. This research is based on the objective and the method of data collection is descriptive. Pearson correlation, regression equation and path analysis were used to determine the relationship between variables. The results of this study are indicated both of transparency and corporate governance have impact on efficiency of the capital market in Tehran Stock Exchange. The main finding of this study was that transparency and corporate governance can have a significant impact on the efficiency of capital markets. So if we want to have market efficiency we should prepare methods and strategy to increase transparency and corporate governance.

*Keywords***:** Transparency; efficiency of the capital market; corporate governance; Tehran Stock Exchange

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1. INTRODUCTION

Transparency discussions have exacerbated following the financial crisis, making world leaders repeatedly call out for more transparency in financial markets. However, it has not yet been established that increased transparency necessarily improves market outcomes. The academic literature generally agrees that changed pre- or post-transparency will alter market outcomes by changing the behavior of market participants (e.g., Boehmer, Saar and Yu, 2005; Porter and Weaver, 1998; Bloomfield, O'Hara and Saar, 2011). However, there is less agreement on the direction of the effect, i.e. whether increased transparency improves or deteriorates market quality. For example, both positive and negative effects have been demonstrated theoretically in several transparency studies (see e.g. Madhavan, 1995, 1996; Naik, Neuberger and Viswanathan, 1999; Baruch, 2005).

On the empirical side, a handful of studies document a positive link between increased transparency and market outcomes. Swan and Westerholm (2006) empirically study 33 major stock exchanges and analyze which transparency features and market designs are associated with desirable market outcomes, such as high liquidity. They conclude that market designs that favor greater (pre- or post-trade) transparency typically outperform more opaque market structures. This is in line with a series of recent papers concluding that increased trade transparency will increase liquidity (Boehmer, Saar and Yu, 2005; Zhao and Chung, 2007), improve price discovery (Hendershott and Jones, 2005), lower volatility (Chung and Chuwonganant, 2007) and ameliorate various other market outcomes (Eom, Ok and Park, 2007). But despite widespread belief – in particular among policy makers 3 – that increasing transparency leads to a fairer and informatively more efficient market, there are empirical studies hat contrast this (see e.g. Madhavan, Porter and Weaver, 2005).

This is particularly true in the debate on broker anonymity, where the case against increased pre-trade transparency is prevalent (Foucault, Moinas and Theissen, 2007; Simaan, Weaver and Whitcomb, 2003; Comerton-Forde, Frino and Mollica, 2005; Desgranges and Foucault, 2005; Rindi, 2008). The benefits of increased post-trade transparency have similarly been questioned in several studies that do not find that changes in the data publication regime – such as changed timing of reporting – leads to liquidity improvements (Gemmill, 1996; Saporta, Trebeschi and Vila, 1999; Board and Sutcliffe, 1995).

In short, there is no clear consensus in the existing literature on the exact liquidity impact of increased pre- and post-trade transparency. However, it is possible that the lack of consensus results from strictly examining discrete events, which can produce different outcomes due to inevitably different transparency levels within each empirical setting. As previously described, this study addresses this issue by introducing a time-varying proxy for the effective level of transparency (number of data users), which allows for an evaluation of how liquidity improves or deteriorates for a range of different transparency levels.

This paper investigates whether an increase in pre-close transparency alters the effectiveness of stock closing call. Previous studies have examined the impact of stock closing call on price efficiency at market closing, and conclude that the introduction of stock closing call could enhance market quality (e.g., Pagano and Schwartz, 2003; Huang and Tsai, 2008). On the other hand, prior studies have examined the effects of transparency on trading behavior of informed traders and the results to date are far from conclusive. One argues that informed traders trade more accurately in a transparent environment since they could tap the liquidity offered by the limit-order book more efficiently (e.g., Madhavan et al., 2005).

The other suggests that informed traders prefer markets with less transparency to avoid revealing their private information (e.g., Chowdhry and Nanda, 1991; Comerton-Forde and Rydge, 2006). While there is no consensus in the literature on the influence of transparency on trading behavior of informed traders, this paper provides additional evidence regarding this issue by examining the impact of pre-close transparency on the efficacy of stock closing call.

Starting from January 1, 2005, the Iran Stock Exchange (IRSE) enhances transparency by disclosing the best five bids and asks prices and related unexecuted orders in the trading period between 9:00 and 13:25. At the same time, the IRSE disseminates no information regarding the limit-order book during the five-minute closing call period surrounding this institutional change. Thus, this unique design provides an opportunity to examine how an increase in pre-close transparency affects informed trading near market closing and then price efficiency of stock closing call.

The empirical results indicate that the quotation information, including bid-ask spreads and market depth, do not change significantly near market closing following pre-close transparency increases. However, this change in pre-close transparency results in larger trading volume, and then induces higher adjusted R-square of market model and less absolute return autocorrelation at market closing. The findings provide evidence that the increase in pre-close transparency could enhance the price efficiency of stock closing call. Thus, this paper conclude that, after pre-close transparency increases, informed traders will increase their trading during stock closing call when disclosing no limit-order book information at that time. The findings support Chowdhry and Nanda (1991) that informed traders prefer to trade in an opaque environment.

The remainder of this study is organized as follows. Section 2 provides a brief literature review. Section 3 develops the research hypotheses. Section 4 describes how the sample is chosen and the methodology used in this paper. Empirical results are presented in section 5. Section 6 concludes the paper.

2. LITERATURE REVIEW

Previous research examines whether an introduction of stock closing call leads to an improvement in market quality. Most of previous literature concludes that stock closing call could enhance market quality. Hillion and Suominen (1998) examine the closing price behavior of the CAC 40 stocks on the Paris Bourse, and find that there exists high price volatility and bid-ask spreads near market closing due to price manipulation. Hillion and Suominen (1998) thus prompt the Paris Bourse to implement the closing call auction. Hillion and Suominen (2004) then develop a theoretical model of closing price manipulation and suggest that the call auction is the optimal closing mechanism because it could reduce price manipulation. Similarly, Pagano and Schwartz (2003) examine the impact of the introduction of stock closing call auction on market quality of Paris Bourse.

Pagano and Schwartz (2003) find that the introduction of stock closing call reduces transaction costs and sharpens price discovery at the end of the day. In addition, Pagano and Schwartz (2005) examine the impact of stock closing call on price determination on the NASDAQ. Pagano and Schwartz (2005) find that stock closing call also improve the market quality for the stocks listed in the Russell 2000.

Moreover, the introduction of stock closing call also improves the market quality in the Asia-Pacific stock markets. Comerton-Forde et al. (2007) examine whether the Singapore Exchange introduces opening and closing call auctions affect stock market quality, and find that the introduction of call auctions enhances the market quality at both market opening and closing. Huang and Tsai (2008) also examine the effects of the introduction of stock closing call on the TWSE. Huang and Tsai (2008) find that stock closing call could reduce the price volatility at market closing and enhances the market efficiency by reducing noise in stock closing prices.

On the other hand, the effects of transparency have attracted considerable attention from practitioners, researchers, and policymakers. Transparency is defined as the availability of information regarding participants' buy and sell orders before executed on the limit-order book (O'Hara, 1995). Prior studies assess the change in market quality associated with an increase in transparency; however, there is no consensus in the literature on whether increased transparency results in an improvement in market quality. Baruch (2005) constructs a theoretical model infer how an increase in transparency affects market quality. Baruch (2005) concludes that increased transparency reduces the bid-ask spread and increases the informational efficiency of stock price. Also, Boehmer et al. (2005) investigate the impact of the introduction of the OpenBook that provides limit-order book information to traders off the exchange floor on the NYSE. Boehmer et al. (2005) indicate that greater transparency leads to higher market liquidity and greater price efficiency.

Examining a reduction in the transparency of the limit-order book on the Island ECN, Hendershott and Jones (2005) find that the dominant market for the three most active ETF's decreases market quality following transparency decreases, and the market quality then improves when Island later redisplay its orders. Besides, Chung and Chuwonganant (2009) examine the influence of transparency on market quality using data surrounding the introduction of the Super Montage which is a fully integrated order display and execution system for NASDAQ-listed stocks. Chung and Chuwonganant (2009) show that both bid-ask spreads and return volatility decline significantly after the implementation of the SuperMontage, and conclude that the Super Montage does improve the market quality on the NASDAQ.

In contrast, Madhavan (1996) study the same question by theoretical model and their viewpoint is different from Baruch (2005). Furthermore, Madhavan et al. (2005) examine such an increase by empirical study to support the theoretical inference of Madhavan (1996). Madhavan et al. (2005) test whether an increase in transparency results in worse market quality after the Toronto Stock Exchange disseminates information about bid and ask depth at the top four price levels in the limit-order book. Madhavan et al. (2005) find that increased transparency results in higher trade execution costs and price volatility.

In summary, previous studies have provided considerable insight into the efficacy of stock closing call. Previous research has also generated interesting findings about the effects of transparency. However, no work has been conducted into the influence of pre-close transparency on the effectiveness of stock closing call when disclosing no limit-order book information at that time. Thus, this paper attempts to bridge this gap.

New technologies have been allowing developing countries to leapfrog some hard problems that are time-consuming to resolve or hopelessly entangled with other parts of the society and get to an advanced stage of capital markets. This is typified by the electronic trading system, and the electronic clearing, settlement and depository system. In fact, the

introduction of the both systems has drastically rationalized some key elements of the capital market working in favor of developing countries.

However, capital markets in many developing countries remain illiquid primarily due to problems on the supply- and demand-sides of the markets.

Besides the supply- and demand-sides of the market, there are some market infrastructure elements of government bonds that will significantly contribute to market efficiency or liquidity if they are designed and/or structured sensitively enough to development country realities. The failure in addressing such market infrastructure elements often results in the misallocation of capital market development costs, a repo marker unworkable to facilitate market making obligations, and the underutilization of human intermediation.

Market intermediaries think twice before taking an initiative for making the market efficient by cutting back on their own brokerage commissions or bead/ask spreads. This is because an elasticity of a commission or spread cut to a trading volume is uncertain, and because there will be a time lag between a commission or spread cut and a trading volume pickup, if any. Primary dealership generally helps cope with this chicken-and-egg situation (see Section **Błąd! Nie można odnaleźć źródła odwołania.**). In competitive environments where intermediaries are sensitive to their own reputation in the marketplace, even post-trade dissemination of trade data such as prices and volumes at or after the close of the market gives market intermediaries a commercial incentive to narrow the spreads under competitive environments.

The market maker's adverse selection impairs the market's ability to dissipate market impact. The market maker may well minimize its market risk exposure by selecting smaller orders to execute. For the same reason, it may be less willing to trade with the investor when the market is volatile. Primary dealership with market making obligations is effective in alleviating this problem.

Market makers are usually granted access to competitive funding enabling them to support their inventories of marketable bonds in a commercially viable manner. An expanded repo market serves such a purpose well. In some countries, the central bank provides market-making support through a "secondary market window". It engages in trading of government bonds with private sector dealers to induce the liquidity into the market, hence accommodating the market maker's position taking.

Fees payable to the regulator, the clearinghouse, the depository, etc. may be so expensive due to limited economies of scale that investors may be discouraged from trading actively. It is not an uncommon practice in emerging markets to charge the fees to the investor every time it trades to financially support the market infrastructure. This is probably because most governments developing a brand-new market infrastructure in their economy are fiscally constrained, and they are influenced by the trend in developed markets of converting the market infrastructure into for-profit organizations. The government or its fiscally independent agencies charge fees to individual trades in a relatively small and low-volume market to build up and support the market infrastructure.

Since a liquid secondary market of government bonds is intended to serve a country's public interests, fees charged for trades apparently have externalities. It is more appropriate to finance the market infrastructure substantially by the government budget and/or more socially broad-based resources than just market players. The costs are meant to be spread out across all segments of the economy that benefit directly or indirectly from well-functioning capital

markets including government bond market at least until the market has reached a full-fledged stage. To counter-balance an uncompetitive nature of market institutions, it is also imperative to require the operators of the market infrastructures to keep their operations transparent in accordance with stated disclosure rules.

Securities transaction taxes, like other types of trading costs, can obstruct price discovery and price stabilization, increase volatility, reduce market liquidity, and inhibit the informational efficiency of financial markets. This is because returns on short-term instruments and short-term transactions of long-term bonds are highly and negatively sensitive to securities transaction taxes.

Opportunity costs of trading also arise from imperfect flow of information. Market information generates trading, and then trading generates a new piece of market and trade information. Traditionally, private sector institutions are operationally more effective in this area. Therefore, this task may be outsourced to the private sector under governmental supervision.

3. HYPOTHESES

As suggested by Zhao and Chung (2006), informed traders buy when prices are below the estimates of fundamental value and sell when prices are above the estimates; hence, their trading could move prices to the estimates of fundamental value. Since informed traders could estimate values accurately, their trading then makes prices more informative and efficient. Based on Zhao and Chung (2006), two competing hypotheses have been offered to explain the impact of pre-close transparency on informed trading and then price efficiency near market closing. On the one hand, an increase in pre-close transparency may result in lower price efficiency at market closing. Madhavan et al. (2005) states that, if transparency increases informed traders' expected profits by allowing them to tap the liquidity offered by the limit-order book more efficiently than in an opaque environment, then informed traders trade more accurately in a transparent environment, speeding up the process of price discovery. Since the TWSE increases pre-close transparency but disseminates no limit-order book information during stock closing call period, an increase of pre-close transparency should decrease price efficiency at market closing.

On the other hand, Chowdhry and Nanda (1991) suggest that informed traders prefer markets with less transparency to avoid revealing their private information, implying informed traders prefer to trade in an opaque environment. Also, Comerton-Forde and Rydge (2006) and Grossman and Miller (1988) indicate that informed traders prefer to trade in an opaque market where they could retain their informational advantage. Since Zhao and Chung (2006) argue that the trading of informed traders facilitates price efficiency, this paper predicts that the opacity of stock closing call should attract more informed trading after pre-close transparency increases, and then results in higher price efficiency of stock closing call.

4. DATA AND MATHODOLOGY

Before the end of 2002, only the unexecuted orders of the limit-order book at the best bid and asks prices are disclosed. Due to the belief that increased transparency leads to a fairer

and more efficient market, the IRSE enhances pre-close transparency by disclosing the best five bids and ask prices and related unexecuted orders on January 1, 2005. Nevertheless, the IRSE disseminates no information about the limit-order book during the five-minute closing call period at the same time. This makes the limit-order book at market closing a black box for traders. The price efficiency of stock closing call after pre-close transparency increases is therefore valuable to investigate.

Thus, this paper utilizes intraday data to analyze the effects of an increase in pre-close transparency on the effectiveness of stock closing call in the Iran stock market. The data is taken from the Iran Economic Journal (ITEJ) database, which provides the price and volume of executed orders and quotation information of limit-order book for each stock.

The sample period is divided into two sub-periods, namely, before and after the increase of pre-close transparency. Before, from October 8, 2005 to December 31, represents only the unexecuted orders at the best bid and ask prices are disclosed. Due to the data availability on the IEJ database, the After period in this study is starting from April 1, 2005. Moreover, this paper selects sample stocks according to the following criteria: (1) the stocks are common stocks on the IRSE; (2) the stocks are traded both before and after pre-close transparency increases; and (3) the stocks are the top 50 largest firms in the testing sample. Then, this paper gathers data with each five-minute interval during the last half-hour of the selected days.

To evaluate the impact of increased pre-close transparency on the effectiveness of stock closing call, this paper begins by calculating relative quoted spread and relative effective spread in each five-minute interval during 13:00-13:30. Adopting relative proxies could control for differences across stocks and time. Relative quoted spread and relative effective spread are the two standard measures of transaction costs. Relative quoted spread is estimated as the difference between the best ask price and bid price and then divided by the midpoint of the bid and ask price. In the interest of completeness, this paper also reports relative effective spread for each stock, measured as twice the difference between the transaction price and the midpoint of the bid and ask price and then divided by the midpoint of the bid and ask price. Similar to calculating spreads, market depth is measured by relative bid depth and relative ask depth. Relative bid depth for each stock is the quoted volume at the highest bid price in each five-minute interval divided by the total daily trading volume. Relative ask depth for each stock is the quoted volume at the lowest ask price in each five-minute interval divided by the total daily trading volume.

This paper then utilizes relative trading volume to measure the impact of increased pre-close transparency on trading activities near market closing. Both trading volume measured by lots and trading volume measured by dollar are used in this study. The change of relative trading activities near market closing surrounding pre-close transparency increases could provide some evidence regarding the trading behavior of informed traders. Relative trading volume is the trading volume in each five-minute interval relative to the total trading volume for the entire day.

Pagano and Schwartz (2003) propose a test of price efficiency via examining the price synchronicity across a set of stocks. An increase in the adjusted R-squares of market model would signal greater synchronicity in stock prices, thereby improving price efficiency. Thus, a comparison of the adjusted R-squares of market model at market closing surrounding pre-close transparency increases provides evidence regarding the impact of pre-close transparency on price efficiency of stock closing call.

The market model is estimated for stock return in each five-minute interval during 13:00-13:30. The Iran Weighted Stock Index (IRSI) is used as a proxy for the market portfolio. Therefore, the market model could be estimated as follows:

$$\text{itd it0 it1 mtditd } R = b + b R + e \ \ldots\ldots(1)$$

where:
Ritd is the return of stock i in time interval t for day d, Rmtd is the corresponding market return, eitd is a random error term, and bit0 and bit1 are coefficients to be estimated.

Return autocorrelation is another measure of price efficiency. Boehmer et al. (2005) indicate that a more efficient price process would be closer to a random walk and therefore exhibit less return autocorrelation (both positive and negative). Thus, this paper estimates absolute value of return autocorrelation rolled on a five-minute interval from 13:00 to 13:30 as follow:

$$|\text{ AutoCorr }|\,|\text{ Corr}(R ,R)\,|\text{ it} = i,t\text{-}1,d \text{ itd } \ \ldots\ldots(2)$$

where:
AutoCorrit is the return autocorrelation of stock i in time interval t.

5. RESULTS

Table 1 and Table 2 present the preliminary analysis regarding the effects of the increase in pre-close transparency on quotation information near market closing. Table 1 shows the differences of bid-ask spreads during 13:00-13:30 surrounding pre-close transparency increases. Panel A of Table 1 indicate that the relative quoted spreads near market closing change insignificantly at the 5% level following pre-close transparency increases. Panel B of Table 1 also indicates that the change of the relative effective spreads nearing market closing are not significant after pre-close transparency increases.

Table 1. Bid-ask spreadnear Market Closing before and after Pre-Close Transparency Increases.

Time	Before	After	ΔDiff. = Diff.After - Diff.Before
Panel A: Relative Quoted Spreads			
(1) 13:00-13:05	0.0043	0.0043	
(2) 13:05-13:10	0.0043	0.0042	
(3) 13:10-13:15	0.0044	0.0043	
(4) 13:15-13:20	0.0044	0.0043	
(5) 13:20-13:25	0.0044	0.0043	

(6) 13:25-13:30	0.0045	0.0045	
Diff.	0.0001	0.0001	0.000
= (6) - (5)	2.39	3.87	0.053
Panel B: Relative Effective Spreads			
(1) 13:00-13:05	0.0043	0.0042	
(2) 13:05-13:10	0.0043	0.0042	
(3) 13:10-13:15	0.0043	0.0042	
(4) 13:15-13:20	0.0043	0.0042	
(5) 13:20-13:25	0.0043	0.0043	
(6) 13:25-13:30	0.0045	0.0045	
Diff.	0.0002	0.0002	0.000
= (6) - (5)	3.01	4.11	0.07

This table presents the bid-ask spread near market closing before and after pre-close transparency increases. Before, from October 8, 2005 to December 31, 2014, represents only the unexecuted orders at the best bid and ask prices are disclosed. After, from April 1, 2005 to June 25, 2014, represents the unexecuted orders at the best five bid and ask prices are disclosed. Numbers in parentheses denote t-statistics. *Significant at the 5% level. **Significant at the 1% level.

Table 2 shows similar results in the differences of relative bid depth and relative ask depth. Panel A or Panel B of Table 2 indicate that the relative bid depth and relative ask depth near market closing do not change significantly surrounding pre-close transparency increases. Combing the results of bid-ask spreads and market depth, we find that increased pre-close transparency has no significant impact on the quotation information of limit-order book during the closing call period.

Trading Activities This paper now examines the relative trading volume near market closing before and after pre-close transparency increases. Panel A of Table 3 shows that, from 13:20-13:25 to 13:25-13:30, the relative trading volume measured by lots significantly increases from 0.0332 to 0.0426 with the t-value of 5.90 in the before period and increases from 0.0311 to 0.0507 with the t-value of 11.11 in the after period.

Furthermore, after pre-close transparency increases, the difference of relative trading volume measured by lots at market closing significantly increases from 0.0094 to 0.0196 with the t-value of 5.87. Similarly, Panel B of Table 3 shows that, after pre-close transparency increases, the difference of relative trading volume measured near market closing significantly increases from 0.0093 to 0.0196 with the t-value of 5.89. The results suggest

that, following pre-close transparency increases, there exists a significant increase in trading activities during the closing call period.

Table 2. Market Depth near Market Closing Before and After Pre-CloseTransparency Increases.

Time	Before	After	∆Diff. = Diff. After - Diff. Before
Panel A: Relative Bid Depth			
(1) 13:00-13:05	0.0379	0.0580	
(2) 13:05-13:10	0.0346	0.0582	
(3) 13:10-13:15	0.0369	0.0598	
(4) 13:15-13:20	0.0378	0.0523	
(5) 13:20-13:25	0.0381	0.0555	
(6) 13:25-13:30	0.0364	0.0616	
Diff.	- 0.0017	0.0061	0.0078
= (6) - (5)	- 0.51	2.36	1.83
Panel B: Relative Ask Depth			
(1) 13:00-13:05	0.0211	0.0564	
(2) 13:05-13:10	0.0204	0.0546	
(3) 13:10-13:15	0.0201	0.0544	
(4) 13:15-13:20	0.0194	0.0540	
(5) 13:20-13:25	0.0194	0.0537	
(6) 13:25-13:30	0.0224	0.0532	
Diff.	0.0030	- 0.0005	- 0.0035
= (6) - (5)	4.2	-0.23	-1.43

This table presents the market depth near market closing before and after pre-close transparency increases. Before, from October 8, 2002 to December 31, 2002 (a total of 60

trading days), represents only the unexecuted orders at the best bid and ask prices are disclosed. After, from April 1, 2003 to June 25, 2003 (a total of 60 trading days), represents the unexecuted orders at the best five bid and ask prices are disclosed. Numbers in parentheses denote t-statistics. *Significant at the 5% level. **Significant at the 1% level.

Price efficiency In order to test the price efficiency of stock closing call, this paper then examines the adjusted R-squares of market model and absolute return autocorrelations near market closing before and after pre-close transparency increases. Panel A of Table 4 presents the adjusted R-squares of market model during 13:00-13:30 surrounding the increase of pre-close transparency. The results indicate a significant improvement in price discovery at market closing after pre-close transparency increases. In the before period, the adjusted R-square reduces significantly from 0.1182 in 13:20-13:25 to 0.0620 in 13:25-13:30 with the t-value of -4.02. In the after period, the adjusted R-square increase significantly from 0.0477 in 13:20-13:25 to 0.2064 in 13:25-13:30 with the t-value of 6.56. As comparing the difference of the adjusted R-square between 13:20-13:25 and 13:25-13:30, this paper finds that the difference of the adjusted R-square increases significantly from -0.0562 to 0.1587 with the t-value of 9.53 following transparency increases. In particular, the smallest adjusted R-square in the before period occurs in the time interval 13:25-13:30, but the largest adjusted R-square in the after period occurs in the time interval. Thus, the evidence indicates that price efficiency enhances significantly during the closing call period after pre-close transparency increases, because a tighter fit between the individual stock returns and market returns at market closing in the after period.

6. CONCLUSIONS

This paper analyzes the impact of increased pre-close transparency on the effectiveness of stock closing call. On January 1, 2005, the IRSE increase pre-close transparency by disclosing the best five bids and ask prices and related unexecuted orders. However, the IRSE disseminates no information about the limit-order book during the five-minute closing call period. Hence, this institutional change provides an opportunity to examine how an increase in pre-close transparency affects the price efficiency of stock closing call. According to Madhavan et al. (2005) and Chowdhry and Nanda (1991), this paper proposes two competing hypotheses to explain how an increase in pre-close transparency affect trading behavior of informed traders and then price efficiency during stock closing call.

The empirical results show that, following pre-close transparency increases, the trading activities and price efficiency at market closing enhances on the IRSE. The relative trading volume and adjusted R-square of market model increase The International Journal of Business and Finance significantly at market closing after pre-close transparency increases; furthermore, the absolute return autocorrelation becomes smaller at the end of the day.

The findings suggest that increased pre-close transparency could enhance the price efficiency of stock closing call when disseminating no information about the limit-order book at that time. Thus, this paper concludes that informed traders will increase their trading during stock closing call following pre-close transparency increases, and this is consistent with the prediction of Chowdhry and Nanda (1991) that informed traders prefer to trade in an opaque environment.

This paper examines the relationship between pre-close transparency and price efficiency at market closing in a comprehensive way. However, due to the limited availability of intraday data, this paper does not have access to information on each trader's type (e.g., individual investors versus institutional investors) which could provide more detailed regarding the relationship of pre-close transparency and informational efficiency at market closing. How individual and institutional investors trade at marketing closing surrounding pre-close transparency increases is an interesting topic for future research.

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