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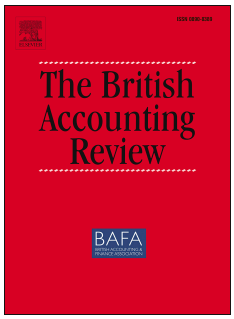

The Impact of Earnings Management on the Extent of Disclosure and True Financial Performance: Evidence from Listed Firms in Hong Kong

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The Impact of Earnings Management on the Extent of Disclosure and True Financial Performance: Evidence from Listed Firms in Hong Kong

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Abstract

This paper challenges the notion that seeking to increase disclosure may not necessarily improve firm performance. Using Hong Kong listed firms subject to increase the extent of disclosure, this paper shows that the net benefit of disclosure is contingent on conditions such as the quality and integrity of a firm's information. We demonstrate that a nonlinear relation exists between disclosure and firm performance when measured performance is adjusted for the impact of earnings management, over the period from 2006 to 2013. The results of our study show that corporate disclosure is likely to result in benefits, but after an optimum level, increasing disclosure reduces true firm performance. This optimum level also falls when differences between other firm's monitoring environments (e.g., independent boards) are in place. These results indicate that intense monitoring of CEOs offsets the advantage of additional corporate disclosure.

Keywords: Disclosure; Earnings Management; Intense Monitoring; True Firm performance

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Abstract

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1. Introduction

A CEO as the most senior corporate officer need to consider his interaction when exercising discretion. In corporate disclosure, a great deal of CEO discretion goes into the construction of disclosing information to inform the market about CEO performance and firm's activities - information that is intended to keep the CEO disciplined. In literature, CEOs, however, are hypothesized to affect firm-enlarging actions that yield greater job security and compensation for themselves, especially when their interest is not aligned with the interests of outsiders. When these two lines of discussion are considered together, CEOs may prefer the less informative disclosure regime and the quality of information (such as completeness, accuracy, reliability, precision and timeliness) that CEOs are prepared to provide may not be of a quality expected by outsiders. This issue has involved Asian corporate transparency models that were criticized as being relatively inefficient in maintaining fairness and integrity in the stock markets during the East Asian crisis (Stiglitz, 1998; Harvey & Roper, 1999; Greenspan, 1999). Therefore, seeking greater corporate transparency is increasingly important to solving the issue and improving the informativeness of disclosure regime. In the Hong Kong stock exchange (HKSE), public-policy discussions on corporate disclosure, view increasing the amount of disclosure as the key to achieving the desired step-change in transparency (Gul & Leung, 2004; Ho & Wong, 2001). Firms responsible for this change often describe increasing the amount of disclosure as providing the information required for enhanced transparency. Therefore, if increased disclosure is good, it is reasonable to ask why owners as outsiders were reluctant to increase the extent of disclosure before regulatory requirements. What is the downside to increasing the amount of information disclosed?

Transparent information environment makes a firm more attractive to all investors. It improves coordination between firms and investors with respect to capital investment decisions and builds a climate of trust that can increase the value of a firm. If CEOs do not disclose any information, investors would lower their views on firm value. As a result, CEOs have incentives to disclose their information to distinguish themselves from CEOs with less favourable information to have a good career reputation (Beyer et al. 2010). Equally, information can improve the ability of shareholders and boards to monitor their CEOs consistently, an ability that may result in a loss of employment for the CEOs. In order to have greater job security and reputation, CEOs must direct their efforts toward increasing firms' stock prices.

In contrast to prior studies believe that career concerns, due to disclosure, increase worthwhile activities in companies, this study argues that CEOs' activities to achieve greater job security and reputation may be cumbersome and ungainly with the possibility of misrepresentation. In this view, the career concerns can give CEOs an incentive to distort information coming from their firms as an exaggerated effort to increase the share price. For example, Hermalin and Weisbach (2012) believe that the career concerns induce the CEO to divert effort to manipulate information about his ability. In line with this, Hirst, Koonce and Venkatarman (2007) indicate that incredible information has increased substantially after the regulatory reforms related to corporate information and corporate governance[1]. Brennan (1999) finds that the management of target firms in takeovers is more likely to disclose information during contested takeover bids to show that their shares are undervalued. Existing research has also indicated that increasing corporate disclosure may result in costs in terms of the distortion caused by career concerns (CEO actions aimed at signal distortion). For example, Hermalin and Weisbach (2012) believe that the career concerns potentially affect the motivation of CEOs to engage in value-reducing activities intended to make reporting appear adequate[2]. Therefore, CEO career concerns may generate additional asymmetric information costs and agency costs for shareholders, which would lead to deconstructing the equilibrium climate of trust.

While, outsiders and CEOs have opposing preferences regarding the increase of disclosure, one would expect that the opposing preference may capture some of the disclosure benefit via greater compensation. Goldman and Slezak (2006) and Holmstrom (1999) show that opposing preference increases CEOs' tendency to have greater compensation given the career concerns they face. This tendency to increase compensation comes at a time of public outrage following scandal or financial crisis, which makes it politically infeasible to raise executive compensation immediately. So, it could have exacerbated the incentives for CEOs to window dress financial statements as a way to increase compensation. The use of earnings management to temporarily boost or reduce reported income is one mechanism for increase CEO compensation, which in turn influences operating performance (Cornett et al. 2008). This study plans to investigate how disclosure influences shareholders' interest, that is, maximizes

[1] The reports of Conference Board (2003) show that nearly 40% of investors rate corporate profit projections as not credible after the Sarbones-Oxley Act.

[2] Hermalin and Weisbach (2012) indicate that CEOs change their investment strategy toward myopic behavior to improve reported performance, for example, substituting away from longer term investments, such as R&D, toward shorter term investments or actions that affect reported numbers sooner.

shareholders' economic self-interest. Common firm performance as measured by accounting data is subject to a potential endogeneity bias through the assumptions concerning earnings managements (e.g., depreciation, amortization, and accruals) due to increased risk to CEOs' careers implicit in disclosure levels. Therefore, we examine true performance as the dependent variable to assess whether the increasing amount of disclosure is related to firm performance when the reported firm performance is deprived of the effects of earnings management. According to the corporate governance literature, the amount of misrepresentation is also affected by other CEO' monitoring factors such as independent board (Ferreira et al. 2011; Armstrong et al. 2014). Therefore, our empirical analysis examines both the average effect of disclosure on true firm performance as well as the interacting effect of independent board on the impact of disclosure. In addition, we contemplate the possibility of a nonlinear relationship between disclosure and true firm performance.

To address any remaining endogeneity issue, we conduct a dynamic panel generalized method of moments (GMM) as suggested by Wintoki, Linck and Netter, (2012), which proves to be a valid methodology. As in earlier studies, this study finds evidence that the extent of disclosure is positively related to firm performance while, adjusting for the impact of earnings management dramatically decreases the impact of disclosure on true firm performance. Our empirical evidence also supports a quadratic relationship between the extent of disclosure and true firm performance. These results are consistent with previous theoretical literature arguing that there is an optimal level of disclosure and that, CEOs' costly and counterproductive efforts to distort information dominates beyond the optimal level. Consequently, attempts to mandate levels beyond this optimum decrease profits.

Furthermore, our results show that the positive relationship between the extent of disclosure and true firm performance is stronger in firms where more independent directors are on the board. In nonlinear model, however, the optimum level between interaction of the extent of disclosure with independent board and true performance is lower than the optimum level between the extent of disclosure and true performance. These findings tend to reinforce the message that the benefits of improved monitoring do not flow wholly to shareholders, and companies in a different monitoring environment have a different optimal level for the extent of disclosure. The remainder of this paper is organized as follows. The literature and related issues are discussed in the next section, followed by an introduction to the models adopted for our firm

performance measures, the control variables used within our dependent variables, and a description of the data and the research methodology adopted for the study. The penultimate section presents the empirical results of our study, which are followed in the final section by the concluding remarks drawn from this research.

2. Literature and Issues

Hong Kong is a laissez-faire capitalistic economy and generally considered one of the world's largest financial centres. The choice of Hong Kong in this study is premised on strong recommendations and mandatory regulation reforms for increasing the amount of disclosure in all listed companies. The HKSE has strongly revised disclosure requirements (Code of Best Practice) in the last decade following the collapse of big corporations in the U.S. and U.K. as well as the East Asia financial crisis. It requires companies to make timely public disclosure of price-sensitive information and encourages them to communicate more with investors and shareholders through annual reports. On the other hand, industrial diversification, increases in foreign investment, and the emergence as a financial centre have led to higher demand for financial reporting disclosures.

2.1 Disclosure and Firm Performance

Traditional disclosure models argue that information is often qualitative in nature. It is generally assumed that the extent of disclosure is an adequate measure of the quality of disclosure, which is not separable information in many empirical settings (Botosan, 2004). In the model, information yields various benefits for shareholders by mitigating information asymmetry and agency conflicts. Disclosures are expected to improve market liquidity and to lower the cost of capital. In addition, it can potentially improve corporate governance and managers' investment decisions. Other indirect and possibly reinforcing shareholder benefits include greater analyst following and the attraction of certain investor clientele, such as institutional investors.

Recent disclosure models partially reject the above discussions (Hermalin & Weisbach, 2012; Beyer & Guttman, 2012; Suijs, 2007). They claim that this pattern of increasing disclosure

through regulation has been and will continue to be a priority for policy makers looking to prevent more financial crises. Hermalin and Weisbach, (2012) have questioned calls for more disclosure if disclosure is value-increasing. Regarding traditional disclosure models such as Feltham et al. (1992), Hayes and Lundholm (1996), and Wagenhofer, (1990), direct costs of disclosure and competitive costs arise to offset the benefit of disclosure. The recent theoretical models, however, suggest that although these factors likely play some role in explaining corporate resistance to disclosure, it is unlikely that they are the complete story. They believe that another cost arises from multitasking when a CEO both makes decisions that impact a firm's financial performance and serves as a key source of information for outsiders. In fact, disclosure helps outsiders to discipline CEO through using the information about the firm's activities and CEO performance (Armitage & Marston, 2008). Therefore, CEOs' control over information in the boardroom consequently may put a natural limit on the outsider's ability to effectively monitor them. The recent voluntary disclosure model claims to increase the extent that information may create additional agency problems or exacerbate existing one and may tend to increase executive compensation. Hence, even ignoring the competitive and the direct costs of disclosure, these effects can be strong enough to cause firms to optimally choose less-than-maximal disclosure. These theoretical arguments point to the non-linearity of the relationship between disclosure and firm performance.

2.2 Disclosure and Independent Board

The board is an approach to ensure that CEOs' activities are in line with the interests of shareholders (Kanagaretnam et al. 2007). Researchers classify board activities into two major functions: monitoring and advising (Linck et al. 2008; Adams & Ferreira, 2007; Raheja, 2005). The monitoring role involves overseeing management with a view to minimizing potential agency problems, while the advising role involves assisting management in strategy formulation and execution, as well as providing counsel in other areas of top-level decision making (Faleye et al. 2011). Existing research shows that the board's principal role has shifted from the "advising board" to the "monitoring board" as the proportion of independent directors on the board increases. Therefore, firms with a high proportion of independent directors on the board serve to limit CEO power and increase career concerns for CEOs.

As discussed earlier, disclosure is an undoubtedly important consideration in CEO monitoring and may therefore affect the agency problems. These considerations give rise a question whether the independent board and disclosure have a complementary-monitoring role or whether one parallels the other. If there is a complementary-monitoring role, the independent board would reinforce the effectiveness of disclosure, thus strengthening the effect of disclosure on firm performance measurements. For example, if disclosure becomes more effective only after an independent board serves to control CEO power and limit misrepresentation or manipulation, this can turn out to be complementary. If it is a parallel-monitoring role, an independent board would destroy the trust necessary for a CEO to share relevant strategic and qualitative information with directors, thus weakening the effect of disclosure on firm performance measurements. For example, CEOs entrench themselves on an independent board in the same way they do with disclosure because boards need information to make decisions on things such as CEO replacements. Therefore, CEOs' control over disclosure consequently places a natural limit on board's ability to effectively monitor them. One would expect to observe meaningful variation among CEOs to manipulate disclosure in the ability to limit CEO power and increase career concerns.

3. Data

3.1 Sample

This section provides details on the regression analysis conducted in the next section and defines the set of dependent and explanatory variables we use. This study is based on the sample of listed companies on the HKSE. To execute the analysis, we use a hand-collected dataset of the extent of disclosure from annual reports. We are aware that the annual report does not represent a unique source of information disclosed by companies. For example: the Association for Investment and Management Research (AIMR) rankings capture analysts' assessments of the informativeness of various aspects of firms' disclosure practices (Healy et al., 1999). The AIMR index is applicable to empirical samples based on US companies. The absence of a robust official index for Hong Kong listed firms did not allow us to use a publicly available ranking. Therefore, we construct disclosure scores that are hand-collected through an examination of annual reports

from our sample firms. Lang and Lundholm, (1993) and Botosan, (1997) proved the existence of a positive correlation between disclosure level in annual reports and the amount of disclosure provided through other means.

In addition, prior studies show that earnings management is more prevalent in poorly performing firms (Cohen, Dey & Lys, 2005; Kothari, Leone & Wasley, 2005) and that standard models of discretionary accruals are least reliable when applied to firms with extreme financial performance (Dechow, Sloan & Sweeney, 1995). Consistent with Cornett et al. (2008), we choose firms that are all free from financial distress, which makes the potential limitations of empirical models of discretionary accruals less of an issue for our sample. We also use the Compustat database for accounting and financial data. This study therefore eliminates several firms due to missing Compustat data. Finally, our sample consists of 848 firm-year observations over the period 2006-2013.

3.2 Explanatory Variables

An issue that has long plagued the research on the extent of disclosure is the appropriate empirical measures. The approaches used in the literature include survey rankings, researcher-constructed indices, measures from natural language-processing technologies, and properties of the firm's reported earnings. To measure the extent of disclosure, we adapted the constructed index developed by Botosan in 1997, which proved to be a valid measure for disclosure extent (Patelli & Prencipe, 2007). We select a constructed index as our main proxy for three reasons. First, this measure can capture both voluntary and mandatory material disclosures (Heitzman et al. 2010). Second, self-constructed measures have increased confidence that the metric captures what it should capture (Healy & Palepu, 2001). Third, self-constructed metric can be calculated for any firm (Francis et al. 2008). Botosan's score was designed to analyse the voluntary disclosure of US companies. Botosan's score has therefore been modified in order to include both mandatory and voluntary information as well as make it suitable for Hong Kong companies.

In this study, we use recent significant regulations that impose changes on the extent of information as a source of exogenous variation in disclosure. Specifically, we use the Listing Rules of HKSE (2005)[3] that require listed corporations to disclose firms' corporate governance

[3] Appendix 23 from the HKSE prescribes the types of information to be disclosed in the Corporate Governance Report in terms of Mandatory Disclosure Requirements. A copy of the checklist is found in the Appendix to this study.

practices in their annual reports for the fiscal year. As discussed earlier, the HKSE has been promoting greater transparency and a higher level of corporate governance disclosure since the Asian financial crisis and the collapse of major corporations. The HKSE had been offering advice and consultation on corporate governance practices to the Hong Kong listed firms. Their continuous efforts over the period 2002-2004 to encourage the listed firms to voluntarily disclose corporate governance practices were codified in the Listing Rules of HKSE (2005), which stipulate that a formal information report for the firms listed on the HKSE be included in their annual reports. Therefore, CEOs who are reluctant to disclose voluntarily are under pressure to increase their disclosure. However, companies that disclosed voluntarily prior to the regulation were not required to extend their annual reports. The effect of this regulation was not the same for all companies. We assess the amount of information that companies had to increase after the Listing Rules (2005) to determine the amount of pressure on CEOs to disclose more information. We construct compression between annual reports before (annual report 2004) and after (annual report 2006[4]) the implementation of the Listing Rules of HKSE (2005) that were required for firms to comply with the regulations.

To get a voluntary disclosure index, we use the voluntary disclosure items of Botosan's, (1997) study that categorize five major types of information, namely, background information (e.g., description of the business), historical results (e.g., does the firm provide a history of returns on asset and if so, for how many years?), key non-financial statistics (e.g., number of employees), forecasted information (e.g., forecasted market share), and management discussion and analysis (e.g., discussion of change in sales). To apply Botosan's score to Hong Kong companies, we made major adjustments to the original score. First, we eliminated those items that are mandatory under the Hong Kong regulation. Second, we retained items that were mandatory under the US accounting standards (Botosan's score was designed to analyse the voluntary disclosure of US companies and therefore they were excluded from score) but are voluntary for Hong Kong companies. For additional information, we also reviewed more recent studies on disclosure focused on Hong Kong (Chau & Gray, 2010; Lo, 2009). Third, we also included other voluntary items in each category of information based on what has been proposed

[4] The Hong Kong stock exchange did not enforce the full CG disclosure requirements in 2005 due to opposition from listed firms to the section of internal control of the Corporate Governance Report. The HKEx agreed that firms could, if they chose, postpone the disclosure of their internal control practices until the listed firms were ready to establish their internal control system.

by prior studies on disclosure (e.g., number of employees, organizational structure and liquidity ratios, as proposed by Patelli & Prencipe, 2007, and Francis et al. 2008). Finally, we submitted our instrument to two experienced auditors and two financial analysts to test its suitability for the Hong Kong setting.

In this study, we calculate unweighted disclosure scores[5] for each company by dividing the total disclosure score it reached (sum of the partial scores in the mandatory part and voluntary part) by the potential maximum score assigned to it to obtain an ordinal measure of the corporate disclosure. We also control for variables other than the disclosure variable, which may affect the firm performance measurements. Following earlier studies on the subject by Cornett et al. (2008), Fang et al. (2009), and Black and Kim (2012) the empirical specification also controls for leverage, firm size, capital expenditures, and firm's age. Leverage is measured as the total debt divided by the book value of assets; firm size represents the volume sale of the firm; capital expenditures is the capital expenditures over sales; and firm's age represents the number of years of financial data available prior to a firm's fiscal year end. In interaction term, we use the proportion of independent directors on the board. Consistent with prior studies (Linck et al. 2008; Duchin et al. 2010), we define a director to be independent if he or she is an outsider with no material relationship with the firm.

3.3 Dependent Variable

ROA is defined as operating income divided by company's total assets at the beginning of the fiscal year; ROE is the ratio of net income divided by equity at the beginning of the fiscal year. To obtain a performance measure that is relatively free of manipulation, we need to strip away the impact of potential strategic choices concerning depreciation, amortization, and accruals (Cornett et al. 2008). Following Cornett et al. (2008); Bartov, Gul and Tsui (2001), and Dechow, Sloan and Sweeney (1995), we use modified Jones' (1991) model to measure discretionary accruals that is recognized as the most powerful for detecting earnings management among other models. Discretionary accruals as a portion of the book value of assets, are calculated as:

[5] An unweighted scoring approach was used in prior studies such as Chen and Jaggi (2000), Cooke (1991), Ferguson et al. (2002), Meek et al. (1995), Wang et al. (2008) and Chau and Gray (2010) which are supported as a valid way to determine disclosure scores.

Discretionary Accruals = Total Accruals - (1 + Δ sale – Δ Receivables + PPE) (1)

where PPE denotes property, plant, equipment and receivables variables in an attempt to capture the extent to which a change in sales is in fact due to aggressive recognition of questionable sales. Total accruals can be computed from successive balance sheet data or from the statement of cash flows. Cornett et al. (2008) argue that the cash flow statement is preferred in the presence of non-articulation events such as mergers and acquisitions resulting in changes to the balance sheet that do not flow through the income statement. We therefore calculate total accruals as earnings before extraordinary items and discontinued operations minus operating cash flows from continuing operations.

4. Research Design

4.1 Model

In this section, our objective is to specify an appropriate functional form for the relationship between the disclosure and the measurements of firm performance, which will allow us to test our research questions. We use dynamic panel data model. True firm performance is denoted by TFP and disclosure is represented by DI. LEV, FS, CE and FG are the rest of the explanatory variables in the model. Following Cornett et al. (2008), Fang et al. (2009), and Black and Kim (2012), we assume a linear parametric form for all of the explanatory variables by estimating Model (1):

$$TFP_{it} = \alpha + \gamma TFP_{it-1} + \beta DI_{it} + \delta_1 LEV_{it} + \delta_2 FS_{it} + \delta_3 CE_{it} + \delta_4 FA_{it} + \varepsilon_{it}, \quad (2)$$

where TFP is measured by Adj-ROA and Adj-ROE. The Adj-ROA denotes the return minus discretionary accruals on the asset ratio; Adj-ROE represents the net income minus discretionary accruals on equity; DI denotes our disclosure score. Lev stands for firm leverage; FS is the firm size; CE stands for the capital expenditure; FA is the firm's age; and ε is an error term.

To model the relationship between firm performance measurements and disclosure and determine the breakpoints of disclosure when firm performance measurements change directions, we specify Model (2) as follows:

$$TFP_{it} = \alpha + \gamma TFP_{it-1} + \beta_1 DI_{it} + \beta_2 DI_{it}^2 + \delta_1 LEV_{it} + \delta_2 FS_{it} + \delta_3 CE_{it} + \delta_4 FA_{it} + \varepsilon_{it} \quad (3)$$

In this model, the firm performance measurements are regressed against disclosure and its square. The quadratic relation proposed in the second Model presents one breakpoint that can be optimally derived by differentiating value with respect to disclosure. The breakpoint in the quadratic relationship is calculated by the expected signs of the coefficients on the disclosure variables (β_1 and β_2), letting $\partial TFP/\partial DI = 0$, and solving for DI:

$$TFP = \alpha + \beta_1 DI + \beta_2 DI^2$$

$$\partial TFP/\partial DI = \beta_1 + 2\beta_2 DI = 0 \quad (4)$$

Then, DI breakpoint = $-(\beta_1/2\beta_2)$

Because the disclosure variable cannot take negative values, the DI breakpoint must be equal to or greater than zero (DI breakpoint$\geq$0). This leads to the condition that β_1 and β_2 present opposite signs. In order to evaluate whether independent board interacts the effect of disclosure of firm performance measures, "IB*DI, IB*DI^2 and IB" are added to the Model:

$$TFP_{it} = \alpha + \gamma TFP_{it-1} + \beta_1 DI_{it} + \beta_2 DI_{it}^2 + \beta_3 IB*DI_{it} + \beta_4 IB*DI_{it}^2 + \delta_1 IB_{it} + \delta_2 LEV_{it} + \delta_3 FS_{it} + \delta_4 CE_{it} + \delta_5 FA_{it} + \varepsilon_{it} \quad (5)$$

where IB stands for the proportion of independent directors on board.

4.2 Estimation Method

An important point of our methodology is that we carefully control for the endogenous relationships between disclosure and true firm performance. The large number of studies represented mainly by Demsetz and Lehn (1985), Hermalin and Weisbach (1988), Smith and Watts (1992), Bizjak, Brickley and Coles (1993), Bhagat and Black (1999), Core and Guay (1999), Denis and Sarin (1999), and Coles et al. (2008) noted that endogeneity is a serious concern when carrying out any empirical estimation in firm performance. These researchers

indicate that the values of any of our variables, in turn, are determined by firm performance. In addition, the current values of explanatory variables are likely to depend on past values of themselves. Thus, neglecting this source of endogeneity can have serious consequences for inference.

We use arguments, building on prior research, which show that dynamic endogeneity is of concern in disclosure and firm performance. For example, Chen et al. (2013) and Akerlof (1970) suggests that high value firms should have greater incentives to engage in voluntary disclosure in next year because doing so helps to lower their cost of capital and avoid a price discount in a market for lemons. To alleviate biases that may arise in this context, we estimate a model using a dynamic panel estimator that controls for three potential sources of endogeneity: (1) unobservable heterogeneity, which arises if there are unobservable factors that affect both the dependent and explanatory variables, (2) simultaneity, which arises if the independent variables are a function of the dependent variable or expected values of the dependent variable, and (3) dynamic endogeneity, which arises if a firm's current actions will affect its control environment, which will in turn affect its future actions.

To test our Models, first, we circumvent the potential problems associated with the effect of simultaneity by using instrumental variables. GMM uses information on a firm's history as valid instruments for the current form of firm performance, disclosure, and other explanatory variables on firm characteristics. Several authors (e.g., Wintoki, Linck & Netter, 2012; and Pathan & Faff, 2013) provide strong evidence that the instruments associated with a dynamic GMM approach are valid and powerful. Second, this study uses a dynamic fixed-effects panel model in our standard regression specifications to produce consistent parameter estimates that are robust to unobservable heterogeneity. Driscoll and Kraay (1998) show that ignoring cross-sectional dependence when estimating panel models can lead to severely biased statistical inference. Third, we adopt a dynamic panel GMM specification procedure that is robust to 'dynamic endogeneity' that refers to the manner in which a firm's current performance affects both its future performance and disclosure.

Overall, the GMM estimator is more appropriate to use in this area of study for three reasons: first, the GMM approach alleviates the problem of slow-moving disclosure index over time, which could render fixed effects techniques ineffective (Coles, Lemmon & Meschke, 2012). Second, when the dynamic relation between the variable of interest and the explanatory

variables is the case, the non-dynamic fixed-effects estimators are biased. Third, given the dynamic nature of the relation between disclosure and performance, the instruments associated with a dynamic GMM approach are valid and powerful, using information on a firm's history as instruments for current firm characteristics (Wintoki, Linck & Netter, 2012).

5. Result

5.1. Descriptive Statistics

Table 1 presents the definition and summary statistics of each variable we use in our study. The variables are defined and discussed below. The average firm has an Adj-ROE of 0.287. The median Adj-ROE fraction is 0.071. Adj-ROA has a similar distribution with a mean (median) of 0.036 (0.075) and a standard deviation of 0.078. The mean value of disclosure is 0.787, suggesting that firms disclose most of our predicted scores. The average of independent boards is 0.538, indicating that about half of our board members are independent. Mean (median) leverage is 0.538 (0.563). The median firm in our sample has sales of 2.8 billion US dollars. The average proportion of capital expenditure over sales is 0.087. The average age of the firms is 28.803. The means and medians in Table 1 suggest that all variables closely follow a normal distribution.

Table 2 presents the Pearson and Spearman rank of correlations between the true firm performance measures, firm performance measure, disclosure measure and all control variables used in our baseline specifications. Pearson correlations are reported above the main diagonal and Spearman correlations are reported below the diagonal. As can be deduced from Table 2 Pearson and Spearman correlation coefficients indicate a significant relation between DI and true performance measurements, at a p-value of 0.000. In addition, DI has significantly positive Pearson (Spearman) correlations with two firm performance measures: ROE and ROA. This result suggests that firms with high disclosure tend to have better firm performance. We also check for multicollinearity statistically by calculating the condition index, which is the square root of the maximum eigenvalue divided by the minimum eigenvalue. If this index is more than 30, the variable has a severe multicollinearity problem (Gujarati, 2004). We find that multicollinearity is of no concern, thus permitting the use of regression analysis.

((Insert Table 1))

((Insert Table 2))

5.2 Relation between Disclosure and True Firm Performance

Table 3 demonstrates the relationship between disclosure and true firm performance. The lower panel of Table 3 includes the post-estimation tests for autocorrelation and instrument validity. AR (1) and AR (2) are Arellano and Bond (1991) tests for first-order and second-order autocorrelation in the first difference errors. When regression errors are independent and identically distributed, the first difference errors are by definition auto-correlated. For each of the Models reported in Table 3, the AR (1) and AR (2) tests show no evidence of autocorrelation at conventional levels of significance. In addition, several formal tests, including Hansen-J test of over-identification has been conducted to confirm the validity of the system GMM estimator used in our study. As presented in the last row of Table 3, the Hansen-J test yield the p-value (above 10%), suggesting that instrumental variables employed in our system GMM are valid. Therefore, these post estimation results indicate that the dynamic model is a reasonably good specification for a true firm performance model.

Model (1) uses a linear specification. Model (2) attempts to capture the nonlinear relationship between disclosure and performance by including the square term of disclosure, DI^2, as a regressor whereas; Model (3) provides evidence of the interacting role played by the proportion of independent directors on board.

The results from the Model (1) indicate a positive and statistically significant relationship between Adj-ROA and true firm performance while the Adj-ROE shows no significant differences. This supports the conjecture that disclosure is value increasing. Results in Model (2) show a positive relationship for Adj-ROA with disclosure and a negative relationship between Adj-ROA and the squared term of disclosure, respectively. The expected sign of the coefficients on the variables *DI* and DI^2confirm the nonlinear relationship between Adj-ROA and disclosure. According to these results, the maximum Adj-ROA is attained at Adj-ROA= $-B_1/2B_2$ = - 1.559 / (2 *-.856) = 91.1%. In particular, the results show that the disclosure – Adj-ROA curve slopes upward until disclosure reaches the level of 91.1%; it then slopes downward. These results suggest that changes to disclosure requirements, while directly beneficial to owners, also carry

indirect costs. It supports the notion that career concerns for CEO in a greater level of disclosure capture some of the disclosure benefit via greater earnings management. As such, the optimal level of disclosure could be less than maximal disclosure. Going beyond that level would reduce firm value. This result is consistent with the Hermalin and Weisbach (2012) model, which argues that the greater level of disclosure affects CEOs adversely, which has a detrimental effect on shareholder value. To better interpret the turning point, Fig. 1 plots the inverted U-shaped curve, which illustrates 91.1% as the level where disclosure turns from a positive into a negative effect on profitability. While a positive relationship exists between disclosure and Adj-ROA, the relationship between disclosure and Adj-ROE is not significant, nor are the curvilinear terms.

The last Model of Table 3 shows the estimation results of the interaction terms. The positive and negative coefficient of the interaction terms of Adj-ROA and its square (β_3= 2.833 and β_4= - 1.636) support nonlinear relationship between disclosure and true firm performance. These results indicate that there are statistically significant differences between dependent and independent boards even when the specification accommodates the possibility of a nonlinear relation between Adj-ROA and disclosure. Therefore, these results show that the maximum Adj-ROA is attained at Adj-ROA= - 2.833 / (2 *-1.636) = 86.5%. Consequently, there can exist a point beyond which additional disclosure decreases firm value. This result allows us to conclude that the optimal level of disclosure drops in firms with a high proportion of independent directors on the board. It can indicate that the role of an independent board for CEO monitoring parallels the monitoring role of disclosure in firms to increase CEO career concerns. Therefore, disclosure is more likely to have a detrimental effect on shareholder value in greater level of board independence. It also confirms the important role of an independent board as an interacting variable when analysing the effect of disclosure on firm performance. The coefficient of the relationship between disclosure and Adj-ROE is not significant even in this case. Coefficients on the control variables in Table 3 are generally consistent with those in Cornett et al. (2008). The coefficients on firm size are all positive, indicating that large firms have greater true firm performance. Similarly, the coefficients on capital expenditure are also positive, and statistically significant. The firm's age term is generally positive, but significant in only one regression. The leverage term is mostly negative, and statistically significant at 10% or better, implying that leverage reduces true firm performance.

((Insert Figure 1))

((Insert Table 3))

5.3 Relation between Disclosure and Firm Performance

Table 4 presents the regression results of firm financial performance as a function of disclosure variables. In this Table, we treat reported performance, ROA and ROE, as the dependent variables. Like previous studies, our empirical evidence supports a significant positive relationship between disclosure and firm performance measurements (ROA and ROE). In stark contrast to the results in Table 3 for reported true firm performance, a nonlinear (inverted U-shaped) relationship disappears in Table 4 using common firm performance. The coefficients of the interaction term with independent board and its square are both statically significant and positive. These results indicated that there is not a nonlinear relationship between common firm performance and disclosure when more independent directors are on the board. Overall, this implies that true firm performance, calculated from earnings free of the effects of managers' choices for depreciation, amortization, and accruals, is less responsive to the monitoring variables. The patterns of other variables are largely consistent with the results of Table 3. For example, firm size, firm age and capital expenditure increase firm performance while leverage reduces firm performance.

((Insert Table 4))

5.4 Robustness Checks

5.4.1 Robustness Checks with Alternative True Firm Performance Variables

In these robustness tests, we modify the measures of true firm performance by Unmanaged ROA and Unmanaged ROE when the reported firm performance is completely deprived of the effects of earnings management. The Unmanaged ROA first estimates earnings before interest and taxes (EBIT) minus discretionary accruals as a fraction of lagged assets minus lagged discretionary accruals from the following equation:

$$\text{Unmanaged ROA} = \frac{EBIT - \text{Discretionary Accruals}}{Lagedassets - \text{lagged discretionary accruals}}$$

In addition, Unmanaged ROE is defined as follows:

$$\text{Unmanaged ROE} = \frac{\text{Net income} - (\text{Discretionary Accruals} - \text{Tax})}{LagedEquity - \text{Lagged Discretionary Accruals}}$$

Therefore, we re-estimated the model by replacing Adj-ROA with Unmanaged ROA, and replacing Adj-ROE with Unmanaged ROE to check the robustness of our results to alternative proxies for true firm performance. Our results are presented in Table 5, which shows that the coefficients of Unmanaged ROA are similar to those of the Adj-ROA in terms of direction, and the magnitudes of the effects remain nontrivial. Disclosure also has a positive effect on Unmanaged ROE; however, it shows no significant differences. As seen, the interaction term coefficient remains negative and statistically significant in Unmanaged ROA regression. Thus, our findings regarding the variables of interest are robust to alternative proxies for true firm performance.

((Insert Table 5))

5.4.2 The Sensitivity of the Result to the Instrument's Reduction

An empirical concern is the problem of instrument proliferation in GMM estimations. Levine et al. (2000); Roodman, (2009); Vieira et al. (2013); Nguyen et al. (2014) clearly appreciate the dangers of instrument proliferation. The idea is that the size of the variance matrix of the moments is too large to be estimated accurately within a finite sample, invalidating the asymptotic results and specification tests. Too many instruments can over fit endogenous variables and fail to expunge their endogenous components, resulting in biased coefficients. Reducing the number of instruments limits this problem.

It is obvious that the number of instruments used in our two-step system GMM model is small relative to the total of groups. This suggests that instrument proliferation is unlikely to be a problem in our estimations. We follow the good standard practices in using the system GMM approach suggested by Roodman, (2009) and check the sensitivity of our results to reductions in the number of instrumental variables. In this case, we incorporate recent advances in dynamic panel data methods to limit the problem of instrument proliferation; we only use one lag per independent variable to generate the moment conditions[6]. Specifically, we reduce the instrument count of our study to less than 30 instruments. As shown in Table 6, the results generally remain unchanged, suggesting that our findings are robust to the instrument reduction.

((Insert Table 6))

6. Conclusion

We examine both the reasoning and data behind the conventional wisdom that more disclosure is not always better. Although we believe that the contribution of prior studies to the examination of linear relationships between disclosure and performance is a very important one, we continue at the point they suggest with attention to the potential non-linearities of this relation. In fact, our study speaks to the call by Hermalin and Weisbach (2012) for a better understanding of the consequence of disclosure and to the appeal in McConnell (2003) for more research on the role of outside directors. This study shows that once the likely impact of earnings management is removed from the firm performance estimates, the relation between performance and disclosure becomes nonlinear, implying that the optimal level of disclosure is less than maximal. Our evidence casts doubt on the idea that more disclosure is not free; attempts to mandate levels beyond this optimum would reduce profits.

CEOs are responsible for choosing and supplying the disclosure regime; the existence and magnitude of the disclosure effect depend on CEOs who inherently conflict with stakeholders. A more accurate analysis reveals that when disclosure is too high, firm

[6] See Roodman (2009) for more details about techniques for reducing the instrument count in system GMM estimation

performance decreases. This reduction stems from the fact that disclosure enables the shareholders and boards to learn about CEO quality, thus additional career risk to which the CEO is exposed. Therefore, greater disclosure exacerbates existing agency problems and asymmetric information with the possibility of misrepresentation, which tends to increase earnings management due to the increased career risks that CEOs face. Our results suggest that the choice of the disclosure level creates a trade-off between acquiring information about the company and detrimental activities by CEOs. This trade-off determines the inverted U-shaped relation found between disclosure and firm performance when discretionary accruals are removed from measured firm performance. In addition, we argue that misrepresentation differs in firms depending on the CEO monitoring and certain classes of firms with more independent directors on the board are unlikely to enjoy the greater level of disclosure.

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Appendix

The Listing Rules of Hong Kong stock exchange in Appendix 23 prescribes the types of information to be disclosed in the Corporate Governance Report in terms of Mandatory Disclosure Requirements and Recommended Disclosures. The Mandatory Disclosure Requirements cover the following:

A. Corporate governance practices:

The issuer is expected to give 1) a narrative statement of how the listed issuer has applied the principles in the Code, providing an explanation that enables its shareholders to evaluate how the principles have been applied and 2) a statement as to whether the issuer meets the code

provisions in the Code. If the issuer has adopted its own code that exceeds the code provisions set out in the Code, the issuer may draw attention to such fact in its annual report. 3) In the event of deviation from the provisions set out in the Code, details of such deviation during the financial year with considered reasons for such deviation are to be provided.

B. Directors' securities transactions:

The issuer is to state whether a code of conduct regarding directors' securities transactions as set out in Appendix 10 has been adopted or otherwise, and the details for the non-compliance.

C. Board of Directors:

The issuer has to provide details, including composition of the board, number of meetings held, and individual attendance of each director. The issuer has to give a statement of how the board operates, including the type of decisions made by the board and those delegated to management. Details of non-compliance relating to the appointment of independent non-executive directors and the remedial measures to address the non-compliance are expected. Relationships, including financial, business, family or other material/relevant relationship(s) among members of the board and in particular, between the chairman and the chief executive officer, must be disclosed.

D. Chairman and chief executive officer:

The issuer is to state the identity of the chairman and chief executive officer, and whether the roles of the chairman and chief executive officer are segregated.

E. Non-executive directors:

The issuer is to state the term of appointment of non-executive directors.

F. Remuneration of directors:

The directors' remuneration policy have to be disclosed with respect to the role and function of the remuneration committee and its composition, the number of meetings held by the remuneration committee or the board of directors if there are no remuneration committee meetings during the year. A summary of the work performed by the remuneration committee relating to the policy in determining executive directors' remuneration and the assessment of performance of executive directors must be included.

G. Nomination of directors:

The issuer is to spell out the role and function of the nomination committee, its composition, the nomination procedures and the process and criteria adopted by the nomination committee. A

summary of the work done by the nomination committee during the year and the number of meetings held are to be disclosed.

H. Auditors' remunerations:

The issuer is to provide an analysis of remuneration in respect of audit and non-audit services provided by the auditors to the issuer. Information about the entity that is under common control, ownership or management with the audit firm or any entity that a reasonable and informed third party having knowledge of all relevant information would reasonably conclude as part of the audit firm nationally or internationally must be provided.

I. Audit Committee:

The issuer is to provide information about the role, function ands composition of the committee members, the number of audit committee meetings held during the year with an attendance record of members, report on the work performed by the audit committee during the year in discharging its responsibilities in its review of the quarterly (if relevant), half-yearly and annual results and the system of internal control, and its other duties set out in the Code. Non-compliance of the audit committee and the steps to address such non-compliance must be specified.

Table 1

Descriptive Statistics

Variable	# of observations	Mean	Median (50%)	SD	25%	95%
Adj-ROA	848	0.036	0.075	0.078	-0.189	0.361
Adj-ROE	848	0.287	0.216	0.124	-0.524	0.375
ROA	848	0.059	0.314	0.217	-0.139	0.438
ROE	848	0.185	0.243	0.172	-0.542	0.617
Disclosure	848	0.787	0.804	0.097	0.723	0.915
Independent Board	848	0.538	0.623	0.225	0.337	0.748
Leverage	848	0.538	0.563	0.247	0.359	0.783
Firm Size (Millions of US Dollars)	848	2842.000	1780.000	1524.000	749.000	4265.000
Capital Expenditures	848	0.087	0.047	0.273	0.026	1.769
Firm Age	848	28.803	24.043	6.850	19.080	52.000

Summary of Descriptive Statistics: The Adj-ROA is computed as the operating income minus discretionary accruals divided by assets; the Adj-ROE is measured by net income minus discretionary accruals, excluding tax, on book value equity; ROA is defined as operating income divided by assets. ROE is the ratio of net income divided by equity; disclosure is the percentage score for each information category that builds on Botosan (1997); Independent Board (IB) is the percentage of independent directors; Leverage (Lev) is measured as the total debt divided by book value of assets; Firm Size (FS) represents the volume sale of the firm; Capital Expenditures (CE) is the capital expenditures over sales and Firm Age (FA) represents the number of years of financial data available prior to a firm's fiscal year end.

Table 2

Correlation **M**atrix (Pearson above Diagonal and Spearman below).

	Adj-ROE	Adj-ROA	ROE	ROA	DI	IB	LEV	FS	CE	FA
Adj-ROE		0.384[b]	0.682[a]	0.447[b]	0.150[c]	-0.127	0.245[a]	-0.138[a]	0.326[b]	-0.096[a]
Adj-ROA	0.636[a]		0.421[a]	0.672[a]	0.178[a]	0.103[b]	-0.284[c]	0.021[b]	0.137	0.118[b]
ROE	0.739[b]	0.425[a]		0.290[a]	0.125[b]	0.016[c]	0.224[a]	0.179[a]	0.238[c]	0.121[a]
ROA	0.491[a]	0.786[a]	0.374[a]		0.118[b]	0.072[c]	0.352	-0.301[a]	0.168[b]	-0.124[a]
DI	0.175[b]	0.203[a]	0.086[b]	0.178[c]		0.158[a]	0.137[b]	0.541[a]	0.328[a]	0.238[a]
IB	-0.143[b]	0.032	- 0.067[c]	0.085[b]	0.154[a]		-0.082[a]	0.204[a]	-0.227[a]	0.357[b]
LEV	0.213[a]	0.122[a]	-0.249[a]	0.127	0.103[a]	-0.138[a]		-0.379[a]	-0.102	-0.030[b]
FS	-0.238[a]	0.085[a]	0.096[a]	-0.205[a]	0.580[a]	0.158[a]	-0.433[a]		0.328	0.392[a]
CE	0.320[a]	0.153[c]	0.213[a]	0.121[c]	0.288[a]	0.305	-0.087[a]	0.174[c]		0.258[b]
FA	-0.144[c]	0.127	-0.045[b]	0.107[b]	0.270[a]	0.387[a]	-0.173[b]	0.272[a]	0.382[b]	

Correlation Matrix for Baseline Specification Variables: Pearson correlations are reported above the main diagonal and Spearman correlations are reported below the diagonal. [a,b,c] indicate statistically significant at the 1%, 5% and 10% level (two-tailed) respectively. The descriptions for all of the variables listed above are given in the notes to Table 1.

Table 3

Regression Analysis: Disclosure and True Firm Performance

	Model 1		Model 2		Model 3	
	Adj-ROA	Adj-ROE	Adj-ROA	Adj-ROE	Adj-ROA	Adj-ROE
TFP (t-1)	2.145 [a]	1.227 [c]	1.021 [a]	2.538 [a]	2.095 [b]	3.011 [a]
	(0.189)	(0.047)	(0.264)	(0.071)	(0.069)	(0.201)
DI	1.452 [a]	0.124	1.559 [b]	3.250 [b]	1.419 [a]	2.128 [b]
	(0.201)	(0.016)	(0.328)	(0.053)	(0.327)	(0.062)
DI^2			-0.856 [a]	-0.371	- 0.785 [a]	-4.793
			(0.256)	(0.009)	(0.179)	(0.018)
IBDI					2.674 [a]	1.782
					(0.136)	(0.021)
$IBDI^2$					-1.638 [a]	-1.770 [c]
					(0.226)	(0.025)
IB					- 0.039 [a]	- 0.457 [a]
					(0.183)	(0.308)
LEV	-18.764 [c]	-0.132 [c]	10.489	-0.120 [b]	-17.378 [c]	-0.052 [b]
	(0.049)	(0.042)	(0.004)	(0.054)	(0.048)	(0.059)
FS	5.396 [a]	0.426 [b]	6.031 [b]	0.130 [a]	4.769 [a]	0.213 [a]
	(0.297)	(0.061)	(0.067)	(0.127)	(0.256)	(0.270)
CE	1.026 [b]	-0.723 [b]	3.069 [a]	0.376 [c]	2.809 [a]	1.124 [a]
	(0.057)	(0.052)	(0.205)	(0.038)	(0.125)	(0.241)
FA	1.201	0.557	0.124 [c]	-0.470	0.230	0.119
	(0.006)	(0.024)	(0.069)	(0.025)	(0.023)	(0.021)
AR (1) test (*p*-value)	(0.127)	(0.010)	(0.000)	(0.021)	(0.124)	(0.000)
AR (2) test (*p*-value)	(0.348)	(0.856)	(0.269)	(0.985)	(0.235)	-(0.103)
Hansen-J test (*p*-value)	(0.122)	(0.308)	(0.858)	(0.243)	(0.764)	(0.320)
No. of instruments	58	58	58	60	69	68
No. of groups	124	125	125	124	124	124

TFP (t-1) is the one-year lag of the dependent variable. The descriptions for all of the variables listed above are given in the notes to Table 1. This table presents the estimation results for the GMM model. Time (year) dummies are included in the regressions. Standard errors are reported in parentheses. [a,b,c] indicate statistically significant at the 1%, 5% and 10% level (two-tailed) respectively.

Table 4

Regression Analysis: Disclosure and Firm Performance

	Model 1		Model 2		Model 3	
	ROA	ROE	ROA	ROE	ROA	ROE
FP (t-1)	3.095 [b]	2.483 [a]	2.128 [b]	4.145 [a]	1.922 [b]	2.421 [a]
	(0.054)	(0.301)	(0.056)	(0.245)	(0.066)	(0.276)
DI	11.437 [a]	5.785 [b]	6.626 [a]	2.213 [c]	9.538 [a]	2.129 [b]
	(0.245)	(0.068)	(0.180)	(0.037)	(0.238)	(0.060)
DI^2			4.834 [b]	2.010 [a]	11.856 [c]	4.753 [b]
			(0.061)	(0.167)	(0.042)	(0. 058)
IBDI					4.220 [a]	3.358 [c]
					(0.097)	(0.039)
$IBDI^2$					1.323	1.866 [c]
					(0.007)	(0.031)
IB					1.328 [c]	1.520 [c]
					(0.041)	(0.047)
LEV	- 8.187	3.280	-7.175	14.096 [c]	-21.659	-0.823 [c]
	(0.021)	(0.014)	(0.010)	(0.046)	(0.019)	(0.035)
FS	1.380 [c]	4.543 [b]	-0.023	4.786 [c]	-3.954 [c]	6.573 [c]
	(0.048)	(0.054)	(0.007)	(0.036)	(0.042)	(0.041)
CE	1.405	2.893	-0.894	2.068 [c]	-1.980 [b]	3.502 [b]
	(0.014)	(0.009)	(0.007)	(0.031)	(0.058)	(0.055)
FA	0.021 [b]	0.011 [b]	1.321 [c]	0.112 [c]	1.107	0.423 [a]
	(0.053)	(0.059)	(0.043)	(0.030)	(0.010)	(0.263)
AR (1) test (*p*-value)	(0.076)	(0.123)	(0.112)	(0.035)	(0.014)	(0.021)
AR (2) test (*p*-value)	(0.463)	(0.398)	(0.821)	(1.207)	(0.463)	(0.546)
Hansen-J test (*p*-value)	(0.376)	(0.360)	(0.611)	(1.056)	(0.483)	(0.767)
No. of instruments	58	58	58	60	69	68
No. of groups	124	125	125	124	124	124

FP (t-1) is the one-year lag of the dependent variable. The descriptions for all of the variables listed above are given in the notes to Table 1. This table presents the estimation results for the GMM model. Time (year) dummies are included in the regressions. Standard errors are reported in parentheses. [a,b,c] indicate statistically significant at the 1%, 5% and 10% level (two-tailed) respectively.

Table 5

Disclosure and True Firm Performance with Alternative Proxies

	Model 1		Model 2		Model 3	
	Unmanaged ROA	Unmanaged ROE	Unmanaged ROA	Unmanaged ROE	Unmanaged ROA	Unmanaged ROE
TFP (t-1)	2.027 [b]	4.096 [b]	2.278 [a]	1.872 [a]	2.368 [a]	3.146 [b]
	(0.068)	(0.056)	(0.130)	(0.014)	(0.073)	(0.060)
DI	1.972 [a]	6.356 [c]	1.317 [a]	6.249	1.465 [b]	2.140 [b]
	(0.284)	(0.049)	(0.128)	(0.014)	(0.058)	(0.065)
DI^2			-0.732 [a]	-8.010	- 0.814 [a]	-4.891
			(0.083)	(0.009)	(0.138)	(0.010)
IBDI					2.614 [b]	1.021
					(0.090)	(0.015)
$IBDI^2$					-1.513 [a]	-2.428
					(0.152)	(0.021)
IB					-0.120	-0.049 [c]
					(0.005)	(0.041)
LEV	-0.042 [b]	-1.215 [a]	- 0.909 [c]	-0.650 [c]	-1.843 [c]	-0.304 [b]
	(0.061)	(0.176)	(0.031)	(0.043)	(0.059)	(0.055)
FS	5.763 [b]	0.725	6.560 [a]	0.023	4.890 [a]	0.056
	(0.059)	(0.018)	(0.297)	(0.005)	(0.327)	(0.005)
CE	-0.478	0.641 [c]	0.870 [b]	- 1.625	0.918 [a]	1.056
	(0.0012)	(0.038)	(0.064)	(0.007)	(0.237)	(0.027)
FA	0.440 [b]	0.542 [a]	0.980 [b]	-0.705	0.419 [b]	1.048 [a]
	(0.061)	(0.207)	(0.058)	(0.008)	(0.049)	(0.196)
AR (1) test (*p*-value)	(0.184)	(0.072)	(0.089)	(0.095)	(0.104)	(0.010)
AR (2) test (*p*-value)	(0.029)	(0.281)	(0.199)	(0.196)	(0.483)	(0.124)
Hansen-J test (*p*-value)	(0.374)	(0.783)	(0. 034)	(0.280)	(0.128)	(0.057)
No. of instruments	58	58	58	60	69	68
No. of groups	124	125	125	124	124	124

TFP (t-1) is the one-year lag of the dependent variable. The descriptions for all of the variables listed above are given in the notes to Table 1. This table presents the estimation results for the GMM model. Time (year) dummies are included in the regressions. Standard errors are reported in parentheses. [a,b,c] indicate statistically significant at the 1%, 5% and 10% level (two-tailed) respectively.

Table 6

Disclosure and True Firm Performance after Reducing the Number of Instruments

	Model 1		Model 2		Model 3	
	Adj-ROA	Adj-ROE	Adj-ROA	Adj-ROE	Adj-ROA	Adj-ROE
TFP (t-1)	2.025 [a]	2.137 [b]	0.542 [a]	3.735 [c]	2.134 [a]	1.240 [b]
	(0.228)	(0.061)	(0.227)	(0.035)	(0.107)	(0.061)
DI	2.832 [a]	1.831	2.490 [b]	0.834	2.769 [a]	0.578 [c]
	(0.290)	(0.006)	(0.052)	(0.015)	(0.270)	(0.030)
DI^2			-1.382 [a]	3.052	- 1.531 [a]	-4.690
			(0.168)	(0.006)	(0.175)	(0.021)
IBDI					5.040 [a]	3.512
					(0.123)	(0.029)
$IBDI^2$					-3.021 [a]	-1.051
					(0.275)	(0.017)
IB					0.523 [a]	0.780 [a]
					(0.301)	(0.219)
LEV	-10.398 [b]	0.390	-7.547 [a]	-0.377 [b]	-8.024 [a]	-0.037 [c]
	(0.69)	(0.25)	(0.215)	(0.063)	(0.276)	(0.048)
FS	3.895 [b]	2.903 [a]	4.278 [a]	1.323 [b]	3.528 [a]	2.207 [c]
	(0.050)	(0.201)	(0.286)	(0.057)	(0.192)	(0.049)
CE	1.525 [a]	-0.983 [b]	1.108 [b]	-1.021 [c]	2.216	1.542 [a]
	(0.259)	(0.055)	(0.059)	(0.030)	(0.011)	(0.070)
FA	-0.327 [b]	-0.276 [b]	-0.128 [c]	-0.330 [c]	- 0.129	- 0.276
	(0.067)	(0.051)	(0.044)	(0.036)	(0.028)	(0.012)
AR (1) test (*p*-value)	(0.075)	(0.035)	(0.010)	(0.010)	(0.000)	(0.021)
AR (2) test (*p*-value)	(0.762)	(0.363)	(0.541)	(0.834)	(0.425)	(0.417)
Hansen-J test (*p*-value)	(0.476)	(0.432)	(0.451)	(0.484)	(0.545)	(0.647)
No. of instruments	29	28	27	26	29	29
No. of groups	124	125	125	124	123	123

TFP (t-1) is the one-year lag of the dependent variable. The descriptions for all of the variables listed above are given in the notes to Table 1. This table presents the estimation results for the GMM model. Time (year) dummies are included in the regressions. Standard errors are reported in parentheses. [a,b,c] indicate statistically significant at the 1%, 5% and 10% level (two-tailed) respectively.

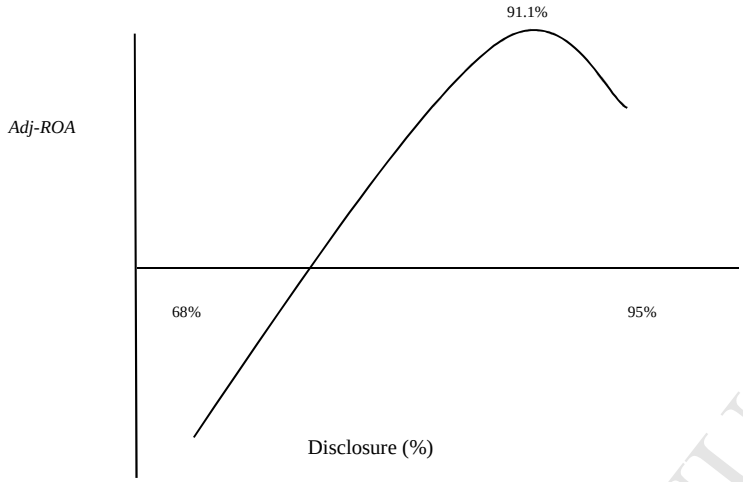

Fig. 1 *The Relationship between Disclosure and Adj-ROA*