Who Benefits from the Adoption of IFRS?*

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ABSTRACT

The research objective of this paper is to investigate when the adoption of International Financial Reporting Standards (IFRS) is beneficial to capital market participants. In particular, I specify the conditions in which IFRS is superior to domestic accounting standards from cost of capital and disclosure viewpoint. This paper presents a competitive equilibrium model to demonstrate who would prefer IFRS to domestic accounting standards, and when. It shows that in certain conditions, there is a conflict between firms' managers and investors, with regard to the adoption of IFRS. It also demonstrates that although the quality of accounting standards is an important condition, it does not necessitate IFRS preference by managers and investors. This sheds light on the fact that the ratio of foreign investors affects the decision.

1. Introduction

The research objective of this paper is to investigate when the adoption of International Financial Reporting Standards (hereafter IFRS) is beneficial to capital market participants. In particular, I specify the conditions which IFRS is superior to domestic accounting standards from cost of capital and disclosure viewpoint. The IFRS discussion is underway in the U.S. and Japan. The

adoption of IFRS is expected to ensure greater comparability and transparency of financial reporting around the world. It is also expected to enhance the internationalization of capital markets.

Despite these expectations, there are concerns that the adoption of IFRS increases the cost of preparation for financial statements or neglects the peculiar business conditions in some countries.[1] Therefore, the time has come to debate the merits and demerits of IFRS. However, little work has been done to formally analyze the conditions in which IFRS is superior to domestic accounting standards. In order to investigate these conditions, I provide a competitive equilibrium model with a firm and two types of investors—domestic and foreign.

A body of empirical research has investigated whether IFRS is beneficial to capital market participants. Ashbaugh and Pincus (2001) assess the quality of the financial statements using analysts' forecasts and show that the accuracy of analysts' forecasts improves once firms adopt IAS. Daske and Gebhart (2006) assess the quality of disclosure by financial analysts. They show that whether the adoption is voluntary and mandatory, the quality of disclosure is superior for firms that adopt IFRS or the U.S. standard. Covrig et al. (2007) find that voluntary IAS adoption reduces home bias among foreign investors. This suggests that IFRS improves capital allocation efficiency.

On the other hand, Christensen et al. (2007) and Gebhardt (2006) study whether adoption of IFRS can reduce the cost of capital, and find that it cannot. This suggests that from the cost of capital viewpoint, it is not clear that IFRS adoption is preferable. I shall contribute to existing literature by presenting an interpretation for the differences in findings.

I assume that there is one company which adopts domestic accounting standards or IFRS, and two types of investors—domestic and foreign. I also assume that the domestic investors and foreign investors face different uncertainties. I assume that disclosure by domestic accounting standards reduces uncertainty more for domestic investors than for foreign investors. Contrary to this, disclosure by IFRS is assumed to reduce uncertainty for domestic investors on par with for foreign investors. Under one of the accounting standards, a firm's manager decides the level of disclosure in order to minimize its cost of capital and investors decide how much stock to buy. To compare the merits of IFRS and domestic accounting standards, I compare the cost of capital and level of disclosure of the two accounting standards.

In this paper, I only focus on the relative merits of accounting standards and do not specify the *quality* of accounting standards. In reality, in order to specify quality, it may be essential to discuss the determinants of quality of accounting standards. However, this may lead to confusion over the merits and demerits of adopting accounting standards which are familiar to foreign investors and the merits and demerits of IFRS. This paper focuses on the former and not on the latter.

The main findings are as follows. There are certain situations in which investors and firms experience a conflict of interests regarding the choice of accounting standards. If the fraction of foreign investors in a capital market is not very small or very large, firms tend to prefer domestic accounting standards, while domestic investors prefer IFRS. This is one reason why some previous works have found IFRS to be beneficial for investors and others have not been able to suggest that IFRS is beneficial for firms.

In addition, I prove that the quality of accounting standards does not necessarily decide which accounting standards are beneficial for capital market participants. Barth et al. (2008) compare measures of accounting quality for firms applying IAS with U.S. firms, and show that firms applying IAS have better quality. It is true that the quality of accounting standards is an important factor that

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[1] Sunder (2011) discusses the possibility that an IFRS monopoly is evolutionarily disadvantageous in that it eliminates the opportunity to compare alternative practices and learn from them

determines the preference of accounting standards. However, my model suggests that the fraction of foreign investors and the uncertainty faced by them are also important factors.

The remainder of this paper is organized as follows. I set up the model in Section 2 and provide the solution in section 3. Finally, the conclusions are presented in Section 4.

2. The Model

This paper compares domestic accounting standards with IFRS. The players in the model are domestic investors, foreign investors, and the firm's manager. For simplicity, the total number of investors is normalized to 1, consisting of I, foreign investors, and $(1-I)$, domestic investors. I also assume that each investor exhibits constant absolute risk aversion (CARA) with risk tolerance parameter τ.

I assume that foreign investors have two distinct characteristics. First, they do not have a good understanding of disclosure by domestic accounting standards. This means that disclosure by adopting domestic accounting standards reduces the uncertainty less effectively than that by adopting IFRS. To address this disadvantage, firms are assumed to engage in IR activities specialized for foreign investors. Contrary to domestic accounting standards, disclosure by IFRS can decrease the level of uncertainty for foreign investors as well as domestic investors.

Second, there is assumed to be home bias. This means that foreign investors face more uncertainty about firms than domestic investors. This is because 1) apart from accounting information, foreign investors do not have easy access to other information sources and 2) they must bear foreign exchange risk.

The manager issues one stock and maximizes the firm's stock price.[2] The market value is not a random variable in this model and therefore, the manager is assumed to be risk neutral. Investors prefer a firm that accurately discloses information because accurate disclosure reduces the uncertainty for them. This increases the firm's stock price. However, the firm incurs more costs by accurate disclosure. This then decreases stock price. The manager takes this trade off into consideration when determining the level of disclosure.

Let $\tilde{E}_f^d$ be the firm's future cash flow for foreign investors under domestic accounting standards. I assume $\tilde{E}_f^d$ is a normal random variable with a mean of $\mu - C_d D_d D_f$ and a standard deviation of $(V_f + V_d)/((1/a)D_d D_f)$. μ refers to the expected value of cash flow from operations and $C_d D_d D_f$ is the total cost of disclosure. This suggests that the expected value of cash flow for investors is cash flow from operation minus cost of disclosure. C_d is the marginal cost of disclosure by domestic accounting standards and indicates the inverse of the quality of accounting standards. The level of disclosure for both domestic and foreign investors is D_d and the level of disclosure specialized for foreign investors is D_f.

The uncertainty faced by foreign investors in terms of domestic accounting standards is $(V_f + V_d)/((1/a)D_d D_f)$. Both types of investors face V_d and the uncertainty faced only by foreign investors is V_f. The manager can reduce it by two sets of disclosure, $D_d D_f$. However, because foreign investors are not familiar with domestic accounting standards, the effect of disclosure is partly offset by $1/a(<1)$. I use a as a parameter of difficulty for domestic accounting standards.

If a firm adopts IFRS, I assume $\tilde{E}_f^a$, which is the firm's future cash flow for foreign investors under IFRS, is a normal random variable with a mean of $\mu - C_a D_a$ and a standard deviation of $(V_f$

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[2] In this paper, stock price and market value are equal because the firm is assumed to issue only *one* stock.

$+ V_d)/D_a$. Cash flow from operation, μ, and the uncertainty faced by foreign investors, $V_f + V_d$, are the same as when the firm adopts domestic accounting standards. The cost of disclosure, $C_a D_a$, and the level of disclosure, D_a, are different. C_a is the marginal cost of disclosure by IFRS. The level of disclosure for both domestic and foreign investors is D_a. The firm engages in the same type and level of disclosure for domestic investors and foreign investors because both types of investors are familiar with IFRS.

Next, let $\tilde{E}_d^d$ be the firm's future cash flow for domestic investors under domestic accounting standards. I assume $\tilde{E}_d$ is a normal random variable with a mean of $\mu - C_d D_d D_f$ and a standard deviation of V_d / D_a. This means that the expected value of cash flow for domestic investors is the same as that for foreign investors because the cash flow from operation and the cost of disclosure are the same. Contrarily, the uncertainty is different for both types of investors because the original uncertainty and the effect of disclosure are different. The original uncertainty faced by domestic investors, V_d, is less than that faced by foreign investors because domestic investors can easily access firms operating in their own country. The effect of disclosure is only D_d because D_f is specialized for foreign investors and is assumed to be useless for domestic investors. This also assumes that domestic investors bear the cost of disclosure for foreign investors but do not receive the benefits of doing so.

If the firm adopts IFRS, I assume $\tilde{E}_d^a$ is a normal random variable with a mean of $\mu - C_a D_a$ and a standard deviation of V_d / D_a. This means that the expected value of cash flow and the effect of disclosure by IFRS are the same as for foreign investors. Only the original uncertainty, V_d, is different.

3. The Solution

3.1 Equilibrium Prices

The combination of normally distributed cash flows and CARA preferences yields the certainty equivalent utility functions as follows;

$$U_d^d = X_d^d (\mu - C_d D_d D_f) - \frac{1}{2} \tau (X_d^d)^2 (V_d / D_d D_f) - (X_d^d - \omega_d) P^d \tag{1}$$

$$U_d^a = X_d^a (\mu - C_a D_a) - \frac{1}{2} \tau (X_d^a)^2 (V_d / D_a) - (X_d^a - \omega_d) P^c \tag{2}$$

$$U_f^d = X_f^d (\mu - C_d D_d D_f) - \frac{1}{2} \tau (X_f^d)^2 ((V_d + V_f)/((1/a)D_d D_f)) - (X_f^d - \omega_f) P^d \tag{3}$$

$$U_f^a = X_f^a (\mu - C_a D_a) - \frac{1}{2} \tau (X_f^a)^2 ((V_d + V_f)/D_a) - (X_f^a - \omega_f) P^c \tag{4}$$

Where
i. U_i^j is the certainty equivalent of preferences of investors' type of i, which is d if they are domestic investors and f if they are foreign investors, when the firm adopts a set of accounting standards of category j, which is a if the firm adopts IFRS and d if the firm adopts domestic accounting standards,
ii. X_i^j is the number of shares of the firm of category j held by a type of i investor, and
iii. ω_i is the endowment of investors of type i.
iv. τ is the parameter of risk aversion.

I now derive the optimal investing choices of investors. The first order conditions for optimal investments follow from taking the derivative of U_i^j with respect to X_i^j, and can be written as

$$X^j_i = \frac{\mu - P_j - C_i D_i}{\tau \, (V_d/D_i)} \tag{5}$$

Equilibrium share prices are derived by substituting the above investments in the following market clearing conditions:

$$(1- I) \, X^j_d + I X^j_f = 1 \tag{6}$$

The resulting prices are as follows.

Lemma 1. Equilibrium prices are as follows:

$$P^*_d = \mu - C_d D_d D_f - \frac{a\tau D_d V_d \, (V_d + V_f)}{I D_f V_d + a(1-I)(D_d)^2 (V_d + V_f)} \tag{7}$$

$$P^*_a = \mu - C_a D_a - \frac{\tau V_d \, (V_d + V_f)}{D_a (V_d + (1-I)V_f)} \tag{8}$$

I define cost of capital (K) as the difference between μ and the equilibrium price because this is caused by the information uncertainty for investors.

3.2 Optimal Level of Disclosure

The manager decides the level of disclosure to maximize the firm's stock price. The first order conditions for optimal level of disclosure follow from taking the derivative of P^*_j with respect to D_d, D_f, and D_a. The resulting levels of disclosure are as follows.[3]

Lemma 2. Optimal levels of disclosure are as follows:

$$\left| \begin{array}{l} D^*_d = \dfrac{\sqrt{(2/3)V_d} \; \sqrt[4]{I\tau}}{\sqrt[4]{aC_d(V_d + V_f)}} \\[2ex] D^*_f = \dfrac{1}{3} \dfrac{\sqrt{a\tau}}{\sqrt{C_d I}} \end{array} \right. \tag{9}$$

$$D^*_a = \sqrt{\frac{V_d \, (V_d + V_f) \tau}{C_a (V_d + (1-I)V_f)}} \tag{10}$$

These equations show that
i.   when risk aversion (τ) increases, the level of any disclosure increases,
ii.   when the cost of any disclosure decreases, the level of any disclosure increases,
iii. when the uncertainty for all investors (V_d) increases, D^*_d and D^*_a increase but D^*_f doesn't change,
iv.   when the uncertainty for foreign investors (V_f) increases, D^*_d decreases, D^*_a increases, but D^*_f doesn't change,

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[3] Because the function of equilibrium prices is always concave for D_j, the first order condition is necessary and sufficient to get global minimum condition.

v.   when the ratio of foreign investors (I) increases, D_d^* and D_a^* increase but D_f^* decreases, and

vi. when the difficulty of domestic accounting standards (a) increases, D_d^* decreases but D_f^* increases.

Domestic investors prefer accounting standards which can further reduce their uncertainty. This means that they would prefer a set of accounting standards that induce greater disclosure by the firm's manager. Proposition 1 shows the condition in which accounting standards induce a manager to disclose more information, as preferred by domestic investors.

Proposition 1. If the following expression is positive, the level of disclosure is higher when adopting domestic accounting standards than when adopting IFRS. If not, the level of disclosure is higher when adopting IFRS.

$$4(C_a)^2 I \left(V_d + (1-I)V_f \right)^2 - 9C_d(1-I)^2 \left(V_d + V_f \right)^3 a\tau \tag{11}$$

This suggests that when the cost of domestic accounting standards becomes higher, when domestic accounting standards become more difficult, and when investors become more risk averse, IFRS is likely to superior from disclosure viewpoint because they can acquire more information through disclosure. However, the effect of the ratio of foreign investors and the uncertainty is more complicated. I discuss this in a subsequent section with numerical examples.

3.3 Equilibrium Cost of Capital

The equilibrium costs of capital (K_d^* and K_a^*) can be obtained when D_d and D_f or D_a are assigned to P_d^* or P_a^*.

Lemma 3 Equilibriums cost of capital are as follows:

$$K_d^* = \frac{\sqrt{(2/3)}\ \sqrt[4]{aC_d(V_d+V_f)}\ \sqrt{V_d}\left(1+9V_d+9V_f+2\sqrt{V_d+V_f}\right)\sqrt[4]{\tau^3}}{3\sqrt{1-I}\ \sqrt[4]{I}\ (2V_d+2V_f+\sqrt{V_d+V_f})} \tag{12}$$

$$K_a^* = \frac{2\sqrt{C_a V_d(V_d+V_f)\tau}}{\sqrt{V_d+(1-I)V_f}} \tag{13}$$

If you differentiate the equilibrium cost of capital, you can show that

i.   when risk aversion (τ) increases, cost of capital of capital increases,

ii. when cost of disclosure (C_j) decreases, the cost of capital increases,

iii. when the uncertainty for all investors (V_d) increases, the cost of capital increases,

iv. when the uncertainty for foreign investor (V_f) increases, K_a^* increases but the effect on K_d^* depends on other conditions,

v.   when the ratio of foreign investors (I) increases, K_a^* increases but the effect on K_d^* depends on other conditions, and

vi. when the difficulty of domestic accounting standards (a) increases, K_d^* decreases.

Managers prefer a set of accounting standards which can further reduce the cost of capital. Proposition 2 shows the condition in which accounting standards can reduce the cost of capital, as preferred by managers.

Proposition 2. If the following expression is positive, the cost of capital is higher when adopting domestic accounting standards than when adopting IFRS. If not, the cost of capital is higher when adopting IFRS.[4]

$$
\begin{aligned}
&C_d I \left(V_d + (1-I)V_f\right)^2 \left(1 + 9V_d + 9V_f + \sqrt{V_d + V_f}\right)^4 a\tau \\
&- 2916 \left(C_a\right)^2 (1-I)^2 I \left(V_d + V_f\right) \left(2V_d + 2V_f + \sqrt{V_d + V_f}\right)^4
\end{aligned}
\tag{14}
$$

This suggests that when the cost of domestic accounting standards becomes higher, when domestic accounting standards become more difficult, and when investors become more risk averse, firms are likely to prefer IFRS because they can reduce the cost of capital by adopting IFRS. However, the effect of the ratio of foreign investors and uncertainty is more complicated. I discuss this in a subsequent section with numerical examples.

3.4 Numerical Example

I examine the effect of distribution of investors, I, on the differences of disclosure, $D_d^* - D_a^*$, and of cost of capital, $K_a^* - K_d^*$. If these values are positive, adopting domestic accounting standards is superior. If not, adopting IFRS is superior. The parameters used in my example are as follows:

Difficulty of domestic accounting standards; a = 1.2
Uncertainty for all investors; V_d = 50
Uncertainty only for foreign investors; V_f = 20
Parameter of risk aversion; τ = 0.02

These parameters are chosen to exhibit conflicts between IFRS and domestic accounting standards. Figure 1 shows the case when domestic accounting standards are superior to IFRS. In this example, I set C_a = 6 and C_d = 4. Figure 1 indicates that from the cost of capital viewpoint, adopting domestic accounting standards is superior to adopting IFRS in most ranges and that from the disclosure viewpoint, the advantages of domestic accounting standards increases as the ratio of foreign investors increases.
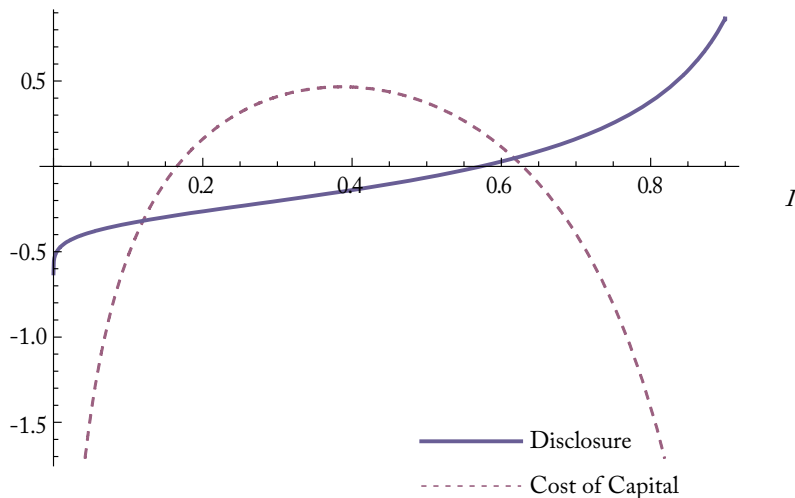
FIGURE 1: DOMESTIC ACCOUNTING STANDARDS ARE SUPERIOR TO IFRS (C_a = 6 and C_d = 4).

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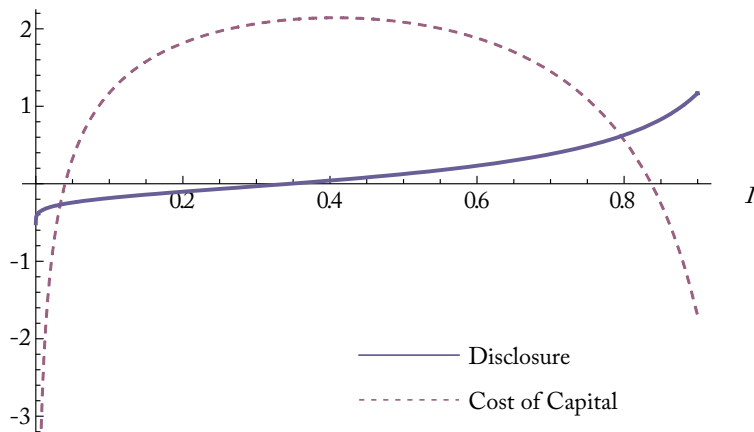
[4] To solve this problem, I calculate each cost of capital to the power four, subtract from the cost of domestics standards to IFRS, and simplify it.

Figure 2 shows the case when IFRS are superior to domestic accounting standards. In this example, I set $C_a = 4$ and $C_d = 6$. Compared to Figure 1, there is a shorter range in which adopting domestic accounting standards is preferable to adopting IFRS, not only from the cost of capital viewpoint but also from the disclosure viewpoint. Nonetheless, there are some ranges in which adopting domestic accounting standards is preferable to adopting IFRS, from both the cost of capital and disclosure viewpoints. This suggests that the quality of standards is not the only factor in the adoption of IFRS and that the distribution of investors must take this into account when in discussion about IFRS adoption.

FIGURE 2: IFRS ARE SUPERIOR TO DOMESTIC ACCOUNTING STANDARDS ($C_a = 4$ and $C_d = 6$)

Each figure shows that if the ratio of foreign investors is small, there is a conflict between firms and domestic investors. In such conditions, firms prefer domestic accounting standards because of lower cost of capital, while domestic investors prefer IFRS because they get more information from firms and can reduce their uncertainty. This may be consistent with previous empirical results, which indicate that IFRS is likely to be beneficial to investors but cannot reduce the cost of capital.

4. Conclusion

This paper investigates the relationship between IFRS adoption, level of disclosure, and cost of capital. The adoption of IFRS is likely to be preferable from the cost of capital viewpoint, when the ratio of foreign investors is very high or very low. This is because the diversification of investors is too narrow to provide two sets of financial statements. Some countries such as Japan, in which the average ratio of foreign investors is approximately 60 percent, may prefer domestic accounting standards. From the information flow viewpoint, the higher the ratio of foreign investors, the more preferable domestic accounting standards are likely to be. This suggests that there may be a conflict between firms and domestic investors in countries in which the ratio of foreign investors is not so

high.

This paper also indicates that even if IFRS is superior to domestic accounting standards from the quality viewpoint, it does not necessitate the adoption of IFRS. The ratio of foreign investors is also significant for the preference of accounting standards. These results suggest that whether adoption of IFRS is beneficial to firms or investors depends not only on the quality of the accounting standards but also on the fraction of foreign investors.

One of the limitations of this paper is that the utility function cannot be compared. This means that it is not clear whether investor prefers IFRS or domestic accounting standard.[5] So this can be left for future research.

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[5] The effects of other parameters cannot be determined because the utility of investors depends on the mean cash flow and the endowments.