



저작자표시-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.
- 이 저작물을 영리 목적으로 이용할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

경영학 석사학위 논문

**Informational relevance of foreign
currency transaction gains and losses
for valuation purpose**

2013년 2월

서울대학교 대학원
경영대학 경영학 전공
이 건 재

Informational relevance of foreign currency transaction gains and losses for valuation purpose

지도교수 황 이 석

이 논문을 경영학석사학위논문으로 제출함

2012년 11월

서울대학교 대학원
경영대학 경영학 전공
이 건 재

이건재의 석사학위논문을 인준함

2012년 12월

위 원 장 곽 수 근 (인)
부 위 원 장 신 재 용 (인)
위 원 황 이 석 (인)

Abstract

Informational relevance of foreign currency transaction gains and losses for valuation purpose

Lee Gun Jae
Business Administration, Accounting
The Graduate School
Seoul National University

Some argue that current accounting standards which require foreign currency transaction gains and losses to be included in net income create unnecessary volatility of net income. Empirical results using Korean data show that foreign currency transaction gains and losses exhibit the attributes related to transitory earnings with less information relevance for purposes of forecasting and valuation.

Also, empirical analysis does not find the significant relationships between the transitory earnings attributes, which is not consistent with the prediction from the analytical model. It can be inferred from this evidence that the information relevance of foreign currency transaction gains and losses is not significantly different cross-sectionally across the firms.

Additional test also reveals that the information relevance does not vary in the cross-section with a firm's stock return sensitivity to the foreign exchange rate change. These results suggest that the informational irrelevancy of foreign currency transaction gains and losses are not conditional on the extent to which a firm is affected by exchange rate changes.

.....

keywords : foreign currency, valuation, forecasting

Student Number : 2011-20545

요약(국문초록)

외환차이를 당기손익에 반영하도록 하는 현행 회계기준이 순이익의 불필요한 변동성을 야기한다는 지적이 제기된 바 있다. 본 연구는 한국기업의 재무정보 및 주가자료를 이용한 실증분석을 통해 외환차이 항목이 이익예측 및 가치평가 목적상 정보유의성이 낮은 transitory earnings 속성을 나타내고 있음을 보인다.

또한, 분석적 모형에 따라 transitory earnings 속성의 기업별 횡단면상 차이는 transitory earnings 속성간에 유의적인 상관관계를 가져옴을 예측할 수 있으나, 실증분석결과 transitory earnings 속성간에 유의적인 상관관계를 발견할 수 없었다. 이러한 결과는 외환차이의 정보유의성이 기업별로 유의적인 차이를 가지지는 않는다는 것을 암시한다.

한편 본 연구는 추가적인 테스트를 통해 기업별 주식수익률의 환율변동성에 대한 민감도가 외환차이의 정보유의성에 유의적인 영향을 주지 않고 있음을 보인다. 이는 이익예측 및 가치평가 목적상 외환차이 항목의 정보유의성 결여는 각 기업별 경영활동이 환율변동에 의해 영향받는 정도와는 무관함을 의미한다.

.....

주요어 : 외환차이, 가치평가, 이익예측
학 번 : 2011-20545

목 차

1. Introduction	1
2. Background and Literature Review	7
3. Analytical Model and Empirical Research Design	10
4. Sample and Data	24
5. Empirical Results	24
6. Conclusion	39
References	40

1. Introduction

Ohlson (1999) develops a concept of transitory earnings and analyzes how this source of earnings differs from other income items (core earnings). It shows that transitory earnings have three attributes which are closely interconnected : (i) earnings forecasting irrelevance, (ii) value irrelevance, and (iii) unpredictability. From an information perspective, core earnings represent the relevant accounting information along with book value. The effect of transitory earnings on valuation and earnings forecasting is basically captured via its effect on book value. In terms of the market returns, a cent of transitory earnings only represents a cent of return, without no information relevance for purposes of forecasting and valuation.

It is generally assumed that realized gains and losses should be recognized in net income immediately. However, establishing accounting standards for unrealized gains and losses has been more challenging, because in some cases unrealized gains and losses are viewed as transitory and not useful for predicting future cash flows and valuing firms.

Current accounting standards require some unrealized gains and losses to be recognized in net income, but allow other unrealized gains and losses to be deferred as other comprehensive income (OCI). OCI treatment was developed because these gains and losses were argued to be too volatile to be a useful component of net income.

Presentation issues such as the division between OCI and net income are being discussed based on a 'disaggregation objective' - that is, disaggregating items that exhibit differences in persistence or predictive value. This is consistent with the ideas of Ohlson (1999) which distinguishes transitory earnings from core earnings based on value relevance, predictive value, and persistence.

FASB pronouncement SFAS No. 52 establishes the accounting standards for foreign currency transactions in financial statements of a reporting entity and the standards for translating foreign currency financial statements of a foreign subsidiary.¹⁾ The predecessor SFAS No. 8, which required firms to use the temporal method of translating foreign currency and include foreign transaction and translation gains and losses in net income, was heavily criticized because many believed this temporal method caused financial statement results to misrepresent the currency exposure of most firms. On the other hand, SFAS No. 52 requires firms whose foreign subsidiaries operated primarily in a local currency to use the current rate method of translation and exclude translation gains and losses from income and report them as OCI. The essence of SFAS No. 52 is to allow management determination of the near-term cash flow impact of floating currency exchange rates through its designation of the functional currency for each foreign subsidiary. This selection is meant to reflect underlying economic circumstances surrounding its foreign subsidiaries regarding whether cash flow from each foreign subsidiary is affected by fluctuating exchange rates. This was expected to reduce the volatility of earnings.

On the contrary, SFAS No. 52 requires the change in expected functional currency cash flows from foreign currency transactions denominated in a currency other than the entity's functional currency due to the exchange rate changes (a foreign currency transaction gain or loss) to be included in net income for the period in which the exchange rate changes, which is consistent with SFAS No. 8. The rationale behind this is that the economic effects of an exchange rate change on foreign currency transactions which are parts of the parent's domestic operations impact the parent's cash flows *directly*.

1) SFAS No. 52 has been adopted by many countries to be the foundation for their local GAAPs including Korea in the Pre-IFRS period. IAS 21 'The Effects of Changes in Foreign Exchange Rates' which appeared after SFAS No. 52 was also based on SFAS No. 52 and followed it on all important matters.

For firms from U.S. or other developed countries whose functional currencies are being used as a settlement currency in international transactions, foreign currency transactions consist of a small part of their business. Even if they use other settlement currencies in their trade, the exchange rate between their functional currency and the settlement currency is very stable compared to the exchange rates involving other developing countries' own currencies. So the effects of exchange rate changes on the firm performance are very limited for them. This makes it less important for them how to treat foreign currency transaction gains and losses, compared to the issue regarding the translation of foreign subsidiary financial statements which caused the replacement of SFAS No. 8 by SFAS No. 52.

But, for many firms from emerging countries who engage in frequent international trades, foreign currency transactions consist of a big part of their business because their local functional currencies are not in common use in international trades. Therefore including foreign currency transaction gains and losses in net income is having a big impact on their net income.

It can hardly be argued that gains and losses from foreign currency transactions which were already settled or are to be settled in the near future affect the cash flows directly or will certainly. However, unrealized foreign currency transaction gains and losses from foreign currency transactions with a long period of time remaining until settlement still have huge uncertainty to be realized into cash flow.

If the exchange rate is determined as a result of efficient function of foreign exchange market, foreign currency transaction gain or loss would be the best estimates of the change in the future cash flows. However, if the exchange rates are subject to market shock, market participants sentiment, or insufficient liquidity, then it cannot be said that the unrealized foreign currency transaction gains and losses from long-term items reasonably reflect the expected change in the future cash flow from them.

So, we may conjecture that the current foreign currency standards based on SFAS No. 52 may give rise to unnecessarily volatile income for firms which engage in a lot of foreign currency transactions and have a functional currency with volatile exchange rate primarily determined in a foreign exchange market which is highly open and relatively small.

The argument offered for deferring unrealized gains and losses as OCI is that they are often related to volatile fluctuations in market conditions and are viewed as transitory, limiting their usefulness for predicting future cash flows and estimating firm values. The volatility issue regarding the recognition of foreign transaction gains and losses for the firms from developing countries does not differ greatly from the volatility issue of the foreign subsidiary translation which resulted in the replacement of SFAS No. 8 by SFAS No. 52. It may be argued that foreign currency transaction gains and losses exhibit different attributes from the other component of earnings in the respect that they have less information relevance for purposes of forecasting and valuation and need to be disaggregated from other earnings components.

This paper evaluates foreign currency transaction gains and losses in terms of attributes related to transitory earnings, which are value relevance (association with equity market value), predictive value (forecasting future earnings), and persistence (ability to predict future values of itself). I believe that the evidence can inform the deliberation on how well the current foreign currency standards reflect the economic substances of foreign currency transactions.

My empirical analysis extends prior literature on value relevance, predictive value, and persistence which relates earnings, equity market value and book value to each other by including (or separating) foreign currency transaction related items as separate variables. The valuation framework is based on Ohlson (1995).

The empirical results show that foreign currency transaction gains and

losses do not have a positive association with equity price, do not predict future earnings, and do not persist into the future. They imply that foreign currency transaction gains and losses have less information relevance for purposes of forecasting and valuation than the other components of earnings.

Even if value relevance, predictive value, and persistence of the foreign currency transaction gains and losses may not be significant at the aggregate level, it is still possible that their informational relevance is different cross-sectionally across the firms.

To investigate this possibility, this study attempts to expand the analytical model of Ohlson (1999) and theoretically establishes the relationship between the persistence of the foreign currency transaction gains and losses and their forecasting ability for the next-period aggregate earnings, and the relationship between their forecasting ability and their value relevance.

The expanded model shows that cross-sectional differences of the three attributes will predict that (1) the stronger the persistence of the foreign currency transaction gains and losses is, the more powerful their forecasting ability for the next-period aggregate earnings is, and (2) the more powerful their forecasting ability for the next-period aggregate earnings is, the more value relevant they are. However, the empirical analysis in this study fail to find the significantly positive association between the persistence of the foreign currency transaction gains and losses and their forecasting ability for the next-period aggregate earnings, and also fail to find the significantly positive association between their forecasting ability and their value relevance. It can be inferred from this evidence that the information relevance of foreign currency transaction gains and losses is not significantly different cross-sectionally across the firms.

Further, to investigate the possibility that the FCGSs informational relevance is significant only in firms whose business models are sensitive to the foreign exchange rate change, this study investigates whether the

information relevance varies in the cross-section with a firm's stock return sensitivity to the FX rate change ratio. Given that the stock price reflects all the factor influencing the firm value, it can be assumed that the differences in firms' stock return sensitivity to the FX rate change ratio comprehensively reflect the differences in each firm's business attributes related to FX rate change. If the information relevance varies in the cross-section with a firm's stock return sensitivity to the FX rate change ratio, in other words, FCGSs in firms whose business models are more sensitive to the foreign exchange rate change are more information relevant, this means that consideration must be given to a firm's business attributes while analyzing the FCGSs in earnings forecasting and valuation. If not, this implies that the FCGSs does not effectively reflect a firm's own attributes related to the FX rate change and that the informational irrelevancy of FCGSs is not conditional on a firm's business model which is affected by exchange rate changes.

The empirical study performs all the preceding test for each groups which are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity. The empirical evidence does not produce the result in which the information relevance varies in the cross-section with a firm's stock return sensitivity to the FX rate change ratio. The evidence suggests that information irrelevancy of foreign currency transaction gains and losses is not conditional on the extent to which a firm is affected by exchange rate changes.

In conclusion, this paper shows that informational relevance of foreign currency transaction gains and losses for forecasting valuation are inferior not only to a firm's operating income, but also other non-operating gain and loss, and does not carry the inference about the firm's sensitivity to FX rate change. This means that including foreign currency transaction gains and losses in net income with other earnings component may deteriorate the aggregate earnings quality.

By integrating tests of the value relevance, persistence, and predictive value

of foreign currency transaction gains and losses, this study extends academic research on the usefulness of components of net income. I believe that future decision-making related to presentation of financial statements can be informed by this paper.

The remainder of this paper is organized as follows. In section 2, I overview the accounting standards for foreign currency transactions and how they have evolved and review the related literature. In section 3, I discuss Ohlson (1999)'s analytical model and extend them to establish empirical specification for my research topic. Section 4 describes the data and section 5 presents empirical results. Finally, section 6 summarizes my findings and concludes the paper.

2. Background and Literature Review

FASB pronouncement SFAS No. 52 establishes the accounting standards for foreign currency transactions in financial statements of a reporting entity and the standards for translating foreign currency financial statements that are incorporated by consolidation, combination, or the equity method of accounting.

SFAS No. 52 states foreign currency transactions denominated in a currency other than the entity's functional currency (foreign currency) are a foreign operation that is an extension of the entity's domestic operations. Foreign currency transactions may fix the amount of foreign currency that will be received or paid. A change in exchange rates between the functional currency and the foreign currency increases or decreases the expected amount of functional currency cash flows upon settlement of the transaction. SFAS No. 52 describes that these changes in expected functional currency cash flows (a foreign currency transaction gain or loss) have a direct impact on the entity's

cash flows and requires them to be included in net income for the period in which the exchange rate changes. Likewise, a transaction gain or loss realized upon settlement of a foreign currency transaction is included in determining net income for the period in which the transaction is settled.

On the other hand, SFAS No. 52 describes the economic effects of an exchange rate change on an operation that is relatively self-contained and integrated within a foreign country relate to the net investment in that operation and translation adjustments that arise from consolidating that foreign operation do not impact cash flows. It states translation adjustments are an inherent result of the process of translating a foreign entity's financial statements and are not included in determining net income for the period, but are accumulated in a separate component of consolidated equity.

The predecessor SFAS No. 8 required firms to use the temporal method of translating foreign currency and included foreign transaction and translation gains and losses in net income. In 1981, the FASB replaced it with SFAS 52 in response to the criticism which claimed that SFAS No. 8 lead to unnecessary volatility of income and misrepresentation of the currency exposure by using the temporal method of translating foreign currency. The new standard supposedly generates more stable earnings (Seidler and McConnell, 1982).

Academic debates on the translation accounting standard since then mainly relate to how we should view the translation adjustments introduced by SFAS 52. The literature focuses more on the stock market reaction to the adjustment gains or losses under SFAS 52. Beaver and Wolfson (1984) argues that translation gains and losses indicate firm performance and that the informativeness of them may deteriorate when excluded from reported earnings. Evidence presented by Soo and Soo (1994) suggests that unrealized cumulative translation gains and losses are valued by the market in a way similar to other earnings components but with smaller weights. Chambers et al (2007) which

examines the pricing of OCI also finds foreign currency translation adjustment are priced by investors in the post-SFAS 130 period. However, Bartov (1997) finds that SFAS 52 has significantly improved the valuation relevance of earnings.

Unlike the information relevance of the foreign currency translation gain or loss, the cash flow impact of the foreign currency transaction gain or loss has been mostly presumed and the requirement to include them in net income has never been challenged seriously, as academic research on its information relevance is virtually nonexistent to my knowledge. I suppose that the reason it does not attract much attention is mainly because foreign currency transactions are of little importance for firms from developed countries whose functional currencies are being commonly used as a settlement currency in international transactions, and their exchange rates with other settlement currencies are relatively stable. However, for firms from emerging countries who engage in frequent international trades, foreign currency transactions are having a big impact on their net income. Moreover, they are the ones who are suffering the volatile exchange rate which sometimes fluctuates beyond the extent to which the efficient market function can explain. For those firms, the current standards based on SFAS No. 52 may give rise to unnecessarily volatile income reducing the information relevance. So it is the empirical question whether that is the case or not.

So, there seems to be some void to be filled in the literature which deals with information relevance regarding the foreign currency translation accounting. Fair value accounting has been a primary focus of most value relevance studies²⁾ (Barth et al 2001a), however, the effect of foreign exchange rate change on foreign currency transaction has been practically neglected while translation

2) The studies on fair values of securities, (e.g., Barth, 1994; Ahmed and Takeda, 1995; Eccher et al., 1996; Barth and Clinch, 1998) consistently find fair value estimates being perceived as more value relevant than historical cost amounts.

gains and losses issue lead to major standard revision. This paper attempts to fill the void by evaluating foreign currency transaction gains and losses in terms of attributes related to transitory earnings, which are value relevance, predictive value, and persistence. I believe that the evidence will enable us to better understand the economic substances of foreign currency transaction gains and losses.

3. Analytical Model and Empirical Research Design

3.1. Informational relevance of foreign currency transaction gains and losses - Testing the transitory earnings attributes of Ohlson (1999)

Ohlson (1999) formalize the three attributes of transitory earnings - (i) unpredictability, (ii) earnings forecasting irrelevance, and (iii) value irrelevance. To be more specific, (1) transitory earnings are unpredictable, at least in the sense that current transitory earnings do not influence subsequent transitory earnings, (2) current transitory earnings are irrelevant when one forecasts total earnings for the subsequent year, (3) the line item transitory earnings plays no informational role when one estimates the present value of a firm's expected dividends. From this information perspective, the effect of transitory earnings on valuation and earnings forecasting is basically captured via its effect on book value.

The modelling in Ohlson (1999) follows Ohlson (1995) as it combine the dividend discount model and clean surplus relation to derive the residual income valuation model $[P_t = b_t + \sum_{\tau=1}^{\infty} R^{-\tau} E_t(x_{t+\tau}^a)]$, but permits two earnings' components: 'core' earnings and 'transitory' earnings to specify the forecasting of

the sequence of expected abnormal earnings in terms of the current information.

$$\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2,t} + \tilde{\epsilon}_{1,t+1} \quad (1)$$

$$\tilde{x}_{2,t+1} = \omega_{22}x_{2,t} + \tilde{\epsilon}_{2,t+1} \quad (2)$$

Let, $x_{1,t}$: *core earnings*

$x_{2,t}$: *transitory earnings*

$x_t = x_{1,t} + x_{2,t}$: *total earnings*

$x_t^a = x_t - rb_{t-1}$: *abnormal earnings*

$\epsilon_{1,t}, \epsilon_{2,t}$: *mean zero disturbance terms*

The second equation excludes a term $\omega_{21}x_t^a$ which means that $\omega_{21} = 0$, because core earnings do not, influence the evolution of transitory earnings.

Then, Ohlson (1999) combines the residual income valuation formula and the above earnings sequence to derive the following valuation formula which only includes the current information.

$$P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2,t} \quad (3)$$

Let, $\alpha_1 = \omega_{11}/(R - \omega_{11})$

$\alpha_2 = \omega_{12}R/(R - \omega_{11})(R - \omega_{22})$.

Based on earnings sequence equation (1), (2) and valuation formula equation (3) introduced in Ohlson (1999), the transitory earnings conditions are defined as follows.

- (a) unpredictability : $\omega_{22} = 0$
- (b) forecasting-irrelevance : $\omega_{11} + \omega_{12} = 0$
- (c) value-irrelevance : $\alpha_1 + \alpha_2 = 0$

Given the expressions $\alpha_1 = \omega_{11}/(R-\omega_{11})$, $\alpha_2 = \omega_{12}R/(R-\omega_{11})(R-\omega_{22})$, Then any two of the three restrictions (a), (b), and (c) imply the third. Stated reversely, if any one of the three attributes of transitory earnings does not hold, we can expect that at least another one of the other two attributes of transitory earnings does not hold, which this paper further explores later.

In the first half of the empirical test, this study investigates whether foreign currency transactions gains and losses exhibit the three attributes of transitory earnings as defined in Ohlson (1999).

3.1.1. Persistence

First, I test the ability of foreign currency transactions gains and losses (*FCGS*) to predict future value of itself. ω_{22} ought to be zero if one wants to label $x_{2,t}$ transitory earnings in the equation (2) $\tilde{x}_{2,t+1} = \omega_{22}x_{2,t} + \tilde{\epsilon}_{2,t+1}$. Accordingly this paper establish the empirical specification for the persistence test as follows.

$$FCGS_t = \alpha_0 + \alpha_1 \cdot FCGS_{t-1}$$

(*FCGS_t* is an abbreviation for foreign currency transactions gains and losses in period *t*)

The dependent variable is current foreign currency transactions gains and losses (*FCGS_t*), and the independent variables are foreign currency transactions gains and losses of the previous period (*FCGS_{t-1}*). If foreign currency transactions gains and losses are transitory earnings, then I expect $\alpha_1 = 0$. For purpose of persistence test, other variables are not controlled for. The equations

are constructed in levels.

My primary test will be to investigate the sign and the significance of coefficients α_1 . Insignificant α_1 implies that foreign currency transactions gains and losses do not predict future values of itself. On the other hand, Positive and significant α_1 implies that foreign currency transactions gains and losses persist into the future. If α_1 is negative and significant, it means that unrealized foreign currency transactions gains and losses exhibit negative persistence and reverse over time implying that it may relates to the unnecessary volatility of net income.

The exchange rate change affects all the firms in any given year, the residuals of a given year may be correlated across different firms. (time effect) So, to answer this problem, I follow the tradition of Fama and MacBeth (1973) and my test centers on the average slopes from yearly cross-section regressions. That goes the same for the rest of the paper.

3.1.2. Predictive Value

Next, I investigate whether current foreign currency transaction gains and losses are irrelevant when one forecasts total earnings for the subsequent year, concerning the condition $\omega_{11} + \omega_{12} = 0$ in the earnings sequence (1) $\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2,t} + \tilde{\epsilon}_{1,t+1}$. In this case abnormal core earnings, $x_{1,t} - rb_{t-1}$ suffice as information to evaluate the next-period expected abnormal earnings.

(1) substitutes x_{t+1}^a , abnormal earnings for the subsequent year with $x_{t+1} - rb_t$ and (2) substitutes x_t^a , current abnormal earnings with the current information utilizing clean surplus relation, one obtains the following model which is empirically testable in terms of the current information.

$$\text{Model 1 : } x_{t+1} = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

where b_t is book value, x_t is total earnings, $FCGS_t$ is foreign currency transaction gains and losses and x_t^* is total earnings adjusted for foreign currency transaction gains and losses of the corresponding period ($x_t^* = x_t - FCGS_t$), meaning that the current earnings, the independent variables which explain the subsequent year earnings are separated into foreign currency transaction gains and losses and the rest of the aggregate earnings.

The forecasting equations are constructed in levels and include only current values as independent variables. The empirical test will verify whether β_3 , the parameter for the foreign currency transaction gains and losses is zero. If β_3 has insignificant value, this implies that current foreign currency transaction gains and losses are irrelevant when one forecasts total earnings for the subsequent year.

Meanwhile, the aggregate earnings include foreign currency transaction gains and losses, so if the foreign currency transaction gains and losses persist into the future, the above empirical specification results in testing simultaneously both the persistence and the predictive value of foreign currency transaction gains and losses. To solve this problem and distinguish the pure predictive value, I test additional empirical specification in which the dependent variable, the subsequent period earnings, are adjusted for foreign currency transaction gains and losses in the corresponding period as follow.

$$\text{model 2: } x_{t+1}^* = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

Furthermore, the following empirical analysis are performed in which dependent variable are replaced with the subsequent year core earnings and

independent variables are further subdivided by including $x_t^{other} (= x_t^* - x_t^{core})$, the other non-operational gains and losses. (The operational net income in the income statement proxies for the core earnings)

$$\text{model 3: } x_{t+1}^{core} = \beta_0 + \beta_1 b_t + \beta_2 x_t^{core} + \beta_3 x_t^{other} + \beta_4 FCGS_t$$

where x_t^{core} is operating net income and x_t^{other} is x_t minus x_t^{core} and $FCGS_t$.

Through these tests, the forecasting ability of foreign currency transaction gains and losses to predict future other earnings and future core earnings can be distinguished, thus, the forecasting ability of $FCGS_t$ and x_t^{other} can be compared.

3.1.3. Value relevance

Lastly, I investigate whether current foreign currency transaction gains and losses are irrelevant when one estimates a firm's value, concerning the condition $\alpha_1 + \alpha_2 = 0$ in the valuation model (3) $P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2,t}$.

Substitute $x_t^a (= x_t - r b_{t-1})$ in (3) with $x_t (= x_{1t} + x_{2t})$ and other current information using clean surplus relation, one obtains:

$$P_t = (1 - k)b_t + k(\varphi x_{1,t} + x_{2,t} - d_t) + (\alpha_1 + \alpha_2)x_{2,t} \quad (3-1)$$

$$\text{Let, } k = \alpha_1 r = r\omega_{11}/(R - \omega_{11}), \quad \varphi = R/r.$$

The condition $\alpha_1 + \alpha_2 = 0$ implies that a firm's value equals a weighted average of current book value b_t and capitalized earnings, which is basically same as the model in Ohlson (1995). (k can be interpreted as a weight-coefficient.)

To derive empirically testable model in terms of the current information, substitute b_t with $b_t^* + x_{2,t}$, and one obtains:

$$P_t = (1-k)b_t^* + k(\varphi x_{1,t} - d_t) + x_{2,t} + (\alpha_1 + \alpha_2)x_{2,t}$$

Then, by deducting $x_{2,t}$, transitory earnings from both sides, one can restate the above as:

$$P_t - x_{2,t} = (1-k)b_t^* + k(\varphi x_{1,t} - d_t) + (\alpha_1 + \alpha_2)x_{2,t}$$

$\alpha_1 + \alpha_2 = 0$ means that an incremental dollar of transitory earnings adds a dollar to market value, no more, no less. Based on this, I draw following empirical specification.

$$\text{model 1: } (P_t - FCGS_t) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^* + \gamma_3 FCGS_t$$

Here, the empirical test will see $\gamma_3 = 0$.

I test additional empirical specification in which independent variables are further subdivided by including $x_t^{other} (= x_t^* - x_t^{core})$ and the dependent variable are further adjusted for x_t^{other} .

$$\text{model 2: } (P_t - FGCS_t - x_t^{other}) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^{core} + \gamma_3 x_t^{other} + \gamma_4 FGCS_t$$

This enables us to compare the incremental effects on market value of x_t^{other} and $FGCS_t$. In this test, we need to check whether γ_4 is zero and compare γ_3 with γ_4 .

3.2. Testing the relation between foreign currency transaction gains and losses attributes - expansion of Ohlson (1999)

Even if value relevance, predictive value, and persistence of the foreign currency transaction gains and losses may not be significant at the aggregate level, it is still possible that their informational relevance is different cross-sectionally across the firms. To investigate this possibility, this study attempts to expand the analytical model of Ohlson (1999)

As stated already, any two of the three transitory earnings attributes (a), (b), and (c) in Ohlson (1999) imply the third.

(a) unpredictability : $\omega_{22} = 0$

(b) forecasting-irrelevance : $\omega_{11} + \omega_{12} = 0$

(c) value-irrelevance : $\alpha_1 + \alpha_2 = 0$

This means that if any one of the three attributes of transitory earnings does not hold, at least another one of the other two attributes of transitory earnings does not hold. With an extension of Ohlson (1999), one can derive the positively linear relationship between the persistence of the foreign currency transaction gains and losses and their forecasting ability for the next-period aggregate earnings, and the relationship between their forecasting ability and their value relevance.

Accordingly, if the informational relevance is quite different cross-sectionally across the firms, then we will capture the above relationships between the transitory earnings attributes empirically.

3.2.1. The relation between predictability and forecasting relevance

Abnormal earnings sequences in Ohlson (1999) are as follows

$$\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2,t} + \tilde{\epsilon}_{1,t+1} \quad (1)$$

$$\tilde{x}_{2,t+1} = \omega_{22}x_{2,t} + \tilde{\epsilon}_{2,t+1} \quad (2)$$

In addition to these, let's define another earnings sequence which predict the subsequent year abnormal core earnings with current earnings information.

$$\tilde{x}_{1,t+1}^a = \omega_{31}x_t^a + \omega_{32}x_{2,t} + \tilde{\epsilon}_{3,t+1} \quad (4)$$

By comparing (1) and (4), we now see that while both ω_{12} and ω_{32} represent the incremental predictive value of transitory earnings over core earnings, ω_{12} represents the predictive value for total abnormal earnings, but on the other hand ω_{32} features only the predictive value for abnormal core earnings. Let's see how they are associated.

By combining (2) and (4) by each side, one obtains:

$$\tilde{x}_{t+1}^a = \omega_{31}x_t^a + (\omega_{32} + \omega_{22})x_{2,t} + \tilde{\epsilon}_{1,t+1}$$

By comparing this with (1), we see that $\omega_{12} = \omega_{32} + \omega_{22}$.

(Also, it is obtained that $\omega_{11} = \omega_{31}$.)

In other words, ω_{12} is expressed as the sum of ω_{32} and ω_{22} , which represents the persistence of $x_{2,t}$. This implies that as the persistence of the foreign currency transaction gains and losses is stronger, their forecasting ability for the next-period aggregate earnings increases linearly.

The empirical test is to examine whether the persistence of foreign currency transaction gains and losses are associated with their forecasting ability.

$$\beta_3 = \delta_0 + \delta_1 \alpha_1$$

where α_i is the persistence of the firm i 's foreign currency transaction gains and losses (*FCGS*) and $\beta_{i,3}$ is the forecasting ability of a firm i 's *FCGS*.

α_i and $\beta_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$FCGS_{i,t} = \alpha_{i,0} + \alpha_{i,1} \cdot FCGS_{i,t-1}$$

$$x_{i,t+1} = \beta_{i,0} + \beta_{i,1} b_t + \beta_{i,2} x_{i,t} + \beta_{i,3} FCGS_{i,t}$$

where $FCGS_{i,t}$ is the firm i 's foreign currency transaction gains and losses, $x_{i,t}$ is the firm i 's total earnings, and $b_{i,t}$ is the firm i 's book value. The reason that the independent variable x_t is used in the second regression, while the empirical test of '5.1.2 Predictive Value' using the independent variable x_t^* is that we need to distinguish ω_{12} in this test. (In contrast, '5.1.2 Predictive Value' investigates if $\omega_{11} + \omega_{12} = 0$.)

The empirical analysis focuses on whether $\delta_1 > 0$. If so, this confirms the prediction that the persistence of the foreign currency transaction gains and losses are positively associated with their forecasting ability for the next-period aggregate earnings and verify that the persistence of the foreign currency transaction gains and losses is different cross-sectionally across the firms. If not, it can be inferred that their persistence is not significantly different across the firms.

3.2.2. The relation between forecasting relevance and value relevance

As Ohlson (1999) put it, the valuation model (3) $P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2,t}$ can be restated as follow if $\alpha_1 + \alpha_2 = 0$.

$$P_t = (1 - k)b_t + k(\varphi x_{1,t} + x_{2,t} - d_t)$$

However, if $\alpha_1 + \alpha_2 \neq 0$, then the valuation model can be stated instead as (3-1), as already discussed in ‘3.1.3. Value relevance’

$$P_t = (1 - k)b_t + k(\varphi x_{1,t} + x_{2,t} - d_t) + (\alpha_1 + \alpha_2)x_{2,t} \quad (3-1)$$

So, $(\alpha_1 + \alpha_2)x_{2,t}$, the last term on the right side is the incremental effect on a firm's value which $x_{2,t}$ have over its own effect on book value, and $\alpha_1 + \alpha_2$ represents the extent (value relevance). Given the expression $\alpha_1 = \omega_{11}/(R - \omega_{11})$, $\alpha_2 = \omega_{12}R/(R - \omega_{11})(R - \omega_{22})$, $\alpha_1 + \alpha_2$ can be restated as:

$$\begin{aligned} (\alpha_1 + \alpha_2) &= \frac{\omega_{11}}{(R - \omega_{11})} + \frac{\omega_{12}R}{(R - \omega_{11})(R - \omega_{22})} \\ &= \frac{\omega_{11}(R - \omega_{22}) + \omega_{12}R}{(R - \omega_{11})(R - \omega_{22})} = \frac{(\omega_{11} + \omega_{12})R - \omega_{11}\omega_{22}}{(R - \omega_{11})(R - \omega_{22})} \end{aligned}$$

Here we can see that $\alpha_1 + \alpha_2$ which represents value relevance of $x_{2,t}$ have a linear and positive association with ω_{12} which represents its predictive value. In other words, the more powerful the forecasting ability of transitory earnings for the next-period aggregate earnings is, the more value relevant they are.

The empirical test is to examine whether the forecasting ability of foreign

currency transaction gains and losses are associated with their value relevance in a similar way to the one in ‘3.2.1. The relation between predictability and forecasting relevance’.

$$\text{Model 1 : } \gamma_3 = \eta_0 + \eta_1 \beta_3$$

where $\beta_{i,3}$ is the forecasting ability of the firm i 's foreign currency transaction gains and losses ($FCGS$), and $\gamma_{i,3}$ is the value relevance of a firm i 's $FCGS$.

$\beta_{i,3}$ and $\gamma_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$x_{i,t+1} = \beta_{i,0} + \beta_{i,1}b_t + \beta_{i,2}x_{i,t} + \beta_{i,3}FCGS_{i,t}$$

$$(P_{i,t} - FCGS_{i,t}) = \gamma_{i,0} + \gamma_{i,1}b_{i,t}^* + \gamma_{i,2}x_{i,t}^* + \gamma_{i,3}FCGS_{i,t}$$

where $FCGS_{i,t}$ is the firm i 's foreign currency transaction gains and losses, $x_{i,t}$ is the firm i 's total earnings, $b_{i,t}$ is the firm i 's book value and $P_{i,t}$ is the firm i 's market value. * denotes that the variable are adjusted for $FCGS_{i,t}$.

The empirical analysis focuses on whether $\eta_1 > 0$. If so, this confirms the prediction that the forecasting ability of the foreign currency transaction gains and losses for the next-period aggregate earnings are positively associated with their value relevance and verify that the forecasting ability of the foreign currency transaction gains and losses is different cross-sectionally across the firms. If not, it can be inferred that their forecasting ability is not significantly different across the firms. (One possible alternative explanation for the result is that market participants does not fully understand the implication of $FCGS$

attributes and does not incorporate them into the prices. It is plausible but still assume inefficient market, so this paper excludes this possibility.)

Meanwhile, $\alpha_1 + \alpha_2$ is also affected by both ω_{11} (the persistence of $x_{1,t}$) and ω_{22} (the persistences of $x_{2,t}$) as can be seen the following equation.

$$\begin{aligned} (\alpha_1 + \alpha_2) &= \frac{\omega_{11}}{(R - \omega_{11})} + \frac{\omega_{12}R}{(R - \omega_{11})(R - \omega_{22})} \\ &= \frac{\omega_{11}(R - \omega_{22}) + \omega_{12}R}{(R - \omega_{11})(R - \omega_{22})} = \frac{(\omega_{11} + \omega_{12})R - \omega_{11}\omega_{22}}{(R - \omega_{11})(R - \omega_{22})} \end{aligned}$$

So, another empirical test is performed to control for their effect which include β_2 and α_1 .

$$\text{Model 2 : } \gamma_3 = \eta_0 + \eta_1\beta_3 + \eta_2\beta_2 + \eta_2\alpha_1$$

where $\beta_{i,2}$ is the persistence of the firm i 's total earnings x_t and $\alpha_{i,1}$ is the persistence of the firm i 's *FCGS*. $\beta_{i,2}$ and $\alpha_{i,1}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$\begin{aligned} FCGS_{i,t} &= \alpha_{i,0} + \alpha_{i,1} \cdot FCGS_{i,t-1} \\ x_{i,t+1} &= \beta_{i,0} + \beta_{i,1}b_t + \beta_{i,2}x_{i,t} + \beta_{i,3}FCGS_{i,t} \end{aligned}$$

3.3. Testing the relation between foreign currency transaction gains and losses attributes - expansion of Ohlson (1999)

In this subsection, I investigate the possibility that the *FCGS*'s informational relevance is significant only in firms whose business models are

sensitive to the foreign exchange rate change. The empirical analysis examine whether the information relevance of foreign currency transaction gains and losses vary in the cross-section with a firm's stock return sensitivity to the FX rate change ratio.

Given that the stock price reflects all the factor influencing the firm value, it can be assumed that the differences in firms' stock return sensitivity to the FX rate change ratio comprehensively reflect the differences in each firm's business attributes related to FX rate change. If the information relevance vary in the cross-section with a firm's stock return sensitivity to the FX rate change ratio, in other words, FCGSs in firms whose business models are more sensitive to the foreign exchange rate change are more information relevant, this means that consideration must be given to a firm's business attributes while analyzing the FCGSs in earnings forecast and valuation. If not, this implies that the FCGSs does not effectively reflect a firm's own attributes related to the FX rate change and that the informational irrelevancy of FCGSs are not conditional on a firm's business model.

The empirical study performs all the preceding test for each groups which are sorted based upon their stock return's foreign exchange rate change sensitivity. For each year, all firm-years in the sample are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity. The sensitivity is measured as the slope coefficient of the foreign exchange rate change ratio from the regression of a firm's monthly raw returns on the foreign exchange rate change ratio and the monthly value-weighted market return over a rolling five-year window ending in the current fiscal year.

4. Sample and Data

I obtain all the financial accounting and market price data from TS-2000 database. My sample covers listed firms in the securities market of the Korea Exchange from 1996 to 2010, whose fiscal years end in December. The recent year 2011 in which Korea adopted IFRS is excluded due to the comparability concern. (IFRS also does not provide net operating income information.) Market value of equity in each given year are measured at end of the March of the next fiscal year to ensure accounting information in the annual report to be reflected on the stock price. The sample consists of 17,914 firm-year accounting data and 12,810 firm-year price data.

5. Empirical Results

Table 1 reports descriptive statistics along with univariate correlations between the variables. Foreign currency transaction gains and losses seem to be negatively correlated with other income component, although the correlation with other non-operating income is not significant.

Table 1
Summary Statistics

Panel A: Descriptive Statistics	(1 million won)	
	Mean	Std Dev
book value	303,306	1,905,122
operating net income	39,503	279,644
other income	-12,399	107,985
foreign currency transaction gains and losses (<i>FCGS</i>)	-614	33,792
market value	461,154	3,139,632

Panel B: Pearson Correlation Coefficients

Prob > |r| under H0: Rho=0

	book value	operating net income	other income	<i>FCGS</i>	market value
book value	1				
operating net income	0.7530	1			
	<.0001				
other income	0.0338	-0.2439	1		
	<.0001	<.0001			
foreign currency transaction gains and losses (<i>FCGS</i>)	-0.0606	-0.0358	-0.0150	1	
	<.0001	<.0001	0.045		
market value	0.8547	0.8493	0.0552	-0.0603	1
	<.0001	<.0001	<.0001	<.0001	

The sample consists of 17,914 firm-year accounting data from 1996 through 2010 for firms whose fiscal year end in December from TS-2000. Book value, operating net income, other income and foreign currency transaction gains and losses (*FCGS*) are measured at the end of the current fiscal year, while market value is the market value of equity from 2000 to 2010, measured using the 12,810 firm-year price data from TS-2000 at end of the March of the next fiscal year. Other income is total earnings minus operating net income and *FCGS*.

5.1. Informational relevance of foreign currency transaction gains and losses - Testing the transitory earnings attributes of Ohlson (1999)

In this subsection I examine whether foreign currency transactions gains and losses exhibit the three attributes of transitory earnings as defined in Ohlson (1999).

5.1.1. Persistence

First, I test the ability of foreign currency transactions gains and losses (*FCGS*) to predict future value of itself. ω_{22} ought to be zero if one wants to label $x_{2,t}$ transitory earnings in the equation (2) $\tilde{x}_{2,t+1} = \omega_{22}x_{2,t} + \tilde{\epsilon}_{2,t+1}$. The

empirical specification is established as follows.

$$FCGS_t = \alpha_0 + \alpha_1 \cdot FCGS_{t-1}$$

Table 2 reports time-series averages of the parameters from the yearly regressions in this equation. Standard errors are calculated from the time-series variation in the parameter. This methodology, developed by Fama and MacBeth (1973), ensures the reported t-statistics account for cross-sectional correlation in the error terms in the equation. Estimate (α_1) from Table 2 indicates that foreign currency transactions gains and losses do not persist into the future. ($t = 0.16$)

Table 2
Regressions of the current year foreign currency transaction gains and losses on the prior year foreign currency transaction gains and losses

Intercept (α_0)	-1,205 (-1.01)
lagged foreign currency transaction gains and losses ($FCGS$) (α_1)	0.0682 (0.16)
R ²	0.35

This table presents the results of the following Fama-MacBeth regression that examine how much current foreign currency transaction gains and losses persist into the future.

$$FCGS_t = \alpha_0 + \alpha_1 \cdot FCGS_{t-1}$$

where $FCGS_t$ is foreign currency transaction gains and losses.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

5.1.2. Predictive Value

Next, I investigate whether current foreign currency transaction gains and losses are irrelevant when one forecasts total earnings for the subsequent year, concerning the condition $\omega_{11} + \omega_{12} = 0$ in the earnings sequence (1) $\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2,t} + \tilde{\epsilon}_{1,t+1}$. The empirical specification is established as follows.

$$\text{model 1 : } x_{t+1} = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FGCS_t$$

$$\text{model 2 : } x_{t+1}^* = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FGCS_t$$

$$\text{model 3 : } x_{t+1}^{core} = \beta_0 + \beta_1 b_t + \beta_2 x_t^{core} + \beta_3 x_t^{other} + \beta_4 FGCS_t$$

Table 3 reports time-series averages of the parameters from the yearly regressions in this equation and standard errors are calculated from the time-series variation in the parameter as in ‘5.1.1. Persistence’. Estimates from Table 3 (β_3 s from model 1 and 2, β_4 from model 3) are not statistically different from zero ($t = 0.87, 0.75, 0.25$) implying that current foreign currency transaction gains and losses are irrelevant when one forecasts total earnings for the subsequent year. This results contrast to the evidence that the rest of the earnings are highly relevant in earnings forecasting (t-stats of β_2 s from all the specification are positive and very high.) In addition, Model 3 also reveals that other non-operating gains and losses are not forecasting relevant. ($t = -1.34$)

Table 3
Regressions of the next year earnings on the current year foreign currency transaction gains and losses (FCGS)

Model 1	
Intercept (β_0)	-1,695 (-1.03)
book value (β_1)	0.0277 (1.53)
earnings excluding FCGS (β_2)	0.7133 (6.20)
FCGS (β_3)	1.1885 (0.87)
R ²	0.63
Model 2	
Intercept (β_0)	-329 (-0.15)
book value (β_1)	0.0265 (1.64)
earnings excluding FCGS (β_2)	0.7132 (6.33)
FCGS (β_3)	1.0282 (0.75)
R ²	0.62
Model 3	
Intercept (β_0)	4,653 (1.08)
book value (β_1)	0.0110 (1.08)
operating net income (β_2)	0.7829 (6.21)
other income (β_3)	-0.1209 (-1.34)
FCGS (β_4)	0.1718 (0.25)
R ²	0.73

This table presents the results of the following Fama-MacBeth regressions that examine how much current foreign currency transaction gains and losses forecast future earnings.

$$\text{Model 1 : } x_{t+1} = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

$$\text{Model 2 : } x_{t+1}^* = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

$$\text{Model 3 : } x_{t+1}^{core} = \beta_0 + \beta_1 b_t + \beta_2 x_t^{core} + \beta_3 x_t^{other} + \beta_4 FCGS_t$$

where x_t is total earnings, b_t is book value, $FCGS_t$ is foreign currency transaction gains and losses, x_t^* is x_t minus $FCGS_t$, x_t^{core} is operating net income, and x_t^{other} is x_t minus x_t^{core} and $FCGS$.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

5.1.3. Value relevance

As the third transitory earnings attributes test, I investigate whether current foreign currency transaction gains and losses are irrelevant when one estimates a firm's value, concerning the condition in the valuation model (3). The empirical specification is established as follows.

$$\text{model 1 : } (P_t - FGCS_t) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^* + \gamma_3 FGCS_t$$

$$\text{model 2 : } (P_t - FGCS_t - x_t^{other}) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^{core} + \gamma_3 x_t^{other} + \gamma_4 FGCS_t$$

Table 4 reports time-series averages of the parameters from the yearly regressions in this equation and standard errors are calculated from the time-series variation in the parameter as in previous analysis. The average slopes from the regression of the adjusted market value on the book value are 0.51 (t=5.09) from model 1 and 0.40 (t=4.83) from model 2, while the adjusted earnings slope is 6.00 (t=8.07) from model 1 and the core earnings slope is 6.62 (t=10.33) from model 2, which is quite consistent with the basic prediction from Ohlson (1995) in which a firm's value equals a weighted average of current book value and capitalized earnings.

However, estimates for foreign currency transaction gains and losses (γ_3 from model 1 and γ_4 from model 2) are not statistically different from zero (t = 0.58 and 0.31) implying that current foreign currency transaction gains and losses are irrelevant when one estimates a firm's value. In addition, Model 2 also reveals that other non-operating gains and losses have a slope of 2.33 and are significant (t = 2.26), which means that foreign currency transaction gains and losses are less value relevant than other non-operating gains and losses.

Table 4
**Regressions of the current year market value on the current year foreign
currency transaction gains and losses (FCGS)**

Model 1	
Intercept (γ_0)	39,089 (2.37)
book value excluding <i>FCGS</i> (γ_1)	0.5059 (5.09)
earnings excluding <i>FCGS</i> (γ_2)	6.0000 (8.07)
<i>FCGS</i> (γ_3)	9.3201 (0.58)
R ²	0.85
Model 2	
Intercept (γ_0)	13,188 (0.74)
book value excluding <i>FCGS</i> (γ_1)	0.4044 (4.83)
operating net income (γ_2)	6.6158 (10.33)
other income (γ_3)	2.3316 (2.26)
<i>FCGS</i> (γ_4)	2.8161 (0.31)
R ²	0.88

This table presents the results of the following Fama-MacBeth regressions that examine how much current foreign currency transaction gains and losses forecast future earnings.

$$\text{Model 1 : } (P_t - FGCS_t) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^* + \gamma_3 FGCS_t$$

$$\text{Model 2 : } (P_t - FGCS_t - x_t^{other}) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^{core} + \gamma_3 x_t^{other} + \gamma_4 FGCS_t$$

where P_t is market value, x_t is total earnings, $FGCS_t$ is foreign currency transaction gains and losses, b_t^* is book value minus $FGCS_t$, x_t^* is x_t minus $FGCS_t$, x_t^{core} is operating net income, and x_t^{other} is x_t minus x_t^{core} and $FGCS$.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

5.2. Testing the relation between foreign currency transaction gains and losses attributes - expansion of Ohlson (1999)

In this subsection I examine whether the relationship between the transitory earnings attributes can be captured empirically as predicted by analytical model.

5.2.1. The relation between predictability and forecasting relevance

First, I examine whether the persistence of foreign currency transaction gains and losses are associated with their forecasting ability. The empirical specification is established as follows.

$$\rho_3 = \delta_0 + \delta_1 \lambda$$

λ_i and $\rho_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$FCGS_{i,t} = \lambda_i \cdot FCGS_{i,t-1}$$
$$x_{i,t+1} = \rho_{i,1} b_t + \rho_{i,2} x_{i,t} + \rho_{i,3} FCGS_{i,t}$$

Estimate from Table 5 (δ_1) is not statistically different from zero ($t=-1.00$) implying that the persistence of the foreign currency transaction gains and losses are not significantly associated with their forecasting ability for the next-period aggregate earnings, which is not consistent with the prediction from the analytical model. Based on this evidence, I infer that their persistence is not significantly different across firms.

Table 5
Regressions of the forecasting ability of foreign currency transaction gains and losses (FCGS) on their persistence

Intercept (δ_0)	-34,044 (-1.32)
FCGS persistence (δ_1)	-75697.22 (-1.00)
R ²	0.05

This table presents the results of the following Fama-MacBeth regression that examine whether the persistence of foreign currency transaction gains and losses are associated with their forecasting ability.

$$\rho_3 = \delta_0 + \delta_1 \lambda$$

where λ_i is the persistence of the firm i 's foreign currency transaction gains and losses (FCGS) and $\rho_{i,3}$ is the forecasting ability of a firm i 's FCGS.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

λ_i and $\rho_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$FCGS_{i,t} = \lambda_i \cdot FCGS_{i,t-1}$$

$$x_{i,t+1} = \rho_{i,1} b_t + \rho_{i,2} x_{i,t} + \rho_{i,3} FCGS_{i,t}$$

where $FCGS_{i,t}$ is the firm i 's foreign currency transaction gains and losses, $x_{i,t}$ is the firm i 's total earnings, and $b_{i,t}$ is the firm i 's book value.

5.2.2. The relation between forecasting relevance and value relevance

Next, I examine whether the forecasting ability of foreign currency transaction gains and losses are associated with their value relevance. The empirical specification is established as follows.

$$\text{Model 1 : } \gamma_3 = \eta_0 + \eta_1 \beta_3$$

$$\text{Model 2 : } \gamma_3 = \eta_0 + \eta_1\beta_3 + \eta_2\beta_2 + \eta_2\alpha_1$$

$\beta_{i,3}$, $\beta_{i,2}$, $\alpha_{i,1}$ and $\gamma_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$FCGS_{i,t} = \alpha_{i,0} + \alpha_{i,1} \cdot FCGS_{i,t-1}$$

$$x_{i,t+1} = \beta_{i,0} + \beta_{i,1}b_t + \beta_{i,2}x_{i,t} + \beta_{i,3}FCGS_{i,t}$$

$$(P_{i,t} - FCGS_{i,t}) = \gamma_{i,0} + \gamma_{i,1}b_{i,t}^* + \gamma_{i,2}x_{i,t}^* + \gamma_{i,3}FCGS_{i,t}$$

Estimates from Table 6 (η_1 s) are not statistically different from zero ($t=0.99$ and 0.99) implying that the forecasting ability of the foreign currency transaction gains and losses for the next-period aggregate earnings are not significantly associated with their value relevance, which is not consistent with the prediction from the analytical model. Based on this evidence, I infer that their forecasting ability is not significantly different across the firms.

Table 6
Regressions of the value relevance of foreign currency transaction gains and losses (FCGS) on their forecasting ability

Model 1	
Intercept (η_0)	-20,214.55 (-0.79)
FCGS forecasting ability (η_1)	131.37 (0.99)
R ²	0.34
Model 2	
Intercept (η_0)	-21776.10 (-0.86)
FCGS forecasting ability (η_1)	131.43 (0.99)
Total earnings persistence (η_2)	-285.15 (-0.53)
FCGS persistence (η_3)	-4547.41 (-1.02)
R ²	0.34

This table presents the results of the following Fama-MacBeth regression that examine whether the forecasting ability of foreign currency transaction gains and losses are associated with their value relevance.

$$\text{Model 1 : } \gamma_3 = \eta_0 + \eta_1 \beta_3$$

$$\text{Model 2 : } \gamma_3 = \eta_0 + \eta_1 \beta_3 + \eta_2 \beta_2 + \eta_2 \alpha_1$$

where $\beta_{i,3}$ is the forecasting ability of the firm i 's foreign currency transaction gains and losses (FCGS), $\beta_{i,2}$ is the persistence of the firm i 's total earnings x_t , $\alpha_{i,1}$ is the persistence of the firm i 's FCGS and $\gamma_{i,3}$ is the value relevance of a firm i 's FCGS.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

$\beta_{i,3}$, $\beta_{i,2}$, $\alpha_{i,1}$ and $\gamma_{i,3}$ in each year are estimated from the following firm-level time-series regressions at the annual level over rolling 5-year windows ending in the current fiscal year.

$$FCGS_{i,t} = \alpha_{i,0} + \alpha_{i,1} \cdot FCGS_{i,t-1}$$

$$x_{i,t+1} = \beta_{i,0} + \beta_{i,1} b_t + \beta_{i,2} x_{i,t} + \beta_{i,3} FCGS_{i,t}$$

$$(P_{i,t} - FCGS_{i,t}) = \gamma_{i,0} + \gamma_{i,1} b_{i,t}^* + \gamma_{i,2} x_{i,t}^* + \gamma_{i,3} FCGS_{i,t}$$

where $FCGS_{i,t}$ is the firm i 's foreign currency transaction gains and losses, $x_{i,t}$ is the firm i 's total earnings, $b_{i,t}$ is the firm i 's book value and $P_{i,t}$ is the firm i 's market value.

5.3. Testing the relation between foreign currency transaction gains and losses attributes - expansion of Ohlson (1999)

In this subsection I examine whether the information relevance of foreign currency transaction gains and losses vary in the cross-section with a firm's stock return sensitivity to the FX rate change ratio. The empirical analysis performs all the preceding test for each groups which are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity.

Table 7 presents the result for persistence, Table 8 for predictive value and Table 9 for value relevance. All the evidence from these table fails to produce the result in which the information relevance significantly vary in the cross-section with a firm's stock return sensitivity to the FX rate change ratio. The evidence suggests that information irrelevancy of foreign currency transaction gains and losses is not conditional on the extent to which a firm is affected by exchange rate changes. I also perform the test in subsection '5.2.' which examine the relationship between the transitory earnings attributes, but the evidence, which is not reported in this paper, shows that the sensitivity do not affect the finding in the subsection.

Table 7
Regressions of the current year foreign currency transaction gains and losses on the prior year foreign currency transaction gains and losses

	the rank of stock return sensitivity to FX rate change				
	1	2	3	4	5
Intercept (α_0)	-90,791 (-0.29)	20,250 (0.02)	-834,116 (-0.50)	23,500 (0.03)	196,067 (0.37)
lagged foreign currency transaction gains and losses ($FCGS$) (α_1)	2.0731 (0.86)	0.4966 (0.63)	-0.0323 (-0.08)	0.0346 (0.10)	-0.0644 (-0.17)
R ²	0.63	0.39	0.38	0.34	0.38

For each year, all firm-years in the sample are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity. The sensitivity is measured as the slope coefficient of the foreign exchange rate change ratio from the regression of a firm's monthly raw returns on the foreign exchange rate change ratio and the monthly value-weighted market return over a rolling five-year window ending in the current fiscal year.

This table presents the results of the following Fama-MacBeth regression that examine how much current foreign currency transaction gains and losses persist into the future.

$$FCGS_t = \alpha_0 + \alpha_1 \cdot FCGS_{t-1}$$

where $FCGS_t$ is foreign currency transaction gains and losses.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

Table 8
Regressions of the next year earnings on the current year foreign currency transaction gains and losses (FCGS)

	the rank of stock return sensitivity to FX rate change				
	1	2	3	4	5
Model 1					
Intercept (β_0)	-157,631 (-0.08)	1,079,005 (0.46)	-6,553,912 (-1.50)	-458,356 (-0.13)	-216,992 (-0.06)
book value (β_1)	0.0753 (3.04)	0.0278 (0.96)	0.0677 (2.37)	-0.0041 (-0.10)	0.0299 (0.86)
earnings excluding <i>FCGS</i> (β_2)	0.3037 (1.88)	0.6085 (3.05)	0.5295 (7.15)	0.9701 (3.32)	0.6966 (4.20)
<i>FCGS</i> (β_3)	-0.5644 (-1.02)	-1.8232 (-0.51)	-0.6421 (-0.65)	1.0502 (1.25)	-2.2020 (-1.60)
R ²	0.67	0.70	0.79	0.80	0.73
Model 2					
Intercept (β_0)	-24,878 (-0.01)	1,534,225 (0.68)	-5,591,350 (-1.27)	59,943 (0.02)	238,877 (0.07)
book value (β_1)	0.0741 (2.95)	0.0258 (1.00)	0.0666 (2.59)	-0.0094 (-0.22)	0.0288 (0.81)
earnings excluding <i>FCGS</i> (β_2)	0.3043 (1.85)	0.6323 (3.31)	0.5165 (7.45)	0.9898 (3.33)	0.6709 (4.04)
<i>FCGS</i> (β_3)	-2.5093 (-0.98)	-2.3935 (-0.70)	-1.0121 (-0.96)	0.6880 (0.75)	-2.1101 (-1.90)
R ²	0.69	0.70	0.76	0.79	0.73

For each year, all firm-years in the sample are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity. The sensitivity is measured as the slope coefficient of the foreign exchange rate change ratio from the regression of a firm's monthly raw returns on the foreign exchange rate change ratio and the monthly value-weighted market return over a rolling five-year window ending in the current fiscal year.

This table presents the results of the following Fama-MacBeth regressions that examine how much current foreign currency transaction gains and losses forecast future earnings.

$$\text{Model 1 : } x_{t+1} = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

$$\text{Model 2 : } x_{t+1}^* = \beta_0 + \beta_1 b_t + \beta_2 x_t^* + \beta_3 FCGS_t$$

where x_t is total earnings, b_t is book value, $FCGS_t$ is foreign currency transaction gains and losses, and x_t^* is x_t minus $FCGS_t$.

The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

Table 9
Regressions of the current year market value on the current year foreign
currency transaction gains and losses (*FCGS*)

	the rank of stock return sensitivity to FX rate change				
	1	2	3	4	5
Intercept (γ_0)	37,896 (2.26)	71,740 (1.80)	8,231 (0.29)	1,749 (0.04)	11,408 (0.32)
book value excluding <i>FCGS</i> (γ_1)	0.7119 (3.99)	0.4309 (2.68)	0.5164 (3.16)	0.8915 (4.76)	1.0114 (5.19)
earnings excluding <i>FCGS</i> (γ_2)	2.4379 (2.54)	4.3997 (3.94)	4.6837 (4.50)	3.4427 (2.24)	2.6380 (2.04)
<i>FCGS</i> (γ_3)	-0.1684 (-0.02)	-3.1509 (-0.36)	4.9604 (0.38)	-17.280 7 (-1.65)	-45.020 0 (-1.15)
R ²	0.83	0.85	0.85	0.85	0.83

For each year, all firm-years in the sample are sorted into 5 deciles based upon their stock return's foreign exchange rate change sensitivity. The sensitivity is measured as the slope coefficient of the foreign exchange rate change ratio from the regression of a firm's monthly raw returns on the foreign exchange rate change ratio and the monthly value-weighted market return over a rolling five-year window ending in the current fiscal year.

This table presents the results of the following Fama-MacBeth regressions that examine how much current foreign currency transaction gains and losses forecast future earnings.

$$(P_t - FCGS_t) = \gamma_0 + \gamma_1 b_t^* + \gamma_2 x_t^* + \gamma_3 FCGS_t$$

where P_t is market value, x_t is total earnings, $FCGS_t$ is foreign currency transaction gains and losses, b_t^* is book value minus $FCGS_t$, x_t^* is x_t minus $FCGS_t$, x_t^{core} is operating net income, and x_t^{other} is x_t minus x_t^{core} and $FCGS$. The Fama-MacBeth t-statistics are below the coefficients, in parentheses.

6. Conclusion

This paper documents that foreign currency transaction gains and losses exhibit the attributes related to transitory earnings with less information relevance for purposes of forecasting and valuation, which means that foreign currency transaction gains and losses do not have a positive association with equity price, do not predict future earnings, and do not persist into the future.

Although the analytical model establish the positively linear relationship between the persistence of the foreign currency transaction gains and losses and their forecasting ability for the next-period aggregate earnings, and the relationship between their forecasting ability and their value relevance, the empirical analysis in this paper does not find the significant relationships between the transitory earnings attributes, which is not consistent with the prediction from the analytical model. From this evidence, it can be inferred that the information relevance of foreign currency transaction gains and losses is not significantly different cross-sectionally across the firms.

Additional test also reveals that the information relevance does not vary in the cross-section with a firm's stock return sensitivity to the foreign exchange rate change. These results suggest that the informational irrelevancy of foreign currency transaction gains and losses are not conditional on the extent to which a firm is affected by exchange rate changes.

By integrating tests of the value relevance, persistence, and predictive value of foreign currency transaction gains and losses, this study extends academic research on the usefulness of components of net income. I believe that future decision-making related to presentation of financial statements can be informed by this paper.

I suggest future research which further explores this paper's theme, which is to investigate whether investors are fully aware of the implication of the

FCGSs' predictive value. This paper fails to find the significantly positive association between the forecasting ability of the foreign currency transaction gains and losses and their value relevance and interpret this result as evidence that the cross-sectional differences of the FCGSs' forecasting ability are not significant. One possible alternative explanation for the result is that market participants does not fully understand the implication of FCGS attributes and thus does not incorporate them into the prices. So, it would be meaningful research avenue to see whether a hedge trading strategy that is long in firms whose predictive value are high and short in firms whose predictive value are low earns abnormal earnings in the future.

References

- Ahmed, A.S., Takeda, C., 1995. Stock market valuation of gains and losses on commercial banks investment securities: an empirical analysis. *Journal of Accounting and Economics* 20, 207-225.
- Barth, M.E., 1994. Fair value accounting: evidence from investment securities and the market valuation of banks. *The Accounting Review* 69, 1-25.
- Barth, M.E., 2000. Valuation-based research implications for financial reporting and opportunities for future research. *Accounting and Finance* 40, 7-31.
- Barth, M.E., Beaver, W.H., Landsman, W.R., 2001a. The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics* 31, 77-104.
- Barth, M.E., Clinch, G., 1998. Revalued financial, tangible, and intangible assets: Associations with share prices and non-market-based value estimates. *Journal of Accounting Research* 36, 199-233.
- Barth, M., D. Cram, and K. Nelson. 2001b. Accruals and the prediction of future cash flows. *The Accounting Review* 76 (January): 27-58.

- Bartov, E. 1997. Foreign currency exposure of multinational firms: Accounting measures and market valuation. *Contemporary Accounting Research*, 14(4):623-53.
- Beaver, W. and M. Wolfson. 1984. Foreign currency translation gains and losses: what effect do they have and what do they mean? *Financial Analysts Journal* 40, 28-36.
- Chambers, D., T. J. Linsmeier, C. Shakespeare, and T. Sougiannis. 2007. An evaluation of SFAS No. 130 comprehensive income disclosures. *Review of Accounting Studies* 12 (December): 557-593.
- Eccher, A., Ramesh, K., Thiagarajan, S.R., 1996. Fair value disclosures bank holding companies. *Journal of Accounting and Economics* 22, 79-117.
- Fama, E., and J. MacBeth. 1973. Risk, Return and Equilibrium: Empirical Tests. *Journal of Political Economy*, 81:607-36.
- Newey, W., and K. West, 1987. A Simple, Positive Semi-Definite, Heteroscedastic and Autocorrelation Consistent Covariance Matrix. *Econometrica* 55:703-8.
- Ohlson, J., 1995. Earnings, book values and dividends in security valuation. *Contemporary Accounting Research* 11, 661-687.
- Ohlson, J., 1999. On transitory earnings. *Review of Accounting Studies* 4, 145-162.
- Seidler, L. J., and P. A. McConnell. 1982. FASB Statement No. 52 on foreign currency translation: A first look. *Financial Analysts Journal* (Jan/Feb): 18-20.
- Soo, B.S. and L.G. Soo. 1994. Accounting for the multinational firm: Is the translation process valued by the stock market? *The Accounting Review* (Oct.):615-637.
- Wooldridge, J. 2007. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.