OPERATING CASH FLOW AND EARNINGS UNDER IFRS/GAAP: EVIDENCE FROM AUSTRALIA, FRANCE & UK

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Abstract

The purpose of this paper is to investigate the difference in the value relevance of operating cash flow and earnings in stock price before and after the mandatory IFRS adoption. The study basically uses Feltham and Ohlson (1995), Joos (1997) and other related studies valuation model. Using a sample of firms from 3 IFRS countries from 2003 to 2012, we find that operating cash flows seem to be more value relevance than earnings within and across country border after a switch to IFRS in Australia and the UK, and earnings seem to be more value relevance than operating cash flows in France. Additionally, Operating cash flow and earnings convey incremental explanatory power to explain share prices in Australia, France and the UK. After a switch to IFRS in 2005, our study shows that the difference in account number (operating cash flows and earnings) reduces across country border but increases within country when both the IFRS and local accounting standards are used. Taken together, our findings suggests that after a swift to the mandatory IFRS adoption, even though income statement and the statement of cash flow are very vital for strategic decisions, investors in Australia and UK are more likely to pay more value relevance to the statement of cash flow than income statement whereas in France, income state is more required than statement of cash flow.

Keywords: Operation Cash Flow, Earnings, IFRS, Stock Price

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1 Introduction

The relative important of share price prediction in the number of financial decision, particularly in the investment practice has been illustrated by prior studies with limited insight after the mandatory IFRS adoption. For example, after 2005, more than 30 countries around the world switched to a recent global financial reporting harmonization. Even though there is a growing number of studies examining the economic consequences of the recent global financial reporting on financial reporting systems, studies (such as Kim & Li 2010, Daske et al 2008 and Li 2009) conclude that there is very little evidence on the effect of IFRS adoption on accounting numbers. Specifically, the switched to IFRS reporting in 2005 did not completely eliminated the local accounting standard as there are firms whose financial reporting are strictly based on the local accounting standard. In Europe, despite the widespread of the mandatory adoption of IFRS, investors' perspectives are difference because European Union countries are financial structure in two groups. Many researchers have shown that countries with a code-based legal system and bank-oriented market are usually characterised by the presence of government rather than professional regulatory bodies whereas countries with a common law system and with well-developed capital market are under the influence of professional bodies. Under these circumstances, in respective of the global financial harmonization, code law oriented investors will prefer earnings than operating cash flow whereas common law oriented investors will prefer operating cash flow to earnings. In this study we examine the impact of operating cash flow and earnings under the IFRS adoption and the GAAP.

Our sample consists of 7,641 firm-years observations from 3 countries that mandate IFRS adoption in 2005 over the period 2003 to 2012. We focus on operating cash flow and earnings due to the fact that they have been considered as key variables in the theoretical accounting setting of Jensen (1996) and Dechow (1996), and that both income statement and the statement of cash flow are essence for firm's liquidity. We employ a difference-in-difference design by comparing changes in the value relevance of operating cash flow and earnings before and after the mandatory IFRS adoption in 2005. Specifically, we find that there are differences in the value relevance of operating cash flow and earnings before and after the mandatory IFRS adoption. We regress stock price on operating cash flow, earnings and two dummies variables, first dummy for post-adoption (2005-2012), second dummy that takes the value of one when both

IFRS and non IFRS firms are from the same IFRS adoption country. We create an interactive term which captures the change in the value relevance of accounting number before and after the switch to the IFRS in 2005. To examine the cross border effect of the IFRS adoption, we introduce an additional variable which takes the value one when the IFRS and non-IFRS firms are from different IFRS adoption country by replacing the IFRS adoption indicator and interacting it with the post-adoption and the operating cash flow and earnings. The coefficient of this alternative interaction term captures the cross-country improvement in accounting numbers after the switch to the IFRS in 2005.

Our studies contributes to the literature in several ways: that operating cash flows seem to be more value relevance than earnings within and across country border after a switch to IFRS in 2005 in Australia and the UK, and earnings seem to be more value relevance than operating cash flows in France. Additionally, Operating cash flow and earnings convey incremental explanatory power to explain share prices in Australia, France and the UK. After a switch to IFRS in 2005, our study shows that the difference in account number (operating cash flows and earnings) reduces across country border but increases within country when both the IFRS and local accounting standards are used. In relation to our sample, the existence of a shift in the value relevance of operating cash flows and earnings after the mandatory IFRS adoption is due to the difference in the accounting systems (IFRS and GAAP). However, over the last decades, that is, from 2005, the difference in accounting systems have significantly reduces since in most IFRS countries, a large proportion of listed firms tend to use the IFRS in the financial reporting, thereby, reducing the difference in accounting systems.

This paper is organized as follows. Section II discusses our literature review. Hypothesis development, data collection and empirical model are discussed in section III. In section IV, we present the result of the empirical analysis and in section V we conclude.

2 Literature review

2.1 The impact of the Mandatory IFRS Adoption

Since the uniformity in accounting standards used by businesses and other organizations for financial reporting around the world, many literatures have examined the impact of the IFRS on accounting numbers. Many studies report that the benefits of the adoption of IFRS help investors to make informed financial decision and more efficient allocation of saving worldwide (Joos, 1997; Street et al., 1999; Ball et al. 2003; Ashbaugh 2001; De Franco et al., 2009;

Bradshaw et al., 2009; Barth et al., 2009; Kim and Li, 2010; Beaver 1981; Foster 1981 Li, 2009; Ashbaugh and Pincus, 2001; DeFond, 2009; Joos and Lang, 1994).

Especially, prior studies such as Kim and Li (2010), Leuz and Verrecchia (2000), Wu and Zhang (2009), Daske et al. (2008), Landsman et al. (2009), Hail et al. (2009) and Meeks and Swann (2008); Covring et al. (2007), Armstrong et al. (2010), Cuijpers and Buijink (2003), Street and Gray (2002) and Yip and Yound, (2009) report that the adoption of high quality standards like IFRS is associated with high financial reporting quality, therefore, the high financial reporting are sufficient to override manager's incentives to engage in earnings manipulation or to temporarily boost cash flow through delaying payment to suppliers (extending payables) and reversing charges made in prior quarters (such as restructuring reserves).

For instance, under GAAP, management are allows to a range of choice to record transactions. This flexibility creates an environment for managers to generally report business in a way that help them earn their bonus and thereby increasing the likelihood that the income statement will overstate profits, whereas, in the IFRS, such option is absence. Kim and Li (2010) report that investors tend to depend on earnings information of industry peer for valuation and how financial reporting quality and information comparability improve after switching to IFRS. Hail et al. (2009), add that investors can evaluate other firms' managerial efficiency or potential agency conflicts using the disclosure of operating performance and governance arrangements as benchmarks. Landsman et al. (2009) support that switching to the IFRS adoption resulted to an increase in market liquidity and in the formation content of earning announcements and a decrease in cost of capital.

Nevertheless, compelling literatures find that without harmonized implementation and greater enforcements after the IFRS, strategic managerial discretion and lower financial reporting quality is inevitable (Nobes, 2002; Leuz and Verrechia, 2000; Dumontier and Raffournier 1998; El-Gazzar et al., 1999; Barthe et al., 2000; Balland Shivakumar 2005; Ball et al., 2000). Tendeloo and Vanstraelen (2005) use cross-sectional Jones model to investigate earning management under German GAAP versus IFRS. They argue that there is no different in earnings management when firms are reporting under German GAAP than under the IFRS. They disagree with the association of low earnings management and voluntary IFRS firms in Germany, however, high quality standards are sufficient and effective in countries with weak investor protection rights. Moreover, Sunder (2007) report that there are still variations in economies since harmonization of the world's accounting standards such as IFRS cannot

adequately accommodate political and economic differences across countries. Following Sunder's view, the mandatory IFRS adoption will eventually reduce comparability and increase opportunistic managerial discretion. This is the reason for non-IFRS adopter reluctant of adopting the standards. Thus, the prediction of the hypothesis is therefore to examine the shift in value relevance from operating cash flow (earnings) to earnings (operating cash flow) among IFRS adoption countries such as Australia, France and the UK.

2.2 The value relevance of Operating Cash Flow and Earnings

Firm's ability to generate cash flow is a fundamental question in forecasting firms' performance in financial accounting research (Orput and Zang 2009; Richardson, 2006). It is because cash flow is value-enhancing for firm which agency problem had been subject to a maximum control. Keown et al. (2005) add that cash flow must exceed the cash payment to ensure survival of business in the long run. Consequently, users of financial information question why the surplus of cash flow should be subject to the level of over-investment and its ability to provide better estimate of capital gain rates (Jensen 1986; Rishardson 2006; Keown et al, 2005). Although evidence exist to support the association between cash flow and stock prices, financial analysts and researchers have added that the relevance and reliability of cash flow is mainly because cash flow techniques consistently outperform earnings techniques over alternatives forecast horizons (Penman and Sougiannis,1998).

Bartov et al., (2001) use a comparative approach to investigate which independent variable (earnings or cash flows) exhibits more dominance on share prices. They provide greater information ability for equity within the US, the UK, Canada, Germany, and Japan during the period from 1988 to 1996. And conclude that earnings have greater explanatory power than cash flows for securities returns in the three Anglo-Saxon countries (the US, UK and Canada). Choi et al. (2000) investigate whether earnings´ lack of timeliness or noise contributes to the low association between earnings and returns of knowledge-based and traditional industries during the period from 1980 to 1994. They focus on noise resulting from investor uncertainty about future cash flow related to intangibles. They conclude that timing differences exist between earnings and stock price changes, which are produced by investor activity, based on an estimation of firm value derived from expected future benefits. They illustrate the possibility of higher uncertainty regarding future economic benefits leading to greater information asymmetry between investors and managers and inducing more noise on the

estimated firm value in knowledge-based industries in comparison to the traditional industries.

Similarly, Arthur et al., (2008) was the first to use the actual components of the cash flow from operations to predict where future earning provide lower prediction errors than models incorporating simply net cash flow from operating activities. Their findings demonstrate that disaggregation cash flow into lowest-level subcomponents concede a significant increase in explanatory over a model which uses just aggregate cash flow from operation. Also, they suggest that, the prediction error is significantly lower for the disaggregate model in each year and the reporting core cash flow from operation as one item provides essentially the same level of explanation as does reporting it as two separate receipts and payment items. The results is consistence with (Krishnam and Largay, 2000; Arthur and Chuang, 2006; Cheng and Hollie, 2007).

When modelling the interaction of security price and accounting earnings, research tends to use a number of variables, contextual returns-fundamentals analysis, and the relationship between fundamentals (Krishnam and Largay, 2000; Van and Robertson, 2003a; Arthur and Chuang, 2006; Ward and Muller, 2010; Cheng and Hollie, 2007). Seven fundamental variables were included in their models, including percentage changes in loans, net interest revenue, interest expense, interest revenue, other operation expenses, allowance for loan losses and number of employees. They constructed an aggregate score of 12 fundamentals for a sample of firms, in period between 1974 and 1988. The fundamental scores were indicative of the expected direction of future earning changes. Their findings supported the incremental value relevance of most of the fundamentals studied. When conditioned on macro-economic variable (e.g. Inflation), the returns-fundamental relation was considerably stronger. Similarly, Beaver et al. (1997) studied 19 variables to investigate the price-earning relationships. They developed a model from the price-earnings relationship that expresses percentage changes in price as a linear function of the percentage change in earnings. A second model, comprising a revised version of this linear regression, was based upon a simultaneous equation approach. The 19 variables were used as instrument variable in a first-stage estimation of the endogenous variable, thereby mitigating bias.

Ali and Hwang (2000) use a comparative approach in exploring the value relevance of fundament accounting data, using US firm as a benchmark. Five country-specific factors were examined along with earnings, cash flow and the book value of equity, relative to their explanatory power in comparable US firms. The authors concluded that financial data is less value relevance in countries with bank-oriented financial systems. Their finding is

ungarbled with theory that banks have direct access to company information in bank-oriented system (Mueller et al., 1991; Choi and Mueller, 1992), which leads to a lower demand for published, valued relevance financial reports. In sum, Ali and Hwang´s secondary finding showed that there exists low value relevance of earnings in countries where private sector bodies are not involved in the standard setting process. Their study suggest that lower value relevance exists in continental- model countries than in British-American model countries. Furthermore, value relevance appeared to be lower for those countries in which tax rules significantly influence financial accounting measurements. These findings are consistent with the belief that companies in such countries have an incentive to report systematically lower profits to reduce their taxes, making their accounting information less valid and reliable (Choi and Mueller, 1992; joos and Langs, 1994).

3 Hypothesis development, data collection and empirical model

3.1 Data

We sample all firms in *COMPUSTAT* between 2003 to 2012 with sufficient data available to calculate the *COMPUSTAT*-based variables for every firm-year. We identify 3 countries with mandatory IFRS in 2005 such as Australia, France, and the UK. The *COMPUSTAT Global* defines firms in the IFRS adoption countries as those firms that follow IFRS in 2005 and afterwards and are identified with code *"DI"* whereas firms in non-IFRS adoption countries are refer to those firm that follow standards other than IFRS and are identified with code not *"DI"*. We eliminate firms in regulated industries (SIC codes between 4400 and 4999) and banks and financial institutions (SIC codes between 6000 and 65000). We require that operating cash flow be available on COMPUSTAT from the statement of Cash Flow. Selected process yields 7,641 firm-years observation for the three IFRS countries.

Even thought prior studies have segregated firms into two groups: profit (firms reporting profit) and loss (those reporting losses) (Collins et al., 1997 & 1999; Kim, 2003; Jang et al, 2002), to investigate the reason for the shift in value relevance from earnings to operating cash flow, our sample is limited only to firms with reporting profit.

Lastly, in order to avoid the misrepresentation of our result through the concept of extraordinary items, we use earnings before extraordinary and exceptional items. It should be noted that the shift in value relevance from earnings to operating cash flow can be attributed to the concept of extraordinary items; therefore using earnings before extraordinary items is best for this study.

3.2 Hypothesis development

Operating cash flows and earnings for valuation after the mandatory IFRS adoption

To detect the differences in the value relevance of operating cash flow and earnings under the IFRS and GAAP, we investigate our first research question which state: Are there differences in value relevance of operating cash flow and earnings among IFRS adoption countries as well as in non-IFRS adoption country?

Operating cash flow represents the cash flow from operations as reported in the statement of cash flows and the variable description is COMPUSTAT data#308. Prior studies have shown that net income misleads investors when valuing shares due to the transitory components (Barth et al., 1999 Dechow, 1998; Collins et al., 1997; hand and Landsman, 1999; Arce and Mora, 2002). For example, Arce and Mora, (2002) use two alternative definitions to measure earnings, namely net income and earnings before extraordinary and exceptional items. They provide evidences based on (Pope and Walker, 1999) that the definition of extraordinary items may differ from one country to another which might affect the result. Therefore, for the purpose of this study we use earnings before extraordinary and exceptional items as one of our independent variable for our hypothesis testing.

We support A&M's view and add that the difference may be huge in a country with two financial reporting systems, that is, firms preparing financial statement using IFRS while others using local accounting statements. The paper uses the measurement of earnings to test hypothesis as in Arce and Mora, (2002), by defining earnings as before extraordinary and exceptional items (COMPUSTAT data#18).

For our primary tests, our research is based on one main accounting themes related to the value relevance of operating cash flows and earnings: the shift in value relevance from operating cash flows and earning under the IFRS and local GAAP, Thus, main research hypothesis is the following:

H₁ₐ *Do the relative importance of operating cash flows and earning for valuation improve after the mandatory IFRS adoption?*

To examine the impact of the mandatory IFRS adoption on accounting numbers, we replicate the difference-in-differences research design in Kim and Li, (2010), to answer the question that the relative importance of operating cash flows and earnings for valuation improve after the mandatory IFRS adoption. Thus, we examine improvement in operating cash flows and earnings among IFRS adoption countries (i.e., when both the firms with IFRS adoption and

local accounting standards are from the IFRS adoption countries) before and after 2005, relative to when either IFRS firm or local accounting standard firm are from the non-IFRS adoption countries. Therefore the following prediction is based entirely on the difference in the providers of finance under the GAAP and IFRS.

Specifically, we develop two indicator variables to capture the impact of the mandatory IFRS adoption on accounting numbers for stock valuation among IFRS adoption countries and non-adoption countries. The first indicator variable, **POST**, we coded one if the firm-year observation

falls in or after 2005, and zero otherwise. This indicator captures value relevance of accounting number and the post-adoption period. The second indicator, **IFRS**, is coded one when both the firm with IFRS adoption and firm with local accounting are from IFRS adoption countries, and zero otherwise. The interaction term **POST*IFRS** is our primary variable of interest, as its coefficients captures the improvement in operating cash flows and earnings after the mandatory IFRS adoption. Thus, empirical model is as follows:

$$P_{it} = \alpha + \beta_1 OCF_{it}/S_t + \beta_2 EARN_{it}/S_t + \beta_3(POST) + \beta_4(IFRS) + \beta_5(POST*IFRS) + \varepsilon_{it} \qquad (1)$$

The coefficients β_5 of the interaction term *POST*IFRS* in regression models *(1)* captures the difference in the value relevance of accounting numbers under the IFRS and GAAP, that is, it captures the shift in value relevance from earnings (operating cash flow) to operating cash flow (earnings) before and after the mandatory IFRS adoption for both IFRS firms and non-IFRS firms from (different) IFRS adoption countries and non-IFRS adoption countries over the sampled period. In the other word, β_5 in model *(1)* captures the shift in the relative importance of operating cash flow (earnings) to earnings (operating cash flows) before and after the IFRS adoption within countries.

Hypothesis 1a only capture the impact of IFRS adoption within countries, but does not detect how

operating cash flows and earnings improved after the IFRS adoption across country borders, thus, we creates an alternative indicator, **IFRS_cross**, which is coded one when the country is an IFRS adoption country and zero otherwise. The coefficient on **POST*IFRS_cross** captures the *cross-country* improvement of accounting numbers after a switch to IFRS in 2005. Thus, third research hypothesis is the following:

H$_{1b}$ *Do the value relevance of accounting numbers for valuation improve across country border after a switch to IFRS in 2005 ?*

Hypothesis 1b can be express empirically as:

$$P_{it} = \alpha + \beta_1 OCF_{it}/S_t + \beta_2 EARN_{it}/S_t + \beta_3(POST) + \beta_4(IFRS\_cross) + \beta_5(POST*IFRS\_cross) + \varepsilon_{it} \qquad (2)$$

Where:

P_t: Stock price 3 months after the end of fiscal t, where year t is the event year;

OCF_{it}: Operating Cash flows in period t, COMPUSTAT data #308;

$EARN_{it}$: Earnings before extraordinary items in period t, COMPUSTAT data#34

POST: Dummy variable equal to one if the fiscal year is 2005 or later, and zero otherwise;

IFRS: Dummy variable equal to one if both the IFRS firm and non-IFRS firm are from within IFRS adoption country and zero, otherwise;

IFRS_cross: Dummy variable equal to one if the country is an IFRS adoption country and zero otherwise.

The coefficients β_5 of the interaction term *POST*IFRS_cross* in regression models *(2)* captures

IFRS adoption cross-border effect on the value relevance of accounting numbers, that is, it captures the shift in value relevance from earnings (operating cash flow) to operating cash flow (earnings) before and after the mandatory IFRS adoption for both IFRS firms and non-IFRS firms from (different) IFRS adoption countries and non-IFRS adoption countries over the sampled period. In the other word, β_5 in model *(2)* captures IFRS adoption cross-border effect on the value relevance of accounting numbers.

In order to test if the individual value relevance of operating cash flow and earnings improve after the mandatory IFRS (the cross-border effect), we decompose model (1) and (2) into four separate equations of operating cash flow and earnings as follows:

$$P_{it} = \alpha + \beta_1 OCF_{it}/S_t + \beta_2(POST) + \beta_3(IFRS) + \beta_4(POST*IFR + \varepsilon_{it} \qquad (3)$$

$$P_{it} = \alpha + \beta_1 EARN_{it}/S_t + \beta_2(POST) + \beta_3(IFRS) + \beta_4(POST*IFRS) + \varepsilon_{it} \qquad (4)$$

$$P_{it} = \alpha + \beta_1 OCF_{it}/S_t + \beta_2(POST) + \beta_3(IFRS\_cross) + \beta_4(POST*IFRS\_cross) + \varepsilon_{it} \qquad (5)$$

$$P_{it} = \alpha + \beta_1 EARN_{it}/S_t \beta_2(POST) + \beta_3(IFRS\_cross) + \beta_4(POST*IFRS\_cross) + \varepsilon_{it} \qquad (6)$$

The value relevance of operating cash flow and earnings separately after the mandatory IFRS (the cross-border effect) is measured with the R^2's in the model 3 & 4 (5 & 6). Further, to contrast the statistical differences in R^2 between models with *same dependent variable* (P_{it}) and same sample but difference independent variables (OCF/S_t, $EARN_{it}/S_t$, POST, IFRS and IFRS_cross) we employ the Vuong test. The Vuong test compares the R^2'from the operating cash flow (OCF_{it}/S_t) regression (3 & 5) directly to the R^2'from the earning ($EARN_{it}/S_t$) regression (4 & 6).

Furthermore, Joos 1977 argues that the *Vuong* and *t* tests are complementary tests because, while the former does not differentiate between the components of each R^2, i.e., answer the questions: what is more value relevant? The later focuses on the incremental explanatory power for price, i.e., it indicates if operating cash flow (earnings) conveys different information than earnings (operating cash flow) after the mandatory IFRS within country and cross-border. Thus, this leads us to examine the incremental R^2 of both operating cash flow and earnings and test the statistical significance of both measures suing a two-step regression and t-test.

The incremental value relevance of operating cash flow and earnings under IFRS

We have shown how to ascertain which accounting magnitude is more value relevant after the mandatory IFRS within country and cross-border, but not if they convey different information to explain market prices. In this section, we will answer the second research question: Do operating cash flow and earnings convey different information to stock valuation after the mandatory IFRS within country and cross-border? In model (1) and (2) we can distinguish between the R^2 that is explained exclusively by operating cash flow or earning, and that explained jointly value by both accounting numbers after the mandatory IFRS within country and cross-border. We are able to distinguish if operating cash flow and earning convey different information to explain market values after the mandatory IFRS within country and cross-border by decomposing the R^2 of model (1) and (2) as

$$R_1^2 = R_{OCF}^2 + R_{OE}^2 + R_B^2$$

$$R_2^2 = R_{OCF}^2 + R_{OE}^2 + R_B^2$$

where R_{OCF}^2 is the incremental operating cash flow R^2 on operating earnings after the mandatory IFRS within country and cross-border, R_{OE}^2 is the incremental operating earnings R^2 on operating cash flow after the mandatory IFRS within country and cross-border, and R_B^2 is the R^2 of both operating cash flow and earnings after the mandatory IFRS within country and cross-border

Further, the incremental explanatory power of operating cash flow after the mandatory IFRS within country and cross-border is the total explanatory power of both operating cash flow and earnings after the mandatory IFRS within country and cross-border less the operating earnings after the mandatory IFRS within country and cross-border alone:

$$R_{OCF}^2 = R_1^2 - R_4^2$$

$$R_{OCF}^2 = R_2^2 - R_6^2$$

Likewise the incremental explanatory power of operating earnings after the mandatory IFRS within country and cross-border is the total explanatory power of both operating cash flow and earnings after the mandatory IFRS within country and cross-border less the operating earnings after the mandatory IFRS within country and cross-border alone:

$$R_{OE}^2 = R_1^2 - R_3^2$$

$$R_{OE}^2 = R_2^2 - R_5^2$$

The explanatory power of both operating cash flow and earnings after the mandatory IFRS within country and cross-border is the total explanatory power of operating cash flow and earnings after the mandatory IFRS within country and cross-border less the incremental explanatory power of operating cash flows after the mandatory IFRS within country and cross-border and the incremental explanatory power of operating earnings after the mandatory IFRS within country and cross-border, that is,

$$R_B^2 = R_3^2 + R_4^2 + R_1^2$$

$$R_B^2 = R_5^2 + R_6^2 + R_2^2$$

The incremental R^2 of operating cash flows (earnings) on operating earnings (cash flows) after the mandatory IFRS within country and cross-border is computed as the difference between the R^2 of model 1 and 2 and the R^2 of model 3 and 5 (model 4 and 6) after the mandatory IFRS within country and cross-border (see King and Langli 1998 and Joss 1997).

4 Empirical analysis

4.1 Descriptive Statistics

Analysing Table 1a below reveals that average of operating cash flow and earnings with price were positive. This implied that, Australia, France, and the UK firms selected for this study on average are profitable and has positive operating cash flow over the study period. The table shows that the mean (standard deviation) of operating cash flows and earnings after the mandatory IFRS adoption around the price is 1.5 and 6.3 (2.84 and 9.99) for Australia;

7.01 and 2.6 (22.23 and 12.69) for France and 0.35 and 0.26 (1.64 and 1.51) for UK, respectively.

More specifically, after the mandatory IFRS in Australia, comparing the yearly mean variables (*price, operating cash flow and earnings*) to the pool sample mean (*price, operating cash flow and earnings* show that the *P, OCF* and *OE* are relatively stable, however, in 2008 that there is a great different between the yearly mean *P, OCF* and *OE* and the group mean *P, OCF* and *OE*. One possible reason for the drastic different in price is due to the 2008 finance crisis. After the mandate IFRS adoption in France, the yearly mean *P* and *OCF* relatively increased, while French earnings are relatively unstable. Finally, in UK, after the mandatory IFRS adoption, the yearly mean price rise significantly whiles both the operating cash flow and the earnings decrease significantly. W found both operating cash flows and earnings lowest in UK and highest in the France and Australia. The table shows that the mean (standard deviation) of operating cash flows and earnings after the mandatory IFRS adoption around the price is 1.5 and 6.3 (2.84 and 9.99) for Australia; 7.01 and 2.6 (22.23 and 12.69) for France and 0.35 and 0.26 (1.64 and 1.51) for UK, respectively.

Table 1b presents the Pearson correlation coefficients among the test variables. We find a positive and significant correlation between the operating cash flows *OCF*, earnings *OE*, *POST* and *IFRS_cross* and the price *P* in Australia, France and the UK, all significant at two-tailed p<1%.

Table 2a reports the coefficients, adjusted R^2 and the two-tailed p-values of the multiple regression analysis for model *(1), (3)* and *(5)*. Specifically, these models examine the impact operating cash flows and earnings for valuation among IFRS adoption countries around 2005. In model 1, 3 and 5, we find a significant and positive coefficient on *POST*, indicating an increase value relevance of accounting information after 2005. The coefficient on the IFRS suggests an insignificant difference on the value relevance of accounting number between IFRS adopters and non-IFRS adopters. More importantly, the coefficient on the interaction term, *POST*IFRS*, is significantly positive at a two-tailed *p=0.001*. This result suggests that, the value relevance of accounting numbers for market valuation significantly increase after 2005 for both IFRS firms and non-IFRS firms of the IFRS countries. In fact, investors pay more attention on accounting numbers for valuation after 2005 for both IFRS firms and non-IFRS firms across countries with the mandatory IFRS adoption.

As already illustrated above, the first hypothesis claims that the relative importance of operating cash flows and earnings for valuation improve after the mandatory IFRS adoption. The R^2 analysis shows that

the relative important of the variable of operating cash flow in explaining share price after the mandatory IFRS adoption is higher in Australia and the UK than that of the variable earnings, whereas in France, the relative importance of earnings is higher than operating cash flow in model 1. The Vuong test in Table 2c combined with Table 2a show the comparison of the value relevance of operating cash flow and earnings for market valuation after the mandatory IFRS. The result is similar with prior studies that argued that earnings before extraordinary and exceptional items are the best major for market valuation, where earnings is more value relevance than operating cash flow in Australia, and France. The adjusted R^2 in model (5) (earnings) is higher than in model (3) (operating cash flows) in Australia and France. Whereas the adjusted R^2 in model (3) (operating cash flow) is higher than in model (5) (earnings) in UK.

Furthermore, when the significance of the difference is considered, operating cash flows is more relevance than earnings after the mandatory IFRS in UK. This can be explained by the market influence in the investment policy of the companies. That is, after the mandatory IFRS adoption, the statement of cash flow plays more important role in valuation than the income statement in UK. However, earnings is more relevance than operating cash flows, indicating that the income statement plays more attention on accounting numbers for valuation after 2005 for both IFRS firms and non-IFRS firms across countries with the mandatory IFRS adoption.

As already illustrated above, the first hypothesis claims that the relative importance of operating cash flows and earnings for valuation improve after the mandatory IFRS adoption. The R^2 analysis shows that the relative important of the variable of operating cash flow in explaining share price after the mandatory IFRS adoption is higher in Australia and the UK than that of the variable earnings, whereas in France, the relative importance of earnings is higher than operating cash flow in model 1. The Vuong test in Table 2c combined with Table 2a show the comparison of the value relevance of operating cash flow and earnings for market valuation after the mandatory IFRS. The result is similar with prior studies that argued that earnings before extraordinary and exceptional items are the best major for market valuation, where earnings is more value relevance than operating cash flow in Australia, and France. The adjusted R^2 in model (5) (earnings) is higher than in model (3) (operating cash flows) in Australia and France. Whereas the adjusted R^2 in model (3) (operating cash flow) is higher than in model (5) (earnings) in UK.

Table 1a. Descriptive statistics

Mean, Standard deviation (Std. Dev.), Maximum (Max.) and Minimum (Min.) of Price (P), Operating Cash flow (OCF) and Operating Earnings (OE) of all listed firms after IFRS for Australia, France and UK from 2003 to 2012.

Year	Nº	Mean	Std. Dev.	Max.	Min.	Mean	Std. Dev.	Max.	Min.	Mean	Std. Dev.	Max.	Min.
				P				OCF				OE	
						Australia							
2003	128	12,13	30,09	460	0,05	1,32	2,92	28	-18	5,34	8,64	74,82	-11,38
2004	129	13,01	27,06	381	0,04	1,42	2,89	27	-16	5,59	8,64	90,66	-7,94
2005	132	14,64	33,79	552,4	0,04	1,56	2,84	31,8	-24	5,9	11,41	159,7	-9,4
2006	130	15,2	32,55	523	0,04	1,62	3,04	35	-25,75	6,55	12,1	177,9	-7,11
2007	112	14,61	19,66	162	0,06	1,53	2,1	8,54	-24	6,45	9,72	120,1	-7,08
2008	130	8,7	12	62,8	0,01	1,1	8,4	11,57	-147,6	6,21	11,97	47,42	-147,4
2009	145	11,35	14,39	74,6	0,02	1,38	2,03	17,2	-22,2	6,21	10,68	47,45	-115,1
2010	139	13,7	16,95	91,5	0,04	1,67	1,29	6,37	-5,6	6,88	8,65	49,93	-7,35
2011	118	12,27	15,84	80,2	0,02	1,71	1,46	9,98	-5	6,86	8,85	54,14	-7,33
2012	132	13,07	18,06	100,9	0,01	1,69	1,43	9,87	-3,77	7,01	9,25	58,71	-8,17
Ave.		12,87	22,04	248,8	0,03	1,5	2,84	18,53	-29,19	6,3	9,99	88,08	-32,83
						France							
2003	179	28,51	47,83	534	0,33	5,77	20,21	262,8	-13,57	1,75	12,68	203,2	-22,45
2004	190	33,87	57,69	646	0,3	6,65	21,4	262,9	-6,52	2,52	12,95	201,7	-18,51
2005	184	41,01	68,74	765	0,52	6,86	21,34	262,2	-5,34	2,82	12,73	198,8	-17,32
2006	156	47,81	80,29	902	0,99	7,69	25,19	358	-6,75	3,97	15,81	238,7	-14,3
2007	178	45,96	66,72	638	0,83	8,35	24,76	303,5	-9,04	4,31	15,25	239	-9,22
2008	204	24,2	36,75	402	0,7	4,84	18,19	143,4	-185,4	-0,11	18,53	36,8	-252,6
2009	199	30,05	46,42	525	0,89	5,98	19,47	159	-29,16	1,4	11,5	114,1	-107,9
2010	186	38,94	75,78	895,4	1,29	7,78	22,05	227,2	-30,28	3,2	8,12	96,2	-22,71
2011	175	32,34	53,18	570	1,89	7,91	22,2	222,1	-12,34	3,11	8,11	69,8	-18,95
2012	157	36,76	67,64	744,1	1,2	8,28	27,53	258,2	-34,56	3,01	11,23	101,8	-47,01
Ave.		35,95	60,1	662,2	0,89	7,01	22,23	245,9	-33,3	2,6	12,69	150	-53,1
						UK							
2003	270	3,26	7,91	113,1	0,01	0,07	2,26	11,31	-35,2	0,81	4,23	2,71	-299,9
2004	271	3,62	8,2	110,5	0,04	0,18	2,39	17,87	-42,55	0,01	2,33	17,07	-43,01
2005	292	4,81	19,07	380,8	0,08	0,22	1,6	15,68	-25,14	0,03	1,52	10,67	-25,46
2006	253	4,73	8,33	91	0,8	0,33	1,33	18,58	-10,36	0,19	1,12	12,98	-10,68
2007	262	4,72	9,38	89	0,37	0,41	1,36	19,11	-10,32	0,21	1,01	5,74	-11,79
2008	306	2,75	5,52	50,25	0,45	0,46	1,69	21,53	-16,42	0,28	1,19	9,11	-17,11
2009	297	3,71	8,09	80,75	0,27	0,42	1,43	22,23	-2,74	0,21	0,86	8,13	-5,77
2010	277	4,52	9,5	95,03	0,42	0,39	1,22	18,56	-2,46	0,19	0,64	5,72	-2,59
2011	270	4,53	9,62	102,3	0,66	0,51	1,59	20,2	-1,42	0,31	1,04	15,1	-1,47
2012	256	4,96	10,15	98,05	0,3	0,54	1,57	18,87	-3,61	0,36	1,11	11,9	-3,67
Ave.		4,16	9,58	121,1	0,34	0,35	1,64	18,39	-15,02	0,26	1,51	9,91	-42,15

Price (P) is the dependent variable while Operating cash flows (OCF) and Operating earnings (OE) are the independent variable. These variables are calculated as the 10-year (2003-2012) sum of annual data extracted from the Compustat data base as described in Data analysis section above.

Furthermore, when the significance of the difference is considered, operating cash flows is more relevance than earnings after the mandatory IFRS in UK. This can be explained by the market influence in the investment policy of the companies. That is, after the mandatory IFRS adoption, the statement of cash flow plays more important role in valuation than the income statement in UK. However, earnings is more relevance than operating cash flows, indicating that the income statement plays more important role in valuation than the statement of cash flows in France and Australia.

In Model 2, we examine how operating cash flows and earnings improved after the IFRS adoption across country borders. That is, the coefficient on *POST*IFRS_cross* captures the *cross-country* improvement of accounting numbers for stock valuation after a switch to IFRS in 2005. We again find a significantly positive coefficient on the interaction term, *POST*IFRS_cross* (two-tailed p=0.027), indicating a stronger cross-border improvement of the relevance of accounting numbers after mandatory IFRS adoption as shown in Table 2b below.

The second hypothesis claims that the value relevance of accounting numbers for valuation improve across country border after a switch to IFRS in 2005. The R^2 analysis shows that the relative important of the variable of operating cash flow in explaining share price after the mandatory IFRS

adoption across country border is higher in Australia and the UK than that of the variable earnings, whereas in France, the relative importance of earnings is higher than operating cash flow in model 1. The Vuong test in Table 2c combined with Table 2b show the comparison of the value relevance of operating cash flow and earnings for market valuation after a switch to IFRS in 2005 across country borders. The result shows that operating cash flow is more value relevance than earnings in Australia, and the UK. That is, adjusted R^2 in model (4) (operating cash flows) is higher than in model (6) (earnings) in Australia and the UK. Whereas the adjusted R^2 in model (6) (earnings) is higher than in model (4) (operating cash

flow) in France. Furthermore, when the significance of the difference is considered, operating cash flows is more relevance than earnings after a switch to IFRS in 2005 across country borders in Australia and the UK. This can be explained by the market influence in the investment policy of the companies. That is, after a switch to IFRS in 2005 across country borders, the statement of cash flow plays more important role in valuation than the income statement in Australia and the UK. However, earnings is more relevance than operating cash flows, indicating that the income statement plays more important role in valuation than the statement of cash flows in France.

Table 1b. Pearson correlation coefficients among the test variables for all listed companies in Australia, France and the UK from 2003 to 2012

Variables	P	OCF	OE	POST	IFRS	IFRS_cross
Australia						
P	1					
OCF	0.677	1				
	0.003					
OE	0.531	0.563	1			
	0.009	0.043				
POST	0.572	0.356	0.402	1		
	<0.000<1	0.0001	0.0001<			
IFRS	0.513	0.404	0.552	0.624	1	
	0.002	0.029	0.007	<0.0001		
IFRS_cross	0.501	0.334	0.761	0.659	0.488	1
	0.023	<0.0001	<0.0001	<0.0001	<0.0001	
UK						
Variables	P	OCF	OE	POST	IFRS	IFRS_cross
P	1					
OCF	0.616	1				
	0.003					
OE	0.512	0.351	1			
	0.021	0.002				
POST	0.519	0.575	0.819	1		
	0.008	<0.0001	0.002			
IFRS	0.763	0.723	0.704	0.672	1	
	<0.0001	0.003	<0.001	0.043		
IFRS_cross	0.547	0.543	0.320	0.546	0.804	1
	0.002	0.004	0.038	0.032	0.005	
France						
Variables	P	OCF	OE	POST	IFRS	IFRS_cross
P	1					
OCF	0.301	1				
	0.039					
OE	0.451	0.680	1			
	0.008	0.018				
POST	0.109	0.746	0.694	1		
	0.046	0.035	0.002			
IFRS	0.670	0.583	0.498	0.687	1	
	<0.001	0.001	0.049	0.001		
IFRS_cross	0.513	0.514	0.505	0.555	0.558	1
	<0.001	0.001	0.001	0.007	0.002	

Price (P) is the dependent variable while Operating cash flows (OCF) and Operating earnings (OE) are the independent variable. These variables are calculated as the 10-year (2003-2012) sum of annual data extracted from the Compustat data base as described in Data analysis section above.

Table 2a. Regression models 1, 3 and 5

Countries	Intercept	OCF	OE	POST	IFRS	POST*IFRS	Adj. R²
Australia	12.441	0.144	0.37	0.405	0.35	0.251	0.162
	(0.001)	(0.0031)	(0.0015)	(<0.001)	(0.424)	(0.001)	
	0.425	0.432		0.267	0.021	0.112	0.054
	(0.041)	(0.002)		(0.003)	(0.178)	(0.000)	
	0.245		0.498	0.225	0.428	0.294	0.087
	(0.003)		(0.046)	(0.052)	(0.195)	(0.000)	
UK	5.56	0.512	0.461	0.261	0.157	0.124	0.064
	(0.000)	(0.000)	(0.000)	(0.000)	(0.346)	(0.000)	
	3.411	0.625		0.295	0.662	0.312	0.036
	(0.000)	(0.002)		(0.000)	(0.183)	(0.002)	
	1.835		0.149	0.241	0.125	0.111	0.023
	(0.000)		(0.03)	(0.000)	(0.421)	(0.019)	
France	1.345	0.321	0.823	0.239	0.165	0.231	0.087
	(0.002)	(0.000)	(0.023)	(0.000)	(0.104)	(0.000)	
	0.981	0.532		0.529	0.191	0.099	0.031
	(0.019)	(0.000)		(0.000)	(0.531)	(0.000)	
	1.082		0.801	0.361	0.293	0.159	0.052
	(0.000)		(0.021)	(0.001)	(0.164)	(0.005)	

Table 2a shows regression of models (1), (3) and (5), independent variables such as operating cash flows per share *(OCP)*, earnings before extraordinary and exceptional items per share *(OE)*, *POST*, and *IFRS* and dependent variable such as price per share *(P)* derived from the COMPUSTAT database for all listed firm in Australia, France and the UK from 2003 to 2012. Figures in parentheses represent the t-test.

Table 2b. Regression models 2, 4 and 6

Countries	Intercept	OCF	OE	POST	IFRS_cross	POST*IFRS_cross	Adj. R²
Australia	2.459	0.571	0.426	0.32	*0.101*	0.384	0.051
	(0.000)	(0.002)	(0.047)	(0.000)	*(0.347)*	(0.027)	
	0.391	0.253		0.189	*0.272*	0.223	0.029
	(0.000)	(0.002)		(0.000)	*(0.192)*	(0.021)	
	0.521		0.101	0.142	*0.291*	0.089	0.014
	(0.000)		(0.002)	(0.023)	*(0.382)*	(0.014)	
UK	3.21	0.592	0.385	0.296	*0.055*	0.238	0.073
	(0.000)	(0.000)	(0.000)	(0.000)	*(0.659)*	(0.000)	
	0.742	0.492		0.377	*0.271*	0.192	0.042
	(0.000)	(0.033)		(0.000)	*(0.680)*	(0.016)	
	0.891		0.481	0.176	*0.122*	0.103	0.031
	(0.020)		(0.005)	(0.000)	*(0.366)*	(0.033)	
France	0.925	0.501	0.823	0.366	*0.209*	0.224	0.064
	(0.000)	(0.000)	(0.000)	(0.000)	*(0.324)*	(0.000)	
	0.839	0.485		0.375	*0.249*	0.156	0.018
	(0.036)	(0.000)		(0.000)	*(0.174)*	(0.000)	
	0.931		0.631	0.247	*0.191*	0.131	0.045
	(0.000)		(0.002)	(0.001)	*(0.512)*	(0.000)	

Table 2b shows regression of models (2), (4) and (6), independent variables such as operating cash flows per share (OCP), earnings before extraordinary and exceptional items per share (OE), POST, and IFRS and dependent variable such as price per share (P) derived from the COMPUSTAT database for all listed firm in Australia, France and the UK from 2003 to 2012. Figures in parentheses represent the t-test.

Table 2c. Vuong test of value relevance of operating cash flows and earnings

	non_cross_border			cross_border			Sig.
	Independent variable in model (3)		*Independent variable in model (4)*	*Independent variable in model (5)*		*Independent variable in model (6)*	
AUSTRALIA	OCF	<	OE	OCF	>	OE	*0.001*
FRANCE	OCF	<	OE	OCF	>	OE	*0.000*
UK	OCF	>	OE	OCF	<	OE	*<0.001*

Table 2c Vuong test for differences in R² between models non_cross_border models (3) and (5) and the cross_border models (4) and (6). The independent variable in model (3) and (5) is operating cash flows and for model (4) and (6) is operating earnings. Sig indicates the probability to accept the null hypothesis of equality of R²s

Table 3. Decomposition of model (1) and (2) and two-step regression *t-test*

	Model 1 R^2	Model 2 R^2	Sig.
AUSTRALIA			
Incremental R of OCF on OE	0.056		*0.000*
Incremental R of OE on OCF	0.089		*0.000*
Joint R	0.017		
Total	0.162		
Incremental R of OCF on OE		0.025	*0.000*
Incremental R of OE on OCF		0.016	*0.000*
Joint R		0.010	
Total		0.051	
FRANCE			
Incremental R of OCF on OE	0.033		*0.000*
Incremental R of OE on OCF	0.051		*0.000*
Joint R	0.003		
Total	0.087		
Incremental R of OCF on OE		0.018	*0.000*
Incremental R of OE on OCF		0.045	*0.000*
Joint R		0.001	
Total		0.064	
UK			
Incremental R of OCF on OE	0.036		*<0.001*
Incremental R of OE on OCF	0.023		*<0.001*
Joint R	0.005		
Total	0.087		
Incremental R of OCF on OE		0.042	*<0.001*
Incremental R of OE on OCF		0.031	*<0.001*
Joint R		0.000	
Total		0.730	

Table 3 shows the two-step regression used to test the incremental explanatory power of operating cash flow (OCF) over earnings (OE) and vice versa for model (1) and (2). Sig indicates the probability to accept the null hypothesis of equality of R^2 to zero.

The incremental value relevance of operating cash flow and earnings

In Table 3, analyzing Model (1) shows that operating cash flows have a significant incremental explanatory power over earnings after the mandatory IFRS adoption in UK, but at the same time earnings have a significant incremental explanatory power over operating cash flows. One possible interpretation is due to the fact that the statement of cash flows play more important role in valuation than the income statement after the mandatory IFRS in UK. In Australia and France, however, earnings have a significant incremental explanatory power over operating cash flow after the mandatory IFRS adoption, but at the same time operating cash flow have a significant explanatory power over earnings. These results can be interpreted as the income statement paying a more important role in valuation than the statement of cash flow after the mandatory IFRS adoption.

In Model (2), operating cash flows have a significant incremental explanatory power over earnings after the IFRS adoption across country borders, but at the same time earnings have a significant incremental explanatory power over operating cash flows after the IFRS adoption across country borders in Australia and the UK. One possible interpretation is due to the fact that the statement of cash flows play more important role in valuation than the income statement after the mandatory IFRS in Australia and the UK. In France, however, earnings have a significant incremental explanatory power over operating cash flow after the IFRS adoption across country borders, but at the same time operating cash flow have a significant explanatory power over earnings. These results can be interpreted as the income statement playing a more important role in valuation than the statement of cash flow after the IFRS adoption across country borders.

5 Conclusions and implications

Operating cash flows and earnings are accounting numbers that's investors use in valuing firms' share prices. Accounting number of one firm in a country may alter investor's beliefs about the valuation of other firms in the same country, thereby enhancing share prices. Thus, this study focuses on the differences in value relevance of operating cash flows and earnings under IFRS and GAAP. We explore the value relevance of operating cash flow and earnings under the IFRS and GAAP by imposing two research question: (1) Are there difference in the value relevance of operating cash flow and earnings among IFRS adoption countries? (2) Do operating cash flow and earnings convey different information to stock valuation after the mandatory IFRS within country and cross-border?

Using a sample of 7,641 firm-years observations for three IFRS countries from 2003 to 2012, we provide evidence that after the mandatory IFRS adoption, the value relevance of operating cash flows and earnings improves among firms from IFRS adoption countries. The result is consistent with investors in adoption countries being more likely to pay on more attention on statement of cash flows than income statement for share valuation in Australia and the UK, whereas in France, investors are likely to pay more attention on income statements than statement of cash flows in share valuation.

Specifically, our results lead us to conclude that operating cash flows seem to be more value relevance than earnings within and across country border after a switch to IFRS in 2005 in Australia and the UK, and earnings seem to be more value relevance than operating cash flows in France. Additionally, Operating cash flow and earnings convey incremental explanatory power to explain share prices in Australia, France and the UK. After a switch to IFRS in 2005, our study shows that the difference in account number (operating cash flows and earnings) reduces across country border but increases within country when both the IFRS and local accounting standards are used. In relation to our sample, the existence of a shift in the value relevance of operating cash flows and earnings after the mandatory IFRS adoption is due to the difference in the accounting systems (IFRS and GAAP). However, over the last decades, that is, from 2005, the difference in accounting systems have significantly reduces since in most IFRS countries, a large proportion of listed firms tend to use the IFRS in the financial reporting, thereby, reducing the difference in accounting systems.

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