

The Relationship between Accruals Quality, Earnings Persistence and Accruals Anomaly in the Canadian Context

Fatma Boubakri

Correspondence: Fatma Boubakri, Ecole Supérieure des Sciences Economiques et Commerciales de Tunis, 4 Rue Abou Zakaria El Hafsi, Montfleury 1089, Tunis, Tunisie. Tel: 216-98-548-188. E-mail: fatma_boubakri@yahoo.fr

Received: March 21, 2012

Accepted: April 9, 2012

Published: June 1, 2012

doi:10.5539/ijef.v4n6p51

URL: <http://dx.doi.org/10.5539/ijef.v4n6p51>

Abstract

The aim of this paper is twofold. First, we examine whether accruals' low reliability explains bias in earnings persistence coefficient. Second, we test whether investors overestimate persistence of low reliability components of accruals. To test our hypotheses, we use a sample of Canadian firms listed on the Toronto Stock Exchange for the period 2002- 2005. The results show that: (1) low reliability of some accruals components seems to partially explain bias in earnings persistence coefficient; (2) not only do Canadian investors overestimate low reliability components of accruals, but also some high reliability components.

Keywords: accruals, reliability, market efficiency, earnings persistence, abnormal returns

1. Introduction

The information content of earnings in relation to future earnings depends on earnings components. Indeed, when accounting earnings consist primarily of transitory elements, its information content regarding future earnings and stock prices is low. However, when earnings consist mainly of permanent elements, its information content is more important. Accordingly, earnings' predictive power follows from its persistent component (Charitou, Clubb, & Andreou, 2001; Martinez, 2004). The persistent component is the part of unexpected earnings which continuously recurs. It consists essentially of recurring elements and transitory elements that have long term effects (Martinez, 2004).

Studies of earnings forecasts highlighted the importance of analyzing the accruals and cash flows components of current earnings (Cotter, 1996; Bernstein, 1993). The accruals component is more affected by transitory events than the cash flows component (Charitou et al., 2001). In contrast to cash flows that are real and less subject to distortion, determining accruals value is impregnated with high subjectivity (Bernstein, 1993). In fact, accruals component correspond to expected future cash flows, deferrals of past cash flows, allocations and assessments, all of which involve a high degree of subjectivity (Richardson, Sloan, Soliman, & Tuna, 2005). Determining accruals reflects accounting policy and flexibility degree that managers deploy while exercising professional judgment. Managers may use judgment in financial reporting to alter financial reports in order to achieve specific goals (Healy & Wahlen, 1999). Accruals measurement error resulting from intentional earnings management (managerial opportunism) and unintentional earnings management (neutral application of accounting rules) affects accruals reliability. Therefore, the two components of current earnings, accruals and cash flows, have different characteristics and consequently different implications in future earnings prediction. Sloan (1996) shows that because of the great subjectivity in determining accruals, current earnings are less likely to persist when they consist primarily of accruals and more likely to persist if they consist mainly of cash flows. Thus, the difference between accruals quality and cash flows quality affects earnings persistence. Penman and Zhang (2002) consider earnings persistence as a good quality indicator. The authors add that high-quality earnings are predictable and sustainable earnings. Sloan (1996) also shows that investors fixate on earnings and fail to fully reflect the difference between properties of accruals and cash flows in forecasting future earnings. By equally weighting both earnings' components, investors tend to incorrectly overvalue persistence of the accruals component of current earnings when forming future earnings expectations, which leads stock prices to deviate from their intrinsic values and adjust their forecasts when realized earnings are less than expected for high-accrual firms (Mashruwala, Rajgopal, & Shevlin, 2006; Zhang, 2007). The negative relationship between current accruals and future stock returns is known as *accruals anomaly*.

Most studies dealing with accruals anomaly adopt Healy's definition of accruals which only takes into focus current accruals (Sloan, 1996; Xie, 2001; Chan, Chan, Jegadeesh, & Lakonishok, 2006; Zhang, 2007). In addition, most studies on accruals quality examine the U.S. financial market. However, accruals quality depends on the countries'

generally accepted accounting principles (GAAP). Rules-based GAAP intentionally minimize managers accounting judgment by establishing articulated rules that anticipate all possible application challenges and attach great importance to the reliability of accounting numbers than principles-based GAAP (Webster & Thornton, 2005).

This study examines on the one hand the relationship between accruals quality and earnings persistence and on the other hand attests for whether available information on accruals quality is reflected in stock prices. Unlike previous studies, we adopt a more comprehensive definition of accruals proposed by Richardson et al. (2005). Indeed, Healy's definition neglects several components of accruals, some of which are considered low reliability components. Neglecting these components leads to a noisy measurement of accruals and cash flows. Additionally, we chose to examine the Canadian context because, unlike the U.S. GAAP which is rules-based, Canadian GAAP is principles-based.

The defendants of rules-based GAAP consider that the greater the latitude given to managers in their professional judgment, the less is accruals quality. Phillips, Pincus, and Rego (2003) reveal that earnings management is accomplished using managerial discretion and typically there is more discretion under principles-based GAAP than under tax rules. The discretion given to managers in their professional judgment is subject to opportunistic use and being such affects accruals reliability. However, Skinner (1995) considers that sound professional judgment in the context of principles-based GAAP improves financial reporting quality in general and accruals quality in particular. Nevertheless, the results obtained by Berthelot (2000) support the possibility that the Canadian firms' managers benefit from flexibility afforded by the guidelines of the Canadian Institute of Chartered Accountants (CICA) to influence reported earnings. Janin and Piot (2008) report that investors fail to distinguish between opportunistic and misleading accounting manipulations and accounting manipulations that allow managers the possibility to enhance information content of accounting numbers. Webster and Thornton (2005) reveal that accruals overall quality does not only depend on standards, but also on other elements of the whole information system. They conclude that there is no difference between accruals quality of Canadian firms and that of U.S. firms. Our paper adds to the debate on the impact of professional judgments on accruals quality by studying the relationship between accruals reliability and bias in earnings persistence coefficient in the Canadian context. This is to test whether this bias is mainly due to accruals component and whether it depends on the estimation error of some items included in the calculation of accruals reported by firms.

The purpose of this paper is twofold. First, we propose to test the relationship between low reliability of some items included in the calculation of accruals and bias in earnings persistence coefficient. Second, we examine whether Canadian investors correctly interpret available information on accruals quality while predicting future earnings.

The remainder of the paper is organized as follows. The second section develops our hypotheses. The third section describes our methodology. The fourth section presents the sample and data sources. The fifth section discusses the empirical results and the sixth section concludes.

2. Research Hypotheses

Cash flows reflect objective elements and can be easily validated by the auditor (Piot, 2008). Conversely, some components of accruals need professional judgment while being determined (stocks, receivables, depreciation, contingent liabilities, etc.), which may induce measurement errors (Note 1). Therefore, validating accruals value needs specific diligence from the part of auditors. However, firms are subject to a strong demand for information, and therefore ask auditors to prepare annual reports at short notice, which affects reliability of accounting numbers (Piot, 2008). Additionally, as part of the principles-based GAAP, external auditor' signature quality should primarily reflect the relevance of accounting numbers rather than their reliability (Janin & Piot, 2008).

The Financial Accounting Standard Board (Statements of Financial Accounting Concepts SFAC 2) defines reliability as the main quality of financial reporting, which means that users have to ensure that the presentation of operations and the underlying facts is consistent with reality and reasonably error and bias-free. Thus, errors arising from professional judgments while determining accruals affect their reliability. It implies that the earnings' accruals component is more affected by transitory events than a cash flow component to the extent that the response coefficient of the accrual component is greatly reduced than the response coefficient of the cash flow component (Charitou et al., 2001). Richardson et al. (2005) show that an increase in accruals measurement error leads to an increase in their persistence coefficient bias compared to cash flow persistence coefficient.

Canadian principles-based GAAP give managers great latitude to make their professional judgments. This flexibility may affect accruals reliability and therefore their persistence in the subsequent period. Thus, our first hypothesis proposes that bias (downward) in accruals persistence coefficient is greater than bias in cash flows persistence coefficient.

H₁: The persistence coefficient on current earnings' accruals component is lower than the persistence coefficient on their cash flows component.

In the absence of accruals accounting, the only account that is recognized in the balance sheet is the cash asset account. All other accounts are the product of accruals accounting process. According to Richardson et al's definition (2005), accruals reflect the change in net non-cash assets. The authors divide accruals into current operating accruals, non-current operating accruals and financial accruals. Thus, Healy's definition (1985) neglects the last two components of accruals. Since not all accrual accounts are subject to management manipulation and consequently do not have the same degree of reliability (Richardson, Sloan, Soliman, & Tuna, 2001), we will analyze reliability of various components of accruals and hypothesize bias in their persistence coefficients.

Current operating accruals are the change in current operating assets nets of cash and short term investments minus the changes in current operating liabilities. The specific current operating assets to focus on are accounts receivable and inventory. Dechow, Sloan, and Sweeney (1995) consider that accounts receivable are the most widely used in revenue manipulation or margin manipulation through premature recognition of revenue (assuming all costs are fixed or all costs are variables). For the inventory component, managers may delay writing an obsolete inventory or allocate more charges (Chan et al., 2006). Thus, changes in accounts inventory and receivable are considered with low reliability and may be the cause of misestimating accruals persistence (Thomas & Zhang, 2002; Chan et al., 2006).

The main account driving liabilities are accounts payable. They reflect financial obligations that are recorded at their nominal values and can usually be measured with high reliability (Richardson et al., 2005). Thus, change in current operating liabilities is considered highly-reliable. Current operating accruals are the sum of low reliability and high reliability accruals. They are therefore of medium reliability and their persistence coefficient bias is relatively more important than cash flows persistence coefficient bias. Hence our second hypothesis assumes that:

H₂: persistence coefficient on current operating accruals is lower than persistence coefficient on cash flows.

The second component of accruals is the non-current operating accruals. It is the change in non-current assets (excluding long term investments and advances) minus change in non-current liabilities (nets of long term debt). The main accounts driving non-current operating assets are tangibles and intangibles. Considerable uncertainty exists in the evaluation of these accruals for several reasons. First, there is great subjectivity in assessing property produced by the firm. As these assets are internally generated, it is sometimes difficult to determine whether they meet the criteria for recognition, either because of uncertainty about the future economic benefits to be generated, or because of problems of evaluating the assets cost. CICA Handbook Section 3062 provides guidance on accounting for intangible assets. However, these details do not deal with internally-generated assets. Second, the improper capitalization of operating expenses can lead to artificial inflation of the firm's assets value. Paragraphs 1000. 26 and 1000. 51 of the CICA Handbook are interpreted by some entities as allowing for delaying a variety of charges. A portion of deferred charges do not meet the definition of assets or the criteria for recognition (Conseil des normes comptables, 2007). In the same vein, Berthelot and Labelle (2007) report that the Canadian standards' distinction between research and development opens the door to manipulation possibilities. As research costs are directly charged to earnings and development costs are capitalized in the balance sheet, managers may try to use their discretion to manipulate earnings. Landry and Callimaci (2003) show that large Canadian firms as well as those whose ownership structure is concentrated, are less likely to capitalize development costs. Third, there is great subjectivity in determining depreciation amount. Write-downs help to restrict firms on reporting in their balance sheets asset values that exceed their probable future economic benefits. However, the discretion given to managers in determining timing and amount of write-downs has been controversial. Via a case study of a Canadian company, Inco Ltd., Hilton and O'Brien (2009) show that managers' discretion may affect valuation of assets. While some firms take big baths to reduce future reported costs and increase their future earnings, other firms report overvalued assets to give the impression that they have a strong financial position. Thus, the change in non-current operating assets is considered of low reliability.

The non-current operating liabilities are driven by a variety of accounts. Some of these accounts (such as contingent liabilities, postretirement benefits) are subject to a highly- subjective assessment and where management has a high degree of accounting flexibility. Contingent liability, such as warranty liability, is different from other monetary liabilities, such as bank loans. In fact, managers might be discrete over the accounting treatment of warranties as a means of opportunistic earnings management. These opportunistic accounting decisions can be achieved through changes in the assumptions and estimates underlying warranty accruals. Cohen, Darrough, Huang, and Zach (2011) show that managers use warranty accruals to achieve specific financial reporting objectives. In particular, they report that abnormal warranty expenses are associated with two popularly cited earnings targets: avoiding reporting

a loss and avoiding reporting an earnings decrease. Moore (2008) finds evidence supporting management's opportunistic use of pension accounting assumptions to reduce reported pension expense. In the same vein, Costello, Machuga, and Teitel (2010) provide empirical evidence on how managers use long term accruals such as postretirement benefits to manage earnings in subsequent years and increase the likelihood of meeting earnings targets. That is, managers do in fact make discretionary choices in year t that increase the likelihood of the firm meeting earnings targets in year $t+1$. They report that assumptions used to account for postretirement benefit costs can also be used as an earnings management tool because: (1) accounting rules give managers great flexibility in setting the assumptions; (2) complexity of accounting rules and related disclosures make it difficult for outside users to identify changes in assumptions and their economic effects; and (3) liability is long term in nature enabling small changes in assumptions to have a large impact on the financial statements. Thus, change in non-current operating liabilities is described as of medium reliability. Non-current operating accruals are the sum of low and medium reliability accruals. Hence our third hypothesis runs as follows:

H₃: persistence coefficient on non-current operating accruals is lower than persistence coefficient on cash flows.

The third component of accruals is financial accruals. It is the change in financial assets (such as long term investments and short term investments) minus change in financial liabilities (such as long term debt and short term debt). Short term investments, short term debt and long term debt are measured with high reliability. However, long term investments, such as long term receivables, can be used while manipulating earnings and error margin in their determination is greater (Richardson et al., 2005). Overall, financial accruals are determined with high reliability and therefore their persistence coefficient bias is not more important than in cash flows persistence coefficient. Our fourth hypothesis assumes that:

H₄: the difference between persistence coefficient on financial accruals and persistence coefficient on cash flows is not significant.

In addition to testing the above-mentioned assumptions, we propose to examine presence of accruals anomaly in the Canadian context. In particular, we examine whether stock prices reflect earnings components' different properties.

The relationship between stock prices and earnings has been widely debated. Since the pioneering work of Ball and Brown (1968), several studies have documented a positive relationship between stock returns and earnings (Pfeiffer, Elgers, Lo, & Rees, 1998; Charitou et al., 2000, 2001; Easton & Harris, 1991; Collins & Kothari, 1989). This relationship is explained by the ability of earnings to reflect relevant information about firm performance. However, some studies report that investors fixate on earnings and fail to fully reflect information about accruals quality in predicting future earnings (Sloan, 1996; Thomas & Zhang, 2002; Cheng & Thomas, 2006). By equally weighting accruals and cash flows components, investors overestimate persistence of current earnings' accruals in predicting future earnings. This leads to a deviation of stock prices from their intrinsic values. Investors adjust their forecasts in the subsequent period, after accruals reversals. Consequently, accruals will be negatively related to future stock returns, a relationship well-known as the *accruals anomaly*. The overvaluation of firms' securities with high accruals will be corrected once the reported earnings turn out to be weaker than the expected earnings. Thus, our fifth hypothesis assumes that:

H₅: Canadian investors overestimate persistence of low reliability accruals components in predicting future earnings and adjust their anticipation in the subsequent period.

If investors do not anticipate low persistence of low reliability accruals components and adjust their forecasts in the subsequent period, the relationship between these components and the subsequent abnormal returns will be negative.

3. Methodology

3.1 The Relationship between Accruals Reliability and Bias in Earnings Persistence Measurement: The Earnings Persistence Models

Freeman, Ohlson, and Penman (1982) show that the book rates-of-return follow a mean-reverting process and changes in rates-of-return strongly correlate with changes in earnings. Hence, the current book rate-of-return provides a basis for predicting future earnings. Thus, we get:

$$ROA_{it+1}^* = \phi + \gamma ROA_{it}^* + \varepsilon_{it+1} \quad (1)$$

Where ROA_{it}^* is the actual return on asset i in year t defined as the actual earnings deflated by average total assets.

By replacing ROA_{it}^* with their cash flows and accruals components, equation (1) can be written as:

$$ROA_{it+1}^* = \phi + \gamma CF_{it} + \gamma AC_{it}^* + \varepsilon_{it+1} \quad (2)$$

Where AC_{it}^* is the actual accruals of firm i in year t and CF_{it} is the cash flows of firm i in year t . All variables are scaled by average total assets.

As accruals are measured with errors, earnings reported by the firms, ROA, are biased measures of their actual earnings, ROA^* . Hence, we get:

$$AC_{it} = AC_{it}^* + e_{it} \quad (3)$$

$$ROA_{it+1} = ROA_{it+1}^* + e_{it+1} \quad (4)$$

Where ROA_{it+1} is the reported return on asset i in year $t+1$ defined as net income before extraordinary items scaled by average total assets and AC_{it} is the reported accruals of firm i in year t scaled by average total assets.

Substituting the above relationships into (2), we get:

$$ROA_{it+1} = \varphi + \gamma CF_{it} + \gamma AC_{it} + v_{it+1} \quad (5)$$

Where $v_{it+1} = \varepsilon_{it+1} + e_{it+1} - \gamma e_{it}$

Because v is correlated with AC via error term e , the estimated coefficients on CF (γ_{CF}) and AC (γ_{AC}) are biased estimates of γ . Richardson et al. (2005) report that bias is measured as follows:

$$(\gamma_{AC} - \gamma) = \frac{-\gamma \frac{\text{var}(e)}{\text{var}(AC)}}{1 - \varphi_{CF,AC}^2} \quad (6a)$$

$$(\gamma_{CF} - \gamma) = -\varphi_{CF,AC} (\gamma_{AC} - \gamma) \quad (6b)$$

Where $\text{var}(e)$, $\text{var}(AC)$ is the variance of e and AC , respectively and $\varphi_{CF,AC}$ is the correlation coefficient between CF and AC .

More measurement error in accruals (e) is important, the greater the bias (downward) in the persistence coefficient on accruals compared to that on cash flows. Therefore, the estimated coefficient on AC is lower than that on CF . The equation actually estimated is as follows:

$$ROA_{it+1} = \varphi_0 + \varphi_1 CF_{it} + \varphi_2 AC_{it} + v_{it+1} \quad (7)$$

Similar to Richardson et al. (2005) and to emphasize the fact that persistence coefficient on accruals is lower than that on cash flows; we replace CF by the difference ($ROA - AC$) in equation (7). Hence, we get:

$$ROA_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 AC_{it} + v_{it+1} \quad (8)$$

Where, $\gamma_1 = \varphi_1$ and $\gamma_2 = (\varphi_2 - \varphi_1)$.

Therefore γ_2 measures the difference between persistence coefficient on accruals and persistence coefficient on cash flows. Hypothesis H_1 states that persistence coefficient on accruals is lower than persistence coefficient on cash flows. Thus, we have $(\varphi_2 - \varphi_1) < 0$. Regressing the modified version of equation (7) provides direct estimation of $(\varphi_2 - \varphi_1)$. If hypothesis H_1 is valid, we will have $\gamma_2 < 0$.

Because some components of accruals are measured with high reliability, while others are considered of low reliability, magnitude of bias in measuring their persistence differs from one component to another. This shows the importance of decomposing accruals. Thus, to test hypotheses H_2 , H_3 and H_4 , we decompose accruals into three components as follows:

$$ROA_{it+1} = \varphi_0 + \varphi_1 CF_{it} + \varphi_2 \Delta WC_{it} + \varphi_3 \Delta NCO_{it} + \varphi_4 \Delta FIN_{it} + v_{it+1} \quad (9)$$

Where ΔWC is current operating accruals, ΔNCO is non-current operating accruals and ΔFIN is financial accruals. All variables are scaled by average total assets. By analogy to equation (8), we can write:

$$ROA_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + v_{it+1} \quad (10)$$

With, $\gamma_2 = \varphi_2 - \varphi_1$; $\gamma_3 = \varphi_3 - \varphi_1$; $\gamma_4 = \varphi_4 - \varphi_1$.

Thus, γ_1 measures persistence coefficient on cash flows component. γ_2 , γ_3 and γ_4 measure the difference between persistence coefficient on each component of accruals and that on cash flows component. Hypotheses H_2 (ΔWC), H_3 (ΔNCO) and H_4 (ΔFIN) imply that $\gamma_2 < 0$, $\gamma_3 < 0$ and $\gamma_4 = 0$, respectively.

The exogenous variables are defined in Table 1.

Table 1. The definition of exogenous variables

Variables (tested hypothesis)	Definition
AC ($H_1: \gamma_2 < 0$ in eq. (8))	the total accruals : $\Delta WC + \Delta NCO + \Delta FIN$
ΔWC ($H_2: \gamma_2 < 0$ in eq. (10))	the current operating accruals : [Δ Current Assets– Δ Cash and Short Term Investment] – [Δ Current Liabilities– Δ Debt in Current Liabilities]
ΔNCO ($H_3: \gamma_3 < 0$ in eq. (10))	the non-current operating accruals : [Δ Total Assets – Δ Current Assets– Δ Long Term Investments and Advances] – [Δ Total Liabilities – Δ Current Liabilities – Δ Long Term Debt]
ΔFIN ($H_4: \gamma_4 = 0$ in eq. (10))	the financial accruals : [Δ Long Term Investments and Advances + Δ Short Term Investments] – [Δ Long Term Debt + Δ Debt in Current Liabilities]

All the variables mentioned above are scaled by average total assets.

3.2 Pricing Models

The efficient-market hypothesis postulates that the current stock price reflects all available information that may influence the stock's future value (Fama, 1970). In an efficient market, an investor can not consistently achieve returns in excess of average market returns given the already available information. Thus, there is no relationship between current accruals and subsequent abnormal stock returns. However, if investors fail to anticipate the lower persistence of the low reliability accruals, they will adjust their expectations in the subsequent period, following the reversal of these accruals (Richardson et al., 2005). Thus, the relationship between low reliability accruals components and subsequent abnormal returns will be negative.

To test our fifth hypothesis dealing with the ability of Canadian investors to rationally anticipate implications of current accruals (and its components) for future earnings and according to Richardson et al. (2005), we regress the following equations:

$$RET_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 AC_{it} + \vartheta_{it+1} \quad (11)$$

$$RET_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \vartheta_{it+1} \quad (12)$$

Where RET_{it+1} denotes buy-and-hold abnormal returns of firm i in year $t+1$. They are calculated using the Market Adjusted Return model as follows:

$$RET_{it} = \prod_{\tau=4}^{15} (1 + R_{i\tau}) - \prod_{\tau=4}^{15} (1 + R_{index\tau}) \quad (13)$$

With $R_{i\tau}$ is the monthly return of firm i for month τ , $R_{index\tau}$ is the monthly return of the stock index S & P/TSX for the month τ and $\tau = 4$ corresponds to four months following the end of the fiscal year. This delay ensures that investors can access to information about financial statements. Other variables of equations (11) and (12) are defined in Table 1. Hypothesis H_5 states that investors overestimate persistence of low reliability accruals in their anticipation of future earnings and adjust their expectations in the subsequent period. Thus, H_5 implies that $\gamma_2 < 0$ (AC) in equation (11). Similarly, H_5 assumes that $\gamma_2 < 0$ (ΔWC), $\gamma_3 < 0$ (ΔNCO) and $\gamma_4 = 0$ (ΔFIN) in equation (12).

4. Sample and Data Sources

The initial sample included Canadian firms listed on the Toronto Stock Exchange over the period 2001-2006. It consists of 1,594 firm-year observations. Since regressions rely on change in variables, as well as future variables,

the final sample is from 2002 to 2005. We chose to begin our analysis starting from 2002 and not before because of the 2002 stock market crash. Our empirical analysis uses annual stock returns calculated starting four months after the end of the fiscal year and ending twelve months later. Thus, the subsequent abnormal returns (RET_{it+1}) relating to fiscal year 2002 exclude returns affected by the 2002 stock market crash. In addition, we chose to exclude observations related to the year 2006 and following, because of the 2008 financial crisis. Indeed, to compute RET_{it+1} for the year 2006 we use stock returns of 2008 affected by the financial crisis.

We exclude from the sample financial firms because the distinction between operating activities and financing activities is not clear in this category of firms. We also eliminate firm-year observations with insufficient data to compute the principal variables used in our tests. The final sample consists of 803 firm-year observations with available stock prices and financial statement data in prior, current, and subsequent years. Accounting data are collected manually from the firms' financial statements available on the SEDAR database, while market data are collected from the Canadian database of the Canadian Financial Markets Research Centre.

5. Empirical Results

5.1 Descriptive Statistics

Table 2 provides descriptive statistics (panel A) and the variables' correlation matrix (panel B). Panel A shows that the mean value of TACC is positive (0.062). Accruals' positive mean value differs from accruals' negative mean value documented by Sloan (1996). Richardson et al. (2005) explain this difference by the fact that Sloan's definition of accruals includes reversal of some non-current operating asset accruals, yet it does not include the origin of these accruals. Panel A also shows that mean values of ΔNCO (0.065) and ΔWC (0.006) are positive, while mean value of ΔFIN (-0.010) is negative. These results show that Canadian firms finance their growth by increasing their net operating assets and reducing their net financial assets. Examination of accruals components also reveals that standard deviations of ΔNCO (0.209) and ΔFIN (0.169) are higher than standard deviation of ΔWC (0.088). Thus, ΔNCO and ΔFIN are the most important sources of variation in the total accruals. This result suggests that previous studies which used Healy's definition of accruals ignored the most important sources of variation in total accruals.

Panel B of table 2 indicates that there is a strong correlation between the various components of accruals. Both ΔWC and ΔNCO are strongly negatively correlated with ΔFIN . This result shows that Canadian firms tend to finance growth of net operating assets by using their financial assets and/or loans (liabilities). In addition, the positive correlation between ΔWC and ΔNCO shows that Canadian firms tend to grow their current and non-current operating assets in tandem. All correlation coefficients of exogenous variables reported in Table 2 are less than the 0.8 limit fixed by Kennedy (1985) from which multicollinearity becomes a serious problem that affects relevance of the results.

Table 2. Descriptive statistics and correlation matrix

Panel A: Descriptive statistics							
	Mean	Median	Maximum	Minimum	Std. Dev		
AC _t	0.062	0.044	0.891	-0.917	0.218		
WC _t	0.006	0.003	0.524	-0.566	0.088		
NCO _t	0.065	0.018	0.962	-0.671	0.209		
FIN _t	-0.010	0.000	0.976	-0.786	0.169		
ROA _t	0.018	0.062	0.569	-0.962	0.180		
ROA _{t+1}	0.027	0.066	0.868	-0.897	0.181		
RET _{t+1}	-0.011	-0.010	0.162	-0.222	0.042		
Panel B: Correlation matrix– Pearson							
	AC _t	ΔWC _t	ΔNCO _t	ΔFIN _t	ROA _t	ROA _{t+1}	RET _{t+1}
AC _t	1						
WC _t	0.330**	1					
NCO _t	0.663**	0.074**	1				
FIN _t	0.298**	-0.189**	-0.418**	1			
ROA _t	0.287**	0.153**	0.159**	0.094**	1		
ROA _{t+1}	0.154**	0.093**	0.107**	0.017	0.816**	1	
RET _{t+1}	-0.045	-0.028	-0.031	-0.005	0.123**	0.114**	1

** : Denotes significance at the 0.05 level.

5.2 Results of Earnings Persistence Tests

Table 3 presents the results of the regression models (8) and (10) using panel data. The Hausman test result advocates choosing the fixed effects model. According to panel A, persistence coefficient on AC (-0.057) is statistically negative at the 0.01 level. This result shows that the persistence coefficient on accruals is lower than the persistence coefficient on cash flows. This result validates our first hypothesis (H_1) and corroborates Richardson et al.'s results (2005) on the U.S. context regarding the magnitude of bias in measuring accruals component persistence.

Panel B reports the estimation results of model (10). Recall that the ΔWC receives a medium reliability rating, the ΔNCO receives a low/medium reliability rating and the ΔFIN receives a high reliability rating. Since the coefficients γ_2 , γ_3 and γ_4 in model (10) measure the difference between persistence coefficient on each component of accruals (ΔWC , ΔNCO and ΔFIN , respectively) and persistence coefficient on cash flows, the coefficients γ_2 and γ_3 are assumed to be statistically negative, while the coefficient γ_4 is assumed to be insignificant. The coefficients on each accruals component are negative. However, ΔWC coefficient (-0.049) is not statistically significant. Hypothesis H_2 is not validated. This result differs from that of Richardson et al. (2005) who show that persistence coefficient on ΔWC is lower than that on CF. This can be explained by the fact that U.S. GAAP need strict prudence in revenue accounting, delaying their recognition in income and may be incompatible with the accountant's professional judgment (Webster & Thornton, 2005). γ_3 and γ_4 coefficients are significantly negative. Thus, hypothesis H_3 ($\gamma_3 < 0$) is accepted and hypothesis H_4 ($\gamma_4 = 0$) is rejected. Generally, these results confirm Richardson et al.'s findings (2005).

Overall, the results suggest that the wide latitude given to Canadian managers to exercise professional judgment in determining accruals does not seem to explain bias in accruals persistence measurement. Indeed, determining current operating accruals needs a manager's professional judgment. However, its persistence coefficient is not statistically different from persistence coefficient on cash flows. In addition, persistence coefficient on financial accruals is lower than persistence coefficient on cash flows. But financial accruals are described as highly reliable.

Table 3. Earnings persistence model regression results

Panel A:							
$ROA_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 AC_{it} + v_{it+1}$							
	Intercept	ROA	AC	\bar{R}^2	F- Stat		
Estimated coefficient	0.027***	0.209***	-0.057***	0.636	9.46***		
(t-Statistic)	(9.27)	(4.00)	(-2.78)				
Fisher test :	F (388, 412) = 2.92			Prob >F = 0.000			
Hausman test :	chi2 (2) = 135.95			Prob > chi2 = 0.000			
Panel B:							
$ROA_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + v_{it+1}$							
	Intercept	ROA	ΔWC	ΔNCO	ΔFIN	\bar{R}^2	F- Stat
Estimated coefficient	0.027***	0.208***	-0.049	-0.060**	-0.055**	0.631	4.72***
(t-Statistic)	(8.91)	(3.97)	(-1.10)	(-2.43)	(-2.05)		
Fisher test :	F (388, 410) = 2.89			Prob >F = 0.000			
Hausman test :	chi2 (2) = 138.26			Prob > chi2 = 0.000			

** , ***: Denote significance at the 0.05 and 0.01 level, respectively

5.3 Results of Mispricing Tests

The latter hypothesis is to test whether the Canadian investor correctly anticipates degree of persistence of the various earnings components. It stipulates that investors do not take into account low persistence of the less reliable accruals components in their anticipation of future earnings and adjust their forecasts in the subsequent period after reversal of these accruals. This implies a negative relationship between these components and the subsequent abnormal returns. To test this hypothesis, we estimate models (11) and (12) using panel data. Table 4 reports the results of the regression models using quasi-generalized least squares (QGLS). The Breusch & Pagan test shows the existence of heterogeneity. The Hausman test statistic requires using the error components model.

Panel A of table 4 presents the estimation results of model (11). The significant negative relationship between abnormal returns and total accruals shows that Canadian investors overestimate persistence of accruals. This result confirms the presence of “accruals anomaly” in the Canadian stock market.

The results presented in panel B show that Canadian investors overvalue persistence of accruals components estimated as low persistence (ΔNCO and ΔFIN). Indeed, ΔFIN and ΔNCO coefficients are significantly negative. Richardson et al. (2005) find that ΔWC and ΔNCO coefficients are the most negative, showing that the less reliable components are the most overvalued by U.S. investors. On the other hand, in the Canadian context, investors overestimate the ΔFIN component considered of high reliability and properly evaluate ΔWC considered of medium reliability. These results show that Canadian investors do not only overstate accruals components considered of low reliability.

Unlike the U.S. context, our results show that the low reliability of accruals seems to partially explain accruals anomaly in a context marked by wide latitude granted to managers in their professional judgment to determine accruals. This result supports Skinner’s disagreement (1995) with idea that principles-based GAAP produces financial information that can be misleading.

Table 4. Mispricing model regression results

Panel A :							
$RET_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 AC_{it} + \vartheta_{it+1}$							
	Intercept	ROA	AC	\bar{R}^2	Wald chi2		
Estimated coefficient	-0.101***	0.031***	-0.017**	0.020	13.48***		
(t-Statistic)	(-5.79)	(3.37)	(-2.34)				
Breusch & Pagan test:	chi2 (1) = 4.25			Prob > chi2 = 0.039			
Hausman test:	chi2 (2) = 1.85			Prob > chi2 = 0.397			
Panel B :							
$RET_{it+1} = \gamma_0 + \gamma_1 ROA_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \vartheta_{it+1}$							
	Intercept	ROA	ΔWC	ΔNCO	ΔFIN	\bar{R}^2	Wald chi2
Estimated coefficient	-0.010***	0.032***	-0.019	-0.016**	-0.017*	0.018	13.54***
(t-Statistic)	(-5.74)	(3.38)	(-1.13)	(-1.98)	(-1.70)		
Breusch & Pagan test:	chi2 (1) = 3.96			Prob > chi2 = 0.047			
Hausman test:	chi2 (2) = 7.20			Prob > chi2 = 0.126			

*, **, ***: Denote significance at the 0.1, 0.05 and 0.01 level, respectively.

6. Summary

This paper has two objectives. First, we examine whether low reliability of some accruals components can explain low earnings persistence by examining the Canadian context which is characterized by high managerial discretion. By decomposing accruals in terms of current operating accruals, non-current operating accruals and financial accruals, we examine their reliability and tested their persistence relative to cash flows. Second, we test whether Canadian investors overestimate persistence of low reliability accruals components. If Canadian investors overestimate persistence of low reliability accruals components, they will adjust their forecasts in the next period following reversal of accruals.

The empirical tests focus on a sample of 803 firm-year observations from Canadian firms listed on the Toronto Stock Exchange over the period 2002-2005. The results show that the two components of accruals ignored by the definition of Healy (1985), i.e. non-current operating accruals and financial accruals, have lower persistence coefficients than cash flows. However, non-current operating accruals are described as low reliability and financial accruals as high reliability. Low reliability of some accruals components seems to partially explain low earnings persistence. In addition, the results reveal that Canadian investors overvalue persistence not only of low reliability accruals components, but also some accruals with high reliability. They overestimate non-current operating accruals persistence described as low reliability, and financial accruals considered as high reliability. Thus, accruals' low reliability seems to partially explain the "accruals anomaly" detected in the Canadian stock market. Finally, the wide latitude granted to managers to exercise their professional judgment, marking Canadian GAAP, does not seem to be the right explanation of accruals lower persistence, or the main cause of overvaluing accruals persistence by Canadian investors.

Finally, it should be noted that our analysis is subject to numerous limitations and a number of extensions could be made. Our sample does not include all publicly traded Canadian firms and our conclusions are dependent on the sample that we studied, which consists mainly of large firms. Also, additional analysis of discretionary and non discretionary components of accruals would be more enriching to examine the relationship between managers' professional judgment, low reliability of accruals and bias in measuring earnings persistence.

Acknowledgement

I am grateful to Lamia Chourou for providing me with the data.

References

- Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, 6(2), 159-178. <http://dx.doi.org/10.2307/2490232>
- Bernstein, L. A. (1993). *Financial statement analysis* (5th ed.). Homewood, IL: Irwin.

- Berthelot, S. (2000). *Evaluation de la Fiabilité de l'Information Financière Divulguée en Matière de Frais Futurs d'enlèvement des Immobilisations et de Restauration des Lieux*. Ph. D. en Administration des affaires, Université de Montréal: Faculté des Etudes Supérieures.
- Berthelot, S., & Labelle, R. (2007). Pertinence de l'Information Financière et Non Financière Relative à la Recherche et au Développement. *Acte du Congrès Annuel de l'Association Canadienne des Professeurs de Comptabilité*, Halifax. Available: <http://www.caaa.ca/CAAAConf/Proceedings/index.html>.
- Chan, K., Chan, L. K. C., Jegadeesh, N., & Lakonishok, J. (2006). Earnings Quality and Stock Returns. *Journal of Business*, 79(3), 1041-1082. <http://dx.doi.org/10.1086/500669>
- Charitou, A., Clubb, C., & Andreou, A. (2000). The Value Relevance of Earnings and Cash Flows: Empirical Evidence for Japan. *Journal of International Financial Management & Accounting*, 11(1), 1-22. <http://dx.doi.org/10.1111/1467-646X.00053>
- Charitou, A., Clubb, C., & Andreou, A. (2001). The Effect of Earnings Permanence, Growth and Firm Size on the Usefulness of Cash Flows and Earnings in Explaining Security Returns: Empirical Evidence for the UK. *Journal of Business Finance and Accounting*, 28(5-6), 563-594. <http://dx.doi.org/10.1111/1468-5957.00385>
- Cheng, C. S. A., & Thomas, W. B. (2006). Evidence of the Abnormal Accrual Anomaly Incremental to Operating Cash Flows. *The Accounting Review*, 81(5), 1151-1167. <http://dx.doi.org/10.2308/accr.2006.81.5.1151>
- Cohen, D., Darrrough, M. N., Huang, R., & Zach, T. (2011). Warranty Reserve: Contingent Liability, Strategic Signal, or Earnings Management Tool? *The Accounting Review*, 86(2), 569-604. <http://dx.doi.org/10.2308/accr.00000021>
- Collins, D. W., & Kothari, S. P. (1989). An Analysis of Intertemporal and Cross-Sectional Determinants of Earnings Response Coefficients. *Journal of Accounting and Economics*, 11(2-3), 143-181. [http://dx.doi.org/10.1016/0165-4101\(89\)90004-9](http://dx.doi.org/10.1016/0165-4101(89)90004-9)
- Conseil des normes comptables. (2007). Actifs incorporels (Modification du chapitre 1000, remplacement du chapitre 3062 par le chapitre 3064 et retrait du chapitre 3450). *Deuxième exposé-sondage du Conseil des Normes Comptables : Historique et fondements de conclusion*. Canada.
- Costello, A., Machuga, S., & Teitel, K. (2010). Evidence of Earnings Management and Managers' Choice of Actuarial Assumptions for the Accounting of Retiree Health. *Working Paper*. University of Hartford. Available: <http://college.holycross.edu/faculty/kteitel/pdf/PRBSept2010sm.pdf>
- Cotter, J. (1996). Accrual and Cash Flow Accounting Models: A Comparison of the Value Relevance and Timeliness of their Components. *Accounting & Finance*, 36(2), 127-150. <http://dx.doi.org/10.1111/j.1467-629X.1996.tb00303.x>
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, 70(2), 193-225.
- Easton, P. D., & Harris, T. S. (1991). Earnings as an Explanatory Variable for Returns. *Journal of Accounting Research*, 29(1), 19-36. <http://dx.doi.org/10.2307/2491026>
- Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383-417. <http://dx.doi.org/10.2307/2325486>
- FASB. (1980). Statements of Financial Accounting Concept (SFAC) n°2: Qualitative Characteristics of Accounting Information. *Stamford: Financial Accounting Standards Board*.
- Freeman, R. N., Ohlson, J. A., & Penman, S. H. (1982). Book Rate-of-Return and Prediction of Earnings Changes: An Empirical Investigation. *Journal of Accounting Research*, 20(2), 639-653. <http://dx.doi.org/10.2307/2490890>
- Healy, P. M. (1985). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics*, 7(1-3), 85-107. [http://dx.doi.org/10.1016/0165-4101\(85\)90029-1](http://dx.doi.org/10.1016/0165-4101(85)90029-1)
- Healy, P. M., & Wahlen, J. (1999). A Review of the Earnings Management Literature and its Implications for Standard Setting. *Accounting Horizons*, 13(4), 365-383. <http://dx.doi.org/10.2308/acch.1999.13.4.365>
- Hilton, A. S., & O'Brien, P. C. (2009). Inco Ltd.: Market Value, Fair Value, and Management Discretion. *Journal of Accounting Research*, 47(1), 179- 211. <http://dx.doi.org/10.1111/j.1475-679X.2008.00314.x>
- Janin, R., & Piot, C. (2008). L'Influence des Auditeurs Externes et des Comités d'Audit sur le Contenu Informatif des Manipulations Comptables. *La revue des Sciences de Gestion - Direction et Gestion*, 233, 23-33.

- Kennedy, P. (1985). *A guide to econometrics* (2nd ed.). MIT Press, Cambridge.
- Landry, S., & Callimaci, A. (2003). The Effect of Management Incentives and Cross Listing Status on the Accounting Treatment of R & D Spending. *Journal of International Accounting, Auditing and Taxation*, 12(2), 131-152. <http://dx.doi.org/10.1016/j.intaccaudtax.2003.08.003>
- Martinez, I. (2004). Le Contenu Informatif des Chiffres Comptables: Vers de Nouvelles Améliorations Méthodologiques? *Comptabilité- Contrôle- Audit*, 10(2), 9-30.
- Mashruwala, C., Rajgopal, S., & Shevlin, T. (2006). Why is the Accrual Anomaly not Arbitraged Away? The Role of Idiosyncratic Risk and Transaction Costs. *Journal of Accounting and Economics*, 42(1-2), 3-33. <http://dx.doi.org/10.1016/j.jacceco.2006.04.004>
- Moore, E. (2008). Do Managers Use their Discretion Afforded them Under Pension Accounting to Meet Earnings Targets? *Working Paper*. Westfield State College.
- Penman, S. H., & Zhang, X-J. (2002). Accounting Conservatism, the Quality of Earnings, and Stock Returns. *The Accounting Review*, 77(2), 237-264. <http://dx.doi.org/10.2308/accr.2002.77.2.237>
- Pfeiffer, R. J., Elgers, Jr. P. T., Lo, M. H., & Rees, L. L. (1998). Additional Evidence on the Incremental Information Content of Cash Flows and Accruals: The Impact of Errors in Measuring Market Expectations. *The Accounting Review*, 73(3), 373-385.
- Phillips, J., Pincus, M., & Rego, S. O. (2003). Earnings Management: New Evidence Based on Deferred Tax Expense. *The Accounting Review*, 78(2), 491-521. <http://dx.doi.org/10.2308/accr.2003.78.2.491>
- Piot, C. (2008). Les Déterminants du Délai de Signature du Rapport d'audit en France. *Comptabilité- Contrôle- Audit*, 14(2), 43-74.
- Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2001). Information in Accruals about the Quality of Earnings. *Working Paper*. University of Michigan. Available: SSRN: <http://ssrn.com/abstract=278308>.
- Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2005). Accrual Reliability, Earnings Persistence and Stock Prices. *Journal of Accounting and Economics*, 39(3), 437-485. <http://dx.doi.org/10.1016/j.jacceco.2005.04.005>
- Skinner, R. (1995, November). Judgement Jeopardy. *CA Magazine*, 14-21.
- Sloan, R. G. (1996). Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review*, 7(3), 289-315.
- Thomas, J. K., & Zhang, H. (2002). Inventory Changes and Future Returns. *Review of Accounting Studies*, 7(2-3), 163-187. <http://dx.doi.org/10.1023/A:1020221918065>
- Webster, E., & Thornton, D. B. (2005). Earnings Quality under Rules- Versus Principles-Based Accounting Standards: A Test of Skinner Hypothesis. *Canadian Accounting Perspectives*, 4(2), 167- 192. <http://dx.doi.org/10.1506/6TPA-D5HH-GKMB-9GJV>
- Xie, H. (2001). The Mispricing of Abnormal Accruals. *The Accounting Review*, 76(3), 357-373. <http://dx.doi.org/10.2308/accr.2001.76.3.357>
- Zhang, X. F. (2007). Accruals, Investment, and the Accrual Anomaly. *The Accounting Review*, 82(5), 1333-1363. <http://dx.doi.org/10.2308/accr.2007.82.5.1333>

Notes

Note 1. To illustrate the problem of measurement errors, Richardson et al. (2005, p. 441) cite the example of the recognition of sales revenue. If credit sales amounted to \$ 110 in year t, of which \$ 100 will actually be collected during the year t +1, there is uncertainty regarding the amount to be recognized in the year t. An aggressive manager could book sales of \$ 110, representing a margin of error of \$ 10 while determining accruals, and therefore while determining earnings of year t. Conversely, a conservative manager could book sales of \$ 90, representing an error margin of \$ -10 while determining accruals and earnings for the year t.