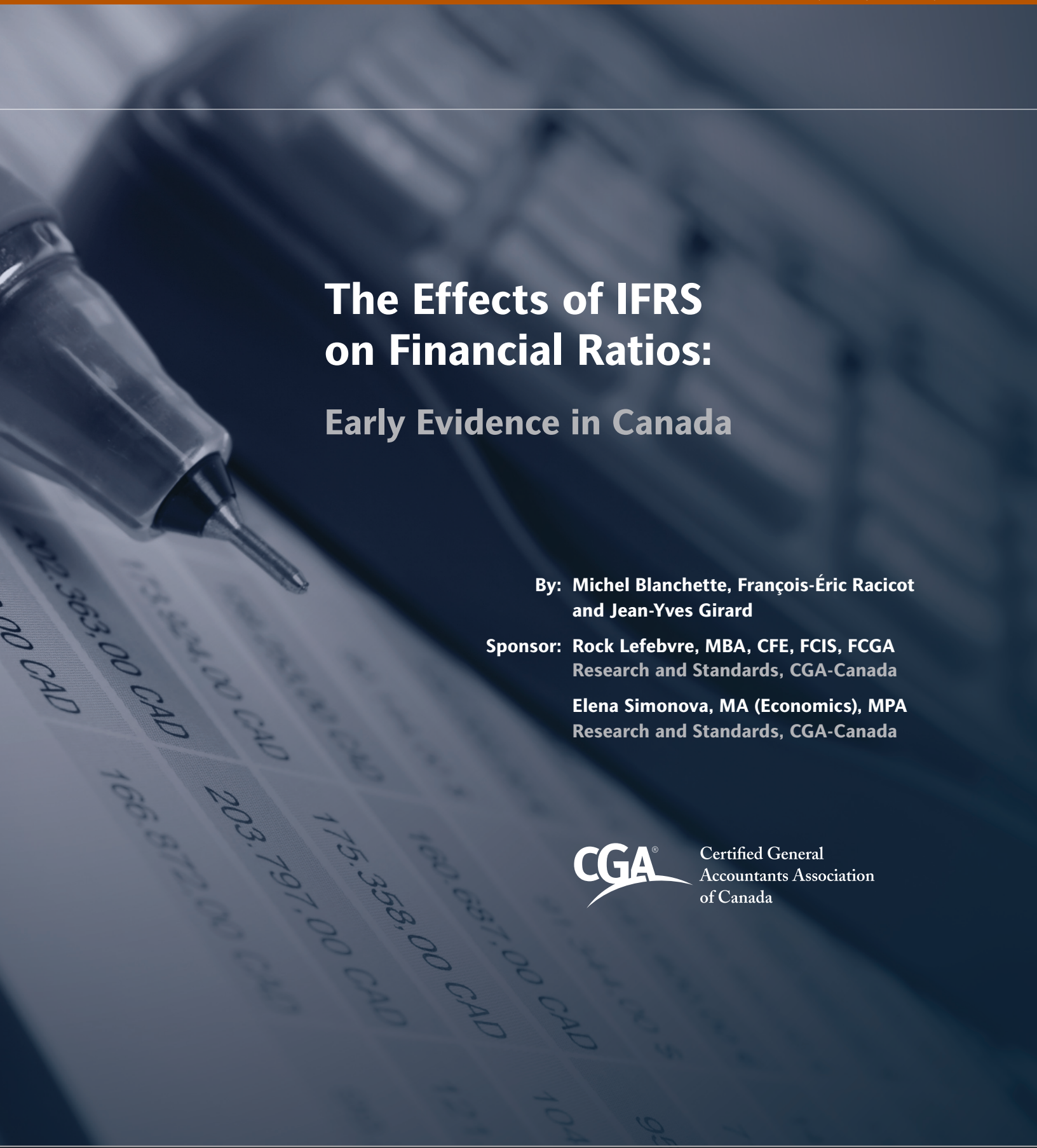

The Effects of IFRS on Financial Ratios:

Early Evidence in Canada

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Table of Contents

List of Tables

List of Figures

ABSTRACT

This paper provides preliminary evidence of the impact on financial ratios caused by the transition to International Financial Reporting Standards (IFRS) in Canada. The main features of IFRS are explained in the context of a shift from Canadian Generally Accepted Accounting Principles (GAAP) while the main differences between the two sets of rules are underscored – heavier reliance of IFRS on fair value accounting and comprehensive income, and the use of the entity theory for consolidation. The effects of IFRS on financial ratios in the areas of liquidity, leverage, coverage and profitability are discussed and verified using a sample cohort of early adopters in Canada. The preliminary evidence reveals significantly higher volatility to most of the ratios under IFRS when compared to those derived under pre-changeover Canadian GAAP. While the means and medians of IFRS ratios differ from the means and medians of the same ratios under pre-changeover Canadian GAAP, the differences are not statistically significant overall. However, important individual discrepancies are in some cases observed. Naturally, analysts using ratios for analytical purposes during the transition period need to be vigilant as ratios computed under IFRS are not directly comparable with those derived under pre-changeover Canadian GAAP. It is recommended that heightened attention be directed to the new feature – comprehensive income – which incorporates unrealized gains and losses that bypass the income statement. The suggested analytical tools best suited to mitigate the contributing effect include reliance on comprehensive-Return on Assets (ROA) and comprehensive-Return on Equity (ROE).

EXECUTIVE SUMMARY

Financial reporting in Canada is undergoing remarkable change as publicly accountable enterprises transition from GAAP to IFRS. Although the conceptual basis and many of the general principles are shared, the application of IFRS may be significantly different. Consequently, the differences between IFRS and pre-changeover Canadian GAAP may impact figures presented in financial statements and lead to variances in financial ratios computed under the two regimes. The objectives of this paper are to analyze the early implementation of IFRS in Canada and to provide preliminary empirical evidence of the impact on financial ratios of Canadian companies caused by a migration to IFRS.

The analysis is based on the examination of a set of financial ratios commonly utilized by investors and other users of financial statements. The 16 ratios examined are grouped into four broad categories: liquidity, leverage, coverage and profitability. The impact of IFRS is analyzed through the comparison of ratios computed under IFRS and pre-changeover Canadian GAAP for the same time/period. Specifically, the tests for equality of means, medians and variances between each series of ratios are used to understand whether the distributions of IFRS values differ from pre-changeover Canadian GAAP. Further, least-square regressions are employed to analyze the relationships between ratios under the two regimes. The analysis is based on a sample of all Canadian companies authorized for early adoption of IFRS and for which audited financial statements are publicly available. The final sample consists of 9 companies and provides for 22 full sets of audited financial statements covering a 12-month period and 30 balance sheets at specific dates. As the following pages reveal, it can be reasonably contended that:

IFRS presents a number of specific characteristics that differentiate it from other accounting regimes. Among the most important are (i) the principle-based approach that gives more importance to substance (over form) and allows management to use greater discretion in its application; (ii) the greater reliance on fair value accounting involving varying degrees of subjectivity; (iii) the concept of comprehensive income that reflects all revenues, expenses, gains and losses to be recognized during a specified time period; (iv) the entity theory that underlies consolidation requiring assets and liabilities of subsidiaries acquired and minority interests to be measured at fair value and the presentation of minority interests within equity; and, (v) the improved transparency and completeness that, on the downside, arguably leads to an overload of information as notes accompanying financial statements are numerous and complex.

IFRS's impact on financial ratios is driven by fundamental differences in application of fair value accounting and consolidation under IFRS and pre-changeover Canadian GAAP, and by a number of other differences. Fair value accounting causes adjustments in balance sheet figures, direct allocation of some unrealized gains and losses to the income statement, and allocation of some other unrealized gains and losses to other comprehensive income. As a result, liquidity and leverage ratios are affected due to balance sheet variations while profitability

and coverage ratios are affected due to balance sheet variations and recognition of unrealized gains/losses. The impact of consolidation on ratios is difficult to isolate as the differences are incorporated or combined in the consolidated figures. Incorporating minority interest in equity also significantly impacts the financial statements; directly affecting profitability and leverage ratios. Other differences affect leverage and profitability ratios, particularly in impairment test procedures applied to long-lived assets. The standards on leases, pensions and contingencies may report higher levels of liabilities under IFRS while the standard on share-based payments may require higher expense and equity recognition. Moreover, IFRS requires more information to be disclosed in the corresponding notes to financial statements; providing additional information potentially useful but further jeopardizing the comparability of ratios.

Most of the financial ratios under IFRS present a significantly higher volatility than those computed under pre-changeover Canadian GAAP. Although the effects of IFRS on means and medians of ratios related to the financial condition of companies are not statistically significant, maximum values of several ratios are higher and the minimum values are lower under IFRS. There is a significant difference in the distribution of values around medians for such ratios as current and quick ratios, debt, alternative-debt and equity ratios, interest coverage, fixed-charge and cash-flow coverage, return on assets (ROA), comprehensive-ROA and price-earnings related ratios. Results of regression analysis confirm the increased volatility of IFRS leverage and profitability ratios.

The impact of IFRS is subject to the industry effect and the time of the transition. It appears that the companies in the mining sector have certain incentives to early adoption of IFRS as early adopters primarily consist of companies operating in this sector. Under IFRS, there is a significant industry effect for mining companies on six profitability and coverage ratios. The analysis also suggests that profitability of companies that transitioned to IFRS recently is affected more negatively than profitability of those applying IFRS on an ongoing basis. However, the composition of the sample imparts certain limitations to these conclusions. In turn, exceptions and exemptions stipulated by IFRS 1 do not affect significantly the differences in ratios computed under the two regimes.

Differences between IFRS and pre-changeover Canadian GAAP do not affect cash flows. In general, IFRS does not materially change the cash flow statement when compared to pre-changeover Canadian GAAP. However, there may be some differences in presentation particularly for interest and dividends, and in the scope of consolidation.

The exact source of increased volatility in financial ratios under IFRS remains unclear and may represent a future area of research. Volatility may be caused by incremental adjustments that are specific to IFRS, for instance, unrealized gains or losses on items measured at fair value under IFRS versus historical cost under pre-changeover Canadian GAAP. It may also be driven by adjustments or methods applied under IFRS principle-based standards allowing

more discretion and judgment by management. Specific areas of accounting standards that explain the increased volatility in the Canadian context may include fair value accounting, impairment, revenue recognition, capitalization, pension and scope of consolidation.

Previous research also confirms the impact of IFRS on financial ratios. In Finland, the analysis of ratios calculated under IFRS and Finnish GAAP for the same time period found that liquidity ratios decrease under IFRS, while leverage and profitability ratios increase. A review published by the Canadian Securities Administrators (CSA) showed that Canadian companies identify a number of differences between IFRS and Canadian GAAP in their Management Discussion and Analysis (MD&A) including those dealing with asset impairment, revenue recognition and property, plant and equipment. Another study revealed that senior financial executives across Canada most often expect IFRS to increase assets and pension liabilities on the balance sheet, and to decrease net income in the income statement.

A number of recommendations are provided based on the results of the analysis. Analysts are advised to be cautious when examining financial ratios during the transition to IFRS in Canada. Comparability of ratios based on IFRS figures with those based on pre-changeover Canadian GAAP may naturally be impaired and the trend analysis misleading. Financial statement users need to be aware of the main features of IFRS that differ from pre-changeover Canadian GAAP and are well served to distinguish between reported performance changes caused by the transition to IFRS from those caused by changes in the business. A possible solution may be to recalculate ratios using IFRS retroactive information presented in the year of the shift. Relying on cash flow analysis, particularly in cases when accounting practices are subject to uncertainty or discretion of management is recommended. In addition, financial statement users are advised to verify the uniformity of the underlying figures when using gross profit and operating profit margins in profitability analysis.

Finally, it is important to be mindful of the new feature through comprehensive income which incorporates unrealized gains and losses that bypass the profit of the income statement. The suggestion is to use two ratios when analyzing comprehensive income: the comprehensive-ROA (return on assets) and the comprehensive-ROE (return on equity). These are an adaptation of the *regular* ROA/ROE but with the comprehensive income as the numerator.

Several areas for future research are identified. Testing specific exceptions and exemptions of IFRS 1 with a larger sample may help to detect particular variations in financial ratios based on IFRS and pre-changeover Canadian GAAP. Identifying specific areas of accounting standards that explain the increased volatility of ratios under IFRS may identify more clearly the exact source of volatility in ratios. Moreover, future research could consider extending the analysis to interim statements to increase sample size; although the results may be less reliable. It will also be possible to increase the sample size with data of mandatory adopters following the IFRS change-over in 2011 in Canada.

1. INTRODUCTION

Financial reporting in Canada has been undergoing a remarkable change since International Financial Reporting Standards (IFRS) have been adopted as Canadian Generally Accepted Accounting Principles (GAAP) for publicly accountable enterprises and government business entities. In the past, Canadian standards for financial accounting and reporting by public companies were developed by the Accounting Standards Board (AcSB).[1] Since adoption of IFRS, the AcSB has been active in monitoring the technical content and timing of standards implementation to Canadian public companies which are required to report under IFRS no later than 2011.[2] The International Accounting Standards Board (IASB) is responsible to develop and publish IFRSs which have been increasingly adopted globally, with or without adaptation.

IFRS is becoming the dominant financial reporting regime on the international scene as it is either required or permitted in more than 100 countries, including the European Union, Africa, Asian, Oceanic and South American countries. The United States continues to use its own GAAP as promulgated by the Financial Accounting Standards Board (FASB) which has encouragingly become influenced by IFRS. The Securities and Exchange Commission (SEC) accepts financial statements prepared under IFRS by foreign issuers whereas the U.S. accounting standards-setter – the Financial Accounting Standards Board (FASB) – is committed to joint projects with the IASB in developing a single set of high-quality international accounting standards.

Although the conceptual basis and many of the general principles are very similar under IFRS and Canadian GAAP, the application of IFRS may be nevertheless significantly different. Consequently, the differences between the two regimes may impact figures presented in financial statements and lead to variances in financial ratios computed under IFRS and Canadian GAAP.

The objectives of this paper are to analyze the early implementation of IFRS in Canada and to provide preliminary evidence of the impact caused by the shift in regimes onto financial ratios. Although Canadian listed companies are required to apply IFRS only in 2011, they have had the option of early adoption that is subject to authorisation by Canadian securities regulators. The analysis presented in this paper is based on the sample of all Canadian companies that have been authorized to adopt IFRS early and for which financial statements are available through the System for Electronic Document Analysis and Retrieval (SEDAR)[3] (CSA, 2010c). Results show preliminary evidence of the potential influence of IFRS on selected financial ratios in the areas

1 The AcSB is an independent body with the authority to develop and establish standards and guidance governing financial accounting and reporting in Canada. It is overseen by the Accounting Standards Oversight Council.

2 Canadian GAAP requires that publicly accountable enterprises apply IFRS for interim and annual financial statements relating to annual periods beginning on, or after, January 1, 2011 (*CICA Handbook*, Part 1, Introduction, para. 1.7). This includes listed companies but also entities that are in the process of becoming listed, entities traded over-the-counter and entities that hold assets in a fiduciary capacity for a broad group of outsiders (e.g. banks). Private enterprises can also elect to apply IFRS on an optional basis. In this paper, the focus is on publicly-traded companies.

3 SEDAR is a filing system developed for the CSA that provides access to public securities documents filed by public companies and investment funds (CSA, 2010c).

of liquidity, leverage, coverage and profitability. It is found that the impact of IFRS is subject to industry and to some other related effects. It should be noted though that the comparison of ratios was based on their quantitative values while evaluation of the structure and importance of the ratios themselves was not within the scope of this study. In the process of analysis, a number of ratios based on the new accounting feature – comprehensive income – were developed.

This study responds to an urgent need of users of financial statements to know the impact on financial ratios as a result of the shift to IFRS. For instance, investors rely on ratio analysis to make decisions regarding stock transacting; bankers consider ratios in their credit analysis and some debt covenants; governments use ratios in monitoring grants and other support measures. Financial ratios can reveal favourable or unfavourable values, depending on their trend over time, and relative to those of other companies operating in the same industry. Making financial decisions based on ratios that are not fully comparable can simply lead to undesirable consequences.

The balance of the paper is organized as follows. Section 2 reviews the evolution of Canadian GAAP towards IFRS and highlights its main features. It describes the introduction of IFRS in the Canadian context and considers several other sets of rules currently in application or in development. This section also explains the unique context of the first application of IFRS which, in turn, provides the opportunity to compare financial statements prepared under both Canadian GAAP and IFRS for the same period. Section 3 describes the selected financial ratios and reviews literature that examines the impact of IFRS on financial ratios. Section 4 presents the methodology and data. Sections 5 and 6 discuss the results and provide concluding remarks and recommendations.

2. INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

In 1973, the International Accounting Standards Committee (IASC) was created with the explicit intent to develop accounting standards for international use. The objective of the IASC was to develop and promote the use and application of International Accounting Standards or IASs (IASB, 2010, Preface). In the early years, IASs were not widely applied. A noticeable change however took place in 2001 subsequent to replacement of the IASC by the IASB along with the new name given to the standards – IFRS.[4] Another incremental step to the success of IFRS took place in 2005 when the European Union (EU) decided to adopt IFRS as the mandatory set of accounting standards in the EU member states.

2.1. Evolution of Canadian GAAP towards IFRS

The *CICA Handbook* contains Canadian GAAP (AcSB, 2010). The Handbook was first adopted in 1968 and published by the Canadian Institute of Chartered Accountants (CICA). Since then, it has evolved from a limited number of rules to a wide range of standards applied to a diverse group of entities. It contains guidelines and recommendations on general accounting, and specific and specialized accounting. The current standards include specific rules for pension plans (first introduced in the 1960s: Milburn and Skinner, 2001, p. 257), governments (developed in the 1980's: ibid, p. 653) and not-for-profit organisations (since 1989: ibid, p. 44). The standards also address industry issues such as banking and insurance (since the 1990's: ibid., p. 44) and mining (*CICA Handbook*: Accounting Guidelines AcG-5 and AcG-16 on full cost accounting in the oil and gas industry, initially published in 1986 and 2003 respectively).

Prior to 2005, the development of Canadian accounting and assurance standards was highly influenced by the United States (Milburn and Skinner, 2001, p. 614). In fact, many accounting standards published in past decades were heavily based on the U.S. rules. In some way, this level of influence may be expected as the United States is one of the leaders of the world capital markets, as well as an important business and trade partner to Canada.

The number and complexity of accounting rules has increased domestically and internationally reflecting the rising complexity of business transactions and vibrant economic growth. This growth engenders a new problem for accounting standards-setters – standards overload. It has become common for accounting standards to be hundreds of pages long and very complex for preparers and users of financial statements. To simplify accounting in certain situations,

4 In practice, IFRS comprises of original IASs issued until 2001 (numbered from IAS 1 to IAS 41) and new IFRSs issued thereafter (numbered from IFRS 1 to IFRS 9 as of October 2010). Materials accompanying new standards include a Preface, a Framework and additional guidance to help in interpreting IFRSs (SICs numbered from 1 to 32 and issued by the Standing Interpretations Committee until 2001; IFRICs numbered from 1 to 19 as of October 2010 and thereafter issued by the International Financial Reporting Interpretations Committee).

exceptions or differential reporting rules were introduced in 2002, authorizing non-publicly accountable enterprises to apply simplified methods as long as owners unanimously consent (AcSB, 2010, Section 1300). More recently, simplified sets of rules were published by the AcSB and the IASB: Accounting Standards for Private Enterprises (AcSB, 2010, Part II) and IFRS for small and medium-sized entities (IASB, 2009) respectively.

Following the example of the European Union, a large number of other countries decided to adopt IFRS, primarily for listed companies. This diminished the U.S. influence on international accounting and elevated the role of IFRS as the benchmark set of rules worldwide. In Canada, the intention to adopt IFRS for publicly accountable enterprises was announced by the AcSB in 2006 (CICA, 2009). Since then, intensive studies and analyses have been performed and several decisions have been made as Canadian GAAP was converging to IFRS (CICA, 2010).

Accounting standards in Canada are presented in two handbooks – the *CICA Handbook – Accounting* which consists of five parts, and the *CICA Public Sector Accounting Handbook*. With the transition to IFRS, the *CICA Handbook – Accounting* has also required modification. The paragraphs that follow describe the content of the Handbook in its restructured form:

CICA Handbook – Accounting (AcSB, 2010):

- *Part I* contains IFRSs that are mandatory for publicly accountable enterprises (PAEs) in periods beginning in 2011. Earlier application is possible but very rare in practice. PAEs refer to entities, other than not-for-profit and pension plans, that have securities traded on a public market or hold assets in a fiduciary capacity for a broad group of outsiders. This includes banks, insurance companies, securities brokers and mutual funds.
- *Part II* contains a new set of standards dedicated to private enterprises that elect not to apply IFRSs. These standards are simplified, in comparison with IFRSs, but nevertheless consist of more than 800 pages. They replace the differential reporting provisions available in the former section 1300 of the Handbook. It should be noted that the IASB published a separate set of standards for small and medium-sized entities (IASB, 2009); however these standards have not been adopted in Canada.
- *Part III* is reserved to not-for-profit organizations. It is an updated version of the former section 4400 of the Handbook. Not-for-profit organizations can apply these standards or elect to apply IFRSs.
- *Part IV* is directed at pension plans and represents an updated version of the former section 4100 of the Handbook.
- *Part V* contains the pre-changeover standards which applied before 2011.

The IFRS transition period in Canada is somewhat confusing with many sets of rules and choices available to entities. It may take a number of years before users of financial statements become familiar with the new rules and understand the limitations of comparing financial statements over time and across industries. The focus of this study is on IFRS as it is presented in Part I of the *CICA Handbook – Accounting*.

2.2. Main features of IFRS

IFRS is a principle-based set of accounting standards designed to improve the comparability of financial statements internationally. An important goal of the IASB is to develop a single set of high quality global accounting standards that are understandable and that improve transparency in financial reporting on the various capital markets of the world (IASB, 2010). The main characteristics of IFRS include a principle-based approach, fair-value orientation, the concept of comprehensive income, the entity theory underlying consolidation, and improved transparency.

Principle-based approach

The principle-based approach of IFRS implies that the standards rely primarily on principles and specified desirable regulatory outcomes rather than detailed, prescriptive rules. This approach gives more importance to substance (over form) and allows management to exercise judgment/discretion in application. In short, management has greater flexibility in selecting accounting methods and in estimating accounting figures when preparing financial statements. In turn, a rule-based approach offers less flexibility in aligning business objectives and processes with regulatory outcomes and forces specific treatments when precise criteria are met. For example, a standard on consolidation that is based on a general definition of control, such as "the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities" (IAS 27.4), is principle-based. Another standard that gives specific quantitative benchmarks, such as ownership of a majority voting interest of over fifty percent of the outstanding voting shares (SFAS No. 94 published by the FASB in 1987), is considered to be rule-based. The distinction is not always clear and some argue that many actual sets of standards are a mix of both models. For instance, Canadian GAAP relies predominantly on principles but evolved gradually towards more rules (Chlala and Fortin, 2005; Fortin and Labelle, 2005). U.S. standards are generally referred to as rule-based (Zarb, 2006), but some argue that they are also principle-based with more robust guidance (Rosen, 2008).

Fair value accounting

Fair value accounting represents a departure from the traditional historical cost principle. IFRS puts a much greater emphasis on fair value than that rendered under earlier Canadian GAAP. It primarily responds to the needs of investors which are given deliberate importance in IFRS compared to other users (IASB, 2001, par. 10; Chua and Taylor, 2008). Since investors need market-based values to make decisions regarding buying or selling stocks, many items in financial statements are required or eligible for fair value accounting under IFRS. Estimating fair value involves various degrees of subjectivity depending on the availability of an active market for the assets and liabilities in question. Currently, the IASB and the FASB are jointly developing a new standard to improve guidance for calculating fair values and to enhance related disclosure (IASB Staff, 2010).

In general, fair value is mandatory in measuring transactions at initial recognition under IFRS. In some instances, items such as financial instruments held-for-trading and derivatives are required to be remeasured at fair value subsequently. In addition, many assets and liabilities can also be remeasured at fair value on an optional basis although this practice is not widespread (Table 1 provides a list of items measured at fair value). According to a survey of 199 listed companies from 15 countries including the European Union, South Africa, and Hong Kong, only 2% of companies actually applied fair value accounting to property, plant and equipment in 2005 (KPMG and Keitz, 2006). The same survey showed that none of the companies applied fair value accounting to intangible assets and only 42% did so for investment property (ibid.).

Table 1 – Fair Value Accounting in IFRS

Fair Value Requirement	Type of Fair Value Accounting
Fair value mandatory	
Impaired assets (IAS 36)	Through profit or loss
Financial instruments held-for-trading (IAS 39)	Through profit or loss
Financial instruments available-for-sale (IAS 39)	Through OCI
Derivatives other than used in designated cash flow hedges (IAS 39)	Through profit or loss
Derivatives used in designated cash flow hedges (IAS 39)	Through OCI
Biological assets (IAS 41)	Through profit or loss
Agricultural produce at the point of harvest (IAS 41)	Through profit or loss
Minority interest at initial recognition (IFRS 3)	One-time fair value
Fair value optional	
Property, plant and equipment (IAS 16)	Through OCI
Intangible assets (IAS 38)	Through OCI
Investment property (IAS 40)	Through profit or loss
Selected items on IFRS transition (IFRS 1)	One-time fair value

Note: "OCI" stands for other comprehensive income

Under IFRS, fair value accounting is seen as more relevant for the measurement of balance sheet items. However, one of the consequences of such a measure is represented by the increased volatility of profits due to the recognition of unrealized gains and losses. To avoid volatility of profits in the income statement while allowing fair value measurement in the balance sheet, the concept of comprehensive income was developed.

Comprehensive income

Comprehensive income is a major development in the recent evolution of accounting standards and a central notion in the conceptual framework of IFRS. It is a new feature reflecting all revenues, expenses, gains and losses that are to be recognized according to accounting standards during a period, and is summarized in a separate financial statement named the Statement of Comprehensive Income. It is formed of two components. The first corresponds to the bottom line (profit or loss) of the income statement as it is commonly measured, incorporating gains and losses on transactions with outside parties and a number of unrealized gains and losses on items measured at fair value through profit or loss. The second component of the statement of comprehensive income relates to unrealized gains and losses caused primarily by fair value adjustments. This component is designed to bypass the income statement. In order to do that, a new category of accounting adjustment has been introduced – other comprehensive income (OCI), which is presented directly in shareholders' equity. OCI may be seen as a buffer that allows the use of fair value accounting without its direct impact on the income statement. Figure A shows the relationship between the balance sheet, the income statement and the statement of comprehensive income. The profit accumulates in retained earnings; the annual variation of the OCI accumulates directly in shareholders' equity, whereas the sum of annual profit and annual variation of OCI forms the comprehensive income.

It should be noted that the separate reporting of comprehensive income was introduced in U.S. accounting standards in 1997 (SFAS No. 130 Reporting Comprehensive Income) and in Canadian accounting standards in 2005 (*CICA Handbook*: Section 1530 Comprehensive Income).

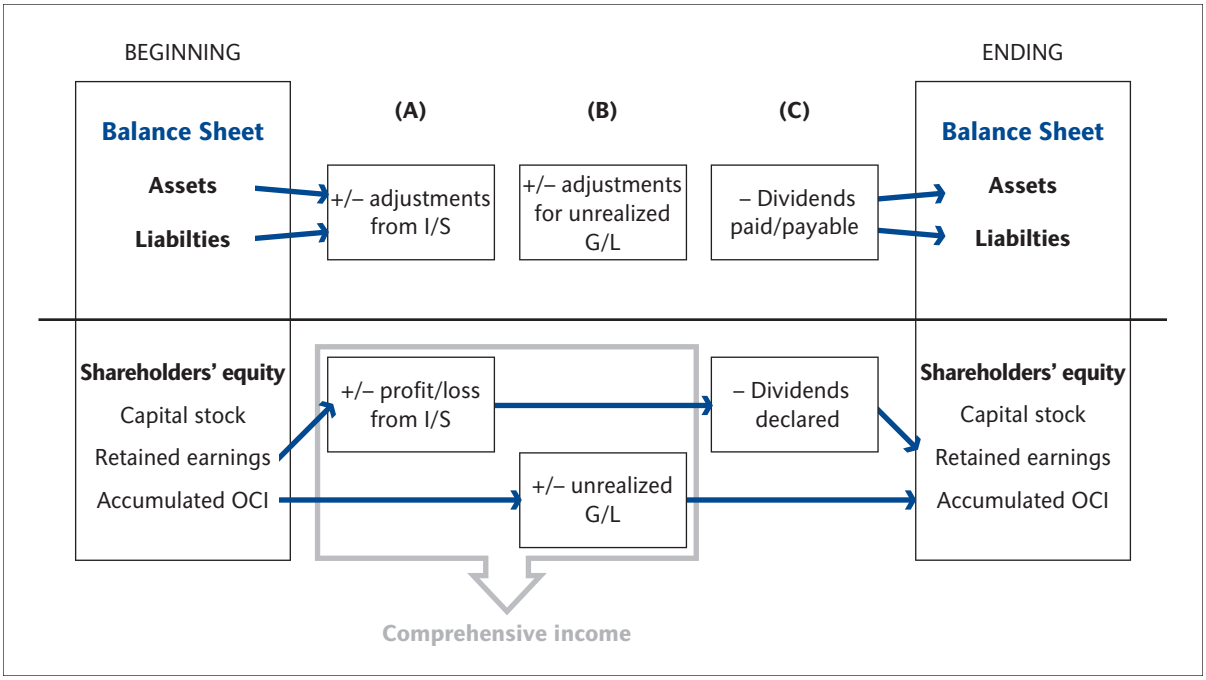
Consolidation

The entity theory underlies the application of the consolidation technique in IFRS. It requires that assets and liabilities of subsidiaries be measured at their full fair value on the date of acquisition. Consequently, minority interest (called non-controlling interest) is measured at fair value at the same date.[5] This is a major difference compared with Canadian GAAP which does not recognize the fair value adjustments related to minority interest.[6]

5 Although IFRS has adopted the concept of fair value for the measurement of minority interest initially, there is still an issue outstanding in the calculation, allowing alternative treatments. It relates to the inclusion (or not) of a control premium or discount in the initial value of minority interest (IFRS 3.19, 20, B44 and B45).

6 It should be noted that the Canadian standards for consolidation and non-controlling interests changed in December 2008 to converge with IFRS, but are to be applied in 2011 only (*CICA Handbook*, Standards 1582, 1601 and 1602). In this study, we refer to standards applied before 2011.

Figure A – Relationships Between Balance Sheet, Income Statement and OCI



Note: (A) Adjustments affecting the income statement (I/S)
(B) Annual variation of other comprehensive income (OCI), mainly unrealized gains and losses (G/L)
(C) Dividends
Other adjustments could be applied

In addition to the measurement issue, the entity theory has important implications on the presentation of minority interest. Under IFRS, minority interest is presented on the balance sheet within the shareholders' equity as the minority shareholders are considered partial owners of the consolidated entity. This is substantially different from the Canadian practice of presenting minority interest outside of equity. As a result, under IFRS, the share of profit allocated to minority interest is recognized directly in equity, whereas it is currently an expense in the income statement under Canadian GAAP.

Transparency

Transparency represents another major characteristic of IFRS. It relates to the assumption that markets are efficient and that all of the information communicated to users of financial statements is accurately and reliably incorporated in stock prices. This represents the qualitative characteristic of completeness (IASB, 2001) which allows users, particularly investors, to make decisions based on all the relevant information. One of the consequences of completeness, though, is an overload of information as notes accompanying financial statements are numerous, complex and sometimes hard to analyse in their entirety. This study primarily relies on figures taken directly from the financial statements, except in a few situations where notes are necessarily relied upon.

2.3. The unique context of the first application of IFRS

When a company applies IFRS for the first time, it must follow the rules and principles outlined in IFRS 1 *First-time Adoption of International Financial Reporting Standards*. This standard requires IFRSs to be applied not only for the year of the shift, but also retrospectively from an opening balance sheet prepared at a transition date (IFRS 1.6-7). The opening balance sheet is based on a full retrospective application of IFRS, as if these standards had always been in application, except for a number of exceptions and exemptions (Wiecek and Young, 2009. p. 364). The transition date is determined by management and must be at least one year prior to the year of the shift (IFRS 1.21).

The first year a company applies IFRS provides for a unique occurrence when it comes to financial reporting. Due to the transitional requirements of IFRS 1, the financial statements for at least one year prior to the shift are available under two sets of accounting standards: local GAAP and IFRS. For example, if a Canadian company shifted to IFRS in 2009, it was required to present comparative financial statements retrospectively adjusted to IFRS for at least one year prior to 2009, i.e. for 2008. In that case, the full financial statements of 2008 are available under both Canadian GAAP and IFRS, including the opening balance sheet. This allows for comparison and identification of the differences between them. However, the comparison is not fully appropriate as IFRS 1 imputes certain exceptions and exemptions.

In the retrospective application, IFRSs effective at the reporting date are fully applied, excluding the mandatory exceptions and optional exemptions. The exceptions and exemptions of IFRS 1 are one-time treatments that may not be representative of the ongoing application of IFRSs. The exceptions refer to accounting policies that are not applied retrospectively as they would normally need to.[7] Exemptions, in turn, provide several alternative accounting treatments that are available on an optional basis. All adjustments, when applicable, should be recognized through retained earnings, or other equity items, at the transition date (Wiecek and Young, 2009). Table 2 provides an overview of the elements of IFRS 1 that may not be representative of the ongoing application of IFRSs.

The primary purpose of this study is to analyse the significance of the impact on financial ratios by the differences between IFRS and Canadian GAAP. In the sections that follow, we first present the financial ratios selected for analysis and then follow with a discussion of the effect of IFRS on financial statements and ratios.

7 Under IFRS, changes in accounting policies normally are required to be fully applied retrospectively (IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors). However, according to IFRS 1, exceptions are possible in the first year of IFRS application.

Table 2 – Elements of IFRS 1 Not Representative of Ongoing Application of IFRSs

Mandatory Exceptions to Retrospective Application

Estimates (IFRS 1.14-17)

- Estimates should not be adjusted retrospectively in accordance with IAS 10 *Events after the Reporting Period*. Therefore estimates at transition date should be consistent with estimates made under GAAP applied before the shift to IFRS (previous GAAP)

Derecognition of financial assets and financial liabilities (IFRS 1.B2-B3)

- Some recognized and derecognized financial assets and financial liabilities at transition date may depend on previous GAAP

Hedge accounting (IFRS 1.B4-B6)

- Hedge accounting should respect IAS 39 *Financial Instruments: Recognition and Measurement* and should not be changed retrospectively except that some documentation on designated net positions may be updated if necessary, e.g. designate an individual item instead of a net position.

Non-controlling interests (IFRS 1.B7)

- Some requirements of IAS 27 *Consolidated and Separate Financial Statements* relating to non-controlling interests may not be applied retrospectively

Optional Exemptions

The exemptions relate to the following topics (PriceWaterhouseCoopers, 2009):

- Business combinations
- Share-based payment transactions
- Insurance contracts
- Fair value or revaluation as deemed cost for property, plant and equipment and other assets
- Leases
- Employee benefits
- Cumulative translation differences
- Investments in subsidiaries, jointly controlled entities and associates
- Assets and liabilities of subsidiaries, associates and joint ventures
- Compound financial instruments
- Designation of previously recognized financial instruments
- Fair value measurement of financial assets or financial liabilities at initial recognition
- Decommissioning liabilities included in the cost of property, plant and equipment
- Service concession arrangements
- Borrowing costs

3. FINANCIAL RATIOS

Financial ratios that are based on accounting information are widely used in practice. Investors, bankers, brokers and other stakeholders use them to analyze the financial condition and performance of a company, establish covenants in lending agreements or for other commercial arrangements. In this study, we calculate ratios based on figures obtained from financial statements prepared under two sets of accounting standards: IFRS and pre-existing Canadian GAAP.

3.1. Selected ratios

Although the general approach to computing ratios may be fairly similar, a number of discrepancies may exist when it comes to particular calculations. One reason for that lies in the absence of standards or rules regulating the computation of ratios, except for some legal or regulatory contexts such as debt covenants and capital adequacy for banks. Naturally, a range of approaches have emerged across regions and industries. However, the focus of our analysis is directed at the impact of IFRS on key financial ratios in the Canadian context. As such, the discrepancies in the underlying formulas and classifications of ratios are not considered. Our approach involved selecting a number of ratios commonly used in practice and referring to the general formulas in four main categories: liquidity, leverage, coverage and profitability. Table 3 provides the list of ratios selected along with formulas.

All of the components of the liquidity and leverage ratios are based on accounting figures taken from the balance sheet. The liquidity ratios are based on current assets and current liabilities while the leverage ratios show the importance of liabilities relative to assets or equity. The coverage and profitability ratios are composed of items from the income statement, comprehensive income, the cash flow statement, the balance sheet; and stock price – one component which is obtained from outside of the financial statements. The coverage ratios weight some expenses or charges, such as interest expense, fixed charges, and current liabilities, against profit or cash available to cover them. The profitability ratios measure the return on investment and other efficiency or productivity indicators. Market-based ratios, such as price-earnings related ratios and two other ratios that involve comprehensive income, are also included in the profitability category.

The price-earnings related ratios are used in two forms: one relies on *basic* earnings per share (EPS) whereas another one uses the *diluted* EPS. This allows observation of the impact of dilutive instruments on the profitability of shareholders. The ratios based on comprehensive income are adapted from the traditional return on assets (ROA) and return on equity (ROE) computations. They have the same denominator (total assets and equity), but the profit is replaced by comprehensive income in the numerator. We call these ratios comprehensive-ROA and comprehensive-ROE.

Table 3 – Selected Financial Ratios

Ratio		Formula	
LIQUIDITY			
Current ratio	=	Current assets / Current liabilities	✓
Quick ratio	=	(Current assets – Inventory) / Current liabilities	✓
LEVERAGE			
Debt ratio	=	Total liabilities / Total assets	✓
Alternative debt ratio	=	(Total liabilities + Minority interest under Canadian GAAP) / Total assets	✓
Debt to worth	=	Total liabilities / Shareholders' equity	✗
Equity ratio	=	Shareholders' equity / Total assets	✓
Debt to tangible net worth	=	Total liabilities / Tangible net worth	✗
COVERAGE			
Interest coverage	=	EBIT / Interest expense	✓
Fixed-charge coverage	=	EBIT / (Interest expense + CMLTD)	✓
Cash flow coverage	=	(Net income + Depreciation and amortization) / CMLTD	✓
Operating cash flow ratio	=	Operating cash flow / Current liabilities	✓
PROFITABILITY			
Return on asset (ROA)	=	Net profit / Total assets	✓
Return on equity (ROE)	=	Net profit / Equity	✗
Comprehensive-ROA	=	Comprehensive income / Total assets	✓
Comprehensive-ROE	=	Comprehensive income / Shareholders' equity	✗
Return on invested capital	=	Operating profit / (Total liabilities + Shareholders' equity)	✗
Gross profit margin	=	Gross profit / Net sales	✗
Operating profit margin	=	Operating profit / Net sales	✗
EBITDA margin	=	EBITDA / Net sales	✓
Net profit margin	=	Net profit / Net sales	✓
Asset turnover	=	Net sales / Total assets	✓
Fixed asset turnover	=	Net sales / Fixed assets	✗
Price-earnings (PE) ratio	=	Stock price / Basic earnings per share	✗
Price-to-diluted earnings ratio	=	Stock price / Diluted earnings per share	✗
Reverse PE ratio	=	Basic earnings per share / Stock price	✓
Reverse diluted PE ratio	=	Diluted earnings per share / Stock price	✓

Note: CMLTD stands for current maturity of long-term debt or debt to be repaid within one year.

EBIT stands for earnings before interest and tax.

EBITDA stands for earnings before interest, tax, depreciation and amortization.

Operating cash flow is from the cash flow statement, that is, net cash flow of the operating section.

Depreciation and amortization is from the cash flow statement – in the operating section when the direct method is used.

All balance sheet items and stock prices are at the fiscal year-end.[8]

"✗" indicates ratios not tested. The rationale for which is presented in Section 4.2.

"✓" indicates ratios tested. The results of testing are presented in Section 5.

8 It should be noted that all balance sheet items and stock prices used for computing the ratios are at the fiscal year-end. For ratios covering a period (such as the ROA), a weighted average of those items would better reflect variations throughout the year. However, since the purpose of the study is to compare Canadian GAAP and IFRS-based ratios, the use of year-end figures was deemed appropriate when applied consistently.

3.2. Effects of IFRS on financial ratios

The differences in the measurement of accounting figures under IFRS and Canadian GAAP may directly affect the numerator of ratio calculations, their denominator, or both. In cases where the difference in measurement affects only the numerator or only the denominator, the effect of changes is straightforward, easy to identify and to interpret. For example, the current ratio is higher under IFRS (everything else being equal) if current assets are higher but current liabilities remain unchanged. Identification and interpretation is less obvious in cases of numerous diverging effects on ratios. For example, a lower profit under IFRS will pull down the ROA by reducing the numerator but, at the same time, will pull it up by reducing the denominator. Moreover, there might be distinct accounting differences between IFRS and Canadian GAAP that have opposite effects on a particular ratio. An example is the impact on the current ratio of higher current assets under IFRS due to an earlier recognition of revenues and receivables concurrent with higher liabilities due to the recognition of a finance lease liability.

The paragraphs that follow present the main differences between IFRS and Canadian GAAP. Understanding them is important for assessing the impact of IFRS on ratios.

Fundamental differences between IFRS and Canadian GAAP

There are two main areas of fundamental difference between IFRS and Canadian GAAP – fair value accounting and consolidation. A higher reliance on fair value accounting in IFRS represents a substantial difference compared with Canadian GAAP. Fair value adjustments introduce volatility in accounting figures as unrealized gains and losses are recognized before the realization of a transaction with external parties. However, as discussed in Section 2.2, the application of fair value under IFRS is limited when it is optional. Fair value accounting may cause three possible effects on financial statements. First, balance sheet figures are adjusted. Second, some unrealized gains and losses are directly allocated to the income statement. Third, other unrealized gains and losses bypass the income statement until realization through a transaction with external parties or until impairment adjustment, and are allocated to OCI. Therefore, there are several ratios that are affected by fair value accounting: liquidity and leverage ratios, as a result of balance sheet variations; profitability and coverage ratios, as a result of balance sheet variations and recognition of unrealized gains/losses.

The consolidation differences between IFRS and Canadian GAAP discussed in Section 2.2 also have important implications on ratios. The measurement of assets, liabilities and minority interest at their full fair value on the date of acquisition in IFRS changes every ratio involving balance sheet items. In practice, however, it is difficult to identify those changes because the differences are incorporated or combined in the consolidated figures. Major effects on financial statements also exist when it comes to the presentation of minority interest. Under IFRS, the annual share of profit attributed to minority interest is allocated directly to equity. This changes the profit figure relative to Canadian GAAP where profit attributed to minority interest is treated as an expense in the income statement. As such, the profitability ratios are directly affected. In addition,

the presentation of the accumulated value of minority interest on the balance sheet has a major impact on leverage ratios. Under IFRS, the treatment of minority interest is unambiguous as it is incorporated in equity. Under Canadian GAAP, though, minority interest is excluded from equity (*CICA Handbook*: Standard 1600.69). As a result, two kinds of presentation are observed in Canadian practice. Most often, minority interest is presented between liabilities and equity (for example, in the 2008 financial statements of *Eastern Platinum Ltd*). In other instances, minority interest is incorporated within liabilities (for example, in the 2008 financial statements of *Northern Dynasty Minerals Ltd*). For the purpose of empirical analysis, two versions of the debt ratio were computed: one that excludes the minority interest figure in the numerator under Canadian GAAP (debt-ratio); and another that includes it (alternative-debt-ratio).

Other differences between IFRS and Canadian GAAP

The conceptual framework of IFRS is similar to the one of Canadian GAAP (CICA, 2009, p. 16). Both are principle-based and require professional judgment in application. While the main areas of fundamental difference can be attributable to fair value accounting and consolidation, there are several other areas of potentially significant differences in the detailed application (Blanchette, 2007).[9] In the area of long-lived assets, IFRS, like Canadian GAAP, requires impairment tests. However, the method implies considerably different procedures. Although the conceptual justification for impairment – conservatism – is the same under the two regimes, the final result can differ significantly. For example, *Eastern Platinum Ltd* reported an impairment loss of $297 million U.S. dollars under IFRS in 2008 while it had no such loss under Canadian GAAP for the same period (total assets were $593 million and $872 million U.S. dollars respectively). Leverage and profitability ratios are particularly sensitive to the measurement of long-lived assets.

On the liability side, a number of IFRSs differ from the corresponding standards under Canadian GAAP. The standards on leases, pensions and contingencies may require different levels of liabilities under IFRS. Also, the standard on share-based payments may change expenses and equity. Leverage and profitability ratios are particularly sensitive to these standards.

Differences between IFRS and Canadian GAAP do not affect cash flows. In general, IFRS does not change the cash flow statement compared with Canadian GAAP, although there may be some differences in presentation (Canadian Performance Reporting Board, 2010, p. 8). This is particularly evident for interest and dividends and in the scope of consolidation wherein consolidated cash flows depend on which entities are controlled or jointly controlled.[10]

9 There are differences between IFRS and Canadian GAAP regarding the details of application in the following areas: revenues and construction contracts; long-lived assets; investments in associates and joint ventures; government assistance; exploration and evaluation of mineral resources; leases; employee future benefits; stock-based compensation and payments; income taxes; contingencies; related party transactions; hedging; foreign currency translation; earnings per share; accounting changes; interim reporting; and various presentation issues. See the website *Canadian Standards in Transition* for information and resources on the impact of IFRS on Canadian accounting practice (CICA, 2010), including a guide for users of financial reports (Canadian Performance Reporting Board, 2010).

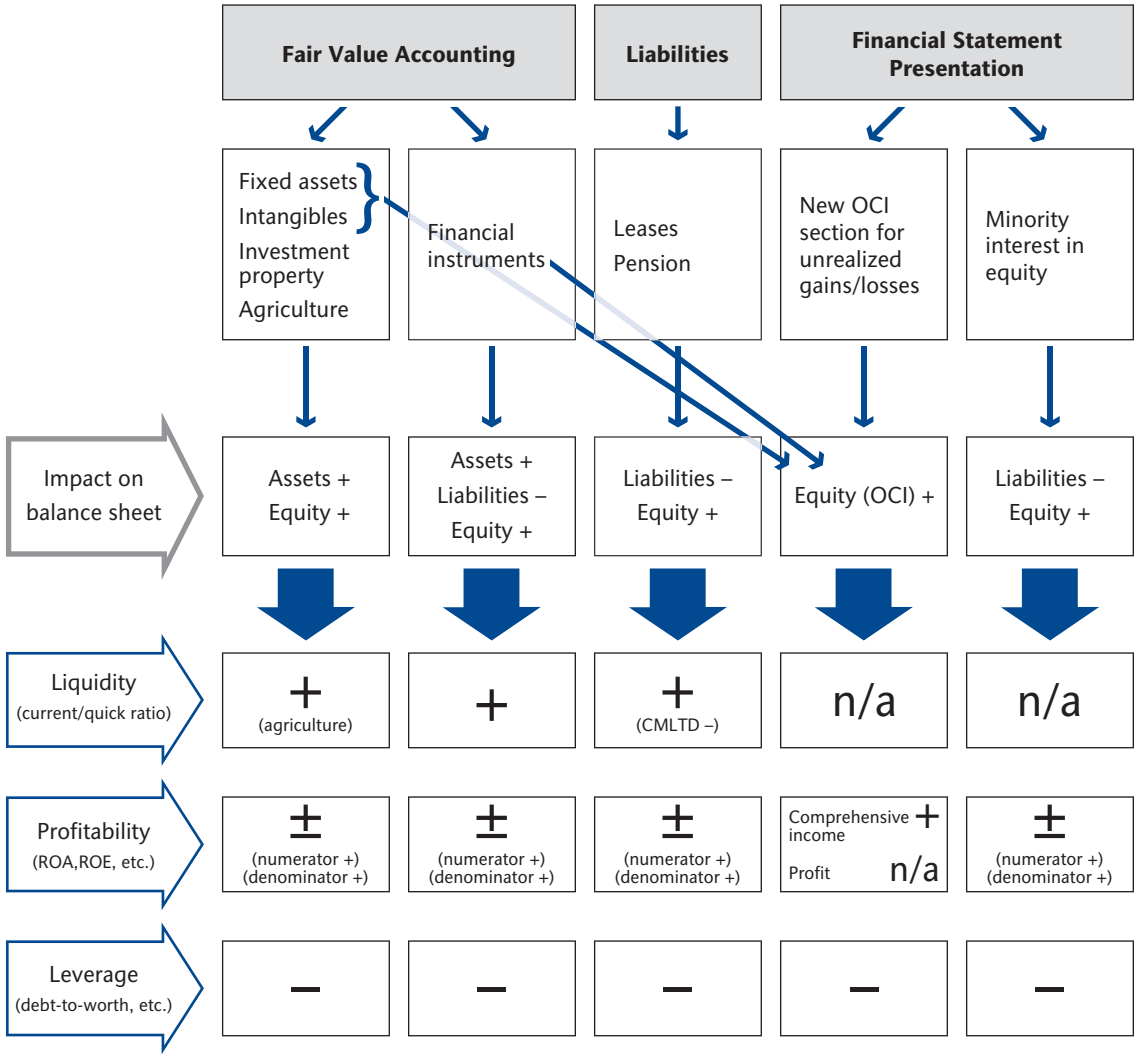
10 The criteria for control involve judgment and are not identical under IFRS and Canadian GAAP. Proportionate consolidation is applied for joint ventures under Canadian GAAP while there is a choice between the proportionate consolidation and equity methods in IFRS.

IFRS generally requires more information to be disclosed in the notes accompanying financial statements; particularly regarding assumptions, estimates, reconciliations of balance sheet items from one year to the next and other supplementary disclosures such as the remuneration of key management personnel (Canadian Performance Reporting Board, 2010, pp. 6, 17). Users of financial statements may obtain useful information from the notes to improve financial analysis and ratios, but this may be a time consuming undertaking. In addition, the comparability of ratios is certainly jeopardized when information is available in notes but not on the face of the financial statements.

Overall, the differences between IFRS and Canadian GAAP affect all financial statements. The differences in balance sheet figures, caused by fair value accounting, consolidation procedures and others, impact directly the numerator and denominator of liquidity and leverage ratios, and some components of profitability and coverage ratios. The differences on the income statement and comprehensive income affect profitability and coverage ratios. Figure B highlights the potential incremental effects on financial ratios of the IFRS adoption in Canada.

Figure B – Potential Incremental Effects on Financial Ratios of the Adoption of IFRS in Canada

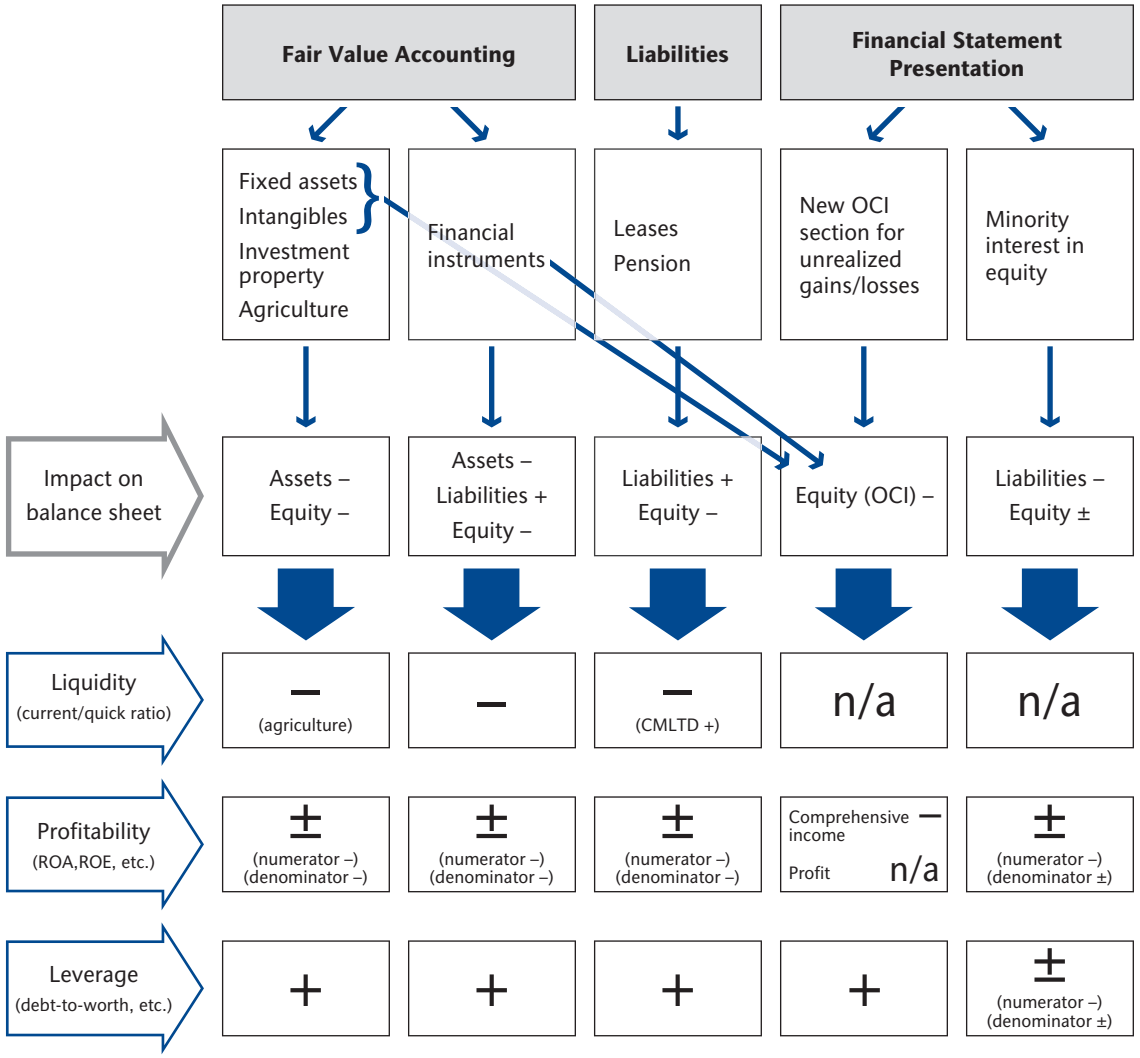
Panel A: Optimistic Scenario



Note: Optimistic scenario assumes positive effects on assets (increasing), liabilities (decreasing) and/or equity items (increasing)

CMLTD stands for current maturity of long-term debt

Panel B: Pessimistic Scenario



Note: Pessimistic scenario assumes negative effects on assets (decreasing), liabilities (increasing) and/or equity items (decreasing)

CMLTD stands for current maturity of long-term debt

Financial ratios and IFRS in practice

In 2005, IFRS became mandatory for listed companies in the European Union. In the first year of IFRS adoption, companies were required to provide comparative financial statements adjusted retroactively to IFRS for 2004. Lantto and Sahlström (2009) investigated the impact of IFRS on financial ratios in Finland, by comparing ratios calculated under IFRS and Finnish GAAP for the same time period – the year 2004. The authors found that liquidity ratios decrease under IFRS, while leverage and profitability ratios increase. Liquidity ratios decrease primarily due to additional current liabilities that result from lease accounting under IFRS (IAS 17). Leverage ratios increase as more liabilities are recognized under IFRS; these liabilities result from lease accounting (IAS 17), employee benefit obligations (IAS 19) and financial instruments (IAS 32 and 39).[11] Profitability ratios increase because profit is higher under IFRS due primarily to business combinations (IFRS 3) and the combined effects of several other standards.[12]

A review published by the Canadian Securities Administrators (CSA) provides information on differences between IFRS and Canadian GAAP identified by Canadian companies in their MD&A presented in 2009 annual reports (CSA, 2010b). The results show differences in accounting policies that are common across all industries, as well as those that are industry-specific. Common differences deal with the issues of asset impairment, revenue recognition and property, plant and equipment. Industry-specific differences deal with the issues of capitalization for mining and oil and gas companies, and fair value accounting for real estate. Overall, companies do identify the areas of differences between IFRS and Canadian GAAP in their MD&A; however, they lack specific explanations of the potential effects on the balance sheet and the income statement (see Table 4 for details).

11 Lantto and Sahlström identify other items that increase leverage or decrease equity: revenues and construction contracts (IAS 11 and 18), impairment losses (IAS 36), property, plant and equipment (IAS 16) and deferred taxes (IAS 12). They also identify items that decrease leverage: inventories (IAS 2), investment property at fair value (IAS 40), business combinations (IFRS 3) and intangible assets (IAS 38).

12 Lantto and Sahlström identify other items that increase profitability due to a reduction of the denominator in ratios such as ROE: employee benefit obligations (IAS 19), property, plant and equipment (IAS 16), financial instruments (IAS 32). By contrast, they also identify items that decrease profitability by decreasing profit or increasing the asset base or equity: share-based payments (IFRS 2), inventories (IAS 2), leases (IAS 17) and investment property (IAS 40).

Table 4 – IFRS Transition Disclosures in MD&A of Canadian Companies, 2009

Disclosures in MD&A	Industries
Impairment of assets (IAS 36): - Impairment losses are recognized using a one-step method under IFRS (two-step under Canadian GAAP); - Reversals are permitted under IFRS; - Disclosure in MD&A is limited to identifying these differences; more meaningful information would have explained the effects on increased income statement volatility under IFRS.	All industries
Revenue recognition (IAS 18): - IFRS is less detailed than Canadian GAAP on revenue recognition; - Disclosure on revenue recognition is generally silent in MD&A; investors would expect more information as revenue is often the single largest item reported in financial statements.	All industries
Property, plant and equipment (IAS 16): - Componentization of depreciation is required by IFRS; - Fair value accounting is permitted under IFRS; - Disclosures in MD&A reveal these differences; but more meaningful information could be provided on the effects on assets on the balance sheet, depreciation in the income statement and revaluation surplus in equity.	All industries
Exploration for, and evaluation of, mineral resources (IFRS 6): - IFRS allows for an approach similar to Canadian GAAP, and permits the alternative of expensing or capitalizing exploration and evaluation costs; - Not all issuers discuss the accounting policy they expect to adopt for these costs in MD&A; meaningful information would include the possible changes on balance sheet and income statement.	Mining
Exploration, evaluation and other activities on mineral resources (IFRS 6): - Canadian GAAP allows the full cost accounting method while IFRS permits to capitalize only exploration and evaluation costs; - Nevertheless, IFRS 1 allows entities that currently use the full cost accounting method to measure exploration and evaluation assets at the amount determined under Canadian GAAP and to measure assets in the development and production phases by allocating amounts based on Canadian GAAP figures as of the date of adoption; - Many issuers disclose in MD&A that they will have to revise their accounting methods and assess the appropriateness of their depletion method; more meaningful information would describe the potential impact on key balance sheet and income statement areas; - Some issuers also discuss IFRS 1 exemptions.	Oil and gas
Investment property (IAS 40): - Fair value through profit or loss can be applied under IFRS; - Many issuers disclose in MD&A that they expect to use the fair value method; more meaningful information would describe the potential impact on balance sheet and income statement.	Real estate

Note: The category "all industries" includes biotechnology, financial services, insurance, manufacturing, mining, real estate, oil and gas, retail, services, technology.

Source: IFRS Transition Disclosure Review (CSA, 2010b).

A survey of senior financial executives from across Canada provides statistics on expected effects of IFRS on financial statements (CFERF, 2010). Most often, respondents expect assets and pension liabilities to increase on the balance sheet under IFRS, and net income to decrease in the income statement. Although this does not provide information on the amounts at stake and the breakdown in assets and income statement items, it anecdotally highlights the uncertainty surrounding the implementation of IFRS in Canada. Table 5 provides additional details of the CFERF survey.

Table 5 – Expectations of Canadian Senior Financial Executives on the Adoption of IFRS

Items in financial statements	Proportion of respondents expecting an **increase** under IFRS	Proportion of respondents expecting a **decrease** under IFRS	Other (no impact, don't know or not applicable)
Assets	29%	22%	49%
Pension liabilities	27%	6%	67%
Net income	23%	28%	49%
Earnings per share	15%	21%	64%
Goodwill	2%	14%	84%

Source: CFERF, 2010, p. 19.

The present study aims to provide early evidence of the effects of IFRS on financial ratios based on actual Canadian data. The section that follows describes methodology and data used for the analysis.

4. METHODOLOGY AND DATA

4.1. Research design

The purpose of this study is to provide empirical evidence of the impact on the financial ratios of Canadian companies as experienced due to the transition to IFRS. Comparing financial ratios computed under IFRS with those obtained under Canadian GAAP requires financial statements prepared under both sets of rules for the same time period. As discussed in Section 2.3, the transitional requirements of IFRS 1 make such comparison possible in the first year of the transition to IFRS. In particular, full financial statements are available under IFRS and Canadian GAAP for at least one year prior to the year of the changeover. Additional prior financial statements are also available when the transition date is determined by management at an earlier date.

Data was collected from audited financial statements prepared under IFRS and Canadian GAAP for the same time/period and ratios calculated using figures from both sets of statements. Ratios were then compared and an empirical analysis was performed on the differences. This was followed by tests for equality of means, medians and variances between each series of ratios to ascertain if the distributions differ under IFRS and Canadian GAAP. Least-square regressions were also used to analyze the relationship between the IFRS and Canadian GAAP ratios.

4.2. Data

The data set was designed in two steps. First, accounting figures were collected from financial statements; and then financial ratios were computed.

Data from financial statements

IFRS is mandatory for Canadian listed companies for financial periods beginning on or after January 1, 2011. However, some companies could elect an early adoption, prior to 2011, subject to the approval of the CSA (CSA, 2008a, 2008b and 2009). The sample used in this analysis consists of all companies authorized by CSA members for an early adoption of IFRS and had filed audited financial statements under both Canadian GAAP and IFRS for the same period through SEDAR.

For example, if a company authorized for early adoption presented its first annual financial statements under IFRS in the period ending December 31, 2009, with a transition date of January 1, 2008, this company must also have presented comparative financial statements retrospectively adjusted to IFRS for the previous period ending December 31, 2008 as well as for the opening balance sheet as at January 1, 2008. For such a company, data was collected from the following full sets of financial statements for the same time period:

- Financial statements originally prepared under Canadian GAAP for 2008, available through the original 2008 annual report of the company, and;
- Financial statements prepared under IFRS for 2008, available through the 2009 annual report as comparative figures.

Data from the opening balance sheet as at January 1, 2008 was also collected:

- Balance sheet originally prepared under Canadian GAAP as at December 31, 2007, available through the original 2007 annual report of the company, and;
- Balance sheet prepared as at January 1, 2008, available through the 2009 annual report as comparative figures.

We found 59 authorizations for early adoption from CSA members' websites: 23 from the *Ontario Securities Commission*, 19 from the *British Columbia Securities Commission*, 9 from the *Alberta Securities Commission* and 8 from the *Autorité des marchés financiers* in Quebec. Combined, this represents 44 different companies. However, 32 of these companies had not filed financial statements under IFRS on SEDAR, as of September 8, 2010, and 3 others had no Canadian GAAP statements available on SEDAR for the periods for which IFRS statements were provided. As such, the final sample for this analysis comprises of 9 companies (Table 6).

Of the nine companies constituting the final sample, eight companies have recently transitioned to IFRS whereas another company has been applying IFRS for the past ten years. In the group of eight companies, one transitioned to IFRS in 2007, another in 2008 and six in 2009. For each of these companies, there is at least one full set of financial statements and an opening balance sheet under IFRS that can be compared to statements under Canadian GAAP for the same time or period. As well, two companies presented additional full sets of financial statements due to earlier transition dates: *Heritage Oil Corporation* made the move in 2007 and provided IFRS comparative statements for 2005 and 2006 – one extra year; *SouthGobi Energy Resources Ltd* transitioned in 2009 and provided IFRS comparative statements for 2005, 2006, 2007 and 2008 – three extra years.

Homburg Invest Inc. has been presenting financial statements in both IFRS and Canadian GAAP on an ongoing basis since 2000.[13] The IFRS statements are provided to "European shareholders who normally receive financial statements prepared under International Accounting Standards"; whereas Canadian GAAP statements are required as the company is listed in Canada (*Homburg Invest Inc.*, financial statements of 2000, notes 1 and 2). Currently, Homburg Invest Inc. is listed on the Toronto Stock Exchange (TSX) and on the NYSE Euronext Amsterdam (AEX) (*Homburg Invest Inc.*, Annual Report of 2009).

13 The auditor's reports of *Homburg Invest Inc.* related to IFRS financial statements explicitly state that they are prepared in accordance with "International generally accepted accounting principles [IAS]" (2000 to 2002), "International Financial Reporting Standards" (2003 to 2008), and "International Financial Reporting Standards as issued by the International Accounting Standards Board" (2009).

Table 6 – Selection of Companies to Form the Data Set

Number of companies that obtained an authorization to early adopt IFRS from the following CSA members (see note):		
-	Ontario Securities Commission	23
-	British Columbia Securities Commission	19
-	Alberta Securities Commission	9
-	Autorité des marchés financiers (Québec)	8
-	Department of Government Services (Newfoundland and Labrador)	0
-	Manitoba Securities Commission	0
-	New Brunswick Securities Commission	0
-	Nova Scotia Securities Commission	0
-	Saskatchewan Financial Services Commission	0
-	Securities Office (Prince Edward Island)	0
-	Superintendent of Securities (Northwest Territories)	0
-	Superintendent of Securities (Nunavut)	0
-	Superintendent of Securities (Yukon Territory)	0
		59
Less:	double-counted companies (authorization obtained from two or more CSA members)	-15
Less:	companies that did not post audited financial statements under IFRS on SEDAR by 28 July 2010	-32
Less:	companies that posted IFRS financial statements on SEDAR but for which no comparative Canadian GAAP statements are available	-3
Number of companies in the final sample		9

Note: To collect information presented in Table 6, the "Search" function was used on the websites of CSA members (all CSA members have a website accessible from the CSA website, except the Superintendent of Securities in Nunavut; CSA, 2010a). The following keywords were applied: "ifrs" and/or "adoption" and/or "decision" (as of July 28, 2010). In addition, we have verified the following other sources to corroborate the sample: the website of CICA on Canadian standards in transition (CICA, 2010); the database *IFRSsearch.com* (IFRS Search, 2010); direct communication with *Autorité des marchés financiers* in Quebec (March 24, 2010).

The final sample used for this analysis consists of eight full sets of financial statements for the year before the year of transition to IFRS, four additional sets for previous years from two companies, eight comparative opening balance sheets at transition dates, and a time series of ten full sets of financial statements for one company. This constitutes a total of 30 balance sheets and 22 full sets of financial statements (Table 7).

Table 7 – Breakdown of Companies in the Sample

	Number of companies	Full set of audited financial statements	Opening balance sheets	Balance sheets available
Financial statements of companies that shifted to IFRS recently	8	12	8	20
Financial statements of a company that uses IFRS and Canadian GAAP on an ongoing basis	1	10	n/a	10
Total	9	22	8	30

Data from the audited financial statements was manually collected. The IFRS data come from the statements prepared in the year of the transition to IFRS and containing the comparative figures. All IFRS data was taken directly on the face of IFRS statements except in cases where the figures are provided in footnotes only. In those cases, the reconciliations of GAAP to IFRS provided in footnotes were relied upon.

Canadian GAAP data was collected from the original statements as they were published in annual reports. Neither reconciliation notes presented in IFRS subsequent statements for Canadian GAAP data, nor comparative figures presented in subsequent Canadian GAAP statements are used. In this way, the Canadian GAAP data is based on the original presentation of financial statements rather than on subsequent revised classifications.

Unless a footnote providing a breakdown was provided, figures were taken from the statements without adjustment or modification. For example, the interest expense of *Thomson Reuters Corporation* is taken from a footnote to Canadian GAAP statements as it is combined with the interest income on the face of the consolidated statement of earnings. Where possible, sub-totals as presented were compiled, without reclassifying items. Otherwise, data was considered to be missing. The sub-totals relevant to the selected ratios are as follows:

- From the balance sheet: current assets, total assets, current liabilities, total liabilities, shareholders' equity.
- From the income statement: gross profit, operating profit, net profit.
- From the statement of comprehensive income: comprehensive income.
- From the cash flow statement: net operating cash flow.

Seven of the 9 companies represented by the sample operate in the mining sector. Their size however differs considerably, from $12.9 million to $42.1 billion total assets. A number of companies faced difficulties during the period considered. Three companies reported negative equity under IFRS for at least one period (four under Canadian GAAP), while three companies had no sales at all (four under Canadian GAAP in at least one year). Eight companies reported net losses in the income statement (seven under Canadian GAAP), and seven companies reported comprehensive losses (seven under Canadian GAAP). These figures introduce limitations to the empirical analysis. The financial crisis that unfolded in 2008 may have influenced significantly the financial situation of these companies. In particular, there may have been more impairment losses and other conservative adjustments in financial statements than might have been expected under better economic conditions. However, the context is the same for the two sets of standards underlying the ratios. In the absence of differences between IFRS and Canadian GAAP, there should not be any differences in underlying ratios. Although the differences identified during the analysis may be influenced by the negative economic context, the comparison is valid as the context is the same for the two sets of ratios compared. Table 8 presents detailed descriptive statistics of financial statement figures.

Table 8 – Descriptive Statistics of Financial Statements Included in the Sample

Company	Industry	Year of shift to IFRS	Years of full financial statements available	Total assets M$	Equity M$	Sales M$	Profit or loss M$	Comprehensive income or loss M$
Companies that shifted to IFRS recently								
Anooraq Resources Corporation	Mining (metals mining and exploration)	2009	2008	12.9	-3.6	0.0	-14.0	-13.8
Austral Pacific Energy	Mining (oil and gas exploration, appraisal and development)	2008	2007	60.2	-3.2	7.3	-21.8	n/a
Eastern Platinum Ltd	Mining (metals production in acquisition, development and mining)	2009	2008	722.7	619.4	139.7	-259.6	-475.1
Heritage Oil Corporation	Mining (oil and gas exploration, development and production)	2007	2005-2006	132.2	64.3	4.7	-21.3	-33.1
Northern Dynasty Minerals Ltd	Mining (copper-gold-molybdenum exploration and development)	2009	2008	167.9	163.3	0.0	-1.2	-20.6
Platmin Limited	Mining (metals exploration and development)	2009 (Dec)	2009 (Feb)	470.1	371.8	0.0	-12.5	36.0
SouthGobi Energy Resources Ltd	Mining (metals and thermal coal exploration, development and production)	2009	2005-2008	33.6	1.6	3.8	-56.2	-56.2
Thomson Reuters Corporation	Intelligent information	2009	2008	42,129.4	22,518.4	14,259.1	1,609.0	-1,628.5
Company that uses IFRS on an ongoing basis								
Homburg Invest Inc.	Real estate (investment and development)	2009	2000-2009	1,579.5	276.1	166.9	-39.5	-344.1
Average excluding Homburg Invest Inc.				5,466.1	2,966.5	1,801.8	152.8	-313.0
Average of the full sample				5,034.3	2,667.6	1,620.2	131.4	-316.9
Median excluding Homburg Invest Inc.				150.1	113.8	4.2	-17.7	-33.1
Median of the full sample				167.9	163.3	4.7	-21.3	-44.6

Note: "Year of shift to IFRS" is the first year for which accounting figures are available in IFRS. For example, Anooraq Resources Corporation presented financial statements prepared under IFRS for the first time in 2009 with a transition date as January 1, 2008. Therefore full financial statements are available under both IFRS and Canadian GAAP in 2008 for this company

Descriptive statistics are based on IFRS average values for the year(s) that full financial statements are available in both IFRS and Canadian GAAP.

All amounts are in millions of Canadian dollars or converted into Canadian dollars using the exchange rates obtained from the Bank of Canada website (Bank of Canada, 2010).

Source of industry classification: identifier located in the "Company" utility on the Toronto Stock Exchange website (TMX Group, 2010) (exception: for Austral Pacific Energy Ltd, industry classification was obtained from the annual report as the company went in receivership and was delisted in 2009).

Source of financial statements figures: SEDAR (CSA, 2010c).

Other data and computation of financial ratios

Stock prices and other selected information were collected in addition to financial statement figures. Stock prices were obtained from the website of the Toronto Stock Exchange (TMX Group, 2010) and from the annual reports of companies when available. Other information included the industry classification for each company and the reporting currency used in financial statements.

Based on the accounting figures and stock prices collected, selected ratios were computed using IFRS and Canadian GAAP. Ratios that rely on fixed assets and intangible assets such as the fixed-asset-turnover and the debt-to-tangible-net-worth were excluded from consideration as these items were inconsistently presented throughout the sample. In the mining sector which represented 77.8% of the companies in the sample, presentation of development costs was mixed. Some companies presented them as fixed assets whereas others as intangibles. To ensure appropriate classification of development costs, notes to financial statements would need to have been analyzed. Although an interesting exercise, this analysis was considered beyond the scope of this study. Likewise, ratios that use gross profit and operating profit, such as return-on invested-capital, gross-profit margin, and operating-profit-margin, were not computed as the cost of sales was not presented consistently throughout the sample and the sub-totals of "gross profit" and "operating profit" were rarely available.

One more challenge related to data was encountered. The distribution of values of ratios is spurious in cases where the denominator of the ratio can have positive and negative values. For example, the ROE has a positive value when profit and equity are both positive (assets > liabilities) but has a negative value when profit is positive and equity is negative (assets < liabilities). This latter situation is not frequently encountered when the economy is on the upside of the business cycle, where equity of companies is normally positive. However, this situation becomes more prevalent in economic downturns. It produces spurious values, for instance a large positive ROE, when there is a large loss at the numerator and a negative equity at the denominator. There is also a potential bias due to the small denominator effect such as when the denominator is close to zero. As previously discussed, the sample used in the study includes negative equity in the data. For this reason, the ROE, the comprehensive-ROE and the debt-to-worth-ratio were not included in the analysis.

A similar dichotomy is evident with the price-earnings (PE) ratios, both basic and diluted, as the denominator can be positive or negative. Since the numerator of PE ratios is always positive (the stock price), the reverse values of PE ratios were used when conducting tests. The transformed ratios reflect a return on investment (i.e. earnings per share divided by stock price), which is as relevant for this analysis as regular PE ratios.

The descriptive statistics of the remaining ratios are provided in Table 9. It should be noted that there are various levels of missing values in the sample. The ratios using balance sheet values have a maximum of 30 potential sets of values whereas other ratios rely on a maximum of 22 sets of values.

Table 9 – Descriptive Statistics of Financial Ratios

Panel A: IFRS and Canadian GAAP Ratios

	IFRS ratios								Canadian GAAP ratios							
	N	Mean	Median	Min	Max	SD	Skew	Kurt	N	Mean	Median	Min	Max	SD	Skew	Kurt
LIQUIDITY																
Current ratio	19	21.763	2.960	0.232	312.716	70.917	3.92	16.62	20	4.913	3.178	0.388	35.170	7.398	3.65	15.53
Quick ratio	19	21.667	2.287	0.232	312.716	70.944	3.92	16.62	20	4.822	3.062	0.378	35.170	7.422	3.65	15.51
LEVERAGE																
Debt ratio	30	1.204	0.639	0.027	19.152	3.431	5.01	26.72	30	0.810	0.642	0.035	6.573	1.225	3.81	17.91
Alternative debt ratio	30	1.204	0.639	0.027	19.152	3.431	5.01	26.72	30	0.845	0.659	0.035	6.573	1.220	3.77	17.76
Equity ratio	30	-0.204	0.361	-18.152	0.973	3.431	-5.01	26.72	30	0.155	0.341	-5.573	0.965	1.220	-3.77	17.76
COVERAGE																
Interest coverage	18	-5.262	0.618	-79.061	5.296	19.140	-3.43	13.79	20	-10.025	1.259	-145.022	4.621	33.910	-3.48	14.05
Fixed-charge coverage	18	-2.621	0.187	-38.786	3.653	9.818	-2.99	11.54	20	-10.001	0.592	-145.022	1.851	33.864	-3.49	14.14
Cash flow coverage	9	-30.364	-5.263	-182.885	3.840	59.972	-2.09	5.94	8	2.183	0.368	-8.723	13.724	6.782	0.24	2.63
Operating cash flow ratio	11	-2.736	-0.012	-23.020	1.318	7.004	-2.49	7.78	12	-3.459	-0.223	-18.421	1.423	6.070	-1.40	3.96
PROFITABILITY																
ROA	22	-1.520	-0.047	-17.243	0.059	4.103	-3.06	11.46	22	-0.613	-0.008	-4.765	0.039	1.375	-2.45	7.59
Comprehensive ROA	12	-2.803	-0.425	-17.243	0.077	5.310	-2.00	5.71	10	-0.727	-0.139	-4.765	0.016	1.456	-2.43	7.34
EBITDA margin	15	-1.656	0.515	-19.544	1.639	5.353	-2.73	9.61	16	-0.912	0.498	-19.663	1.174	5.035	-3.53	13.69
Net profit margin	16	-2.271	0.143	-22.257	0.944	5.742	-2.88	10.50	16	-1.430	0.086	-19.958	0.258	5.004	-3.47	13.38
Asset turnover	19	0.096	0.105	0.000	0.338	0.081	1.25	5.22	22	0.086	0.101	0.000	0.325	0.077	1.11	5.10
Reverse PE ratio	17	-0.368	-0.005	-3.028	0.219	0.812	-2.25	7.84	18	-0.170	-0.011	-1.670	0.118	0.408	-2.94	11.41
Reverse diluted PE ratio	17	-0.369	-0.005	-3.028	0.219	0.811	-2.25	7.85	18	-0.170	-0.011	-1.670	0.111	0.408	-2.94	11.43

Note: "N" is number of values, "SD" is standard deviation, "Skew" is skewness, "Kurt" is kurtosis.

Panel B: Differences between Ratios

	Medians from Panel A		Differences							
	IFRS	Canadian GAAP	N	Mean	Median	Min	Max	SD	JB	
LIQUIDITY										
Current ratio	2.960	3.178	17	19.031	0.000	-5.349	308.196	74.683	0.0000	***
Quick ratio	2.287	3.062	17	19.029	0.000	-5.349	308.196	74.683	0.0000	***
LEVERAGE										
Debt ratio	0.639	0.642	30	0.394	-0.001	-0.348	12.579	2.304	0.0000	***
Alternative debt ratio	0.639	0.659	30	0.359	-0.005	-1.130	12.579	2.320	0.0000	***
Equity ratio	0.361	0.341	30	-0.359	0.005	-12.579	1.130	2.320	0.0000	***
COVERAGE										
Interest coverage	0.618	1.259	18	2.665	0.601	-80.833	137.313	38.666	0.0000	***
Fixed-charge coverage	0.187	0.592	18	5.279	0.336	-39.664	137.313	34.315	0.0000	***
Cash flow coverage	-5.263	0.368	6	-46.302	-10.816	-196.609	0.234	77.259	0.3300	n.s.
Operating cash flow ratio	-0.012	-0.223	9	-2.844	-0.022	-24.443	0.359	8.108	0.0005	***
PROFITABILITY										
ROA	-0.047	-0.008	22	-0.907	-0.006	-12.479	0.647	2.825	0.0000	***
Comprehensive ROA	-0.425	-0.139	9	-1.407	-0.062	-12.479	0.535	4.160	0.0005	***
EBITDA margin	0.515	0.498	15	-0.779	0.093	-5.720	0.706	1.932	0.0156	**
Net profit margin	0.143	0.086	16	-0.841	0.044	-6.480	0.685	2.003	0.0023	***
Asset turnover	0.105	0.101	19	-0.003	-0.004	-0.076	0.060	0.025	0.0012	***
Reverse PE ratio	-0.005	-0.011	17	-0.189	-0.006	-1.358	0.358	0.464	0.0806	*
Reverse diluted PE ratio	-0.005	-0.011	17	-0.190	-0.006	-1.358	0.358	0.463	0.0801	*

Note: "N" is number of values, "SD" is standard deviation, "JB" is p-value of the Jarque-Berra test, "Differences" are computed as IFRS ratio minus (-) Canadian GAAP ratio.

Null hypothesis: differences follow a normal distribution.

*** null hypothesis rejected at the 1% level of confidence.

** null hypothesis rejected at the 5% level of confidence.

* null hypothesis rejected at the 10% level of confidence.

n.s.: null hypothesis not rejected significantly.

Comments regarding the ratios that use balance sheet values only (N ≤ 30):

- The liquidity ratios have missing values when sub-totals for current assets and current liabilities are not provided (N=19 and 20 in IFRS and Canadian GAAP respectively).
- The leverage ratios have values for all of the balance sheets collected (N=30).

Comments regarding other ratios (N ≤ 22):

- The interest and fixed-charge coverage ratios have missing values in a few cases where the interest expense is nil (division by zero) and where IFRS comparative data is not provided (N=18 and 20 in IFRS and Canadian GAAP respectively).
- The cash-flow-coverage and operating-cash-flow-ratio have missing values in cases where the CMLTD is nil (division by zero), where depreciation/amortization is not provided in the cash flow statement (direct method), and where IFRS comparative data is not provided (N ranges between 8 and 12).
- The ROA has values for all of the full financial statements collected (N=22).
- The comprehensive income was generally not reported prior to 2007; as such there are missing values for the comprehensive-ROA (N=12 and 10 in IFRS and Canadian GAAP respectively).
- The EBITDA and net-profit margins have a few missing values because of a zero-denominator when there are no sales in the income statement and where depreciation/amortization is not provided in the cash flow statement (N=15 and 16 in IFRS respectively; N=16 for both ratios in Canadian GAAP).
- The asset-turnover has a few missing values where IFRS comparative data is not provided (N=19 and 22 in IFRS and Canadian GAAP respectively).
- The price-earnings related ratios have a few missing values when stock prices are not available (N=17 and 18 in IFRS and Canadian GAAP respectively).

In summary, the final sample provides data for 22 full sets of financial statements covering a 12-month period (income statement, statement of comprehensive income, statement of shareholders' equity, cash flow statement) and 30 balance sheets at specific dates, given that there are 8 opening balance sheets. Therefore, there are 30 sets of data available to test ratios based exclusively on balance sheet items (two liquidity ratios and three leverage ratios) and 22 sets of data for ratios requiring full sets of financial statement figures (four coverage ratios and seven profitability ratios). The section that follows discusses the results of the analysis.

5. RESULTS

The descriptive statistics presented in Table 9 show that the ratios computed for the sample do not follow a normal distribution. This is unsurprising as the underlying accounting figures do not follow the normal distribution (see Table 8) and is consistent with prior research (Lantto and Sahlström, 2009, Mcleay and Omar, 2000; Ezzamel and Mar-Molinero, 1990). Skewness and kurtosis are very high and large discrepancies were observed between means and medians. In addition, the Jarque-Berra tests (based on skewness and kurtosis) on differences between ratios under IFRS and Canadian GAAP reject significantly the normal distribution for every ratio except the cash-flow-coverage. Therefore, nonparametrical tests on medians were conducted. Parametrical tests on means were also conducted due to the relatively small size of the data set whereas parametrical tests on variances examine volatility.

5.1. Comparison of means, medians and variances

Tests for equality of medians were performed by analyzing the differences between medians of ratios computed under IFRS and those computed under Canadian GAAP. No significant differences were found for any of the ratios with the exception of cash-flow-coverage at the 10% confidence level (the null hypothesis that medians are equal is not rejected, Panel B of Table 10). However, since the sample size is small, median estimators and related nonparametrical tests were not solely relied upon. Equality of means was tested even though there is recognition of limitation as distributions are not normal. Again, the results do not reject equality of means for any of the ratios (Panel A of Table 10).

These results suggest that the change from Canadian GAAP to IFRS is not statistically significant regarding financial ratios; however, this is an overall effect based on the central value of medians and means. These results do not show whether or not the distributions around medians/means are similar. As verification, equality of variances was also tested (Panel C of Table 10).

It was found that the variance of several ratios based on IFRS is significantly different from the variance of the same ratios based on Canadian GAAP. This means that there is a significant difference in the distribution of values around medians in the four categories of ratios:

- Liquidity (current and quick ratios) at the 1% confidence level.
- Leverage (debt, alternative-debt and equity ratios) at the 1% confidence level.
- Coverage (interest, fixed-charge and cash-flow) at the 5%, 1% and 1% confidence level respectively.
- Profitability (ROA, comprehensive-ROA and PE-related ratios) at the 1% confidence level.

Table 10 – Tests of Equality

		Panel A				Panel B				Panel C			
		Means (from Table 9)		Equality of means		Medians (from Table 9)		Equality of medians		SD (from Table 9)		Equality of variances	
	N	IFRS	Canadian GAAP	t-test p-value		IFRS	Canadian GAAP	Wilcoxon p-value		IFRS	Canadian GAAP	F-test p-value	
LIQUIDITY													
Current ratio	19-20	21.763	4.913	0.297	n.s	2.960	3.178	0.811	n.s	70.917	7.398	0.000	***
Quick ratio	19-20	21.667	4.822	0.298	n.s	2.287	3.062	0.757	n.s	70.944	7.422	0.000	***
LEVERAGE													
Debt ratio	30-30	1.204	0.810	0.556	n.s	0.639	0.642	0.684	n.s	3.431	1.225	0.000	***
Alternative debt ratio	30-30	1.204	0.845	0.591	n.s	0.639	0.659	0.492	n.s	3.431	1.220	0.000	***
Equity ratio	30-30	-0.204	0.155	0.591	n.s	0.361	0.341	0.492	n.s	3.431	1.220	0.000	***
COVERAGE													
Interest coverage	18-20	-5.262	-10.025	0.603	n.s	0.618	1.259	0.388	n.s	19.140	33.910	0.018	**
Fixed-charge coverage	18-20	-2.621	-10.001	0.379	n.s	0.187	0.592	0.474	n.s	9.818	33.864	0.000	***
Cash flow coverage	9-8	-30.364	2.183	0.149	n.s	-5.263	0.368	0.092	*	59.972	6.782	0.000	***
Operating cash flow ratio	11-12	-2.736	-3.459	0.794	n.s	-0.012	-0.223	0.829	n.s	7.004	6.070	0.660	n.s.
PROFITABILITY													
ROA	22-22	-1.520	-0.613	0.331	n.s	-0.047	-0.008	0.647	n.s	4.103	1.375	0.000	***
Comprehensive ROA	12-10	-2.803	-0.727	0.246	n.s	-0.425	-0.139	0.307	n.s	5.310	1.456	0.000	***
EBITDA margin	15-16	-1.656	-0.912	0.693	n.s	0.515	0.498	0.984	n.s	5.353	5.035	0.824	n.s.
Net profit margin	16-16	-2.271	-1.430	0.662	n.s	0.143	0.086	0.559	n.s	5.742	5.004	0.601	n.s.
Asset turnover	19-22	0.096	0.086	0.685	n.s	0.105	0.101	0.744	n.s	0.081	0.077	0.840	n.s.
Reverse PE ratio	17-18	-0.368	-0.170	0.363	n.s	-0.005	-0.011	0.987	n.s	0.812	0.408	0.009	***
Reverse diluted PE ratio	17-18	-0.369	-0.170	0.361	n.s	-0.005	-0.011	0.987	n.s	0.811	0.408	0.009	***

Note: "N" is number of values for IFRS ratios and GAAP ratios respectively, "SD" is standard deviation.
Null hypothesis: means/medians/variances are equal.
*** null hypothesis rejected at the 1% level of confidence.
** null hypothesis rejected at the 5% level of confidence.
* null hypothesis rejected at the 10% level of confidence.
n.s.: null hypothesis not rejected significantly.

For four ratios, the equality of variances is not rejected. One of the ratios – the operating cash flow ratio – is based on a cash flow figure that is normally not affected by accounting standards, except for situations where consolidation scope differs. This supports the notion that the cash flow statement is less influenced by accounting methods and estimates. The three other ratios for which the equality of variances is not rejected are classified in the profitability group: EBITDA-margin, net-profit-margin, and asset-turnover. The dot plot graphs of these ratios show less variability between individual values than the dot plot graphs of other ratios, so that the combined effects of differences do not change variances significantly.

The next step of the analysis is to examine whether the pattern or shape of the distributions differs under IFRS and Canadian GAAP.

5.2. Analysis of distributions

In theory, financial ratios should be identical if there is no difference between IFRS and Canadian GAAP. The adoption of IFRS alters accounting figures and therefore the associated financial ratios. Least-square regressions were used to study the extent to which the IFRS ratios can be explained by the corresponding Canadian GAAP ratios and to examine the degree of correlation between the variables. Running one regression per ratio; the model is as follows:

$$IFRS_{it} = \alpha + \beta\ GAAP_{it} + \varepsilon \qquad \text{(Model 1)}$$

where: IFRS is the IFRS ratio for company *i* at time *t*
α is the intercept
GAAP is the Canadian GAAP ratio for company *i* at time *t*
β is the coefficient of the variable GAAP
ε is the error term
i refers to the 9 companies in the sample
t refers to the date of balance sheet data (for N≤30) or the year-end date of period-related statements (for N≤22)

The results of regressions with intercept (Panel A of Table 11) show a strong relationship for leverage and profitability ratios, and weak relationships between series for liquidity and coverage ratios (except for the cash flow coverage). All intercepts and coefficients β of leverage ratios are significant at the 1% confidence level (with adjusted-R2 ranging from 0.881 to 0.894) and all coefficients β of profitability ratios are significant at the 1% confidence level as well (with adjusted-R2 ranging from 0.818 to 0.966). All intercepts and coefficients β of liquidity and coverage ratios are not significant and adjusted-R2 is virtually nil, except for the cash flow coverage (coefficient β is significant at the 10% level with adjusted-R2 of 0.320).

Leverage

The negative intercept of the debt-ratio is pulling down the IFRS ratio relative to the Canadian GAAP ratio while the higher-than-one coefficient β is pulling it up (Panel A of Table 11). These results imply that the debt-ratio is negative under IFRS when the ratio in Canadian GAAP is below 0.356 ($-0.944 + 2.653\beta$ is negative when $\beta<0.356$), which is simply not possible in practice. This spurious result is caused by extreme values, or outliers, that force a deviation in the slope of the regression line. For instance, one company in the sample has a debt ratio many times greater than one in two periods due to negative equity (one of them is a debt ratio of 6.6 under Canadian GAAP and 19.2 under IFRS for the same period). This pushes up the coefficient β and creates the negative intercept.

Table 11 – Regression of IFRS Ratios with Canadian GAAP Ratios

Dependent variable (IFRS)		Panel A - Model 1 with intercept					Panel B - Model 1 with no intercept			
		Intercept	β GAAP	N	Adj-R2	DW	β GAAP	N	Adj-R2	DW
LIQUIDITY										
Current ratio	Coefficient	20.962	0.632	17	neg.	2.379	1.887	17	neg.	2.349
	t-stat	0.930	0.260				0.949			
		n.s.	n.s.				n.s.			
Quick ratio	Coefficient	20.738	0.667	17	neg.	2.387	1.893	17	neg.	2.349
	t-stat	0.930	0.280				0.948			
		n.s.	n.s.				n.s.			
LEVERAGE										
Debt ratio	Coefficient	-0.944	2.653	30	0.894	2.449	2.290	30	0.843	2.044
	t-stat	-3.840	15.650				13.409			
		***	***				***			
Alternative debt ratio	Coefficient	-1.032	2.646	30	0.881	2.525	2.241	30	0.823	2.015
	t-stat	-3.910	14.720				12.477			
		***	***				***			
Equity ratio	Coefficient	-0.614	2.646	30	0.881	2.483	2.581	30	0.853	2.010
	t-stat	-2.820	14.720				12.994			
		***	***				***			
COVERAGE										
Interest coverage	Coefficient	-5.092	0.021	18	neg.	0.042	0.056	18	neg.	0.034
	t-stat	-1.070	0.150				0.409			
		n.s.	n.s.				n.s.			
Fixed-charge coverage	Coefficient	-2.304	0.040	18	neg.	0.084	0.056	18	neg.	0.052
	t-stat	-0.950	0.570				0.810			
		n.s.	n.s.				n.s.			
Cash flow coverage	Coefficient	-23.961	-6.235	6	0.320	0.024	-7.471	6	0.343	0.029
	t-stat	-0.910	-1.830				-2.430			
		n.s.	*				**			
Operating cash flow ratio	Coefficient	-3.488	-0.210	9	neg.	0.000	0.190	9	neg.	0.000
	t-stat	-1.240	-0.160				0.145			
		n.s.	n.s.				n.s.			
PROFITABILITY										
ROA	Coefficient	0.223	2.842	22	0.902	3.770	2.779	22	0.904	3.745
	t-stat	0.740	13.930				15.137			
		n.s.	***				***			
Comprehensive ROA	Coefficient	0.750	3.663	9	0.966	0.756	3.439	9	0.955	1.403
	t-stat	1.885	15.146				14.222			
		*	***				***			
EBITDA margin	Coefficient	-0.815	0.959	15	0.862	0.537	0.987	15	0.847	0.363
	t-stat	-1.560	9.385				9.332			
		n.s.	***				***			
Net profit margin	Coefficient	-0.730	1.078	16	0.875	0.566	1.119	16	0.867	0.424
	t-stat	-1.380	10.280				10.803			
		n.s.	***				***			
Asset turnover	Coefficient	-0.007	1.039	19	0.903	1.231	0.991	19	0.906	1.276
	t-stat	-0.740	12.990				21.280			
		n.s.	***				***			
Reverse PE ratio	Coefficient	-0.052	1.764	17	0.818	0.426	1.812	17	0.826	0.440
	t-stat	-0.572	8.542				9.793			
		n.s.	***				***			
Reverse diluted PE ratio	Coefficient	-0.053	1.764	17	0.818	0.425	1.812	17	0.826	0.438
	t-stat	-0.576	8.536				9.794			
		n.s.	***				***			

Note: "N" is number of values, "Adj-R2" is adjusted R2, "DW" is Durbin-Watson value (providing a rough check for consistency of regression results; a DW-value close to zero combined with a high R2 is a symptom of spurious regression).

*** coefficient significant at the 1% level of confidence.

** coefficient significant at the 5% level of confidence.

* coefficient significant at the 10% level of confidence.

n.s.: coefficient not significant.

neg.: negligible.

Another regression with no intercept was run to determine the impact on the coefficient β (Panel B of Table 11). The goodness fit is reduced in that case but it avoids the problem of negative intercept. The results are similar with a coefficient β of 2.29, significant at the 1% level, and an adjusted-R2 of 0.843. The slope is clearly positive and above one, suggesting that the leverage in IFRS increases 2.29 times faster than the leverage in Canadian GAAP. Similar effects apply to the other two leverage ratios – alternative-debt-ratio and equity-ratio.

One of the major differences between IFRS and Canadian GAAP is the presentation of minority interest. It is presented within shareholders' equity under IFRS and outside of it under Canadian GAAP. The results of regression for the debt-ratio are similar to those for the alternative-debt-ratio. This suggests that whether or not the minority interest figure is incorporated in liabilities under Canadian GAAP does not affect the results significantly. However, the lower intercept and coefficient β with the alternative ratio is consistent with the underlying theory. If the debt ratio under Canadian GAAP is higher, i.e. the minority interest figure is incorporated in the numerator, then the intercept and regression coefficient β should be lower since the ratio under IFRS is unchanged. The issue of presenting minority interest exists only when companies hold less than 100% of subsidiaries. The fact that no significant overall effect was found is mainly due to the small number of companies in our sample having minority interest figures on the balance sheet (N=3). This result does not preclude significant effects from happening on an individual basis in practice.

Profitability

The intercept is not significant in every regression of profitability ratios, except for the comprehensive-ROA at the 10% confidence level (Panel A of Table 11). However, two types of results regarding the coefficients β were observed. The ratios reflecting a return (i.e. ROA, comprehensive-ROA, reverse-price-earnings-ratio and reverse-diluted-price-earnings ratios; hereafter ROA-ratios and PE-ratios respectively) show significant coefficients β well above one; whereas other ratios (i.e. margins and asset-turnover) have coefficients β near and around one.

The coefficients β of return ratios are above one and significant at the 1% confidence level (with adjusted-R2 ranging from 0.818 and 0.966). This implies that the slope is positive and the return in IFRS increases faster than the return under Canadian GAAP (2.84 and 3.66 times faster for ROA-ratios and 1.76 for PE-ratios). This holds true in the opposite direction: the ROA-ratios decrease 2.84 and 3.66 times faster in IFRS while the PE-ratios decrease 1.76 times faster when they are negative under Canadian GAAP. When the regression is run with no intercept, results are similar with coefficient β ranging from 1.81 to 3.44 (with adjusted-R2 from 0.826 to 0.955; Panel B of Table 11).

It should be noted that no significant difference between PE-ratios based on basic versus diluted earnings per share were found.

Liquidity and coverage

There are no significant results in the regressions on liquidity and coverage ratios, except for the cash-flow-coverage with adjusted-R2 of 0.320 and 0.343 (Panels A and B of Table 11). This is caused by extreme values that are disconnected from the majority of other values in the sample. This also means that the relationship between IFRS and Canadian GAAP ratios is non-linear and that other econometric methods could be used or the data transformed (such as suggested in Mcleay and Omar, 2000, and in Ezzamel and Mar-Molinero, 1990) for the analysis. This is an area of future research.

5.3. Industry and other effects

The context of this study may suggest the presence of some effects specific to the nature of data and to the time period in which it is collected. Additional regressions were run to observe the impact of three groups of effects on the results: (i) industry/sector, (ii) exceptions and exemptions under IFRS 1, and (iii) recent shift to IFRS versus applying IFRS on an ongoing basis.

The model is adapted from Model 1 with three additional dummy variables. Since the sample size is small, three separate regressions were run.

$$IFRS_{it} = \alpha + \beta_1 GAAP_{it} + \beta_j DUMMY_{jit} + \varepsilon$$

where: $DUMMY_j$ refers to three dummy variables (j= 2, 3 or 4)

Industry effect

It appears that the companies in the mining sector have certain incentives to early adoption of IFRS as early adopters primarily consist of companies operating in this sector. Additional tests were run to see if the results are sensitive to the industry effect using a dummy variable for mining versus non-mining companies.[14]

$$IFRS_{it} = \alpha + \beta_1 GAAP_{it} + \beta_2 MINING_{it} + \varepsilon \qquad \text{(Model 2)}$$

where: MINING is 1 for companies in the mining sector, 0 otherwise

The results of Model 2 are provided in Panel A of Table 12. They show no significant effect on the dummy variable "MINING" for liquidity and leverage ratios, but significant effects for three coverage and three profitability ratios.

14 See Deloitte (2008) and PWC (2007) for a discussion of the impact of IFRS in the Canadian mining sector.

Table 12 – Regression of IFRS Ratios with Canadian GAAP Ratios and Dummies

Dependent variable (IFRS)		Panel A - Model 2						Panel B - Model 3						Panel C - Model 4					
		Intercept	β_1 GAAP	β_2 MINING	N	Adj-R2	DW	Intercept	β_1 GAAP	β_3 OPEN	N	Adj-R2	DW	Intercept	β_1 GAAP	β_4 SHIFT	N	Adj-R2	DW
LIQUIDITY																			
Current ratio	Coefficient	0.974	0.477	23.572	17	neg.	2.460	29.502	1.563	-32.596	17	neg.	2.162	(not tested due to a lack of variations/ observations in the sample)					
	t-stat	0.017	0.190	0.390				1.155	0.570	-0.755									
		n.s.	n.s.	n.s.				n.s.	n.s.	n.s.									
Quick ratio	Coefficient	0.892	0.520	23.349	17	neg.	2.460	29.462	1.622	-33.102	17	neg.	2.159	(not tested due to a lack of variations/ observations in the sample)					
	t-stat	0.016	0.208	0.386				1.159	0.592	-0.765									
		n.s.	n.s.	n.s.				n.s.	n.s.	n.s.									
LEVERAGE																			
Debt ratio	Coefficient	-1.231	2.642	0.492	30	0.895	2.574	-1.143	2.706	0.583	30	0.896	2.604	-1.348	2.651	0.608	30	0.898	2.632
	t-stat	-3.585	15.678	1.187				-3.914	15.609	1.235				-3.628	15.924	1.430			
		***	***	n.s.				***	***	n.s.				***	***	n.s.			
Alternative debt ratio	Coefficient	-1.226	2.635	0.339	30	0.880	2.550	-1.247	2.705	0.624	30	0.884	2.547	-1.340	2.640	0.469	30	0.882	2.594
	t-stat	-3.328	14.502	0.762				-3.983	14.689	1.249				-3.353	14.690	1.025			
		***	***	n.s.				***	***	n.s.				***	***	n.s.			
Equity ratio	Coefficient	-0.409	2.635	-0.339	30	0.880	2.550	-0.457	2.705	-0.624	30	0.884	2.547	-0.301	2.640	-0.469	30	0.882	2.594
	t-stat	-1.179	14.502	-0.762				-1.832	14.689	-1.249				-0.802	14.690	-1.025			
		n.s.	***	n.s.				*	***	n.s.				n.s.	***	n.s.			
COVERAGE																			
Interest coverage	Coefficient	2.193	-0.087	-20.949	18	0.167	0.145	n/a						1.803	-0.056	-16.890	18	0.077	0.093
	t-stat	0.416	-0.662	-2.318										0.310	-0.408	-1.844			
		n.s.	n.s.	**										n.s.	n.s.	*			
Fixed-charge coverage	Coefficient	1.709	-0.017	-11.471	18	0.234	0.133	n/a						1.672	-0.003	-9.718	18	0.153	0.091
	t-stat	0.659	-0.256	-2.598										0.585	-0.048	-2.163			
		n.s.	n.s.	***										n.s.	n.s.	**			
Cash flow coverage	Coefficient	9.445	-5.096	-73.849	6	0.597	0.469	n/a						2.534	-5.455	-43.357	6	0.243	0.156
	t-stat	0.354	-1.896	-1.935										0.057	-1.461	-0.772			
		n.s.		*										n.s.	n.s.	n.s.			
Operating cash flow ratio	Coefficient	0.806	-0.353	-4.916	9	neg.	0.000	n/a						(not tested due to a lack of variations/ observations in the sample)					
	t-stat	0.093	-0.251	-0.526															
		n.s.	n.s.	n.s.															
PROFITABILITY																			
ROA	Coefficient	0.000	2.938	0.563	22	0.901	3.864	n/a						0.008	2.915	0.476	22	0.890	3.837
	t-stat	0.001	12.731	0.908										0.019	12.857	0.779			
		n.s.	***	n.s.										n.s.	***	n.s.			
Comprehensive ROA	Coefficient	0.075	3.812	1.194	9	0.973	0.343	n/a						0.083	3.740	0.938	9	0.967	0.536
	t-stat	0.141	16.402	1.691										0.115	15.036	1.095			
		n.s.	***	*										n.s.	***	n.s.			
EBITDA margin	Coefficient	0.193	0.788	-4.342	15	0.978	0.734	n/a						0.177	0.839	-3.293	15	0.939	0.229
	t-stat	0.807	17.391	-8.423										0.423	11.400	-4.190			
		n.s.	***	***										n.s.	***	***			
Net profit margin	Coefficient	0.152	0.929	-3.504	16	0.944	0.312	n/a						0.167	0.971	-2.801	16	0.923	0.269
	t-stat	0.372	11.870	-4.282										0.333	10.933	-3.152			
		n.s.	***	***										n.s.	***	***			
Asset turnover	Coefficient	-0.016	1.079	0.011	19	0.900	1.517	n/a						(not tested due to a lack of variations/ observations in the sample)					
	t-stat	-1.034	11.042	0.736															
		n.s.	***	n.s.															
Reverse PE ratio	Coefficient	-0.025	1.770	-0.050	17	0.806	0.481	n/a						-0.021	1.774	-0.050	17	0.806	0.482
	t-stat	-0.183	8.267	-0.290										-0.144	8.210	-0.282			
		n.s.	***	n.s.										n.s.	***	n.s.			
Reverse diluted PE ratio	Coefficient	-0.025	1.770	-0.050	17	0.806	0.479	n/a						-0.022	1.774	-0.050	17	0.806	0.480
	t-stat	-0.188	8.260	-0.286										-0.149	8.202	-0.278			
		n.s.	***	n.s.										n.s.	***	n.s.			

Note: "N" is number of values, "Adj-R2" is adjusted R2, "DW" is Durbin-Watson value (providing a rough check for consistency of regression results; a DW value close to zero combined with a high R2 is a symptom of spurious regression).

*** coefficient significant at the 1% level of confidence.

** coefficient significant at the 5% level of confidence.

* coefficient significant at the 10% level of confidence.

n.s.: coefficient not significant.

neg.: negligible.

The dummy variable "MINING" is significant at the 1% confidence level for EBITDA-margin and net-profit-margin, with negative coefficients β_2 (adjusted-R2 of 0.978 and 0.944). This result suggests that the mining sector has a negative impact on profitability in IFRS based on income statement measures (EBITDA and net profit). This result also reveals that under IFRS, the profitability of mining companies is affected to a greater extent than the profitability of companies in other sectors during the period tested. However, the dummy is also significant (at the 10% level) for the comprehensive-ROA, but with a positive coefficient β_2 (adjusted-R2 of 0.973). The latter result suggests a positive impact on "comprehensive" profitability in IFRS for companies operating in the mining sector. As such, the impact on comprehensive income is opposite to that on net profit. This represents an interesting area of future research.

The dummy variable "MINING" is also significant and negative for three of the four coverage ratios (interest, fixed-charge and cash-flow) at confidence levels between 1% and 10%. The adjusted-R2 increases for these ratios from negligible (or 0.320 for cash flow coverage) in Model 1 to 0.167-0.597 in Model 2. This suggests that the negative effect on companies in the mining sector is greater compared to other sectors when it comes to coverage ratios in IFRS.

Effect of exceptions and exemptions allowed by IFRS 1

As discussed in Section 2.3, IFRS 1 allows a number of exceptions or one-time decisions on selected accounting issues. It remains unknown whether the results observed (or not observed) in this study are due to differences between regular IFRS and Canadian GAAP or due to the occasion of one-time decisions allowed by IFRS 1. One of the allowed exemptions deals with the initial capitalization of costs in the mining, and oil and gas industries (IFRS 1.D8A), which may represent a significant limitation as the sample is primarily composed of mining companies. However, use of a dummy variable to capture the separate impact of IFRS 1 on the opening balance sheet, at the transition date, can mitigate through the following model:

$$IFRS_{it} = \alpha + \beta_1 GAAP_{it} + \beta_3 OPEN_{it} + \varepsilon \qquad \text{(Model 3)}$$

where: OPEN is 1 for the opening balance sheet subject to IFRS 1, 0 otherwise

The results of Model 3 are provided in Panel B of Table 12. The dummy variable "OPEN" is not significant for liquidity and leverage ratios and the regressions on liquidity ratios have negligible adjusted-R2, which does not provide any explanatory power. The coverage and profitability ratios do not involve balance sheet figures at the transition date and thus are not tested as IFRS 1 is not directly applicable.

These results suggest that there is no evidence of particular variations in ratios obtained based on IFRS and Canadian GAAP at the date of opening balance sheet. The exceptions and exemptions of IFRS 1 do not affect significantly the differences in ratios computed based on our sample. Testing specific adjustments of IFRS 1 with a larger sample is likewise an interesting area for future research.

Effect of the recent shift to IFRS versus ongoing application

As described in Section 4.2, the ratios in the sample were computed from two groups of financial statements. The first group consists of financial statements of eight companies having recently transitioned to IFRS. The second consists of financial statements from one company applying IFRS on an ongoing basis over a period of ten years. A dummy variable is used to distinguish between the two groups.

$$IFRS_{it} = \alpha + \beta_1 GAAP_{it} + \beta_4 SHIFT_{it} + \varepsilon \qquad \text{(Model 4)}$$

where: SHIFT is 1 for companies having shifted recently to IFRS, 0 for ongoing application of IFRS

The results of Model 4 are provided in Panel C of Table 12. They show no significant effect on the dummy variable "SHIFT" for leverage ratios, but significant effects for two coverage and two profitability ratios. Liquidity ratios and two other ratios (operating-cash-flow-ratio and asset-turnover) could not be tested due to lack of variations/observations in the sample, creating a multicolinearity problem (near singular matrix).

The dummy variable "SHIFT" is significant at the 1% confidence level for the EBITDA and net-profit margins, with a negative coefficient β_4 (adjusted-R2 of 0.939 and 0.923). This result suggests that the profitability of companies that shifted recently to IFRS is affected more negatively than the profitability of companies applying IFRS on an ongoing basis. But since there is only one company in the latter group of the sample, testing with a larger sample is necessary and may represent an area of future research.

The dummy variable "SHIFT" is also significant and negative for two coverage ratios (interest and fixed-charge) at the 10% and 5% confidence level (adjusted-R2 increasing from negligible in Model 1 to 0.077-0.153 in Model 4). These results are consistent with greater negative effects of IFRS on profitability for companies that recently shifted to IFRS.

6. CONCLUDING REMARKS AND RECOMMENDATIONS

IFRS relies more heavily on fair value accounting, affecting assets, liabilities and equity items on the balance sheet, as well as profit or comprehensive income. In particular, impairment adjustments can differ significantly in some situations. Other differences imbedded in IFRS originate from the entity theory in consolidation, and a number of specific practices. Under the entity theory, the variations and cumulative values of minority shareholders are incorporated directly in equity. In contrast, under pre-existing Canadian GAAP, minority interests are excluded from equity and their share of profit is included in the expenses on the income statement. Accounting for leases, pensions and share-based payments also affect expenses, liabilities and equity items.

The main findings of this study relate to the volatility of ratios. Preliminary evidence reveals a significantly higher volatility of most ratios computed under IFRS when compared with ratios computed under Canadian GAAP for early adopters of IFRS. Differences between means and medians of ratios were also observed although the differences are not statistically significant. The distribution of means and medians of financial ratios suggests that IFRS does not affect significantly the financial condition of companies. However, important individual discrepancies do exist in some cases. In particular, the maximum values of several ratios are higher and the minimum values are lower under IFRS (Table 9). Moreover, the variance of several ratios computed under IFRS is significantly higher at the 1% level of confidence for liquidity and leverage ratios (i.e. current, quick, debt, alternative-debt, and equity ratios), for one coverage ratio – the cash-flow-coverage, and for four profitability ratios (i.e. ROA, comprehensive ROA and PE-related) (Table 10).[15] Overall, there is a wider range of values in most ratios under IFRS and more variations when compared with ratios under Canadian GAAP.

Least-square regressions were used to verify the extent to which IFRS ratios can be explained by corresponding Canadian GAAP ratios and the degree to which the relationship is correlated (Table 11). The model has each IFRS ratio as the dependent variable and the corresponding Canadian GAAP ratio as the independent variable (with coefficient β). In the absence of differences between IFRS and Canadian GAAP, the ratios would be identical under the two sets of rules and the regressions would show no intercept with coefficient β equal to one and R2 equal to 100%. Results of the analysis confirm the increased volatility of leverage and profitability ratios under IFRS. The coefficients β of every ratio in these categories are significant at the 1% confidence level and above one (except for the EBITDA-margin at 0.959) with adjusted-R2 ranging from 0.818 to 0.966.[16] A coefficient β above one indicates that the value of the IFRS ratio is amplified in comparison to the Canadian GAAP ratio, subject to the value of the intercept (which is fixed). This implies larger positive variations of the IFRS ratio when the

15 On the other hand, the variance of two ratios is significantly lower under IFRS than under Canadian GAAP: interest-coverage (at the 5% level of confidence) and fixed-charge-coverage (at the 1% level).

16 Three ratios have a coefficient β near one: EBITDA-margin is below one at 0.959; net-profit-margin is at 1.078; asset-turnover is at 1.039. These results are consistent with the tests of equality of variances which were not significant for these three particular ratios (see Table 10).

Canadian GAAP ratio is positive and larger negative variations of the IFRS ratio when the Canadian GAAP ratio is negative. The end result is more volatility of IFRS ratios although there is no significant difference in the overall means and medians compared with ratios under Canadian GAAP. Results are similar when regressions are forced to have no intercept.

Tests for three specific effects related to particular characteristics of the data (Table 12) were performed. First, a significant industry effect for six ratios was found, with five ratios reflecting a lower profitability or coverage for mining companies under IFRS compared with Canadian GAAP. But this result may be influenced by the small size of the sample and an insufficient number of companies from other sectors. Our test uses a dummy variable for mining versus non-mining companies (seven versus two companies respectively). Second, we find no significant effect associated to the exceptions and exemptions allowed in IFRS 1. This result was obtained by isolating the opening balance sheet, at the transition date, with a dummy variable. A more thorough testing is required to verify further the effects of IFRS 1 on ratios at the transition date. Third, we find that the profitability of companies having recently transitioned to IFRS is affected more negatively by IFRS than the profitability of the company applying IFRS on an ongoing basis. However, this result is not robust as the sample includes only one company in the latter situation.

Our results differ from those of Lantto and Sahlström (2009) regarding the effects of IFRS on ratios in the European context. Our study finds no significant difference between medians of all ratios (except one – cash flow coverage) computed for Canadian early adopters. In contrast, Lantto and Sahlström report significant differences in one liquidity ratio, two leverage and four profitability ratios, including the market-based price-earnings-ratio. However, Lantto and Sahlström also report that IFRS considerably changes the magnitude of financial ratios, which is consistent with our findings of higher volatility in ratios under IFRS for Canadian early-adopters.

The increased volatility of IFRS ratios that we observe with Canadian early-adopters is associated to the underlying accounting figures. However, the exact source of the volatility remains unclear. Is it due to incremental adjustments that are required under IFRS but not under Canadian GAAP (as, for instance, unrealized gains or losses on items measured at fair value in IFRS vs. historical cost in Canadian GAAP)? Or is it driven by adjustments or methods applied in the IFRS principle-based standards allowing more discretion and judgment by management? Or is there another reason? The present analysis cannot provide an unequivocal answer. Identification of the specific areas of accounting standards that explain the increased volatility of ratios under IFRS may represent an interesting area of future research. Recent literature highlights some of the areas that may be impacted by IFRS in the Canadian context. Among those are the areas of fair value accounting, impairment, revenue recognition, capitalization, pension and scope of consolidation.

The objective of this paper is to provide preliminary evidence regarding the impact of IFRS on financial ratios in Canada. It is noteworthy however that this evidence is subject to a number of important limitations due to the nature of data and timing. First, the sample relied upon is limited in size; it consists of 30 balance sheets and 22 other financial statements collected from

9 companies. Second, given that all companies in the sample are voluntary early adopters, the results may be driven by factors that apply to them as such but may be less relevant to mandatory adopters. Third, the presence of an industry effect is fairly evident as 77.8% of the companies in the sample operate in the mining sector. This is noteworthy given the fact that the sample represents 100% of early adopters in Canada for which financial statements were available on SEDAR at the time. It seems evident that incentives to early adopt IFRS are higher for mining companies. Fourth, it is likely that the 2008 financial crisis had a certain influence on the data relied upon in the analysis.

While preliminary testing shows significant results, those results are incomplete and may not represent the overall impact that will affect Canadian listed companies in the future; particularly in periods of economic growth, as opposed to financial crisis. In this study, the sample is based on audited financial statements – the most accepted reliable source of accounting information available. Future research could consider extending the analysis to interim statements to increase the sample size; this, though, would affect the reliability of results. It will also be possible to increase the sample size with data of mandatory adopters following the IFRS changeover in 2011 in Canada.[17]

Recommendations

We encourage analysts to adopt a cautious approach when examining financial ratios during the transition to IFRS in Canada. Comparing ratios based on IFRS figures with those based on Canadian GAAP is not fully appropriate. Users of financial statements need to distinguish reported performance changes caused by the transition to IFRS from those caused by changes in the business (Canadian Performance Reporting Board, 2010). One possible solution may be to recalculate previous ratios using IFRS retroactive information presented in the year of the transition. However, this may be a costly exercise which is still subject to limitations such as exemptions and exceptions allowed by IFRS 1. Analysts need to be aware of the main features of IFRS that differ from Canadian GAAP.

It is encouraging that preliminary evidence does not show statistically significant differences between means and medians of ratios computed under IFRS and Canadian GAAP; however, relying on these results may be daring. While IFRS does not influence significantly overall financial ratios, there are notable differences at the level of individual ratios. This is also confirmed by a noticeable increase in the volatility of a number of IFRS ratios, expanding values above and below the medians. Financial analysts should pay particular attention to situations where IFRS and Canadian GAAP lead to uneven results. Otherwise, the comparability may be impaired and the trend analysis misleading.

Interestingly, we do not observe the same effect on volatility for the operating-cash-flow-ratio as the equality of variances is not rejected for this ratio. The reason may lie in the fact that cash flows are not affected by changes in accounting practices except for situations where the scope of

17 Another possibility of future research is to transform data to correct for outliers (such as suggested in Mcleay and Omar, 2000, and in Ezzamel and Mar-Molinero, 1990).

consolidation changes. We recommend relying on cash flow analysis, particularly in cases when accounting practices are subject to uncertainty or the sole discretion of management.

Missing figures in financial statements and some other reasons did not permit testing of certain financial ratios. The fact that operating and gross profits are not presented in a consistent manner or not otherwise available in financial statements is an important consideration for analysts. We recommend verifying the uniformity of the underlying figures when using gross profit and operating profit margins in profitability analysis.

Finally, we advise users of financial statements to be mindful of the new feature – comprehensive income – for which we suggest two ratios: the comprehensive-ROA and the comprehensive-ROE. These ratios are adapted from the *regular* ROA/ROE but with the comprehensive income at the numerator. The comprehensive income incorporates unrealized gains and losses that bypass the profit of the income statement. A difference between the regular and the comprehensive versions of ROA/ROE should prompt further investigation of the underlying causes.

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