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The Effect of IFRS on the Financial Ratios of Canadian Public Mining Companies.

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Honors Thesis Signature Approval Form

The Effect of IFRS on the Financial Ratios of Canadian Public Mining Companies

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Executive Summary

The objective of this study is to add to the body of research concerning International Financial Reporting Standards (IFRS). To accomplish this objective, it will examine whether Canada's adoption of IFRS, which replaced Canadian Generally Accepted Accounting Principles (GAAP), appears to affect the reported financial performance of Canadian public mining companies. Financial information for 2010 from the audited financial statements, as stated under IFRS and Canadian GAAP, were used to compute selected financial ratios. These financial ratios were tested to determine if statistically significant differences in their dispersion and central tendency resulted from adopting IFRS. It was found that no statistically significant differences existed in the dispersion of the ratios. However, statistically significant differences were found in the central tendency of three of the ratios: quick ratio, return on assets, and comprehensive return on assets. The results of this study will provide valuable information for investors, Canadian public mining companies, and government policy makers in other countries around the world.

Chapter 1: Introduction

Acceptance of International Financial Reporting Standards (IFRS) is a significant challenge that the accounting profession faces today. Issues that are frequently discussed include the need for IFRS, differences between IFRS and existing standards, and criticisms of IFRS. There is also much discussion of the widespread acceptance of IFRS and of the results of IFRS adoption. This discussion is especially relevant to Canada, which recently adopted IFRS on January 1, 2011. These topics will be examined to provide background information on the topic. The purpose of this research will also be explained. All of this information will provide background information on the issue and explain the reason for pursuing this research.

Need for IFRS

The purpose of financial reporting is to provide reasonably accurate information about a company's financial performance to investors and other interested parties. To ensure that the financial performance of various companies can be compared, standards have been made that enable consistent preparation of financial reports. Until recently, these standards have generally been set by individual countries. While these standards have served their purpose well, they are often viewed today as being no longer adequate.

Global standards have been increasingly called for in recent years. The stated reason is that businesses and the marketplace in which they operate have become increasingly global. Therefore, investors and other capital market participants want financial statements to have worldwide transparency and comparability (Gornik-Tomaszewski & Showerman. 2010). As a

result, many countries (including the United States, Canada, Australia, and France) have been active participants in shaping and forming a set of international standards to be known as International Financial Reporting Standards, or IFRS (Godfrey & Chalmers. 2007). This set of standards was designed to ensure unified reporting of financial information worldwide and, consequently, to meet the need for a global set of standards (Gornik-Tomaszewski & Showerman. 2010).

Changes under and Criticisms of IFRS

IFRS contains many changes over previous standards. Valuing inventory using the last-in-first-out assumption of cost flow is not permitted under IFRS (Kieso, et. al. 2011). IFRS uses a method for testing the impairment of long-term assets that is more stringent than previous standards such as United States Generally Accepted Accounting Principles (U.S. GAAP); but, companies reporting under IFRS may reverse impairment losses, a practice which is prohibited under U.S. GAAP (Kieso, et. al. 2011). These differences represent some of the changes in specific accounting practices. Perhaps the most significant change, however, is in type of standards. Previous standards, especially U.S. GAAP, tended to use prescriptive and complex rules for individual situations (Pitt. 2006). However, IFRS uses a conceptual framework to create consistent standards that are based on principles (Krivogorsky. 2011). As a result, accountants who use IFRS will often be "looking into one sentence, and trying to apply that in principle," as opposed to researching thousands of pages in other standards such as U.S. GAAP for a specific rule (Hong. 2008). These changes represent significant differences from previous standards.

As a result of these changes, many criticisms have been made of IFRS. Some criticisms are against specific changes under IFRS. Regarding disclosure requirements, one study concluded that "systematic non compliance" currently exists in the valuation of goodwill and that such non compliance could be the result of the impairment testing method used under IFRS (Carlin & Finch. 2008). Other criticisms focus on problems that can arise when a company implements IFRS. One article suggests that companies, particularly those in the United States, would face challenges such as losing much of the interpretive guidance under U.S. GAAP and having to rely more heavily on the judgment of managers and auditors (Elena, et. al. 2009). A few criticisms have even been made against the organization that oversees IFRS. One article claims that the International Financial Reporting Standards Foundation, which oversees the formation of IFRS, has failed to guard the public interest and desires to serve its own interests instead. As evidence, the author discusses the IFRS Foundation's failure to respond to the 2008 financial crisis and its new constitution, which removes references to the public interest (Murphy. 2011). However, despite these criticisms, IFRS enjoys wide acceptance around the world.

Acceptance and Effects of IFRS

The acceptance of IFRS can be seen from the number of countries that utilize it. As of 2011, companies are required or allowed to prepare their financial reports in accordance with IFRS in over 120 countries or other reporting jurisdictions. This list includes Israel, Australia, New Zealand, all member nations of the European Union, and, as of January 1, 2011, Canada. Adoption of IFRS in Mexico is scheduled for 2012 (AICPA. 2011). IFRS also enjoys a degree

of acceptance even in many countries that have not yet fully adopted it. The best example is the United States. The Financial Accounting Standards Board (which sets U.S. GAAP for U.S. companies) has been working extensively with the International Accounting Standards Board (which sets IFRS) to converge their respective standards (Shoaf. 2005). The U.S. Securities and Exchange Commission (SEC) is currently debating and will likely decide soon whether public companies in the U.S. will use IFRS and, if so, whether the U.S. will simply adopt IFRS or will work to converge U.S. GAAP and IFRS (Tysiac. 2012). In addition, the SEC already permits foreign companies to use IFRS when preparing their U.S. financial statements instead of having to reconcile their statements to U.S. GAAP (AICPA. 2011). In a similar manner, Japan allows voluntary adoption of IFRS by some of its domestic companies (AICPA. 2011).

As a result of IFRS acceptance, many real-world changes and effects have occurred. One study found that adopting IFRS reduces differences in accounting methods and thereby increases integration. This increase in integration helps to more easily facilitate international transfers of capital (Cai & Wong. 2010). Another study concluded that the cost of equity capital in Germany decreased following the adoption of IFRS (Lachminarein. 2010). However, other research has posited less positive effects. One researcher found that many Norwegian oil and gas companies were using U.S. GAAP in areas where IFRS guidance was considered to be incomplete, despite being required to use IFRS. The researcher recommended that the effects of proposed standards should be examined by the International Accounting Standards Board before they are adopted as part of IFRS (Adere. 2011). Another study found that IFRS has not been as successful as desired in reducing differences in accounting practices between different nations. As evidence, the study demonstrates that no significant decrease occurred in activities regarding earnings management

following IFRS adoption (Lin & Paananen. 2006). Each of these effects, both positive and negative, has been attributed to IFRS adoption.

IFRS in Canada

Canada is one of the most recent countries to adopt IFRS, having done so on January 1, 2011 (AICPA. 2011). Nearly all Canadian public companies are required to use IFRS for their financial statements that cover reporting periods beginning on or after that date. IFRS replaced the previous standards, known as Canadian Generally Accepted Accounting Principles (Canadian GAAP). Because this change has occurred so recently, very little comprehensive research exists on Canada's adoption of IFRS.

However, some research does exist. One article determined that mining companies have spent many hours meeting with competitors to decide how various rules under IFRS should be interpreted (Marjo. 2012). A study sponsored by the Certified General Accountants Association of Canada (CGA-Canada), which is the inspiration for this study, looked for differences in the reported financial performance of companies that chose to adopt IFRS early. The study found that, with one exception, no significant differences existed in the central tendency of the sixteen selected financial ratios (as computed under Canadian GAAP and IFRS). However, twelve out of the sixteen selected financial ratios did show significant differences in their variability. The study concluded that, among early adopters of IFRS, the financial ratios that were calculated using financial statements prepared under IFRS appeared to be more volatile than their Canadian GAAP counterparts (Blanchette, et. al. 2011).

Purpose of this Research

The purpose of this thesis is to expand on the preliminary research and gain a better understanding of the potential changes that have occurred following the adoption of IFRS in Canada. To accomplish this purpose, this study will examine the financial statements of Canadian public mining companies to see if their reported financial performance appears to have changed as a result of the adoption of IFRS. To accomplish this objective, the study will look for statistically significant differences between the central tendency and dispersion of eight selected financial ratios, as calculated using Canadian GAAP data and IFRS data. It will contain similarities to the previously-referenced CGA-Canada study. Specifically, the eight ratios that it will use are among the sixteen ratios used by the CGA-Canada study. Much of the methodology, including data gathering and many of the statistical tests, will also be the same. However, this study will also contain differences between it and the CGA-Canada study. In particular, the CGA-Canada study looked only at early adopters of IFRS that had financial statements available. The total sample size was only nine companies, seven of whom were in the mining industry (Blanchette, et. al. 2011). This study will look for changes in the reported performance of mining companies that were required by law to adopt IFRS beginning on January 1, 2011, as opposed to companies that chose to adopt IFRS early. Doing so will allow an examination of whether IFRS adoption is the likely cause of any changes in financial ratio central tendency and dispersion, or whether the changes were unique to the early adopters. In addition, this study will attempt to increase the quality of the data being used by utilizing a much larger sample size of fifty (50) companies. These changes will enable this study to provide a significant contribution to the current body of research concerning the adoption of IFRS in Canada.

Chapter 2: Methodology

Research Objectives

The objective of this research is to contribute to the body of research concerning the transition of many companies to International Financial Reporting Standards (IFRS) from their previous national standards. Specifically, this study will examine if Canada's adoption of IFRS, which replaced Canadian Generally Accepted Accounting Principles (GAAP), appears to cause any significant differences in the reported financial performance of public Canadian mining companies. Data from the annual financial reports were used to calculate financial ratios, which are commonly used as an indication of performance in relation to other companies. Differences between the dispersion and central tendency of these ratios as computed under Canadian GAAP and under IFRS were examined for statistical significance. This analysis was designed to meet the objectives of determining what changes in reported performance, if any, IFRS adoption appears to cause.

Hypotheses

Two categories of hypotheses were used: one category for the dispersion of the financial ratios, and one category for the central tendency of the financial ratios. The dispersion and central tendency were tested for each of the eight selected financial ratios, giving a total of

sixteen null and alternate hypotheses (eight null and alternate hypotheses for the dispersion, and eight null and alternate hypotheses for the central tendency).

- The first category of hypotheses describes the dispersion of the financial ratios.
    - H_0: $\sigma_1 = \sigma_2$; there is no significant change in the dispersion of the financial ratios of public Canadian mining companies following the change to IFRS.
    - H_A: $\sigma_1 \neq \sigma_2$; there is a significant change in the dispersion of the financial ratios of public Canadian mining companies following the change to IFRS.
- The second category of hypotheses describes the central tendency of the financial ratios.
    - H_0: $\mu_1 = \mu_2$; there is no difference in the central tendency of the IFRS financial ratios and the Canadian GAAP financial ratios.
    - H_A: $\mu_1 \neq \mu_2$; there is a difference in the central tendency of the IFRS financial ratios and the Canadian GAAP financial ratios.

These hypotheses were used in comparing each financial ratio's dispersion and central tendency as calculated according to Canadian GAAP data and to IFRS data. These comparisons were designed to accomplish the objectives of this research.

Research Design

This study selected a random sample of fifty (50) public Canadian mining companies from the eligible public Canadian mining companies that are listed on SEDAR.com. The relevant financial reports of the companies in the sample were downloaded; and the relevant numbers were entered into Excel spreadsheets. Cell formulas were then used to calculate the financial ratios to be used in this study (see Table 1). Since 2010 is the only year in which both

Canadian GAAP and IFRS data are available for most, if not all, of these companies, the financial ratios were calculated based on 2010 data.

The ratios that were selected, their categories, and their computations are summarized in Table 1.

Table 1: Ratios and Formulas	
Ratio	Computation
Liquidity and Coverage	
Current Ratio	Current Assets / Current Liabilities
Quick Ratio	(Current Assets - Inventories) / Current Liabilities
Operating Cash Flow Coverage	Operating Cash Flow / Current Liabilities
Leverage	
Debt Ratio	Total Liabilities / Total Assets
Equity Ratio	Total Liabilities / Shareholder's Equity
Profitability	
ROA	Net Income / Average Total Assets
Comprehensive ROA	Comprehensive Income / Average Total Assets
Asset Turnover	Net Revenue / Average Total Assets
Note: Average Total Assets = (assets at beginning of year + assets at end of year) / 2 ROA = return on assets	

Once these ratios were computed for each company for both Canadian GAAP and IFRS, statistical analyses were performed. Summary statistics were computed for each ratio, including the mean, median, minimum, maximum, and standard deviation. Statistical tests were conducted to determine whether significant differences exist in the dispersion and central tendency of these values.

In addition to these ratios, five other ratios were initially included in this study: interest coverage, fixed charge coverage, cash flow coverage, net profit margin, and EBITDA margin (earnings before interest, income taxes, depreciation, and amortization). However, the

computation of these ratios relied on certain figures from the financial statements, specifically interest expense, current maturities of long-term debt, and "top-line" revenues (revenues from the company's primary operations). Many companies in this study's sample did not report any "top-line" revenues, meaning that, if the company received any revenues at all, they were not part of the company's primary operations and were therefore reported in the "other" section of the income statement. Similarly, many companies did not report interest expense or current maturities of long-term debt. Even among companies that reported these figures, the reporting was inconsistent, meaning that the specific figure was reported by a company in its IFRS financial statements but not its Canadian GAAP financial statements, or vice versa. Due to these issues with data availability and consistency, it was determined that these five ratios should be excluded on the grounds that analysis of them could not be properly conducted.

Data Sources

The data that were gathered and used were the audited annual financial statements for fiscal years 2010 and 2011 of the Canadian public mining companies that were selected in the sample. These financial statements were gathered from SEDAR.com. The financial statements were contained in a file typically called the "Annual Report" or "Audited Annual Financial Statements" and contained the following information: a balance sheet (or statement of financial position), an income statement (or profit and loss statement), a stock-holder's equity statement (or statement of changes in retained earnings), a statement of cash flows, and the notes to the financial statements. The balance sheet, income statement, and statement of cash flows sections contained the information needed to calculate the selected financial ratios for 2010.

Statistical Tests

There were three types of statistical testing performed: testing for normality assumption, testing for dispersion, and testing for central tendency. All tests used a significance level of $\alpha = 0.05$.

First, this study tested whether the data may be assumed to be normally distributed. Testing normality was necessary to determine the appropriate tests to be used for testing dispersion and central tendency. The values for each Canadian GAAP financial ratio and each IFRS financial ratio were individually graphed on a normality plot. Each ratio was also tested using the Ryan-Joiner test (which is similar to the Shapiro-Wilk test), in which the null hypothesis is that the population from which the sample came is normally distributed, and in which the alternate hypothesis is that the population from which the sample came is not normally distributed. The statistical software package Minitab 14 was used to create the normality plots and to conduct the Ryan-Joiner test. The results of the Ryan-Joiner test and normality plots indicated that each ratio could not be assumed to be normally distributed. As a result, appropriate nonparametric tests were used instead of the parametric tests.

Second, this study tested the dispersion of the ratios. Since none of the ratios could be assumed to be normally distributed, Levene's test was used. This test was performed using the PHStat2 add-in for Excel. The results were designed to show whether the dispersion under IFRS is significantly different from the dispersion under Canadian GAAP.

Third, this study tested the central tendency of the ratios. Because normality could not be assumed for any of the ratios, the Wilcoxon signed rank test was used in lieu of the paired-t test. This statistical test was performed using Excel and the QI Macros 2012 statistical software add-

in. The results were designed to demonstrate whether the central tendency under IFRS is significantly different from the central tendency under Canadian GAAP.

In each test, the p-value was calculated using statistical software and compared to the critical value ($\alpha = 0.05$). The tests for dispersion and central tendency utilized two-tailed tests.

Chapter 3: Results

Sample Characteristics

The final sample contained the 2010 and 2011 financial statements of fifty randomly-selected companies. They were selected from a sampling frame of 705 tentatively-eligible companies, meaning that the company was a publicly-traded Canadian company within the mining sector, used December 31 as the fiscal year-end for both 2010 and 2011, and had financial statements available for 2010 and 2011 (checking for one-hundred percent eligibility before inclusion within the sampling frame was not done due to time constraints). Eleven of the fifty companies in the initial sample did not meet all of the eligibility criteria. To replace these eleven companies, another random sample of fifty companies was taken; and replacements were selected beginning with the first company in the second sample and ending when eleven eligible replacements were found. While the replacements were being selected, another four companies were determined to be ineligible. Because fifteen companies were ineligible out of the sixty-five companies examined, it is estimated that approximately 163 companies are ineligible out of the 705 companies that met the tentative eligibility criteria.

Few companies in the final sample explicitly reported inventories in the assets section of the balance sheet. Most companies either included it in other asset categories such as prepaid expenses or did not state whether the company had inventories. As a result, for most companies, the current and quick ratio will be the same. Also, only eleven out of fifty companies reported a net income under both Canadian GAAP and IFRS. These facts caused many companies to have

ratios with negative values that would otherwise be expected to be positive values (such as return on assets). These characteristics led to results that differ from those found in the CGA-Canada study on voluntary IFRS adopters.

Liquidity and Coverage Ratios

The first results to be examined are the liquidity and coverage ratios. Table 2 and Table 3 contain the summary statistics for the current ratio, quick ratio, and operating cash flow coverage.

Table 2: Liquidity and Coverage Canadian GAAP

Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
Current Ratio	9.251695	4.59948	0.09394	68.16323	12.52027
Quick Ratio	9.230683	4.59948	0.013613	68.16323	12.53176
Operating Cash Flow Coverage	-1.92356	-1.3754	-15.4547	6.197278	3.019267

Table 3: Liquidity and Coverage IFRS

Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
Current Ratio	8.799032	3.299551	0.059029	68.24885	12.28496
Quick Ratio	8.774286	3.299551	0.013613	68.0653	12.27782
Operating Cash Flow Coverage	-2.00811	-1.0703	-16.0392	6.19697	3.343575

Within the sample, the mean and median for the current ratio and quick ratio were higher under Canadian GAAP than under IFRS. This fact would appear to indicate that companies reported either higher current assets, lower current liabilities, or both under Canadian GAAP than under IFRS. Also, the standard deviation for both ratios is higher under Canadian GAAP than under IFRS, meaning that dispersion would appear to be higher under Canadian GAAP. Given these observations, the statistical tests were conducted to see if these differences were statistically significant.

The first set of tests, following the normality testing, was the tests for dispersion. Levene's test gave the following p-values: 0.94377 (current ratio), 0.941569 (quick ratio), and 0.619825 (operating cash flow coverage). Because the critical value is 0.05, the null hypothesis is not rejected. The dispersion of these ratios does not appear to be significantly different following the adoption of IFRS.

The second set of tests was the tests for central tendency. The Wilcoxon signed rank test provided the following p-values: current ratio (0.074), quick ratio (0.032), and operating cash flow coverage (0.286). Because the p-values for the current ratio and operating cash flow coverage exceed the 0.05 critical value, the null hypothesis is not rejected. Adoption of IFRS does not appear to significantly affect the central tendency of these two ratios. It is worthy to note that, had a critical value of 0.10 been used, the null hypothesis for the current ratio would have been rejected. The p-value for the quick ratio, however, is less than 0.05. Therefore, the null hypothesis for the quick ratio is rejected. Adoption of IFRS does appear to change the central tendency of the quick ratio.

Leverage Ratios

The second results to be examined are the leverage ratios. Summary statistics for the debt and equity ratio are included in Table 4 and Table 5.

Table 4: Leverage Ratios Canadian GAAP					
Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
Debt Ratio	1.233523	0.096468	0.005228	33.38302	5.204378
Equity Ratio	-0.73068	0.084881	-37.5024	1.296384	5.33321

Table 5: Leverage Ratios IFRS					
Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
Debt Ratio	1.235465	0.090932	0.005228	33.38302	5.221056
Equity Ratio	-0.71818	0.075844	-36.9364	1.316646	5.254756

Prior to conducting the statistical tests, an observation was made. The values of both the central tendency and dispersion measures appear, at a precursory glance, to be very close to each other. As such, neither ratio is expected to show statistically-significant changes following adoption of IFRS.

For the debt ratio, Levene's test for the dispersion gave a p-value of 0.992325, greater than the critical value (0.05). Therefore, the null hypothesis is not rejected. The dispersion of

the debt ratio does not appear to be significantly changed following the adoption of IFRS. The Wilcoxon signed rank test gave a p-value of 0.184. Because this is higher than the critical p-value (0.05), the null hypothesis is not rejected. IFRS adoption does not appear to cause changes in the central tendency of the debt ratio.

For the equity ratio, Levene's test indicated a p-value of 0.998436. Because this is greater than the critical p-value of 0.05, the decision is to fail to reject the null hypothesis. The dispersion of the equity ratio does not appear to significantly change with IFRS adoption. In testing the central tendency, the Wilcoxon signed rank test indicated that the p-value (0.166) is greater than the critical value (0.05); therefore the null hypothesis should not be rejected. This decision indicates that the central tendency of the equity ratio does not appear to significantly change following IFRS adoption.

Profitability Ratios

The third and final results to be examined are the profitability ratios. Summary statistics are contained in Table 6 and Table 7.

Table 6: Profitability Ratios Canadian GAAP

Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
ROA	-0.39086	-0.08443	-5.10037	0.550612	1.034885
Comprehensive ROA	-0.37744	-0.08274	-5.10037	0.672629	1.025892
Asset Turnover	0.098575	0	-0.00293	1.441521	0.30518

Table 7: Profitability Ratios IFRS					
Ratio	Mean	Median	Minimum	Maximum	Standard Deviation
ROA	-0.41271	-0.09479	-5.10037	0.555672	1.029816
Comprehensive ROA	-0.39873	-0.09619	-5.10037	0.672629	1.020159
Asset Turnover	0.101881	0	0	1.379848	0.307761

Prior to examination of the final ratio results, a few comments and observations should be made. Because of the lack of top-line revenue, many companies had an asset turnover value of zero. Also, the majority of companies have expenses that exceed revenues and therefore have negative values for their return on assets and comprehensive return on assets. Given these facts, the statistical tests can now be examined.

For the profitability ratios, Levene's test yielded the following p-values: return on assets (0.958611), comprehensive return on assets (0.974595), and asset turnover (0.958619). Each p-value exceeds the critical value (0.05); therefore, the null hypothesis should not be rejected. IFRS adoption does not appear to cause the dispersion of the profitability ratios to change. The p-values given by the Wilcoxon signed rank test are as follows: return on assets (0.017), comprehensive return on assets (0.001), and asset turnover (0.988). The p-value on the asset turnover ratio exceeds the 0.05 critical value; therefore, the null hypothesis should not be rejected. Adoption of IFRS does not appear to significantly change the central tendency of the asset turnover ratio. However, the p-values for return on assets and comprehensive return on

assets are less than the critical 0.05 value. Therefore, the null hypothesis for these ratios is rejected. Adopting IFRS does appear to significantly change the central tendency of these ratios.

Results Summary

Table 8 and Table 9 contain summaries of the statistical outputs and the decisions made regarding whether or not to reject the null hypothesis.

Table 8: Levene's Test Summary

Ratio	F value	P-value	Decision
Current Ratio	0.005	0.94377	Fail to reject null
Quick Ratio	0.0054	0.941569	Fail to reject null
Operating Cash Flow Coverage	0.247685	0.619825	Fail to reject null
Debt Ratio	0.000093	0.992325	Fail to reject null
Equity Ratio	0.00000386	0.998436	Fail to reject null
ROA	0.002707	0.958611	Fail to reject null
Comprehensive ROA	0.001019	0.974595	Fail to reject null
Asset Turnover	0.002706	0.958619	Fail to reject null

Table 9: Wilcoxon Signed Rank Test Summary

Ratio	Z value	P-value	Decision
Current Ratio	-1.8	0.074	Fail to reject null
Quick Ratio	-2.1	0.032	Reject null
Operating Cash Flow Coverage	1.1	0.286	Fail to reject null
Debt Ratio	1.3	0.184	Fail to reject null
Equity Ratio	1.4	0.166	Fail to reject null
ROA	-2.4	0.017	Reject null
Comprehensive ROA	-3.2	0.001	Reject null
Asset Turnover	0.0	0.988	Fail to reject null

To summarize the results, each of the selected ratios has been tested for differences in the dispersion and central tendency following the replacement of Canadian GAAP with IFRS.

Because both versions of all ratios did not meet the normality assumption, as indicated by the Ryan-Joiner test, Levene's test and the Wilcoxon signed rank test (as opposed to the paired-t test) were used for each ratio. Each test for dispersion and five of the tests for central tendency (current ratio, operating cash flow coverage, debt ratio, equity ratio, and asset turnover) indicated that the null hypothesis should not be rejected. As such, it must be concluded that IFRS adoption does not appear to cause changes in the central tendency of these five ratios or in the dispersion of any of these ratios among Canadian public mining companies. However, the central tendency tests for the quick ratio, return on assets, and comprehensive return on assets indicated that the null hypothesis should be rejected. As a result, it must be concluded that IFRS adoption appears to cause changes in the central tendency of these ratios among Canadian public mining companies.

Chapter 4: Conclusions, Implications, Limitations, and Further Research

Conclusions

Based on the results of this study, it can be concluded that, overall, adoption of IFRS does not appear to cause significant changes the central tendency of some of the selected financial ratios or in the dispersion all of the ratios of Canadian public mining companies. However, IFRS adoption does appear to cause significant changes in the central tendency of the quick ratio, return on assets, and comprehensive return on assets. These results represent a departure from some of the results of the CGA-Canada study. It found no significant differences in the central tendency of any of the ratios examined by this study. However, it did find significant differences in the dispersion of the following ratios: current ratio, quick ratio, debt ratio, equity ratio, return on assets, and comprehensive return on assets.

There are three reasons why this study and the CGA-Canada study came to different conclusions. The first explanation is the characteristics of the companies in the CGA-Canada study's sample. The CGA-Canada study examined voluntary early adopters of IFRS (most of which were in the mining industry). Because the companies in the CGA-Canada study's sample voluntarily chose to adopt IFRS early, it is possible that these companies were "self-selected," meaning that they had characteristics that were different from the population as a whole. If this situation is true, then the CGA-Canada study's sample would have the potential to produce differences which would not be found in the population as a whole because the sample is not

representative of the population as a whole. For example, these companies could have an abnormally high number of transactions that Canadian GAAP and IFRS treat differently, with most other companies not having these transactions. This explanation would make sense, given that, for several ratios, the sample for this study showed significant differences in a few companies and little or no differences in many others. A second explanation is the sample sizes. The CGA-Canada study's sample size was nine companies. Since some companies reported IFRS and Canadian GAAP data in more than one year, the sample sizes for each ratio ranged from as low as eight to as high as thirty, with most ratios having a sample size around twenty. This study used a sample size of fifty for all ratios. Because larger samples are more representative of the population, the sample size could explain why the CGA-Canada study found differences in the dispersion of some of the ratios, while this study did not. Also, statistical tests tend to become more powerful and detect differences better as sample sizes get larger. As such, the sample size could also explain why this study found statistically significant differences in the central tendency of three of the ratios, while the CGA-Canada study found none among the eight ratios this study used. A third explanation is the fact that this study is examining a different population. Specifically, it is studying the first group of mandatory adopters of IFRS among Canadian public mining companies overall. As such, it is possible that mining companies overall tend to have less dispersion in their ratios than the specific companies in the CGA-Canada study's sample. These reasons are possible explanations as to why this study and the CGA-Canada study came to different conclusions.

Implications to Interested Parties

These conclusions contain several implications and ramifications for this study's interested parties: investors, Canadian public mining companies, and policy setters in other countries. Specifically, it will inform each of what changes have occurred or should be expected following IFRS adoption; and it will allow each to make more informed decisions.

Investors

Investors in Canadian public mining companies, and to an extent companies in other industries, can use the results of this study to set their expectations for the companies in which they are investing. Specifically, they should closely examine the return on assets and comprehensive return on assets. These ratios appeared to decrease overall following IFRS adoption, possibly due to impairment losses that are reported under IFRS but not Canadian GAAP (Kieso, et. al. 2011). Therefore, investors in Canadian public mining companies should examine these two ratios to determine if the earnings reported by these companies are still adequate to meet their expectations and should also revise their expectations. For example, based on the means, investors who expect a minimum return on assets value should decrease this minimum by about two one-hundredths of a point. Also, while the results of this study cannot be generalized to other industries, investors in other industries should be aware of these changes within the mining industry and examine their own companies to see if IFRS adoption resulted in similar effects. Overall, investors should closely monitor the statements of the companies in which they invest and be aware that IFRS adoption appears overall to significantly change the return on assets and comprehensive return on assets among Canadian public mining companies.

Canadian Public Mining Companies

Canadian public mining companies will be able to use these results in their planning processes. In particular, these companies should monitor their reported ability to pay current liabilities. Both the current and quick ratio appeared to decrease following IFRS adoption (while this decrease in the current ratio was not significant at $\alpha = 0.05$, it should be noted that it would have been significant at another commonly-used critical value, 0.10). This information means that IFRS adoption appears to cause reported current assets (minus inventories) to be lower, reported current liabilities to be higher, or both. Companies should determine if and how these conditions affect their debt covenants or other contractual agreements. Overall, companies should determine whether IFRS changed their reported performance and use this information in their planning processes.

Policy Makers in Other Countries

Policy makers in other countries, such as those in the United States, can use this study's results to decide whether and how to replace their current standards with IFRS. Because companies often have a significant input in the decisions made by policy makers, policy makers elsewhere can use these results to inform mining companies in their own country of how it will likely affect their reported performance and assist them in providing their input to the policy makers. Assuming these results give an accurate picture of the financial performance of Canadian public mining companies, policy makers will also know that, within this industry, IFRS adoption will change the reported financial performance of a few companies while causing

little or no change in other companies. They will also know that there are no statistically significant differences in dispersion. These facts will help policy makers in deciding whether IFRS is standardized and consistent enough to be adopted. Overall, this study will help set the expectations of policy makers and assist them in deciding whether and how to replace their current standards with IFRS.

Limitations

This study contains some limitations. These limitations fall into one of two categories: data availability and scope of generalization.

The first category is data availability. Since not all data was available or usable, this study implemented eligibility criteria for inclusion in the sample. Financial data is readily available only for public Canadian companies. Therefore, private companies were not included in the sample. Because of constraints regarding on-time collection of data and timing consistency, the sample was limited to companies with a fiscal year that ends on December 31. Each eligible public company must have had audited financial statements available on SEDAR.com for fiscal years ended December 31, 2010 and December 31, 2011. Any company that did not release financial statements on SEDAR.com for 2010 or 2011, or that have fiscal years ending on other dates, were excluded from the sample. Further, the 2010 financial statements must have been prepared in accordance with Canadian GAAP; and the 2011 financial statements must have been prepared in accordance with IFRS (including a restatement of the 2010 comparative figures from Canadian GAAP to IFRS). This restriction prevented the inclusion of companies that voluntarily adopted IFRS early, that were allowed to defer adoption

of IFRS (such as life insurance companies), or that did not restate the 2010 comparative figures to IFRS on the 2011 financial statements. Additionally, the 2010 and 2011 financial statements must have been a complete set of data, meaning that the financial statements contain the numbers that are required to calculate all eight of the financial ratios selected for this study. Finally, each company must have been a member of the mining industry, as indicated by its SEDAR.com profile page (with words such as "junior natural resource - mining," "gold and precious metals," or "metals and minerals" with various suffixes). While these restrictions helped to provide good quality data, they also placed limits on the scope of generalization.

The second category is the scope of generalization. The limitations imposed by the "data availability" category also limit the extent to which the study's findings can be generalized. None of these results can be generalized to private companies. The results cannot be generalized to companies that adopted IFRS early or that have exercised an option to defer IFRS adoption. Since only mining companies are examined, these results should not be generalized to other industries. Additionally, the sample used in this study is limited to companies with fiscal years ending on December 31. While the author is unaware of any theoretical basis that would indicate financial performance differs according to the selection of the fiscal year-end date, it is possible that such differences could exist. Therefore, generalizing these results to mining companies with alternate fiscal year-ends should be done with caution.

Further Research

This study provides multiple opportunities for further research. The first opportunity is to examine companies with fiscal year-ends other than December 31, test them for differences

overall, and compare them to companies with a December 31 fiscal year-end. While no theoretical basis for differing reported performance based on fiscal year-end is known to the author, it must be noted that the December 31 fiscal year-end companies are the first companies to be mandated to adopt IFRS. Companies with alternate fiscal year-ends will have had more time to examine the standards and gain knowledge from their industry peers and elsewhere on how to correctly apply them. As such, these companies could report more differences under IFRS than December 31 fiscal year-end companies. The second opportunity is to examine other industries. Because this study examined only the mining industry, these results are applicable only to the mining industry. Examining other industries and comparing them to each other will provide a better picture on what effect, if any, IFRS adoption has on the reported performance of companies as a whole. Finally, the third opportunity is to examine IFRS adoption over a period of time. A few years into the future, another study can perform trend analysis to see if the average yearly change in reported performance is different following IFRS adoption. While this type of study would introduce confounding variables (such as economic conditions), it would also show whether any changes from IFRS adoption are temporary or long-lasting. These opportunities for further research demonstrate that adoption of International Financial Reporting Standards will continue to be a major topic of discussion within the academic and accounting world.

References

Adere, E. M. (2011). Accounting for oil and gas: The effect of the gap between US GAAP and IFRS on Norwegian companies. *Umea University*. Retrieved from http://umu.diva-portal.org/smash/get/diva2:478518/FULLTEXT03

American Institute of Certified Public Accountants. (2011). International Financial Reporting Standards (IFRS): An AICPA backgrounder. *AICPA*. Retrieved from http://www.ifrs.com/pdf/IFRSUpdate_V8.pdf

Blanchette, M., Racicot, F.-E., & Girard, J.-Y. (2011, March). The effects of IFRS on financial ratios: Early evidence in Canada. *Certified General Accountants Association of Canada*. Retrieved from http://ideas.cga-canada.org/WorkingPapers/110302.pdf

Cai, F., & Wong, H. (2010). The effect of IFRS adoption on global market integration. *The International Business & Economics Research Journal, 9*(10), 25-34. Retrieved from https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/762021344?accountid=10771

Carlin, T. M., & Finch, N. (2008, July 24). Goodwill impairment testing under IFRS: A false impossible shore? *University of Sydney Business School*. Retrieved from http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1173382_code438461.pdf?abstractid=1173382&mirid=1

Elena, H., Catalina, M. C., Stefana, C. I., & Niculina, A. A. (2009). Some issues about the transition from U.S. Generally Accepted Accounting Principles (GAAP) to International Financial Reporting Standards (IFRS). *Annales Universitatis Apulensis : Series Oeconomica, 11*(1), 275-289. Retrieved from https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/807501880?accountid=10771

Godfrey, J., & Chalmers, K. (2007). *Globalisation of Accounting Standards*. Edward Elger. Pg. v, 1-5.

Gornik-Tomaszewski, S., & Showerman, S. (2010). IFRS in the United States: Challenges and opportunities. *Review of Business, 30*(2), 59-71. Retrieved from https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/744485638?accountid=10771

Hong, K. (2008, July 14). PwC IFRS ready? How. *YouTube*. Retrieved from http://www.youtube.com/watch?v=wX_TPRTnz3A&feature=related

Kieso, D., Weygandt, J., & Warfield, T. (2011). *Intermediate Accounting*. John Wiley & Sons, Inc. Pg. 154-155, 545, 654.

Krivogorsky, V. (2011). *Law, Corporate Governance, and Accounting: European Perspectives*. Taylor & Francis Routledge. Pg. 5-30. Retrieved from http://web.ebscohost.com.ezproxy.etsu.edu:2048/ehost/detail?sid=3c975f15-37e7-4a5c-8520-3f0336e4d1f9%40sessionmgr

111&vid=1&hid=125&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=nlebk&AN=365087

Lachminarein, R. (2010, October 7). Economic consequences of introduction of IFRS: The impact of IFRS on the cost of equity capital in Germany. *Erasmus University Rotterdam*. Retrieved from http://oaithesis.eur.nl/ir/repub/asset/8299/M663-Lachminarein_290782.doc

Lin, H., & Paananen, M. (2006). The effect of financial systems on earnings management among firms reporting under IFRS. *University of Hertfordshire, Business School Working Papers, vol. UHBS 2006-2*. Retrieved from https://uhra.herts.ac.uk/dspace/bitstream/2299/714/1/S61.pdf

Marjo, J. (2012, January 19). Strategy: How miners met the accounting challenge. *The Globe and Mail*. Retrieved from http://www.theglobeandmail.com/report-on-business/careers/business-education/strategy-how-miners-met-the-accounting-challenge/article2306979/

Murphy, R. (2011, June 16). Have they pushed the self destruct button at the International Financial Reporting Standard Foundation? *Forbes*. Retrieved from http://www.forbes.com/sites/richardmurphy/2011/06/16/have-they-pushed-the-self-destruct-button-at-the-international-financial-reporting-standard-foundation/

Pitt, H. L. (2006, May 1). Filling in the GAAP. *Forbes*. Retrieved from http://www.forbes

.com/2006/05/01/harvey-pitt-gaap-fasb-cx_hp_0501fasb.html

Shoaf, V. (2005). Goodwill impairment. *Review of Business, 26*(2), 31-35. Retrieved from https://login.ezproxy.etsu.edu:3443/login?url=http://search.proquest.com/docview/220959334?accountid=10771

Tysiac, K. (2012, February 21). IFRS decision a "few" months away, based on SEC staff report timeline. *Journal of Accountancy*. Retrieved from http://www.journalofaccountancy.com/Web/20125186

Appendix A: Sample

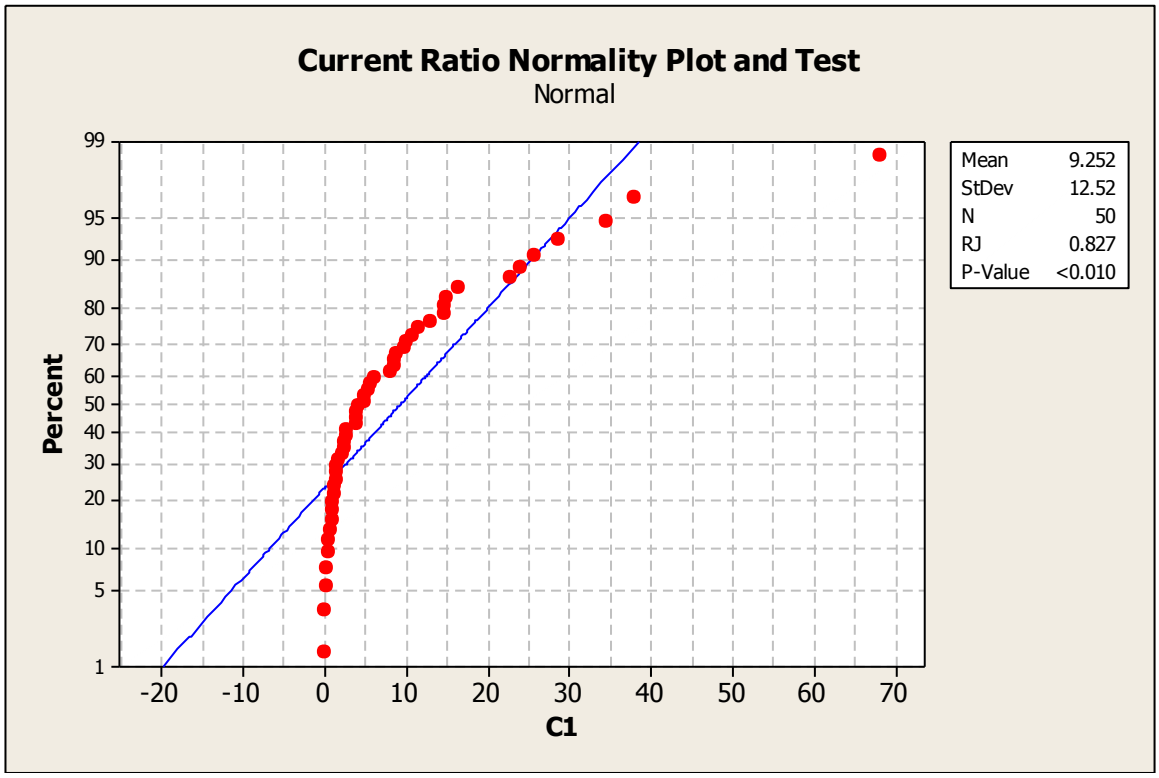
Table 10: Sample	
Number	Company Name
1	Rodinia Lithium Inc.
2	Silvermet Inc.
3	Emerick Resources Corp.
4	Scorpio Gold Corporation
5	Taranis Resources Inc.
6	Amex Exploration Inc.
7	Franco-Nevada Corporation
8	Les Mines J.A.G. Ltée
9	Stratabound Minerals Corp.
10	Rodinia Lithium Inc.
11	Minco Gold Corporation
12	INV Metals Inc.
13	Mega Precious Metals Inc. (formerly Mega Silver Inc.)
14	Yamana Gold Inc.
15	Calibre Mining Corp.
16	Bear Creek Mining Corporation
17	Evrim Resources Corp.
18	Rock Tech Lithium Inc.
19	Ansil Resources Ltd.
20	Orezone Gold Corporation
21	Premier Gold Mines Limited
22	Ditem Explorations Inc.
23	Atlanta Gold Inc.
24	Marifil Mines Limited
25	AVINO SILVER & GOLD MINES LTD.
26	Ginguro Exploration Inc.
27	AXMIN Inc. (formerly Asquith Resources Inc.)
28	Solid Resources Ltd.
29	Pancontinental Uranium Corporation (formerly, Centram Exploration Ltd.)
30	Searchgold Resources Inc.
31	NSR Resources Inc.
32	Greenock Resources Inc. (formerly Simberi Mining Corporation)
33	Lundin Mining Corporation
34	Senator Minerals Inc.
35	Strathmore Minerals Corp.
36	IC Potash Corp.
37	Commander Resources Ltd.
38	Jubilee Gold Inc.
39	Whitemud Resources Inc.
40	Tamerlane Ventures Inc.

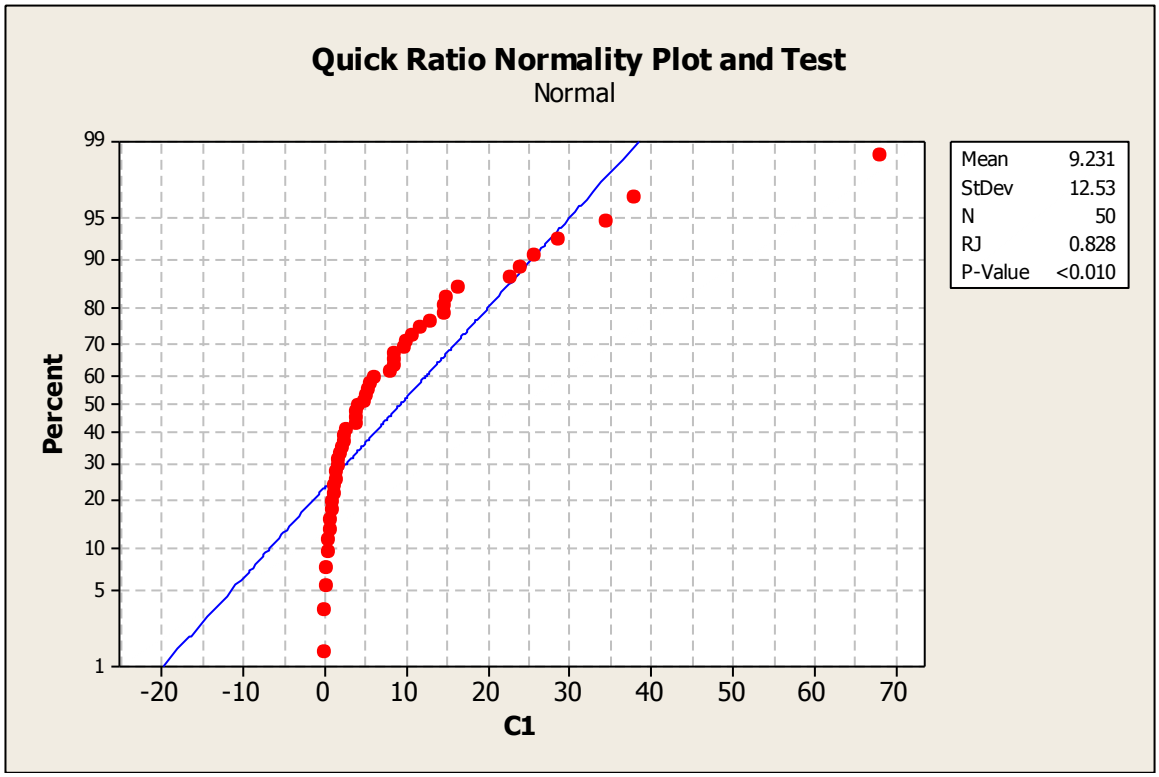
41	Galantas Gold Corporation
42	Queenston Mining Inc.
43	Klondex Mines Ltd.
44	Slater Mining Corporation
45	Silver Wheaton Corp.
46	Volta Resources Inc.
47	Golconda Resources Ltd.
48	XEMPLAR ENERGY CORP.
49	Dundarave Resources Inc.
50	Laurion Mineral Exploration Inc.

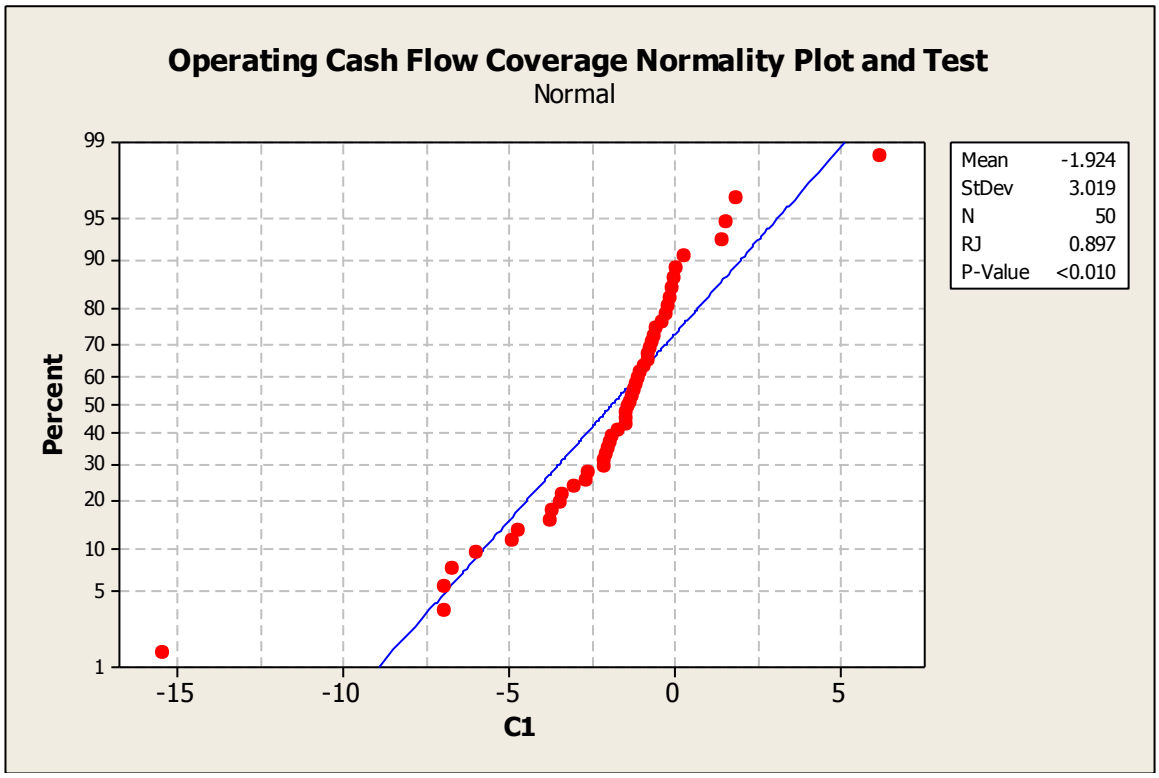
Appendix B: Ineligible Companies

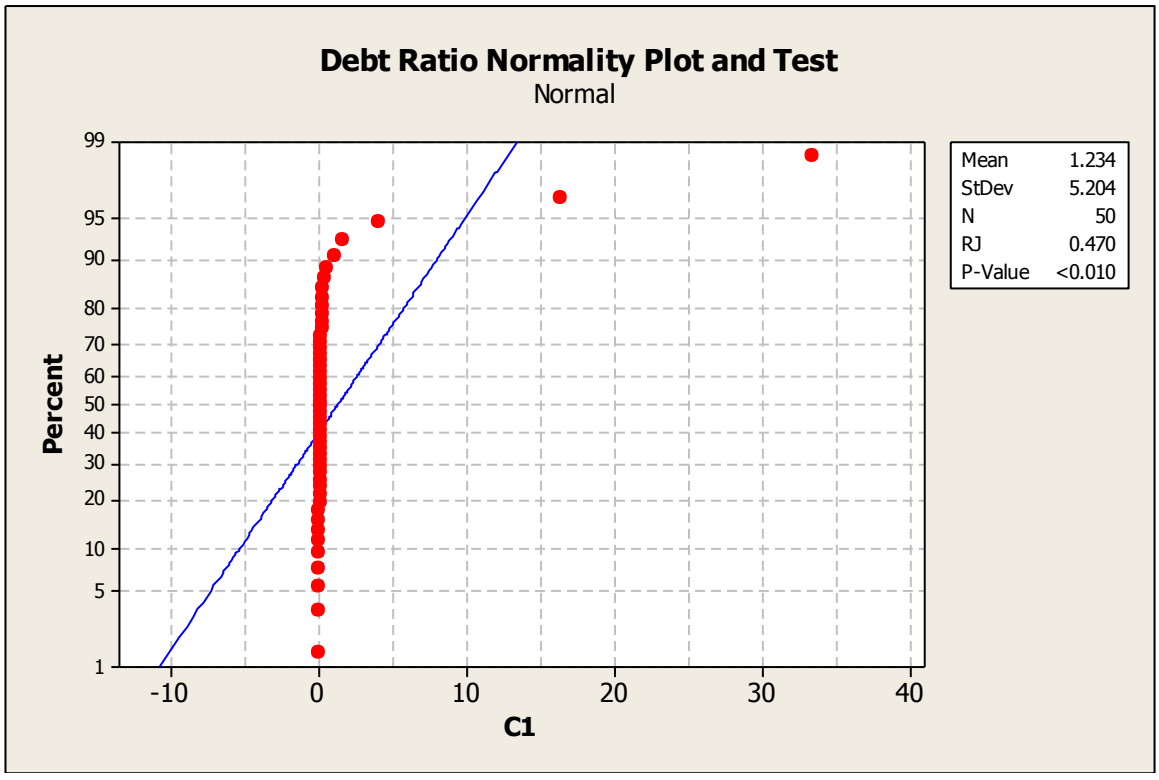
Table 11: Ineligible Companies	
Name of Company	Reason for Ineligibility
Minera IRL Limited	Adopted IFRS early
Golden Minerals Company	Uses U.S. GAAP
Xtra-Gold Resources Corp.	Uses U.S. GAAP
Iron Tank Resources Corp.	Insufficient data
Strategic Mining Corp.	Uses U.S. GAAP
Windamere Ventures Ltd.	Insufficient data
Hunter Bay Minerals plc	Insufficient data
Eastern Platinum Limited	Adopted IFRS early
Lydian International Limited	Adopted IFRS early
Corazon Gold Corp.	Insufficient data
Agnico-Eagle Mines Limited	Uses U.S. GAAP
Atlatsa Resources Corporation	Adopted IFRS early
Balaton Power Inc.	Uses U.S. GAAP
American Vanadium Corp.	Used fiscal year end other than December 31
Turquoise Hill Resources Ltd.	Uses U.S. GAAP

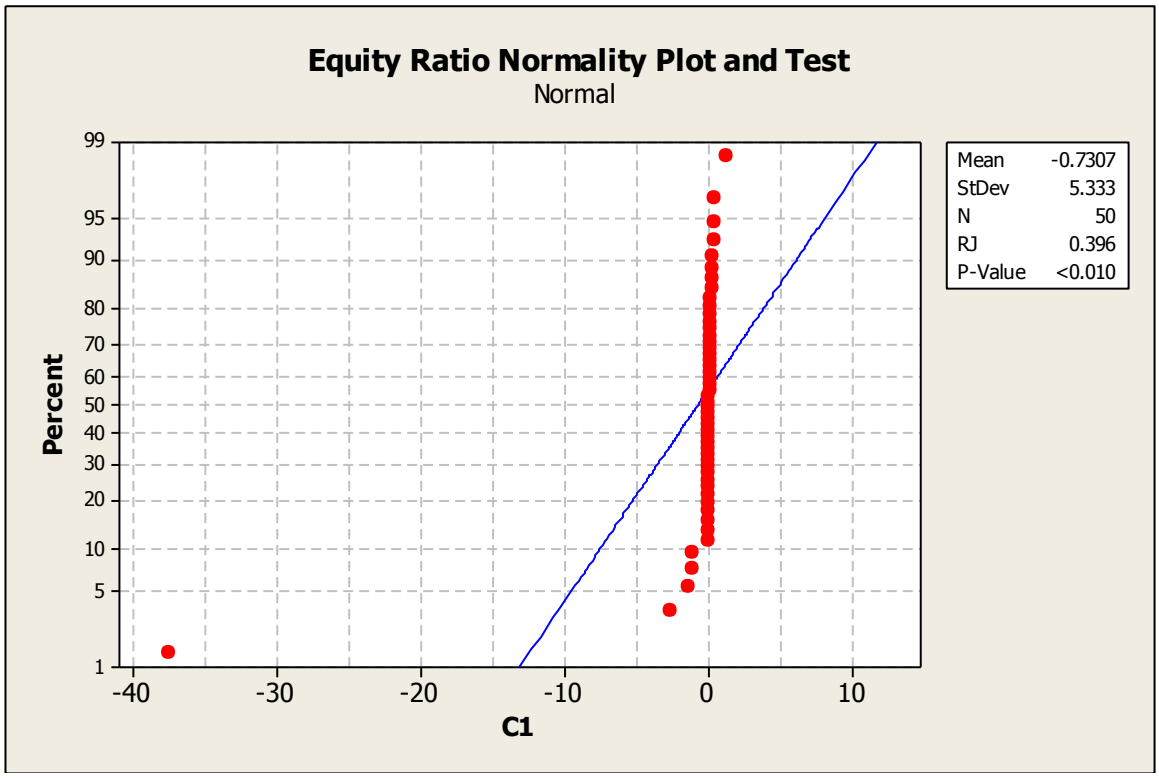
Appendix C: Canadian GAAP Normality Tests

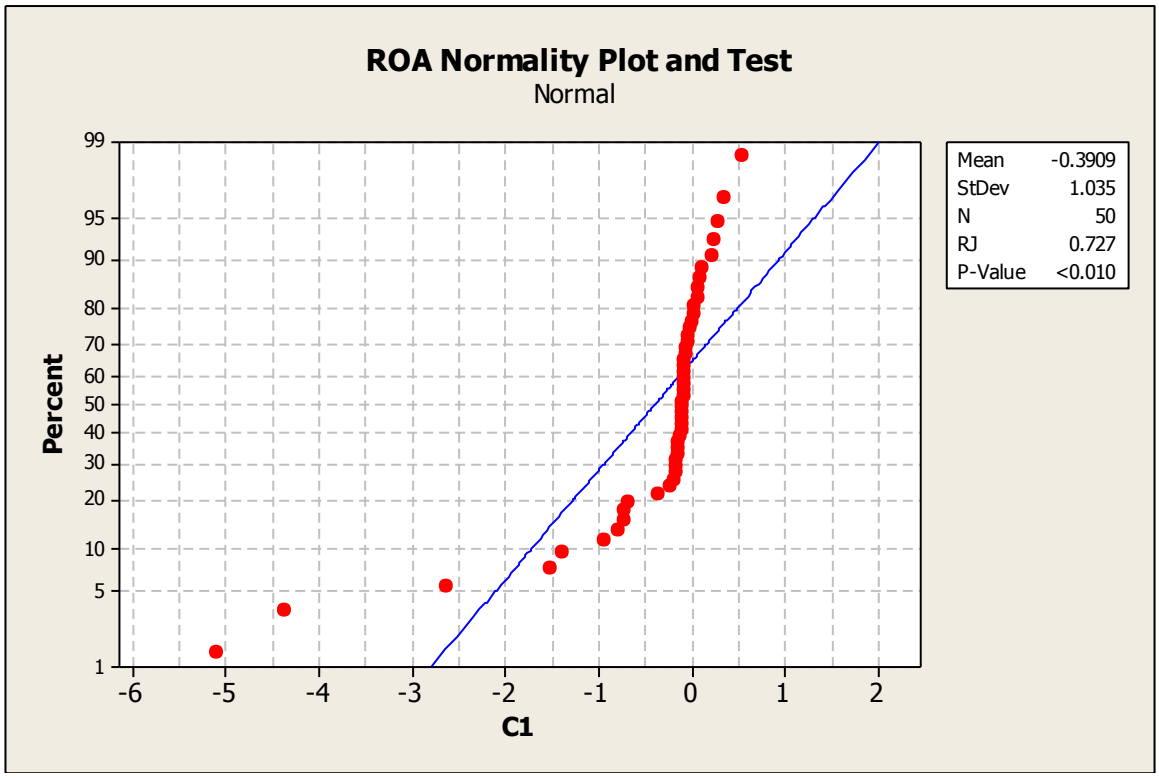


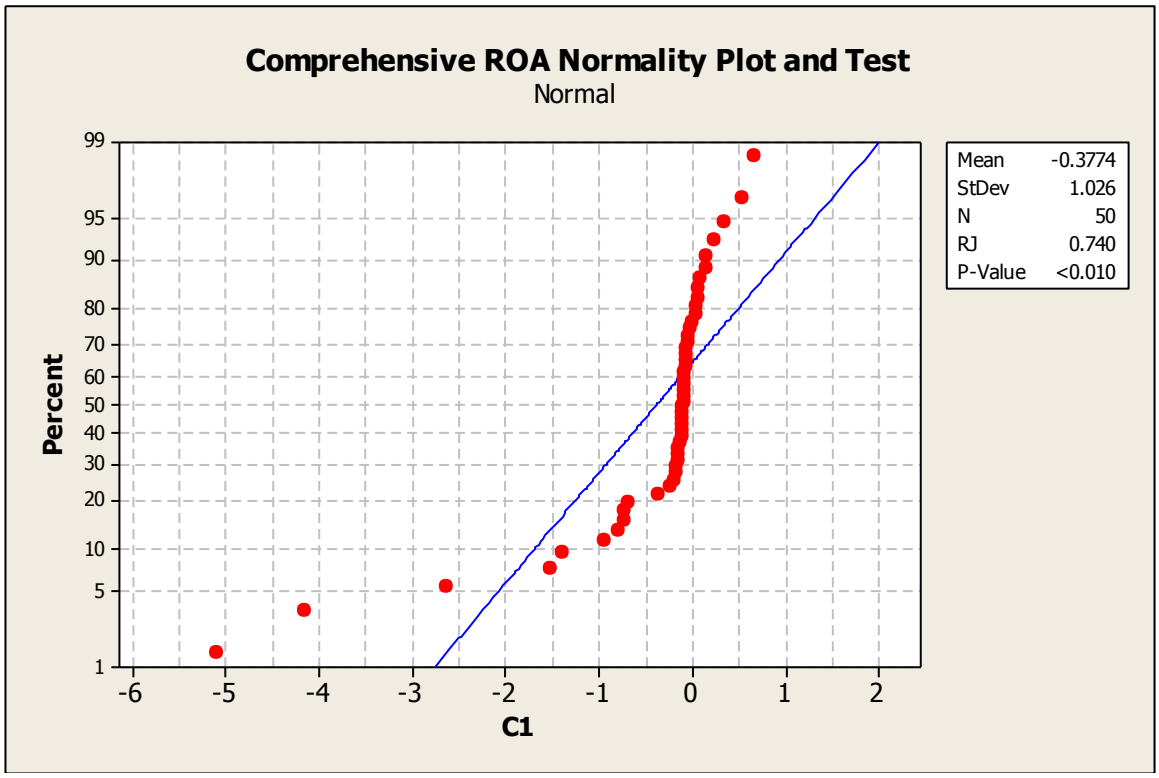


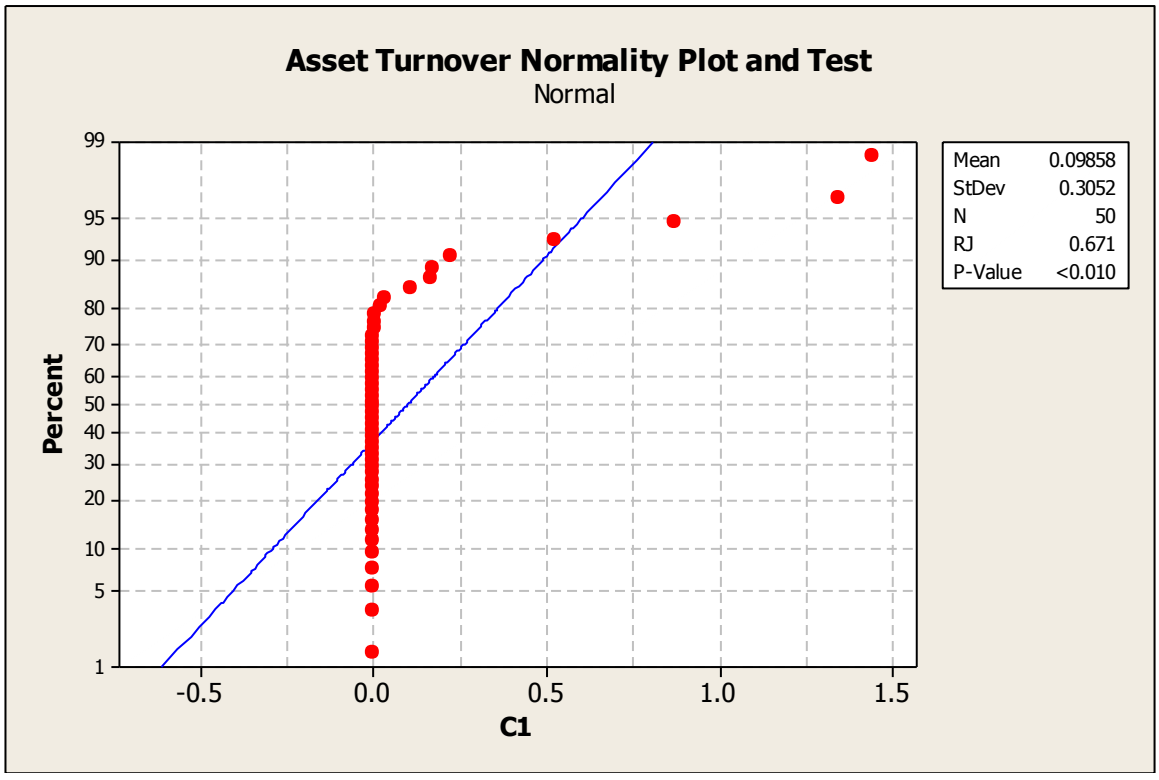

Operating Cash Flow Coverage Normality Plot and Test
Normal
Percent
C1
Mean -1.924
StDev 3.019
N 50
RJ 0.897
P-Value <0.010


Debt Ratio Normality Plot and Test
Normal
Percent
C1
Mean 1.234
StDev 5.204
N 50
RJ 0.470
P-Value <0.010

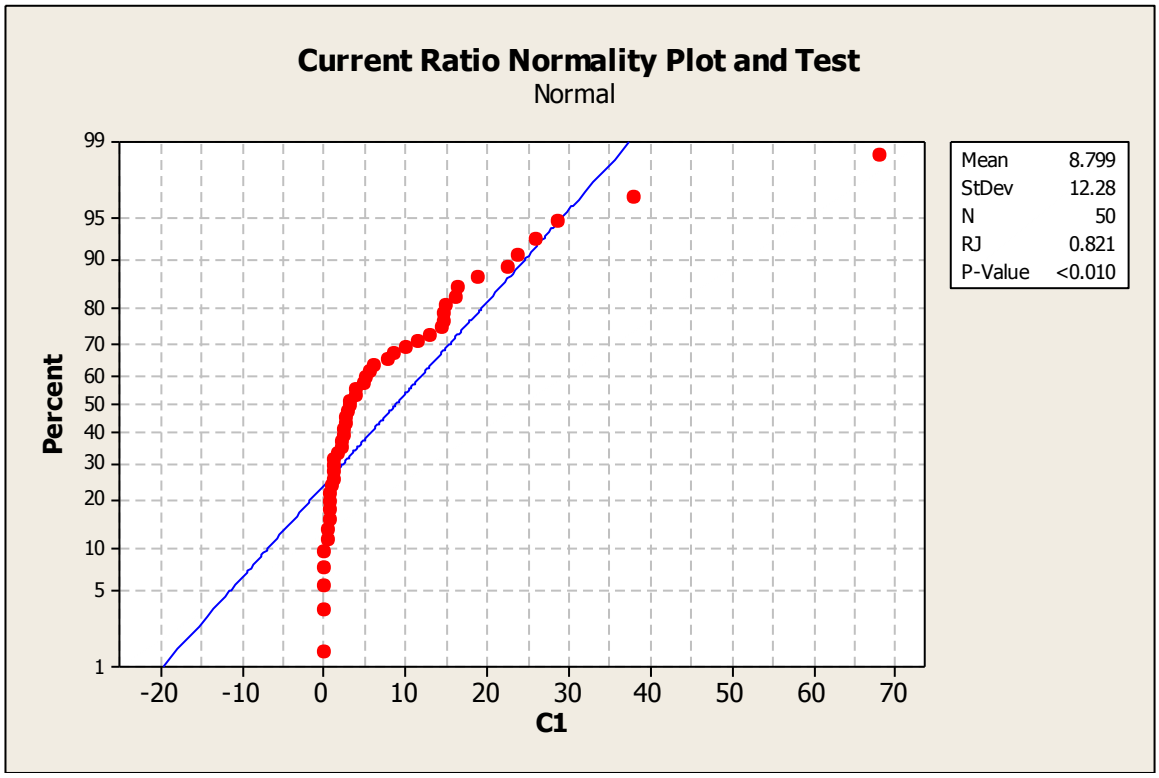

Equity Ratio Normality Plot and Test
Normal
Mean -0.7307
StDev 5.333
N 50
RJ 0.396
P-Value <0.010
Percent
C1
99
95
90
80
70
60
50
40
30
20
10
5
1
-40
-30
-20
-10
0
10

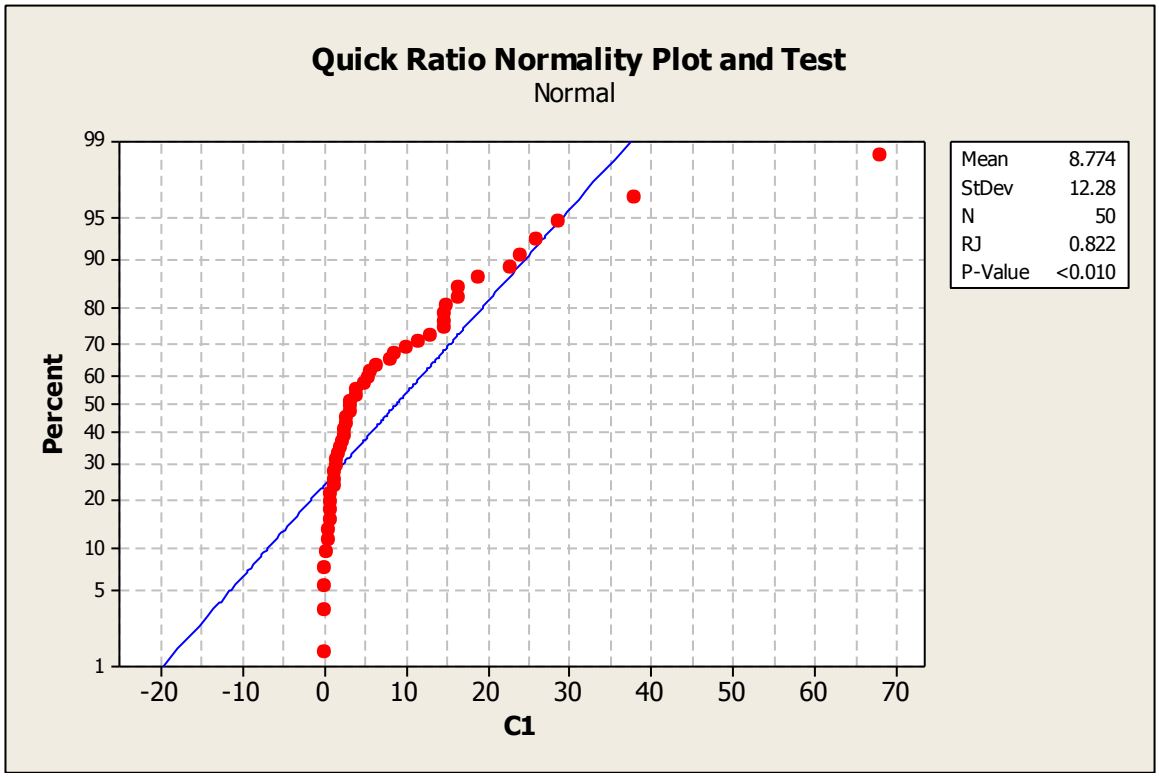

ROA Normality Plot and Test
Normal
Mean -0.3909
StDev 1.035
N 50
RJ 0.727
P-Value <0.010
Percent
C1
99
95
90
80
70
60
50
40
30
20
10
5
1
-6
-5
-4
-3
-2
-1
0
1
2

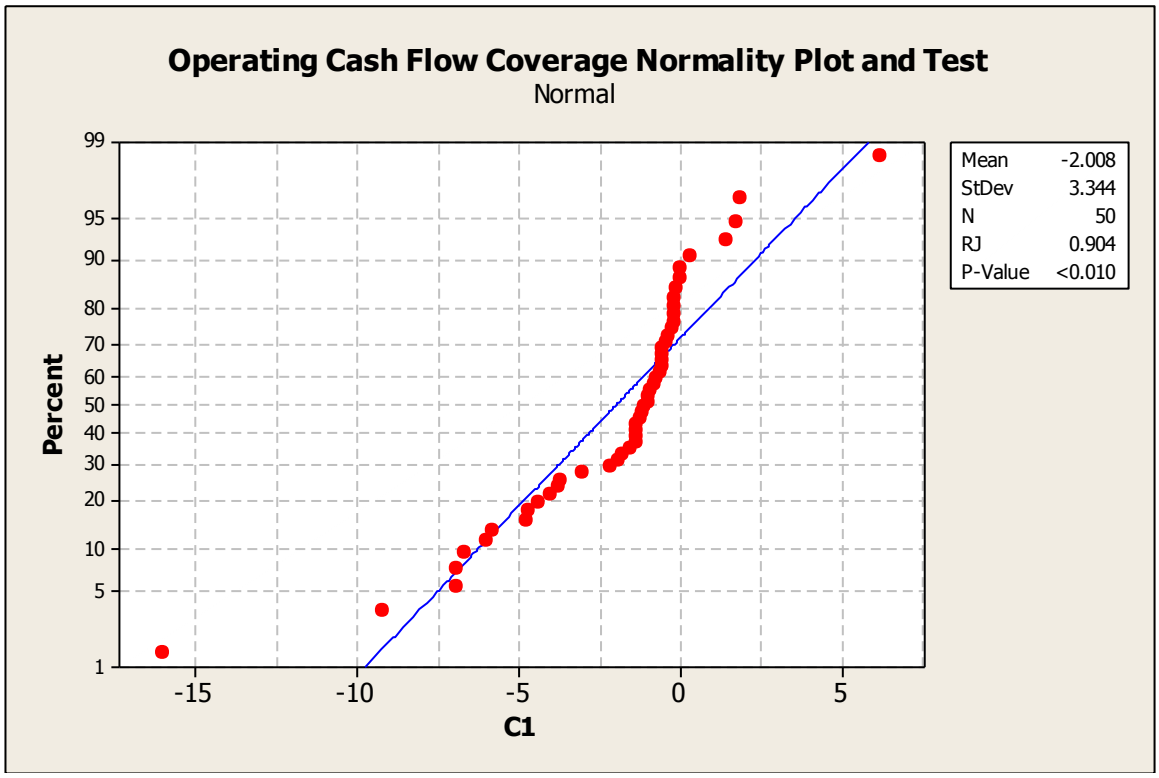

Comprehensive ROA Normality Plot and Test
Normal
Percent
C1
Mean -0.3774
StDev 1.026
N 50
RJ 0.740
P-Value <0.010

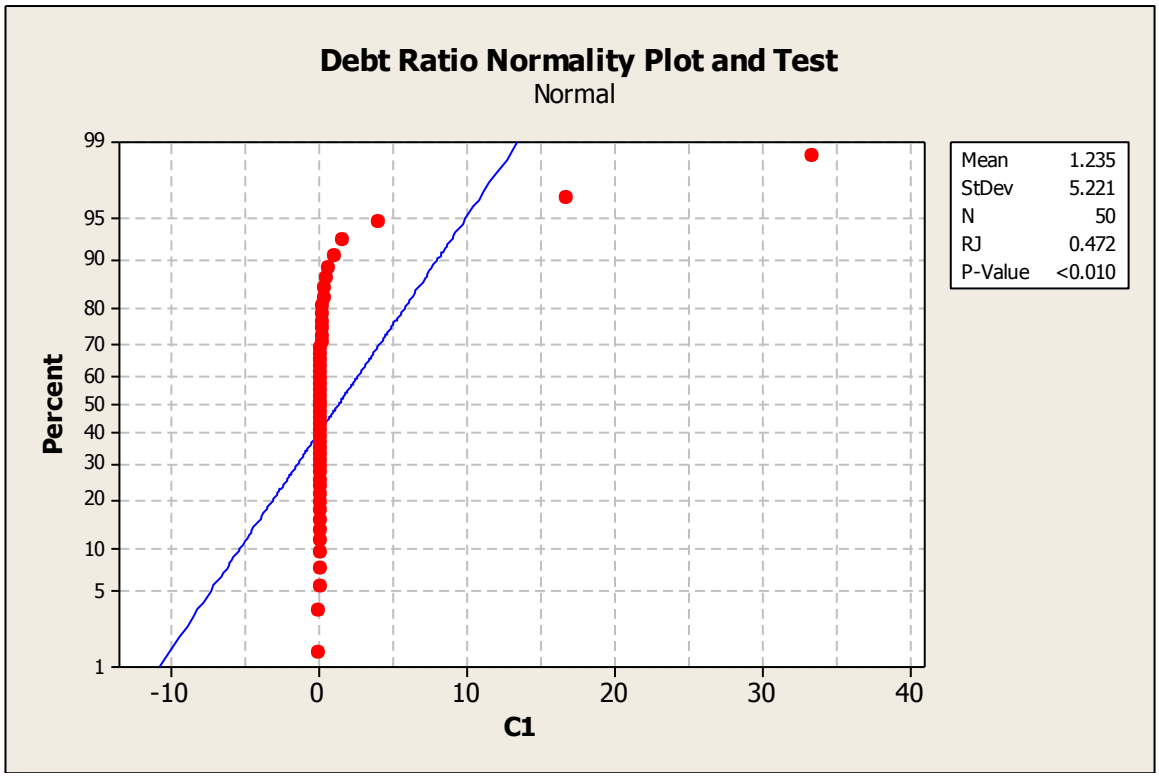

Asset Turnover Normality Plot and Test
Normal
Percent
C1
Mean 0.09858
StDev 0.3052
N 50
RJ 0.671
P-Value <0.010

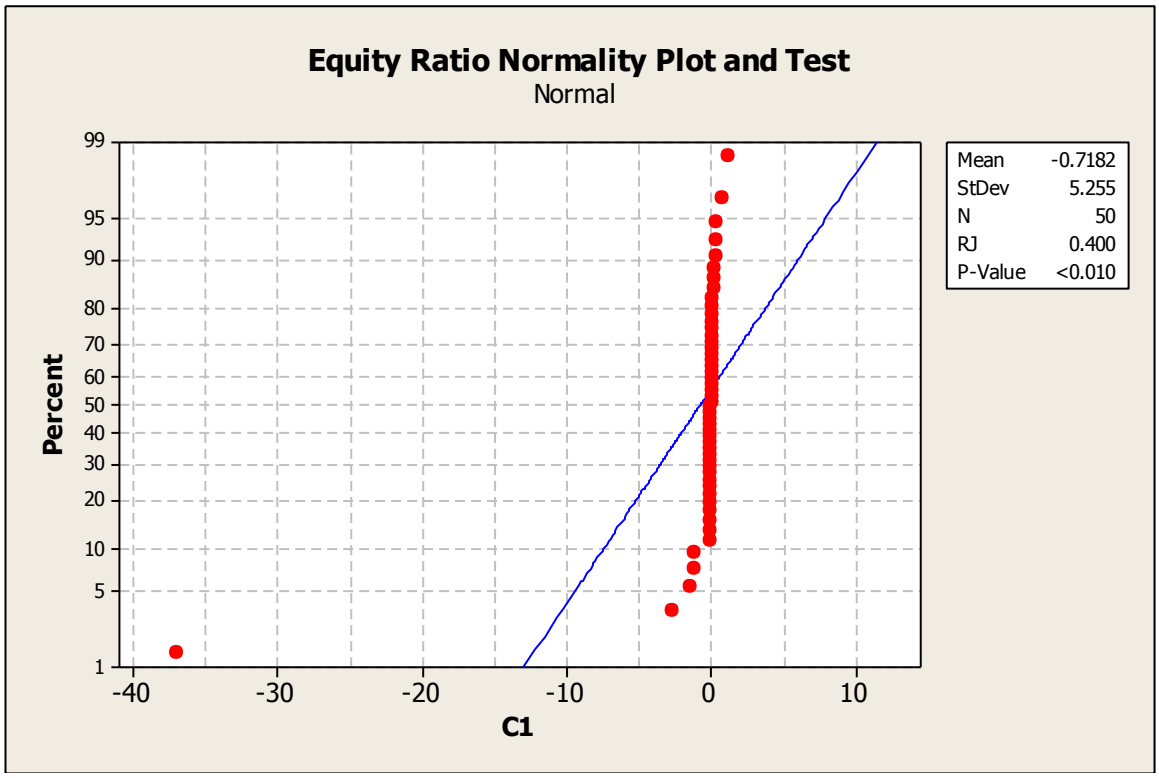
Appendix D: IFRS Normality Tests

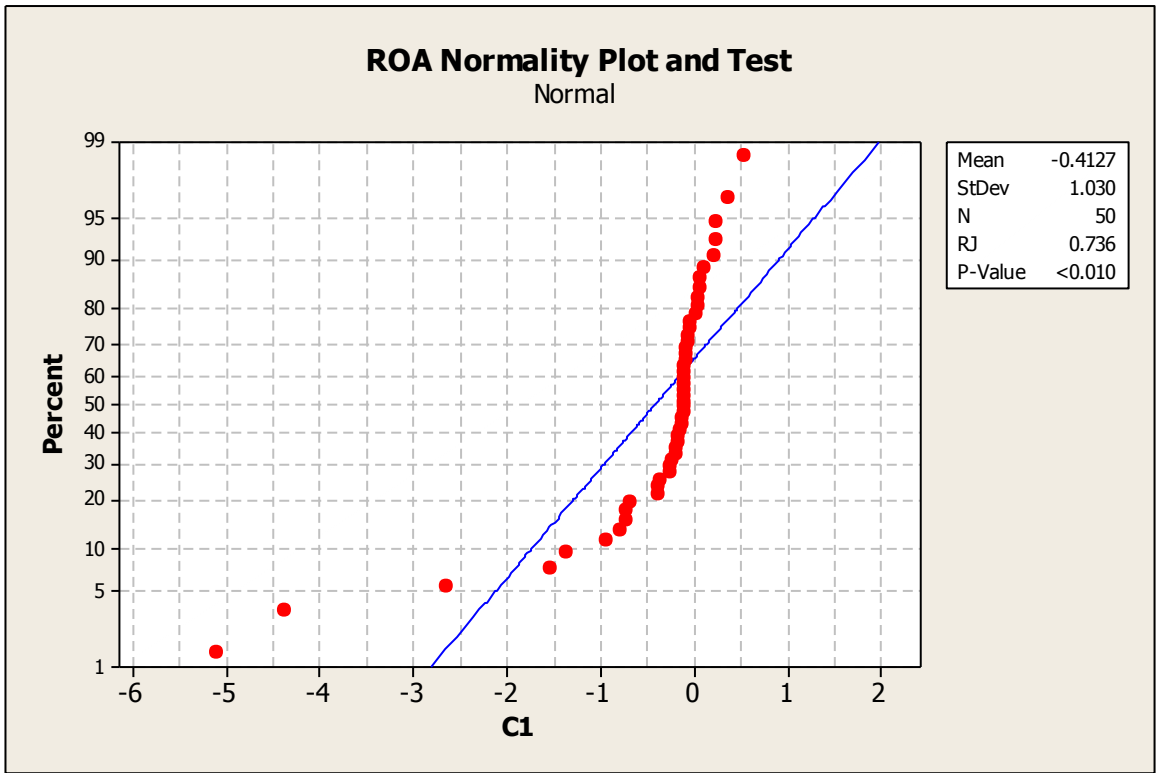





Operating Cash Flow Coverage Normality Plot and Test
Normal
Percent
99
95
90
80
70
60
50
40
30
20
10
5
1
-15
-10
-5
0
5
C1
Mean -2.008
StDev 3.344
N 50
RJ 0.904
P-Value <0.010


Debt Ratio Normality Plot and Test
Normal
Percent
99
95
90
80
70
60
50
40
30
20
10
5
1
-10
0
10
20
30
40
C1
Mean 1.235
StDev 5.221
N 50
RJ 0.472
P-Value <0.010


Equity Ratio Normality Plot and Test
Normal
Mean -0.7182
StDev 5.255
N 50
RJ 0.400
P-Value <0.010
Percent
C1
99
95
90
80
70
60
50
40
30
20
10
5
1
-40
-30
-20
-10
0
10


ROA Normality Plot and Test
Normal
Mean -0.4127
StDev 1.030
N 50
RJ 0.736
P-Value <0.010
Percent
C1
99
95
90
80
70
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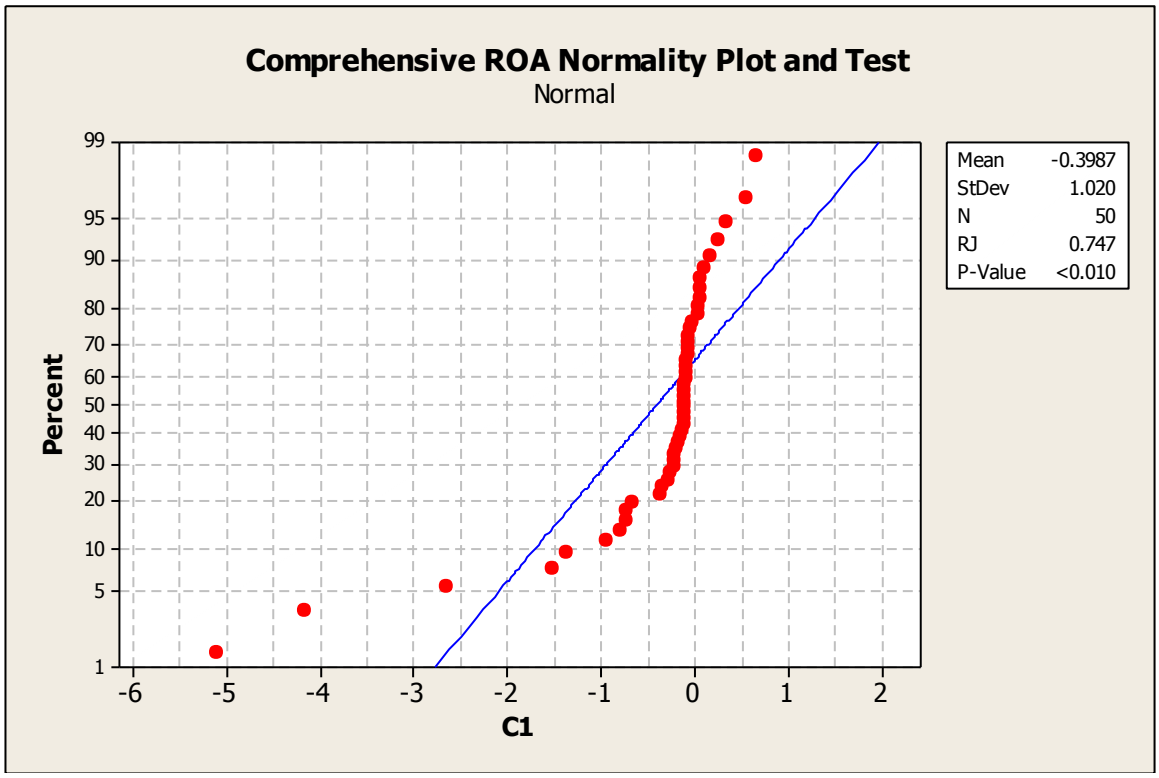
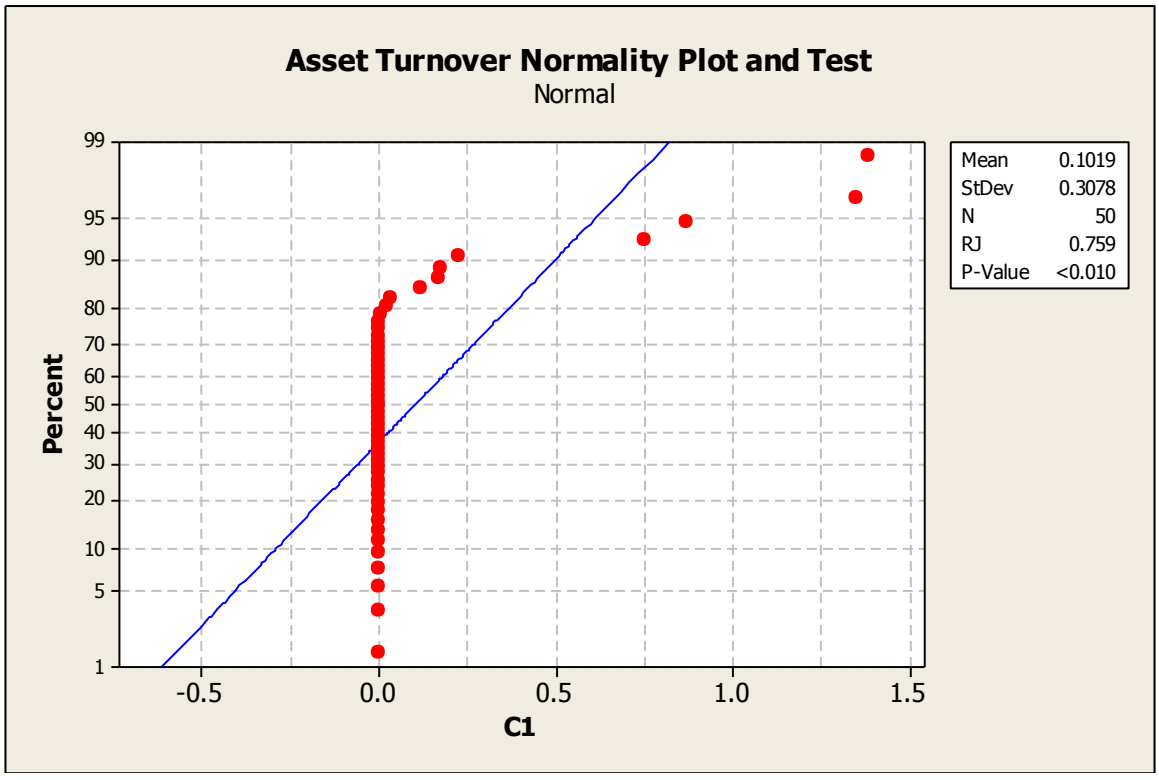
30
20
10
5
1
-6
-5
-4
-3
-2
-1
0
1
2


Comprehensive ROA Normality Plot and Test
Normal
Percent
C1
Mean -0.3987
StDev 1.020
N 50
RJ 0.747
P-Value <0.010


Asset Turnover Normality Plot and Test
Normal
Percent
C1
Mean 0.1019
StDev 0.3078
N 50
RJ 0.759
P-Value <0.010

Appendix E: Levene's Test Outputs

Current Ratio

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	376.1964	7.523928	121.0773
IFRS	50	368.3303	7.366606	126.4075

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.618754	1	0.618754	0.005	0.94377	3.938111
Within Groups	12126.75	98	123.7424			
Total	12127.37	99				

Quick Ratio

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	377.0214	7.540429	120.9123
IFRS	50	368.8597	7.377195	125.7955

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.666135	1	0.666135	0.0054	0.941569	3.938111
Within Groups	12088.68	98	123.3539			
Total	12089.35	99				

Operating Cash Flow Coverage

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	91.71261	1.834252	5.989439
IFRS	50	104.6872	2.093745	7.603708

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.683408	1	1.683408	0.247685	0.619825	3.938111
Within Groups	666.0642	98	6.796574			
Total	667.7476	99				

Debt Ratio

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	59.14844	1.182969	26.97686
IFRS	50	59.65011	1.193002	27.14381

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.002517	1	0.002517	9.3E-05	0.992325	3.938111
Within Groups	2651.913	98	27.06034			
Total	2651.915	99				

Equity Ratio

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	48.88755	0.977751	28.14634
IFRS	50	48.78412	0.975682	27.28441

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.000107	1	0.000107	3.86E-06	0.998436	3.938111
Within Groups	2716.107	98	27.71537			
Total	2716.107	99				

Return on Assets

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	22.36204	0.447241	0.962701
IFRS	50	22.87088	0.457418	0.950156

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.002589	1	0.002589	0.002707	0.958611	3.938111
Within Groups	93.73001	98	0.956429			
Total	93.7326	99				

Comprehensive Return on Assets

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	22.52011	0.450402	0.934075
IFRS	50	22.82763	0.456553	0.92143

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.000946	1	0.000946	0.001019	0.974595	3.938111
Within Groups	90.91977	98	0.927753			
Total	90.92072	99				

Asset Turnover

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Canadian GAAP	50	4.934618	0.098692	0.093112
IFRS	50	5.094033	0.101881	0.094717

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.000254	1	0.000254	0.002706	0.958619	3.938111
Within Groups	9.203585	98	0.093914			
Total	9.203839	99				

Appendix F: Wilcoxon Signed Rank Test Outputs

Current Ratio

T	-370
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	-1.8
Accept Null	
p	0.074

Quick Ratio

T	-444
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	-2.1
Reject Null at 0.05	
p	0.032

Operating Cash Flow Coverage

T	221
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	1.1
Accept Null	
p	0.286

Debt Ratio

T	275
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	1.3
Accept Null	
p	0.184

Equity Ratio

T	287
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	1.4
Accept Null	
p	0.166

Return on Assets

T	-493
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	-2.4
Reject Null at 0.05	
p	0.017

Comprehensive Return on Assets

T	-669
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	-3.2
Reject Null at 0.05	
p	0.001

Asset Turnover

T	-3
n=	50
σ{T}	207.1835
α	0.05
Action(L)	-406.1
Action(U)	406.1
z	0.0
Accept Null	
p	0.988