Financial and Qualitative Determinants of Voluntary Environmental/sustainability Reporting in the Canadian Mining Sector

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Abstract **- The ever increasing attention given to the environmental threats facing the planet have permeated almost all areas of human endeavor. Accounting and corporate reporting has not been immune to this effect and is a key area of interest. Much of the environmental damage and the public costs associated with its clean-up is a result of commercial activity. Captured under the headings of social responsibility accounting, environmental accounting, integrated reporting or sustainability accounting, there are only limited mechanisms in accounting standards that directly address environmental issues and the associated costs and benefits. The majority of reporting mechanisms over the last three decades are largely voluntary so companies can choose whether or not to provide this type of information to users of financial statements. The existing literature in this area has focused on how these disclosures (voluntary or otherwise) have affected user decision making, primarily investors and creditors, and shareholder value.**

What factors lead to a decision to do voluntary reporting with respect to environmental issues? This research focusses on the Canadian mining sector (exclusive of oil and gas) and examines the financial and qualitative characteristics of companies and their respective reporting methods to build a generic profile of a company that would most likely to provide such voluntary reporting. Analysis of annual reports and the associated audited financial statements of companies in the sector will provide the raw data to build this generic profile.

We can infer that companies that are inclined to report on environmental issues, beyond their regulatory responsibilities, are likely to be better environmental stewards. Understanding the financial and qualitative characteristics and having a profile can aid in regulatory decision making and provide potential and current investors an additional analytical tool for assessing corporate social responsibility with regard to environmental and sustainability issues.

Index Terms **– Mining, Accounting, Financial reporting, Environment, Sustainability**

1. Introduction

The ever increasing attention given to the environmental threats facing the planet have permeated almost all areas of human endeavor. Accounting and corporate reporting has not been immune to this effect and is a key area of interest. Much of the environmental damage and the public costs associated with its clean-up is a result of commercial activity.

In spite of this, attempting to determine which companies will be good environmental stewards remains a challenging task. One approach is to infer that companies which provide voluntary environmental reporting, beyond their regulatory responsibilities, are likely to be better environmental stewards. Understanding the financial and qualitative characteristics of the firms which provide the additional disclosures and those which do not can aid in developing a generic profile of companies that are more likely to take their environmental responsibilities seriously. Having such a profile can aid in regulatory decision making as well as provide potential and current investors an additional analytical tool for assessing corporate social responsibility with regard to environmental and sustainability issues.

II. Literature Review

Environmental issues in general are of ever-increasing interest and debate. There is a public interest in having companies engaged in commercial activities which have the potential to result in environmental damage report on those activities, the associated risks and the steps taken to mitigate those same risks. As one of the key public disclosures made by public corporations, the annual report and the associated financial statements therein are a likely location for these types of disclosures. However, accounting rules have been slow to respond [1], with most required disclosure coming through the Management Discussion and Analysis or in other commentary throughout the report. These disclosures are usually captured under the headings of social responsibility accounting, environmental accounting, integrated reporting or sustainability accounting, but it remains that there are only limited mechanisms in accounting standards that directly address environmental issues and the associated costs and benefits [2]. The majority of reporting mechanisms over the last three decades are largely voluntary so companies can choose whether or not to provide this type of information to users of financial statements [3]. The existing literature in this area has focused on how these disclosures (voluntary or otherwise) have affected user decision making, primarily

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investors and creditors, and shareholder value [4]. [1] However no work looks at using financial data as a predictor of levels of environmental stewardship.

III. Purpose and Method

What factors lead to a decision to do voluntary reporting with respect to environmental issues? This paper focusses on the Canadian mining sector (exclusive of oil and gas) and examines the financial and qualitative characteristics of companies and their respective reporting methods to build a generic profile of a company that would most likely provide voluntary reporting on the environmental issues discussed above.

The choice of this sector for analysis revolves around two factors. The mining industry has long been a vital component of Canadian GDP and an area for continued economic development. Additionally, the nature of the various extractive processes and the by-products resulting from refinement activities, are well-known to have the potential to inflict significant environmental harm in the short and long-term horizons. Therefore, having a benchmark can provide feedback on existing mining operations and enable the decision to provide regulatory approvals for new projects. This will also assist current and potential investors in assessing the environmental sustainability practices of the respective company or companies.

To produce this profile, a sample of Canadian public mining companies has been selected and their respective annual reports and financial statements analyzed for evidence of voluntary environmental reporting. The initial sample size is 34, but is reduced by 4 companies that are not operational. In addition, the sample is reviewed for the existence of senior executive positions specifically related to environmental issues and the existence of an environmental committee at the board of directors' level. For each company included in the sample, a set of average financial ratios is calculated over a 10 year horizon. Finally, for each step of the sample analysis the averages is developed. Those steps are those firms that 1) provide voluntary environmental disclosure, 2) have a senior executive position with specific responsibilities for environmental issues, and 3) have a specific board committee responsible for environmental issues. Ratio averages are again calculated for this group. Average ratios for companies not falling into this group will be calculated and used for comparative purposes. Defining what constitutes voluntary reporting is a key decision as there are multiple methods currently in use. It was decided, for the purposes of this study, that those companies that were reporting using some level of the Global Reporting Initiative (GRI) reporting standard for mining companies would be considered to those providing voluntary reporting.[2]

IV. Data and Analysis

The final sample contains 30 publically traded companies in the mining sector that are based in Canada, although their operations may be international. Annual reports and other reporting documents were collected from corporate websites, as available, for the last ten years. The latest reporting period is the fiscal year 2016. For companies that were acquired during this period, the continuing companies' statistics were used in the analysis. Additionally, where the annual reports were not available, SEDAR was accessed to fill in the data gaps.[3] Financial ratios were gathered from the Financial Post Infomart database.[4] The key for the ratios use is as follows:

Ratio	Ratio Code
Return On Equity	1
Return On Assets	2
Operating Margin	3
Net Profit Margin	4
Cash Flow/Total Debt	5
Current Ratio	6
Total Debt/Common Equity	7
Working Cap/Total Assets	8
EBIT Margin	9
Free Cash Flow	10
Free Cash Flow Ratio	11

Simple averages on the key ratios were calculated for each company, the results of which are in Table 1.

Table 1 - Averages for Entire Sample		
Ratio Code		
1	%	-3.73
2	%	-0.91
3	%	0.40
4	%	-3.85
5	Multiple	-2.55
6	Multiple	1.71
7	Multiple	0.12
8	Multiple	4.35
9	%	-2.53
10	$ (millions)	2,496
11	%	0.01

[1] For an example of an exception see Rob Gray, "Accounting and Environmentalism: An exploration of the Challenge of gently Accounting for Accountability, Transparency and Sustainability", *Accounting, Organizations and Society*, Vol 17, No 5, pp 399-425, 1992. For a full discussion of the trends in the literature see Burritt and Schaltegger, "Sustainability Accounting and Reporting: Fad or Trend?" Accounting, Auditing and Accountability Journal, Vol. 23, No. 7, 2010, pp 829-846, and Matthews, M.R. "Twenty-five Years of Social and Environmental Accounting Research: Is there a Silver Jubilee to Celebrate?" *Accounting, Auditing and Accountability Journal*, Vol. 10, No 4, 1997, pp481-531. As representative samples.

[2] For information on the Global Reporting Initiative please see https://www.globalreporting.org. There are varying levels of disclosure that are awarded by GRI based on its assessment, or the disclosure can be self-reporting. This paper will not distinguish between these levels, although further research would be warranted in this area to determine the efficacy of higher achievement levels.

[3] www.sedar.com is the official site for Canadian public company filings.

[4] Accessed through the University of New Brunswick's subscription. For further information on Infomart see https://www.fpinfomart.ca/.

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The first slice taken of the sample is that of the companies reporting voluntarily. Analysis of the group revealed several approaches to voluntary reporting on environmental issues. A large part of the sample, 17 companies, used some form of reporting following the GRI standards. A second group, 3 companies, utilized direct reporting, while 2 companies provided some reporting through their web site, but not comprehensive in nature. Eight (8) companies in the sample did no voluntary reporting. Tables 2-5 displays these results.

Since this paper is using the GRI reporting method as the proxy for voluntary reporting, a further grouping was assembled of those companies using GRI and those who were not. As noted, Table 2 shows the GRI adopters, Table 6 displays the results for the remaining companies.

Table 2 - Averages for Companies using GRI		
Ratio Code		
1	%	2.12
2	%	1.45
3	%	32.99
4	%	-4.29
5	Multiple	100.38
6	Multiple	3.24
7	Multiple	2.56
8	Multiple	14.02
9	%	4.17
10	$ (millions)	113,369
11	%	0.00

Table 3 - Averages for Companies using		
Direct Reporting		0.00
Ratio Code		
1	%	-7.43
2	%	-2.54
3	%	28.62
4	%	-7.05
5	Multiple	135.48
6	Multiple	8.10
7	Multiple	2.77
8	Multiple	17.31
9	%	-3.34
10	$ (millions)	-7,667
11	%	-0.01

Table 4 - Averages for Companies using		
Other Limited Reporting		
Ratio Code		
1	%	1.81
2	%	-2.87
3	%	8.93
4	%	-3.80
5	Multiple	97.52
6	Multiple	2.72
7	Multiple	0.49
8	Multiple	15.37
9	%	1.06
10	$ (millions)	4,032
11	%	-0.01

Table 5 - Averages for Companies Doing		
No Reproting		
Ratio Code		
1	%	0.27
2	%	1.11
3	%	2.13
4	%	0.02
5	Multiple	21.51
6	Multiple	0.57
7	Multiple	0.17
8	Multiple	6.25
9	%	0.52
10	$ (millions)	4,181
11	%	0.01

Table 6 - Averages for Non-GRI Reporting		
Companies		
Ratio Code		
1	%	-10.04
2	%	-3.13
3	%	8.90
4	%	-11.10
5	Multiple	40.38
6	Multiple	6.24
7	Multiple	1.00
8	Multiple	16.39
9	%	-6.45
10	$ (millions)	4,611
11	%	0.02

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The second slice of data was based on whether or not companies had established a senior executive position (VP level) specifically responsible for environmental issues. It is generally assumed that the establishment of senior executive position signals the company's commitment to the particular area in question or their consideration of the importance of the area to the company.[5] As with the voluntary reporting methods, considerable variation was found in job titles for those companies that had established these roles in the executive hierarchy. In some cases, the environmental role was included in larger health and safety, sustainability, and corporate social responsibility roles. To delineate between these varying titles, this paper will group together those companies that have a specific role established that is exclusively responsible for environmental/sustainability issues. Using this decision rule, only 4 companies have established such roles. The associated ratio analysis for those companies that have these roles and those that do not can be seen in Tables 7 and 8 respectively.

Table 7 - Averages for Companies with Specific Environmental Executive Position		
Ratio Code		
1	%	3.57
2	%	3.01
3	%	29.48
4	%	2.25
5	Multiple	-68.75
6	Multiple	9.30
7	Multiple	0.42
8	Multiple	13.22
9	%	8.08
10	$ (millions)	37,109
11	%	0.00

Table 8 - Averages for Companies with No Specific Executive Environmental Position		
Ratio Code		
1	%	-4.18
2	%	-1.08
3	%	21.53
4	%	-8.70
5	Multiple	96.40
6	Multiple	3.81
7	Multiple	2.11
8	Multiple	15.33
9	%	-1.73
10	$ (millions)	70,722
11	%	0.01

[5] An example of this is the emergence of the Chief Information Officer in the late 1990s representing management's increasing awareness of the importance and value associated with information systems and the data they were generating.

The third slice of the data is to identify which companies have committees established at the board of directors level with sole responsibility for environment issues, including voluntary reporting. The logic for this is similar to that for examining whether senior executive positions exist. Ten (10) companies of the sample have established such committees. The results of this selection can be seen in tables 9 and 10.

Table 9 - Averages for Companies with Board Committees Specifically Responsible for Environmental/Sustainability Areas		
Ratio Code		
1	%	-2.49
2	%	-0.87
3	%	30.30
4	%	-6.52
5	Multiple	78.54
6	Multiple	3.07
7	Multiple	4.99
8	Multiple	12.97
9	%	1.44
10	$ (millions)	100,701
11	%	-0.01

Table 10 - Averages for Companies with No Specific Board Committees for Environmnetal/Sustainability Areas		
Ratio Code		
1	%	-3.48
2	%	-0.37
3	%	18.73
4	%	-7.60
5	Multiple	72.29
6	Multiple	5.28
7	Multiple	0.33
8	Multiple	16.09
9	%	-1.35
10	$ (millions)	49,010
11	%	0.02

Companies with all three parameters present then could be considered to have a very high awareness and commitment to environment sustainability in the long term. Investments in the board committees and executive roles, and the associated staffs represent a considerable expenditure. Additionally, complying with any external reporting standard, like the GRI, requires further investment, financial and human, along with a commitment to establish the necessary workflows, policies, practices, and training systems to ensure

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the necessary data is accumulated and aggregated correctly. As such, the sample was sliced to select only companies that had all three parameters to establish the generic profile. In this sample, only one company fit this criteria. The results are seen in Table 11.

Table 11 - Averages for Companies Reporting with GRI, a Specific Executive position and a Dedicated Board Committee		
Ratio Code		
1	%	-4.87
2	%	-0.34
3	%	47.54
4	%	-5.78
5	Multiple	33.81
6	Multiple	2.71
7	Multiple	0.63
8	Multiple	11.84
9	%	2.56
10	$ (millions)	294,138
11	%	0.01

V. Discussion of Results and Conclusions

Based on simple observations of the results, no apparent pattern emerges from the first grouping of analysis (existence of voluntary reporting). Considerable variation exists in the ratio results, particularly for any of the groups doing some form of voluntary reporting. The results for the companies doing no voluntary reporting whatsoever tend to be slightly inferior to those of the others, however it does appear to be significant and it is uncertain whether there is a causal relationship.

When isolating the GRI reporters from the companies not using this standard, a marked difference is apparent the averages. Profitability ratios are much better in the GRI grouping, there appears to be stronger cash flows and solvency ratios are significantly improved. The only area that does not follow this trend are the two liquidity ratios.

The second grouping is based on the existence of a senior executive position devoted exclusively to environmental or sustainability issues, displayed in Tables 7 and 8. Again the results appear somewhat confusing with neither group having consistently better ratios than the other. Companies with the position seem to have better profitability results but appear weaker in terms of cash flow. Liquidity ratio results are mixed and companies with no executive position appear to have stronger solvency positions.

Examining the third grouping, that looking at the existence of board committees, reveals little variation in results. All ratios are quite consistent within the two groups indicating that the existence of the committee has little effect of the reported results.

Given that there is only one company meeting all three of the criteria (results in Table 11), the results are not strictly relevant. However a quick examination reveals the same variations as in the other groupings.

Several caveats are important to note with regards to these results. Since the sample is drawn from the extractive industry (not including oil and gas), there will be considerable variation in reported results for individual companies based on the specific mineral. Revenues would be sensitive to variations in commodity market prices. Additionally, the stage of development of the particular properties of the respective company would affect the results. Newer properties may not show profitability until sufficient volume is being produced. Similarly, as properties exhaust their reserves, unit costs will increase resulting in lower profitability.

The time series for the individual companies is looking at the ten years up to 2016. This period, of course, includes the significant global economic downturn (2007/2008) and a more recent period (2012-2015) where commodity prices remained somewhat suppressed. Additionally, no adjustments have been made to account for variations in company size or number of operating properties covered by the reported results.

The noted variations in the results here provide a preliminary conclusion that the existence of voluntary reporting, executive positions or board committees do not have a specific effect on firm performance. While the study is able to generate a profile of the ten years for the groupings selected, given that no clear pattern emerges, it would be questionable whether or not this simple profile can be relied upon. Longer time frames may be necessary to generate a reliable profile, as well as expanding the number of ratios included to capture more aspects of company performance. Also, when examining the results of the three groupings separately, the interaction effect is not captured. Further statistical analysis, beyond the simple averages and observations here, may result in more conclusive results than this simple preliminary examination.

It may also be useful to test the profile, if a reliable one could be developed, against results from companies that have failed in their environmental obligations. Identifying such companies will require significant additional research but would provide a useful counterfoil to reported results and a subsequent profile of companies fulfilling their obligations.

While conclusive results in terms of the profile are not immediately apparent, the study does provide a lens into the environmental reporting practices within the Canadian mining sector. Voluntary environmental reporting is apparent, in some form or another, in over half the sample. The existence of specific board committees and executive positions lags considerably behind the reporting practices. This is with using a strict definition for the position and the committee. Several companies in the sample combine the role of responsibility for environmental issues (both in terms of executive positions and board committees) into an omnibus position or committee. These usually combine environmental responsibilities with

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those for health and safety concerns, corporate social responsibilities, and other regulatory issues. If the definition used in this paper was expanded to include these, over half of the sample would be deemed to satisfy the requirement.

The intent of this approach is not to develop a tool for assessing firm performance (there are many of these available) but rather to determine whether financial results can be used as an indicator of environmental performance over the long term. The results here, while being able to generate such a profile, do not appear to provide a sufficiently reliable tool although simple to generate. Regulators and other stakeholders will require a minimum of acceptable reliability even at the expense of a more complex approach. Further statistical analysis, expanded data and an identified comparator group would be necessary to develop a predictive tool that would have an acceptable level of reliability. Given the global importance of environmental sustainability, efforts should move forward to develop such a model.

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