

# An Assessment of Corporate Disclosures of IFRS 15: *Revenue from Contracts with Customers*

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## **Why it matters**

Disclosures are an important communication tool within a firm's annual report. The firm's notes about its accounting policies enable financial statement users to understand the basis for the reported numbers, which is critical for analysis. The notes that reference individual line items on the statements provide vital details on what those numbers mean and how they were obtained.

At a minimum, standard setters need to know whether firms have complied with IFRS, and whether the information provided is of high quality. Since boilerplate disclosure has limited information value, it is also useful to explore whether the disclosures reflect the firm's operational complexity. Finally, the decision-making environment is changing, creating a dichotomy of users. Some users want information at a sufficient level of details to enable them to draw insight, but without experiencing information overload, whereas other users are applying machine learning to explore voluminous sets of data. This project examines these issues in the context of IFRS 15.

## **What we explore**

### Disclosure quality

The nature of information is multi-dimensional, therefore we develop several complementary measures of quality. We create metrics that capture the level of information (quantity of text); the content (the extent to which key words from the accounting standard are used); the relevance (by measuring the use of boilerplate text); the clarity (its readability index); and the balance between textual and numeric information.

We compare the disclosure quality of each firm to various benchmarks, such as their country peers, their industry peers, and illustrative examples of IFRS 15 disclosure made publicly available by accounting firms. We also explore our metrics by audit firm, to better understand how auditors shape disclosure.

The amount of disclosure should be commensurate with the need for it: firms with simple operations should disclose a smaller amount of simple text relative to firms with complex revenue processes, in order to provide information value without disclosure overload. We

develop measures of *complexity* and interact these with the amount of disclosure, as a test of whether disclosure choices were appropriate for each firm.

Finally, we explore how well firms have transitioned to IFRS 15, by examining disclosure over three time periods: (1) three years before adoption (2) in the year of transition, and (3) one year after adoption.

#### Firm characteristics

We explore the association between firm characteristics and disclosure quality. Using a cross-sectional analysis of determinants of our metrics, we explore whether disclosure is associated with firm value, performance, governance, and other characteristics. We conclude with tests of the economic implications of reporting, by exploring how disclosure practices affect the market value, the cost of capital, and bid-ask spreads.

#### Disclosure non-compliance

The production of information is costly, which may have caused some firms to try to circumvent the increased disclosures required by IFRS 15. We examine whether some of the firms that did not adopt IFRS 15 (non-discloser) should have done so. Using information on the firms that adopted IFRS 15 (discloser), we develop an algorithm that assesses the likelihood that IFRS 15 applies to any specific firm based on that firm's characteristics (such as industry, size, performance obligations, use of contracts, etc.). We apply the algorithm to the sample of non-discloser firms, then select those with a high likelihood score, and obtain a professional evaluation of whether these firms should have applied IFRS 15.

#### Machine learning capabilities

We use Machine Learning (ML) - a subset of Artificial Intelligence (AI) - in three different ways to better understand its capabilities for assessing disclosures. First, we assess the machine's ability to identify the location of important revenue recognition information. Using a manually coded set of 100 annual reports, we train a machine to find this information and then gauge its performance. Next, we use ML to detect non-compliance. We apply ML techniques to develop an algorithm that helps us identify the non-discloser firms that are likely to have required IFRS 15 disclosure. And of course, the use of NLP to develop our metrics is also a form of AI.

## Contributing knowledge to our research community

Our contribution on the research side is to add to extant knowledge on disclosure indices. We compile our metrics into a *quality* index which we compare to prior research. In this area of the literature, a self-constructed index seems to be the most common method of measuring disclosures. We combine four of the common methods: (1) professional evaluation of a small sample, (2) thematic content analysis, (3) readability analysis, and (4) semantic analysis, for a multi-pronged approach. To connect with the literature in this area, we then corroborate our disclosure measures to those that would be obtained with various disclosure indices used in the literature, as well comparing our highest ranked firms to annual report award winners. Our research is among the first to explore disclosure on IFRS 15, and first to apply a comprehensive set of methods.

## **How we explore it**

### Firms

We compare disclosures across several English-speaking regimes: the USA, Canada, UK, and Australia, where the USA dataset is comprised of firms that follow IFRS and are cross-listed on a stock exchange in the US. For each firm, we collect their annual reports from 2016 to 2019, with the expectation most will have adopted IFRS 15 in 2017 or 2018. We collect annual reports prepared under IFRS for fiscal years ending in 2013 to 2019. We retain firms that meet the following criteria: (i) at least 5 years of annual reports; (ii) positive total assets and retained earnings; (iii) in an industry where at least 10 firms meet the above criteria. For each firm, we separate its annual report into 4 sections: (1) Management Discussion and Analysis (**MD&A**), (2) Primary Financial Statements, (3) **Notes** to the Financial Statements, and (4) Summary of Significant Accounting Policies (**SSAP**). We extract the “revenue recognition” section from their **SSAP**.

### Disclosure metrics

We use Information Extraction and Natural Language Processing (**NLP**) techniques to detect, extract, and create various disclosure metrics, which are described in Appendix A.

### Firm characteristics

Details about the firm, such as financial numbers, industry, etc. are collected from various sources, depending on the country. For firms in the US, we use from *Compustat Capital IQ*.

Details from Canadian firms are obtained from *Capital IQ*. See Appendix B for a list of the variables collected.

## Our findings so far

===== Note: The discussion in the following section pertain to the USA dataset =====

We identify firms that are cross-listed in the USA that use IFRS and adopted IFRS 15. This is done in the following steps:

### Firms cross-listed in the US that follow IFRS

#### *Foreign filers*

Using 2018 and 2019 as our key years, we extract all the CIK codes of firms that filed 20-F or 40-F forms in the EDGAR database in 2018. This produces a set of **n= 915** firms.

We compare this output with a similar one obtained from *Compustat Capital IQ*, where we examine firms that had either **(i)** Accounting Standard Code [ACCTSTD] is equal to “DI” (*Domestic standards generally in accordance with or fully compliant with IFRS*) or **(ii)** non-USD as its native currency [CURNCD] or **(iii)** a positive *American Depository Receipts* ratio [ADRR]. This download produces a larger dataset (than through EDGAR) of n= 2,008 firms, but many have no CIK number, meaning their annual reports are not in EDGAR, and the rest only have F-6 filings in the system or fewer than 5 years of data. The sample is therefore reduced to **n= 1,576** firms. The ones without CIK numbers are predominately Canadian firms, which we will pick up when we analyze the Canadian dataset.

#### *Discloser/Non-discloser*

Since *Compustat Capital IQ* has an Adoption of Accounting Change [ACCTCHG] field that identifies new accounting standards adoption, we download the **n=486** firms that had “IFRS 15” in this field at any time between 2010 and 2019. The transition years for these 486 “discloser” firms are: 2017 (4%), 2018 (87%), and 2019 (10%). Our non-disclosure set is made up of the remaining **n= 1,090** firms.

===== Note: The findings in the following section pertains to a sample of n = 44 annual reports that have been manually-tagged from the USA dataset =====

### Extracting the variables

Here we encounter our first challenge in the project, which is to identify various subsections in the financial statements. The beginning and end of the audit report, financial statements, and the beginning of the SSAP and Notes to the financial statements are easy to find since they are presented consistently across all firms. However, our algorithm is having difficulty identifying the

end of the Notes section, the end of the SSAP, the exact location of the revenue recognition policy, as the latter is typically explained in one of three places: (1) in the SSAP (2) in a Note on Significant Estimates, or (3) in a Note on the effect of new accounting policies.

Because of the complexities encountered, we used NLP to extract the financial statements from the annual report, and then manually tagged the beginning/end of the Notes, SSAP, and revenue recognition policy. Consequently we currently have a very small sample of n=44 firms that were tagged very carefully by the research team.

Moving forward, we are able to simplify the search on revenue recognition policy, but will not be able to identify its specific location within the Notes. This will reduce the number of metrics we can consider, and add noise to the data.

*Next steps:*

**EXTRACTION:** We will apply a simplified algorithm to find and extract the revenue recognition policy, with a trade-off that the measure will be noisier, and some of our metrics (particularly with respect to the SSAP) can not be generated.

**DATA:** We are in the process of obtaining the data from Canadian firms (a request for extraction was sent to SEDAR in August but we are still waiting for the data). We will then collect recent years of UK data (we have an older set of data for this country), and find a collaborator to help collect and analyze the Australian data.

**TABLE 1: Disclosure quality metrics on n=44 firms**

Several of the metrics described in Appendix A are examined:

NAME	DESCRIPTION	MEAN	STD DEV	MIN	MAX
Balance	words/numbers ratio	1.85	3.40	0	13.88
Complex 8	is 1 if Note on segmented reporting	0.23	0.42	0	1.00
Complex 9	is 1 if Note on discontinued operations	0.34	0.48	0	1.00
Complex 10	is 1 if Note on subsequent event	0.39	0.49	0	1.00
Info1a <sup>1</sup>	% of revenue recognition wording that is similar to IFRS 15	0.45	0.17	0	0.65
Info3a-Flesch <sup>2</sup>	the readability of the SSAP	25.71	42.18	-49.2	206.84
Info3b-Flesch <sup>2</sup>	the readability of the Revenue Recognition policy	33.20	50.81	-27.9	206.84
Info3b-Fog	is 1 if SSAP is more readable than IFRS 15	18.34	8.87	0	42.03
Info3c-Flesch	is 1 if SSAP is more readable than IFRS 15	0.14	0.35	0	1.00
Info3d-Fog	is 1 if the Revenue Recognition policy is more readable than IFRS 15	0.98	0.15	0	1.00
Level 1	% of SSAP allocated to Revenue Recognition	0.08	0.16	0	0.95

Level 2	% of Notes allocated to Revenue Recognition	0.02	0.05	(0.14)	0.17
Level 3	% of Notes that are words related to elements required by IFRS 15	0.01	0.01	0	0.02
Level 4	# of tables in Notes that has "Revenue" in it	2.89	6.02	0	22.00
Table Notes	amount of text in table format in the Notes	1,684.84	3,100.47	0	11,702.00
Table SSAP	amount of text in table format in the SSAP	128.68	555.33	0	3,518.00

<sup>1</sup> We used the Cosine Similarity method.

<sup>2</sup> The illustrated IFRS 15 disclosure that forms our baseline generated a scored Gunning Fog score of 18 and a Flesch Ease score of 27.

**TABLE 2: Firm characteristics on n=44 firms**

We examine the following firm characteristics, with variables scaled by Total Assets (AT) where appropriate:

NAME	DESCRIPTION	Compustat	MEAN	STD DEV	MIN	MAX
size	size	log(AT)	9.3	2.4	3.2	14.3
%soft	% of assets that are “soft”	(AT - PPENT)/AT	0.64	0.28	0.12	0.99
%int	intangibles ratio	(INT+GDWL)/AT	0.19	0.25	0	1.1
age	age of the firm	2020 – year(IPODATE)	33	19	6	71
gear	leverage ratio	LTD/AT	0.25	0.18	0	0.72
liquid	current ratio	ACT/LCT	1.58	0.97	0.23	4.5
comp	stock compensation	STKCO/AT	0.01	0.01	0	0.05
r&d	research & development	XRD/AT	0.02	0.09	0	0.61
adv	advertising expense	XAD/AT	0.01	0.01	0	0.04
div	dividend rate	OPTDR	0.81	1.75	0	8.25
re	retained earnings	RE/AT	-0.29	1.95	-10.0	0.65
profit	net income to sales ratio	IB/SALE	0.06	0.13	-0.36	0.36
acq	acquisition dummy	is 1 if AQS>0	0.06	0.25	0	1
gdwl	goodwill impairment	GDWLID/AT	0.47	0.50	0	1

**TABLE 3: Regression model n=44 firms**

Each row represents a disclosure metric (from Table 1) that is regressed against the firm characteristics (from Table 2). Only the coefficients that were significant at the 10% level are tabulated:

	intercept	size	%soft	%int	age	gear	liquid	comp	r&d	adv	div	re	profit	acq	gdwl	Adj-R <sup>2</sup>
Balance							2	830	-62							29%
Complex 8												-0.19				11%
Complex 9					0.01								0.72			11%
Complex 10		0.13										-0.01				5%
Info1a	0.06				-0.01								-0.38			24%
Info3a-Flesch	94		-93	88							-5	-10	133			34%
Info3b-Flesch					0.82											19%
Info3b-Fog		3.22								-592						27%
Info3c-Flesch													1.1		0.24	39%
Info3d-Fog	0.69								-8.3		-0.05					34%
Level 1					-0.01						0.05	0.04				32%
Level 2	0.15	-0.01					-0.02		0.7	-2.36		0.02				55%
Level 3	0.02				-0.01					-0.42						38%
Level 4						-11										38%
Table Notes						-4883										35%
Table SSAP										-60927				2252		45%

## **Appendix A**

### **A description of the metrics developed to evaluate the quality of disclosures**

#### **Level**

##### Quantity

The amount of revenue recognition information is our first measures of disclosure on IFRS 15.

**Level1** = within *SSAP*, the percentage of text allocated to the section on revenue recognition.

**Level2** = within the *Notes*, the percentage of text allocated to *Notes* on revenues.

##### Content

The next two metrics capture the type of information that meet the requirements of IFRS 15.

**Level3** = within the *Notes*, a count of the number of items/elements required to be disclosed by IFRS 15 (See Appendix A for a list of words representing these items/elements); some variants of Level3 can be obtained with a weighting scheme of these words.

**Level4** = a count of the number of revenue line items (i.e., rows) tabulated in the *Notes*.

#### **Informativeness**

##### Relevance

Disclosures could meet one of two objectives: to explain the accounting standard generally (which we refer to as **DisclGen**) or to explain how the standard specifically applies to the firm (**DisclFirm**). An example of *DisclGen* is where many firms in our pilot study described *the 5-step model for revenue recognition*. Since the former (*DisclGen*) is easily available public information, it is the latter (*DisclFirm*) that provides information value.

Our first approach is to identify disclosure that is common to a firm's peer group, in order to parse out each firm's *SSAP* into *DisclFirm* vs *DisclGen*. We employ lexical, semantic, and n-grams to identify common disclosure in order to separate *DisclFirm* from *DisclGen*. This allows us to create a ratio of firm-specific disclosure [*DisclFirm*/*DisclGen*], which is increasing in the proportion of firm-specific disclosure. We use various peer-groupings to establish *DisclGen*:

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<sup>7</sup> Note: For sensitivity analysis, we will also calculate common variants of our measures. For example, when calculating the proportion of text related to revenue, we re-calculate this metric after removing common words such as "the", "and", and "it", etc. Some measures are further enhanced with a fine-grained analysis of nouns/adjectives/verbs.

**nfo1a** = where *DisclGen* is based on the IFRS 15 accounting standard.

**Info1b** = where *DisclGen* is the disclosure common to the firm's industry. **Info1c** = where *DisclGen* is the disclosure common to the entire sample.

**Info1d** = where *DisclGen* is the disclosure common to all firms that had the same auditor.

Our second approach examines the overall disclosure without parsing it between firm-specific and general parts. Here we apply *Text Reuse* techniques to estimate the proportion of a firm's SSAP that is unique to that firm. This complements the analysis above by providing a metric that is less noisy (as it does not rely on accurate parsing) but more granular.

**Info2a** = where each firm is compared to the IFRS 15 accounting standard. **Info2b** = where each firm is compared to the firm's industry.

**Info2c** = where each firm is compared to the entire sample.

**Info2d** = where each firm is compared to all firms that had the same auditor.

We have access to several **Text Reuse** techniques to construct the above metrics, and these generate a score between 0 (no text reuse) and 1 (identical text) for each firm:

- the Type Token Ratio, which measures the number of unique words
- the Cosine Similarity (as in Slaton et al., 1975), which uses vector space model to measure the similarity of texts
- Word Error Rate algorithm (as in Popović and Ney, 2007) that measures the number of insertions, deletions, and/or substitutions needed to transform one text to another
- TESAS (as in Piao and McEnery, 2003) which includes NLP techniques
- Plagiarism software

Finally, we apply content analysis to examine whether important themes are included in the disclosure, to address the possibility that a firm might provide lengthy disclosure yet say very little. We first develop a set of themes from our textual analysis of the standard itself through word networks and cluster. We then calculate what percentage of the themes mentioned by the firm.

**Info3** = the percentage of themes mentioned in either the *SSAP* or the *Notes*.

### Clarity

We explore how well firms explain the new standards themselves. Although the standards can be complex, firms should use the simplest language possible to explain how they apply the standards to their own operations. We use *Readability* metrics to measure the clarity of descriptions provided in the *SSAP* and the *Notes*. We also compare the clarity of the firm's disclosure relative to the clarity of the accounting standard itself, to gauge whether the firm

obfuscated or simplified it.

**Info3a** = the *Readability* of the firm's *SSAP* on revenue recognition. |

**nfo3b** = the *Readability* of the firm's *Notes* on revenue.

**Info3c** = an indicator variable equal to 1 if Info3a > the *Readability* of IFRS

15. **Info3d** = an indicator variable equal to 1 if Info3b > the *Readability* of IFRS 15.

We have access to several **Readability** metrics such as:

- the FOG index, which ranges from 6-17, reflecting the years of education required to be able to understand the text
- the FLESCH index, which reflects the school level required to understand the text, ranging from 30 (university degree) to 100 (5<sup>th</sup> grade)
- and several others: <https://clickhelp.com/software-documentation-tool/user-manual/readability-metrics.html>

### Balance

The ratio of words to numbers is not in itself a measure of quality. However, we surmise the optimal representation is a balanced mixture of the two. Too few numbers fails to provide sufficient depth to understand economic implications, whereas too many numbers fails to provide context. Our first *balance* measure helps capture disclosure practices that are at either of these two extremes.

**Bal1** = an indicator variable equal to 1 if the firm is in the top percentile of the ratio [words/numbers] in their *Notes* on revenue.

**Bal2** = an indicator variable equal to 1 if the firm is in the top percentile of the ratio [numbers/words] in their *Notes* on revenue.

Management's response to new accounting standards is expected to be neutral. We use textual analysis of the *MD&A* to evaluate management communication of the change in accounting.

For each mention of the accounting standard or revenue recognition policy, we obtain the following:

**Bal3** = an assessment of whether management adopted a passive or active voice, where a passive voice could be indicative of management feeling they are submitting to authority; the analysis would be assessed with Stanford Sentiment Analysis and TextBlob.

**Bal4** = a sentiment analysis of whether management had a positive or negative tone, where a negative tone may suggest management anticipates the standard will cause them to

report poor performance; the analysis would be assessed with word lists from Henry (2006), Henry (2008) and Loughran and McDonald (2011).

The importance of a message is reflected in how and where management communicates it. Our last measures of balance are based on the assumption that adopting a new accounting standard

on revenues is significant, and the impact of this should be mentioned in the *MD&A*. We apply textual analysis to the *MD&A* to gauge the importance assigned to the new accounting standard as follows:

Bal5 = how often it is mentioned.

Bal6 = the location of the first mention, as a percentage of text that precedes it.

Bal7 = the proximity to other key impact words such as “profits”, “returns”, “shareholders”, “risks”.

### Transition

The purpose of IFRS 15 is to improve information about the nature, amount, timing, and uncertainty of revenue and cash flows arising from a contract with a customer. We explore how the transition from IAS 18 to IFRS 15 was handled, and its consequence on reporting. For each firm in our sample, we identify the year they transitioned to IFRS 15, and examine their disclosures *over time* and in the *year of adoption*.

#### Over time

Our measures examine how early management started preparing users for the change in accounting standards, and changes in the information provided.

Time1 = the number of years ahead of time management began discussing IFRS

15. Time2 = a time-series analysis (or pre/post comparison) of the following metrics:

- disclosure on revenues (metrics = Level1, Level2)
- the use of key words from the standard (metric = Level3)
- the number of revenue lines in the *Notes* (metric = Level4)
- the use of boilerplate disclosures (metrics = Info2a-d)
- clarity (metrics = Info3a-d)
- the balance between qualitative and quantitative information (metric = [total numbers/total words] in the revenue *Notes*)

Time3 = a change in the number of line items in the Statement of Financial Position.

Time4 = a change in the number of line items in the Statement of Income.

### Year of adoption

We expect greater focus on IFRS 15 in the year of adoption, therefore examine whether the message is communicated differently in that year, through a higher ratio of the following metrics in the year of adoption:

**Year1** = how often the standard is mentioned (metric = Bal5).

**Year2** = the location of the first mention (metric = Bal6).

**Year3** = the proximity to impact words (metric = Bal7).

### **Overall Quality**

All of the constructs discussed in this section are either binary (0 or 1) or measured on a scale of 1 to 100, allowing us to aggregate the values (either weighted or unweighted) and interact the scores to obtain overall measures. We use this feature to create a meaningful index of the quality of IFRS 15 disclosure. We inform and advance the disclosure literature by corroborating our index to two methods employed in prior research. First, we explore whether our highest disclosure-ranking firms are on the list of award-winning annual reports in each country. Next, we collect as many of the checklist items from prior research as possible, and recalculate the index with these variables to compare with our own.

### **Complexity**

Firms should align their disclosure practice with the need to provide information. For example, a firm with simple operations should not overwhelm financial statement users with high volumes of unnecessary information, whereas organizations with more complex operations should provide more information to help users understand implications. We create metrics of firm *complexity* to explore whether the level of disclosure on IFRS 15 is commensurate with the operations of the firm, and with their financial reporting complexity.

### Operation

s

**Complex1** = a count of the number of words connected to complexity, such as judgment, uncertainty, complexity, risk, etc.

**Complex2** = the type of words the firm uses to define its operations; we first tag words that are meant to describe their operations, such as “business model”, “company profile”, “operations”, etc.; we then collect the sentences containing these words, and evaluate how often these sentences contains words connected to complexity.

### Financial reporting

**Complex3** = the percentage of sentences in the MD&A that include words related to revenue recognition, such as “IFRS 15”, “accounting policy”, “revenue recognition”, etc.

**Complex4** = a count of the # of IFRICs mentioned in the annual report.

**Complex5** = how material the standard ultimately was to the firm, as measured by the following ratio in the year of transition [(the adjustment due to transition to IFRS 15)/(total Retained Earnings)].

**Complex6** = how significant the standard might have been, as measured by the change in revenue over the prior three years.

**Complex7** = an indicator variable equal to 1 if IFRS 15 was adopted prospectively (because the impact was too complex), and equal to 0 if it was adopted retroactively.

**Complex8** = an indicator variable equal to 1 if segmented reporting was applied, and 0 otherwise.

**Complex9** = an indicator variable equal to 1 if the firm had a note on discontinued operations, and 0 otherwise.

**Complex10** = an indicator variable equal to 1 if the firm had a note on subsequent events, and 0 otherwise.

If disclosure practices were efficient, we would expect firms with simple operations to provide minimal, simple information on IFRS 15. We explore this assertion by testing whether less complex firms:

- have a lower count of items/elements (metric = Level3)
- provide less firm-specific relative to general disclosure (metrics = Info1, Info2)
- communicate with more clarity (metrics = Info3)
- provide relatively less qualitative information (metric = [total numbers/total words] in the revenue *Notes*)
- notify users with less lead time (metric = Time1)
- experience smaller changes as a result of the new standard (metrics = Time2,3,4)

## ***Appendix B***

### ***A description of the information collected about the firms***

#### **Firm characteristics**

##### Firm characteristics and disclosure quality

With the above measures in place, we are ready to explore the firm characteristics associated with disclosure practices. We first investigate variations in quality based on high-level categories: (1) country (2) industry, and (3) audit firm. The country analysis provides insight on the effect of legislation and regulation on disclosure. The industry analysis examines how the economics of an industry shapes its disclosure practices. The audit firm analysis explores to what degree auditors influence client reporting (tested by firm, and also by Big-4 vs Non-Big 4 dichotomy). Where we perceive significant differences in our high-level analysis, we control for them when we (next) test disclosure at the corporate level.

Following the high-level analysis, we are able to delve deeper into firm characteristics that could be associated with the firm's disclosure practice. We explore whether our quality index, and its individual elements are significantly related to variables that define the corporation. We include variables from prior research on disclosure as well as some theoretical ones from accounting literature, in a regression of each construct on firm characteristics on the following dimensions:

**Firm performance** (1) accounting effect in the *year of transition* [represented as (i) Dummy variable for Increase vs decrease in earnings and (ii) Magnitude of change in earnings] (2) Economic effect in *year following transition* [represented as (i) Dummy variable for Increase vs decrease in earnings and (ii) Magnitude of change in earnings.]

**Firm value** (1) total net assets (2) Soft-to-hard asset ratio (3) intangibles as % of assets

**Firm characteristics** (1) Firm age,(2) Competition [Herfindahl index] (3) gearing ratio (4) liquidity ratio (5) size of any seasoned equity offering (6) cross-listings

**Governance** (1) Board composition (2) CEO compensation (3) ownership structure (4) audit committee

**Firm complexity** (1) Segmented reporting (2) Length of the annual report (3) variables from the Complexity section (above) identified as significant factors

**Audit engagement** (1) length (in years) of auditor tenure (2) Audit opinion (3) Month of the firm's fiscal year end

**Social Impact** (1) CSR ranking (2) The frequency of use of social responsibility words in the MD&A, such as "stakeholder", "transparency", "community", "climate", "human rights", "social", "respect", "ethics"

## **Firm performance**

### Firm performance and disclosure quality

We round out this research project by exploring the capital market implication of good disclosure practices. We explore the value relevance of disclosure, by testing if our constructs have significant explanatory power in a regression of the market value of the firm against the book value of its net assets as well as the corporate variables listed above. We also test for a relationship with the firms' cost of capital and with proxies of information asymmetry, such as bid-ask spreads. This analysis improves our understanding of the economic consequences of disclosure practices.