Firms can meaningfully increase their market value by increasing the readability of their annual reports

Industry Report on:

It Pays to Write Well

Through the studies summarized in this report, IBECC expert Dr. Hwang & colleague Dr. Kim investigated the effects of readability of disclosure documents on firm value.

Read on to learn how the studies were conducted, what IBECC researcher Dr. Hwang and his colleague Dr. Kim found, and the key takeaways for your business.

1. Rationale

Corporate disclosure documents include accounting numbers accompanied by a significant volume of text. Regulators, practitioners, and academics alike are increasingly interested in understanding how the readability of such text affects investors’ perception of the firm. The existing literature provides evidence that the readability of disclosure documents affects analyst forecast dispersion, stock return volatility and trading volume. Prior work also suggests that low readability undermines readers’ belief that a source is trustworthy (McGlone and Tofighbahksh, 2000; Alter and Oppenheimer, 2008). However, to the researchers’ best knowledge, there existed no previous research on how readability affects firm value and to what extent lower readability of annual reports lowers a firm’s market value compared to its “true” fundamental value.

The researchers contributed to this new line of research by investigating the readability of equity closed-end investment funds (CEFs) and using a more refined measure of readability than that used in previous research. CEFs have several characteristics that make it possible for the researchers to shed light on the value implications of annual reports’ readability. Like all publicly traded corporations, CEFs file annual reports with the Securities and Exchange Commission (SEC) and their shareholders. Since CEFs are relatively small with no analyst coverage and little coverage in the financial press, their annual reports typically constitute the primary source of information for investors. Furthermore, both CEFs and the stocks held be these CEFs are traded on stock exchanges. This makes it possible to compare the market value of the fund against the market value of its underlying assets and thereby assess if the “discount” between these two is tied to the readability of its annual report.
2. Background

There is a significant body of research on how corporate disclosure affects investor perception and firm outcome variables (Core, 2001; Fields, Lys, and Vincent, 2001; Healy and Palepu, 2001; Beyer, Cohen, Lys, and Walther, 2010). Earlier work focused mainly on how informative the accounting numbers are, but more recently the focus has shifted to how informative the accompanying text is and the ease with which corporate disclosure documents can be processed (e.g., Miller, 2010; Lehavy, Li and Merkley, 2011; Lawrence, 2013; Loughran and McDonald, 2014). Findings by Miller (2010), Lawrence (2013) and Rennekamp (2012) suggest that greater readability facilitates small investors’ access to information and helps level the playing field. Results from Lehavy, Li, and Merkley (2011) showed that lower readability of 10-K documents is associated with greater disagreement and lower forecast accuracy among professional sell-side analysts. According to findings by You and Zhang (2009), lower readability slows the stock market’s reaction to value-relevant information in 10-K filings. Loughran and McDonald (2014) found that firms with low readability 10-K documents are linked to higher stock return volatility, greater analyst dispersion and larger absolute earnings surprises.

3. Research Description

Building upon the existing body of evidence, the researchers conjectured that poor readability generates distrust and uncertainty, which results in lower demand for shares of firms with hard-to-read annual reports, thereby causing these firms to trade at greater discounts. They expected to find a negative association between readability and a CEF’s discount, defined as the difference between a CEF’s market value and the market value of its underlying assets. Thus, they formulated their hypothesis as follows: CEFs whose annual reports have lower readability trade at greater discounts than their counterparts with more easily readable reports.

To assess readability, the researchers built on the SEC’s Plain English Handbook (1998) developed to help firms make their disclosure documents easier to read. In the handbook, the SEC lists eight language-related writing faults and one formatting-related writing fault that make a document harder to read: (1) long sentences, (2) passive voice, (3) weak verbs, (4) superfluous words, (5) legal and financial jargon, (6) numerous defined terms, (7) abstract words, (8) unnecessary details, and (9) unreadable design and layout. To gauge the degree to which CEFs’ annual reports suffer from these writing faults, the researchers used StyleWriter (also used by Miller, 2010), a Word manuscript editor that captures six of the language-related writing faults listed in the SEC’s Handbook. “Long sentences” and “numerous defined terms” are not captured by StyleWriter. In addition, the researchers considered that “abstract words” don’t meaningfully confuse CEF investors and thus excluded them as well.

Readability (Baseline) is calculated as: the # of times each of the 5 writing faults occur in the CEF’s most recent annual report, divided by the # of sentences and multiplied by -10. Low (i.e. more negative) values imply low readability and high (i.e. less negative) values imply high readability. Because most of the variation in Readability (Baseline) comes from “passive verbs”, overpowering other components such as “hidden verbs”, for the tests in this study the researchers experimented with two variants of Readability (Baseline): Readability (Standardized) and Readability (PAC). To construct Readability (Standardized), the researchers first standardized each of the 5 components and then computed the equal weighted average across the five standardized components. In Readability (PCA), they took the first principal component of the five components. Additional information on these three measures of readability is available in the published document (pp. 12-13).
The researchers conducted four experimental studies to explore: (1) the validity of their readability measure; (2) the results of their readability measure versus the Fog Index and the Flesch-Kincaid Index, both of which are readability measures used in prior studies; (3) which of the five writing faults contributes the most to an annual report’s perceived readability; and (4) the effects of a report’s readability on subjects’ trust on the information provided, perception of the manager’s skill and mood.

In order to assess the effect of readability on firm value, the researchers followed the system generalized method of moments (GMM) procedure of Blundell and Bond (1998) and conducted a series of regression analyses of the monthly CEF discount on the readability of the most recent annual report, along with various control variables listed and described in Appendix F of the published paper. They also experimented with the Fog Index and the Flesch-Kincaid Index.

To help establish causality, that is, to help establish that it is truly readability that produces the observed results, the researchers explored the role of fund age, manager tenure and the volatility of performance of CEF funds. They conjectured that investors are more likely to rely on annual reports than on past performance if the fund’s manager’s tenure is relatively short, if the fund is relatively young, and if past performance has been volatile. Therefore, they expected the effect of readability to be stronger under these circumstances. On a second attempt at establishing causality, the researchers conducted a difference-in-difference analysis around the Plain Writing Act (PWA) of 2010, designed to make documents produced by the government (or government agencies) easier to read for the general public. The researchers conjectured that the PWA had an incremental positive impact on the readability of documents filed with the SEC, especially on those with “low readability scores”.

In their final analysis, the researchers examined the extent to which their findings of the impact of readability on firm value for CEFs generalize to regular publicly traded corporations.

**How was this study conducted?**

To build the study’s sample, the researchers extracted a list of CEFs from the Center for Research in Security Prices (CRSP), which provides monthly CEFs prices. They obtained monthly data on the market value of each fund’s underlying assets on a per-share basis from Compustat. They merged the two data sets via PERMNO, a security identifier used by both CRSP and Compustat, and manually screened the data for obvious entry errors. For information on a fund’s equity holdings, the researchers used data from the Thomson-Reuters database and merged it with the CRSP/Compustat data via each CEF’s name. Their final sample had 92 CEFs with annual reports in html/txt format available in the SEC Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system for the period 2003-2013.

To measure readability, the researchers downloaded the annual reports (Form N-CSR) for each CEF in the sample from 2003 through 2013. Reports were cleaned following the procedures described in Appendix A of the published paper and were individually saved as Word documents. The researchers applied StyleWriter to each annual report and recorded the number of times each of the 5 writing faults appeared in the text.

To conduct the four experimental studies described earlier, the researchers recruited undergraduate business students at Cornell University and randomly assigned them CEF annual reports that earned either “high readability” scores or “low readability” scores, as per this study’s readability measure or as per the Fog Index and the Flesch-Kincaid Index. After reading each report, the students were asked to address the following questions on a scale from 7 (“Very”) to 1 (“Not at all”): “How easy to read was the annual report?”, “How trustworthy does the information provided by the company seem to you?”, and “How skilled does the fund manager seem to you after reading the annual
In addition, they were asked the following two questions: “How do you feel right now?”, using a scale range from 7 (“Calm”) to 1 (“Bothered”), and “How do you feel right now?”, using a scale range from 7 (“Relaxed”) to 1 (“Tense”).

For the PWA tests, the researchers compared the changes in discount levels of CEFs with “low readability” (the “treatment group”) with those of CEFs with “high readability” (the “control group”) around the signing of the PWA. For each CEF in either group, they took the first annual report whose fiscal year ended after the passage of the PWA, and compared it with the first annual report that was written prior to the signature of the PWA.

To examine whether their findings extend to regular publicly traded corporations, the researchers conducted a random draw of firms from the CRSP/Compustat universe. Their final sample contained 95 firms with annual reports in html/text format available in the SEC Edgar system for the period 2000 to 2015. Through an identical regression framework as that used for CEFs, they assessed how readability of the annual reports of the firms in the sample related to their Tobin’s Q - the market value of total assets divided by the book value of total assets. Control variables included in this analysis are listed and described in Table 8 of the published paper.

**What did IBECC expert Dr. Hwang & his colleague find?**

The researchers found evidence that CEFs with “low readability” trade at greater discounts relative to those with “higher readability”. The coefficient estimates obtained through the regression analyses to assess the impact of readability on firm’s value are presented in Table 1 for Readability (Baseline), Readability (Standardized) and Readability (PCA). The coefficient estimate for Readability (Baseline) of 0.027 implies that a 10 percentage points increase in the number of writing faults per sentence, on average, increases the CEF discount by 2.7 percentage points. For reference, the average CEF discount for the sample is 5.1%. The economic significance is similar for Readability (Standardized) and Readability (PCA). The weaker association found between readability and CEF discounts for the Fog Index or the Flesch-Kincaid Index suggests that Readability is a more refined measure of readability than the Fog Index or the Flesch-Kincaid Index.

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<tr>
<th>Table 1. CEFs premia/(discounts) and readability (# of observations = 6,507)</th>
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<tr>
<td><strong>Readability (Baseline)</strong></td>
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<td>Readability</td>
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<td>Lagged Premia/(Discounts)</td>
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*** Statistically significant at the 1% level

**t**-statistics are reported in parentheses and are based on standard errors adjusted for heteroscedasticity and arbitrary forms of auto-and cross-correlation.

Additional results for control variables included in this analysis are available in Table 4 of the published paper.

In the experimental component, students perceived reports with “high readability” scores as significantly easier to read than those with “low readability scores”. However, when the reports were sorted using the Fog Index or the Flesch-Kincaid Index, their perception of the reports’ readability agreed to a lesser
extent. Furthermore, the researchers found that annual reports with “high readability” scores come
with more positive moods, more trust and higher perception of managerial skill.

Furthermore, while the average readability effect is such that a 10 percentage points increase in the
number of writing faults per sentence, on average, increases the CEF discount by 2.7 percentage
points, additional tests showed a substantially stronger effect of readability for (1) funds whose
managers have been on the job for less than a year, (2) funds which have been in operation for less
than 5 years, and (3) funds with highly volatile past performance.

The researchers also found a sudden and disproportionate rise in the readability of annual reports
that, prior to the PWA, had “low readability” scores. The rise in readability around the PWA was
accompanied by an abnormal and lasting drop in CEF discounts.

The analysis conducted on regular publicly traded corporations showed that higher readability is
associated with higher valuation ratios (in particular, market-to-book ratios), although the effect is
weaker than that observed for CEFs. The coefficient estimates obtained for Readability (Baseline),
Readability (Standardized) and Readability (PCA) are presented in Table 2. The estimate for
Readability (Baseline) of 0.133 implies that a 10 percentage points decrease in the number of writing
faults per sentence, on average, increases the market-to-book ratio by 0.133. For reference, the average
market-to-book ratio for the sample is 1.892.

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<th>Readability (Baseline)</th>
<th>Readability (Standardized)</th>
<th>Readability (PCA)</th>
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<tr>
<td>Readability</td>
<td>0.133* (1.85)</td>
<td>0.029** (2.07)</td>
<td>0.059** (2.08)</td>
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** Statistically significant at the 5% level
* Statistically significant at the 10% level

t-statistics are reported in parentheses and are based on standard errors adjusted for heteroscedasticity and arbitrary forms
of auto-and cross-correlation.

Additional results for control variables included in this analysis are available in Table 9 of the published paper

**What do these results mean?**

Results from this study suggest that:

- Poorly written reports cause firms to trade at a discount, especially those in opaque
  information environments where investors rely heavily on annual reports for information
- The effect of readability is stronger for funds whose managers have been on the job for less
  than a year, funds which have been in operation for less than 5 years, and funds with highly
  volatile past performance
- For regular publicly traded firms, the association between the annual report’s readability and
  firm value is economically meaningful but weaker than for CEFs
- The readability measure used in this study is more refined than either the Fog Index or the Flesch-
  Kincaid Index, which are primary readability measures used in prior studies
4. Takeaways for Your Business

Key Takeaway:

Firms can meaningfully increase their market value by increasing the readability of their annual reports.

Other Important Takeaways

- There is considerable variation in annual reports’ readability among firms
- Difficult to read annual reports make investors become suspicious, perceive a lower quality in the firm and its managers, or subconsciously develop negative sentiment

Caveat

A disadvantage of studying CEFs is that a CEF’s premium/discount is codetermined by a host of other forces, such as liquidity, managerial skill, and investor sentiment. Readability may be correlated with some of these factors, creating a form of omitted variable bias.

This is an industry-focused summary of the publication cited below. For references cited and additional information please consult the published paper: