

## SHORT AND SWEET OR JUST SHORT?

### THE READABILITY OF PRODUCT DISCLOSURE STATEMENTS

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**Abstract:** Given the importance of information in making informed financial decisions, it is vital that investors are able to understand the information provided to them. With this in mind, in 2013, New Zealand legislators replaced the existing disclosure documents with the Product Disclosure Statement (“PDS”). The change was in response to large and complex disclosure documents from providers of new or ongoing sales of financial products. PDS documents have a strictly enforced word limit and are meant to be written in plain English to allow “prudent but non-expert” investors access to the information they contain. We compare the readability of the old prospectus and investment statements (the disclosure documents legally required before 2013) with the new PDS for a sample of superannuation mutual funds (referred to in New Zealand as KiwiSaver funds). We find that while the documents are definitely shorter, there have been mixed improvements in the readability of the documents. The main improvements are a reduction in the amount of finance terminology used, while the language in PDSs compared to investment statements is actually more complex, likely driven by the word limit. As a result, while investors require less finance knowledge, they appear to require a higher level of general education to understand the documents, potentially putting the information out of reach of over half the general population.

**Keywords:** Readability, financial disclosure, KiwiSaver

#### 1. Introduction

The creation of the Product Disclosure Statement (PDS) disclosure regime in New Zealand’s Financial Markets Conduct Act 2013 was designed to overcome several weaknesses with prospectuses. Prospectuses and investment statements had become increasingly long and complex over time, and had transformed from documents providing information to investors into documents designed to limit potential liability. As a result, there is a widespread belief that investors stopped using prospectuses and investment statements to make financial decisions about investing in new products or issues. The PDSs are designed to be shorter (for managed investment products they are

limited to 6,000 words or 12 pages) and issuers are encouraged to make them easier to read. This research examines whether the new documents are significantly easier to understand.

We consider the ease with which an investor can understand a document in two ways; language complexity and the amount of financial terminology an investor needs to know in order to understand the PDS. Readability is particularly important in the context of KiwiSaver as these are products that are sold to 'everyday' investors, and have been widely taken up by the New Zealand investing public.<sup>1</sup> KiwiSaver was introduced in New Zealand in 2007 as a defined contribution superannuation savings scheme to address the baby boomer retirement issue. The scheme was set up on an opt-out basis, where employees starting a job would be given a short period to opt-out, otherwise they were enrolled. Investors have a limited number of decisions that they need to make, specifically their contribution rate (3, 4 or 8%), the fund type (cash, conservative, moderate, balanced, growth or aggressive) and fund provider. Members who did not make a decision were auto-enrolled into a conservative fund run by a limited number of default providers. In total there are currently 25 providers (although this number has changed over time as a result of the entrance of new providers, mergers and closures), offering 144 different funds managing, as at Oct 2017, over NZ\$40 billion. KiwiSaver offers an excellent opportunity to examine readability as it is a product sold to a wider audience than most investment products, making readability even more important given many participants lack of financial knowledge, and products are sold on a continual basis requiring updated disclosure documents from the same providers. This creates a nice sample for this natural experiment.

To look at whether the PDS documents are easier to read, we compare the last prepared prospectus and investment statement with the first PDS document for each fund manager. We use a range of metrics designed to measure the readability of the text and the amount of financial terminology contained in the document. We compare each of the measures for 21 fund providers for their publicly available prospectus and PDS, and a smaller sample of 18 funds who provided us with copies of their old investment statements, and test the statistical significance of the differences.

The results show that the PDS regime has resulted in a significant reduction in the amount of financial terminology that investors need to understand, from approximately 240 terms to 103 (the percentage of complex words is also lower for the average PDS, at 15.3% compared to 19.3% for the average prospectus). However, when compared with the investment statement, other readability measures suggest the PDS has resulted in less readable documents. While sentence lengths remain similar, the complexity of the language increased, and finance terms were used proportionally more frequently. Compared to the prospectus the results for language complexity are again mixed. On one hand, the language used is simpler, with a reduction in the number of large words. On the other hand, the length of the sentences has significantly increased, making them more complex and potentially harder to digest. Additionally, the increase in the length of the sentences outweighs the simplification of the language. Therefore, in general it appears that investors require a significantly higher level of education to understand the product disclosure statements than either the prospectus or investment

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<sup>1</sup> While KiwiSaver has been sold to the public at large in New Zealand, the Financial Markets Conduct Act sets the target for the readability of PDS documents as "prudent but non expert" investors. While the legal formulation as to this level of investor is arguably higher than the general public, we have chosen to assess readability in relation to the wider public as this is the target market for KiwiSaver.

statement. Overall, the results suggest that there has been progress toward more accessible disclosures, but there is still considerable room for improvement.

## 2. Literature Review

The use of textual analysis and readability measures are a recent development in the field of finance, although they have an established history in other fields. Additionally, many of the studies to date have been restricted to considering annual reports, specifically the U.S.-based 10-K documents. For instance, Li (2008) considered the impact of annual report readability on firm performance using the Fog Index. The Fog Index is a function of word complexity and sentence length. Li finds that firms with lower earnings have higher Fog Index scores, which indicates that they are harder to read. Additionally, firms with better readability have higher earnings persistence. Biddle, Hilary and Verdi (2009) find that firms with higher readability have greater capital investment efficiency, while Guay, Samuels and Taylor (2015) find that firms with less readable annual reports try to overcome this by issuing more managerial forecasts. Lundholm, Rogo and Zhang (2014) find that foreign firms listing in the U.S. have more readable documents. They suggest foreign firms need to make their information clearer than domestic firms to attract investors.

Readability also impacts on the way investors behave in relation to firms. Miller (2010) finds that retail investors trade fewer shares in firms with less readable and larger annual reports, while Lawrence (2013) finds that small investors invest more in firms with more readable and shorter annual reports. Analysts are also impacted by the readability of annual reports. Lehavy, Li and Merkley (2011) find that firms with less readable annual reports attract more analysts, have higher analyst dispersion and lower earnings forecast accuracy. Additionally, the quartile with the worst readability have a Fog Index that requires a level of education greater than a Master's degree to understand and therefore are considered unreadable.

Studies considering documents other than annual reports are less common. De Franco, Hope, Vyas and Zhou et al. (2015) consider the readability of analyst reports and find that more readable analyst reports result in increased stock trading volumes in the days immediately following the report's release. They argue this is consistent with models that suggest investors will initiate trades when they have access to more precise information. Additionally, Cash and Tsai (2017) study the readability of credit card agreements. They find the average agreement is written to an 8th or 9th grade level, which is greater than the average American's reading level. Additionally, more readable agreements are associated with lower annual percentage rates.

Studies related to offer documents have not tended to consider readability, although some studies have conducted textual analysis of IPO documents for equity issues. Hanley and Hoberg (2010) consider the informativeness of IPO disclosure documents. They split the information contained into standard and informative components by comparing the information contained in an IPO disclosure compared with prior IPO documents. They find that more informative IPO disclosures reduce the amount of underpricing, and can substitute for book-building processes. Loughran and McDonald (2013) consider the definitiveness of the language in the first SEC filing in the IPO process (the S-1 form). They find that weaker language, such as words like 'may' and 'might', especially in relation to the business strategy section, results in higher first day returns, increased likelihood of price revisions and more volatility.

The focus on U.S. annual reports has meant little research has considered disclosure documents designed for the sale or offer of new financial products, nor documents aimed at products other than equities. The literature has however shown that financial documents are generally pitched at a relatively high level, making them difficult to read by the vast majority of the general public. However, firms that try to write more readable documents appear to be rewarded with more investor interest, therefore readability is a desirable trait.

### 3. Methodology

We study the readability of disclosure documents using a number of metrics that have been applied previously to study the readability of financial documents. Loughlin and McDonald (2014) argue the complexity of language, commonly measured via measures such as the Fog Index, does not fully account for the complexity of understanding financial documents. We follow Loughlin and McDonald (2013) and measure the readability of KiwiSaver documents by looking at both the complexity of the language and the amount of financial jargon that is contained in the document. We employ the Loughran-McDonald master dictionary list, which provides the number of syllables for each word. We also consider the number of unique words as a percentage of the total dictionary of words used in a document. This measures the range of vocabulary required to understand a document.

To measure complexity of the language we apply the Fog Index. This is a widely-used measure of readability and has been applied in numerous fields of research. The Fog Index measures readability based on the percentage of complex words, defined as words of three syllables or more, and the average number of words per sentence. The formula is as follows:

$$FI = 0.4 * (WordsPerSentence + \%ComplexWords * 100) \quad (1)$$

The Fog index is a simple way of measuring one aspect of readability, although it has been criticised by some. For example, the measure doesn't take into account other aspects of readability such as active vs passive voice, the use of graphics to convey information or the way information is laid out or structured. Unfortunately, objective measures for these additional aspects do not currently exist.

As Loughlin and McDonald (2013) point out, another component of readability of financial documents is the amount of jargon and technical terms that a reader needs to comprehend in order to understand a document. We use Campbell Harvey's hypertext finance dictionary to create a dictionary of finance terms. As per Loughlin and McDonald (2013), we remove multiple word phrases and acronyms. The hypertext dictionary was developed within the U.S. context, therefore we add terms associated with KiwiSaver and New Zealand. We measure the amount of jargon in two ways. First, the unique number of financial terms contained in the document as a percentage of the total words and second, the percentage of finance terms in the document.

We collect the last prospectus and investment statement and the first product disclosure statement for each fund manager from the Disclose Register<sup>2</sup> provided by the New Zealand Companies Office. As these documents are in PDF format, we convert

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<sup>2</sup> <https://disclose-register.companiesoffice.govt.nz/disclose>

them to text files. As a result, we manually check the documents for accuracy, as figures and tables do not convert well. We also check for spelling, including differences between American and English spelling. We considered the body of the document to end prior to the application form, as the structure of the application forms would make them extremely problematic to analyse. Our resulting database contains all the words in each individual document, the number of times they occur, the number of syllables in the word and whether it is a finance term.

## 4. Results

### 4.1 Investment Statement vs. PDS

Investment statements were intended to act as a plain English version of the information contained within the prospectus, and to act as the primary disclosure document for investors. However, while the goal initially was to create a plain English document investors could read, they became more complicated and longer over time. As a result, the New Zealand regulator, the Financial Markets Authority, in June 2012 issued a guidance note entitled “Effective Disclosure” which put emphasis on improving disclosure in the investment statements. As investment statements were meant to be the disclosure document provided to investors, we initially compare investment statements to the product disclosure statements. However, as old copies of investment statements are not publicly available, we were only able to collect investment statements from 18 of the 21 fund managers who operated both before and after the change to PDSs (with the assistance of the KiwiSaver Industry Working Group). In Table 1 we compare the investment statement readability measures with the PDS results. We also calculate the difference between the two averages, and the statistical significance of the difference using a matched pair *t*-test.

The results are interesting, and offer a mixed view of the benefit of the PDS. We observe a significant reduction in the size of the documents as a result of the introduction of the PDS. PDS's are on average less than a quarter of the length of investment statement based on words, and 1/6th the length based on sentences. Of note, we observe a large difference in the PDSs, between 3400 and 6500 words. Given the limited word count and mandatory text, it is notable that one fund manager managed to use just over half the word count. This may be due to relying more heavily on Other Material Information documents. Additionally, more complex fund providers, which run a number of funds covering multiple risk levels, are able to avoid duplicating tables by placing some of the PDS information into the regular fund updates, provided these are also given to investors alongside the PDS. These factors may account for the differences in length.

However, the language in the PDS is significantly more complex. The percentage of complex words is 5.3% higher in the PDS, which combined with an insignificant difference in the average sentence length, results in a 2.6 increase in the Fog Index. The average Fog index of 9.7 for investment statements suggests that people only need an early high school education to understand them, compared with the 12.35 for the PDS, which relates to an education level of the final year in high school. Currently only 1 in 2 students completes high school (in New Zealand, high school certification is Level 3 NCEA), suggesting the PDS is beyond the understanding of half of all secondary students. While the readability of the average PDS is lower than the average investment statement, the level of vocabulary required is much less. We see the percentage of unique words in the PDS is under half that of the investment statement. One caveat on the Fog index findings is an issue regarding how a sentence is determined. This is a known weakness of the Fog index and makes the Fog easiest to apply when dealing

with traditionally formatted text documents, i.e. with lots of paragraphs. The PDS, and to a lesser degree the investment statements, include a lot of information in bullet pointed lists which can result in longer sentence lengths, but not necessarily in less readable text. We have done our best to treat bullet pointed lists consistently but they are a limitation to our findings.

**Table 1: Investment Statement vs PDS Results**

	Investment Statement			Product Disclosure Statements			Difference in Averages
	Average	Minimum	Maximum	Average	Minimum	Maximum	
<i>Number Words</i>	22720.72	10750	71434	5226.78	3469	6474	-17493.94***
<i>Number Sentences</i>	2045.83	545	3679	335.06	238	432	-1710.78***
<i>Words Per Sentence</i>	14.53	5.64	45.23	15.75	11.74	17.85	1.22
<i>% Complex</i>	9.83%	0.05%	14.74%	15.14%	13.80%	17.70%	5.31%***
<i>Fog Index</i>	9.74	6.99	18.37	12.35	10.50	13.91	2.61***
<i>% Unique Finance Words</i>	2.14%	0.23%	3.29%	1.04%	0.74%	1.26%	-1.10%***
<i>% Doc Finance Words</i>	8.01%	0.18%	13.72%	12.52%	10.60%	14.79%	4.51%***
<i>% Dict</i>	10.49%	1.26%	15.07%	7.62%	5.54%	9.23%	-2.87%***

Note: We examine the investment statement and product disclosure statements of 18 KiwiSaver providers where we could obtain both documents. *Number of Words* is defined as the total number of words in the document after excluding abbreviations, names and addresses. *Number of Sentences* is defined as the number of non-heading sentences in the document. *Words per Sentence* is defined as number of words in the document divided by the number of sentences. *% Complex* is defined as the number of words contained three or more syllables divided by the total number of words in the document. The number of syllables was sourced from the Loughlin-McDonald 2011 master dictionary. *Fog Index* is calculated as per equation 1. *% Unique Finance Words* is the number of unique words from the Campbell Harvey hypertext finance dictionary contained within the document as a percentage of the total number of words in the finance dictionary. The finance dictionary was amended to include terms related to NZ. *% Doc Finance Words* is defined as the sum of the number of times each word contained in the finance dictionary occurs divided by the total number of words in the document. *% Dict* is defined as the total number of unique words contained in the document as a percentage of the number of words in the master dictionary. Significance of the difference in averages was calculated using a matched pairs *t*-test. \* denotes significance at 10%, \*\* denotes significance at 5%, \*\*\* denotes significance at 1%.

We also observe that the level of finance knowledge required to understand the PDS is lower. The percentage of unique finance terms in the PDS halves. However, the percentage of finance terms in the PDS is higher, 12.5% compared with 8%. In essence, the investment statement uses a wider range of finance terms, but overall uses finance terms less frequently. An interesting point to note is that most of the investment statements also contain a glossary of finance terms, something that has been left out of the PDS. This may actually improve the investors ability to access the information within the investment statement as plain English explanations are provided within the document, and do not require the reader to go further to find the meaning of terms. A glossary may be worth considering in future revisions to the PDS, although we have no empirical evidence on the value of the glossaries at this stage.

One way to interpret the mixed results regarding readability between the investment statement and the PDS is that fund providers are struggling to convey all the required information within the strict word limits mandated for the PDS. Some consequences of this may be greater use of complex language, where a longer and more complicated word can replace a several simple words, resulting in less readability. Similarly, it may also explain the greater frequency of finance terms, where finance terms can be shorter to use.

## 4.2 Prospectuses vs. PDS

Table 2 presents the results of the final prospectus prior to the change and the first PDS following the change, averaged over the 21 fund managers. The documents are considerably shorter. On average, KiwiSaver prospectuses were nearly 30,000 words and close to 3,000 sentences compared with just 5,200 words and 328 sentences for the PDS. Interestingly, there is quite a large range. The shortest prospectus was just over 16,000 words and the largest is over 62,000 words, close to four times longer than the shortest.

**Table 2: Prospectuses vs. PDS**

	Prospectuses			Product Disclosure Statements			Difference in Averages
	Average	Minimum	Maximum	Average	Minimum	Maximum	
<i>Number Words</i>	29208.81	16176	62447	5166	3469	6474	-24043***
<i>Number Sentences</i>	2976.86	1536	6208	327.95	238	432	-2649***
<i>Words Per Sentence</i>	9.77	8.13	10.70	15.92	11.74	18.91	6.16***
<i>% Complex</i>	19.28%	17.57%	21.07%	15.29%	13.80%	17.70%	-4.00%***
<i>Fog Index</i>	11.62	10.52	12.62	12.48	10.50	14.08	0.86***
<i>% Unique Finance Words</i>	2.61%	2.02%	3.70%	1.04%	0.74%	1.26%	-1.57%***
<i>% Doc Finance Words</i>	12.05%	9.82%	14.53%	12.49%	10.47%	14.79%	0.44%
<i>% Dict</i>	17.95%	14.77%	22.45%	7.63%	5.54%	9.23%	-10.32%***

Note: We examine the prospectus and product disclosure statements of 21 KiwiSaver providers who had both documents publicly available. *Number of Words* is defined as the total number of words in the document after excluding abbreviations, names and addresses. *Number of Sentences* is defined as the number of non-heading sentences in the document. *Words per Sentence* is defined as number of words in the document divided by the number of sentences. *% Complex* is defined as the number of words contained three or more syllables divided by the total number of words in the document. The number of syllables was sourced from the Loughlin-McDonald 2011 master dictionary. *Fog Index* is calculated as per equation 1. *% Unique Finance Words* is the number of unique words from the Campbell Harvey hypertext finance dictionary contained within the document as a percentage of the total number of words in the finance dictionary. The finance dictionary was amended to include terms related to NZ. *% Doc Finance Words* is defined as the sum of the number of times each word contained in the finance dictionary occurs divided by the total number of words in the document. *% Dict* is defined as the total number of unique words contained in the document as a percentage of the number of words in the master dictionary. Significance of the difference in averages was calculated using a matched pairs t-test. \* denotes significance at 10%, \*\* denotes significance at 5%, \*\*\* denotes significance at 1%.

We see mixed evidence of improvement in the complexity of the language used. On one hand, the number of unique words more than halves while the percentage of complex words in the PDS is 4% less, going from 19% to 15%. Additionally, the minimum values for the number of unique words and percentage of complex words for the average prospectus are higher than the maximum for the average PDS. This suggests that an effort has been made to simplify the language used within the PDS text. However, the sentences have become longer in all cases, moving from an average of just under 10 words per sentence to nearly 16. As a result of the significant increase in words per sentence, we see an increase in the Fog Index from 11.62 to 12.48, an increase of 0.86. A possible interpretation is that readers require nearly a full year of additional education, ideally between final year at high school and first year of university, to understand a PDS.

We also see some evidence that the PDSs in general require investors to understand fewer finance terms. The percentage of finance terms in the prospectus and PDS are similar, as shown by the insignificant difference in the percentages. However, in terms of the percentage of the finance dictionary, there has been a 10% reduction, representing just under 140 words. This suggests that investors require considerably less awareness of finance terms and concepts than was previously the case. However, they do still require an understanding of over 100 terms. This is a considerable improvement in readability for investors.

### 4.3 Key Information Summary

The Financial Markets Conduct Act 2013 and the guidance from the Financial Markets Authority clearly outline information required within the PDS, and also some of the structure. One item of note is the so-called Key Information Summary (KIS) section, which is presented at the very start of the document, before even the contents page. This is a short section, serving as almost an executive summary for the offering, discussing the nature of the investment, the logistics of removing your money, and details about different types of funds the manager offers, including the risk level, asset allocation and basic information about the fees. This summary covers much of the information a person needs to make a decision, albeit in considerably less detail than is contained in the rest of the document.

When we compare the KIS with the rest of the document we observe that the KIS is relatively short, has higher readability, and uses fewer unique and unique finance words. The implication of this is that the KIS is generally easier to read as a result of having shorter sentences, and requiring a smaller vocabulary and less understanding of finance.



Table 3: Components of the Product Disclosure Statement

	PDS - Key Information Summary			PDS - Rest of Text			Difference in Averages
	Average	Minimum	Maximum	Average	Minimum	Maximum	
<b>Number Words</b>	709.52	395	1200	4408.33	2699	5670	-3698.81***
<b>Number Sentences</b>	49.29	25	89	273.33	183	373	-224.05***
<b>Words Per Sentence</b>	14.71	11.31	17.95	16.29	11.83	19.47	-1.58***
<b>% Complex</b>	15.08%	12.17%	19.83%	15.22%	13.83%	17.65%	-0.14%
<b>Fog Index</b>	11.92	10.26	13.70	12.61	10.43	14.31	-0.69**
<b>% Unique Finance Words</b>	0.28%	0.21%	0.39%	1.00%	0.69%	1.22%	-0.71%***
<b>% Doc Finance Words</b>	14.83%	10.95%	17.58%	12.06%	10.25%	14.18%	2.77%***
<b>% Dict</b>	2.56%	1.55%	3.47%	7.37%	5.17%	9.16%	-4.82%***

Note: For each of the 21 PDS documents we separate the documents into the Key Information Summary and the rest of the document. *Number of Words* is defined as the total number of words in the document after excluding abbreviations, names and addresses. *Number of Sentences* is defined as the number of non-heading sentences in the document. *Words per Sentence* is defined as number of words in the document divided by the number of sentences. *% Complex* is defined as the number of words contained three or more syllables divided by the total number of words in the document. The number of syllables was sourced from the Loughlin-McDonald 2011 master dictionary. *Fog Index* is calculated as per equation 1. *% Unique Finance Words* is the number of unique words from the Campbell Harvey hypertext finance dictionary contained within the document as a percentage of the total number of words in the finance dictionary. The finance dictionary was amended to include terms related to NZ. *% Doc Finance Words* is defined as the sum of the number of times each word contained in the finance dictionary occurs divided by the total number of words in the document. *% Dict* is defined as the total number of unique words contained in the document as a percentage of the number of words in the master dictionary. Significance of the difference in averages was calculated using a matched pairs *t*-test. \* denotes significance at 10%, \*\* denotes significance at 5%, \*\*\* denotes significance at 1%.

## 5. Conclusion

Overall we find that the PDS documents are a marked improvement over the prospectuses that fund managers were required to provide previously. There is a significant reduction in the complexity of the language used and the amount of finance jargon contained with the PDS. However, we do observe an increase in the length of the sentences which can make documents more difficult to read. One observation, however, is that the PDS has encouraged fund managers to use more

bullet pointed lists and tables rather than more traditional paragraphs. This may be responsible for the increased sentence length, and may in fact improve an investor's ability to understand the information contained. It is also worth noting that while PDS documents are significantly shorter and appear to be easier to understand, it is still not clear if a typical KiwiSaver investor would be able to understand the information they contain.

While the PDS does appear to have made improvements in some areas, several open questions remain. For example, are the word limits for the PDS appropriate (especially given the significant difference in the number of offerings between fund providers)? What is the best size of a PDS to maximise the number of investors engaging with the document? Does the Key Information Summary provide enough information for investors to make a decision solely based on it (without the PDS)? Lastly, it is unclear whether the move toward simplified disclosure will be enough to encourage investors to rely more heavily on the PDS when making KiwiSaver decisions. The answers to these questions will be the subject of ongoing work, given the importance of ensuring investors are well-placed to make informed decisions.

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