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IPO first-day returns, offer price revisions, volatility, and form S-1 language ☆

Tim Loughran *, Bill McDonald [1]

Mendoza College of Business, University of Notre Dame, Notre Dame, IN 46556-5646, USA

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ABSTRACT

Form S-1 is the first SEC filing in the initial public offering (IPO) process. The tone of the S-1, in terms of its definitiveness in characterizing the firm's business strategy and operations, should affect investors' ability to value the IPO. We find that IPOs with high levels of uncertain text have higher first-day returns, absolute offer price revisions, and subsequent volatility. Our findings provide empirical evidence for the theoretical models of uncertainty, bookbuilding, and prospect theory.

1. Introduction

For U.S. firms, one of the first steps in going public is filing a Form S-1 on the Securities and Exchange Commission's (SEC) Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. Typically, the S-1 offers investors their first detailed glimpse of a firm's business model and financial statements. For more anticipated initial public offerings (IPOs), like Google, Facebook, or Groupon, the S-1 filing can generate extensive media coverage.

Imagine an investor trying to value an IPO on the basis of the S-1 filing. U.S. IPOs do not typically have a long history of tangible information (i.e., past positive earning streams, revenue, or even dividends) to facilitate forecasting cash flows. IPOs usually have negative trailing earnings, few assets-in-place, and limited experience/success selling their products. The S-1 filing, however, will have ample amounts of intangible information concerning future business plans or potential problems that might arise. The tone of the document, in terms of its definitiveness in characterizing the company's business strategy, its articulation of the firm's competitive position within an industry, and confidence in projecting financial outcomes, should impact investors' assessment of value. The more uncertain text contained in an S-1 filing, the more ambiguous are future cash flow projections, and thus the more challenging it is for an investor to value the IPO.

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* Corresponding author. Tel.: +1 574 631 8432.
E-mail addresses: Loughran.9@nd.edu (T. Loughran), mcdonald.1@nd.edu (B. McDonald).
[1] Tel.: +1 574 631 5137.

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Specifically, we argue that S-1 filings with higher proportions of uncertain/weak modal words like *may, could, depend,* and *approximately*, or negative words like *loss, failure, termination,* and *adverse* should make it more difficult for investors to precisely assimilate the value-relevant information, thus generating more uncertainty about future outcomes. In a similar context, Epstein and Schneider (2008) note that when the information quality of an asset is difficult to judge, investors will treat signals as ambiguous and demand compensation for holding the asset.

Our paper links uncertain text in the Form S-1 language with first-day returns, offer price revisions, and subsequent volatility for a sample of 1,887 completed U.S. IPOs during 1997–2010. Supplementing this sample with data from 793 withdrawn IPOs, we also find that uncertain text only marginally impacts the probability of the offering being withdrawn. Managers and underwriters co-author the S-1. Does the tone of their writing provide any guidance about the uncertainty surrounding the IPO's valuation? Several key theories of IPO pricing (see Ritter, 1984; Rock, 1986) predict that uncertainty should matter in initial returns. Yet, the previous literature offers few ex ante and direct proxies for uncertainty. For example, firm age, sales, and IPO gross proceeds are frequently used as ex ante proxies of uncertainty but clearly could be measuring many other aspects of the offering. Alternatively, the standard deviation of ex post returns produces impressive empirical relations, but obviously is only available after the initial price is observed.[2]

We propose that the S-1′s tone provides a direct proxy for ex ante uncertainty about an IPO's valuation. To measure document tone, we use the Loughran and McDonald (2011) six sentiment word lists (uncertain, weak modal, negative, positive, legal, and strong modal). The Loughran and McDonald word lists have been used in the literature to gauge tone in newspaper articles (Gurun and Butler, 2012; Dougal, Engelberg, Garcia, and Parsons, 2012), 10-Ks (Feldman, Govindaraj, Livnat, and Segal, 2010; Jegadeesh and Wu, 2011), time-stamped CNBC transcripts (Shabani, 2011), articles published on Seeking Alpha's Web site (Chen, De, Hu, and Hwang, 2011), and even managerial vocal cues in conference calls (Mayew and Venkatachalam, 2012). Their six word lists were created specifically for financial documents.

Our sample is intensive in firms with low sales and negative trailing earnings. Some IPOs, in spite of having zero trailing sales, had enormous market values right after going public (Corvis Corp.: $28 billion, WebVan Group: $8 billion, and EarthShell Corp: $2.4 billion). These types of low sales, negative earnings firms are exactly where we would expect the subtlety of word choice to be most important to investors. It is not clear that our emphasis on uncertain, weak modal, and negative words to measure the IPO's information environment would apply equally as well to large, established firms with highly profitable operations.

Low trailing sales IPOs with high uncertain/negative tone in the S-1 filing are often backed by venture capitalists (VCs). The positive linkage we identify between uncertain/negative text and VC backing should not be surprising. We would expect IPOs backed by VCs to have more uncertain text, since venture capitalists are often viewed as capital providers of the last resort.

Beatty and Ritter (1986) demonstrate a positive link between ex ante uncertainty about an IPO's value and its expected initial return. According to the two authors, firms with higher ex ante uncertainty should experience higher first-day returns. Consistent with their hypothesis, we report that uncertain, weak modal, and negative word frequencies in the Form S-1 are significantly related to first-day returns after controlling for other valuation-relevant variables.

We find that the percentages of uncertain, weak modal, and negative words in the S-1 are much more powerful variables in explaining levels of underpricing than many commonly used IPO control variables, such as venture capital dummy, top-tier underwriter dummy, or trailing annual sales. For example, we find that a one-standard deviation increase in the proportion of weak modal or negative words is positively linked to an increase in first-day returns by an economically significant 4%. A one-standard deviation increase in the proportion of S-1 uncertain words is associated with a 3% increase in first-day returns.

Although the role of weak modal and uncertainty word lists in measuring ambiguity in the initial valuation process is obvious, negative words in the context of IPO pricing can be viewed from two perspectives. One could posit that a preponderance of negative words might have a negative effect on the expected offering price. However, to the extent that the tone of an S-1 filing has already been rationally impounded in the offer price, we would not expect negative words to have a mean effect on underpricing. Alternatively, as we argue, negative words can be seen as another source of uncertainty in projecting cash flows. Projecting presumably positive future cash flows for a firm reporting a long history of losses is clearly more difficult than making a positive projection for a firm with a stable history of positive cash flows. In this case, negative words should contribute to the uncertainty in the initial valuation and thus be linked to the level of underpricing.

In addition, prior literature links potential negative outcomes with ex post uncertainty as measured by stock return volatility. For example, Clayton, Hartzell, and Rosenberg (2005) find long-lived increases in volatility following a change in the Chief Executive Officer (CEO). After forced CEO departures, the increases in subsequent volatility are even larger. Kothari, Li, and Short (2009) find that unfavorable news stories about a firm are linked with higher stock return volatility. In a principal component analysis, we find that the uncertain, weak modal, and negative word lists do appear to be measuring the same underlying attribute, a result consistent with the uncertainty interpretation of negative words.

Future researchers should consider using an aggregate uncertainty word list drawing words from the union of

[2] Jenkinson and Ljungqvist (2001) in their Table 3.2 provide a useful summary of variables used to measure uncertainty in the IPO process.