

[A configurational approach to the intended use of IPO proceeds and performance](#)

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Abstract:

Purpose - The authors seek an answer to the research question: how do the disclosure of the intended use of initial public offering (IPO) proceeds and firm characteristics jointly influence IPO performance?

Design/methodology/approach - Data on the use of proceeds, firm age, size, high- or low-tech industry, and the length of the use of proceeds section were collected from 341 IPOs in the USA, UK, and Hong Kong. Fuzzy-set Qualitative Comparative Analysis was used to predict which configurations of IPO use of proceeds and firm characteristics consistently led to above-average IPO performance.

Findings - Ten configurations of causal factors were found to lead to above-average IPO performance. Disclosure of IPO proceeds use matters for IPO performance but is contingent on firm characteristics. Whether a firm is in a high- or low-technology industry along with its size and age have distinct effects on which intended uses of proceeds are beneficial and how long their intended proceeds section must be to lead to above-average IPO performance.

Originality/value - These findings contribute to a multidimensional view of IPO performance. The authors use information processing and a management perspective to see how the use of proceeds sections help frame an IPO's equity story. The use of a configurational methodology and a management perspective shows how IPOs can be viewed as a bundle of attributes.

Keywords: IPO | IPO proceeds | Information processing perspective | Entrepreneurial financing | FsQCA

Article:

1. Introduction

If a company does not adequately explain how it is going to use the money [from its proceeds] in its regulatory filings, the chances are investors will not touch the stock.

-Anupreeta Das, Reuters

An initial public offering (IPO) is a substantial event that requires an extensive amount of preparation. IPO investors analyze a significant amount of information about a firm from early meetings with management, roadshows, and prospectuses (PWC, 2016). The bulk of management research on IPOs has focused on which firms are at an advantage (e.g. firms with a strong top management team; Cohen and Dean, 2005) or disadvantage (e.g. small firms; Carpenter and Rondi, 2006) at the time of IPO and/or how to reduce uncertainty in the IPO process (e.g. signaling that firm has social capital; Khoury *et al.*, 2013). These studies have contributed to understanding the IPO process from a management perspective. However, most studies investigate elements of the IPO from only one or two dimensions. Given that investors analyze an extensive package of information prior to investing in an IPO (PWC, 2016), multidimensional research is required to further the research agenda on IPO firms.

The information disclosed within the prospectus can help investors make informed investment decisions and can have an impact on how the firm will perform once it goes public (Payne *et al.*, 2013). A particularly important part of the prospectus is the “use of proceeds” section, which discusses what the organization plans for the money it earns from making its offering. After the world financial crisis of 2008, use of IPO proceeds became of increased importance to investors. The head of Deutsche Bank’s equity capital markets was quoted in the New York Times saying that “use of proceeds is even more scrutinized in this market” (Wahba, 2008). What a company declares in its use of proceeds section can help investors determine the future health of the company. Yet, large, advanced international markets only have minimal requirements for what an IPO firm needs to disclose in its intended use of proceeds section. Therefore, the detail of the information is left up to those preparing the prospectus.

Despite its importance, there has been minimal research conducted on the subject of use of IPO proceeds. Previous research on the use of proceeds sections of prospectuses has found that including specific but not strategically revealing information about a company’s use of its proceeds (Daily *et al.*, 2003a, b; Leone *et al.*, 2007; Schenone, 2004), firm characteristics (Carpenter and Rondi, 2006), contextual factors (Kim and Weisbach, 2008), and individual categories of IPO proceeds use influence IPO performance (Amor and Kooli, 2017; Wyatt, 2014). Although this research is enlightening, it is largely general and atheoretical, with few studies analyzing the overall gestalt of the IPO. This oversight is critical because investors focus on the equity’s “story” and how it fits in their portfolio (PWC, 2016). An IPO’s equity story has to be “convincing and reassuring” to investors (Kengelbach *et al.*, 2019, p. 4). In order to better understand how investors make decisions, research needs to look beyond what happens on average and examine IPO prospectuses holistically.

In particular, we investigate how the framing of the “use of proceeds” section and firm characteristics work together to influence IPO performance. We seek an answer to the research question: how do the disclosure of the intended use of IPO proceeds and firm characteristics jointly influence IPO performance? We use fuzzy-set Qualitative Comparative Analysis (fsQCA) of 341 firms across three international exchanges to explore how low-tech and high-tech IPO

firms disclose different information in their use of proceeds section. The results of the fsQCA reveal that particular disclosure categories are substitutable and others are complementary, depending on various firm characteristics. Based on the results, we form propositions to elaborate theory towards a multidimensional view of IPO performance.

Our study contributes to the literature on IPO performance in three ways. First, we take a first step towards an emerging multidimensional view of IPO proceeds use and performance by showing that performance is dependent on multiple contingencies acting in concert to influence investor perceptions. Using a configurational approach has helped move research forward on better understanding contextual influences (Kraus *et al.*, 2018). Second, we deepen the understanding of how high-tech and low-tech IPO firms differ in terms of information disclosure. While there are distinctive differences between high-tech and low-tech IPO firms (Kim *et al.*, 2008), there are mixed findings within high-tech and low-tech firms. We show how intended use of proceeds depends not only on firms being in high-tech or low-tech industries but also other firm characteristics simultaneously. Third, we use the information processing perspective to further investigate how IPOs are framed in their equity story. Most IPO research on how firms were viewed used signaling theory. While signaling theory helps show how some firms are inclined to package their information for investors, it is less useful for predicting how investors will receive it (Park *et al.*, 2016), and therefore, it only helps explain one-half of the IPO performance equation. An information processing perspective coupled with a multidimensional analysis helps provide additional context regarding when certain information is valuable to investors, which not only advances theoretical understanding of IPOs but also helps managers navigate the complexities of the IPO process.

2. Prospectus information and IPO performance

When a company lists on an exchange, a prospectus is made available to all potential investors to learn about the company before it goes public and includes past performance history in the form of income statements and balance sheets for the two years prior to the offering, notable acquisitions, and other financial data (Latham and Watkins LLP, 2017). While specific financial data is legally required to be reported in prospectuses, there is a significant portion of a prospectus that is discretionary. In other words, organizations and the underwriters of the public offering have significant control over the information and its framing in a prospectus. The discretionary information presented in a prospectus can make a difference for many IPO outcomes, including pricing accuracy and performance outcomes (Hanley and Hoberg, 2010). Not only the type of discretionary information presented, but how it is presented can influence IPO performance (Yan *et al.*, 2019).

Yet, there is mixed evidence regarding the extent of information that should be disclosed to maximize performance. On the one hand, investors like information. In a sample of United States of America (USA) IPOs, companies that included more “informative” content (unique to the IPO company) as opposed to standard content (included in the prospectuses of similar companies) resulted in less IPO underpricing (Hanley and Hoberg, 2010). Similarly, companies that had less ambiguous information within their prospectuses, or “soft” informational content that can be interpreted differently by different observers, were less underpriced (Park and Patel, 2015, p. 799). Companies in industries that rely heavily on intellectual capital for a competitive advantage typically disclose more about intellectual capital (Brüggen *et al.*, 2009). Furthermore, disclosing intellectual capital details about human resources, IT, strategy and so forth was found

to impact long-run IPO performance for a set of Italian IPOs (Cardi *et al.*, 2019). On the other hand, investors do not want too much “sensitive” information presented in prospectuses. For example, disclosing more information about intellectual property in an IPO prospectus was negatively correlated with performance for a sample of Singaporean IPOs (Singh and Van der Zhan, 2009). Companies that do not conform strategically to their industry also see less pronounced underpricing when including ambiguous information in their prospectus (Park and Patel, 2015). Moreover, companies that disclose their dependence on key employees in their prospectus experienced negative impacts on performance for US high-tech firms (Liu and Arthurs, 2019). Given these mixed findings, it can be difficult for companies preparing for an IPO to know exactly how much and what kind of information they should include in their prospectuses. Some prospectus content can be substitutable or complementary depending on context (Wang *et al.*, 2019). However, it is difficult to decipher which content can be substitutable or complementary without viewing the content as a package. Understanding task characteristics and the firm’s environment is important for organizations to make decisions about the kind of content to disclose (Jia *et al.*, 2020). Minimal research on the complementarity and substitutability of prospectus content represents a gap within the management research. In the subsequent paragraphs, we will discuss the current state of the literature and how our study proposes to move the field forward by exploring how elements of the prospectus can be analyzed as a package of content.

In particular, one area of a prospectus where IPO firms have great discretion is the section on how they will use their IPO proceeds. Many firms choose to fully disclose how they will use their proceeds (Balatbat and Bertinshaw, 2008) particularly in developed markets (Khoury *et al.*, 2013). For example, in the USA, the Securities and Exchange Commission requires companies to disclose their intended use of proceeds. Yet, how specific they are is up to the listing company (Leone *et al.*, 2007). A company can list “general corporate purposes,” or can explain in detail each activity it plans to finance. Many American companies choose to be relatively vague to remain flexible and to avoid revealing proprietary information (Leone *et al.*, 2007).

Yet, the specifics of what IPO firms choose to disclose regarding the use of proceeds influence IPO performance. Investors do not like uncertainty in the IPO process (Guldiken *et al.*, 2017), and companies going public make a conscious effort to partially quell the uncertainty through information. The information about IPO proceeds that most decreases uncertainty includes specific company actions such as deleveraging, capital expenditures, and research and development (Leone *et al.*, 2007). More general information, such as using proceeds for working capital, has not been shown to decrease underpricing. In one study, IPO firms that precisely disclosed what they were going to do with their proceeds reduced their underpricing by 11.2% (Schenone, 2004).

Using a sample of Australian IPOs, Wyatt (2014) classified use of proceeds into three broad categories that included growth (R&D, exploration), production investments (capital expenditures, acquisitions), and financing transactions (working capital, repay debt, cash out of owners, purchase of securities). Wyatt (2014) also looked at how different categories influenced IPO underpricing, market survival, equity, and operating performance. She found that firms that disclosed they are using their proceeds for growth are slightly more underpriced, and larger firms using their proceeds for capital expenditures are also underpriced. Seven years after IPO, firms that disclosed their use of proceeds for financing purposes had lower market value. In a US sample, Amor and Kooli (2017) found that IPOs that stated they would use their proceeds for

debt repayment were the largest underperformers three years after IPO. IPOs that said they would use their proceeds for growth resulted in insignificant results (Amor and Kooli, 2017). In an Indonesian sample, Andriansyah and Messinis (2016) found that declaring use of proceeds for capital expenditures were the only firms that performed better, contrary to what Wyatt (2014) found in Australia. In a Malaysian sample, Rahman and Che-Yahya (2019) found that IPO firms that disclosed they would use their proceeds for growth were underpriced less than average and performed better three years after IPO, contrary to what Wyatt (2014) found. Similarly for a Malaysian sample, Ahmad-Zaluki and Badru (2020) found that IPO firms using their proceeds for growth and working capital had better initial performance than firms using their proceeds for debt repayment. When investigating using proceeds for growth specifically, Ahmad-Zaluki and Badru (2020) found that capital expenditures influenced IPO performance positively while R&D expenses negatively impacted performance. In another study, disclosing more uses of IPO proceeds did not have any significant relationship with IPO underpricing (Daily *et al.*, 2003a, b). More is not necessarily better. Taken together, the findings suggest that there is a “right” amount and types of information to be disclosed about IPO proceeds. However, the “right” amount and types of information to disclose likely depends on firm characteristics and context given the mixed findings in the literature.

In sum, research has shown that the amount of information disclosed, internal firm characteristics, external factors, and disclosure categories all influence outcomes for IPO firms. However, the joint effects of these factors have not been investigated. Understanding how multiple factors work together in the IPO process will better show the “equity story” investors are using to evaluate IPO firms (PWC, 2016) and contribute towards a more complete and accurate multidimensional view of IPO performance. Previous research has addressed some of the questions about IPO use of proceeds influence on performance using correlational methods. However, there has not been any multidimensional research on the use of IPO proceeds from either a conceptual or empirical standpoint. Multidimensional research provides a better view of the “equity story” investors use than previous correlational methods because it better represents variables as substitutes and complements. According to interviews of IPO investors conducted by Pricewaterhousecooper (2016), IPO investors are “awash in information about company, industry and macroeconomic trends, to which they’re adding their own internal equity research and analysis” (p. 11). With more information that is more easily accessible to investors, it becomes more valuable to analyze IPO information holistically, just as investors do. Additionally, the differences between high-tech and low-tech IPO firms and their intended use of proceeds are nuanced but not well understood at a holistic level. It can be seen as risky for high-tech IPO firms to take on debt (Kim *et al.*, 2008) yet the firms still must make considerable investments in R&D (Mousa and Reed, 2013). Disclosing too much sensitive information for high-tech firms can be seen negatively (Singh and Van der Zhan, 2009) or potentially not have an impact (Leone *et al.*, 2007). For low-tech firms, taking on debt could be seen positively (Kim *et al.*, 2008), but this may not be true for smaller and younger firms that can be seen as riskier than their larger established counterparts. Analyzing the package of information presented via a configurational approach better shows the nuances within high-tech and low-tech IPO firms and their intended use of proceeds.

Theorizing about multidimensional or configurational phenomena is more complex than traditional theorizing that assumes the use of correlational methods (Furnari *et al.*, 2020). FsQCA naturally behaves as an exploratory method unless there is previous research that provides adequate reasoning for developing specific configurational predictions (Díaz-Fernández *et al.*,

2020). When such previous research and theoretical reasoning is lacking, it is common in configurational studies to develop post-hoc propositions using empirical results (Misangyi *et al.*, 2017). This is particularly useful when scholars seek to elaborate existing theory; in the case of IPO performance, the important causal factors are known, but the multiple interactions and interdependencies among them are not understood. Therefore, a theory-elaborating approach is appropriate (Misangyi *et al.*, 2017).

3. Methods

3.1 Sample

We selected three developed countries with large exchanges: the US (NASDAQ and New York Stock Exchange), the United Kingdom (London Stock Exchange), and Hong Kong (Stock Exchange of Hong Kong Limited). These three countries' exchanges have been considered comparable given their size, function, level of development and internationalization (i.e. Moore *et al.*, 2010). We chose IPOs that listed from 2009 to 2011 after the height of the financial crisis in order to minimize variability in our sample based on year of IPO. This resulted in a usable sample of 341 firms. All IPOs completed in each country were included in the sample with the exception of secondary offerings, corporate spinoffs, and REITs/trusts/funds/ETFs.

3.2 Fuzzy-set qualitative comparative analysis

Given our interest in a multidimensional view of IPO proceeds, we used fuzzy-set Qualitative Analysis (fsQCA), a method well-suited for configurational studies. Whereas parametric-based methodologies assume that causal factors are independent of one another, fsQCA assumes that causal factors (called causal conditions) can interact in complex, interdependent, and nonlinear ways to lead to a given outcome. Additionally, it allows for equifinality, meaning multiple configurations or bundles of causal conditions could exist that can lead to the same outcome (Fiss, 2007; Ragin, 2008). FsQCA treats the unit of analysis as the case (in this study, a firm), and cases are viewed holistically based on their membership or non-membership in each causal condition and outcome under investigation.

FsQCA blends elements of qualitative and quantitative techniques because it utilizes calibrated, quantitative measures (based on qualitative, theoretically derived anchors) to assign cases based on their degree of membership in sets of *causal conditions*, which are akin to independent variables, and *outcomes*, which are akin to dependent variables (Ragin, 2008). Essentially, raw data is transformed to calibrated measures such that a value of 1 denotes full membership, 0 denotes full non-membership, and ranges in between 0 and 1 denote degrees of membership (Ragin, 2008). A case with a 1 would be "fully in" the set, meaning the case strongly fits with the theoretical definition of the condition being measured, whereas a case with a 0 would not fit with the definition at all. For example, if a hypothetical researcher wanted to measure individuals as being highly educated or not, a person with a Ph.D. might be assigned a 1 and person with less than a secondary degree might be assigned a 0. Values in between 0 and 1 represent degrees of membership, with those greater than 0.5 being at least partially in and those less than 0.5 at least partially out. In our hypothetical example, a person with a bachelor's degree might be assigned a value greater than 0.5 but less than 1, indicating that he or she is somewhat highly educated, but not at the theoretical maximum.

The overall process of calibration and set analysis allows the researcher to test which individual conditions are *necessary* for a given outcome to occur, as well as to test the *sufficiency* of *configurations* of causal conditions. Hence our first test below will indicate whether an individual condition is, by itself, needed to produce above-average IPO performance, whereas our second test will indicate the configurations of causal conditions that consistently produce above-average IPO performance.

3.3 Measures

IPO underpricing is impacted by issue-specific, firm-specific, and economy-specific factors (Katti and Phani, 2016). We have selected two issue-specific variables and three firm-specific variables that influence underpricing to test in our configurations. The two issue-specific variables are IPO proceeds categories and use of proceeds section length. The three firm-specific variables are whether the firm is high tech or low tech, the firm's age, and the firm's size. We next discuss how each variable is measured in accordance with the literature in.

3.3.1 IPO performance

Consistent with previous research demonstrating its reliability and validity, we used underpricing to measure *IPO performance* (i.e. Hanley and Hoberg, 2010). IPO underpricing is the difference between the firm's initial stock price and its closing price on the first day of trading (Ibotson, 1975). Underpricing frequently happens and has been studied prominently in the literature (Daily et al., 2003a, b). We chose to use underpricing to measure IPO performance because investors use information from the prospectus, such as the intended use of proceeds, to decide what price they are willing to pay for shares of an IPO on the first day of trading (Daily et al., 2003a, b). Underpricing is calculated using the following equation (Hanley and Hoberg, 2010):

$$IR = \frac{P_{mkt} - P_{ipo}}{P_{ipo}}$$

IR represents the initial return of the IPO at the close of the first day of trading. Pmkt is the trading price at the close of the first day and Pipo is the IPO price at open. These values are typically represented as percentages. The higher the underpricing percentage, the more money that was left on the table in the IPO process. We used previous research to determine the anchor points of our sample because it is common to "benchmark" firm performance to determine anchor points when using fsQCA (e.g. Díaz-Fernández et al., 2020). Utilizing the international IPO data provided by Ritter (2015), we calculated the weighted average (based on the number of IPOs on each exchange) of underpricing, which was 19 percent. This value was used as the crossover point, meaning that a firm had to be underpriced by 19 percent or less to be partially considered "in" the set of high-performing firms. To be fully in the set, firms had to have an underpricing of 0 percent, that is, not underpriced at all. To be fully "out," firms had to be underpriced by 38 percent or more, or approximately double the average and falling within the cluster of the lowest-performing firms. Hence, those firms with underpricing of 19 percent or less would be increasingly considered "high-performing" as they approached 0 percent

underpricing, and those firms with underpricing of 19 percent or more would be increasingly considered “low-performing” as they approached 38 percent underpricing. Based on these inputs, we used the direct method of calibration, such that the fsQCA software transformed the raw data to a calibrated fuzzy-set membership score between 1 and 0 by using each case’s logarithmic odds of falling within the ranges set by the inputted anchor points.

3.3.2 IPO proceeds categories

There are categories of use that companies can disclose in their IPO proceeds section in their prospectus. It is important to select IPO proceeds categories that fit the exchanges in the sample (Andriansyah and Messinis, 2016). We, therefore, recorded the categories of IPO proceeds disclosed by each firm using the classifications found in Wyatt (2014), as this is an empirically validated and reliable classification scheme in the literature. The categories included: *production*: producing products or services; *growth*: “mergers and acquisitions” and/or “research and development”; *financing*: “repay loans,” “refinance debt,” “repay shareholders,” and/or “asset financing;” and *general purposes*: “general corporate purposes” and/or “other.” Each proceeds use category was measured using a binary value (1/0), such that a 1 indicated that the firm intended to use proceeds for each given category. These are the intended use of proceeds typically stated in prospectuses and disclosed in the US, UK, and Hong Kong for comparability.

3.3.3 High-tech and low-tech IPOs

The classification of high-tech and low-tech firms was used in this study because high-tech firms have been shown to be more underpriced on average (Leone *et al.*, 2007) and typically have different goals for their use of proceeds (Mousa and Reed, 2013). High-tech IPOs were identified as IPOs with the following SIC codes: 2833, 2834, 2835, 2836, 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3674, 3812, 3823, 3825, 3826, 2827, 3829, 3841, 3845, 4812, 4813, 4899, 7370, 7371, 7372, 7373, 7374, 7375, 7377, 7378, 7379 (Kim *et al.*, 2008). All other industries were considered low-tech. Using SIC codes to denote high-tech and low-tech industries is commonly used in the literature because such classifications are relatively stable and denote industries where high technology is usually applied, but they can also accommodate technology as it evolves (e.g. Loughran and Ritter, 2004). As such, this is a reliable and valid measure of the technological intensity of different industries.

3.3.4 Use of proceeds section length

Given our interest in the amount of information a company discloses about the use of their IPO proceeds, we measured the *length* of each IPO’s use of proceeds section by counting the number of words in the section. The length of the proceeds section signals the amount of information the firm is willing to disclose about their use of proceeds. The amount of information in a prospectus section or about a particular topic has been shown to influence performance (e.g. Hanley and Hoberg, 2010). Word counts of a particular section or topic of a prospectus are used a proxy for disclosure level (e.g. Deumes, 2008). Word counts allow for results to be comparable across prospectuses that may use different formatting, making this a valid and reliable measure. The word counts were then calibrated to fuzzy-set membership scores using the direct method of calibration in fsQCA software, with the top quartile (143 words), median (87 words), and bottom

quartile (43 words) used as the anchor points for fully in, midpoint, and fully out, respectively. That is, longer use of proceeds sections would be increasingly considering “in” the set as they extended above the median value towards the top quartile, and shorter use of proceeds sections would be considered “out” of the set as they decreased below the median value towards the bottom quartile.

3.3.5 Firm size

Firm size can impact performance of an IPO firm (Fama and French, 2004). We used the natural logarithm of the number of employees in each firm as the basis for our measure of *firm size* (Kroll *et al.*, 2007). Once again, we used the direct method of calibration based on the quartiles of the distribution of the data (top quartile = fully in, median = crossover point, bottom quartile = fully out), such that larger firms would have membership in this set (i.e. the condition of firm size would be present for larger firms in our sample and absent for smaller firms).

3.3.6

Firm age has been consistently shown to influence IPO performance (Bell *et al.*, 2014). Firm age is measured by the number of years the company has been in operation at its IPO date. Using the direct method of calibration described above, we calibrated *firm age* using the top quartile (19 years) as the anchor point for fully in, the median (10 years) for the crossover point, and the bottom quartile (4 years) as the anchor point for fully out. Descriptive data of all measures (prior to calibration) are displayed in Table 1.

4. Results

The first step in fsQCA is to assess the necessity of each causal condition. A consistency score at or above 0.90 indicates that a condition is almost always present when the outcome occurs. Because fsQCA assumes asymmetric effects (i.e. if X leads Y then less of X does not necessarily lead to less of Y), the presence and absence of each causal condition were tested. As shown in Table 2, the use of proceeds for finance was above 0.90, indicating that this condition is almost always present in firms that exhibited high-performing IPOs (Ragin, 2008). No other condition met this threshold.

Next, we proceeded to test the sufficiency of configurations of causal conditions. Utilizing the fsQCA software, we assessed how consistently each configuration was associated with the outcome. Boolean logic was used in a minimization analysis to simplify the configurations, eliminating logical redundancies and revealing the core factors in each configuration that led to the outcome. For the following analyses, we required that each configuration must have at least two cases to be included in the analysis; possible configurations that have no or only one actual case in the data were not included in the truth table analysis. This approach is recommended for fuzzy-set analyses with large samples (more than 50 cases; Greckhamer *et al.*, 2013). When testing for sufficiency, consistency reflects how often the outcome is present when the configuration is present. Consistency scores above 0.90 are excellent, while those around or above 0.75 are acceptable (Ragin, 2008), especially in larger sample sizes where there is inherently more diversity in the cases and, therefore, less consistent results (Greckhamer *et al.*, 2013; Wagemann *et al.*, 2016).

Table 1. Descriptive statistics of uncalibrated data ($N = 341$)

Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. IPO performance	-9.14	20.03	1.00							
2. Firm size	5.78	2.26	-0.03	1.00						
3. Firm age	19.07	26.52	0.01	0.23*	1.00					
4. Proceeds length	108.75	98.15	0.12*	0.12*	-0.06	1.00				
5. High-tech ¹	0.23	0.42	-0.11*	-0.05	-0.14*	-0.09	1.00			
6. Growth ¹	0.24	0.43	0.01	-0.10	-0.11*	0.06	0.30*	1.00		
7. Production ¹	0.31	0.46	0.00	-0.06	-0.01	-0.07	0.24*	0.07	1.00	
8. Finance ¹	0.91	0.29	-0.02	0.21*	0.07	0.26*	-0.14*	-0.17*	0.02	1.00
9. General ¹	0.79	0.41	-0.09	-0.05	-0.15*	0.07	0.04	0.10	0.20*	-0.09

Note(s): ¹Binary indicator (0/1)

* $p < 0.05$

Table 2. Results of necessity analysis for above-average IPO performance

Condition	Consistency	Coverage
Large firm	0.52	0.54
Small firm	0.55	0.61
Old firm	0.47	0.55
Young firm	0.59	0.59
Long proceeds section	0.59	0.63
Short proceeds section	0.48	0.51
High tech	0.18	0.42
Low tech	0.82	0.57
Growth proceeds use	0.25	0.55
No growth proceeds use	0.75	0.53
Production proceeds use	0.30	0.52
No production proceeds use	0.70	0.54
Finance proceeds use	0.91	0.54
No finance proceeds use	0.09	0.53
General proceeds use	0.75	0.51
No general proceeds use	0.25	0.63

Before analysis, the researchers must decide on a minimally acceptable consistency score indicating those configurations that are highly relevant for predicting the outcome. We required consistency scores of at least 0.75 as a recommended cut-off (Ragin, 2008). Additionally, we required PRI consistency scores of at least 0.75 for configurations as a means of ensuring robust results (Misangyi and Acharya, 2014). PRI consistency applies a penalty if a configuration simultaneously is associated with the presence and absence of an outcome.

The results of the sufficiency analysis are displayed in Table 3. Ten distinct configurations led to above-average IPO performance. The solution consistency score, which assesses the adequacy of the entire set of configurations in the solution, is 0.86, indicating the set of configurations consistently lead to IPO performance (Ragin, 2008; Schneider and Wagemann, 2013). The solution coverage score indicates the proportion of the occurrence of the outcome in the sample that is explained by the set of configurations, and 0.22, meaning the configurations explain about 22% of the occurrences of high IPO performance. Consistent with recently published studies using the fsQCA method (e.g. Misangyi and Acharya, 2014) the symbol “●” indicates a causal condition’s presence in the configuration, the symbol “⊗” indicates its absence, and a blank cell indicates that the condition could be present or absent in that configuration. Moreover, each configuration has a consistency, raw coverage, and unique coverage score associated with it. Raw coverage indicates how much variation of the outcome is covered by a single path, including overlap with other paths; unique coverage, on the other hand, represents the portion of the outcome covered by a path that does not overlap with other paths (Ragin, 2008; Schneider and Wagemann, 2013).

Table 3. Results of sufficiency analysis for above-average IPO performance

Configuration	1	2	3	4	5	6	7	8	9	10
Countries			US		US	US	US		US	
Represented	US	US	UK	US	UK	HK	HK	US	HK	US
Hi-tech industry	⊗	⊗	⊗	⊗	⊗	⊗	⊗	●	⊗	●
Firm size	⊗		⊗	●	⊗	⊗	⊗	⊗	●	●
Firm age		⊗		●	⊗	●	●	⊗	⊗	●
Use of proceeds section length	●	●	●		⊗	⊗	⊗	●	●	●
Growth proceeds	⊗	⊗	⊗	⊗	⊗	⊗	●	●	●	⊗
Production proceeds	⊗	⊗	●	●	●	⊗	⊗	⊗	⊗	⊗
Financing proceeds	●	●	●	●	⊗	⊗	●	●	●	●
General proceeds	⊗	⊗	●	●	⊗	●	●	⊗	●	⊗
Consistency	0.88	0.85	0.88	0.82	1.00	0.99	0.77	0.94	0.77	0.94
Raw coverage	0.05	0.05	0.07	0.04	0.01	0.01	0.01	0.01	0.03	0.01
Unique coverage	0.01	0.02	0.04	0.01	0.01	0.01	0.01	0.01	0.02	0.01

Note(s): Solution coverage: 0.22; solution consistency: 0.8

The configurations that include low-tech firms are 1, 2, 3, 4, 5, 6, 7, and 9. Configurations 1, 3, 5, 6, and 7 are smaller low-tech firms and Configurations 4 and 9 are larger low-tech firms. Configurations 8 and 10 include firms that are in a high-tech industry. Configuration 8 includes young and small high-tech firms while Configuration 10 includes older and large high-tech firms.

The configurations reveal some similarities and differences between the three countries where the IPOs were listed. First, the USA exchanges are present in all configurations and are the only exchanges present in the high-tech configurations. This could indicate more diversity in listings and how investors make decisions in the US. However, for low-tech firms there are configurations containing Hong Kong and United Kingdom firms as well. First, Configuration 9 shows a longer use of proceeds section and states many intended use of proceeds for Hong Kong firms that are large, young, low-tech firms. However, Configurations 6 and 7 are older, small low-tech firms listed on the Hong Kong and the use of proceeds sections is short. Configurations 3 and 5 are the two configurations that have firms listed on the London Stock Exchange. Configuration 5 is for small, young, low-tech firms that are only using their proceeds for production while Configuration 3 has more proceeds section and a longer proceeds section for small low-tech firms of any age.

5. A multidimensional view OF IPO proceeds

Combining the empirical results observed above with extant theory, we aim to take a first step towards a multidimensional view of IPO proceeds and performance. In particular, the information processing perspective is useful for understanding how investors view prospectuses. This view states that decisions are made by individuals and organizations based on the information available to them and their ability to use that information effectively (Muhammad *et al.*, 2009). A mismatch between the information processing abilities necessary to make a decision and the information processing abilities at hand can impede decision making (Galbraith, 1973). The larger the mismatch and the more uncertainty present, the more information processing is needed to decide (Galbraith, 1973). Logically, actors seek to simplify the process by either reducing the information to be processed or increasing their processing capabilities. Moreover, the amount of information necessary to make a decision is context-dependent. For instance, Sapienza *et al.* (1996) studied how venture capitalists interacted with firms over time, finding that venture capitalists required different amounts of information from firms based on how experienced the venture capitalist was, how “risky” they thought the firm to be, and the length of the relationship with the firm.

Investors make more informed decisions about organizations based on the quality and appropriateness of information available. Information from credible sources is weighted more heavily (Guldiken *et al.*, 2017), and providing too much information can be seen as a weakness (Daily *et al.*, 2003a, b). A key tenet of the information processing perspective is that the best decision is not made by having a necessarily large amount of information, but rather by having information that can be appropriately processed (De Dreu, 2007). Therefore, IPO firms need to judge what information is most appropriate and how much of that information to include in their use of proceeds section to satisfy investors. Using this perspective, we leverage our empirical results to elaborate existing theory of IPO proceeds and performance and take a step towards a multidimensional view.

5.1 High-tech firm configurations

Industrial context can determine which information is appropriate to disclose to investors. High-tech and low-tech IPO firms behave differently in a few ways. First, high-tech firms typically have greater underpricing (Leone *et al.*, 2007). New technology developed by firms in these industries can be difficult for investors to understand, therefore, high-tech companies have the uphill battle of explaining the financial value of their new technology in an event (the IPO) rife with additional uncertainty. Second, investors interpret information about firms differently depending on if they are from a high-tech sector or not. For instance, taking on debt is perceived positively for low-tech IPOs and results in less underpricing (Kim *et al.*, 2008). For high-tech IPOs, taking on more debt is perceived as riskier (Kim *et al.*, 2008). Firms in high-tech industries invest significant resources into R&D while being relatively young and small (Mousa and Reed, 2013) and have minimal slack resources (Mousa *et al.*, 2013). High-tech firms may need to show that they are investing everything possible into their innovations and taking on too much debt could make them appear overleveraged at the time of IPO. Third, information disclosed in prospectuses varies for high- and low-tech IPOs. Companies that are developing new technology have to be careful about what they disclose in order not to reveal anything proprietary. However, this has not been shown to impact the specificity of proceeds disclosure for high-tech firms (Leone *et al.*, 2007), suggesting that the relationship between high-tech and low-tech firms and intended use of proceeds is nuanced. The right level of information to disclose and how to use IPO proceeds is undoubtedly going to vary for high- and low-tech IPOs.

Information is understood based on the decision makers' "knowledge corridor." How people connect information together depends on their previous knowledge of the subject (Venkataraman, 1997). With high-tech firms developing new technology, investors are likely to have minimal knowledge on what the firm is developing. High-tech firms may find it advantageous to detail their proceeds use by providing specific, salient information so investors do not experience confusion based on a subject matter they are not familiar with (Huyghe *et al.*, 2016).

The amount of information that individuals deem necessary to make a decision ultimately depends on the amount of risk the individual is exposed to. Riskier firms require more information to reduce the uneasiness of investors (Sapienza *et al.*, 1996). High-tech firms can be perceived as riskier because they are less familiar to investors. Moreover, task environment uncertainties can require more information processing (Jia *et al.*, 2020). Given high-tech firms operate in a more uncertain environment, investors may have a harder time understanding the company's vision with minimal information. Ignorance can be a larger driver for information needs than uncertainty (Lorentz *et al.*, 2020). High-tech firms have to make decisions that often result in more equivocality to investors. High-tech firms that invest heavily in intangible assets tend to have a lower book value than a low-tech firm that has similarly valued assets that are tangible (Lin *et al.*, 2014). The predicted value of intangible assets is more difficult to assess (Lin *et al.*, 2014). To investors, what determines the value of new technology and intangible assets may be ambiguous. In such instances of equivocality, investors may value increased information (Lorentz *et al.*, 2020). Therefore, both high-tech configurations (8 and 10) have a long use of proceeds section. Both configurations show firms that intend to use their proceeds for financing. As mentioned previously, taking on too much debt can be viewed negatively for high-tech firms (Kim *et al.*, 2008). However, if high-tech firms are telling investors they are going to use their IPO proceeds to decrease their debt through financing activities that can provide information that

makes investors feel more comfortable. However, younger, smaller firms and older, larger firms differ on whether they disclose their use of proceeds for growth. Although there are some risks involved in all high-tech IPOs, smaller firms are even riskier (Unlu *et al.*, 2004). Therefore, smaller and newer high-tech IPO firms need to use their proceeds for growth (Configuration 8) for investors to get on board while the more established high-tech businesses (Configuration 10) do not. Therefore, we propose:

Proposition 1a. Young, small high-tech firms will need to have a long use of proceeds section and to state that they will use their proceeds for growth and financing to achieve above-average IPO performance

Proposition 1b. Older, larger high-technology firms will need to have a long use of proceeds section and to state that they will use their proceeds for financing in order to achieve above-average IPO performance.

5.2 Low-tech firm configurations

Low-tech firms come from industries where there are established measures to compare firms more readily, so, investors may be savvy in their business workings. Low-tech firms also have more tangible signals to send investors including the value of assets, sales, and early cash flow (Kim *et al.*, 2008). Information about firms in traditional and low-tech industries may be more readily understood than for high-tech firms that are bringing novel ideas to market. Having prior knowledge about low-tech companies' operations will influence how investors see the information presented in their prospectuses. However, previous research does not typically distinguish between how large and small or young and old low-tech firms behave differently since the focus of the research is usually comparing high-tech and low-tech firms (e.g. Kim *et al.*, 2008). Yet, there is variety within low-tech firms. For instance, in low-tech firms that are young and small, investing in process innovation positively influences their chance of survival (Cefis and Marsili, 2011). Older and larger IPO firms are perceived as less risky and attract highly ranked underwriters which in turn can lead to better performance (Kim *et al.*, 2008). Given the variety in low-tech firms, investors may perceive them differently based on their age and size.

Configurations 1, 2, 3, 4, 5, 6, 7, and 9 are all low-tech firms. Five of the eight configurations are dependent upon both size and age while three of the eight configurations are dependent upon either size or age. The variety within the configurations shows that investors may find that how IPO firms should use their proceeds varies with firm characteristics. There is not one formulaic equity story for all low-tech companies. We will discuss the configurations in blocks of size and age.

First, Configuration 4 is the only configuration that has large low-tech firms that are older. Older, large low-tech firms could be considered the most established firms. Fittingly, these firms do not need to disclose that they are investing in growth. However, they do need to disclose that they plan on investing in production. Previous research has shown that firms that are larger are less likely to invest in growth around an IPO (Carpenter and Rondi, 2006). Investing in production may be a way to increase efficiency and competitiveness for established firms. Firms within low-tech industries continue to develop and compete through transforming their current processes and innovating without investing in traditional R&D (Hirsch-Kreinsen *et al.*, 2006).

However, a larger low-tech company may need a stronger justification for going public and receiving an influx of cash than achieving one objective (increasing production) since they have shown the company's ability to grow on their own already. Therefore, the use of proceeds for financing may lend additional impetus for the IPO. As mentioned above, taking on debt is perceived positively for low-tech IPOs by investors since the firm has to build its capacity to continue to absorb knowledge and engage in innovation (Sciascia *et al.*, 2014). When IPO firms use their proceeds for financing it is typically structuring the company to be more financially lean by repaying shareholders, loans, and so forth. Taking on debt may be perceived positively at IPO for more established firms but investors may look for ways that the firms will reduce debt over time. However, just becoming more efficient or planning to reduce debt would not be adequate for undertaking the big event of an IPO. For an established firm to compete, investors need to see the firms take a more robust approach to using their proceeds. To handle managing production and financing in the future, it seems logical that the large more established low-tech firms will also have to invest in general corporate purposes which is also present in Configuration 4. General purposes, with the exception of Configuration 6, are found in addition to two or more other use of proceeds because most likely firms need to make other changes (i.e. hiring) in order to deploy their key objective (i.e. ramp up or innovate their production). We propose:

Proposition 2a. Older, large low-tech IPO firms will need to state they will use their use of proceeds for production, financing, and general purposes to achieve above-average IPO performance

Growth and production do not appear in any configuration together that led to above-average IPO performance for low-tech firms. Growth and production could appear to be substitutable in the mind of investors. Considering that growth and production are big, expensive processes, and that firms typically have a focal strategy that drives their main business decisions, it makes sense for growth and production to be substitutable. Filatotchev and Piesse (2009) found that for IPO firms to be able to invest in growth via R&D and internationalization they had to invest heavily in some assets and be financially constrained prior to IPO. This shows that being able to invest enough money to grow involves a particular resource path. Producing more or different products or services would most likely require similar path dependency. The substitution effect is only seen for low-tech firms since no high-tech firms stated they intend to use their proceeds for production.

Proposition 2b. Disclosing intended use of proceeds for growth and disclosing intended use of proceeds for production are substitutable for low-tech IPO firms in order to achieve above-average IPO performance.

Configurations 1, 3, 5, 6 and 7 show small low-tech firms. Smaller low-tech firms have not received much examination in the IPO literature. Bukh *et al.*, (2004) did not find a relationship between firm size and how much information that needed to be disclosed in an IPO prospectus even though previous studies hypothesized that more information is better for small firms to assuage investor concerns. There are most likely other organizational characteristics that determine disclosure levels for smaller IPO firms (Bukh *et al.*, 2004). Our results confirm this

supposition because we analyzed multiple organizational characteristics alongside firm size. For small, low-tech firms, more information is not necessarily better for investors. The “right” level of information needed for investors to process is not simplistic. As previously mentioned, the information needed is context-dependent and about the quality and appropriateness of information available. Therefore, less information can be sufficient if it is the appropriate kind of information.

Low-tech firms tend to innovate by continuously improving their products or services, developing products and services more tailored to their customers, and making their production processes more efficient (Hirsch-Kreinsen *et al.*, 2006). In a longitudinal study of small low-tech firms, the most successful companies invested in infrastructure and improvements along the value chain to capture better margins (Corbett, 2008). Given how important production is to low-tech firms to remain competitive, IPO firms only using their proceeds for production may seem appropriate to investors. In Configuration 5, small low-tech firms are only using their proceeds for production and keep their proceeds section short. Configuration 5 shows firms with a simple equity story. It is also the only configuration with specifically young, small, low-tech firms. Using IPO proceeds for production may be considered safe to investors for young and small firms.

Proposition 2c. Small low-tech IPO firms will require a long use of proceeds section or to intend to use their proceeds for production to achieve above-average IPO performance.

For Configurations 1 and 3 where age is not a factor, the equity story is more complex and requires longer use of proceeds sections for small low-tech firms. For Configuration 3, not only is the company investing in production, they are investing in financing and general categories. In Configuration 1 where firms are only using their proceeds for financing, they need to explain their decisions more in depth. In almost every configuration that has financing as a proceeds section, prospectuses have a longer use of proceeds section. Potentially, financing decisions could require more explanation as to where the money is going. Furthermore, given investors’ knowledge corridors, they can process more information on a topic in which they are more familiar. For instance, investors in international markets have home-country bias because they collect and analyze more information from their own country because it is more readily understood (Mondria and Wu, 2010). Similarly, investors may be more familiar with the elements of financing activities since that is their field than activities that are more industry-specific. Therefore, more information in line with their knowledge corridor is useful.

In the other two configurations for low-tech firms where there is only one use of proceeds present, Configurations 5 and 6, the use of proceeds section is short. Configurations 1 and 3 both had financing as the only use of proceeds category while 5 and 6 only had production or general purposes, respectively. While investors are familiar with financial activities, they may not be as knowledgeable about firm-specific information such as the IPO firm’s specific products and services or administrative practices. Therefore, including a longer use of proceeds section to explain financing activities but a shorter section for firm-specific information (production or general purposes) aligns with investors’ knowledge corridors. It is of minimal benefit to include extra information about a topic that investors may not be as familiar with (Huyghe *et al.*, 2016).

Proposition 2d. Low-tech IPO firms will need to state they will use their proceeds for

financing unless they are stating they are only using their proceeds for production or general purposes to achieve above-average IPO performance.

6. Discussion and Conclusion

6.1 Theoretical implications

Table 4 contains a summary of the findings and propositions. This study contributes to a more nuanced, multidimensional view of the influence of IPO firms' characteristics on market performance. This view contributes to the literature in three important ways. First, we take a first step towards an emerging multidimensional view of IPO proceeds use and performance by showing that performance is dependent on multiple contingencies acting in concert to influence investor perceptions. A dominant theme in the management IPO literature is how the firm's managers counteract the risk and uncertainty investors experience when assessing newly public firms (e.g. [Khoury et al., 2013](#)). Emerging research in this stream points to the complexity and configurational nature of informational attributes influencing IPO performance ([Wang et al., 2019](#)), which adds even more uncertainty and risk. This study takes a further step in unraveling such complexity by demonstrating that risk and uncertainty can be reduced by distinct bundles of relevant attributes. By evaluating the larger "equity story" of a company surrounding its use of proceeds disclosures, we show how managers can use information to reduce uncertainty and risk for investors and thereby improve IPO performance.

Table 4. Results summary

Firm type	Proceed length section	Use of proceeds section	Configurations	Propositions
Small, young high-tech firms	Long	Growth and financing	8	1a
Large, old high-tech firms	Long	Financing	10	1b
Small, young low-tech firms	Short	Production	5	2b, 2d
Small, old low-tech firms	Short	Growth, financing, and general	6, 7	2b, 2d
Large, young low-tech firms	Long	Growth, financing, and general	9	2b, 2d
Large, old low-tech firms	Long or short	Production, financing, and general	4	2a, 2b, 2d
Small low-tech firm regardless of age	Long	Production, financing, and general	1, 3	2b, 2c, 2d
Young low-tech firm regardless of size	Long	Financing	2	2d

Specifically, we found different configurations leading to above-average performance for high-tech and low-tech IPO firms. High-tech IPO firms need to use their proceeds for growth and financing and have a long use of proceeds section if they are young and small to achieve above-average IPO performance. For older and larger high-tech firms, they need to use their proceeds for financing and have a longer use of proceeds section. These results paint previous findings in a different light. Wyatt (2014) found that firms stating they would use their proceeds for growth are more underpriced than those that do not. While this may be true on average, our results show configurations where firms disclose that they will use their proceeds for growth are less underpriced if they also use proceeds for financing activities. In other studies, high-tech firms have been shown to have more underpricing than low-tech firms (Leone *et al.*, 2007). Yet, there are instances where high-tech firms can be less underpriced depending on their firm characteristics and how they intend to use their proceeds. High-tech firms can be perceived as “riskier” given that the technology they are using may not be readily understood by investors. Researchers have argued that high-tech firms need to present specific salient information to investors in order to overcome the level of risk of investing in newer technology (Huyghe *et al.*, 2016). Furthermore, high-tech IPO firms can reduce their level of perceived risk by pairing the right management team and ownership structure with the technology being developed (Wang *et al.*, 2019). We show an additional way high-tech firms can be perceived as less risky, in that firms that have longer sections explaining their intended use of proceeds and that plan on using proceeds for financing activities were less underpriced.

For low-tech firms, using proceeds for production or growth are substitutable in terms of achieving above-average IPO performance. Moreover, older and larger low-tech firms need to use their proceeds for production, financing, and general purposes. Smaller low-tech firms need a longer use of proceeds section or to use their proceeds for production. The research showing that larger low-tech firms are less likely to invest in growth around IPO (Carpenter and Rondi, 2006) is not always true in our configurations. Large and young low-tech firms performed well if they intended on using their IPO proceeds to invest in growth. Low-tech firms may be more easily understood, and considered less risky, by investors compared to high-tech firms given their use of established technology and business practices. However, being perceived as less risky does not necessarily mean they will always perform better than high-tech firms. Our results show that the level of perceived risk may very dependent on low-tech firm’s other characteristics such as their age and size.

Taken together, these results demonstrate the contingent nature surrounding factors that influence IPO performance. Some factors that have been previously found to affect IPO performance have differing effects depending on the larger bundle of attributes of the IPO and prospectus. Put differently, whereas previous studies have uncovered antecedents of IPO performance, our study demonstrates that such antecedents operate in tandem rather than in isolation. Namely, the intended use of proceeds for high-tech and low-tech IPO firms have differing impacts on IPO performance dependent upon other firm characteristics. Our results add to a growing body of literature that investigates variances between and within high-tech and low-tech IPO firms (e.g. Jeon and Kim, 2011; Mousa *et al.*, 2013; Kim *et al.*, 2021).

Finally, we use information processing perspective to further investigate how IPOs are framed in their equity story. Most IPO research in management uses signaling theory (e.g. Cohen and Dean, 2005). While signaling theory helps show how some firms are inclined to package their information for investors, it is less useful for predicting how investors will receive information (Park *et al.*, 2016). An information processing perspective coupled with a

multidimensional analysis helps elucidate both the packaging and interpreting of an IPO's equity story. In other words, research has heretofore only focused on one side of the equation – how firms package information in the prospectus – without regard to how such information will be received and interpreted, which is what ultimately determines the extent of IPO underpricing. We, therefore, take a first step towards filling a large hole in scholarly understanding of IPO performance by showing that there can be a correct amount and type of information that can be disclosed about IPO proceeds for particular firms. People make decisions based on the information they have available to them and their ability to use the information available (Muhammad *et al.*, 2009). The environment of the organization (Jia *et al.*, 2020) and level of uncertainty and equivocality (Lorentz *et al.*, 2020) influence which information investors need. Investors most likely consider how well the intended use of proceeds fits with other firm attributes and what will decrease their perceived level of risk. For instance, a small, young high-tech firm that is investing its proceeds in growth may be more aligned with what investors believe their goals for going public should be. On the other hand, larger high-tech firms were found to have better performance when disclosing their use of proceeds for financing activities. Investors may process that larger firms at this stage should want to become more efficient and financially flexible. For IPO firms to assuage investors' concerns, they may need to provide more information on subject matter where the investors may not have previous knowledge, such as specific products and administrative practices, and minimize the amount of information investors are familiar with already. Packaging of information in line with how investor will perceive and use it is critical for achieving above-average IPO performance.

In terms of theoretical implications for future research, a more fine-grained view of how the use of proceeds section influences investor decisions helps tie multiple research findings together and points to fresh approaches for understanding IPO proceeds and performance. More specific information in the use of proceeds section generally leads to reduced underpricing in previous studies (Leone *et al.*, 2007; Schenone, 2004). Which categories are most important may depend on exchanges given that different results were found in Australia (Wyatt, 2014), the US (Amor and Kooli, 2017), Indonesia (Andriansyah and Messinis, 2016), and Malaysia (Rahman and Che-Yahya, 2019). Yet, we found configurations where previous findings did not hold. The information that can be appropriately processed in a situation is dependent upon multiple firm characteristics (De Dreu, 2007). More information or the most precise information is not always better for investors. Thus, our study indicates that IPO performance must be understood in a way that is holistic and contingency-based. Findings regarding a single attribute of the firm or prospectus ought to be couched within the larger context of the firm and its prospectus. Moreover, single attributes may be more or less relevant, depending on the context. Configurational analysis can help IPO researchers unravel such complexity and contribute to more accurate and nuanced theory.

6.2 Practical implications

Our findings can help managers in two important ways. First, they can potentially help managers decide whether making an IPO will fit into their organizational goals and help them raise the necessary capital. Firms that intended to use their proceeds for certain purposes that align with their firm characteristics ultimately performed better over time. Namely, young small high-tech IPO firms need to use their proceeds for growth and financing and have a long use of proceeds section while older and larger high-tech firms need to use their proceeds for financing and have a

longer use of proceeds section. For low-tech firms, using proceeds for production or growth are substitutable in terms of achieving above-average IPO performance. For older and larger low-tech firms, they need to use their proceeds for production, financing, and general purposes. Smaller low-tech firms need a longer use of proceeds section or to use their proceeds for production. Organizations using their proceeds for the purposes not found to lead to higher performance may consider whether making an IPO will give their firm the amount of funding they need to be successful or will increase their risk of delisting. For instance, young small high-tech firms use their use of proceeds for financing and growth together. Since financing activities include repaying shareholders, repaying loans, and so forth, it is likely that young small high-tech firms are using various financing options to fund more rapid growth prior to IPO. Therefore, young small high-tech firms may find it beneficial to rely on external funding such as venture capital backing early in the process if they want to see their IPO be successful. Most of the configurations for companies that performed well were for low-tech firms which potentially lends credence to not all high growth firms are young, small, and high-tech firms (Brown *et al.*, 2017). There were multiple elements that were substitutable for low-tech firms. For example, using their IPO proceeds for production or growth were substitutable. Managers of low-tech firms can determine which way to package their IPO prospectus based on their overall objective, growth or production, to best achieve above-average IPO performance. IPO performance matters to the firms' managers because it impacts how much capital they raise to fund growth, production, or other firm goals.

Second, our findings help managers and bankers who prepare the prospectuses for these IPO firms potentially provide the right amount and type of information. Importantly, those who prepare the prospectus should pay attention to how much information they provide in the use of proceeds section. Previous research provided mixed information on how much information disclosure was appropriate. In this study, we show that longer use of proceeds sections are important for particular firms and goals. For example, high-tech firms always need to have a longer use of proceeds section. For low-tech firms, it depends on their firm size and what they are using their proceeds for. For instance, large low-tech firms just using their proceeds for production need a short section while the same type of firms using the proceeds for production, financing, and general uses need a longer use of proceeds section. Notably, the more disclosure uses did not always mean a longer proceeds section. Large low-tech firms that were only using the proceeds for financing also had longer use of proceeds sections. Understanding how much information to disclose to raise the most capital is important for those stakeholders involved in the IPO process.

6.3 Limitations

Although we find nuances that add to previous research, there are limitations to our study. First, FsQCA can only accommodate a limited number of causal factors, with six to eight being the recommended maximum (Ragin, 2008). It was, therefore, not empirically feasible investigate additional factors that could possibly influence IPO performance. For instance, even though we used multiple exchanges in our dataset we did not include any country-level variables to more deeply compare the differences between countries. The differences between the exchanges could be explored in future research because how people process information is culturally-dependent (de Mooij and Hofstede, 2011). Future research could condense the firm-level attributes or use of proceeds in configurations uncovered here into a single variable in order to accommodate more

variables at the country and/or industry level. Future research could also consider how the offer is marketed and whether the prospectus is read by a wide audience (Katti and Phani, 2016). In addition, economy-specific factors such as how many companies are going public within an industry at one time could influence underpricing (Katti and Phani, 2016).

Second, the time frame for our data collection follows the financial crisis of 2008. The firms that undertake an IPO after a financial crisis may be different than in an “optimal” time period. Furthermore, large market changes like a crisis inevitably influence how investors think and how the market performs (Li *et al.*, 2018). Future research can investigate pre- and post-financial crisis markets to see if how proceeds play a role change. For instance, financing and paying down debt may not be as important prior to the financial crisis or more years removed from the financial crisis. Furthermore, we have included only three comparable years of IPOs. It is possible that results could be different during more bullish market conditions and when considering a longer time frame.

6.4 Conclusion

Our study contributes a multidimensional view of IPO proceeds information and performance, advancing our understanding of how investors view IPO information and how this in turn affects IPO performance. This understanding helps advance the nascent stream of research on IPO performance and guides managers who are considering or in the process of conducting an IPO. Specifically, high-tech IPO firms and low-tech firms need to disclose different use of proceeds in order to achieve lesser underpricing. The appropriate use of proceeds to disclose is not only based on the market, as found in previous research, but firm characteristics such as firm size and age. The length of the use of proceeds sections is also an essential variable to consider in how firms package their prospectus. Understanding how different variables work in different configurations to impress investors helps organize and make sense of the mixed findings in previous research.

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