

# **Product Market Competition, Proprietary Cost & Capital Market Financing Choice**

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## **Product Market Competition, Proprietary Cost & Capital Market Financing Choice**

**Abstract:** This paper examines whether product market competition influences a privately held firm's financing choice between private placements and public offerings in the capital market. A private placement exempts the issuers from mandatory requirements to disclose a comprehensive set of information, some of which could potentially damage its competitive position in the product market. First, after controlling for market timing, firms operating in more competitive product markets are more inclined to choose private placements. Second, an increase in product market competition is associated with a bigger increase in the proportion of firms that choose private placements. Third, firms operating in multiple lines of business are more inclined to choose private placements. Finally, given that firms operate in multiple lines of business, more profitable firms are more inclined to choose private placements. Those findings are consistent with the interpretation that firms with potentially higher proprietary costs are more inclined to choose private placements to avoid the *obligation* to disclose competitively sensitive information.

**Keywords:** proprietary cost; private placements; public offerings; mandatory disclosure

# Product Market Competition, Proprietary Cost & Capital Market Financing Choice

## I. Introduction

This paper examines whether product market competition influences a privately held firm's financing choice between private placements and public offerings in the capital market. The research question is motivated by studies suggesting that disclosure of sensitive information could potentially damage a firm's competitive position in the product market (e.g., Verrecchia, 1983; Wagenhofer, 1990; Feltham and Xie, 1992; Gigler, 1994; Hayes and Lundholm, 1996).

An issuer that chooses to raise capital through public offerings is required, both at the time of the offering and on a periodic basis thereafter, to disclose a comprehensive set of information, some of which could potentially damage a firm's competitive position in the product market. A prominent example of competitively sensitive information is the mandated disclosure of segment information on investment and profitability in separate lines of business under SFAS 131. In contrast, issuers in private placements sell unregistered securities to a selected group of investors (mostly institutional investors) without general investor solicitation. SEC recognizes that investors in private placements are able to "fend for themselves" and exempts the issuer from mandatory disclosure requirements if the issuer is a privately held firm prior to the placement.<sup>1</sup> Thus a private

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<sup>1</sup>If the issuer has previously engaged in public offerings, and thus, has other securities registered with SEC, the issuer is still required to comply with mandatory disclosure requirements. It is important to point out that, although both publicly held firms and privately held firms engage in private placements, *only privately* held firms in private placements have no obligation to publicly disclose information. Private placements by *publicly held* firms, also known as PIPEs, are *not* exempt from mandatory disclosure and reporting requirements. This is because the mandatory disclosure and reporting requirements under the Securities Exchange Act of 1934 are applicable to all SEC registrants. A SEC registrant is a firm that has once engaged in public offerings of equity or debt or other securities.

placement enables a privately held firm to avoid the obligation of disclosing certain competitively sensitive information.

As the potential for mandatory disclosure requirements to create competitive harm vary across industries and firms, some issuers have stronger incentives to choose private placements to avoid the obligation to disclose certain competitively sensitive information. Overall, firms with potentially higher proprietary costs under the mandatory disclosure and reporting regime are expected to be more inclined to choose private placements. More specifically, I expect that firms operating in more competitive product market are more inclined to choose private placements because the potential for mandatory disclosure requirements to create competitive harm is higher. I also expect that firms operating in multiple lines of business are more inclined to choose private placements because the potential for segment disclosure requirement to create competitive harm is higher.

Anecdotal evidence suggests that potential proprietary cost plays a significant role in the financing choice between public offerings and private placements. For example, Renaissance Technologies, the \$30bn hedge fund group run by billionaire mathematician James Simons, opted for equity private placements because “it would not be forced to publicly reveal significant information about its trading strategies and it would be more likely to attract long-term investors”.

The sample includes all private placements and public offerings of both debt and equity by *privately* held firms from 1990 to 2006. I find empirical results that are largely consistent with the interpretation that firms with potentially higher proprietary costs are more inclined to choose private placements to avoid the *obligation* to disclose

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competitively sensitive information. First, in a cross-section, firms operating in more competitive product markets are more inclined to choose private placements after controlling for market timing. The result is robust to multiple dimensions of product market competition, including concentration ratios, product substitutability and entry costs. Second, an increase in product market competition is associated with a bigger increase in the proportion of firms that choose private placements. Moreover, firms operating in multiple lines of business are more inclined to choose private placements. Finally, given that firms operate in multiple lines of business, more profitable firms are more inclined to choose private placements.

This paper is related to prior studies on private placements. However, prior studies on private placements are limited to private placements by *publicly held* firms (PIPEs) (e.g., Hertzal and Smith, 1993; Wu, 2004; Borphy, Paige and Clemens, 2004; Gomez and Phillips, 2007). This is largely due to the paucity of publicly available information on privately held firms. In this paper, I hand collect, from a unique data source, financial information for a sizable sample of privately held firms. To my knowledge, this paper is the first paper that examines private placements by *privately held* firms.

This paper contributes to two strands of literature in accounting and finance. First, the findings in this paper contribute to the literature on proprietary cost of disclosure. Prior studies provide empirical evidence that potential proprietary cost influences a publicly held firm's *voluntary* disclosure practices (e.g. Harris, 1998; Berger and Hann, 2003; Leuz, 2004). This paper is the first paper suggesting that potential proprietary cost influences a privately held firms' *commitment to mandatory* disclosure

requirements as well. Second, while the impact of publicly held firms' debt-to-equity ratio on product market competition is explored in prior studies (e.g., Chevalier, 1995; Phillips, 1995), this paper is the first one documenting that product market competition is an *endogenous* determinant in the financing choice between private placements and public offerings for privately held firms. In prior studies, the financing choice between debt and equity is exogenous and product market competition is endogenous. In contrast, this paper treats product market competition as exogenous and the financing choice between private placements and public offerings as endogenous.

The rest of the paper is organized as follows. Section 2 develops the hypothesis. Section 3 discusses the industry classification and measure of product market competition. Section 4 discusses the research design and section 5 presents empirical results. Section 6 concludes the paper.

## **II. Hypothesis development**

Prior studies document that firms with an intention to access the capital market have a strong incentive to disclose more information (e.g., Lang and Lundholm, 1993; Frankel et al., 1995; Healy et al., 1999). As both firms that opt for private placements and firms that opt for public offerings have the need for external capital, an examination of the financing choice between private placements and public offerings explicitly controls for external financing incentives.

The financing choice between private placements and public offerings depends on the benefits and costs of private placements relative to public offerings. Compared with public offerings, one major advantage of private placements is the ability to avoid

mandatory disclosure obligations. Private placements also provide issuers a relatively quicker access to the capital market. “Some will want to access the markets quickly; some will want to avoid disclosure about certain assets of their business. Those are the two big drivers for private placements: speed to market and ability to limit disclosure,” said David Ballard, managing director of private equity at Merrill Lynch in New York.

The major drawback of private placements, however, is that issuers in private placements incur a relatively higher cost of capital than otherwise similar issuers in public offerings. For example, Fenn (2000) and Chaplinsky and Ramchand (2004) find that the average yield spread for the investment (speculative) grade debt in Rule 144A private placements is 49 (71) basis points higher than public debt offerings. Livingston and Zhou (2002) find that Rule 144A debt private placements have higher yield spreads even after controlling for default risk. The higher cost of capital in private placements is associated with the limited liquidity in private placements compared with public offerings.<sup>2</sup> The higher cost of capital in private placements is also associated with the differential investor types in private placements and public offerings. As private investors hold undiversified portfolio, and therefore, are not willing to pay as high price as diversified investors in public offerings.

When the benefits exceed the costs of private placements, it is efficient for the privately held firm to choose private placements. To illustrate algebraically,

$COST_{disclosure}$  is the costs associated with mandatory disclosure requirements, including

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<sup>2</sup> Securities issued in private placements were subject to a minimum 12-month holding period prior to Rule 144A. On April 1990, the SEC adopted Rule 144A. Liquidity in private placements is enhanced through the ability to resell to a large group of QIBs under Rule 144A. Recently, NASDAQ has established Private Offerings, Resales and Trading through Automated Linkages (PORTAL) and Goldman Sachs has established Tradable Unregistered Equity (GSTRUE) to improve the liquidity in the private placement market.

both direct implementation costs ( $IMPLEMENTATION\_COST_{disclosure}$ ) and indirect proprietary costs which result from mandated disclosure of sensitive information that potentially damages a firm's competitive advantage ( $PROPRIETARY\_COST_{disclosure}$ ).

$BENEFIT_{cost\_of\_capital}$  is the lower cost of capital if the firm chooses public offerings.

It is efficient for the issuer to choose private placements if

$$IMPLEMENTATION\_COST_{disclosure} + PROPRIETARY\_COST_{disclosure} > BENEFIT_{cost\_of\_capital} \quad (1)$$

It is clear from inequality (1) that, in this simplified setting, three parameters --- direct implementation costs of mandatory disclosure requirements, indirect proprietary costs associated with mandatory disclosure requirements and potential cost of capital reduction in public offerings --- influence the financing choice between private placements and public offerings. Controlling for direct implementation cost associated with mandatory disclosure and cost of capital reduction in public offerings, I use the inequality in (1) to derive four main hypotheses on the association between proprietary costs and the financing choice between private placements and public offerings. Proprietary costs associated with mandatory disclosure requirements potentially vary considerably across industries and firms.

First, potential proprietary costs associated with mandatory disclosure requirements are likely to be related to the intensity of product market competition. A firm operating in a more competitive product market is likely to be more concerned about the possibility that potential competitors enter into the business to intensify the already fierce competition and the possibility that existing competitors mimic their key business

strategies or. More specifically, firms operating in product markets where the entry cost is low are more concerned about potential new entry into the market, and thus, are more inclined to avoid the obligation to disclose competitively sensitive information. Similarly, firms operating in markets where their products are highly substitutable ( with low differentiability) are more concerned about existing competitor mimic their operations or strategies, and thus, are more inclined to avoid the obligation to disclose competitively sensitive information. In summary, the potential for mandatory disclosure and reporting rules to create competitive damage is higher in more competitive product markets. Consequently, ceteris paribus, firms operating in more competitive product market are more inclined to choose private placements to avoid the obligation of disclosure. This leads to the first hypothesis:

*H1: Firms operating in more competitive environment are more inclined to choose private placements.*

Second, over an extended period, new players enter into the product market and old players exit the product market, which results in a change in the intensity of competition. Product market competition is also likely to experience a dramatic change when some firms adopt more advanced technologies or more efficient processes. As the product market becomes more competitive, the potential for mandatory disclosure and reporting requirements to create competitive harm is higher in the particular product market over time. Thus, as the product market becomes more competitive, firms operating in that market are more inclined to choose private placements to avoid the disclosure regulation. Conversely, as the product market becomes less competitive, the potential benefit associated with private placements to avoid incurring proprietary costs is

smaller. Thus, firms are less likely to choose private placements. This leads to the second hypothesis:

*H2: An increase in product market competition is associated with an increase in the proportion of firms that choose private placements in the capital market.*

The first two hypotheses indicate that proprietary costs vary across industries and over time. The potential for mandatory disclosure requirements to create competitive harm is also likely to vary across firms. Segment information is generally regarded as competitively sensitive because it reveals the operating margin and investments in different lines of business at the firm level (e.g., Feltham et al., 1992; Hayes and Lundholm, 1996; Leuz, 2004). Survey evidence also suggests that segment disclosure is viewed as among the most competitively sensitive information by managers (e.g., Gray and Roberts, 1988). Under the current U.S. reporting regime, all public firms are required to disclose segment information regarding the investment and profitability in each line of business. The segment disclosure requirement is likely to impose a higher potential proprietary cost on firms operating in multiple lines of business rather than firms operating in a single line of business. Thus, ceteris paribus, firms operating in multiple lines of business are more inclined to choose private placements to avoid the obligation of disclose competitively sensitive segment information. This leads to the third hypothesis:

*H3: Firms operating in multiple lines of business are more likely to choose private placements.*

Finally, among firms with multiple lines of business, the potential for mandatory disclosure requirements to create competitive harm is likely to vary as well. A number of

empirical studies infer the effect of proprietary cost on voluntary disclosure choices from either the classification of segments or the level of aggregation in segment reporting (e.g., Harris, 1998; Berger and Haan, 2003; Leuz, 2004). For example, Harris (1998) finds that profitable operations in less competitive industries are less likely to be reported as segments. Berger and Haan (2003) find that firms with high abnormal profitability are less likely to voluntarily report multiple lines of business prior to SFAS 131. Leuz (2004) find that German firms are less likely to voluntarily provide segment information when firm profitability is high. All findings are consistent with the interpretation that segment disclosure imposes potentially higher proprietary costs on more profitable firms. Consequently, given that firms operate in multiple lines of business, more profitable firms are more inclined to choose private placements. This leads to the fourth hypothesis:

*H4: Given that a firm has multiple lines of business, more profitable firms are more inclined to choose private placements.*

The discussion in this section only addresses the efficiency of private placements versus public offerings in raising external capital. The hypotheses ignore the distinct possibility that managers may have opportunistic incentives that may lead to inefficient financing choice. The above discussion also addresses the choice between private and public offerings from the proprietary cost perspective exclusively. However, it is clear from inequality (1) that implementation cost of mandatory disclosure requirements and cost of capital play an economically significant role in the financing choice in the capital market. In the research design section and the following empirical analysis, I explicitly control for the direct implementation cost and cost of capital.

### **III. Product market classification and measures of product market competition**

#### *3.1. Product market classification*

I classify product markets using the North America Industry Classification System (NAICS). NAICS uses a six-digit hierarchical coding system to classify all economic activities into twenty industry sectors. Five sectors are mainly goods-producing sectors and fifteen are entirely services-producing sectors (see Appendix 1 for NAICS sector aggregation). I use the North America Industry Classification System (NAICS) rather than the Standard Industrial System (SIC) to identify product markets for a number of research design considerations.

First, NAICS uses a production-oriented conceptual framework and groups establishments into industries based on activity in which they are primarily engaged. Establishments using similar raw material inputs, similar capital equipment, and similar labor are classified in the same industry. Thus, the NAICS classification approximates the concept of product markets better than the SIC classification.

Second, NAICS was developed recently in response to structural changes in the US economy. SIC was developed in the 1930s at a time when manufacturing dominated the US economic scene. Despite numerous revisions to the SIC system, it has received increasing criticism about its ability to handle rapid changes in the US economy. Recent developments in information services, new forms of health care provision, expansion of services, and high tech manufacturing are examples of industrial changes that cannot be studied under the SIC system. In response, nine new service sectors and 250 new service industries are recognized in the NAICS system. For example, a new Information sector combines communications, publishing, motion picture and sound recording, and online

services, recognizing our information-based economy and a new sub-sector is devoted to computers and electronics. NAICS allows for the identification of 1,170 product markets at the 6-digit level compared with 1,004 product markets identified at the 4-digit SIC code.

Finally, I classify product markets at the 6-digit NAICS level to be consistent with the classification of the Economic Consensus. The information used to measure product market competition is hand-collected from the Economic Consensus, which is disaggregated at the 6-digit NAICS level. I use the Economic Consensus largely due to its wider coverage. While Compustat covers publicly held firms only, the Economic Consensus covers both privately held companies and publicly held companies. As both privately held firms and publicly held firms compete in a product market, the Economic Consensus provides a more comprehensive measure of product market competition.

### *3.2. Measures of product market competition*

Prior studies have mainly used the level of concentration as the sole measure of competition (e.g., Defond and Park, 1999; Engel et al., 2003). The most widely used measure for concentration is the 4-firm concentration ratio. I measure the 4-firm concentration ratio (CONCENTRATION\_RATIO) as the proportion of sales at the 6-digit NAIC level accounted for by the four largest firms, both privately and publicly firms. A substantial body of the literature suggests that both unit price and unit profit margin decline as concentration level falls, and thus a low concentration ratio indicates intense competition in the product market (e.g., Bain, 1956).

However, recent studies in economics suggest that competition encompasses several dimensions, including entry costs and product substitutability, and thus, the relation between concentration and competition is not clear (e.g., Demsetz, 1973; Nickell, 1996; Raith, 2003). Raith (2003) suggest that, with endogenous market structure, concentration indices alone are poor measures of competition unless it is clear what causes their variation across industries. More specifically, when entry cost in a product market increases, competition become less intense because fewer firms enter the industry, leading to higher concentration. Thus, when product markets vary in entry costs, more concentrated markets tend to be less competitive. In contrast, when product substitutability in a market increases, price competition becomes more intense, forcing less efficient firms to exit the industry or merge with more efficient firms. Consequently, the industry ends up with fewer firms and increased concentration. Thus, when product markets vary in product substitutability, more concentrated markets indicate intense competition (e.g., Sutton, 1991; Symeonidis, 2000). Thus, a high concentration ratio could indicate either high or low competition, and thus, I have no prediction on the sign of the association between concentration and propensity to choose private placements.

In order to capture the other two dimensions of competition, I measure entry costs (ENTRY\_COST) as the total capital expenditure deflated by total industry revenues at the 6-digit NAIC level. When entry costs increases, competition becomes less intense because fewer firms enter the industry in the long run. Thus, a higher value of entry cost indicates less potential competition in the product market.

Prior studies use the price-cost margin to measure product substitutability. The underlying economic intuition is the following: when product substitutability is high, price competition becomes more intense and results in a lower price-cost margin. Following Demsetz (1997), I measure product substitutability (PRODUCT\_SUBS) as total industry revenues divided by total industry operating costs identified in the Economic Consensus at the 6-digit NAIC level. A lower value of PRODUCT\_SUBS indicates higher product substitutability, and thus, more intense competition in product market.

I hand collect data from the 1997 Economic Consensus to calculate CONCENTRATION\_RATIO, ENTRY\_COST and PRODUCT\_SUBS to measure the *level* of product market competition. The *change* in product market competition is the difference in the values for CONCENTRATION\_RATIO, ENTRY\_COST and PRODUCT\_SUBS as measured from the 2002 Economic Consensus versus those from the 1997 Economic Consensus.

#### **IV. Data and research design**

##### *4.1. Research design to test product market competition and the financing choice*

I use SDC platinum to identify private placements and public offerings, where the issuer is a privately held firm prior to the issuance. Both debt and equity offerings from 1991 to 2006 are included in the sample. The final sample to test product market competition and the financing choice in the capital market includes 7,222 private placements and 6,888 public offerings by privately held firms.

Both empirical and anecdotal evidence suggest that public offerings are closely related to market timing.<sup>3</sup> Loughran, Ritter and Rydqvist (1994) find that IPO volumes are higher when the aggregate market returns are higher. Lerner (1994) finds that biotechnology firms are more likely to engage in IPOs when the industry market-to-book ratio is high. Pagano, Panetta, and Zingales (1998) find that Italian companies are more likely to have IPOs when the average market-to-book ratio of all public firms in their industry is higher. To control for market timing associated with public offerings, I use the median market-to-book ratio for all public firms in the same industry in the quarter prior to private placement or private offerings (INDUSTRY\_PUBLIC\_MB).

Furthermore, the direct implementation costs associated with mandatory reporting requirements are likely to vary over time. To the extent that SOX significantly increases implementation cost of mandatory disclosure requirements in the United States (e.g., Collins, 2003; Engel, Hayes and Wang, 2007), I include the indicator variable POST\_SOX to control for the potential increase in direct implementation costs. I code POST\_SOX as 1 if the offering occurs after July 2002, and 0, otherwise. Summarizing, I use the following models to test hypothesis 1 and 3 respectively:

$$PROB (PRIVATE PLACEMENT = 1, PUBLIC OFFERING = 0) = \alpha + \gamma_1 \mathbf{COMPETITION} + \beta_1 \mathbf{INDUSTRY\_PUBLIC\_MB} + \beta_2 \mathbf{POST\_SOX} + \varepsilon \quad \text{INDUSTRY MODEL (1)}$$

$$PROB (PRIVATE PLACEMENT = 1, PUBLIC OFFERING = 0) = \alpha + \gamma_1 \mathbf{MULTIPLE} + \gamma_2 \mathbf{COMPETITION} + \beta_1 \mathbf{INDUSTRY\_PUBLIC\_MB} + \beta_2 \mathbf{POST\_SOX} + \varepsilon \quad \text{FIRM MODEL (2)}$$

In both model (1) and model (2), the coefficient on concentration ratio is ex-ante uncertain, depending on what is the underlying economic fundamental for the variation in

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<sup>3</sup> The following statement from Wall Street Journal captures the impact of market timing on public offerings succinctly. “When [investors] get bearish, you cannot go public. But when they go bullish, just about anyone can go public (Wall Street Journal, April 19, 1999, p. C1).”

concentration ratios across product markets. The coefficients on both entry cost and product substitutability are expected to be negative for both model (1) and model (2) because a higher value of both ENTRY\_COST and PRODUCT\_SUBS indicates a less competitive product market. In the firm-level model (2), the coefficient on the indicator variable for operating in multiple lines of business (MULTIPLE) is expected to be positive.

To test hypothesis 2 whether an increase in product market competition is associated with an increase in the proportion of firms that choose private placements. I construct two sub-samples based on the year of the issuance. The first sub-sample period starts from 1995 and ends on 1999. The second sub-sample period starts from 2000 and ends on 2004. Based on each measure of competition, all product markets are classified into two groups: the group of product markets that become more competitive and the group of product markets that become less competitive. For each sub-sample period and each group, I calculate the proportion of firms that choose private placements. Those procedures yield a 2-by-2 matrix of the proportion of firms that choose private placements. I use the Z-test to examine whether the increase in the proportion of private placements from the first sub-sample period to the second sub-sample period is larger for the group of product markets that have become more competitive.

#### *4.2. Data, sample and research design to test hypothesis 4*

The empirical difficulty in testing hypothesis 4 is the paucity of publicly available information on privately held firms. SDC provides virtually no financial information on issuers if the issuers are privately held firms. I hand collect from a unique data source,

Global Securities Information, financial information for a sample of 88 privately held firms in equity private placements.<sup>4</sup> Although this hand-collected sample is far from comprehensive, the availability of financial data for privately held firms provides a unique opportunity to examine whether the firm-level profitability influences their financing choice between public offerings and private placements.

Such a research question is also important in connection with prior studies on IPOs. For example, Chemmanur and Fulghieri (1999) make the theoretical prediction that it is optimal for a firm to engage in public offerings, if it grows sufficiently large. Pagano, Panetta, and Zingales (1998) use empirical data on Italian firms and find that IPO firms are larger and more profitable than firms that do not go public. The conclusions from those studies are not conditional on firms' needs for external capital. The research question in this paper effectively examines what types of firms are not likely to choose IPOs *conditional* on firms' needs for external capital.

I use a matched sample approach to examine the association between profitability and the financing choice between private placements and public offerings. The matching procedures involve two steps. First, to control for product market competition, I use SDC to identify all initial public offerings (IPOs) by firms in the same product market for each private placement. Second, to control for market timing, among

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<sup>4</sup> All private placements documents obtained from Global Securities Information are Rule 144A private placements. Depending on the structure of private placements, private placements can be broadly classified into traditional private placements and Rule 144A private placements. Traditional private placements are typically placed with only one placement agent. On April 1990, the SEC adopted Rule 144A which allows a group of underwriters commit to purchase all of the offered securities and offer them for resale to qualified institutional buyers (QIBs). Thus liquidity is enhanced in a typical Rule 144A private placement relative to traditional private placements through the ability to resell to QIBs. A QIB is defined as an institution, such as an insurance company, a registered investment company, a pension or employee benefit plan, a bank or loan association and a registered broker-dealer, that in the aggregate owns and invests at least \$100 million.

the IPO firms operating in the same product market, I pick the corresponding initial public offering that occurs closest to the private placement but not exceeding six months before or after the private placement. The sub-sample to test hypothesis 4 includes 88 Rule 144A equity private placements and 88 matched IPOs by privately held firms.

Summarizing, I use the following specification to test whether, given that a firm operates in multiple lines of business, more profitable firms are more likely to choose private placements:

$$PROB (PRIVATE PLACEMENT = 1, PUBLIC OFFERING = 0) = \alpha + \beta_1 ROA + \beta_2 SIZE + \beta_3 INDUSTRY\_PUBLIC\_MB + \varepsilon \quad \text{MODEL (3)}$$

In model (3), ROA is net income deflated by beginning assets in the fiscal year prior to capital raising event and SIZE is the natural log of total assets in the fiscal year prior to the capital raising event. I include SIZE in the model because of two reasons. First, to the extent that there is a fixed component of implementing mandatory disclosure requirements, implementation cost of mandatory disclosure requirements is more burdensome for smaller firms. Second, Gomes and Philips (2007) suggest that firms with more severe information asymmetry are more likely to choose private placements. In general, smaller firms are more likely to have severe information asymmetry problem. I expect that, among firms with multiple lines of business, the coefficient on ROA is positive and statistically significant.

## **V. Empirical results**

### *5.1. Distribution of firms across sectors and industries*

I tabulate the distribution of private placements and public offerings across major sectors as classified by NAICS in Table 1 Panel A and Table 1 Panel B respectively. About 57% of privately held firms that choose private placements are in the finance and insurance industry, while only 42% of firms that choose public offerings are in the finance and insurance industry. The Chi-square test suggests that the difference is statistically significant (p-value = 0.001). The distribution pattern, as demonstrated in Table 1, is consistent with the intuition that the potential proprietary cost associated with mandatory disclosure requirements can be especially salient for firms in finance and insurance industry. In particular, the key strategic decision for a finance and insurance company is its trading or holding strategy. As a publicly held finance and insurance company is required to disclose its top 10 holdings, such a mandatory disclosure requirement effectively reveals the company's key strategic decision to its competitors. Thus, finance and insurance companies are more likely to choose private placements to avoid the public dissemination of information about its trading strategy.

Among finance and insurance companies, the required disclosure of the top 10 holdings is likely to create more severe competitive damage if the holdings are more liquid. In Panel A and Panel B of Table 2, I list the top 10 6-digit NAICS product markets for firms in private placements and public offerings respectively. Per Table 2 Panel A, the top three product markets for firms in private placements include holding and investment offices, sales financing and portfolio management. The three product markets combined account for 37% of firms that choose private placements. Per Table 2 Panel B, the top three product markets for firms in public offerings are commercial banking, software reproducing and saving institution. Those three product markets

combined account for 27% of firms that choose public offerings. The pattern is consistent with the intuition that a disproportionately large number of firms in the finance and insurance sector choose private placements when their holdings are more liquid.

### *5.2. Product market competition and the financing choice at the industry level*

Panel A of Table 3 presents the descriptive statistics on three measures of product market competition. On average, the top four companies generate about 24.3% of the revenue in a specific product market. Ten percent of product markets have a concentration below 7.2% and ten percent of product markets have a concentration ratio exceeding 45.9%. On average, firms spend 2.3% of revenues on capital expenditure on fixed assets. A quarter of product markets require virtually no capital expenditure on fixed assets. On average, the ratio of total sales to total operating costs as identified from the Economic Consensus is 1.52.<sup>5</sup> The standard deviation of ENTRY\_COST is 0.027, whereas the standard deviation of PORDUCT\_SUBS is 0.229.

Panel B of Table 3 presents the descriptive statistics by a firm's financing choice between private placements and public offerings. From the univariate analysis, firms that choose private placements operate in product markets where the concentration ratio is higher, where the entry cost is lower and where the ratio of total sales to total operating costs are lower (products are less substitutable).

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<sup>5</sup> For the majority of product markets, the Economic Consensus provides data on the payroll expenses and the cost of raw materials used in production and the cost of shipment if any. In essence, total operating costs identified from the Economic Consensus is different from the operating costs as defined in accounting. One prominent example is expenditure on research and development and advertising. Under the Generally Accepted Accounting Principles (GAAP), both research and development expenditure and advertising expenditure are classified as operating costs. However, those two types of expenditures are not identified as operating costs for any of the 1,170 product markets at the 6-digit NAIC level. Consequently, the average level of total sales to total operating costs as identified in the Economic Consensus is higher than that under U.S. GAAP.

Table 4 presents the results from the multivariate analysis on model (1). Running the likelihood of private placements on each measure of competition separately, the coefficient on the concentration ratio is 0.629 and statistically significant. The coefficient on entry costs is -5.191 and the coefficient on product substitutability is -0.043, both of which are statistically significant. A negative coefficient on the median industry market-to-book ratio is consistent with market timing of public offerings. Privately held firms are less likely to engage in private placements when the industry valuation in the public market is high. A positive coefficient on POST\_SOX is consistent with the interpretation that the SOX act substantially increases the cost of being a public firm.

Per the last two columns of Table 4, if three measures of competition are included as explanatory variables jointly, the results on both ENTRY\_COST and PRODUCT\_SUBS are consistent with the interpretation that firms operating in more competitive industries are more inclined to choose private placements to avoid the obligation of mandatory disclosure. In economic terms, the odds ratio of choosing private placements rather than private placements decreases by 3.60% if the value of ENTRY\_COST increases from the 25th percentile to the 75th percentile. Furthermore, the odds ratio of choosing private placements rather than public offerings decreases by 6.66% if the value of PRODUCT\_SUBS increases from the 25th percentile to the 75th percentile. A positive coefficient on CONCENTRATION\_RATIO suggests that the variation of concentration ratios across product markets is largely driven by product substitutability. In this case, a high concentration ratio indicates intense product market competition. In economic terms, the odds ratio of private placements instead of public

offerings increases by 18.60% if the value of CONCENTRATIO\_RATIO increases from the 25th percentile to the 75th percentile.

Table 5 presents the results on whether an increase in product market competition is associated with an increase in the proportion of private placements in the capital market by three measures of competition respectively. Per Panel A of Table 5, for the group of product markets where the increase in concentration ratio is below the median, the proportion of private placements from 1995 to 1999 is 37.8% and the proportion from 2000 to 2004 is 59.1%, an increase of 21.3% across the two sub-sample periods. The corresponding increase for product markets where the change in concentration ratio is above the median is only 8.6%. The difference of 12.7% across the two groups of firms is both economically and statistically significant (p-value = 0.001). Per Panel B of Table 5, when the change in competition is measured as the change in entry cost, the corresponding difference across the two groups of firms is 6.6% ( p-value = 0.001). Per Panel C of Table 5, when the change in competition is measured as the change in product substitutability, the corresponding difference across the two groups of firms is 4.7% ( p-value = 0.040). As a decline in entry costs or product substitutability indicates that the product market has become more competitive, the results from Table 5 are consistent with hypothesis 2 that an increase in product market competition is associated with an increased proportion of firms that choose private placements.

### *5.3. Proprietary costs and the financing choice at the industry level*

On a univariate basis, Panel B of Table 3 indicates that, for all firms that choose private placements, 69.6% of firms operate in multiple lines of business, while the

percentage is only 55.3% for firms that choose public offerings. The difference is statistically significant. Table 6 presents the regression result on whether firms operating in multiple lines of business are more inclined to choose private placements after controlling for product market competition and market timing. After controlling for all dimensions of competition, the coefficient on the indicator variable MULTIPLE is 0.597 and statistically significant (p-value = 0.001). In economic terms, if a firm expands its operations from a single line of business into multiple lines of business, the odds ratio of choosing private placements rather than public offerings increases by as much as 81.7%. The results on control variables, concentration ratio, entry costs and product substitutability are qualitatively similar to those presented in Table 4. Table 6 indicates that firms with potentially higher proprietary costs, such as firms operating in multiple lines of business and firms operating in more competitive product market, are more inclined to choose private placements to raise external capital.

Table 7 tabulates the formation of the sample to examine the association between firm profitability and propensity of private placements. The additional requirement of profitability for IPO issuers eliminates 18 initial public offerings. The additional data requirement of the median market-to-book ratio for all public firms in the same product market eliminates 23 private placements. The final sample consists of 70 initial public offerings and 65 private placements. Among the 135 observations, 80 firms operate in multiple lines of business.

Per Panel A of Table 8, 66% of firms in private placements operate in multiple lines of operations, while only 53% of firms in public offerings operate in a multiple lines of operations. Per Panel B of Table 3, the ratios for the overall sample are 69.6% and

55.3% respectively. On this dimension, the sub-sample with financial information for privately held firms is representative of the overall sample. Among firms with multiple lines of business, firms in private placements are more profitable than firms in public offerings. The difference is economically and statistically significant (p-value = 0.097). The first column of Panel B of Table 8 suggest that, given that a firm operate in multiple line of business, after controlling for market timing and firm size, more profitable firms are more inclined to choose private placements.

The consensus on the IPO literature is that more profitable and larger firms are more likely to go public. However, the second column of Panel B of Table 8 indicates that, *conditional* on raising external capital, firms that go public are neither more profitable nor larger than firms that stay private. As firms in private placements in this sub-sample are issuers in Rule 144A private placements, one possible interpretation for different results obtained in this paper is that IPO firms are not statistically different from firms in Rule 144A private placements in terms of profitability and size. Alternatively, the result in this paper could indicate that a firm's need for external capital is essential in understanding why firms go public.

## **V. Conclusions**

This paper examines whether product market competition influences the financing choice between private placements and public offerings in the capital market. First, after controlling for market timing, firms operating in more competitive product markets are more inclined to choose private placements. Second, an increase in product market competition is associated with a bigger increase in the proportion of firms that choose

private placements. Third, firms operating in multiple lines of business are more inclined to choose private placements. Finally, given that firms operate in multiple lines of business, more profitable firms are more inclined to choose private placements. Those findings are consistent with the interpretation that firms with potentially higher proprietary costs are more inclined to choose private placements to avoid the *obligation* to disclose competitively sensitive information.

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**Table 1**  
**Distribution of Capital-raising Firms across Sectors**

**Panel A: Distribution of privately held firms that choose private placements**

<b>Sector</b>	<b>N</b>	<b>Percentage%</b>
Accommodation and Food Services	84	1.16
Administrative and Support and Waste Management and Remediation	120	1.66
Agriculture, Forestry, Fishing and Hunting	2	0.03
Arts, Entertainment and Recreation	61	0.84
Educational Services	8	0.11
Finance and Insurance	4,125	57.12
Health Care and Social Assistance	115	1.59
Information	206	2.85
Manufacturing	1,310	18.14
Mining	45	0.62
Other Services	14	0.19
Professional, Scientific and Technical Services	278	3.85
Real Estate and Rental and Leasing	403	5.58
Retail Trade	287	3.97
Utilities	164	2.27

**Panel B: Distribution of privately held firms that choose initial public offerings**

<b>Sector</b>	<b>N</b>	<b>Percentage%</b>
Accommodation and Food Services	129	1.88
Administrative and Support and Waste Management and Remediation	179	2.60
Agriculture, Forestry, Fishing and Hunting	0	0.00
Arts, Entertainment and Recreation	36	0.52
Educational Services	29	0.42
Finance and Insurance	2,886	41.95
Health Care and Social Assistance	191	2.78
Information	220	3.20
Manufacturing	2,284	33.20
Mining	34	0.49
Other Services	10	0.15
Professional, Scientific and Technical Services	437	6.35
Real Estate and Rental and Leasing	82	1.19
Retail Trade	320	4.65
Utilities	43	0.63

P-value on the Chi-square test for the dominance of firms in finance and insurance sector in private placements = 0.001

**Table 2**  
**Distribution of Capital-raising Firms at the 6-digit NAICS Level**

**Panel A: Top 10 industries for privately held firms that choose private placements**

<b>6-digit NAICS Industry</b>	<b>N</b>	<b>Percentage%</b>
Holding and investment offices	1,479	20.48
Sales Financing	904	12.52
Portfolio Management	301	4.17
Other Activities Related to Credit Intermediation	254	3.52
Miscellaneous Intermediation	186	2.58
Real Estate Investment Trusts	144	1.99
Software Reproducing	144	1.99
Direct Life Insurance Carriers	136	1.88
Savings Institutions	126	1.74
Investment Banking and Securities Dealing	121	1.68
<i>Cumulative percentage of top 10 industries</i>		<b>52.55</b>

**Panel B: Top 10 industries for privately held firms that choose public offerings**

<b>6-digit NAICS Industry</b>	<b>N</b>	<b>Percentage%</b>
Commercial Banking	1,147	16.67
Software Reproducing	375	5.45
Savings Institutions	317	4.61
Other Depository Credit Intermediation	310	4.51
Real Estate Investment Trusts	235	3.42
Pharmaceutical Preparation Manufacturing	199	2.89
Investment Banking and Securities Dealing	181	2.63
All Other Nondepository Credit Intermediation	169	2.46
Semiconductor and Related Device Manufacturing	161	2.34
Software Publishers	153	2.22
<i>Cumulative percentage of top 10 industries</i>		<b>47.19</b>

**Table 3**  
**Descriptive statistics**

**Panel A: Descriptive statistics of three measures of competition**

	Mean	Median	Std	10 <sup>th</sup> percentile	25 <sup>th</sup> percentile	75% percentile	90% percentile
<i>CONCENTRATION_RATIO</i>	0.243	0.204	0.154	0.072	0.132	0.334	0.459
<i>ENTRY_COST</i>	0.023	0.021	0.027	0.000	0.000	0.036	0.054
<i>PRODUCT_SUBS</i>	1.515	1.437	0.229	1.260	1.316	1.437	1.723

**Panel B: Descriptive statistics by private placements or public offerings**

	Private placement (N = 7222)		Public offerings (N = 6880)		Diff in mean test (p-value)	Median test p-value
	Mean	Median	Mean	Median		
<i>CONCENTRATION_RATIO</i>	0.281	0.268	0.253	0.189	0.028 (0.001)	0.001
<i>ENTRY_COST</i>	0.011	0.000	0.200	0.000	-0.189 (0.001)	
<i>PRODUCT_SUBS</i>	1.713	1.737	1.676	1.709	0.037 (0.001)	0.001
<i>INDUSTRY_PUBLIC_MB</i>	1.717	1.459	2.359	2.037	-0.642 (0.001)	0.001
<i>POST_SOX</i>	0.258	0.000	0.163	0.000	0.095 (0.001)	
<i>MULTIPLE</i>	69.6%	1.000	55.3%	0.000	0.143 (0.001)	

CONCENTRATION\_RATIO is measured as the proportion of sales in an industry accounted for by the four largest firms. ENTRY\_COST is measured as the total industry capital expenditure deflated by total industry revenues. PRODUCT\_SUBS is product substitutability, which is measured as total industry revenues divided by total industry operating costs. All three variables are hand-collected from 1997 Economic Consensus. INDUSTRY\_PUBLIC\_MB is measured as the median market to book ratio for all public firms in the same industry in the quarter prior to private placement or private offerings. The indicator variable POST\_SOX is coded as 1 if the offering occurs after July 2002, and 0, otherwise. The indicator variable MULTIPLE is coded as 1 if a firm operate in multiple lines of business, and 0, otherwise.

**Table 4**  
**Product market competition and Capital market financing choice at industry level**

Model:  $\text{PROB (Private placement = 1)} = \alpha + \gamma_1 \text{COMPETITION} + \beta_1 \text{INDUSTRY\_PUBLIC\_MB} + \beta_2 \text{POST\_SOX} + \varepsilon$

Explanatory Variables	Dependent variable: Probability (= 1 if private placements and 0 if public offerings)					
	Predicted Sign	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Marginal effect (odds ratio)
<i>INTERCEPT</i>		0.594 (0.001)	0.785 (0.001)	0.865 (0.001)	2.027 (0.001)	
<i>CONCENTRATION_RATIO</i>	(?)	<b>0.629</b> <b>(0.001)</b>			<b>0.658</b> <b>(0.001)</b>	<b>18.6%</b>
<i>ENTRY_COST</i>	(-)		<b>-5.191</b> <b>(0.001)</b>		<b>-8.193</b> <b>(0.001)</b>	<b>-3.60%</b>
<i>PRODUCT_SUBS</i>	(-)			<b>-0.043</b> <b>(0.001)</b>	<b>-0.809</b> <b>(0.001)</b>	<b>-6.66%</b>
<i>INDUSTRY_PUBLIC_MB</i>	(-)	-0.425 (0.001)	-0.395 (0.001)	-0.441 (0.001)	-0.401 (0.001)	
<i>POST_SOX</i>	(+)	0.646 (0.001)	0.619 (0.001)	0.651 (0.001)	0.668 (0.001)	
N		14,102	14,102	14,102	14,102	
Likelihood ratio		1161.18	1200.56	1129.36	1278.74	

CONCENTRATION\_RATIO is measured as the proportion of sales in an industry accounted for by the four largest firms. ENTRY\_COST is measured as the total industry capital expenditure deflated by total industry revenues. PRODUCT\_SUBS is product substitutability, which is measured as total industry revenues divided by total industry operating costs. All three variables are hand-collected from 1997 Economic Consensus. INDUSTRY\_PUBLIC\_MB is measured as the median market to book ratio for all public firms in the same industry in the quarter prior to private placement or private offerings. The indicator variable POST\_SOX is coded as 1 if the offering occurs after July 2002, and 0, otherwise.

**Table 5**  
**Change in Product Market Competition**  
**& Change in Proportion of Firms in Private Placements**

**Panel A: proportion of firms in private placements by change in concentration ratio**

Change in competition	1995-1999	2000-2004	Change across the two sample periods
Rank(CHG_CONCENTRATION_RATIO)= 1	37.8%	59.1%	21.3%
Rank(CHG_CONCENTRATION_RATIO)= 2	47.3%	55.9%	8.6%
Difference in change across the two sample periods (p-value)			12.7% (0.001)

**Panel B: proportion of firms in private placements by change in entry cost**

Change in competition	1995-1999	2000-2004	Change across the two sample periods
Rank(CHG_ENTRY_COST)= 1	36.7%	53.5%	15.8%
Rank(CHG_ENTRY_COST)= 2	40.8%	50.0%	9.2%
Difference in change across the two sample periods (p-value)			6.6% (0.001)

**Panel C: proportion of firms in private placements by change in product substitutability**

Change in competition	1995-1999	2000-2004	Change across the two sample periods
Rank(CHG_PRODUCT_SUBS)= 1	30.0%	44.7%	14.7%
Rank(CHG_PRODUCT_SUBS)= 2	47.4%	57.4%	10.0%
Difference in change across the two sample periods (p-value)			4.7% (0.040)

\* P-value is from the Z-test on the change in the proportions

**Table 5**  
**(Continued)**

CONCENTRATION\_RATIO is measured as the proportion of sales in an industry accounted for by the four largest firms. CHG\_CONCENTRATION\_RATIO is the value of CONCENTRATION\_RATIO from 2002 Economic Consensus minus the value of CONCENTRATION\_RATIO from 1997 Economic Consensus. ENTRY\_COST is measured as the total industry capital expenditure deflated by total industry revenues. CHG\_ENTRY\_COST is the value of ENTRY\_COST from 2002 Economic Consensus minus the value of ENTRY\_COST from 1997 Economic Consensus. PRODUCT\_SUBS is product substitutability, which is measured as total industry revenues divided by total industry operating costs. CHG\_PRODUCT\_SUBS is the value of PRODUCT\_SUBS from 2002 Economic Consensus minus the value of PRODUCT\_SUBS from 1997 Economic Consensus.

**Table 6**  
**Product market competition and Capital market financing choice at firm level**

Model:  $PROB$  (Private placement = 1, Public offering = 0) =  $\alpha + \gamma_1 MULTIPLE + \gamma_2 COMPETITION + \beta_1 INDUSTRY\_PUBLIC\_MB + \beta_2 POST\_SOX + \varepsilon$

Explanatory Variables	Dependent variable: Probability (= 1 if private placements and 0 if public offerings)					
	Predicted Sign	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Marginal effect (odds ratio)
<i>INTERCEPT</i>		0.218 (0.001)	0.437 (0.001)	0.603 (0.001)	1.820 (0.001)	
<i>MULTIPLE</i>	( + )	<b>0.582</b> <b>(0.001)</b>	<b>0.572</b> <b>(0.001)</b>	<b>0.573</b> <b>(0.001)</b>	<b>0.597</b> <b>(0.001)</b>	<b>81.7%</b>
<i>CONCENTRATION_RATIO</i>	( ? )	0.706 (0.001)			0.747 (0.001)	22.2%
<i>ENTRY_COST</i>	( - )		-5.172 (0.001)		-8.546 (0.001)	-3.60%
<i>PRODUCT_SUBS</i>	( - )			-0.091 (0.298)	-0.911 (0.001)	-7.20%
<i>INDUSTRY_PUBLIC_MB</i>	( - )	-0.424 (0.001)	-0.394 (0.001)	-0.444 (0.001)	-0.402 (0.001)	
<i>POST_SOX</i>	( + )	0.588 (0.001)	0.561 (0.001)	0.598 (0.001)	0.613 (0.001)	
N		14,102	14,102	14,102	14,102	
Likelihood ratio		1413.90	1444.63	1375.18	1542.21	

**Table 6**  
**(Continued)**

CONCENTRATION\_RATIO is measured as the proportion of sales in an industry accounted for by the four largest firms. ENTRY\_COST is measured as the total industry capital expenditure deflated by total industry revenues. PRODUCT\_SUBS is product substitutability, which is measured as total industry revenues divided by total industry operating costs. All three variables are hand-collected from 1997 Economic Consensus. INDUSTRY\_PUBLIC\_MB is measured as the median market to book ratio for all public firms in the same industry in the quarter prior to private placement or private offerings. The indicator variable POST\_SOX is coded as 1 if the offering occurs after July 2002, and 0, otherwise. The indicator variable MULTIPLE is coded as 1 if a firm operate in multiple lines of business, and 0, otherwise.

**Table 7**  
**Procedures to form the sub-sample with firm-specific financial information**

	Number of observations
Private placements for which financial information is available for the issuer	105
Matched IPOs in the same 6-digit NAICS	88
Matched IPOs for which financial information is available for the issuer from COMPUSTAT or SDC	70
IPOs in the final sub-sample	<b>70</b>
Private placements with matched IPOs in the same 6-digit NAICS	88
Private placements for which the median market to book ratio for public firms in the same industry is available from CRSP	<b>65</b>
Private placements+ IPOs in the final sub-sample	<b>135</b>

**Table 8**  
**Firm-specific financial characteristics and financing choice**

**Panel A: Descriptive statistics on firm-specific financial information**

		N	Mean (Median) ROA	Mean (Median) Total Assets	% of firms with multiple lines of business
Firms with multiple lines of business only	Public offerings	37	-0.055 (0.024)	265.161 (209.409)	100%
	Private placements	43	-0.005 (0.032)	228.669 (125.510)	100%
	P-value on the diff in mean (median)		<b>0.077*</b> <b>(0.097*)</b>	0.705 (0.234)	
All firms	Public offerings	70	-0.077 (0.011)	193.917 (111.744)	52.8%
	Private placements	65	-0.032 (0.009)	725.927 (109.186)	66.2%
	P-value on the test statistics on difference		0.231 (0.228)	0.145 (0.144)	0.052*

**Panel B: Regression results on whether more profitable firms with multiple lines of business are more likely to engage in private placements**

	Dependent variable: Probability (= 1 if private placements and 0 if public offerings)	
	Firms with multiple lines of business only	All firms in the sub-sample
<i>Explanatory variables</i>	Predicted Sign    Coefficients (p-value)	Coefficients (p-value)
<i>INTERCEPT</i>		-0.520 (0.449)
<i>ROA</i>	(+) <b>2.892</b> <b>(0.093*)</b>	1.069 (0.412)
<i>SIZE</i>		0.052 (0.632)
<i>INDUSTRY_PUBLIC_MB</i>		0.050 (0.530)
<i>MULTIPLE</i>		0.524 (0.156)
<i>N</i>	80	135
<i>Likelihood ratio</i>	106.96	180.93

**Table 8**  
**(Continued)**

SIZE is the natural log of total assets in the fiscal year prior to the capital raising event. ROA is measured as return on assets in the fiscal year prior to capital raising event. INDUSTRY\_PUBLIC\_MB is measured as the median market to book ratio for all public firms in the same industry in the quarter prior to private placement or private offerings. The indicator variable MULTIPLE is coded as 1 if a firm operate in multiple lines of business, and 0, otherwise.

## **Appendix I: Sector Aggregation Titles under NAICS**

### Goods-Producing

- Natural resources and mining
  - Sector 11 (Agriculture, forestry, fishing and hunting)
  - Sector 21 (Mining)
- Construction
  - Sector 23 (Construction)
- Manufacturing
  - Sector 31-33 (Manufacturing)

### Service-Providing

- Trade, transportation, and utilities
  - Sector 42 (Wholesale trade)
  - Sector 44-45 (Retail trade)
  - Sector 48-49 (Transportation and warehousing)
  - Sector 22 (Utilities)
- Information
  - Sector 51 (Information)
- Financial activities
  - Sector 52 (Finance and insurance)
  - Sector 53 (Real estate and rental and leasing)
- Professional and business services
  - Sector 54 (Professional, scientific, and technical services)
  - Sector 55 (Management of companies and enterprises)
  - Sector 56 (Administrative and support and waste management and remediation services)
- Education and health services
  - Sector 61 (Education services)
  - Sector 62 (Health care and social assistance)
- Leisure and hospitality
  - Sector 71 (Arts, entertainment, and recreation)
  - Sector 72 (Accommodation and food services)
- Other services
  - Sector 81 (Other services, except public administration)
- Public administration
  - Sector 92 (Public administration)
- Unclassified
  - Sector 99 (Unclassified)