



## **Determinants of voluntary going-private transactions**

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## **Abstract**

The main aim of this thesis is to investigate the determinants of firms' voluntary going-private decisions. By analyzing 118 US listing cancellations during the period from 2003 to 2015, this thesis shows that firms with a smaller size prefer to go private, which is consistent with the adverse selection theory. According to this theory, the small firms cannot produce and transfer enough useful information to outside investors. Thus, these firms are willing to go private to avoid the adverse selection costs. In addition, if the firms have lower growth prospects and lower leverage ratios, the probability of going private is usually higher, because they have less demand for additional capital to fund their development. At length, the result shows that the firms with a significant amount of free cash flow and poor corporate governance prefer to go private, as the going-private transactions can reduce the high agency costs.

**Keywords:** going private, leverage, firm characteristics, corporate governance, growth prospect.

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## 1. Introduction

The going-private transaction (GPT) is a particular type of transaction in which a shareholder with controlling power or other related individuals are determined to reduce the number of shareholders within the public firm. After that, the company will discontinue its public status and cease to follow the rules under the *Securities Exchange Act of 1934* (Ascher, 2015).

Going private transactions can be conducted through three primary approaches. The first one is acquisitions by a dominated stockholder in a public subsidiary (such transactions are also referred to squeeze-out mergers). The second one is acquisitions by a stockholder which is significant but without controlling power. And the last one is through a leveraged buyout , normally the promoter is working in a private business or a third-party which has close relationship with the management group. (Renneboog, Wright, & Simons, 2007).

Issuing shares via initial public offering (IPO) to get access to the financial market is a critical stage in a firm's life cycle (Patricia & Annor, 2015). Frequently, the public firms seem to have more advantages than the private ones, since they can garner external funding from the public market. The public market can boost firms' stock liquidity and provide them with more investment options. Moreover, the stock exchange allows firms to utilise liquidity portfolios to diversify their listing risks and enhance wealth building status (Renneboog, Wright, & Simons, 2007).

However, in the recent period, there seems to be a popular trend among firms to go private. As stated in Sreedhar and Amy (2010), going private transactions appear to present a resurrection trend among many of these firms since 2000 because the private equity market expands. Moreover, the private equity firms raised approximately \$ 225 billion in 2006, which

significantly exceeds the amount of 2005 (\$159 billion). The ratios of delisting to IPO also demonstrated the increasing economic importance of delisting. In 2012, the ratio was 1.3 in the US, which means there are more delistings than IPOs. Furthermore, according to Ferris et al. (2013), in continental Europe, the number of going-private transactions has increased by 73%, from 2007 to 2012.

Given the increasing trend of companies' going-private transactions, it is crucial to comprehend firms' primary motives in such acts. Whereas, the research question of this thesis is:

***RQ: Why would a firm choose to go private from the stock exchange in the US?***

To answer this research question, this thesis extracts a detailed data set including 118 US firms that filled *13E-3*, and then *Form 15 in SEC Livedgar*<sup>1</sup>, from 2003 to 2015. Due to the data unavailability, this is a small sample. And all the going-private announcement dates have to be collected through manual work(Appendix Table 16 ). I chase the going-private sample through their entire life cycle, from the IPO date to the going-private date. Moreover, in order to compare the specific characteristics of the going-private firms with that of the public ones, the data set also includes some public firms as the control group. In this group, the specific industries and the operation period of control firms are matched with the treatment firms.

In the first step, I use the *Cox Proportional Model* to test the influence of firm characteristics within the entire going-private sample. This method can assist in investigating the reasons and time of the firms' going private transaction during its life cycle. And particularly, I am interested in the length of time it takes firms to go private, the inherent differences at the time of IPO and the firm characteristics evolution. Thus, the IPO date of all the firms should be collected from

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<sup>1</sup> All companies in the United States, foreign and domestic, are required to file registration statements, periodic reports, and other forms electronically through EDGAR.

Compustat to determine the survival period of the going-private firms. Moreover, through this model, the results indicate that firms are more likely to make a going-private announcement seven years after the date of IPO. Furthermore, the significant hazard rates in this model have some implications: First, firms with severe adverse selection problems<sup>2</sup> are more likely to go private, because they cannot produce adequate external information, which increases the trepidation of investors. Next, companies with financial distress and high growth prospects prefer to remain public to get enough capital funding. Lastly, greater agency problems also tend to accelerate the going-private decisions.

The Cox Proportional Model illustrates the firm characteristics during the entire survival period. However, the inner firm characteristics may still affect the going private decision. To better understand the fundamental firm characteristics differences between going-private firms and those remaining public, the author uses a logit model. I first test whether the inherent characteristics at the date of IPO could predict the ultimate going-private decisions. Then, to verify the robustness of results, independent variables of one year before the going-private transactions are measured. These results appear very similar to the results from the hazard model, which ensure the accuracy of the previous results.

This thesis has several contributions: Firstly, although a lot of studies has done to investigate the determinants of going-private transactions, only some of them use a sample period since 2005. Concerning this limitation, the data collected in this thesis are derived from a newly updated source. The data period ranges from 2003 to 2015, which can precisely reflect the

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<sup>2</sup> Adverse selection is a situation in which the buyers in the market get asymmetric information. The party with less informed information would worry about an unfair trade. As a consequence, the fear would promote this party to withdraw from the trading market.

current economic situation. Therefore, the result could be more precise and reliable to explain the reasons for going private. Secondly, since the passage of Sarbanes-Oxley Act (SOX) indeed increases the compliance cost for firms, it can be a vital factor to promote firms' going-private decision (see appendix). All the data are collected after the issuance of SOX, which can enhance the comparability of the results. Lastly, the author uses two models - hazard model and logit model to test the impacts of firm characteristics together, the hazard model could test the influence of firm features of the entire going-private sample. Moreover, the logit model can investigate the initial firm characteristics differences between going-private firms and those remaining public. The combination of these two models ensures the accuracy of the outcomes.

In the following section, this thesis would discuss the factors associated with firm's going-private decision. Section two presents the literature which is relevant to the research question. Section three formulates the hypothesis. Section four explicates the data and methodology. Results and conclusions are in section five and six respectively.



## **2. Literature review**

This part discusses the important backgrounds and theories that are related to the going private transactions. This chapter commences with the distinction of voluntary and compulsory delisting, the differences between the going-private and going-dark transactions, and continues with the important going private reasons presented by previous literature. The last part portion will focus on the economic consequences of the going-private transactions.

### **2.1. Voluntary delisting versus compulsory delisting**

Before continuing the research, it is important to distinguish between voluntary and involuntary delistings. The delisting transaction can be realized by two types of methods: voluntary and compulsory.

In a voluntary delisting, it is the company itself that opts to withdraw from the market. Prior to this transaction, shareholders should approve this decision and announce to the public. This transaction can be carried out by the promoter or anyone else from the firm. The previous shareholders would receive the final exit price. This price is determined by the reverse book building method.

Compulsory delisting means removing the company's securities from the stock market because of the non-compliance with relevant listing rules. This is accomplished by stock exchange operators or supervisory authorities. Before the transactions, the firm will receive the show-cause notice, which should be issued through newspapers and various appropriate notice boards. After the going-private transaction, the previous shareholders are entitled to gain a fair value of their securities. The value is determined by an arbitrator. Normally, in an involuntary delisting transaction, the firm will always be a passive position because it is unlikely to avoid a withdraw order (Onesti, 2013). This thesis focuses on the reasons of voluntary delisting.

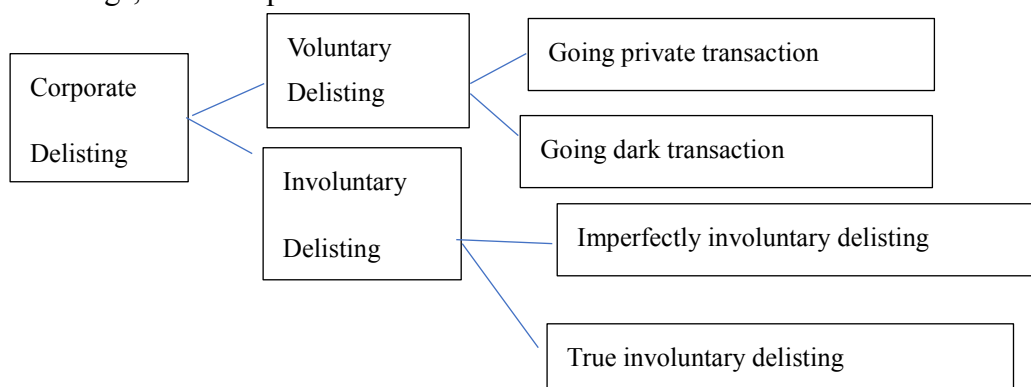
## 2.2. Going private versus going dark

Voluntary delisting consists of two forms of transaction, the going-dark transaction and the going-private transaction. Firms that go private or go dark do not need to file with SEC. Thus, going-private transactions are often confused with going-dark transactions because of this resemblance (Leuz, Triantis, & Wang (2008)).

In a going-dark transaction, the public firm will withdraw from the common stock but still trade on the over-the-counter (OTC) market. They cease to meet the public reporting requirements of the *Securities Exchange Act of 1934*, by not shedding all the company's "public" shareholders. For example, if a firm in the US makes a going-dark transaction, it will also no longer need to follow the SOX Act and the SEC rules.

Unlike the going-dark transactions, going-private transactions should restructure the ownership arrangement of management and private equity investor, as well as increase the debt of the firm significantly and fluently. After this transaction, firms cease to trade on the common market. As a consequence, going private is a more complex and costly event.

Both these transactions remove the social obligations to provide information to the public. However, after these events, firms going dark continue trading on the pink sheet (Onesti et al., 2013). Thus, going-dark and going-private transactions are likely to exhibit different determinants and consequences. According to these relationships among the corporate delistings, I make a panel to reveal the contents.



### **2.3 Different types of going private transactions**

In the UK and the US, delisting via the Leverage Buyout Option (LBO) is widespread. Normally, this kind of transaction is financed by a large amount of borrowed money. Hence they are known as leveraged buyouts (Renneboog & Simons, 2005). Moreover, there are some different types of LBOs, such as management buyout, management buy-in and institutional buyout. When the company is taken by the insider management, it is called Management Buyout (MBO). In this transaction, the company's management team employs a combination of debt and equity to take over the assets they manage. This transaction is often executed by professional managers because these managers can obtain more benefits as being owners of the private firm rather than remaining as employees. This transaction can be financed by large firms that decide to sell part of their business which is not in a core and important status or processed by a private business in which the owners may want to retire. An MBO may be attractive to management because of its effectiveness as a defensive weapon against hostile takeovers (Dunleavy, 1980). The most beneficial aspect of MBO is the financial flexibility because it affords a lower debt loan. However, the MBO structure is the main drawback because, for the management team, it is challenging to transfer its strategy from management to the entire company.

Management Buy-in (MBI) is a different transaction from an MBO. In this transaction, the acquirer is usually an external management team. When the value of the firm is undervalued, or the previous team has a bad performance, this action would occur. As a consequence, there would be some learning curves involved, because the outside management team possess a lower level of private information from the firm than previous management (Renneboog & Simons, 2005). Therefore, when the firm's management group cannot realize the value of the corporation, it would be acquired by the external management team establishing. As a result,

MBIs are more frequently hostile transactions (Robbie & Wright, 1995).

For the acquirers who are institutional investors or private equity holders, it is the type of institutional buyout (IBO) transaction, which is also called Bought Deals. (Renneboog & Simons, 2005). In a IBO transaction, the management group will use a remuneration package to gain the delisting firms. (Tomas & Mike, 2007).

In Continental Europe, rather than leverage buyout transactions, the main form of delisting method is called buyout offers with squeeze-out (BOSO). With this transaction, the acquirers first establish a new firm, and then send the target an offer in which the price is higher than a target's current stock price. If the target accepts, the acquirer gains the controlling power and transfers the target firm's assets to the new firm.

## **2.4 Reasons for firms to go private**

To establish the reasons why a firm opts to go private, most researchers base their study on one theory - cost-saving theory, where the cost is often referred to listing cost. Normally, The listing cost consists of direct and indirect cost, while direct cost includes the annual listing and trading cost, and the indirect costs include compliance cost and agency cost (Isabelle, Stéphanie, & Constant, 2016).

For the annual listing cost, as per in DeAngelo et al. (1984), the stock change listing cost always necessitates a large percentage of the firm's overall costs. Therefore, the decision to go private seems to be associated with the firms' special characteristics to afford and amortised these annual listing costs. Moreover, firm size is a favourite topic among all the previous researchers. As proffered by Becker and Pollet (2008), firms with a smaller size prefer to go private, because small firms have fewer abilities to amortize these fixed costs when the listing costs increase significantly; hence, they are willing to go private to avoid these costs. Michelsen and Klein

(2011) postulated that the information produced by small- and mid-sized firms is less interesting to investors, which would result in these firms receiving less financing investments, which makes their survival more difficult. Moreover, financial visibility (a firm's ability to attract outside investors) is also a factor that may influence the listing cost and is often measured by analyst coverage. According to Mehran and Peristiani (2010), firms with a decreasing trend of analyst coverage are more likely to go private. Therefore, by reducing the analyst coverage number, it can cause an increase in listing costs, because firms are not able to precisely predict the market trend. Amihud and Mendelson's (1988) paper was the first to emphasize the importance of liquidity considerations for a public firm, as firms have more options to make investment decisions. Therefore, if the liquidity benefits cease, it may lead firms to go private (Serve & Martinez, 2016). Stock liquidity is also an enterprise characteristic that tends to enhance an investor's interest in the company if it is positive. Michelsen and Klein (2011) proposed that when the firm's liquidity decreases, the firm has a lower ability to diversify their shareholders' risk, thereby causing an enhanced possibility to go private. Additionally, as noted from Bharat and Dittmar (2010), once the firm's stock lacks liquidity, the stock price cannot accurately reflect information, because the cost of getting the information has increased. Furthermore, compared to bilateral trades, the share cost is cheaper when trading the common stock, primarily due to the stock liquidity. For growth opportunity, Khan, Vilanova, and Hassairi (2011) proffered that lower growth companies such as mature companies and cash-generating companies are less attractive for the capital market. However, higher growth firms can easily garner benefits from the public market, as they can get access to the low-cost fund to stride across difficult barriers. Additionally, Marosi and Massoud (2007) ascertained that firms with higher growth opportunities would rather remain in the common stock, so as to increase their business funds.

Regarding indirect cost, increasing compliance cost is a major factor that needs to be considered for the firms' decision to go private. In recent periods, there are increasing corporate governance

regulations in both the United States and European countries (Martinez, Serve & Djama, 2016). The US market, for example, adopted SOX in 2002, which introduced new disclosure rules, auditing standards and also added criminal penalties for governance fraud, so as to enhance investors' confidence. For example, under *Section 404*, it requires that there would be an attestation by external auditors to confirm the effectiveness of the firm's internal control. Furthermore, some other sections also established requirements that the CEO and CFO should certify the accuracy of the firm's periodic financial report and the effectiveness of the internal control system. Thus, some researchers argue that this adoption of SOX increases compliance costs, which may lead to the going-private transaction (Ribstein, 2002). However, this act appears to have a limited effect for larger firms. Because smaller firms normally derive small net benefit. Then they are more likely to be sold. In Europe, European corporate governance has also become increasingly regulated with several directives and recommendations from the EU Commission. By complying with all the legalities owing to investor protection, it may also increase costs to protect investors' interest. It is self-evident that the more rules, such as disclosure requirements or strict limitations on board compositions produced by the commission, the more firms' costs of governance would increase. Moreover, when investors acquire more inside information from firms, the stock price will be lower, and firms would attain fewer benefits, which increases the possibility of going private. As for the IFRS, Vulcheva (2011) stated that the initial and recurring costs of applying to IFRS could, respectively, be 31% and 0.06% of the firms' total turnover. The creation and subsequent changes to the IFRS have been accompanied by extensive cost-benefit analyses (IFRS Foundation, 2010). As noticed in Elizabeth et al. (2017), They ascertained that the probability of delisting is higher for IFRS-adopting jurisdictions in the post-adoption period, while the probability of delisting increases only in strong-enforcement jurisdictions.

For agency cost, Jensen (1986) demonstrated that going-private transactions could also mitigate agency problems between the shareholders and the management. Many studies have conducted

researches on corporate governance. As for firms with a dispersed ownership structure, the separation between ownership and control generates conflicts of interests between managers and shareholders. Thus, shareholders cannot garner the information they want and need from the insider managers. As a consequence, agency costs are incurred when corporate governance is less effective, thereby intensifying the agency problem (Martinez et al., 2016). According to Kim and Sorensen (1986), agency cost is much more significant for those firms whose managers own a small portion of equity. Therefore, these firms are more likely to make suboptimal investment decisions because the uncoordinated decisions. Then, after delisting, the firms with a small portion of managers face a lower agency cost, and can then acquire better terms of debt capital.

## **2.5 Consequences of the going-private transaction**

Going-private activities can adversely affect the benefits of previous shareholders. However, voluntary going-private transactions can generate significant gains for the existing shareholders, because when the firm decides to go private, this transaction can mitigate the direct and indirect listing costs (Serve & Martinez, 2016). Many existing types of research often utilize an event study or test the cumulative abnormal returns (CARs), because the acquirer should pay a premium to pre-transaction shareholders. Thus, the average premium reveals the potential additional value generated by the going-private transaction. In most US and UK studies, the estimated premium is approximately 40% (Kaplan, 1989), and according to the different event window, CARs range from 13% to 38%, in the United States.

### **3.Theoretical prediction and hypothesis development**

Existing studies present a lot of theories and predictions in line with the determinants of the going private transactions. In order to provide the sensible answers in light of this question. I summarise some related theories and factors and divide them into four categories: I adverse selection problem; II access to capital; III debt burden; IV agency problem.

#### **3.1 Adverse selection**

Adverse selection is a situation in which the buyers in the market get asymmetric information. The party with less informed information would worry about an unfair trade. As a consequence, the fear would promote this party to withdraw from the trading market. According to Bharath and Dittmar (2010), when a firm is in a public status, investors can get less real information of the company than insiders. This may cause an adverse selection problem. Therefore, outside investors may doubt the quality of shares they purchase. This concern can have a negative influence on the quality of the firm as well as their share price. As stated in Leland and Pyle (1997), to minimise investors' trepidation, firms will try to invest more of their money on the specific project. However, this action may cause a waste of firm's resources. By contrast, private firms do not have such problem. Sreedhar and Amy (2010) argue, smaller firms are more likely threatened by this problem, because they cannot produce and transfer enough information to the outside. Therefore, my first hypothesis will be:

***Hypothesis 1: Firms with severe adverse selection problems are more likely to go private***

#### **3.2 Demand for capital**

As stated in Sreedhar and Amy (2010), the enough equity capital in public markets attracts firms to go public, in particular for those with a higher growth prospect. Higher growth companies often need to invest in many current and future projects, however, due to the high transaction



costs and high leverage, they cannot get financing in private market easily. As a consequence, they prefer to stay public to get enough capital funding. Also, Jensen (1986) argue that in order to minimise the cost of capital and maximise the total value, firms typically choose to go public to access the low-cost fund to stride across the steep barriers. Under this theory, I predict firms with lower future growth prospects do not prefer to make a significant investment. Thus they do not have a great demand for market capital. Going private can also help them minimise the listing costs in public market.

Therefore, I formulate the following hypothesis:

***Hypothesis 2: Firms which have a lower demand for equity capital are more likely to go private***

### **3.3 Debt burden**

Debt burden refers to a situation in which the newly generated cash flow is used to pay for the debt holder rather than investing in positive net profit projects (Becker & Pollet, 2008). A higher debt burden can be an incentive indicator to promote managers' performance (Michelsen & Klein, 2011), as this load limits their ability to make discretionary spending. Therefore, if the management group's future performance is poor, they will face a higher risk of losing their job. Furthermore, as stated in Sreedhar and Amy (2010), firms with debt burden are those have large investment, and they prefer to stay in public to garner funds and get their investment opportunities. So, the third hypothesis is following:

***Hypothesis 3: Firms that have a debt burden are less likely to go private***

### **3.4 Agency problem**

Concerning a firm's corporate governance, the separation of ownership and control often triggers the conflicts of managers and shareholders, then causes the agency problems. Normally,

managers have more incentives to get benefits from the company, so they want to sell part of capital to get individual interests (Motgomery,1994).

According to the Free Cash Flow(FCF) hypothesis, the agency cost would be higher if the FCF amount is high, because FCF means that cash is used for the negative NPV<sup>3</sup> projects.This indicates the management group prefer to waste the cash flow rather than use it effectively to contribute to shareholder's interest (Martinez, Serve, & Djama, 2015). As Jensen pointed (1986), when firms get free cash flow, they prefer to use the money to invest in less profitable projects rather than pay dividends. As paying dividends will decrease the stock liquidity. Managers often use this method to retain resources under their control, which causes a more severe problem.

The agency problems can also become more severe when the corporate governance is of poor condition, Marosi and Marosi (2007) point out firms with lower institutional ownership are more likely to go private. Because the involvement of larger institutional owners shows a monitoring effect on the management group, which help to solve the agency problems. It could be assumed a going private transaction can mitigate the agency problems and improve the governance structure for delisted firms.

Then the last hypothesis could be formulated in this way:

***Hypothesis 4: Firms with severe agency problem are more likely to go private***

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<sup>3</sup> "NPV" means "Net Present Value"

## 4. Data and sample selection

### 4.1 Sample selection

In this study, sample firms conducting transactions of going private are selected from 2003 to 2015. This sample period was carefully chosen from 2003 to exclude the impact of the implementation of SOX in 2002 and reduce possible bias. The period ends in the year of 2015, due to the limitations encountered after 2015. It should be noted that the sample comprises all the available data relating to the most recent years from all available databases.

At first, 343 going-private firms are selected through the SEC LiveEgder which meet the following criteria: **1.** the going-private announcement date is from 2003 to 2015. **2.** Firms documented the *schedule 13E-3*. When a firm files a *SEC 13E-3*, it means that the number of shareholders of the firm has decreased to a particular level, after which the firms do not need to report to the public. These events may include mergers, tender offers, etc. **3.** Firms documented the *schedule Form 15*. For Form 15, which is also known as the *Certification and Notice of Termination of Registration*, it indicates that the firms cease to remain as a public firm, and has probably transformed into a privately-held firm or even give up doing business altogether. After this step, firms that only go dark can be excluded. Table 1 illustrates the year distribution of the sample firms.

After determining which firms went public during the selected period, the IPO date for all these firms was collected from Compustat. The independent variables (detailed information in Appendix Table 15) were also obtained from Compustat and Thomson One Banker. After the selection process, 118 firms met the criteria in total. Table 2 presents the selection procedure.

**Table 1 Time series for going-private transaction**

<b>Year</b>	<b>Number</b>
2003	52
2004	46
2005	52
2006	31
2007	33
2008	22
2009	20
2010	21
2011	19
2012	11
2013	20
2014	12
2015	5
Total	343

**Table 2 Sample selection procedure**

Total sample from Live ledger	343
-Missing IPO date	(123)
-Missing data in Compustat	(84)
-Missing data in Thomas one Banker	(18)
Final data	118

Table 3 presents the all the going-private years of the sample firms, as we can see in the table, the number of going-private transactions is very high is the year 2003 and 2004, with the number of 20 and 30 respectively.

***Table 3 Time series for going private transaction (new)***

Year	Number
2003	20
2004	30
2005	12
2006	7
2007	6
2008	8
2009	7
2010	12
2011	4
2012	2
2013	6
2014	3
2015	2
Total	118

Table 4 shows the industry distribution<sup>4</sup> of all the available sample firms. We can see the service and mining industries are most prominent among these firms.

<sup>4</sup> The author use the four-digital SIC code to classify firms into different industries.

***Table 4 Industry Distribution for going private transactions***

Industry Distribution	Number	Percentage
Agriculture	2	1.69%
Mining	3	25.42%
Construction	1	8.47%
Manufacturing	23	19.49%
Transportation	12	10.17%
Whole trade sale	7	5.93%
Retail trade	17	14.41%
Finance, Insurance, Real estate	14	11.87%
Service	38	33.04%
Public administration	1	8.47%
Total	118	100%

To analyze the determinants of going-private transactions, a control group would be necessary. This group consists firms that remain listing on the market. Therefore, I use the complete list of all public listed American firms in the Compustat on 31, December 2015. In this thesis, the technique of pairing was employed. This method is utilized in many studies, such as Aurelie et al. (2015) and Michelsen & Klein (2010). In this research, industry background and the IPO date are matched to the treatment group. For the industry background, firms with the same first two SIC code digits as the going-private sample was selected, which ensure that control firms are located in the same environment industry. For the IPO date, control firms have the same IPO year with the treatment firms. After the selection procedure, 112 control firms are employed to do the univariate and multivariate tests.

## **4.2 Firm variables**

### **Firm size**

Firm size is the first independent variable. I will use the logarithm of a total asset to capture this characteristic. Firm size is predicted to have a negative influence on firm's going private decision. And this feature is related to the adverse selection theory (H1). According to Michelsen and Kleien (2011), the small and medium-sized companies may provide less useful information. Thus, the cost of transferring information to the outside is increasing, hence increasing the information asymmetry, such asymmetrical information also decreases the attractiveness of the company (DeAngelo et al., 1984).

### **Growth prospects**

Firms' growth prospect is also predicted to have a negative relationship with firm's decision to go private. This prediction is related to the theory of access to capital (H2). Jensen (1986) states companies that have lower growth prospects often has a poor management ,which cause them to go private. I use Return on asset (ROA), and Tobin Q dummy to proxy firm's future growth prospects.

### **Leverage ratio**

The leverage ratio is used to investigate the H3, which can reflect firm's current financial situation. The evidence of firm's leverage on the going-private decision is mixing. As per in Brau (2010), firms with higher leverage are difficult to get financing from debt, thus lose the tax benefits if the firms are profitable. However, Sreedhar and Amy (2010) argue that firms with a high leverage normally want to stay in public to get enough equity fund. Because it's hard for them to get another kind of capital as the high leverage, it is worthy to test the leverage influence in this investigation.

### **Investment level**

The ratio of capital expenditure to asset can show firm's investment level. A lower ratio

means the firm has lower capital expenditure. Firms with lower capital expenditure indicates they have fewer investments and do not have a significant demand for capital.

### **Agency cost**

In order to test the hypothesis 4, the ratio of free cash flow to asset, and the number of >5% Institutional Block Ownerships are used. Table 15(Appendix) shows the calculation and sources of all the proxies.

## **4.3 Methodology**

To test the reasons that why a firm choose to go private, I use two models - Cox hazard proportional model and logit model to confirm the result.

### **4.3.1 Hazard model**

The Cox hazard model is a duration model, by which I can test the relation between firm characteristics and firm's going private decision during the whole lifecycle (from IPO date to going-private date). This model can provide analysis how the change of firm characteristics influences the possibility to go private. I use this model which is commonly employed by researchers:

$$\mathbf{h(t, X(t)) = h(t, 0)\exp(\beta ' X (t) )}$$

In this research, t means the survival year of the IPO firms, h (t,0) is the baseline hazard function, X (t) means all the explanatory variables included in the analysis, exp (β ' X (t) ) represents the hazard ratio for the independent variable. If the ratio of x is positive, it implies a higher x is related to a higher risk of going private, and a lower survival period of the sample firms. The



influence of independent variables could vary with time, so this model can capture the time impact and examine the differences between firms.

In this model, I will use all the going-private firms' IPO date information and their survival periods to test whether the initial firm's characteristics and their evolution time influence the possibility of firm's going private decision.

#### **4.3.2 logit model**

The hazard model can show the relation of change of firm characteristics and the possibility of going private decision. However, to better understand the inherent firm characteristics with firm's decision to go private, I decided to formulate a logit model, in this model, I will use the data 1 year after the IPO date and one year before the going private transaction. The result will reveal the importance of firm's intrinsic characteristics.

The model is estimated as following:

$$\text{Pro (going private = 1)} = \alpha_1 + \beta_1 \text{Firm Size} + \beta_2 \text{Leverage ratio} + \beta_3 \text{Capex/Sales} + \beta_4 \text{Tobin Q Dummy} + \beta_5 \text{Return on asset} + \beta_6 \text{Free cash Flow/Asset} + \beta_7 \text{Number} + \varepsilon$$

The dependent variable "going private" has a binary nature, if value equals to 1, means the company decide to go private, otherwise, equal to 0.

## 5. Multivariate analysis

### 5.1 Descriptive statistics

In Table 5 and 6, I summarize the age of firms when they go private and the year distribution of their IPO dates. As we can see on the table, most our sample firms go public around the period:1990-2000, and most of them delist at the age around 6 - 15. The mean age of our sample firms is 7.6 years. The medium of those firms is 11 year.

***Table 5 IPO year distribution***

Year	Treatment	Control
Before 1990	4	11
1990-2000	101	80
2000-2008	13	21
Total	118	112

***Table 6 Age distribution of going private firms***

Age	Number
<or =5	27
6-10	44
11-15	33
16-25	14
Total	118
Mean	7.7
Median	8

Table 7 presents the firm characteristics of going private firms and control firms in one year after IPO. We can see in the table, the result is significant. The result of the first part is consistent with the adverse selection theory, which means firms that choose to go private always have a lower firm size and cannot release the useful information to outside effectively and successfully. (H1). As compared to the control group, the variable Ln of total asset observed in the going private group (1.85) is 54% lower when compared to the group still list (3.13). These observations conform with Amihud and Mendelson (1988) as well as Becker and Pollet (2008).

The second part of this table relates to the Debt burden hypothesis. The results show going-private firms have a little lower leverage ratio, while firms with a higher leverage ratio prefer to stay in public to get enough capital fund.

The lower Capex/sales ratio in going private group means they are not active in investment activities, so it is not surprising that they would stop the public status and then go private.

The fourth panel depicts that firms that are going private have lower growth prospects at the period of IPO. They even have a negative mean of earning after one year of IPO.

The last panel, we can see firms with server agency problems (higher amount of FCF/asset) and less effective corporate governance (less number of institutional investors) are more likely to go private.

***Table 7 Comparison of independent variables between Private and public firm-IPO***

	Private firm	Control firm	Difference t-stat
<b>Adverse selection</b>			
The logarithm of asset	2.26	4.95	3.82**
<b>Debt Burden</b>			
Leverage ratio	0.22	0.14	1.70*
<b>Investment Level</b>			
Capex <sup>5</sup> /Sales	0.36	0.48	4.26
<b>Growth prospects</b>			
Tobin Q dummy	0.53	1.72	1.98**
ROA	-0.05	0.51	2.64*
<b>Agency problem</b>			
FCF/asset	0.52	-0.06	-6.22***
Number	1.46	3.21	-1.43**

Furthermore, a determination was made as to whether the changes of firm characteristics during this time have influenced the firms' decision to go private. This is achieved by conducting a comparative analysis of the firm characteristics in the year after the IPO date with the year prior the going private. The results are listed in Table 8.

<sup>5</sup> "Capex" means "Capital expenditure"

The first dimension indicates that a decrease of firm size from the IPO date to going-private date (from 2.26 to 2.07), which also supports the adverse selection prediction. Firms with a decreasing trend of the size have decreasing liability to release useful information to outside investors. The second part, lower leverage ratio presents before going private transaction, firms face a more serious financial distress, so they will choose to go private. Regarding capex/sales, there is a decreasing trend, which means they have less need for capital. And in panel 3, we can also see the decrease of the future growth prospects.

***Table 8 Comparison of firm characteristics in IPO date and going private date***

	IPO date	Going private date	Difference t-stat
<b>Adverse Selection</b>			
The logarithm of asset	2.26	2.07	0.16*
<b>Financial situation</b>			
Leverage ratio	0.62	0.54	1.23**
<b>Investment Level</b>			
Capex/Sales	1.36	0.82	0.08
<b>Growth prospects</b>			
Tobin Q	0.53	0.19	1.48**
ROA	-0.05	-0.01	-0.8*
<b>Agency problem</b>			
FCF/asset	0.52	0.36	5.9
Number	1.46	0.69	3.3**

The last panel illustrates the transactions before going private. During this time firms have a lower free cash flow ratio; however, this result seems inconsistent with agency theory. Nevertheless, according to Bharath and Kittmar (2011), this result can be an indicator of an improvement regarding the outside information environment, resulting in firms needing to spend more money on improving their management quality. This, in turn, makes it more costly to remain public. Moreover, by comparing the ratio with the control group according to their IPO date, the number 0.36 was significantly higher than -0.06. Thus, it could be inferred that free cash flow increases agency costs, and promotes firms' decision to go private.

## **5.2 Serial correlation**

Before carrying on the research, it is essential to test the correlations among all the independent variable. This procedure can secure the accuracy of the outcomes. If the liner correlations between the independent variables are too high, around 0.5, the result would be constrained (Michelsen & Klein, 2010).

Table 9 investigates the correlations among firms' initial characteristics, which are used in the hazard model and table 10 tests the variables which are collected one year before the going-private announcement.

As we can see in table 9 and table 10, all the correlation matrixes are less than 0.5. Thus, the multi-collinearity could not bias the results. And all the independent variables are free from significant biases.

***Table 9 Correlation matrix for the variables used in hazard model(initial firm characteristics )***

	Leverage	ROA	Asset	FCF	Capex	Tobin	Number
Leverage	1						
ROA	-0.26	1					
Asset	0.20	0.42	1				
FCF	0.09	0.22	0.16	1			
Capex	0.02	-0.13	0.05	-0.03	1		
Tobin	0.16	0.11	0.26	-0.07	0.02	1	
Number	0.25	-0.03	0.08	-0.08	0.07	0.27	1

***Table 10 correlation matrix of independent explanatory variables(collected one year before going –private transactions)***

	Leverage	ROA	Asset	FCF	Capex	Tobin	Number
Leverage	1						
ROA	-0.34	1					
Asset	0.20	0.19	1				
FCF	0.22	0.32	0.19	1			
Capex	0.04	-0.05	0.02	-0.06	1		
Tobin	0.46	0.08	0.18	-0.07	0.02	1	
Number	0.28	-0.08	0.13	-0.08	0.04	0.25	1

### 5.3 Hazard result

Table 11 presents the correlations between specific characteristics of going-private firms and the decision to go private. All the seven independent variables listed with industry and year fixed effect.

Panel 1 reveals that firms have a higher hazard ratio of going private if they have a smaller firm size, which is consistent with the adverse selection theory (H1). This result is also in line with Amihud and Mendelson (1988), according to the author, large-sized firms possess substantial business maturity; thus, they can amortize their increasing listing costs effectively, so are less influenced by outside change. And as stated in (Pour, & Lasfer, 2013), firms with a smaller firm size are often followed by a small number of financial analysts, which increases the information asymmetry.

The result in panel two also supports the H2. A lower Tobin Q and ROA indicate firms have a lower growth prospect. The negative hazard rates indicate the negative relationship between the growth prospect and the going-private decisions. However, the ratio of capital expenditure to sales ratio is not significant, which indicates it is not a good indicator of firms' investment level.

For the leverage ratio, the hazard rate of voluntary going private transaction increases by about 0.505 for a unit decrease of leverage ratio. The result indicates firms with a lower leverage ratio are more likely to go private, as they do not have a significant demand for capital support.



The last two panels allow for the prediction that firms with lower growth prospects and higher agency costs are more likely to go private (H4).

From this result, we can predict, firms with a smaller size, lower leverage ratio, lower growth prospects and more agency problems have higher profitability to go private.

***Table 11 Cox proportional hazard result***

<b>Explanatory Variable</b>	<b>Hypothesis</b>	<b>Hazard ratio</b>	<b>Standard errors</b>
Firm Size	H <sub>1</sub>	-1.109*	0.036
Capex/Sale	H <sub>2</sub>	-0.853	0.17
Tobin Q dummy	H <sub>2</sub>	-1.515**	0.018
ROA	H <sub>2</sub>	-0.694	0.17
Leverage	H <sub>3</sub>	-0.5058*	0.025
FCF	H <sub>4</sub>	0.918**	0.04
Number	H <sub>4</sub>	-0.294***	0.03
N		118	
R <sup>2</sup>		0.32	

**Note:** This table presents the results of the Cox Proportional Hazard model. The dependent is the survival time of the specific going-private firm. The period is measured as the period of the IPO date and the time of the going-private announcement. The coefficients and standard errors(in parentheses) are reported in the table. Variables are defined in Table 15. .\*,\*\*,and\*\*\* mean significance at 1%,5% and 10%,respectively

### 5.3 The logistic result

The hazard model emphasizes on the influence of the change of firm characteristics over time to firms' going private decision. However, with the comparison between the treatment and control group, I find the instinct firm characteristics still have a possible influence on the going private decision. Therefore, I form a logit model to test the influence of inside characteristics. Two forms of data were utilized: data in the year after the IPO date, while the other is one year prior to engaging in private transactions. This research can facilitate a more precise conclusion regarding the initial importance of firm characteristics, to increase the accuracy of the result. In this model, the control sample was added to increase the comparability. Table 13 and 14 present the result.

***Table 12 Logit result of firm characteristics in IPO date***

Explanatory Variables	Hypothesis	Df/Dx	Se
Firm Size	H1	-0.192***	0.029
Capex/sales	H2	0.043	0.041
Tobin Q	H2	-0.105**	0.040
ROA	H2	-0.217	0.147
Leverage ratio	H3	-0.252***	0.065
FCF ratio	H4	0.334*	0.143
Number	H4	-0.099***	0.009
N		230	
R <sup>2</sup>		0.59	

**Note:** This table shows logit estimation of firms' going private decision. The dependent variable equals to one if the firm chooses to go private and zero for the control group. The number of "Df/Dx" means the margin effect of each explanatory variable. Variables are defined in Table 15. \*, \*\*, and \*\*\* mean significance at 1%, 5% and

10%,respectively.

***Table 13 Logit model of firm's characteristics in one year before going private***

Explanatory Variables	Hypothesis	Df/Dx	Se
Log of asset	H1	-0.158***	0.016
Capex/sales	H2	-0.031	0.015
Tobin Q	H2	-0.122**	0.033
ROA	H2	-0.189	0.089
Leverage ratio	H3	-0.122***	0.017
FCF ratio	H4	0.231**	0.244
Number	H4	-0.057***	0.012
N		230	
R <sup>2</sup>		0.59	

**Note:** This tale shows logit estimation of firms' going private decision. The dependent variable equals to one if the firm chooses to go private and zero for the control group. The number of "Df/Dx" means the margin effect of each explanatory variable. Variables are defined in Table 15.\*,\*\*,and\*\*\* mean significance at 1%,5% and 10%,respectively.

Table 12 presents substantial evidence that going-private firms always have a smaller firm size, a lower leverage ratio, lower growth prospects and more agency problems. For the first row, I can predict, if the firm size( the log of the asset) increases by one unit, the probability of going-private transactions would decrease by 0.192, with a standard error of 0.029 in the logit model. That is, the bigger of the firm size, the lower probability of the firms choose to go private. This

relation confirms the adverse selection hypothesis(H1).The measure about the hypothesis of access to capital also shows the right signs of the coefficients (H2).With a margin effect of -0.112, the Tobin Q dummy margin has a strong influence on the probability of going private. This result confirms the hypothesis 2 and indicates firms with a higher growth prospects are less likely to go private. However, the figures of the ratios of capital expenditure to sales and ROA are not significant. On examining the agency problem, it is clear that high free cash flow and poor corporate governance have a marginal adverse effect on the going-private transaction, with the marginal effect of 0.334 and -0.009 respectively.

To test the robustness of the result, table 13 investigates the independent variables one year before the going-private transactions.

Moreover, in both tables, the results demonstrated a profound similarity with the previous hazard model. However, firm size was more significantly correlated than in the previous analysis, which means the instinct firm characteristic of firm size represents more important factors that influence the going-private decision. And with time going on and other factors interaction influence, the factor gradually decreases its influence. Interestingly, the level of capex/sales ratio and return on assets are not significant, because the capital expenditure has a seasonal attribute, which cannot reflect the overall investment level successfully. (Pour & Lasfer, 2013)

## **6. Conclusion**

### **6.1 summary of results**

This thesis investigates firms' going-private transactions by focusing on specific firm characteristics affecting the going-private decision. Correspondingly, I use 118 hand-collected data of going-private firms from 2003 to 2015 in the United States.

Through the univariate and multivariate tests, the findings illustrate that firms are more likely to go private approximately seven years after their IPO date.

For the first characteristics, the result reveals that firms with a smaller size are more likely to go private, because they have a more severe adverse selection problem, and they cannot produce and transfer enough information from the public market. This information asymmetry would lead to the "lemon problem", which causes firms to engage in erroneous investment decisions. Therefore, firms opt to go private to avoid this problem.

For the second one-debt burden, the result presents that firms with a lower leverage ratio are more likely to go private, because they do not have a big demand for an equity fund, and it is difficult for them to attract outside investment. As a consequence, they prefer to go private to avoid other listing costs.

Firm's growth prospect is also an important factor to influence the going-private decision. The results show that firms with lower growth prospects are more likely to go private because lower growth companies have less interest in the capital market. Hence, they are more willing to go private.

The aftermost factor refers to the agency problems. The result shows that firms with severe agency problems are more likely to go private. Agency problems emerge due to the separation of ownership and management. Therefore, a serious agency problem means that the administration group prefers to pursue its interest rather than provide reliant service for all the shareholders and companies. When this occurs, firms are more likely to go private.

In a way, the thesis can provide indications for the investors to better evaluate whether a public firm would go private or not. This paper would serve as a warning for the investors in those higher going-private risk firms.

***Table 14 Summary of final results***

Hypothesis	Assumed relationship	Observed relationship	Final result
H <sub>1</sub> :Adverse selection	Positive	Positive	Accept
H <sub>2</sub> : Demand of capital	Positive	Positive	Accept
H <sub>3</sub> :Debt burden	Positive	Positive	Accept
H <sub>4</sub> : Agency problem	Negative	Negative	Accept

## 6.2 Limitations

The study exhibits limitations. First, there are different kinds of voluntary going-private transactions, such as MBO, MBI, BOSO transactions. However, these were not tested separately. Thus this method might cause the heterogeneity problems.

Second, this thesis only focused on the voluntary going-private transactions, but not all the withdrawals from the public capital market.

Third, the inadequate samplings could bias the results. Data of firms after the year of the going-private transactions are unavailable. Thus, it is difficult to investigate whether this transaction can produce real and pragmatic benefits to the shareholders and the firms. Therefore, further research can investigate the extent to whether the going-private transactions can bring real and long benefits.

Fourth, this study focused on researching the internal characteristics of firms, rather than external environmental factors, such as the financial crisis of 2008, which might have influenced firms' decision to go private.

Then, the sample size is small. To uncover a significant influence of the independent variables when doing a statistical testing, the sample size is critical (Morris,2016). The larger the sample is, the more accurately the sample will reflect the relationship. Due to the data unavailability, I can only get 118 sample at last. This made it impossible to do a good difference test, and the results are less strong.

Last, this thesis is only focused on one country-the United States. The going-private transaction is active in the whole world. It would be interesting to research other countries and parts, such as the United Kingdom, the continental Europe, the Asia, etc. This method can examine whether the factors have different influences in the various countries, which increase the comparability of the results.

### **6.3 Further research**

The limitations of this thesis demonstrate that further research is required to attain a more accurate result. Firstly, additional motives could also be added, such as firm liquidity, firm undervaluation and so on. Secondly, it would be advantageous to divide the going-private transactions into different groups, such as MBO, MBI, etc. By investigating these groups separately, the final result could be more accurate and precise. Thirdly, future research can try to focus on another choosing method to select the going-private firms. Lastly, future research could add one or more countries rather than just concentrate on the US. A comparison among different geographical areas is possible.



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## **Appendix**

### **The influence of Sarbanes-Oxley Act**

The passage of the Sarbanes-Oxley Act marks an important flagship determination for corporate governance in the United States. This act, which was promoted due to several financial scandals, published some strict regulations to enhance the confidence of shareholders in the public common market. This act has generated enormous changes in corporate governance, especially in the areas of accounting, auditing and other aspects.

Akin to all the other regulations, the implementation of SOX can facilitate both costs and benefits. For example, more disclosure requirements will lead to more transparency in financial reports, which are beneficial to investors; however, for the firms, the act increases their compliance costs. Following the new act, both the CEO and CFO have a responsibility to certify the quality of the financial reports, causing an increase in auditing costs directly.

### **Variable definitions**

***Table 15 variables description***

<b>Variable</b>	<b>Description</b>	<b>Sources</b>	
Log of asset	This variable indicates the firm size, the higher amount, the bigger size of the firms.	Compustat Annual	Industrial
Leverage ratio	$\frac{\text{Total Debt}}{\text{Total equity}}$ The higher ratio means firm has a server debt burden	Compustat Annual	Industrial
Tobin q dummy	$\frac{\text{Firm's Market Value}}{\text{Firm's replacemnt cost}}$ I set this variable as a dummy variable, if result $\geq 1$ , means firm have a good future prospect, this value is 1, otherwise ,this value is 0.	Compustat Annual	Industrial
Capex ratio	$\frac{\text{Capital Expenditure}}{\text{Total Sales}}$ The higher amount, the higher investment of the firm.	Compustat Annual	Industrial
ROA	$\frac{\text{EBIT}^6}{\text{Total Asset}}$ The higher amount, the better growth prospect.	Compustat Annual	Industrial
Free cash flow ratio	$\frac{\text{Free CashFlow}^7}{\text{Total Asset}}$ The higher amount, the more free cash flow generated from the firm.	Compustat Annual	Industrial
Number	higher amount, higher concentrated ownership	Thomson One Banker	

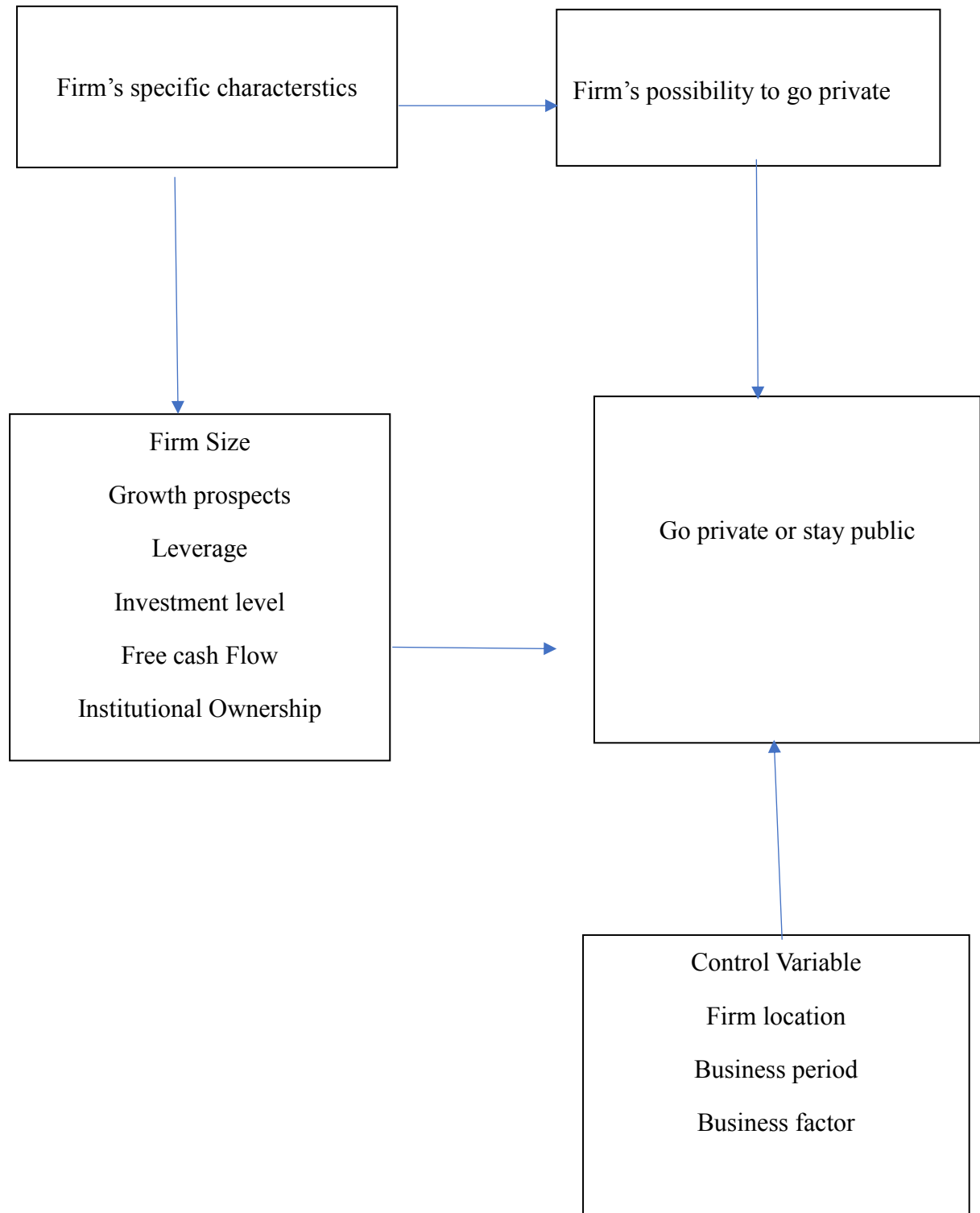
<sup>6</sup> “EBIT” means “Earning before Interest and Tax”

<sup>7</sup> Free cash Flow=Operating income before Depreciation-Income Tax-Interest Expense-Dividends Total

## Libby Box

Independent variable(X)

Dependent variable(Y)



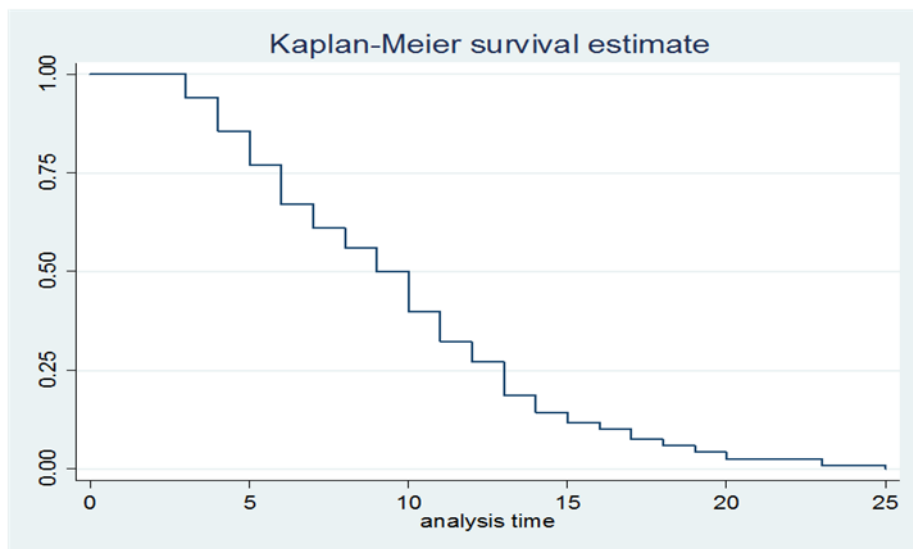
## Overview previous literature

Paper	Sample	Methodology	Characteristics of going private firms	Country
Screedhar&Amy(2010)	1377 voluntarily going private firms(1980-2003)	Cox Proportional hazard model+logit model	higher free cash flow higher liquidity lower growth	US
Bo&Joshua(2008)	6243 voluntarily going private firms(1981-2006)	Logit model	Smaller Size Low volatility High Profitability	US
Patricia&Annor(2014)	227 voluntarily going private firms(2001-2012)	Logit model	Low free float Great cash availability Low stock liquidity	Brazil
Eilnaz&Meziane(2013)	155 voluntarily going private transaction(1995-2009)	Logit model+Cox proportional model	High Leverage Low Profitability	UK

			Low growth prospect	
Marc& Christian(2009)	52 voluntarily going private firms(1996-2004)	Probit model	Low leverage Small size High free cash flow	Germany
Opler and Titman (1993)	180 voluntarily going private firms(1980-1990)	Logit model	Undervaluation Financial distress	US
Luc, Tomas& Mike(2006)	177 voluntarily going private firms(1997-2003)	Logit model	High free cash flow Undervaluation	UK
Hamid &Stavros(2009)	1294 voluntarily going private firms (1980-2007)	Cox proportional model	Low financial visibility	UK
Martinez& Serve(2011)	70 voluntarily going private firms(1997-2006)	Logit model	Weak firm performance Low growth Low financial visibility	French



Mehran & Peristiani (2010)	262 voluntarily going private firms(1990-2007)	Cox proportional model	Low financial visibility Low risk of financial distress	US
Leuz, Triantis and Wang (2008)	436 voluntarily going private firms(1998-2004)	Logit model	Small size Poor future growth prospect	US



**Panel 2 survival rate of going-private firms with time changing(result from hazard**

ratio )

**Details of the going-private firms**

**Table 16 Details of going-private firms**

CIK	Company name	going private year	Date of filing Form 13E-3		Date of filing Form 15	
			Month	Date	Month	date
32020	ELDER BEERMAN STORES CORP	2003	7	18	10	7
34489	WESTMINSTER CAPITAL INC	2003	7	10	9	7
41980	GODDARD INDUSTRIES INC	2003	6	27	10	6
108079	WOLOHAN LUMBER CO	2003	8	20	11	8
200533	MOYCO TECHNOLOGIES INC	2003	5	5	9	5
275866	PACER TECHNOLOGY	2003	9	3	12	9
351541	BCT INTERNATIONAL INC /	2003	6	17	12	6
352956	FAFCO INC	2003	8	6	11	8
717754	INLAND RESOURCES INC	2003	2	5	6	2
775840	DECADE COMPANIES INCOME PROPERTIES	2003	7	16	9	7
795968	EDISON CONTROLS CORP	2003	4	24	8	4

797502	DWYER GROUP INC	2003	6	13	10	6
840402	GREKA ENERGY CORP	2003	6	4	9	6
890448	PML INC	2003	4	25	8	4
896157	CARECENTRIC INC	2003	6	19	9	6
946855	AVERY COMMUNICATIONS INC	2003	1	9	7	1
1005119	CRAZY WOMAN CREEK BANCORP INC	2003	10	14	11	10
1018290	PROFESSIONAL STAFF PLC	2003	4	28	7	4
1023902	RDO EQUIPMENT CO	2003	4	28	7	4
1032373	RWD TECHNOLOGIES INC	2003	6	2	9	6
28325	GRISTEDES FOODS INC	2004	9	10	11	9
46656	REGENCY EQUITIES CORP	2004	1	26	7	1
105096	WAXMAN INDUSTRIES INC	2004	1	29	6	1
316537	AVOCA INC	2004	8	13	12	8
354383	PRAB INC	2004	2	23	7	2
356858	FIRST BANKING CENTER INC	2004	8	20	12	8
714540	MPSI SYSTEMS INC	2004	3	3	8	3
721238	AMERICAN BANCORP INC/LA	2004	4	16	9	4
727303	SAFEGUARD HEALTH ENTERPRISES INC	2004	1	9	6	1

805023	GUNDLE ENVIRONMENTAL INC	SLT	2004	3	10	5	3
810876	MINUTEMAN INTERNATIONAL INC		2004	8	5	11	8
812914	SEMELE GROUP INC		2004	1	16	7	1
812914	SEMELE GROUP INC		2004	1	16	7	1
814457	HOME INTERNATIONAL INC	PRODUCTS	2004	7	6	12	7
830156	AMERICAN VILLAS PROPERTIES II	RETIREMENT	2004	1	22	9	1
843081	LOEHMANN'S HOLDINGS INC		2004	5	27	10	5
869296	COLONIAL TRUST CO /AZ		2004	5	10	11	5
874038	STAR MULTI CARE SERVICES INC		2004	1	23	5	1
874385	RAG SHOPS INC		2004	10	6	10	10
880209	EASTON BANCORP INC/MD		2004	2	10	6	2
895364	DUANE READE INC		2004	3	19	8	3
920907	BOYD TRANSPORTATION INC	BROS	2004	2	3	9	2
922865	INTEGRITY MEDIA INC		2004	4	16	7	4
929037	EDELBROCK CORP		2004	8	10	12	8
939928	LOGANSPORT FINANCIAL		2004	5	28	7	5

	CORP					
942789	VALRICO BANCORP INC	2004	8	11	11	8
945688	SPORTSLINE COM INC	2004	8	19	12	8
1012734	TRAVIS BOATS & MOTORS INC	2004	11	23	12	11
1037388	PANAMSAT CORP /NEW/	2004	5	24	8	5
1038368	SCHUFF INTERNATIONAL INC	2004	5	11	11	5
52532	MERCURY AIR GROUP INC	2005	4	1	9	4
89925	SHOPSMITH INC	2005	8	18	12	8
312842	KESTREL ENERGY INC	2005	5	20	8	5
351349	PIONEER OIL & GAS	2005	5	5	9	5
703701	USHEALTH GROUP, INC.	2005	4	18	10	4
717422	LINCOLN LOGS LTD	2005	3	24	9	3
719483	SYNBIOTICS CORP	2005	4	20	11	4
719495	FIRST MANITOWOC BANCORP INC	2005	2	28	6	2
789388	SUNGARD DATA SYSTEMS INC	2005	4	12	8	4
793523	LXU HEALTHCARE, INC.	2005	8	31	12	8
794487	NEWS COMMUNICATIONS INC	2005	7	13	11	7
922622	FIRST CHOICE HEALTH NETWORK INC	2005	9	30	12	9
860730	HCA INC/TN	2006	8	9	11	8

888455	PETCO ANIMAL SUPPLIES INC	2006	8	11	10	8
912262	SPORTS AUTHORITY INC /DE/	2006	2	15	5	2
944763	ENCORE MEDICAL CORP	2006	8	15	11	8
1013266	YADKIN VALLEY CO	2006	1	24	4	1
1022608	NCO GROUP INC	2006	8	14	11	8
1023950	INSTRUMENTATION LABORATORY SPA	2006	3	10	6	3
6383	MOSCOW CABLECOM CORP	2007	5	4	7	5
54193	K TEL INTERNATIONAL INC	2007	1	8	7	1
82788	REFAC OPTICAL GROUP	2007	2	26	4	2
100331	21ST CENTURY INSURANCE GROUP	2007	6	11	10	6
102343	URBAN IMPROVEMENT FUND LTD 1974	2007	7	20	12	7
702983	SHELL CANADA LTD	2007	2	8	4	2
76094	LEVCOR INTERNATIONAL INC	2008	6	25	9	6
202947	CAPITAL PROPERTIES INC /RI/	2008	8	4	12	8
863821	RESTORATION HARDWARE INC	2008	2	19	6	2
917857	DOMINION HOMES INC	2008	3	7	6	3
1089874	GOLDEN TELECOM INC	2008	1	18	3	1

1133555	HUSKER AG LLC	2008	1	18	7	1
1175158	TENNESSEE VALLEY FINANCIAL HOLDINGS INC	2008	7	1	12	7
1328067	E ENERGY ADAMS LLC	2008	8	14	11	8
108770	XEDAR CORP	2009	4	8	5	4
737602	CUISINE SOLUTIONS INC	2009	6	12	9	6
790071	ARISTOTLE CORP	2009	8	24	11	8
854883	EDD HELMS GROUP INC	2009	1	23	6	1
915909	HIRSCH INTERNATIONAL CORP	2009	7	20	10	7
949536	HEARST ARGYLE TELEVISION INC	2009	5	4	6	5
1080866	BANKRATE INC	2009	7	28	10	7
770034	ADVANCE DISPLAY TECHNOLOGIES INC	2010	8	16	9	8
823130	SYNERGX SYSTEMS INC	2010	4	15	7	4
870069	REGAN HOLDING CORP	2010	1	5	4	1
879181	AMERICAN HOMEPATIENT INC	2010	7	7	10	7
904973	GTC BIOTHERAPEUTICS INC	2010	11	12	12	11
916802	BOSS HOLDINGS INC	2010	1	20	4	1
1046212	OMNI ENERGY SERVICES CORP	2010	7	1	11	7

1079996	LIFE QUOTES, INC.	2010	6	28	8	6
1080359	ALLOY INC	2010	7	21	11	7
1113336	CNB FINANCIAL SERVICES INC	2010	7	6	12	7
1122099	VILLAGEEDOCS INC	2010	2	5	8	2
1177314	NORTHERN GROWERS LLC	2010	1	22	7	1
102588	SONOMAWEST HOLDINGS INC	2011	4	1	6	4
782879	CONTINENTAL MINERALS CORP	2011	2	11	5	2
1006840	ZHONGCHAI MACHINERY, INC.	2011	3	22	7	3
1092807	ALPINE AIR EXPRESS INC/DE	2011	7	25	12	7
354706	FIRST PULASKI NATIONAL CORP	2012	8	15	11	8
885531	DENMARK BANCSHARES INC	2012	8	31	12	8
5117	EMTEC INC/NJ	2013	5	6	7	5
24240	CONTRAN CORP	2013	5	10	7	5
724267	PHAZAR CORP	2013	4	2	8	4
759458	CANANDAIGUA NATIONAL CORP	2013	7	1	9	7
789868	FEIHE INTERNATIONAL INC	2013	3	22	7	3
922717	CHINDEX INTERNATIONAL INC	2014	5	15	10	5



1003226	FIRST PHYSICIANS CAPITAL GROUP, INC.	2014	6	20	12	6
1096840	SUNWAY GLOBAL INC.	2014	7	30	12	7
73048	BROADVIEW INSTITUTE INC	2015	5	13	6	5
1421538	Infinity Augmented Reality, Inc.	2015	2	17	11	2