ERASMUS UNIVERSITY ROTTERDAM

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Determinants of voluntary going-private transactions in different economic settings

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Abstract

The study's purpose is to identify the elements that influenced the company's choice to go private and analyse if there are differences between different economic settings. Subsequently, 274 hand-collected going-private enterprises are used, 81 for which data is found for four quarters before and of the announcement of the going-private transaction, in the United States from 2007 to 2008 and 2018 to 2021. The results of the four regressions in the panel data model conclude that there is a difference in firm characteristics and their impact on firm value and EPS between the quarters before the announcement and the quarter of the announcement. Through a cross-sectional model, the difference in firm characteristic trends around the announcement date of the going-private firms and their impact on firm value and EPS in different economic situations is displayed. Lastly, the logit model explains the different correlation of firm characteristics between the firms that went through the delisting process after their announcement and the ones that stayed public with the probability of delisting.

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Introduction

In the financial world, Initial Public Offerings (IPOs) have been and still are a very important topic. This subject has been scrutinized for decades both in the theoretical and empirical literature. Often so, public firms seem to have quite a few advantages over private firms such as augmented investment options, augmented liquidity, and external funding (Renneboog, Wright, & Simons, 2007). So, why do firms go private? A real-world and actual example of a company getting bought over to get privatized is the $44 billion sale of twitter to Elon Musk.

Going private has become a more usual and comprehensible move for financial market participants in recent decades. In the United States, leverage buyouts became popular in the early 1980s, whereas in Europe, the first wave happened in the 1990s (Serve, Djama, Martinez, 2012). Delisting to IPO ratios also showed that delisting is becoming more economically significant. Delisting that occurs after three years of the IPO, consists of 11,4% of the total of IPOs between 1980-2020 (Ritter, 2022).

Figure 1: US: publicly traded firms from uschamberfoundation
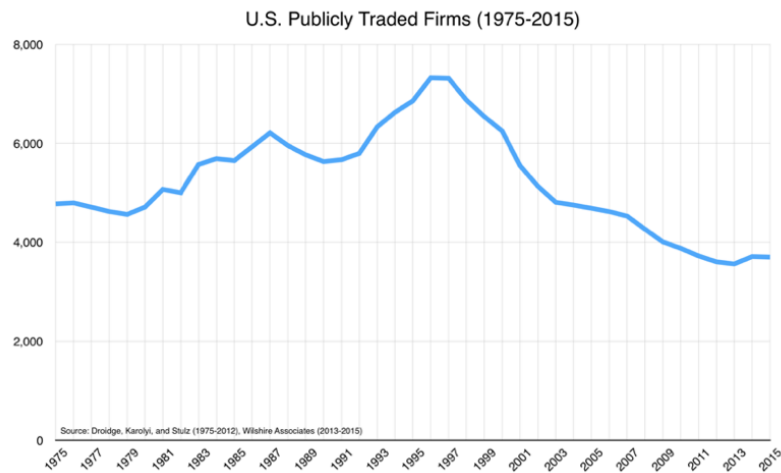
There are two main ways a company undergoes a delisting. The first one is voluntary, such as going private, going dark, or through an acquisition. The second reason is involuntary,

such as poor financial performance of a firm or violations of the conditions of the stock market. This research will only be concentrated on the former one, namely the voluntary firms going private. A public to private transaction entails a newly established unlisted company bidding for a publicly traded corporation, usually for the purpose of the transaction (Jensen, 1986). A leveraged buyout (LBO) occurs when the resulting company's capital structure has significant debt. Bedu and Garnier (2018) define Management buy-outs (MBOs) as a buyout where corporate internal managers who become minority or majority shareholders after participating in the acquisition of the company where they previously worked. The managers that started the acquisition are external to the company in management buy-in (MBI). Managers mandated by a PE fund are known as institutional buyouts (IBOs) (Bedu and Garnier, 2018).

The reasoning behind public companies leaving the market and going private is a relatively new topic. Jensen (1986) states that two of the most generally known determinants of going private are to reduce agency costs and eliminate the separation between management and ownership. This thesis examines the relationship between voluntary going-private transaction and firms' characteristics around the great financial crisis (2007-2008) and the Covid-19 crisis (2020-2021) as 2 different periods for an economic downturn and 2018-2019 as a proxy for a regular economic situation. Previous research that has analysed the stock value following the going-private transaction lack some crucial points in this economy. First, often it was written more than a decade or two ago, and surely before the great financial crisis. Secondly, this thesis emphasizes the importance of the chosen periods, where the announcement takes place, and separates the GFC, the Covid-19 period and one neutral pre-crisis period.

Covid-19 is a one-of-a-kind incident that, as a pandemic, resembles the Spanish Flu of 1920 more than the financial crisis of 2008-2009. The Covid-19 crisis is the outcome of lockdown measures that halted the economy for 'non-essential' items and services. Contrarily, the financial crisis was caused by overleveraged financial institutions. After the financial crisis, the stock market recovered slowly but steadily, whereas, during Covid-19, the recovery is entirely contingent on the virus's development since the crisis emerged from public health concerns and is thus exogenous (Albuquerque et al., 2020; World Economic Forum, 2020). Given the change in the economic environment these last few years, an inquiry is made whether similarities with prior recessions are present for firms that experienced a going-private transaction. This thesis intends thus to answer the following question:

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What firm characteristics are determinants for a company undergoing a going-private transaction and are these the same in different economic settings?

This paper's first research goal will be to investigate which elements are linked to the company's choice to delist. To obtain these results, first and foremost, an intense literature review on the "going private" matter is conducted, and all the possible factors of this decision are identified, in addition an analysis of the difference between the two crises and a pre-crisis situation is made. Thereafter, the theories and factors are described and their possible effect, thus the hypothesis are constructed. Following this, an empirical study to identify which of those factors are indeed important in this matter is created, based on different models.

The first research examines the difference in firm characteristics in going private firms in the quarters before the announcement and the quarter of the announcement and their impact on the firm value and the earnings per share. The second model will be used to analyse different firm characteristic trends around the announcement date of the going-private firms and their differences in different economic situations. Furthermore, the differences in correlation of firm characteristics between the firms that went through the delisting process after their announcement and the ones that stayed public with the probability of default are explored in the third model.

The following points are some of the contributions made by this thesis: to begin with, although much research has been conducted to explore the determinants of the going-private transactions, only a few of them use a sample period after 2005. To overcome this constraint, the data covers the years 2007 to 2008 and 2018 to 2021. All the data is collected after SOX (Sarbanes-Oxley Act) was issued, which improves the results' comparability (Engel et al., 2007). Finally, the research utilizes three models to assess the effects of firm characteristics: a panel data regression for the first research, a cross-sectional model for the second research, and a logit model for the third research. The finalization of the results is ensured by the combination of these three models.

The results of the panel data model's four regressions show that there is a difference in firm attributes and their impact on firm valuation and EPS between the quarters before and after the announcement. A difference in firm characteristic trends around the announcement date of the going-private enterprises, as well as its impact on firm value and differences in different

economic scenarios, are presented using a cross-sectional regression. Furthermore, the logit model explains a difference in business characteristics between firms that were delisted following their announcement and those that remained public. The results of this thesis may be interesting to some parties. Because becoming private could have a considerable impact on competition, growth, and prosperity in general. This is thus valuable to all kinds of people, both in private and public sectors. Government could employ these results as a guidance for the creation of regulations in different economic settings and adjust when needed. Furthermore, managers, consultants, investors may find the discovery beneficial during transactions.

This thesis has various limitations or may potentially trigger further study. To begin with, the final sample of this thesis is somewhat small, making it difficult to represent all going-private transaction and make vigorous conclusions. The other big limitation is the use of only the quarters before and of the announcement of the transaction. Since companies are not obligated to share their quarterly and annual data once they delist, information disappears. In-depth research could potentially improve this aspect and analyse the quarters after the announcement to effectively see change.

The thesis is organized as follows: The following part reviews existing research and provides a theoretical contextualization of the issue at hand. The third section dives deep into the hypothesis development. The section afterward discusses the data gathering and sample selection. After the sample selection, the research methodology will be discussed, followed by the final section presenting the research results. The conclusion, discussion, and implications of this thesis are explored in the final chapter.

Theoretical framework

This section provides key-related literature for this research. First, a discussion of the definition of going private in general and its transaction is given. Secondly, the different types of delisting possible are considerate. Paragraph 2.3 summarizes the literature about the different types and approaches of the going private transactions. Additionally, paragraph 2.4 elaborates on the prior research done on the reasons why shareholders decide on the going private transactions. Finally, an analysis of the difference between economic situations and thus an explanation of the Great Financial Crisis (hereafter GFC) and the Covid-19 crisis will be made in paragraph 2.5.

Going private transaction

Going private has become a more usual and comprehensible move for financial market participants in recent decades. In the United States, leverage buyouts became popular in the early 1980s, whereas in Europe, the first wave happened in the 1990s (Serve, Djama, Martinez, 2012). Going private restructures corporate ownership by altering public stock with equity owned by management, which often changes the control, funding, and structure of a public corporation (DeAngelo, 1984).

It is critical to evaluate the meaning of going private when analysing this research. Leuz (2007) adhered to the SEC's definition and limited its sample to Rule 13e-3 going-private transactions, which are transactions started by affiliates (i.e., insiders or entities) that reduce the number of "shareholders" to less than 300 and allow the company to deregister from the SEC. This term has been widely used in the literature although it has significant flaws. First, it includes companies that simply reverse their stock splits, as well as companies who deregister with the SEC but continue to trade on the Pink Sheets. Second, it ignores companies with fewer than 300 record holders which are exempted from filing Schedule 13E-3 yet choose to go private anyhow (Leuz, 2007).

Different types of delisting

Before moving on with the investigation, it's crucial to distinguish between involuntary and voluntary delisting. Delisting operation can be realized through different type of transactions. According to Tutino et al. (2014) delisting can be accomplished by a variety of transactions; there is a difference between involuntary delisting, when a company is merged with or bought by another company, or when it is in financial trouble, and voluntary delisting (also known as Regular delisting, or going private transactions), which occurs when a listed corporation voluntarily revokes its listed status. Furthermore, the going-dark transaction and the going-private transaction are two types of voluntary delisting transactions.

Involuntary delisting is usually the result of corporate restructuring, such as financial difficulty, a merger or acquisition by another company, a change in corporate structure, incorporation with the parent company, ... This often happens when the company no longer meets the exchange's listing requirements or prerequisites (Tutino et al., 2014).

A voluntary delisting, on the other hand, occurs when a publicly traded firm requests the entire withdrawal of its trading access, or when the listing admission is revoked due to non-compliance with issuing criteria (Tutino et al., 2014). The going-dark transaction and the going-private transaction are two types of voluntary delisting. Companies that go private or dark don't have to file with the SEC anymore, thus they are not obligated to release annual and quarterly reports, which may be costly (Lakhal, 2005).

The goal of this research is to analyse the reasons for going-private transactions and not compulsory delisting or the going dark transaction.

Different types and approaches for a going-private transaction

There are dealings that take place before a company becomes private. The acquisition of all publicly held shares by a small group of investors, including present management, is a common feature of the going-private transactions. Shareholders of a public company are bought out in going private transactions (Denis, 1992). Yet not all companies have enough cash on hand to remunerate their shareholders, therefore private equity funds are frequently used to finance transactions. The four main different transactions will be explained in the upcoming paragraphs (LBO, MBO, MBI, and IBO). Additionally, there are four different approaches that firms can employ to undergo a voluntary delisting: a cash-out merger, a sale of all assets by current management, a tender offer, and a reverse stock split (DeAngelo et al., 1984). This paragraph is relevant to give an in-depth explanation of the ways the going-private transaction can take place and help understand the course of action that management take to effectively undertake a going-private transaction.

In the United Kingdom and the United States, leveraged buyouts are the most common sort of going private agreement (Djama, Martinez, Serve, 2012). Leverage buyouts or LBOs were thought to be tremendously rewarding for investors, but only if the acquiring management team could change from a public to private mindset and concentrate on long-term objectives (DeAngelo, 1984). Bedu and Garnier (2018) define Management buy-outs (MBOs) as a buyout where corporate internal managers who become minority or majority shareholders after partic-ipating in the acquisition of the company where they previously worked. The managers that started the acquisition are external to the company in management buy-in (MBI). Managers mandated by a PE fund are known as institutional buyouts (IBOs) (Bedu and Garnier, 2018). Although MBOs and MBIs are frequently confused in research, the distinct responsibilities of insiders and outsiders is important (Amess and Wright, 2007). For example, in an MBO, current managers will have inside knowledge of the company and may be able to use it to their ad-vantage (Robbie and Wright, 1996). Furthermore, according to Robbie and Wright 1996), an MBI usually occurs if the firm's value is undervalued or if the previous team performed poorly.

In the going-private merger, a private company is created as only purpose to merge with the public company. The surviving firm's stockholders are the only equity owners (DeAngelo, 1984). In going private asset sales, the managers, controlling "the private company", buy all the company's asset for cash and redistribute to the shareholders. Going-private tender offers,

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in contrast to the first and second strategies, do not involve a vote and do not require public shareholders to surrender their shares unwillingly (DeAngelo, 1984). Lastly, instead of buying out minor investors to go below the three hundred threshold for deregistration, the company does a massive reverse stock split. This path is a little more complex because stockholder approval is required (Block, 2004).

Reasons for going private

Block (2004) utilizes a survey in his research to ask firms why they choose to delist. The four big answers that came back were the cost of being public, the pressure and time constraint from management, the lack of coverage by security analyst, and the absence of liquidity in the public market.

Research, such as Engel (2007), focus on the passive reasons for delisting following the passage of the Sarbanes-Oxley (SOX) Act of 2002, rather than the active reason for listing rule modifications to encourage relisting in the domestic market. The SOX Act makes being a public corporation more expensive than being a private one. Disclosure requirements, obligatory internal control procedures, constraints on board of director selections, and the cost of averting lawsuits are among these costs (Hu, 2019). According to the replies of the survey, the cost of being public increased from $900k to $1954k after the Sox' implementation. The expenditures of maintaining a listing status, the increased pressure, and the constraints, according to Block (2004), were the primary motivation for turning private.

The requirements of the SOX increased the correctness of the financial reports, because if there would be fraud in the reports, whether intentional or accidental, managers are not protected from criminal prosecution (Block, 2004).

Analyst coverage and liquidity are both another reasons why delisting occurs in the US. Firms with high visibility have a lower information risk because they may attract investors' attention, resulting in more information flow and availability (Hu et al., 2019). According to Renneboog and Simons (2005), analyst coverage of large capitalization stocks with better liquidity is becoming more concentrated. When liquidity is scarce, corporations find it more difficult to access capital markets to fund their expansion by issuing additional shares. Firms can minimize their cost of capital through increasing investor recognition and lowering information

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risk. Thus, they can also raise new cash more easily on the stock market (Hu et al., 2019). If stock is undervalued due to a lack of liquidity or analyst coverage, the costs of maintaining their listing status and complying with regulatory requirements may be unjustifiable, prompting them to delist and become private (Hu et al., 2019).

Other potential benefits of the going-private transaction are to alleviate agency costs (Koenig, 2014). According to Jensen (1986) enterprises that go private suffer from high agency costs, such as ineffective internal governance procedures. Managers and outside stockholders may have competing objectives when it comes to the best dividend policy. The corporation is under pressure from outside stockholders to report big earnings and dividends and on the other side, management stockholders in high tax brackets are more interested in long-term capital gains (Rao et al., 1995). Taking the company private is considered as a solution to the problem.

According to Kim and Sorensen (1986), the agency cost of debt is more substantial for firms whose managers own a small percentage of equity than for firms whose managers own a large percentage of equity since the former group is more prone to make poor investment decisions. As a result of the lack of coordination, these companies are more prone to make inefficient investment decisions. The process of becoming private changes a company's capital structure. After going private, the debt structure gets less complicated as well, existing debts are often repaid using fresh loan facilities negotiated by a syndicate. Prior to being private, the capital structure is prone to severe agency frictions (Guan, 2021).

According to Engel et al. (2007), a corporation decides thus to go private if the costs of being public outweighs the benefits.

The Covid-19 virus was identified in Wuhan, China, at the end of 2019. This virus had spread extensively by March 2020, and it was declared a "global pandemic." Covid-19 has had a tremendous influence not only on financial markets but is also regarded as a humanitarian crisis that is still unfolding in early 2021. (World Economic Forum, 2020). In March 2020, financial markets around the world plummeted as a result of Covid-19, which was regarded as one of the largest crashes in financial history. At the time, the Dow Jones Industrial Average (DJIA) had dropped to 6,400 points, a drop of 26%. This happened in fewer than four trading days (Dang et al., 2020). In many nations, unemployment rates skyrocketed, and practically every industry was badly impacted by the pandemic. Because the stock markets have been substantially impacted by the crisis since March 2020, it presents a useful and rather unusual research opportunity.

There are three reasons why the COVID-19 pandemic is so devastating (Albuquerque, Koskinen, Yang & Zhang, 2020). To begin with, the COVID-19 pandemic is exogenous, as it arose from public health concerns rather than economic conditions. Second, the COVID-19 issue, and the following government actions have disconcerted the global stock markets. Finally, the COVID-19 epidemic caused a stock market meltdown. The shock's speed, as well as its unanticipated and exogenous nature, suggest that businesses had no time to adapt to the crisis as it unfolded.

The financial crisis of 2008-2009 is the most recent and analogous situation to Covid-19, notwithstanding its distinctions, because it has initiated a total drop in stock price comparable to the Covid-19 financial crisis. However, because there are clear differences with the previous economic crisis (i.e., the financial crisis of 2008-2009), Covid-19 can be used to explore firm characteristics for firms undergoing a going-private transaction in severe economic downturns (Holling, 2001). The financial crisis of 2008 taught us a lot, and it's a fantastic place to start for this research. According to Beltratti & Stulz (2009), banks differ in how much they were affected by the financial crisis of 2008 due to factors such as debt, liquidity, and asset types. The initial market sell-off began when the severity of the coronavirus was revealed, and governments throughout the world made steps to combat the virus. This distinguishes the COVID-19 pandemic from the 2008-2009 financial crisis, in which financial risks and imbalances accumulated over a long period of time (Bernanke, 2020). Central banks and governments

swiftly announced strategies to protect their economy from the crisis in order to avert a big recession. Environmental and social issues play a significant role in the recovery plans of many companies and countries.

The COVID-19 crisis is thus unlike any other catastrophe that contemporary generations have seen, but every crisis teaches us something. The shortage of money to invest, makes it more difficult to get new investments for businesses that are in financial crisis and require a cash injection to survive. This is further corroborated by studies by Denis and Denis (1995), which attributed the decline in public-to-private transfers to a shortage of financial resources. The inability to obtain money, as a result of the economic slump of 1990-1991, restricts the ability to acquire company assets. Purchasing corporate assets and transferring them to the private sector is known as a public-to-private transaction. When considering economic conditions alone, however, they have little impact on the volume of public-to-private exchanges (Denis and Denis, 1995). In conclusion, without new investment money in this hostile economic setting, the number of public-to-private transaction could change.

Hypothesis Development

The five streams of literature discussed in the previous sections the going-private transactions, the types of delisting, types and approaches of transactions, their reasons, and the two different crises help built a theoretical framework to create a research question and three hypotheses. To provide reasonable answers in response to this question, the various relevant theories and factors are categorized into three models with 5 hypotheses.

Summarizing the literature explained above, a going-private transaction entails a newly established unlisted company bidding for a publicly traded corporation (Jensen, 1986). It restructures objectives from short-term to long-term by replacing public stock with equity owned by current management (DeAngelo 1984). The goal of this study is to find proof of the impact of turning private on firm characteristics in the quarters before and the quarter of the announcement. With time, financial reports have become more and more important because research and investors base their decision on these accurate reports (Lakhal, 2005). Earnings per share is frequently used in relation to the performance of companies that sell their shares to the public, because investors and potential investors believe that EPS contains important information for predicting future stock prices, as well as assessing the effectiveness of the company's financial management (Hanifah, 2019). Thus, firm value and earnings per share are two important factors in this thesis.

Gunay (2021) uses the Kapetanios m-break unit root test to investigate standalone risk measures such as downside variance, upside risk, volatility skewness, Gaussian VaR, historical VaR, modified Var, and Diebold-Yilmaz volatility spillover to examine shockwave effect of the Covid-19 crisis and the GFC on currency markets. The volatility in the early months of Covid-19 was not as severe as during the GFC, yet when he examines co-movements and volatility spillovers it is eight times bigger during the shockwave of the Covid-19 pandemic than during the GFC. Additionally, unlike the COVID-19 crisis, which arose from public health concerns and was thus exogenous, the GFC arose from within financial institutions. This is why we analyse not only the determinants on their own but during three different periods of whom two are crises, namely the Covid-19 pandemic and the GFC.

The first research will analyse the difference in firm characteristics of companies having filed the SEC13-e3 and their impact on Firm value (FV) and Earnings per share (EPS). This

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analysation will be done for the complete sample and by period (namely, GFC, Neutral, and Covid). Moreover, the differences in firm characteristics during quarters without any drastic shocks such as a going-private announcement are compared to the one where the announcement took place. For that reason, the first hypothesis states that the firm characteristics of the quarters before the announcement have a different impact on the firm value than during the quarter of the announcement. Consequently, the second hypothesis states that the firm characteristics of the quarters before the announcement have a different impact on the earnings per share than during the quarter of the announcement.

Once again, the elements that influence a company's decision to go private are evaluated from two angles: operational performance and stock exchange results. The second research evaluates the differences in trends of the firm characteristics of companies having filed the SEC13-e3 and their impact on Firm value (FV) and Earnings per share (EPS). Hence, in this part of the thesis, only the change between de quarters before and the quarter of the announcement is analysed. Firms face increased financial limits and problems during the crisis period. Raising the necessary capital for a buyout becomes extremely difficult, reducing the likelihood of a voluntary delisting (Croci, 2014). The companies' principal goal is to survive and overcome the challenges given by the environment. As a result, businesses cannot afford the additional expenditures of being public and are more inclined to delist during these difficult times (Croci, 2014). In consequence, the third hypothesis expresses that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on firm value is different in a normal and in a crisis state. Ergo, the fourth hypothesis states that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on EPS is different in a normal and in a crisis state.

The third research model will inspect the correlation of trends of firm characteristics with the probability of delisting by comparing firms that in fact underwent a delisting after their announcement with those who stayed public after their announcement. All firm characteristics before the announcement will be analysed to see whether there is a difference. Firms can be inactive on the stock market for many reasons. Therefore, to avoid any misinterpretation of the stock's status, only enterprises having filed forms 15 or 25 will be considered delisted. In

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consequence, the fifth and last hypothesis declares a possible difference in firm characteristics between the firms that delisted and the ones that stayed public.

There is an important point to be addressed about the private announcement. There's a risk that there won't be many announcement dates available. Once the announcement is done, firms are also more private with their information and thus databases will sometimes lack in data during the quarters of the announcement and after. However, we'll go through data selection and sample in the next part.

The preceding hypotheses are presented in a new light according to the null hypothesis and are chosen to better understand the principal goal of the thesis.

H1: The firm characteristics of the quarters before the announcement have the same impact on the firm value as during the quarter of the announcement.

H2: The firm characteristics of the quarters before the announcement have the same impact on the EPS as during the quarter of the announcement.

H3: The change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on firm value is different in a normal and in a crisis state.

H4: The change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on EPS is different in a normal and in a crisis state.

H5: The change in firm characteristics between firms that delisted and the ones that stayed public are the same for the quarter before the announcement.

Data gathering and sample

The main sources of information for this research are academic articles that are in line with the subject of going private, articles, both theoretical and empirical, that help construct justification of the specific factors used in this research, and articles devoted to econometric models to support the empirical part of this research. In addition to these necessities, a database should be created to analyse and regress in STATA, a statistic, and data science software. For this, a scrutinization of websites, such as SEC LiveEgder (for the dates and information on the delisting), WRDS, and Compustat, (for further information on the variables per quarter) is needed. The US shares a lot of information, so this will be the chosen sample location.

Data sample selection

For this thesis, a sample of firms that announced the going-private transactions are selected. To avoid the bias and impact of SOX's implementation in 2002 the research analyses two big financial crises after this date and an average economic situation. The sample of enterprises has announced their going-private transaction during the sample period of 2007 to 2008 and 2018 to 2021.

When a company announces its going-private transaction, the firm must file a SEC13E-3. Thus, the data is based on firms having filed the SEC13E-3. Companies must disclose complete information regarding the going-private transaction. Furthermore, all firms that filed form 15 and form 25 after 2007 until 2021 are looked at for the third part of our research and match by hand those of our 274 firms that did in fact filed none, one, or both files. Form 15, also known as the Certification and Notice of Termination of Registration, states that the company has ceased to be a public company and has most likely converted to a privately held company or stopped doing business completely. Form 25 is the Notice of the removal from listing and registration of matured, redeemed, or retired securities. Engel (2007) as well retrieved all SEC schedule 13E-13 filing for the tracked period, checking SEC forms 15 and 25 to ensure the deal was completed. The announcement date and the definitive delisting could differ between 1-12 months. Firms that just go dark can be excluded after this phase. By looking on Bloomberg at all firms that filed the SEC13E-3 form during the sample period of 2007-2008 and 2018-2021

in North America selected initially were 274 firms. For those 274 firms, the ISIN to gather the rest of the information more easily on other databases is found.

Additionally, firm characteristics for each firm must be found. Through different databases such as WRDS and Compustat, firm characteristics (each one explained in the following paragraph) for each firm are found. For this model to work, data of the firm for four quarters before and the quarter of the SEC13e-3 filing need to be obtained.

	All periods	07-08 GFC	18-19 Neutral	20-21 Covid	Of whom delisted
SEC filing 13-e3	274	151	52	71	57.61%
Fundamentals found	179	73	51	55	51,39%
Ratios found	85	43	23	19	52,94%
Total going-private firms	81	39	23	29	51,85%

Table 1: sample screening process

Once the firm is private, the requirements to make firm-specific information public are not present anymore. Thus, the sample includes all accessible data from all relevant databases for the most recent years. After long research, data for quarters after the SEC13e-3 filing were quite difficult to find for the majority of the firms and thus were not used in this research. Following the first screening process of the firm's fundamentals, a total of 179 firms were left over because firm characteristics were not found. Furthermore, for a few firm ratios that are not computed through firm characteristics, only a total of 85 firms out of the 277 firms were found. However, a total of 81 firms had all the necessary firm variables to calculate our firm characteristics for nearly every quarter. As seen in table1, the number of companies is also organized by period. The sample starts with a total of 151 firms for the GFC and ends with 39, 52 to 23 for the neutral period, and 71 to 29 for the Covid-19 crisis. Not all firms had all their quarters with complete accounting information, for example, the quarter of the announcement at times lacked data due to the privatization of the firm. Hence, for the different regressions and different models a few extra observations were dropped, this will be seen in the regression panels in the Results chapter.

Moreover, this kind of drastic drop in the availability of data is quite generic for this line of subject. Reading through different papers and other thesis has made me aware of the

general 90% to 60% drop in sample size through the elimination process. Previous literature reports a small sample size in their works. For example, Magni et al. (2021) had initially a sample of 1814 listed firms and dropped to 383 for the final sample. Furthermore, Pezzi's (2018) sample dropped from 225 to 140 firms, Makrominas' (2021) from 185 to 92, and Gao's (2017) from 343 to 118.

Firm Variables

On behalf of the above-mentioned literature review, a collection of firm characteristics that are used in these three different types of research will be mentioned and explained. The table 2 below shows all variables used, what they control for, and some further explanations. Following the list of variables will be a correlation matrix. All formulas and proxies have been found on WRDS and have been retrieved from Compustat.

	Variable	Further Explanation
Firm value	Tobins Q	(Total assets + (Common Shares Outstanding* Price Close)- Common/Ordinary Equity)/ total assets
Earnings per Share	EPS	Net Income / Common Shares Outstanding
Size	Firm size	Log of Total Assets
Leverage Ratio	Debt proxy	Total Liabilities / Total Assets
Investment Activities	Investment level	Capex / net sales
Undervaluation	PB	Share Price/Book Value per Share
Performance	Return on Asset	ROA
Performance	Return on Equity	ROE
Period	GFC (2007-2008) Neutral (2018-2019) Covid-19 crisis (2020-2021)	

Table 2: firm variables

Firm value

Tobin's q has been utilized as a proxy in many previous research where company value is a variable (Russo, 2013). In this research firm value is both a dependent and independent variable contingent on the model/regression Furthermore, Tobin's Q is widely acknowledged as providing a superior cross-firm comparison than other accounting measures (Lang & Stulz,

1994). Being a public or private corporation comes with various fees and perks. Those are often the driving force behind a company's decision to go private. The perks of being undergoing the going-private transactions are listed in the theoretical framework.

Earnings per Share

The second dependent variable, and once independent variable, is earnings per share (EPS), which is reported in quarterly earnings releases. EPS is calculated by dividing a company's net income by the number of common shares outstanding, meaning EPS is influenced by how well the company is doing. Regulations S-X from the SEC obligates firms to release annual and quarterly reports, which help researchers, investors, are others have accurate information (Lakhal, 2005). Earnings per share is frequently used in relation to the performance of companies that sell their shares to the public, because investors and potential investors believe that EPS contains important information for predicting future stock prices, as well as assessing the effectiveness of the company's financial management (Hanifah, 2019). The higher the EPS value, the bigger the profit provided to shareholders, which in course, encourages shareholders.

Firm size

The firm size is the first independent variable. This research uses the logarithm of the total assets of the firm to apprehend this characteristic. This data has been converted in the LOG format to improve the test results since it takes the outliners into account. The scale of a company is expected to have a detrimental impact on its choice to go private. Smaller firms are more likely to go-private than large-cap firms (Rao, 1995). A large portion of these companies are cash rich and can provide in-house financing source for going-private transactions and for post-privatization funding requirements (Hu et al., 2019).

Leverage ratio

The leverage ratio can reflect the financial status of the company and/or the debt burden and is represented by dividing total liabilities with total assets. Availability of equity markets is one of the key advantages of having a public company. According to this logic, when a company's requirement for external finance is lessened, there are fewer benefits to being listed, and the majority shareholders may elect to delist the company (Martinez and Serve, 2011). As a

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result, businesses without significant investments or future development prospects are more likely to become private (Bharath and Dittmar, 2010).

Investment level

Capital expenditure divided by net sales gives the capex ratio and can be used to determine a company's investment level. According to Greenwood et al. (2009), firms with lower capex ratios prefer to delist from the stock market.

Undervaluation

The price-to-book ratio (share price divided by the book value per share) is used as a proxy for undervaluation. According to Hu et al. (2019), undervaluation theory is one of the main reasons for firms going private, the more serious the undervaluation problem, the more likely management will decide to take the company private. According to Kalay and Loewenstein (1985) the undervaluation theory, becoming private should benefit shareholders because the company is projected to generate more value after it is private. Delisting, according to Ventoruzzo (2010), occurs when market prices do not adequately reflect a firm's genuine value. The shareholders and managers' goals in this situation would be to conceal the firm's true value and avoid opportunity costs associated with undervaluation. Thus, when management representatives believe that a company's stock is undervalued, they can choose to delist for strategic reasons to reap personal profits and avoid the costs of maintaining the listing.

Firm Performance

To control for firm performance, return on asset (ROA) and return on equity (ROE) are used. Return on Equity is calculated as net income over the common stock equity value. Return on Asset, accordingly, is calculated as net income over total assets.

Period

For the first part of the crisis, three different periods are used. First, we analyse all the previously mentioned firm characteristics between 2020-2021 and 2018-2019. Firms face increased financial limits and problems during the crisis period. Raising the necessary capital for a buyout becomes extremely difficult, reducing the likelihood of a voluntary delisting (Croci,

2014). This will show thus show the difference between an average economic situation, like before the Covid-19 crisis, and an economic downturn like the Covid-19 crisis. Secondly, the two crises in between them are analysed. A comparison of the Great Financial Crisis and the Covid-19 crisis is given and their differences. While both crises on surfaces look similar, they differ in speed and scale. Furthermore, the GFC arose from within financial institutions, in comparison to the COVID-19 crisis which emerged from public health concerns and is thus exogenous. Furthermore, a dummy variable is made about whether the announcement of the going-private transaction takes place during a crisis or not. These three different periods or the crisis dummy will each be used in their way during the research of this thesis.

Multicollinearity (matrix and VIF)

It is critical in research that the variables do not have a perfect linear connection, or else multicollinearity could arise. According to Alin (2010), multicollinearity's biggest issue is that it can result in an unreliable coefficient, which makes it hard to analyze the effect of an independent variable on a dependent variable. The variance inflation factor (VIF) analysis is used in this study to determine multicollinearity for the variables in the various regressions. According to Franke (2010), a VIF level of less than 10 and a tolerance of greater than 0.1 is appropriate. The results of the tests for are shown in the appendix in Table 10. All variables have a VIF of less than ten and a tolerance of greater than 0,5. As a result, no multicollinearity is anticipated.

	Tobin Q	∆EPS	logassets	debt/asset	capex ratio	price/book	ROA	ROE
Tobin Q	1,0000							
∆EPS	0,3900	1,0000						
logassets	-0,1668	0,4397	1,0000					
debt/asset	-0,0974	0,1755	0,2959	1,0000				
capex ratio	0,0074	0,1508	0,1868	0,6350	1,0000			
price/book	0,5305	0,2625	-0,1530	0,1034	0,0513	1,0000		
ROA	-0,3014	0,1634	0,1175	0,1349	0,1004	-0,0765	1,0000	
ROE	-0,2718	0,0996	0,3042	-0,0417	-0,0300	-0,2750	0,5773	1,0000

Table 3: correlation matrix

When discerning the various relations between the chosen variables, mostly P/B and Tobin Q, a possible correlation could arise. Therefore, a correlation matrix is needed to further

prove the validity of this thesis. A correlation matrix is a straightforward approach to summarizing all the variables in a dataset's correlations. A totally negative linear correlation between two variables is indicated by -1, 0 means that there is no linear relationship between two variables and a complete positive linear correlation between two variables is indicated by 1. Table 3 shows that the greatest correlation happens between the capex ratio and the debt-to-asset ratio with a positive coefficient of 0,64. Furthermore, other correlation above 0,5 consist of the return on equity and the return on asset. Additionally, the Tobin Q is correlated with the price-to-book ratio with a coefficient of 0,53. Tobin Q reflect the firm value through multiple proxies. The formula utilized in this thesis comes from WRDS, but the market-to-book ratio could be used too. This could explain the nor weak not high correlation in between these variables. These little correlations could signify that multicollinearity appears in this research, even though no strong correlation appears in the matrix.

Methodology

As mentioned before, this research will contain three main questions. The first research examines the difference in firm characteristics in going private firms in the quarters before the announcement and the quarter of the announcement and their impact on the earnings per share and the firm value. The second model will be used to analyse different firm characteristic trends around the announcement date of the going-private firms and their differences in different economic situations. Lastly, the differences in firm characteristics between the firms that went through the delisting process after their announcement and the ones that stayed public and their correlation with the probability of delisting are explored. These three types of research help answer the research question of this thesis namely, **what firm characteristics are determinants for a company undergoing a going-private transaction and are these the same in different economic settings?**

The first research using panel data will try and answer the first and second hypotheses. Data Panel Regression is a cross-section and time-series combination in which the same unit is measured at different times. In other words, panel data is information from a group of people or companies who were observed over a period of time. If T amount of time periods (t = 1, 2..., T) and N amount of people I = 1, 2..., N) occurs, there will be a total observation units of N x T with panel data. While other data types, namely: time-series data and cross-section. In time series, one or more variables will be observed on one observation unit within a certain time frame. While data cross-section is the observation of several units of observation in a single point of time (Zulfikar, 2019).

Using common knowledge, a Fixed Effects model is used for this research (industry and year fixed effects). However, as a supplementary security measure, a Hausmann test can be carried out. The Hausman test is a statistical test to select whether the most appropriate Fixed Effect (FE) or Random Effect (RE) model is used; if $p > 0.05$ select RE, if $p < 0.05$ select FE. A Fixed Effects model believes that individual differences may be addressed by using different intercepts. Different intercepts can occur due to changes in work, managerial, and incentive cultures, hence a dummy variable technique was used to estimate Fixed Effects model panel data to reflect the differences between intercept firms (Zulfikar, 2019).

Two different regressions will be used with two different dependent variables; EPS and firm value, represented by Tobin's Q. The independent and control variables will be the same for both regressions and based on previous literature (Martani et al., 2009): firm size, leverage ratio, investment activities, undervaluation, ROE, and ROA. In addition, to have a more accurate explanation of the research question, an analysis of the quarters before the announcement separately than the quarter of the announcement is made. This is done in the interest of a more complete analysis of the announcement shock on the firm variables. Furthermore, the regression by period is sorted, namely the GFC, neutral, and the Covid-19 crisis, to illustrate the difference in firm characteristics by economic setting. The baseline is as follows:

$$FV_{it} \: and \: _{\Delta}EPS_{it}$$
$$= \alpha_{it} + \beta 1_{it} * firmsize_{it} + \beta 2_{it} * debt/asset_{it} + \beta 3_{it} * capexratio_{it}$$
$$+ \beta 4_{it} * P/B_{it} + \beta 5_{it} * ROA_{it} + \beta 6_{it} * ROE_{it} + \beta 7_{i5} * firmsize_{i5} + \beta 8_{i5}$$
$$* debt/asett_{i5} + \beta 9_{i5} * capexratio_{i5} + \beta 10_{i5} * P/B_{i5} + \beta 11_{i5} * ROA_{i5}$$
$$+ \beta 12_{i5} * ROE_{i5} + \varepsilon_{it}$$

Where i stand for the companies and t for the time periods (quarters), namely 1, 2, 3, and 4 before the announcement and 5 the quarter of the announcement. ΔEPS_{it} and FV_{it} are the dependent variables. The constant is represented by αi, the independent and control variables by their corresponding variable names, with each a corresponding β coefficient. Lastly, the regression contains an error term.

To empirically analyse the effect of firm size, leverage ratio, investment activities, undervaluation, ROE, and ROA on earnings per share and/or firm value around the announcement, a cross-sectional method is applied (hypothesis 3 and 4). A cross-sectional model is one of the most used and common techniques in multivariate analysis. This model analyses only the change in firm characteristics between the quarter before and of the announcement, this will give us a truer explanation of the impact of the going-private announcement on the firm characteristics. Additionally, we scrutinize the different economic settings of the data by using a crisis dummy. The baseline of the regression states:

$$\Delta FV_i \text{ } and \text{ } \Delta EPS_i$$
$$= \beta 0_i + (1 + crisisdummy)$$
$$* \left\{ \beta 1_i * \Delta firmsize_i + \beta 2_i * \Delta debt/asset_i + \beta 3_i * \Delta capexratio_i + \beta 4_i \right.$$
$$\left. * \frac{\Delta P}{B}_i + \beta 5_i * \Delta ROA_i + \beta 6_i * \Delta ROE_i \right\} + \varepsilon_i$$

As presented above, the dependent variables are change in EPS a change in firm value. The constant is represented by $\beta 0$ and the independent variables by their matching variable labels, with each a corresponding β coefficient. Lastly, the regression contains an error term and each i indicates a firm in the data sample.

The last regression uses a binary logit model to analyse the correlation of firm characteristics between firms that underwent the delisting and firms that stayed public after their going-private announcement with the probability of delisting, and thus answer the fifth and last hypothesis. For this, the data of the two quarters before the announcement is needed to calculate the change in firm characteristics for the quarter before the announcement. The dependent variable is binary since it will represent "delisting", with a value equal to 1 and 0 meaning delisting and staying public respectively. The model regression will look like this:

$$Delisting_i = \alpha_i + \beta 1_i * \Delta FV_i + \beta 2_i * \Delta EPS_i + \beta 3_i * \Delta firmsize_i + \beta 4_i * \Delta debt/asset_i$$
$$+ \beta 5_i * \Delta capexratio_i + \beta 6_i * \frac{\Delta P}{B}_i + \beta 7_i * \Delta ROA_i + \beta 8_i * \Delta ROE_i + \varepsilon_i$$

Where i stand for all the individual companies. The delisting dummy, a binary variable, is the dependent variable. The constant is represented by αi, the independent and control variables by their corresponding variable names, with each a corresponding β coefficient, and an error term is present.

Furthermore, Tobin Q is calculated through the following formula: (total assets + (common shares outstanding * close price) – common equity)/ total assets and EPS is calculated by dividing net income with common shares outstanding. This formula was found on the WRDS website under the list of variables.

Interpretation of the Results

This section contains the results of the various regressions mentioned before, as well as the conclusions drawn from the hypotheses. First and foremost, there are summary statistics. The second portion contains the result and analysis of the panel data model. It examines the difference in firm characteristics in going private firms in the quarters before the announcement and the quarter of the announcement and their impact on the firm value and earnings per share. The third part consists of the result and analysis of the cross-sectional regression; the difference in firm characteristic trends around the announcement date of the going-private firms, and their differences in different economic situations. Finally, the results and analysis of the logit model, the correlation in firm characteristics between the firms that went through the delisting process after their announcement and the ones that stayed public with the probability of delisting, will be discussed. All the regressions are run with the statistical program STATA/MP 15.1.

Descriptive statistics

Variable	ALL					GFC				
	#	mean	std. dev.	min	max	#	mean	std. dev.	min	max
Tobin Q	358	1.854	2.114	0.524	27.30	174	1.720	1.071	0.682	8.406
∆EPS	358	24.41	23.22	0	136.7	174	23.18	18.28	0.130	86.80
logassets	358	6.546	1.843	2.956	11.71	174	6,196	1,7	2,985	11,71
debt/asset	358	0.594	0.285	0.0167	1.574	174	0.570	0.260	0.0454	1.092
capex ratio	358	0.415	0.771	0	7.305	174	0.323	0.293	0	1.208
price/book	358	3.522	7.818	0	60.92	174	3.024	4.440	0	32.42
ROA	358	0.0517	0.187	-0.904	1.027	174	0.106	0.160	-0.133	1.027
ROE	358	-0.0369	0.420	-2.718	2.330	174	0.0264	0.293	-1.719	0.929

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Variable	Neutral					Covid				
	#	mean	std. dev.	min	max	#	mean	std. dev.	min	max
Tobin Q	104	2.141	3.426	0.679	27.30	80	1.770	1.490	0.524	10.94
ΔEPS	104	29.19	32.51	0.160	136.7	80	20.88	16.79	0	69.12
logassets	104	6.642	2.003	2.956	10.86	80	7.183	1.759	4.351	10.80
debt/asset	104	0.614	0.258	0.201	1.189	80	0.621	0.358	0.0167	1.574
capex ratio	104	0.375	0.385	0	1.705	80	0.669	1.488	0	7.305
price/book	104	5.169	12.91	0	60.92	80	2.461	3.256	0	18.83
ROA	104	0.00932	0.171	-0.744	0.305	80	-0.0103	0.227	-0.904	0.167
ROE	104	-0.108	0.625	-2.718	2.330	80	-0.0825	0.290	-1.233	0.359

Table 4: descriptive statistics (complete sample and per period)

The number of observations for the complete sample is 358, with almost always 5 observations per company. The GFC contains 174 observations of the sample, the neutral period holds 104, and the Covid crisis 80. For the Tobin Q and the change in EPS, the general mean is 1.9 and 24.4 respectively, it is a bit lower in times of crisis because there are not as much higher numbers. However, for the variable firm size (log of assets), we depict a higher mean for the Covid-19 period because the minimum is quite higher. For the leverage ratio (debt/asset), the largest range and mean is within the Covid period. Nevertheless, the price-to-book ratio is much larger in mean and range for the neutral period. The control variables for performance, ROA and ROE, are the highest for the GFC and the neutral period respectively.

Results for the Fixed effect model (firm value)

Table 5 illustrates the results of the panel data for the complete sample and by period. The dependent variable in this table is the firm value, all the independent and control variables mentioned in the previous chapters are displayed as well.

VARIABLES	ALL		GFC		Neutral		Covid	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Tobin Q	Tobin Q	Tobin Q	Tobin Q	Tobin Q	Tobin Q	Tobin Q	Tobin Q
logassets	-2.468***	-2.578***	-1.191***	-1.184***	3.269**	2.797*	-7.287***	-7.323***
	(0.603)	(0.609)	(0.363)	(-0.348)	(1.473)	(1.411)	(0.847)	(0.889)
debt/asset	7.350***	8.038***	-4.031***	-1,784	19.81***	21.84***	-2,006	-2,166
	(1.332)	(1.410)	(1.507)	(-1.554)	(2.139)	(2.118)	(2.167)	(2.294)
capex ratio	-0.332	-0.329	-0.591	-0,971	-4.270***	-5.115***	-0,216	-0,105
	(0.523)	(0.578)	(0.931)	(-0.9)	(1.197)	(1.169)	(0.426)	(0.507)
price/book	0.0312***	0.0294***	-0.02**	-0.076***	0.0235***	0.0211***	0.138**	0.13*
	(0.00808)	(0.00849)	(0.01)	(-0.015)	(0.00705)	(0.00666)	(0.063)	(0.066)
ROA	0.903	0.925	2.188***	2.624***	-12.46***	-12.94***	1,374	1,398
	(1.255)	(1.283)	(0.829)	(-0.8)	(2.489)	(2.424)	(2.138)	(2.257)
ROE	-0.0919	-0.138	-1.526***	-0.964***	0.243	0.213	-0,312	-0,445
	(0.290)	(0.322)	(0.336)	(-0.349)	(0.257)	(0.276)	(0.971)	(1.098)
logassets 5		0.0720		0,041		0.0669		0,315
		(0.0502)		(-0.028)		(0.0833)		(0.385)
debt/asset 5		-0.687		-0,419		-2.017		-3,151
		(0.619)		(-0.377)		(1.512)		(3.746)
capex ratio 5		0.0818		0,198		0.468		0,618
		(0.221)		(-0.396)		(1.019)		(0.704)
price/book 5		0.0116		0.094***		-0.0186		0,3
		(0.0321)		(-0.023)		(0.363)		(0.346)
ROA 5		-2.961**		-2.696***		4.276		-11,186
		(1.285)		(0.793)		(3.382)		(14.972)
ROE 5		0.431		-0,121		0.0200		-0,015
		(0.355)		(-0.291)		(0.770)		(2.928)
Constant	13.62***	13.95***	11.462***	10.339***	-30.11***	-27.83***	55.151***	55.42***
	(3.926)	(3.952)	(-2.317)	(-2.247)	(9.611)	(9.185)	(-5.968)	(6.249)
Observations	358	358	174	174	104	104	80	80
R^2 within	0.2383	0.2600	0.3673	0.4773	0.8185	0.8523	0.6056	0.6253
R^2 between	0.0169	0.0155	0.0742	0.0622	0.0001	0.0018	0.0881	0.0899
R^2 overall	0.0208	0.0194	0.0786	0.0732	0.0032	0.0083	0.0642	0.0657
# companies	80	80	38	38	23	23	19	19

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: panel data results for firm value (complete sample and by period)

For the complete data sample, thus 395 observations, we observe four variables that have a significant influence on the firm value, without accounting for the constant. Starting with the firm size (log of assets), which is significant under the 1% level, we distinguish that if the firm size increases by 1%, the firm value declines by 2,5. When we add the distinction of the quarter of the announcement with the quarters before the announcement, we analyse that when firm size increases by 1% it declines the firm value by 2,6 in the quarters before the announcement instead of 2,5 (not significant) in the quarter of the announcement. When the leverage ratio (debt-to-asset) increases by 1% we discern a 7,4 increase in the firm value under the 1% level of significance. When adding the distinction of the quarters, the firm value rises by 5,9 in the quarters before the announcement under the 1% level of significance and rises by only 8 in the quarters before the announcement and by 7,4 in the quarter of the announcement. The proxy for undervaluation, namely the price-to-book ratio, indicates a 0,03 increase of the firm value with each 1% increase of its variable under the 1% significance level. In this case, the difference between the quarters before the announcement and the quarter of the announcement is essentially small and insignificant (-0,001). Furthermore, one variable is only significant in the quarter of the announcement after the distinction in the regression. A 1% increase in the return on assets declines the firm value by 2 under the 5% level of significance in the quarter of the announcement instead of increasing it by 0,9 such as in the quarters before the announcement. A summary of the other (insignificant) variables will nevertheless be explained. The investment activities have a negative relationship with the firm value during all quarters but greater in the quarters before the announcement. A possible explanation for the insignificance, is that capital expenditure has a seasonal component and thus is sometimes unable to accurately reflect overall investment levels (Pour & Lasfer, 2013). Lastly, return on equity undergoes a negative relationship in the quarters before the announcement and a positive relationship in the quarter of the announcement. The first null hypothesis stated that the firm characteristics of the quarters before the announcement have the same impact on the firm value as during the quarter of the announcement. We can conclude, due to the firm size, debt-to-asset ratio, and the price-to-book ratio that there is a significant difference in the quarters before the announcement and due to ROA that there is a significant difference in the quarter of the announcement, and thus reject the hypothesis.

For the GFC, neutral period of 2018-2019, and the sample taking place during the covid-19 crisis differences are spotted, only the ones with statistical significance will be mentioned,

apart from the constant. For the GFC we see that for the complete sample the firm size, the debt-to-asset ratio, and the return on equity are all negatively related to the firm value under the 1% significance level. The price to book ratio is negatively related to the firm value under the 5% level and the return on assets however is positively related to the firm value under the 1% significance level. When adding the distinction of the quarters before and the quarter of the announcement distinctions can be made. Firm size is negatively related to firm value under the 1% level of significance for the quarters before the announcement to firm value. The price-to-book ratio is negatively related to firm value under the 1% level for the quarters before the announcement and positively related to firm value in the quarter of the announcement under the 1% level of significance. Return on asset is positively and negatively related to the firm value in both the quarters before and of the announcement respectively under the 1% level of significance. Return on equity is only significant in the quarters before the announcement under the 1% level and has a negative relationship with firm value. For the neutral economic setting for the complete sample, five variables of the six are significant: firm size under the 5% level and debt-to-asset ratio, Capex ratio, price-to-book ratio, and ROA under the 1% level of significance. Firm size, debt-to-asset ratio, and price-to-book ratio have a positive relationship with the firm value. Yet, the Capex ratio and the ROA have a negative relationship with the firm value. The distinction of the quarters applied, five variables are under the 1% level of significance, and all occur during the quarters before the announcement. First, the firm size is positively related to firm value in both periods, yet to a greater extent in the quarter of the announcement. The debt-to-asset ratio and the price-to-book ratio have a positive relationship with the firm value in all quarters, but with a smaller amount in the quarter of the announcement. Lastly, the Capex ratio and the ROA both are negative in both periods, although with a smaller impact in the quarter of the announcement. Finally, we analyse the data taking place during the Covid-19 crisis and find 2 significant variables, aside the constant. The firm size is negatively related under the 1% significance level and the price-to-book ratio is positively related under the 5% significance to the firm value. Adding the distinction keeps the firm size negatively related under the 1% significance level for the quarters before the announcement and the price-to-book ratio stays positively related to the firm value under the 10% significance level.

Table 6 illustrates the results of the panel data for the complete sample and by period. The dependent variable in this table is the change in earnings per share, all the independent and control variables mentioned in the previous chapters are displayed as well.

VARIABLES	ALL		GFC		Neutral		Covid	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	ΔEPS	ΔEPS	ΔEPS	ΔEPS	ΔEPS	ΔEPS	ΔEPS	ΔEPS
logassets	3.310	3.135	3,46	2,574	35.91**	36.75**	-19.581**	-18.895***
	(4.554)	(4.567)	(-5.016)	(5.083)	(13.94)	(14.02)	(7.838)	(6.858)
debt/asset	47.55***	44.18***	-1,875	5,324	106.6***	109.6***	-7,682	-19,035
	(10.05)	(10.58)	(-20.803)	(22.702)	(20.24)	(21.05)	(20.045)	(17.702)
capex ratio	-2.799	0.453	-2,657	-4,102	-23.37**	-25.75**	-2.181***	2,563
	(3.946)	(4.336)	(-12.856)	(13.145)	(11.33)	(11.62)	(3.938)	(3.909)
price/book	0.198***	0.182***	0,015	-0,341	0.141**	0.131*	2,11	1.812***
	(0.0610)	(0.0637)	(-0.132	(0.22)	(0.0667)	(0.0662)	(0.582)	(0.513)
ROA	2.568	6.708	10,031	15,453	-69.27***	-65.88***	9,725	16,726
	(9.474)	(9.631)	(-11.453)	(11.69)	(23.56)	(24.08)	(19.777)	(17.411)
ROE	-0.616	-2.487	-6,656	-2,693	1.122	-1.423	-0,361	-8,683
	(2.192)	(2.414)	(-4.638)	(5.097)	(2.429)	(2.745)	(8.986)	(8.475)
logassets 5		0.0705		0,324		-0.893		2,116
		(0.377)		(0.404)		(0.828)		(2.971)
debt/asset 5		1.592		-3,991		8.205		-17,972
		(4.647)		(5.503)		(15.02)		(28.901)
capex ratio 5		1.983		8,041		-1.070		5,444
		(1.657)		(5.783)		(10.12)		(5.435)
price/book 5		0.0988		0,498		-0.773		2,597
		(0.241)		(0.336)		(3.610)		(2.672)
ROA 5		-21.00**		-21.798*		-1.337		-58,886
		(9.642)		(11.575)		(33.60)		(115.525)
ROE 5		5.709**		3,093		8.061		20,04
		(2.665)		(4.252)		(7.654)		(22.595)
Constant	-25.21	-23.81	2,735	4,63	-266.0***	-272.4***	162.631***	160.872***
	(29.63)	(29.66)	(-31.997)	(32.823)	(90.97)	(91.26)	(55.211)	(48.217)
Observations	358	358	174	174	104	104	80	80
R2 within	0.1735	0.2064	0.0188	0.0934	0.6299	0.6680	0.2191	0.4840
R2 between	0,0925	0,0913	0.2942	0.2851	0.1407	0.1439	0.2122	0.2180
R2 overall	0.1136	0,1121	0.2617	0.2779	0.1532	0.1567	0.2083	0.2028
# companies	80	80	38	38	23	23	19	19

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: panel data results for EPS (complete sample and by period)

For the complete data sample, we see that two variables have a significant effect on the change of the EPS. Following the announcement of going private, the company could already be focusing more on future ambitions and less on short-term or quarterly earnings. In light of the foregoing, earnings per share commonly rises during the quarter of the announcement (DeAngelo, 1984 & Lehn, 1989). First, the debt-to-asset ratio, namely the leverage ratio is significant under the de 1% level and the coefficient is positive. This means that if the leverage ratio increases, the change in EPS increases too by 47,5. When adding the distinction between the quarters before the announcement and the quarter of the announcement we have a similar result (44,8) that is significant under the 1% level. The amount of change in EPS, on the other hand, grows (not significantly) more during the quarter of the announcement than the quarters before the announcement if the debt-to-asset ratio increases. If the price-to-book ratio rises by 1%, the change in EPS rises by about 0,2%. However, the change in EPS, per 1% increase in the price-to-book ratio, which indicates the undervaluation of a stock, grows significantly by 0,2% in the quarters before the announcement and by 0,3% (not significantly) in the quarter of the announcement. Some coefficients are only significant when adding the distinction; the return on equity and the return on assets are both significant in the quarter of the announcement at the 5% level. A 1% rise in the return on assets declines the change in EPS by 14,3% in the quarter of the announcement instead of increasing it by 6,7% such as in the quarters before the announcement. When the return on equity rises by 1%, the change in EPS rises by 3,2% in the quarter of the announcement instead of declining by 2,5% (not significantly), such as in the quarters before the announcement. Nonetheless, a summary of the other insignificant variables is mentioned. An increasing firm size and an increasing capex ratio, reflecting the firm's investment activities, make the change in EPS increase as well, even more in the quarter of the announcement. We can conclude, due to the ROE and ROA, that there is a significant difference in the quarter of the announcement, and due to the debt-to-asset ratio and the price-to-book ratio that there is a significant difference in the quarters before the announcement. Hence, we reject the second null hypothesis that the firm characteristics of the quarters before the announcement have the same impact on earnings per share as during the quarter of the announcement. This finding is consistent with Lehn and Poulsen (1989), who found that announcement news continues to affect stock prices the days before, the day of and after the announcement.

For the GFC, neutral period of 2018-2019, and the sample taking place during the covid-19 crisis some differences are spotted once again. For the GFC we see that for the complete sample no significant variables. When adding the distinction between the quarters before and of the announcement, one variable is significant. Return on assets is significantly and negatively related to the change in EPS during the quarter of the announcement under the 5% level, opposite to a positive relationship in the quarters before the announcement. For the neutral economic setting for the complete sample, five variables of the six are significant besides the constant: debt-to-asset ratio and ROA under the 1% level, firm size ratio and Capex ratio under the 5% level of significance, and price-to-book ratio under the 5% level in the first regression and under the 10% level when adding the distinction of the quarters. The distinction applied; the significant variables all occur during the quarters before the announcement. Firm size has a positive relationship with the change in EPS for all quarters, but greater before the announcement. The debt-to-asset ratio has a positive relationship with the firm value in all quarters, but with a smaller amount in the quarters before the announcement. The coefficients of the Capex ratio and the ROA are negative in both quarters, although with a bigger impact in the quarter of the announcement. Lastly, the price-to-book ratio is positive in the quarters before the announcement yet negative in the quarter of the announcement. To conclude, we analyse the data taking place during the Covid-19 crisis and find two significant variables, besides the constant. The firm size and the Capex ratio are negatively related under the 5% and 10% significance level respectively without the distinction of the quarters. However, considering the distinction, firm size and the price-to-book ratio are significant under the 1% level. If the firm size rises by 1% in the quarters before the announcement, change in EPS declines by 18,9%, and by 16,3% in the quarter of the announcement. Additionally, the price-to-book ratio is negatively related to the change in EPS during both before the announcement and during the quarter of the announcement.

Results for the Ordinary Least Squares model

Table 7 depicts the results of the cross-sectional model for the complete sample and with a distinction between economic settings by using a crisis dummy. We analyse the impact of the change in firm characteristics between the quarter before and of the announcement on the change in firm value and earnings per share for the same period. Furthermore, we add a

crisis dummy to compare both economic settings. This research has less significant values than the panel data but is still interesting to interpret.

VARIABLES	(1) ΔTobin Q 5	(2) ΔTobin Q 5	(1) Δ EPS 5	(2) Δ EPS 5
Δ logassets 5	-2.921	8.656***	1.296	-1.455
	(2.480)	(3.138)	(3.418)	(6.196)
Δ debt/asset 5	0.720	5.626***	0.0250	-2.199
	(0.462)	(0.929)	(0.636)	(1.835)
Δcapex ratio 5	0.00189	0.00154	-0.00832	0.0282
	(0.00584)	(0.0156)	(0.00805)	(0.0307)
Δprice/book 5	0.0815	0.178	-0.141	-0.187
	(0.0806)	(0.119)	(0.111)	(0.236)
Δ ROA 5	-0,00925	-0.00597	0.0176	-0.107
	(0.0172)	(0.0537)	(0.0238)	(0.106)
Δ ROE 5	-0.00294	-0.00489	-0.000146	-0.0265
	(0.00523)	(0.0124)	(0.00720)	(0.0245)
Δ logassets 5 crisis		-18.87***		-1.745
		(4.373)		(8.636)
Δ debt/asset 5 crisis		-6.447***		3.184
		(1.064)		(2.102)
Δ capex ratio 5 crisis		0.0840		-0.292*
		(0.0810)		(0.160)
Δ price/book 5 crisis		-0.211		-0.0935
		(0.140)		(0.276)
Δ ROA 5 crisis		0.0165		0.151
		(0.0550)		(0.109)
Δ ROE 5 crisis		-0.00288		0.00203
		(0.0185)		(0.0365)
Constant	2.665	4.349**	26.10***	26.92***
	(2.575)	(1.877)	(3.548)	(3.707)
Observations	45	45	45	45
Adjusted R-squared	0,08	0,5648	-0,040	-0,010
R-squared	0.205	0.683	0.102	0.266

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: cross-sectional results for firm value and EPS

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When looking first at the impact on the change of firm value between the quarter before and of the announcement we identify no significant variable for the complete sample. When adding the dummy variable for a crisis in the equation we obtain 4 significant variables aside from the constant. The first one is the change in firm size who is under the 1% level of significance for both the normal economic setting and under the crisis constraint. If the change in firm size increases by 1%, the change in firm value increases by 8,7% in a neutral economic setting and declines by 10,2% during a crisis. Additionally, the change in leverage ratio impacts the change in firm value significantly under the 1% level. When the leverage ratio increases by 1%, the change in firm value increases by 5,6% in a normal economic setting and decreases by 0,8% during a crisis. Even though the additional variables are statistically insignificant, a quick summary will be communicated. A change in Capex ratio has both in a neutral economic setting and during a crisis a positive relationship with the change in firm value, however greater in the latter. The change in price-to-book ratio has a positive relationship with the change in firm value during a neutral economic setting, though a negative impact occurs during crises. For the change in return on assets, we observe a negative and positive relationship during a neutral economic setting and a crisis respectively. Yet, the change in return on equity appears to have a negative relationship to the change in firm value in both economic settings. In conclusion, we can reject the third hypothesis that declares that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on firm value is different in a normal and in a crisis state, due to the multiple significant variables available in this model.

Secondly, looking at the impact on the change of EPS between the quarter before and of the announcement we identify no significant variable, without accounting for the constant, for all economic settings. When adding the distinction of the crisis setting only one variable is significant under the 10% level. If the change in investment levels rises by 1%, the change in firm value declines by 0,3% more than in a neutral economic setting. Without asseverating statistically, an analysis of the remaining variables in different economic settings will be made. There is a negative relationship between the change in firm size and the change in the price-to-book ratio with the change in EPS that is greater in a crisis state than in a neutral economic setting. However, the change in leverage ratio and the change in return on assets have a negative relationship in a neutral economic setting with the change in firm value, contrary to a positive one during a crisis setting. Lastly, a negative relationship between the change in return on equity

with the change in EPS occurs, which is greater in a neutral economic setting. Because of the significance of the capex ratio, we reject the fourth hypothesis that asserts that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on EPS is different in a normal and in a crisis state.

Results for the Logit model

Table 8 interprets the results of the last research and answers the last hypothesis about the difference in the change of firm characteristics between firms that stayed public after their going-private announcement and those who underwent the delisting. As previously mentioned, there is just over 50% of the companies in the sample delisted.

VARIABLES	delisting Dummy
Δ Tobin Q	-0.0492
	(0.0324)
Δ EPS	-0.0262*
	(0.0148)
Δ logassets	-0.416
	(0.287)
Δ debt/asset	-0.000889
	(0.0333)
Δcapex ratio	-0.0177
	(0.0170)
Δprice/book	0.00462
	(0.0120)
Δ ROA	0.0115
	(0.00802)
Δ ROE	0.00185
	(0.00370)
Constant	0.923*
	(0.515)
Observations	62
Psuedo R2	0,195

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Logit Regression Results

This model returns only one significant variable, aside from the constant. If a 1% increase occurs in the change in earnings per share during the quarter before the announcement, it decreases the chance of delisting by 2,6%. Because the coefficient of the change in Tobin Q, the change in firm size, the change in debt to asset ratio, and the change in Capex ratio is negative, we can imply, without asseverating statistically, that an increase in these variables in the quarter

before the announcement decreases the chance of delisting. Additionally, the positive coefficient of the change in price-to-book ratio, the change in return on assets, and the change in return on equity imply, without significance, that an increase in these variables in the quarter before the announcement increases the chance of delisting. However, as mentioned before, undervaluation will encourage a company to depart the public market (Ventoruzzo, 2010). If the price-to-book ratio increases, there is less change the stock is undervalued and thus our positive coefficient is not in agreement with previous research. Due to the significance of the change in EPS, we can reject the fifth hypothesis that states that the change in firm characteristics between firms that delisted and the ones that stayed public are the same for the quarter before the announcement.

Conclusion

The reasons for public corporations exiting the stock market and going private are relatively recent subjects. A public to private transaction entails a newly established unlisted company bidding for a publicly traded corporation, usually for the purpose of the transaction (Jensen, 1986). A private company can devote more time and equity to objectives in the long run goals, instead of devoting time to please the shareholders such as a public company (DeAngelo, 1984).

The study's purpose is to identify the elements that influenced the company's choice to go private and analyse if there are differences between different economic settings. Subsequently, 274 hand-collected going-private enterprises are used, 81 of which data is found for, in the United States from 2007 to 2008 and 2018 to 2021. This thesis focuses mostly on the quarter of the going-private announcement, as well as the four quarters before the announcement.

This study uses three different models to answer 5 different hypotheses. The panel data model examines the difference in firm characteristics in going private firms in the quarters before the announcement and the quarter of the announcement and their impact on the earnings per share and the firm value. Through a cross-sectional regression, the difference in firm characteristic trends around the announcement date of the going-private firms and their differences in different economic situations is elucidated. Finally, the logit model explains the difference in correlation in firm characteristics between the firms that went through the delisting process after their announcement and the ones that stayed public with the probability of delisting. Quarterly data is required mainly for the earnings per share and the firm value. Furthermore, firm size (log of total assets), leverage ratio (debt/asset), investment activities (Capex ratio), undervaluation (price/book), and performance (ROA and ROE) are used as independent and/or control variables.

With this methodology, the research question is attempted to be answered:

What firm characteristics are determinants for a company undergoing a going-private transaction and are these the same in different economic settings?

The purpose of the panel data model is to answer the first two hypotheses of the thesis, namely that the firm characteristics of the quarters before the announcement have the same impact on the firm value and the earnings per share as during the quarter of the announcement. The first regression displays three significant variables, namely firm size, debt-to-asset ratio, and the price-to-book ratio, for the quarters before the announcement and one significant variable, ROA, in the quarter of the announcement. Because of these variables, we can conclude that there is a difference between the firm characteristics of the quarters before the announcement and the quarter of the announcement and therefore reject the first hypothesis. The second regression analyses the same independent and control variables during the same quarters, the same way, yet on a different dependent variable, the earnings per share. As a result of the significant ROE and ROA in the quarter of the announcement and the debt-to-asset ratio and the price-to-book ratio in the quarters before the announcement, we once again conclude a significant difference between the quarters. Consequently, we reject the second hypothesis.

The second model i.e., the cross-sectional model, depicts the result needed to answer the fourth and fifth hypotheses. The data used in the regressions of this model are the change in variables between the quarter of the announcement and the one preceding it. The third hypothesis that declares that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on firm value is different in a normal and in a crisis state, is rejected due to the two significant variables available in this regression for both the neutral and crisis state. Firm size and leverage ratio are both positively related in a neutral state and negatively related during a crisis to the firm value. The fourth regression, however, has only one significant value when the dummy variable for crisis is added, a negative coefficient during a crisis period instead of a positive one during a neutral economic setting. Because of these results, we can reject the fourth hypothesis that asserts that the change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on EPS is different in a normal and in a crisis state.

The logit model supplies the results to answer the fifth and last hypothesis and uses the change of the variables for the quarter before the announcement. Due to the significant negative relationship between the change in EPS and delisting, we can reject the fifth hypothesis that

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states that the change in firm characteristics between firms that delisted and the ones who stayed public are the same for the quarter before the announcement.

Finally, the results of the panel data, cross-sectional, and logit analyses show that five out of the five hypotheses made in this thesis are rejected. A brief recap of the null hypotheses is given in table 9 below.

Null Hypothesis	Reject?
H1: The firm characteristics of the quarters before the announcement have the same impact on the firm value than during the quarter of the announcement.	Yes
H2: The firm characteristics of the quarters before the announcement have the same impact on the EPS than during the quarter of the announcement.	Yes
H3: The change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on firm value is different in a normal and in a crisis state.	Yes
H4: The change in firm characteristics between the quarters before and the quarter of the announcement of the going-private firm and their impact on EPS is different in a normal and in a crisis state.	Yes
H5: The change in firm characteristics between firms who delisted and the one who stayed public are the same for the quarter before the announcement.	Yes

Table 9: summary of hypotheses

Limitation and Future Research

This research is being carried out with great care and commitment. Despite its good intentions, this study has a few drawbacks. As previously stated, the study did not observe firms after they were delisted. Only 20 companies of the 274 had data available for the quarters after the announcement. The benefit of leaving the public market happens after the going-private transaction and thus are not considered in this study. Furthermore, the many different types of voluntary going-private deals, such as LBO, MBO, MBI, and BOSO were not tested separately nor analysed. Likewise, the sample size is quite modest. The sample size is crucial when undertaking statistical testing to find significant impacts between the variables; a larger sample size could result in more accurate results. The declining sample from 2018 until 2021 compared to 2007-2008 reflects the rarity of transactions these last years. In addition, due to lacking data

from the databases WRDS and COMPUSTAT, many of the going-private transactions were excluded from the sample. Furthermore, the use of control firms or a larger neutral period would help this research be more accurate. By including all public-to-private trades that occurred between 2007-2008 and. 2018-2021, the results would be more convincing. Finally, many reasons for deciding if a company undergoes a delisting after the announcement exist, but this research only analyses the internal firm characteristics.

The limitations of this thesis show that further research is needed to reach a more accurate conclusion. To begin with, becoming private helps a corporation to concentrate more on long-term objectives. It would be more accurate to measure the true impact of a company becoming private if it was observed for a period of time after it was delisted. Second, new incentives such as firm liquidity, agency problems, and so on could be added. Third, it would be beneficial to categorize going-private deals into distinct categories, such as LBO, MBO, MBI, …. The final finding could be more exact if these groups were investigated independently. Finally, rather than focusing solely on the United States, future studies may include one or more countries. It is feasible to make comparisons between different geographical areas. Tax advantages in the US of funding businesses with debt rather than equity, for example, could result in higher debt levels in US public-to-private deals compared to Europe.

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APPENDIX

VARIABLES	VIF	1/VIF
logtotassets	1,27	0,785884
debtasset	1,87	0,535806
capexratio	1,68	0,59604
pricebook	1,11	0,898887
ROA	1,6	0,623354
ROE	1,84	0,542552
mean VIF	1,56	

Table 10: Multicollinearity analysis: VIF