

Motives for going private in Germany

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“Motives for going Private in Germany”

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MOTIVES FOR GOING PRIVATE IN GERMANY*

by

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Abstract:

This study empirically examines the rationales that motivate firms to go private. Based on a sample of 64 German going-private transactions between 1997 and 2001, we find that a firm is more likely to go private the higher the average annual dividend yield growth, the higher the market-to-book value of equity, the lower the average annual net sales growth, the lower the free-float, and the lower the average market capitalisation. These results provide support for the agency cost of free cash flow but contradict the information asymmetry motivation of going-private. In addition, the importance of transaction cost rather than information asymmetry and the role of concentrated ownership are highlighted.

JEL classification codes: G32, G34, G38

Key words: Going-Private, Agency Costs of Free Cash Flow, Information Asymmetry, Liquidity, Ownership Structure, Logit Modelling

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I. Introduction

Over the last decade the German capital market has undergone tremendous changes and along with it the answer to the question “What is the optimal form of incorporation?” has been reconsidered. Prior to 2000 many companies went public thereby following a trend evoked mainly by the initial public offering (IPO) of the Deutsche Telekom AG or Deutsche Post AG. The majority of these corporations believed that a state of being-public is “a symbol of success, and can bring with it intangible benefits like prestige and market visibility” (Johnson and Weidhass, 2001). However, following the bull market of the late 1990s, Germany’s stock market along with many other markets worldwide experienced a massive correction in share prices since the spring of 2000. Many listed companies are now trading below the issuing price or even beneath their equity base. Consequently, corporate management often inferred that a continuance as a public entity is unbeneficial and began to re-examine the benefits of the IPO’s counter-rotating strategy, the so-called going-private strategy or public-to-private (PtP) transaction. In the past, German jurisdiction long prohibited companies’ voluntary listing termination and only with the commencement of the Takeover Code (Umwandlungsgesetz) in 1995 a statutory basis was given, enabling corporations to convert their corporate form to a non-listable legal form. Thus, following the IPO trend in the 1990s, in the 2000s Germany experienced a second trend, although this time driven by an increasing number of going-private transactions. It is expected that this going-private trend will intensify further due to additional regulatory changes in 2001 and 2002. While the going-public transactions of the 1990s have enjoyed widespread attention from practitioners and academics alike and while at present regulators and managers are clearly concerned with the role of going-private transactions, academic attention towards German going-private transactions has so far been limited. This is especially surprising as, due to the

special features of the German corporate finance system, these PtP transactions allow researchers to judge the relevance of concentrated ownership structure, a feature that has not yet been investigated directly. This study attempts to remedy these shortcomings by investigating the motives behind going-private transactions. Borrowing from the empirical literature on takeovers¹, this study attempts to predict going-private candidates and is thus able to show whether and how market imperfections such as agency cost and asymmetric information can explain a company's decision to go private. The study at hand is novel in several aspects. First, rather than concentrating on a fraction of potential going-private transaction forms (merger), this study considers the complete set from which a company can choose in order to reverse its public company to a private entity. Second, the employed sample exclusively consists of German companies which, third, enables us to investigate the role of ownership structure and market (il)liquidity. Fourth, rather than focusing on either the information asymmetry approach or the agency cost of free cash flow, this study will incorporate both theories simultaneously. It should be pointed out that while there might be other internal and external factors influencing the likelihood of a going-private activity, this study specifically focuses on *quantifiable financial* and *capital market characteristics*. Consequently, we will especially disregard going-private motives, which result from tax savings incentives.

The outline of the paper is as follows: Section II introduces the fundamentals of going-private transactions. In section III hypotheses are derived that explain the motives for and the profile of German going-private firms. Section IV presents the data and methodology whereas in Section V the empirical findings are presented and interpreted. Section VI concludes.

¹ There have been many previous studies, which have used likelihood models to predict takeover targets including Stevens (1973), Belkoui (1978), Dietrich and Sorensen (1984), Palepu (1986), Rao, Waters and Payne (1995) and Nuttall (1999).

II. The Practice of Going-Private

According to Land and Hasselbach (2000), going-private² can be defined as “converting a public listed corporation (public company) to a closed, not publicly traded entity (private company)”. Thus, going-private attempts to restructure corporate ownership by replacing the entire public stock interest with full equity ownership. As DeAngelo, DeAngelo and Rice (1984, p.903) state: “This procedure leaves only that group of insiders who direct the corporate reacquisition programs (usually the very ones who took the company public originally) as the surviving shareholders in a now privately held enterprise”.

Going-private first appeared in the U.S. as early as 1886 (Kleppe, 2002) but until the 1970s it has been extremely rare to find publicly held corporations revoking their listing admission. Yet, by the end of 1974 the Dow Jones Industrial Average had collapsed beneath 600. Since for most companies the collapse had not been the result of reduced corporate earnings, stocks were at this time selling at far higher price-to-earnings ratios and multiples of book value than at any time in the adjacent years. As a consequence, the capital market lost its attractiveness and going-private gained in importance, as companies preferred to capitalize on this collapse in firm value and a continuation of its operations with less duties such as accounting- and disclosure requirements or shareholder communication. In the US, going-private reached its peak in the second half of the 1980s with more than 1200 transactions (Oelschlegel, 2001) and was in some years even outnumbering IPOs (Kleppe, 2002). Going-private transactions were also occurring in the United Kingdom but the number of transactions remained relatively low with as little as 10 transactions in 1990 increasing to 27 and 39 transactions in 1998 and 1999, respectively (Hohn, 2000). In Germany however, termination of companies' listing admission played only a minor role until 1994. Although, a

² In recent papers the terms “Taking-Private”, “Reprivatization” and “Public-to-Private transactions” have emerged as synonyms for “going-private”. Rather than applying all these terms to the study at hand, we decide to use the terms “going-private” and “PtP transaction” interchangeably, in order to guarantee smooth reading.

statutory basis did not exist at that time, BASF AG unsuccessfully attempted to concentrate its market dealing at the Frankfurter Wertpapierbörse and thus, to terminate its quotation at the regional stock exchanges (de Vries, 2002). While BASF's plans failed, its intentions set in motions the discussion under which circumstances a delisting is legally admissible. As a result, the Takeover Code (Umwandlungsgesetz, or short UmwG) came into force on January 1, 1995, which for the first time created a statutory basis for a going-private transaction in Germany. Yet in the following months, Scheidemantel AG³ was the only company to go private. As a consequence of such limited response among listed companies the discussion vanished as fast as it rose. The reason for keeping going-private on the sidelines was, on the one hand, the absent knowledge about the various transaction forms and, on the other hand, its rather juvenile legal regulation within the German Stock Exchange Act (§ 43 Abs. 4 BörsG⁴). Up to the revision of the Law On The Further Development Of Germany As A Financial Location (Gesetz zur weiteren Fortentwicklung des Finanzplatzes Deutschland, rather known under the term Drittes Finanzmarktförderungsgesetz), which came into force on April 1, 1998, the admissibility of either a partial or a regular delisting from German's stock exchange(s) within the context of the German Capital Market Law was highly controversial (Bungert, 2000). Since 1999, going-private gathered momentum as more than 90 companies including Honsel AG, Stixi AG, Frankfurter Bankgesellschaft gegr. 1898 AG, Schaerf AG, Grünzweig AG, Rolf Benz AG, or Wayss & Freytag AG have gone private representing a substantial 8% of all companies currently listed⁵. In practice, going-private for a German company requires either a *regular* or a *cold delisting*. Delisting refers in general to the revocation of a company's listing admission and thus, the cancellation of its public quotation and appears in three forms: regular ("reguläres"), cold ("kaltes"), or partial ("partiell").

³ Deutsche Börse granted Scheidemantel's application in 1995 and terminated its listing admission at the stock exchanges of Berlin, Düsseldorf and Hamburg. For details see de Vries (2002).

⁴ For details we refer to: BGB1 I 529; BR-Printed Matter 605/97 15.08.1997 = BT-Printed Matter 13/8933 from the 6th of November 1997.

⁵ On May 15, 2002, the Deutsche Börse AG reports 1078 listed companies.

Regular delisting is applied to the case in which a company voluntarily moves for the complete revocation of its listing admission or in which the revocation of the listing admission is caused ex officio⁶. A cold delisting results from a corporate restructuring such as for example going-private merger, integration into the parent company, change of corporate form, reverse stock splits, or share repurchases where the resulting company no longer meets the listing requirements or prerequisites of the exchange. Finally, within a partial delisting a company revokes its listing admission at one of Germany's seven regional stock exchanges under retention of its presence at (at least) one stock exchange in Germany⁷.

Within the context of a cold delisting, both the merger and the change of corporate form were highly attractive tools to realize a PtP-transaction because of their tax advantages resulting from a depreciation potential of the resulting goodwill and the refunding of already paid corporation taxes. Nowadays, as a new Tax Act prohibits major actions and the objective to increase potential tax shields gains in importance, the recently created "Squeeze-Out" or "Freeze-Out"⁸ is expected to characterize prospective PtP-transactions. Here, a majority shareholder, holding a fraction of more than 95% of a company's common stock, has the right to compulsorily exclude the remaining shareholders (1) through a general meeting's decision (qualified ¾ majority) and (2) under the payment of a reasonable cash settlement⁹. Accordingly, this approach represents a new legal institution of Germany's AktG, to which no pattern existed before the Securities Acquisition And Takeover Act (Wertpapiererwerbs- und Übernahmegesetz, or short WpÜG) came into force in January 2002 (Vetter, 2002). A cheaper and much simpler way to exclude minority shareholders, a period-regulation, exists for companies seeking regular delisting at the Frankfurt exchange where instead of a cash

⁶ The termination of the listing admission ex officio is intended for the noncompliance of issuing requirements according to §§ 43 Abs. 3, 44 d BörsG or for companies whose shares are not traded regularly.

⁷ For details see Kleppe (2002), Wirth and Arnold (2002), and Radtke (1998).

⁸ Note that these terms are often used interchangeably. For a discussion on whether and how these terms should be distinguished see Kleppe (2002).

⁹ For details we refer to: <http://www.bundesfinanzministerium.de>.

settlement in which the share price is set to the average – but at least to the highest – stock price over the last six months, minority shareholders are given a 6 months period during which they can liquidate their holdings.

In summary, the above discussion shows that the idioms going-private, delisting, and squeeze-out cannot be isolated from one another. The following four points are noteworthy: (1) a going-private depicts a transaction, where insiders attempt to reacquire from external investors all the publicly held common stock in order to obtain complete control at their firms. This requires either (2) a delisting from *all* national and international stock exchanges at which the publicly held common stocks are traded or on the other hand (3) a cold delisting. Furthermore, (4) a company's partial termination of its listing admission at one of its regional stock exchange's listing represents a step towards the achievement of the complete conversion to a private entity. For this study, we only consider regular voluntary delistings, cold delistings, freeze-outs, and period-regulations as constituting a going-private or PtP transaction.

III. Motives for Going Private

In recent years, the publicly held corporation was the main driving force of economic progress in Germany. However, according to many researchers including Zingales (1995), Köhler (2000), Brühl (2002), de Vries (2002), Kleppe (2002) and Labbé and Poeschel (2002) the publicly held corporation has outlived its usefulness. Jensen (1997, p.1) makes this argument when stating that “[t]he publicly held corporation has outlived its usefulness in many sectors of the economy. New organizations are emerging. Takeovers, leveraged buyouts, and other going-private transactions are manifestations of this change”. This statement raises several questions: What are the main reasons for organizations to operate under no public shareholders and not being listed or traded on organized exchanges? Why are

companies' primary owners large institutions and entrepreneurs rather than diffused small retail investors? Why do companies use public and private debt, rather than public equity, as their major source of capital? In this context, modelling the going-private likelihood can cast light on the characteristics of those firms that go private and thus discover the motives underlying PtP-activities. By addressing these questions, we discuss the validity of two highly debated and documented finance theories that attempt to explain the structure of corporate ownership¹⁰ and thus, going-private decisions: (1) agency cost of free cash flow and (2) information asymmetry. In addition, we test predictions based on illiquidity and ownership structure. Although several theories (especially tax-based¹¹) are ignored, the hypotheses chosen arguably provide a reasonable coverage of the most important PtP-transaction motives.

A. Agency Cost of Free Cash Flow

In an early empirical study, Lehn and Poulsen (1989) noticed that shareholders reaped large gains in going-private transactions that could not directly be attributed to synergies associated with the merger of two firms and looked into the direction of agency cost of free cash flows for a possible explanation. Although Jensen (1986) notices that agency costs of free cash flow are prevailing in almost all publicly held corporations, this problem is considered to be an essential facet of PtP transactions. Jensen characterizes potential going-private candidates as firms operating under stable business environments and achieving substantial free cash flows, i.e. low growth prospects and large amounts of internally generated funds, which remain idle because of limited investment opportunities. Free cash flow retention and thus low payout ratios reflect managers' propensity to increase the

¹⁰ The authors apply the term "ownership structure", rather than "capital structure" to emphasize the importance of determining the fraction of the residual claim held by the managers as *the* crucial variables and not only companies' debt-to-equity ratio. This view goes in line with Jensen and Meckling (1976).

¹¹ In Germany, as a result of the tax reform, non-tax motives such as the achievement of management's unlimited control, access to free cash flows and the "noiseless" preparation of further growth objectives are expected to characterize future going-private activities.

resources under their control. Many of the benefits in going-private activities, especially through LBOs, seem to be due to the control function of debt. By increasing the debt-to-equity ratio managers are restricted from engaging in investment and financing decisions that reduce the value of debtholder claim (debt covenants violations). Similarly, high dividend payouts reduce the amount of free cash flow, which is under the control of the management, and thus high payout can be an indicator of limited investment opportunities and high free cash flow. In a firm without any outside equityholders, as in the case of a PtP transaction, agency costs of free cash flow disappear. Consequently, one of the essential motives for PtP transactions is the reduction of agency cost, which is often referred to as the wealth-creation hypothesis.

Empirical evidence on the validity of the agency cost of free cash flow hypothesis is mixed. Lehn and Poulsen (1989), Denis (1992), and Opler and Titman (1993) provide supporting evidence whereas Maupin, Bidwell and Ortegren (1984), Kieschnik (1998), Servaes (1994), Rawashdeh (1994) and Halpern et al. (1999) do not find empirical support. Due to the inconclusive findings we propose the following hypotheses to determine whether agency cost of free cash flow are a determinant of PtP-transactions.

- H₁:** *Relative to non-going-private companies, going-private companies have substantially greater free cash flows.*
- H₂:** *Relative to non-going-private companies, going-private companies have substantially lower growth prospects.*
- H₃:** *Relative to non-going-private companies, going-private companies have substantially higher payout ratios.*

B. Information Asymmetry

Keown and Pinkerton (1981) have acknowledged an “insider-leakage” phenomenon preceding the announcement of PtP plans, a theory being initially advanced by Myers and Majluf (1984). Management-led PtP-transactions represent, in a sense, an extreme form of corporate stock repurchases. Myers and Majluf’s information-asymmetry hypothesis predicts that managers issue common stocks when they deem the stock price to be high. Accordingly, management would repurchase common shares when the equity-market undervalues the firm (Kim and Lyn, 1991). When the informational gaps about asset productivities, future earnings potential or positive net present value investment choices between agents and principals widen, corporate restructuring will be an attractive alternative for the former party. In such circumstances, insiders know the project’s expected return, respectively the intrinsic value of the corporation, outside investors do not know enabling the former party to capture the future rents.

Yosha (1993) suggests that information disclosure costs determine the choice of either *bilateral* or *multilateral* financing. Although, he distinguishes debt financing, the derived model can be applied in the context of our paper regarding the choice between public (multilateral) and private (bilateral) financing. As opposed to private arrangements, public finance relationships require detailed information disclosure in order to convince potential investors of a company’s creditworthy and substantial earnings potential - information, which will inevitably become available to companies’ competitors. Especially for companies whose direct competitors are not publicly listed undesirable reactions on their part may arise. For example in 1999 Honsel AG terminated its listing admission due, at least partially, to the existence of distorted competition. While Honsel’s main competitors were highly informed about its historical and upcoming business development, the information at Honsel’s disposal in terms of extensiveness and sensitivity was rather low. A second advantage of private

financing, besides avoiding information flows to direct competitors, depicts companies' digression over the information distribution. Public listing requires comprehensive disclosure requirements. Yet often the business development might be inhibited as short-term performance becomes more important than the realization of long-term strategic goals. The termination of companies' listing admission on the other hand, allows the supervision of information to third parties. Consequently, the company might conduct restructuring actions and realize substantial efficiency improvement (Hohn, 2002).

Overall, it is reasonable to posit the information asymmetry hypothesis as an explanation for PtP transactions. Whereas DeAngelo, DeAngelo and Rice (1984), Maupin, Bidwell and Ortegren (1984), Marais, Shipper and Smith (1989) and Damodaran and Liu (1993) empirically support the claim that going-private transactions are mainly driven by inside information managers possess, whereas Lehn and Poulsen (1989), Jensen (1989), Kaplan (1989) and Lee (1992) argue the opposite. In light of the above theory and the indecisive findings of prior research, we develop the following prediction:

H₄: *Relative to non-going-private companies, going-private companies are substantially more undervalued.*

Furthermore, Rao, Waters and Payne (1995) find evidence that most companies conducting a PtP-transaction are small in size. The idea is based on the premise that there are transactions costs of PtP activities related to size, such as the associated cash offer to remove possible minority shareholders (freeze-out). According to Kim and Lyn (1991, p 641) "these costs are likely to increase with firm size and the number of public stockholders". However, companies' size is also believed to influence the degree of informational asymmetry, and therefore the severity of undervaluation. In particular, larger firms that are more likely to

have a diverse ownership base are more prone to information asymmetry than smaller firms with fewer, more concentrated owners. Thus, whereas asymmetric information based arguments would lead us to predict PtP transactions to be more likely for larger firms as the potential benefits are larger, transaction cost based arguments would predict the opposite. Buzby (1975), Levine and Aaronovitch (1981) and Palepu (1986), among others, find size to be negatively related to the going-private likelihood. Consequently, the following hypothesis is developed:

H₅: *Relative to non-going-private companies, going-private companies are substantially different in size.*

C. Illiquidity and Ownership Structure

Although, it is reasonable to posit the agency cost of free cash flow and information asymmetry hypotheses as the most important explanations for going-private transactions, Oelschlegel (2001) reveals in her study other motives for a going-private transaction. As a consequence, we consider in this study additional *quantifiable* conditions related to liquidity and ownership structure in our analysis.

One major driving force of a stock's liquidity is companies' underlying ownership structure. The larger the percentage of companies' concentrated ownership, the more illiquid is the underlying stock. This illiquidity can in turn lead inappropriate company valuation. When only a minor fraction of companies' shares are traded in the stock market, share purchases and disposals initiate severe price fluctuations and fail to reflect the fair and intrinsic value of a company. Similar to limited partners' interests, large blocks of shares will consequently be traded off-board with the actual share-price serving only as a benchmark (Oelschlegel, 2001). Richard and Weinheimer (1999) refer to the prevailing prices as

“coincident stock prices”. Furthermore, the company faces diminishing shareholders’ interest and analyst coverage. Under such conditions both institutional and retail investors have severe difficulties to take the stock price as a valuation standard for the underlying entity development and management performance. Yet, without a fair valuation the capital market is unable to adequately perform the control and sanction functioning. Consequently, the company might consider a PtP-transaction as the costs of being-public outweigh the nevertheless unreachable benefits. German PtP transactions are especially suited to investigate this issue. In other countries such as the US or UK ownership structures are rather dispersed and blockholdings are relatively small and might thus not much influence the going private decision. In Germany, dispersed ownership structures are typical only for the largest multinationals while most listed companies are characterized by large blockholdings, which are relatively stable over time. Based on the voting right structure of 444 firms in March 2000, Kleimeier and Whidbee (2001) report that on average each German firm has 3.43 blockholders who jointly control 75.8% of the direct vote. Each blockholder holds voting block in 1.27 companies with banks holding an above average number of 3.09 voting blocks and for both groups, the average voting block amounts to 21.9% of the direct vote.¹² The figures reported by Kleimeier and Whidbee (2001) might still underestimate the concentration of ownership and voting power as cross-holdings and pyramid structures prevail in Germany. In an international comparison, Becht and Roell (1999) correct for this when calculating the ultimate voting block. They find, that for most European countries the largest shareholder holds about 50% of the voting power. The UK is the most notable exception with 9.9%. In more than 50% of all US firms, on the other hand, the largest shareholder controls less than 5% of the votes whereas in Germany there are no such firms. These differences in ownership concentration across countries, any impact of ownership

¹² Note that more recently the above average number of voting blocks for banks have fallen as a tax-law change made it attractive for banks to sell their unwanted blockholdings.

concentration on going-private transaction will most likely matter in countries with more concentrated ownership structures and will be difficult to detect in countries like the US or UK. Thus, the German going-private transactions provide a unique opportunity for studying this issue. Anecdotal evidence supporting the role of ownership structure concentration is available. Exemplary for the successive buyout through companies' majority shareholder(s) was the previous going-private activity of Schaerf AG, Weru AG and Koepp AG (Süddeutsche Zeitung, 1999). These transactions were characterized by blockholders' objective to minimize the free-float. According to Hohn (2000), among the German companies that conducted a PtP-transaction within the previous years, the free-float amounted to less than 5 percent and companies exhibited a concentrated ownership of more than 95 percent (such as Magna Media Verlag AG or Friedrich Grohe AG). Hohn's findings are consistent with the reasoning of Maupin et al. (1984, p. 441) "that the greater the percentage of shares held by management and the board of directors, the more easily" going-private transactions can be accomplished.¹³ Based on the above discussion we develop the following hypotheses:

H₆: *Relative to non-going-private companies, going-private companies have substantially more concentrated ownership structures.*

H₇: *Relative to non-going-private companies, going-private companies have substantially less liquid share trading.*

Note that in the first place hypothesis H₇ intends to test the shares' illiquidity. As argued above, the higher company's concentrated ownership structure, the more illiquid is the

¹³ One could also view this ownership structure related argument in the context of agency cost. Here agency cost arise due to a conflict between managers and blockholders on the one side and minority shareholders on the other side. These are in general agency cost of equity and not specifically agency cost of free cash flow. As we want to investigate the effects of mis-valuation due to illiquidity at this point, we have chosen to differentiate this argument and the resulting hypotheses from the agency cost of free cash flow arguments presented earlier.

underlying share. Yet, according to the information-asymmetry theory, managers use inside information to earn abnormal returns prior to the going-private announcement, which inevitably will drive the pre-announcement price run-ups and volume behaviour. Thus, although the illiquidity of companies' shares might not represent an underlying motive for a going-private transaction, in case the empirical analysis discloses no support for H₇, the rejection leads to the conclusion that insiders possess private information and are successful in predicting when their firms are undervalued.

Defenders of going-private frequently suggest another, although qualitative in nature¹⁴, benefit to the corporation: the anticipated savings of a corporation's continual expenditures. Besides the shareholder communication costs, being necessary to build a long-term relationship, the after costs of an IPO consist of the publication requirements. On the one hand, the latter expenditure results from the regulations of being a company operating in the legal form of a corporation. On the other hand, the stock exchange sets certain release-requirements depending on the market the company is listed. However, the realization of a going-private transaction incorporates expenditures, which might be similar to the unique costs of an IPO. Consequently, as Notes (1975, p. 908) examines, "going-private, then, can rarely be justified as a money saving device".

IV. Data and Methodology

A. Sample Selection¹⁵

In order to collect a sample of German PtP transactions, past PtP-transactions were retrieved from the Deutsche Aktieninstitut, Deutsche Börse Group as well as "mandatory"

¹⁴ We refer to this benefit as qualitative in nature as any approach to test this prediction would require either a telephone-survey or the dispatch of a questionnaire. Furthermore, with regard to the empirical analysis, this exclusion does not have any severe effects. The model being developed treats only quantifiable going-private characteristics, whereas non-measurable and unobserved factors are expected to be equally and randomly distributed across all potential PtP-firms (random element).

¹⁵ A description of all companies included in the going-private as well as the non-going-private sample is available upon request.

and “voluntary” takeover offers published by Germany’s takeover commission. In addition, Hohn (2000), Oelschlegel (2001), Kleppe (2002) and de Vries (2002) name various PtP transactions. All resulting transactions were compared to Bloomberg’s listings in order to verify each going-private transaction and to determine the announced and effective date of companies’ listing termination. From Bloomberg, additional PtP transactions were identified that were not previously found in the other sources. Finally, a total of 97 companies were identified that went private within the time span of 1997 – 2001 as described in Table I. Note the growth in PtP transactions over time with 26 and 31 transactions in 2000 and 2001, respectively, compared to less than 15 annual transactions in the years before. Also it appears that the most common forms of transaction include cold delisting due to mergers and voluntary regular delistings.

[insert Table I about here]

This initial sample of 97 going-privates was reduced if one of the following selection criteria was not fulfilled: (1) companies had to have their shares quoted with daily share price data available for the time span under consideration, (2) companies’ IPO dates back at least three years and (3) all relevant proxy variables needed to test the hypotheses could be retrieved from Bloomberg or Hoppenstedt Aktienführer for the full observation period. The screening-procedure reduced the original sample of 97 companies to 64 corporations, constituting the final going-private sample of this study.

Based on these 64 PtP transactions, the hypotheses derived in the previous section will be tested. The main methodological tool, which will be described in more detail in a later part of this section, is a logit regression. Thus, not only companies that have gone private have to be

sampled but also companies that did not. Several studies¹⁶ have addressed the impact of sampling strategies on the finite performance of the maximum likelihood logit estimator. Following Kieschnik (1998) the crucial step is to match the choice-based sample (going-private firms) with either a proportional or balanced random control sampling scheme (non-going-private companies). As different sampling schemes affect both parameter and variance estimates, it can be generally noted that the bias (precision) will decrease (increase) as the sample size rises. Yet, according to Kieschnik (1998, p. 189) bias “is clearly present when one samples equally (balanced sampling scheme) from two subgroups whose populations are substantially different”. To avoid such bias, proportional random control sampling is applied in this study with a fraction of 1:1.2 resulting in 76 non-going-private companies to match the 64 going-private companies¹⁷. These 76 observations were selected randomly from the population of 1078 companies, which did not realize a going-private activity within the time period of 1997 until 2001 and which were obtained from the German Deutsche Börse Group, consisting of companies being listed in the C-DAX and NEMAX-ALL SHARE Index.

B. Hypothesis Testing

In order to test the hypotheses derived in section III within a logit model, empirical proxies of the different dependent and independent variables have to be found. In principle, the logit model’s dependent variable takes a non-zero value when there is a going-private transaction in the *next* accounting year. Consequently, the model uses financial information up to and including the accounting year *preceding* the event as proxies for the independent variables. Thus, accounting data over the period 1994 – 2001, obtained from Bloomberg, are

¹⁶ See Cochran (1977), Daganzo (1980), Bull (1993) and Dietrich (2001).

¹⁷ Previous studies have used the following sampling fractions of going-private versus non-going-private companies: 1:1.6 (Palepu, 1986), 1:1.5 (Kim and Lyn, 1991), 1:2.5 (Rawashdeh, 1994), 1:1.5 (Rao *et al.*, 1995). However these studies use U.S. data. As the U.S. market is substantially larger than the German market, we judge the average applied fraction of 1:1.5 of the U.S. studies as too high and reduce the fraction to 1:1.2 to be applied to Germans equity market.

relevant for the sample ranging from 1997 to 2001. For non-going private firms, these data are obtained for the year 2001.

For hypothesis H₁ a proxy for the company's free cash flow is needed. Gupta and Rosenthal (1991) and Opler and Titman (1993) suggested the employment of net operating cash flow as a proxy for a firm's free cash flow. Halpern et al. (1999) notice, however, that this measure is misleading as it neglects agency cost. Consequently, we employ a measure similar to that used by Lang, Stulz and Walkling (1991), which simultaneously adjusts for firm size by standardizing the free cash flow estimate by the firm's book value of total assets. These free cash flows to total assets (CFtoTA) are defined as follows.

$$CFtoTA_t = \frac{EBITDA_t - TAX_t - DIVIDENDS_t - STOCKREPURCHASE_t}{TOTAL\ ASSETS_t}$$

where

EBITDA	= operating income before depreciation and amortization
TAX	= total income taxes adjusted for the change in deferred taxes
DIVIDENDS	= cash dividends to common and preferred stocks
STOCKREPURCHASE	= net common stock repurchase
TOTAL ASSETS	= book value of total assets
t	= year preceding the going-private transaction

To proxy for the growth prospects of hypothesis H₂ we follow Palepu (1976), Lehn and Poulsen (1989), Rawashdeh (1994), Rao et al. (1995), Powell (1997) and Halpern et al. (1999) who use the (average) growth rate of net sales. In particular, we use the following proxies for growth prospects reflecting an average sales growth over one and two fiscal years, respectively:

$$\text{SALESGR1}_t = \frac{\text{NetSales}_t}{\text{NetSales}_{t-1}} - 1$$

$$\text{SALESGR2}_t = \left[\frac{\text{NetSales}_t}{\text{NetSales}_{t-2}} \right]^{(1/2)} - 1$$

where

SALESGR1 = annual net sales growth rate during the year preceding the effective date of the going-private transaction¹⁸

SALESGR2 = average annual net sales growth rate during the two years preceding the effective date of the going-private transaction¹⁹

It was hypothesized in H₃ that going-private firms have high payout ratios, which are measured with the following two proxies based on dividend yields. Again, a one- as well as two-year time horizon is chosen. Note that by using dividend yield growth rather than the dividend yield itself, we implicitly assume that agency problem develop slowly over time instead of occurring within one fiscal year. A going private transaction can be seen as a last resource to solve this agency problem, and might as such be preceded by dividend increases as an alternative and less drastic attempt to solve the agency problem. Solely considering dividend yield prior to the year of the going-private transaction (t-1) could therefore be misleading.

$$\text{DIVYIELDG1}_t = \frac{\text{DIVYIELD}_t}{\text{DIVYIELD}_{t-1}} - 1$$

$$\text{DIVYIELDG2}_t = \left[\frac{\text{DIVYIELD}_t}{\text{DIVYIELD}_{t-2}} \right]^{(1/2)} - 1$$

¹⁸ Growth of the firm is defined as the annual rate of change in the company's net sales. For example consider a company that conducted a going-private transaction in 2001 with a December 31 fiscal year. Consequently, the sales data from fiscal year end 1999 and 2000 is used to compute the annual net sales growth.

¹⁹ Consider the same going-private company as in footnote 16: The sales data from fiscal year end 1998 and 2000 is used to compute the average annual net sales growth rate during the two years preceding the effective date of the going-private transaction. This approach, however, implicitly assumes a constant growth pattern $(1+g)^t$.

where

DIVYIELD = dividend per share divided by the share price

DIVYIELDG1 = annual change in dividend yield during the year preceding the effective date of the going-private transaction

DIVYIELDG2 = average annual change in dividend yield during the two years preceding the effective date of the going-private transaction

Hypothesis H₄ postulates that going-private companies tend to be relatively undervalued due to information asymmetry. In line with Palepu (1976), Kim and Lyn (1991), Rao et al. (1995) and Powell (1997) representative proxies of this undervaluation hypothesis are market-to-book value (MBV) and price-to-earnings (PtoE) ratios.

$$MBV_t = \frac{\text{Market Capitalization}_t}{\text{Book Value of Equity}_t}$$

$$PtoE_t = \frac{\text{Market Capitalization}_t}{\text{Net Earnings}_t}$$

Hypothesis H₅ predicts a relationship between company size and the likelihood to go private either driven by information asymmetry or transaction cost. To test this hypothesis we apply two measures of company size: total assets (TA_t) and average market capitalisation (AMARKETCAP) which is measured as the arithmetic mean of the last 180 active trading days preceding and including the going-private announcement date for going private firms. To proxy for concentrated ownership of hypothesis H₆, we choose a company's free-float (FREEFLOAT) which measures the fraction of shares held by minority shareholders. The lower a company's free-float, the higher is the concentrated ownership and thus, the higher the likelihood of a potential going-private transaction. Averaged trading volume (ATRADVOL) aims to proxy for the illiquidity prediction of hypothesis H₇ and is measured

as the arithmetic mean of the daily trading volume over the last 180 active trading days preceding and including the going-private announcement date²⁰.

Table II summarizes the going-private likelihood hypotheses developed, the proxy variables used within the empirical tests, and the expected sign for each variable.

[insert Table II about here]

C. Methodology

Although this study focuses primarily on the multivariate analysis of the determinants or motives of going-private likelihood, we also report univariate descriptive statistics. Whereas multivariate analysis controls for the interactions between the explanatory variables, univariate descriptive statistics consider each variable separately. The main objective of the univariate descriptive statistics is to investigate the hypothesis of a sufficiently large difference in the sample means²¹ (going-private versus non-going-private) to obtain a preliminary indication of the results of the investigation. Consequently, a 2-sample t-test assuming unequal variances is performed. On the other hand, the multivariate analysis attempts to distinguish among a sample of companies those, which will be subject to a going-private activity on the basis of a functional relationship between a firm's characteristics and its going-private likelihood in a given period (t+1). Thus, the main objective is to classify the company being considered either as a going-private candidate or a remaining public candidate. In related areas, Palepu (1986), Dietrich and Sorensen (1984), Rao et al. (1995),

²⁰ For the going-private sample, this implies to calculate the arithmetic means for market capitalisation and trading volume by considering the last 180 active trading days preceding the going-private transaction announcement. Yet, for the control sample the period of 180 active trading days refers to the time prior to calendar year end 2001.

²¹ At this moment the main objective is to test the prevalence of a mean difference in the value of every proxy variable for each matched pair of going-private and the corresponding non-going-private companies. With respect to the comparison of the summary data it is irrelevant, at least at this stage, whether the corresponding mean of the going-private firms is below or above the mean of the control sample. Therefore, the alternative hypotheses (H_A) are two sided ($H_A: \underline{X}_{GP} \neq \underline{X}_{NGP}$).

Lehn and Poulsen (1989) and Powell (1997) among others employ the concept of the multivariate logit probability models. This model²² takes the form:

$$\text{EVENT}_{t+1} = f[\text{GoingPrivate characteristics}_t] \quad (1)$$

where EVENT_{t+1} is a qualitative dependent variable, taking the value one if the firm goes private in the accounting year $t+1$, and zero if the company remains public. Thus, logit analysis relates the likelihood of a going-private event to quantifiable company characteristics “while explicitly accounting for a stochastic element in the outcome due to the un-measurable and unobservable elements” (Dietrich and Sorensen, 2001, p. 398). Furthermore, rather than employing the multi-discriminant analysis to predict going-private activities, the concept of logit analysis avoids some of the problems associated with the application of the former statistical tool. Eisenbeis (1977) emphasizes in his study on the occurring flaws in the application of a discriminant analysis rather than the superior concept of logit analysis. As opposed to the former analysis, the latter does not depend on the normal distribution assumption. Secondly, the usage of logit analysis enables direct interpretation of the various explanatory variable coefficient estimates, whereas multiple discriminant analysis coefficients estimates are only unique up to a factor of proportionality.

V. Results

Table III presents the results of the univariate analysis for the going-private versus non-going-private sample. In addition to the sample means, the table reports the mean difference in the value of each proxy variable for the two samples and the corresponding t-statistics.

²² For a detailed discussion of the logit model including the employment of the logistic cumulative probability curve and the maximum likelihood see Eisenbeis (1977), Palepu (1986) or Wooldridge (2000).

[insert Table III about here]

Regarding the agency cost of free cash flow hypotheses, Panel A of Table III reveals that CFtoTA is significantly larger in the going-private sample than in the control sample with an average of 0.0510 compared to -0.0032 respectively. Furthermore, both growth proxies SALESGR1 and SALESGR2 are significantly smaller for going-private companies with growth rates of 0.2100 and 0.0563 compared to 0.6036 and 0.5455 for the control sample, respectively. Regarding payout ratios, only the mean difference of the proxy variable DIVYIELDG2 is positive and statistically significant at the 5% level. As the signs of t-tests regarding CFtoTA, SALESGR1, SALESGR2 and DIVYIELDG2 are all as expected, there is strong evidence that going-private firms have larger free cash flows and lower growth potential during the year, respectively last two years, preceding the going-private transaction. Furthermore the findings indicate that going-private firms have higher average annual dividend yield changes during the last two years preceding the PtP-transaction compared to non-going-private corporations. In summary, the significant differences across the two samples support our assertion that the agency cost of free cash flow are an essential motive for a going-private transaction.

The findings in Panel A of Table III do not support the approach to explain going-private transactions by means of the information asymmetry hypothesis. The average difference of the PtoE proxy variable across the samples is insignificantly different from zero. With respect to the market to book value of equity (MBV), the mean difference of 1.7397 is positive – rather than negative as expected – and significant at the 1% level. This provides evidence that the firms, which went private on average, tended to be valued higher by the market than non-going-private firms (3.4155 in contrast to 1.6757). Finally, in contrast to earlier findings, our results indicate that going-private firms have an average size of 10,197.36 million euro in

total assets compared to the control group with 7,935.56 million euro but this difference is not statistically significant as standard deviations are high. Measuring company size via market capitalisation does not reveal any significant size difference either with a market capitalisation of going-private companies of 1.2 billion euro compared to 1.7 billion for the control sample.

In order to explain the rather unexpected finding with respect to MBV and PtoE, an alternative calculation of the proxy is provided in panel B of Table III. Whereas MBV is calculated at the year-end prior to the respective observation year for the going-private sample, the proxy variable for the control sample was estimated based upon the market capitalisation, which prevailed at the end of 2001. However, the national capital market development in 2001 in general, and in particular the progress within the last quarter, was characterized by extreme price corrections, mainly as a result of investors' enormous insecurities created by the terrorist attacks in New York at the 11th of September. To ascertain whether the author's former findings were disturbed by the far-reaching changes and consequences of these attacks, companies' MBV and PtoE for the control sample are recalculated by taking the average share-price of 2001. Compared to the initial mean value of MBV (1.6757), the recalculated alternative MBV is slightly higher (2.0986), resulting in a positive mean difference across the matched pairs of the going-private and the non-going-private samples of 1.3169, being 0.4228 lower than the original mean value (1.7397). Again the null hypothesis of equal means can be rejected – though at the lower significance level of 5%. Mean PtoE for the control sample drastically increases after averaging 2001 share-prices (53.9789 in contrast to the previous mean of 21.3788), leading to a negative mean difference across the matched pairs of both samples of -16.2585. Yet the coefficient is still insignificant. Thus, we conclude that the event from the 11th of September 2001 and the tremendous price

corrections at the German capital market are not responsible for disproving the information asymmetry motive of going-private transactions, at least in Germany.

Regarding the remaining hypotheses of illiquidity and ownership, there is strong evidence that PtP-firms have on average greater concentrated capital ownership structures than the control sample. The average free-float is 0.1311 for PtP-companies compared to 0.3413. Yet, going-private firms show higher average trading volume (195,765.84) than non-going-private companies (68,978.17) but the mean difference is insignificant. Overall, whereas the finding with respect to FREEFLOAT strongly infers that going-private firms have higher concentrated capital ownership structures, the illiquidity hypothesis is not supported when considering the insignificance of the coefficients for ATRADVOL. In summary, the univariate tests provide support for the agency cost of free cash flow and the control motivation of going-private but arguments based on asymmetric information and illiquidity cannot be supported.

Since the preceding (univariate) analysis considered each proxy variable independently, the coefficients might lose reliability in determining the variable's significance in the presence of other variables. Therefore, multivariate analysis is employed to estimate the common effects on the going-private likelihood. Based upon the earlier discussion there is strong evidence that the effects of some variables on a company's decision to go private depend upon the levels of other proxy variables. For example if a company experiences high sales growth, a selfish management could be expected to take the firm private in order to maximize the resources under its control. In case of low growth, on the other hand, companies are expected to have large free cash flows.

One major assumption of a multiple regression is the non-existence of *perfect multicollinearity* among the regressors. Before estimating the logit model, we therefore conducted a correlation analysis to obtain a preliminary indication for the existence of

multicollinearity among the included explanatory variables. As could be expected, the results show the highest correlation in absolute terms between the alternative size proxies TA and AMARKETCAP (88.08%) and the two growth proxies SALESGR1 and SALESGR2 (67.34%). Between other proxies correlations are high in absolute terms between CFtoTA and SALESGR2 (-20.60%), a result that supports the agency cost of free cash flow hypothesis. With respect to the proxy variables that aim to test the existence of information-asymmetry, MBV and PtoE, the correlation matrix did not demonstrate any interaction except for MBV and FREEFLOAT (-19.52%), PtoE and SALESGR1 (19.11%), and PtoE and SALESGR2 (18.06%). Yet, based on the insignificance of the mean difference of the proxy variable PtoE, one questions, at least at this stage, whether information asymmetry drives going-private transactions. The test for any other possible interaction among the model's determinant variables revealed no correlation. The high degree of intercorrelations, especially between SALESGR1 and SALESGR2 and TA and AMARKETCAP, will thus be taken into consideration when constructing the final logit model.

To determine which proxies to include in the final logit model, a single factor logit model is run first on each determinant factor and revealed the following variables to be significant, where the p-values for each coefficient estimate is shown in parentheses: CFtoTA (0.0716), SALESGR1 (0.0607), SALESGR2 (0.0158), FREEFLOAT (0.0000) and MBV (0.0769). In contrast to the univariate test, DIVYIELDG2 is only statistically discernible at the 12% error level under the single factor logit model. In the following, four different logit models are presented in Table IV with the objective to determine a model, which has the largest explanatory power. Although the McFadden R^2 likelihood ratio index is stated, the main criterion for the model selection is the AIC criterion and the Schwarz criterion²³. In general,

²³ Whereas R^2 measures the in-sample success of the regression equation in forecasting y and is widely used as a quick check of goodness-of-fit, is the AIC- and the Schwarz criterion an effectively estimate of the out-of-sample forecast error variance. Depending on the specific form of the penalty factor, each criterion embodies its own trade-off between the fit (average residual sum of squares divided by the number of regressors) and the

one judges a model with a lower value of the criterion to be preferable to alternative models. Model I consists of the independent variables that correspond to the hypotheses developed in Chapter 3. In addition to the exclusion of DIVYIELDG1, we consider the large interaction between SALESGR1 and SALESGR2, by omitting SALESGR1 in Model II. Model III aims to examine the consequences of excluding all independent variables, except for the ones being significant within the univariate analysis. Model IV is similar to Model II with the exception of the variable TA, which is not considered in the former model. Note that 51 going-private firms and 61 non-going-private firms were selected and used in estimation, being equal to a ratio of 80% of the whole sample. The remainder of 13 going-private firms and 15 non-going-private firms is used to test the models' predictive power, hereafter referred to as the hold-out sample.

[insert Table IV about here]

In Model I, the independent variables SALESGR2, DIVYIELDG2, MBV, AMARKETCAP and FREEFLOAT are statistically significant indicating that (1) negative average annual sales growth rates during the last two years prior to the PtP-transaction, (2) positive dividend yield changes during the previous two years preceding the effective date of the going-private transaction, (3) high market to book value of equity, (4) low average market capitalisation over the last 180 trading days and (5) high concentrated capital ownership structures are likely to increase a company's probability of becoming a going-private candidate. FREEFLOAT is by far the most influential variable on going-private likelihood, followed by the next larger significant coefficients of SALESGR2, DIVYIELDG2, MBV and AMARKETCAP. Relating these findings to the hypotheses of agency cost of free cash flow,

penalty factor (degrees of freedom). In contrast to R^2 , both criteria penalize the degrees of freedom more harshly. Although AIC and Schwarz should obtain their minimum at the same model, has the Schwarz-criterion an extremely strong taste for simple models. For details the author refers to Diebold (2001).

information asymmetry, illiquidity and ownership, reveals most support for the agency cost of free cash flow motivation of going-private as the two-year growth and payout proxies are significant and have the expected sign. The free-cash flow proxy has the expected sign but is not significantly different from zero, a finding, which stands in contrast to, the univariate analysis conducted earlier. The negative and significant coefficient on the MBV leads to a clear rejection of the information asymmetry motivation of going-private. Further measuring size by market capitalisation and finding a positive and significant coefficient points into the direction of transaction cost rather than information asymmetry as a relevant going-private motive. Finally regarding the illiquidity and ownership hypotheses, whereas illiquidity measured by trading volume does not seem to be relevant for a firm's going-private decision, ownership structure matters.

The above conclusions remain unaltered when the variables SALESGR1 and DIVYIELDG1 are omitted in Model II. Deleting SALESGR1 allows examining the existence of multicollinearity and thus, the high interaction between both growth estimates (SALESGR1 and SALESGR2) previously observed. A close inspection of the coefficients' standard error reveals a smaller asymptotic standard error for SALESGR2 (0.6754) in Model II compared to the associated error in the initial model (1.4626). Consequently, one is forced to conclude that the high standard error of SALESGR2 is a result of multicollinearity. Thus, the inclusion of SALESGR1 might bias the coefficients of the remaining variables and consequently, the overall performance, prediction accuracy, of the model. Conducting the same analysis with respect to the high interaction between TA and AMARKETCAP (Model IV) revealed similar findings. Including merely the significant proxy variables of the univariate test (Model III) shows as before FREEFLOAT to be a highly important determinant of the going-private likelihood. Comparing across the four models shows that despite the high correlations indicated above between some proxies, the estimated

coefficients do not change in sign or significance (with the exception of DIVYIELDG2) across models. Thus, the conclusions drawn above regarding Model I are generally valid for all four models.

The likelihood ratio statistic (LR) is found to be highly significant for all four models. Consequently, we infer that the models provide a statistically significant explanation of a firm's going-private likelihood. The McFadden R^2 for the four models ranges between 22.66% and 36.95%, where Model I has the largest explanatory power and Model III the smallest. This range is highly acceptable given the cross-sectional variations among the independent variables within the four models. Although Model II has a slightly smaller McFadden R^2 (36.59%) compared to Model I (36.95%), the Akaike-Information criterion and Schwarz criterion is applied to select the final model. Unfortunately, the Akaike-Information criterion selects Model II to be superior, whereas the minimum of the Schwarz criterion is reached at Model IV. Yet, as the explanatory power of Model II (36.59%) is larger than the corresponding explanatory level of Model IV (34.04%), we decide to employ Model II for the further analysis.

Interpretation of the coefficient values is complicated based on the fact that estimated coefficients from a binary dependent variable model cannot be interpreted as the marginal effect on the event, here a firm going private. Yet, as equation 2 shows, the multiplication of the estimated coefficients by the value of the density function infers the size of the change in probability, and thus, the marginal effect on the conditional probability²⁴.

$$\text{Density function of } x_j = \frac{\mathbf{q}E(y|x_j, \mathbf{b})}{\mathbf{q}x_j} = f(-x' \mathbf{b}) \mathbf{b}_j \quad (2)$$

Since the density function is non-negative, the direction of the effect of a change in x_j depends only on the sign of the coefficient β_j . Thus, positive values of β_j imply increasing x_j

²⁴ For further details see Wooldridge (2000).

will increase the probability of the response whereas negative values of β_j imply the opposite. The last column of Table IV shows the results of the logit analysis with respect to Model II where elasticity of means indicates the percentage change in the probability of a firm going private as a result of a one percent change in the relevant proxy, keeping the values of the remaining regressors constant. Thus, for instance, the coefficient -1.8524 for the explanatory variable SALESGR2 indicates, holding all other variables constant, the probability that the firm will go private in $t+1$ declines by 2.2382% for every one-percent increase in SALESGR2. Consequently, the higher companies' average annual net sales growth rates during the last two years, the lower the likelihood that they will go private. Likewise, a one percent increase in the explanatory variable DIVYIELDG2 will enlarge the chance of a forthcoming going-private transaction by 2.1818%. The variable FREEFLOAT has the largest impact on the likelihood of a going-private transaction. For every one-percent decrease of a company's free-float, the going-private probability boosts by 6.9557%. Although, the explanatory variables AMARKETCAP and MBV are both statistically significant at the 10% error level, their impact on the going-private likelihood is only minor.

Whereas measures such as LR, McFadden R^2 , AIC and Schwarz reported in Table IV already provide an indication about the goodness of fit of the logit model, a more specific and detailed view of the predictions provided by Model II can be found in the classification table shown in Panel A of Table V. Note that a standard prediction cut-off value of $p=0.5$ is used here. The fraction of going-private firms that are correctly predicted, often referred to as the *sensitivity*, amounts to 82.4%. *Specificity*, on the other hand, refers to the same measure applied to non-going-private firms and equals 78.7%. The number of correct predictions is identified as the sum of the main diagonal (90). In summary, the results presented in Panel A of Table V clearly show that the predictive power of the logit regression model is very high (80.4%).

[insert Table V about here]

Since the model parameters are obtained from the estimation sample, the in-sample predictive power shown in Panel A of Table V is likely to be biased upwards. Hence, we now use the hold-out sample, consisting of 13 going-private firms and 15 non-going-private firms, which previously were not considered when deriving the estimation model. Panel B of Table V and Figure 1 show the results of this analysis.

[insert Figure I about here]

Based upon the estimated coefficients, the model incorrectly predicts one going-private observation, as the predicted probability is only 0.4. With respect to the non-going-private classification there is one severe mis-prediction with a predicted probability of $p=0.95$ that is almost the opposite of the true event $p=0$. However, the overall performance shows a total of 26 correct predictions, equal to a success rate of 92.9%.

Given the model's explanatory power in- and out-of sample, the arguments for its practical application are multifaceted: (1) disclosing (early) warning signals for the existence of agency cost of free cash flow problems or information-asymmetry, (2) approving results of "being-public" cost-benefit analysis and (3) representing a consulting-tool for corporate-finance consultancies striving to expand their core-business portfolio. Based upon the model's findings, involved parties might either undertake enhancing steps or countermeasures to influence the estimated going-private probability of the company under consideration.

Although the explanatory power of the model is quite high, the insignificance of several coefficients and the significant intercept offer strong evidence that the profile of German

going-private firms cannot entirely be explained in terms of the quantitative proxies applied in this paper. Whereas the results suggest support the agency cost of free cash flow and ownership hypotheses, it appears that information asymmetry and illiquidity do not explain going-private transactions. Several explanations might be responsible for these findings: The empirical analysis in this chapter was performed on a sample consisting of 51 going-private companies and 61 non-going-private firms settled in various industries. Proceeding in this way, industry idiosyncratic conditions on going-private likelihood are likely to be ignored. In section II the transaction forms were discussed that inevitably lead to a companies' direct listing termination. Thus, subdividing the going-private sample according to the respective transaction form - as depicted by the frequency distribution in Table I - might be beneficial. Given the small number of German PtP transactions, however, such an analysis is not feasible here. Finally, due to data limitation, one major proxy of the information-asymmetry hypothesis is ignored: the company's cumulative abnormal return (CAR) prior to the going-public announcement.²⁵ Such a CAR would indicate managements' information advantage on non-public information and their ability to outperform other companies. Consequently, the above finding might be biased in the sense that a relevant regressor has been omitted.

VI. Conclusions

Although several papers have attempted to empirically investigate the motives for going-private transactions within the Anglo-Saxon region, the authors have failed to expand their analysis to Continental European countries in general, and to Germany in particular. This gap in the academic literature is especially critical for Germany as recent regulatory changes will

²⁵ Note that our overall sample of going-private and non going-private companies includes "dead" companies. Usually Thomson Financial DataStream (Advance 3.5) directly provides companies' abnormal daily returns. However, DataStream does not cover company accounts and equity data on "dead" companies for Germany except for the historical trading volume, market capitalisation and dividend yield. This fact was certified by further inquiries with the responsible employees of Thomson Financial's Help-Desk and Company Accounts Team.

most likely result in a larger number of going-private transactions and as Germany allows us to study the role of illiquidity and ownership concentration. To remedy this shortcoming, this study exclusively examined the going-private phenomenon in Germany. Specifically, we presented a first attempt to explain the motives for a going-private transaction and to empirically examine whether the financial characteristics of German going-private companies are distinguishable from firms, which have not gone private.

Given the results, the analysis offered the overall strongest evidence agency cost of free cash flow hypothesis to explain German PtP-transactions. However, our analysis revealed contradicting results to clarify going-private transactions in the context of informational asymmetry. In sharp contrast to expectation, companies' going-private likelihood is positively affected by an *increase* in the underlying market to book value of equity. Regarding firm size, we find smaller firms to be more likely going-private candidates, a result that supports the transaction cost rather than the information asymmetry motivation of going-private. Finally, regarding the illiquidity and ownership hypotheses, we conclude that a company's ownership proxied by the free-float is relevant whereas illiquidity measured by trading volume does not determine the likelihood of a firm to go private.

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Table I: German Going-Private Transactions

This table presents all German going-private transactions by year and type. A regular delisting applies to companies which voluntarily revoke their listing admission or where the revocation of the listing admission is caused ex officio. A cold delisting results from a corporate restructuring such as a going-private merger or an integration into the parent company. Bankruptcy of the company obviously leads to the disappearance of the company's stock from the exchange.

	Total	Regular Delistings	Cold Delistings		Bankruptcy
			M&A	Integration	
1997	13	5	5	1	2
1998	15	5	5	1	4
1999	12	3	7	2	0
2000	31	10	12	7	2
2001	26	8	17	1	0
Total	97	31	46	12	8

Table II: Summary of Hypotheses

This table summarizes the hypotheses regarding the motivations for going private. For going-private firms, all level proxies are taken the year before the going-private transaction whereas all growth proxies are taken over the two years preceding the going-private transaction. For the control sample of non-going-private firms, the data for the year 2001 is used. The average trading volume is calculated based on the last 180 trading days either before the going-private transaction or before the end of 2001. The sources are Bloomberg or Hoppenstedt. A positive expected sign implies that an increase in the corresponding variable increases the likelihood of a forthcoming PtP transaction.

Theory	Hypothesis	Proxies	Abbreviation	Expected Sign
agency cost of free cash flow	H ₁	free cash flow to total assets	CFoTA	+
	H ₂	growth rate of net sales	SALESGR1, SALESGR2	-
	H ₃	change in dividend yield	DIVYIELD1, DIVYIELD2	+
information asymmetry	H ₄	market to book value of equity	MBV	-
		price-to-earnings ratio	PtoE	-
	H ₅	total assets	TA	-
		average market capitalisation	AMARKETCAP	-
illiquidity and ownership	H ₆	free-float	FREEFLOAT	-
	H ₇	average trading volume	ATRADEVOL	-

Table III: Univariate Analysis

This table provides descriptive statistics for the sample of 64 German going-private transactions and the control sample of 76 German firms that did not go private during the period 1994 to 2002. For all proxies described in table II, mean and standard deviation are reported and a univariate test for the difference in means between the two samples is conducted. Here, the mean difference is defined as the value for the going-private companies minus the values for the non-going-private companies. Thus, a significantly positive (negative) t-statistic implies that the mean of the going-private sample is larger (smaller) than the mean of the non-going-private sample. * and ** indicate statistical significance at the 1% and 5% level, respectively. In Panel B, alternative values for MBV and PtoE are calculated for the control sample based on the average share prices during 2001.

Proxy	Going-Private Companies		Non-Going-Private Companies		Mean Difference	t-Statistic for Difference in Mean
	mean	standard deviation	mean	standard deviation		
Panel A: Basic specifications						
CFtoTA	0.0510	0.0712	-0.0032	0.1650	0.0542	2.5931**
SALESGR1	0.2100	1.0942	0.6036	0.8541	-0.3936	-2.3393**
SALESGR2	0.0563	0.3604	0.5455	0.8463	-0.4891	-4.5705*
DIVYIELD1	0.1071	1.0321	0.2172	2.3565	-0.1101	-0.3676
DIVYIELD2	0.0003	0.3105	-0.1915	0.6231	0.1919	2.3594**
MBV	3.4155	2.2266	1.6757	1.9917	1.7397	2.6340*
PtoE	37.7204	111.4932	21.3788	1,036.1383	16.3416	0.9649
FREEFLOAT	0.1311	0.1303	0.3413	0.2226	-0.2101	-6.9394*
TA ¹	10,197.4	46,590.9	7,935.6	50,990.7	2,261.8	0.2740
AMARKETCAP ¹	1,200.8	3,769.6	1,725.8	8,795.7	-524.9	-0.4714
ATRADVOL ¹	195,765.7	887,346.8	68,978.2	236,079.2	126,787.6	1.1105
Panel B: Alternative Specifications						
MBV	3.4155	2.2266	2.0986	1.3029	1.3169	1.9776**
PtoE	37.7204	111.4932	53.9789	83.887	-16.2585	-0.4262

¹ mean values are given in millions of euros.

Table IV: Multivariate Logit Regression Analysis of Factors Influencing the Going-Private Likelihood

This table presents the results of four multivariate logit regressions which include different sets of independent variables. The expected sign in the second column refers to the hypotheses summarized in table II. In addition to the estimated coefficients, the z-statistic, computed to test the null hypothesis of a zero coefficient, is shown in parentheses. *, **, and *** indicate statistical significance at the 1%, 5%, and 10% level, respectively. LR indicates the p-value of the likelihood ratio test statistic, which is computed to test the hypothesis that all parameters of the model are simultaneously equal to zero. The McFadden R² reflects the likelihood ratio index of the model. AIC presents the Akaike-Information criterion. Schwarz refers to the Schwarz criterion. For model II, the elasticity of means is calculated which indicates the percentage change in the probability of a firm going private as a result of a one percent change in the independent variable while keeping the values of the other regressors constant.

Independent Variable	Exp. Sign	Model I	Model II	Model III	Model IV	Elasticity of Means for Model II
CFtoTA	+	3.2554 (0.9554)	3.1481 (0.9486)	3.7206 (1.2207)	2.1864 (0.7968)	3.8037
SALESGR1	-	0.2793 (0.4981)				
SALESGR2	-	-2.4335*** (-1.6640)	-1.8524** (-2.1414)	-1.1265*** (-1.7229)	-1.7675** (-2.0991)	-2.2382
DIVYIELDG1	+	-0.0820 (-0.4733)				
DIVYIELDG2	+	1.8563* (2.7011)	1.8058* (2.6735)	0.7315 (1.4951)	1.2786** (2.2058)	2.1818
MBV	-	0.1608*** (1.9489)	0.1554*** (1.9278)	0.0961 (1.3901)	0.1390*** (1.8084)	0.1878
PtoE	-	0.0091 (1.3238)	0.0102 (1.5231)		0.0098 (1.5070)	0.0123
TA	-	0.0000 (1.6007)	0.0000 (1.5933)			0.0000
AMARKETCAP	-	-0.0005*** (-1.9149)	-0.0005*** (-1.9117)		-0.0003* (-2.7708)	-0.0006
FREEFLOAT	-	-5.5758* (-3.1615)	-5.7567* (-3.2745)	-4.5512* (-3.3566)	-6.3404* (-3.6153)	-6.9557
ATRADVOL	-	0.0000 (1.2083)	0.0000 (1.2620)		0.0000 (2.5364)	0.0000
constant		0.8972*** (1.7888)	0.9122*** (1.8374)	0.7121*** (1.6855)	0.9117*** (1.9197)	1.1021
LR		57.0414*	56.4851*	34.9819*	52.5437*	
McFadden R ²		0.3695	0.3659	0.2266	0.3404	
AIC		1.0833	1.0526	1.1731	1.0699	
Schwarz		1.3746	1.2953	1.3188	1.2883	

Table V: Classification Results of Logit Model II

This table provides information regarding the goodness of fit of the logit regression model II. Panel A reports the results for those firms included in the logit regression whereas Panel B presents results for firms not included in the regression sample. $P(\text{Dep}=1)$ defines the predicted probability that a firm will go private. Correct classifications are obtained when the predicted probability $P(\text{Dep}=1)$ is greater than the cut-off probability of 0.5 for going-private firms and lower than 0.5 for non-going-private firms.

	Going-Private Companies (Dep=1)	Non-Going-Private Companies (Dep=0)	Total
Panel A: Within Sample Results			
$P(\text{Dep}=1) = 0.5$	9	48	57
$P(\text{Dep}=1) > 0.5$	42	13	55
Total	51	61	112
% correct	82.4%	78.7%	80.4%
Panel B: Hold-Out Sample Results			
$P(\text{Dep}=1) = 0.5$	1	14	15
$P(\text{Dep}=1) > 0.5$	12	1	13
Total	13	15	28
% correct	92.3%	93.3%	92.9%

Figure I: Predicted Probability of Going-Private for the Hold-Out Sample

Each bar represents a specific company in the hold-out sample. Black bars represent companies that actually went private during the sample period whereas companies represented by grey bars did not. The height of the bar shows the predicted probability of going-private (GPL forecast) based on logit model II. Incorrectly predicted firms are indicated with a *

