

Cash Auction Bankruptcy and Corporate Restructuring

Karin S. Thorburn

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Cash Auction Bankruptcy and Corporate Restructuring

Ph.D Dissertation

by

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March, 1998



STOCKHOLM SCHOOL OF ECONOMICS
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Stockholm March 31, 1998

Karin S. Thorburn

Foreword

In 1994, I participated in a two-week seminar on law and economics at Dartmouth College. I became aware that, although there are numerous studies of corporate restructurings under the reorganization provisions of Chapter 11 of the U.S. bankruptcy law, evidence on competing types of bankruptcy systems is relatively sparse. Nevertheless, there was—and still is—a trend throughout Europe towards adopting Chapter 11-style reorganization provisions into the respective countries' bankruptcy codes.

At the time, my intuition was (and still is) that Chapter 11-style reorganizations would exacerbate agency conflicts between managers and securityholders due to the relative protection of managerial control rights afforded by Chapter 11. This is an unresolved empirical issue which I set out to examine through a large-sample analysis of restructurings under the alternative, mandatory auction bankruptcy system in Sweden. What follows is the result of this endeavour.

The thesis consists of four essays, three of which are single-authored. The first essay, *Cash auction bankruptcy: Costs, recovery rates and auction premiums*, examines direct costs, creditor recovery rates and auction premiums in Swedish auction bankruptcy, and compares the results to extant evidence on U.S. Chapter 11 cases. Overall, the results suggest that cash auction bankruptcy provides a relatively cost-efficient bankruptcy procedure, producing average firm recovery rates that are similar to those reported for much larger firms in Chapter 11. Moreover, I find no evidence that managers file for auction bankruptcy "too late" (which would destroy going concern value). Moreover, auction premiums are significant and tend to increase with industry distress measures, which in part contradicts popular asset fire-sales arguments. The latter result possibly reflects increased marketing effort by the trustee when industry demand is relatively low.

This essay has been revised and resubmitted for publication in the *Journal of Financial Economics* after invitation by the journal's editor.

The paper has also generated substantial interest during my presentations at numerous European and North-American university seminars, including Harvard, Dartmouth, Duke, Utah, Penn State, Illinois, Toronto, Vienna, Stockholm, Gothenburg, Bergen and Oslo.

The second essay *Managerial compensation and corporate performance following cash auction bankruptcy* provides evidence on managerial compensation changes, turnover and corporate performance following Swedish bankruptcy auctions. The evidence indicates that mandatory bankruptcy auctions act

as a substantial managerial disciplinary force: CEOs typically incur significant compensation losses and a majority of CEOs lose their job through the bankruptcy auction. Nevertheless, the operating profitability of the auctioned firms is typically at par with industry norms. Thus, although CEO personal wealth effects and turnover rates are dramatic, there is little support for the argument that managers in a mandatory auction bankruptcy system tend to delay filing at the detriment of the firm's going concern value. To my knowledge, this is the first study providing systematic evidence on this "delayed filing hypothesis" in an auction environment.

This essay is currently under review at the *Journal of Finance*.

While the first two essays examine auction bankruptcy per se, essays three and four take a broader perspective on corporate restructurings and the resolution of financial distress. In this broader perspective, firms attempt to resolve their financial distress out-of-court, often avoiding bankruptcy filing altogether. One potential mechanism for resolution of financial distress is to merge with a financially healthy firm. The extant literature demonstrates large shareholder gains to target firms in corporate acquisitions, however, there is little evidence on significant gains to bidding firms. Absent bidder gains, takeovers do not constitute a viable alternative to bankruptcy.

The third essay *Gains to bidder firms revisited*, which is coauthored with B. Espen Eckbo, therefore sets out to examine in unprecedented detail potential alternative econometric explanations for the lacklustre performance of bidders. The analysis is based on a large sample of Canadian and U.S. bidders acquiring Canadian targets. The paper provides some first evidence consistent with the proposition that the *measured* stock market gains to relatively large, frequent acquirors reflect an attenuation bias produced by event-study econometrics. The positive gains to shareholders of Canadian domestic bidding firms suggest that mergers between relatively equal-sized firms, and which have not generated anticipations of future acquisition activity, tend to produce significantly positive bidder gains.

This essay is currently under review for publication at the *Journal of Financial and Quantitative Analysis*.

The thesis ends with a general survey of much of the finance literature on the resolution of financial distress. This essay, which is written in the Swedish language, has been published in *EFI's annual book* of 1997, Stockholm School of Economics.

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Chapter 1

Costs, recovery and auction premiums

**Cash Auction Bankruptcy:
Costs, recovery rates and auction premiums¹**

by
Karin S. Thorburn

Abstract

This paper provides large-sample Swedish evidence indicating that mandatory cash auctions constitute a relatively efficient bankruptcy procedure. Cash auctions, which adhere to absolute priority rules, have similar (size-adjusted) direct costs as Chapter 11 reorganizations and are substantially quicker. There is no evidence that managers, fearing loss of corporate control, file "too late". Seventy-five percent of firms are auctioned as going concerns, of which 25 percent are "auction prepacks". Moreover, secured debtholders and banks recover typically 80 percent of face value. Auction premiums decrease with asset uniqueness and tend to increase with industry distress, which contradicts popular asset fire-sales arguments.

¹I wish to thank B. Espen Eckbo for constant encouragement and numerous comments. I am also grateful for comments by Peter Björnram, Jonathan Karpoff, Kai Li, Todd Pulvino, Stefan Sundgren, Elisabeth Tashjian, Larry Weiss and seminar participants at Dartmouth College, Duke University, Harvard Business School, the Norwegian School of Economics and Business Administration, the Norwegian School of Management, Penn State University, the Stockholm School of Economics, University of Illinois, University of Toronto, University of Vienna, the 1997 European Finance Association meetings, the 1997 Stockholm International Seminar on Risk Behavior and Risk Management, the 1998 Utah Winter Finance Conference, and the 1998 RJ Seminar on Bankruptcy. This research has received financial support from Bankforskingsinstitutet, NÖDFOR, Sparbankernas Forskningsstiftelse and the Norwegian Research Council (Norges Forskningsråd).

1.1 Introduction

Different bankruptcy procedures allocate different sets of control rights to incumbent managers and the firm's security holders, thus affecting both the timing and form of management's choice of bankruptcy venue. For example, Chapter 11 of the U.S. bankruptcy code allows managers to retain a certain degree of control over the firm's assets and operations while in bankruptcy. Chapter 11 thus encourages managers to select a court-supervised debt reorganization rather than file for liquidation in Chapter 7. In contrast, the Swedish bankruptcy code, which constitutes the empirical laboratory of this paper, is a "liquidation code" in the sense that it has no reorganization provisions and requires all bankruptcy filings to be resolved through a cash auction. This auction results either in a going concern sale of the firm or in a piecemeal sale of the assets.² Importantly, the auction is run by an independent, court-appointed trustee, and neither incumbent management nor any of the firm's security holders retain any control rights.

Proponents of the bankruptcy auction system point to the fact that it exploits the market's valuation of the firm's assets.³ The question of the optimal

²Note that the term "liquidation" in the context of bankruptcy auctions refers to either piecemeal sale of the firm's assets or sale of the firm as a going concern. In the latter case, it is only the firm's "corporate shell" or legal corporate definition that in fact is liquidated. Throughout this paper, the term "bankruptcy auction" is used synonymously with "liquidation". The specific context will make clear whether the auction results in piecemeal sale or sale of the bankrupt firm as a going concern.

³See, e.g., Roe (1983), Baird (1986), Bebchuck (1988), Jensen (1991), Bradley and Rosenzweig (1992).

disposition of the distressed firm's assets is left to the highest-valuation bidder rather than to management or to a disinterested court. This reduces the scope for agency problems as well as disagreement among existing claimholders, and it simplifies bargaining, all of which ultimately lowers bankruptcy costs. Moreover, the cash proceeds from the auction allow settlement of debt claims strictly according to absolute priority rules (APR).

On the other hand, proponents of a Chapter-11 type of reorganization code argue that auctions risk destroy value by forcing asset "fire-sales" below true market value. The argument ranges from claims of informationally inefficient capital markets, to direct costs of bidding in an auction, liquidity constraints and scarce managerial resources in distressed industries, and asymmetric information about true managerial quality which may induce managerial overinvestment under a liquidation code.⁴

The relative merits of court-supervised reorganizations vs. mandatory bankruptcy auctions is a largely unexplored empirical issue. While numerous studies document evidence on Chapter 11 cases, systematic evidence on the effects of bankruptcy auctions under a liquidation code (as well as Chapter 7) is sparse.⁵ As discussed in greater detail below, the stylized facts on Chapter 11 cases indicate that the proceedings are relatively time consuming and

⁴E.g., Shleifer and Vishny (1992), Aghion, Hart and Moore (1994), Berkovitch and Israel (1995) and White (1995).

⁵Notice the difference between studying Chapter 7 cases, which are in the context of the *option* to select Chapter 11, and the cash auction cases studied here, where court supervised reorganization is not an alternative. The self-selection process of financially distressed firms is potentially very different under the two alternative legal environments.

costly, and permit deviations from APR.⁶ Furthermore, a significant proportion of firms emerging from Chapter 11 require a second debt restructuring, and the average post-bankruptcy performance is below industry norms.⁷

This paper presents new evidence on the efficiency of bankruptcy auctions using 263 Swedish bankruptcies compiled by Strömberg and Thorburn (1996). Moreover, it systematically contrasts the Swedish evidence with extant empirical results on Chapter 11 cases. The analysis focuses on four major issues. The first set of issues concerns the choice of bankruptcy venue. The paper documents that a significant proportion (over 25%) of the going concern sales are in the form of agreements executed just prior to filing or immediately upon filing for bankruptcy. I label these "auction prepacks", and they have an interesting counterpart in Chapter 11 prepacks.

The alternative to auction prepacks and other in-bankruptcy going concern sales is piecemeal liquidation. In Sweden, 30% of the bankruptcy filings result in piecemeal liquidation, which compares to the thirty percent of Chapter 11 filings that fail to reorganize as a going concern. Since a "late" filing increases the chance of piecemeal liquidation (due to loss of going concern value), this evidence is inconsistent with speculations of excessive management aversion to file for cash auction bankruptcy. Moreover, there is no evidence that firms filing for auction bankruptcy are in a worse financial

⁶See, e.g., Franks and Torous (1989, 1994), Eberhardt, Moore and Roenfeldt (1990), Gilson, John and Lang (1990), Weiss (1990), and Betker (1997).

⁷See, e.g., Hotchkiss (1995) and Gilson (1997).

condition in the year prior to filing than firms filing for Chapter 11, which again fails to support the proposition of "late" filing.

The second set of issues of this paper concerns the magnitude and determinants of direct bankruptcy costs, which are important for judging the economic efficiency of the bankruptcy regime. In the case of the third largest Swedish firms, the percentage direct costs of cash auctions are similar to those reported for the much larger publicly held U.S. firms reorganizing in Chapter 11 (average 3.7% vs. 3.6%).⁸ In light of the fixed components in bankruptcy costs, cash auctions appear to provide a relatively low-cost bankruptcy procedure. Prepacks incur the lowest costs in both bankruptcy regimes, and are lowest under the cash auction system. Interestingly, direct bankruptcy costs are also found to be increasing in industry distress factors, suggesting that the bankruptcy trustee increases her auction marketing efforts when industry financial distress tends to reduce auction demand. Cash auction proceedings have substantially lower indirect costs, reflecting their speed of execution: median 1.5 *months* compared to the 2-3 *years* it on average takes to resolve restructurings under Chapter 11.

Third, the paper examines debt recovery rates. Recovery rates presented here for Swedish auction bankruptcy represent actual cash distributions paid out a few months after filing, while recovery rates reported in the literature

⁸The largest Swedish firms in the sample, none of which were publicly traded, are an order of magnitude smaller than the publicly held firms typically studied under Chapter 11. Throughout the paper, references to Chapter 11 evidence indicate whether the underlying sample consists of publicly traded or private firms.

for Chapter 11 cases are market and book values of claims received 2-3 years later. Debt recovery in Sweden tend to be higher for firms sold as going concerns and lower for firms filing for bankruptcy during the economy-wide downturn in 1991. Firms that filed prior to 1991 and were sold as going concerns have a median overall recovery rate which is similar to that reported for a sample of publicly traded firms completing their reorganization under Chapter 11 (40% vs. 41%). Banks and secured creditors tend to recover approximately the same in both bankruptcy regimes (in excess of 80%). While junior debt and equity appear to recover a disproportionate share in Chapter 11 proceedings, reflecting deviations from APR, junior claimants receive typically nothing in the Swedish cash auctions.

Fourth, the paper examines whether the auction *premium* (defined as the ratio of the realized cash auction price to the trustee's value estimate) depends on industry wide financial distress and asset uniqueness. This econometric analysis explores structural regime-switch and self-selection models in order to account for the possible dual role of the filing firm's bank when it decides to finance the buyer in the auction. As expected, the auction premium decreases with the fraction of the firm's assets that are unique to the industry. Surprisingly, industry distress factors tend to *increase* auction premiums, which contradicts popular asset fire-sales arguments. It is possible that the auction trustee, when facing a liquidity constrained distressed industry, increases general sales efforts to offset low expected demand in the

cash auction.

The paper is organized as follows. Data sources and sampling procedures are contained in Section 2. Section 3 presents evidence on the determinants of firms' choice of bankruptcy venue (auction prepack, in-bankruptcy going concern sale, piecemeal liquidation). Section 4 examines direct bankruptcy costs and debt recovery rates, while section 5 examines determinants of auction premiums. Section 6 concludes the paper.

1.2 Data and sample characteristics

1.2.1 Legal rules under Swedish cash auction bankruptcy and U.S. Chapter 11

Table 1 summarizes central characteristics of Swedish auction bankruptcy and shows the comparable rules under Chapter 11 in the U.S.. Chapter 11 provides the stronger protection of managers, equityholders and the firm. For example, management remains in control of the firm under Chapter 11, while in Sweden, the incumbent management team is always replaced by an independent court-appointed trustee with a fiduciary responsibility towards creditors. The bankruptcy trustee organizes the sale of the firm in a cash auction, either piecemeal or as a going concern. The bankruptcy auction is also supervised by the provincial supervisory authority ("Tillsynsmyndigheten i Konkurs"). This supervision, the legal constraints on the trustee, as well as the value of the trustee's own reputation, all increase the trustee's incentives

to fulfill her fiduciary responsibility towards the filing firm's creditors.⁹

Under Chapter 11, management has an exclusive right to propose a reorganization plan during the first 120 days and during a routinely granted extension of that period, plus another 60 days to seek approval of the plan. Shareholders participate in the voting of the proposed reorganization plan and often retain some equity (effectively resulting in deviations from APR). In contrast, under Swedish bankruptcy, the trustee alone decides on the sale of the assets and distributes the cash proceeds to the creditors strictly according to APR. Also, in the U.S., the bankrupt firm is strongly protected under Chapter 11 through automatic stay of creditors and debtor-in-possession financing. There is a corresponding protection of collateral under the Swedish bankruptcy code.¹⁰ Moreover, interest continues to accrue on secured and senior debt, and new debt financing is also legal although infeasible in practice.

In Sweden, administrative and advisory costs of the bankruptcy proceeding receive highest priority along with costs incurred by the firm while in bankruptcy. Secured claims are entitled to the proceeds from sale of the collateral, leaving any unpaid portion of the claim unsecured. The vast majority of firms have so-called "floating-charge" secured claims pledging as collateral the movable property of the firm, including operational assets such as ma-

⁹Note that if a shareholder of the bankrupt firm places a bid for the assets, the trustee is still requested to go ahead and arrange an open auction.

¹⁰Under very limited circumstances, secured creditors can seize assets that are currently in their physical possession.

chinery, inventory and accounts receivables, but excluding cash balances and stock holdings. Debt claims are paid in the following order: secured claims (including floating-charge secured claims), certain audit claims, tax claims, wage claims and, lastly, junior (or unsecured) claims. Audit, tax and wage claims have statutory priority to unsecured claims, and are classified as senior claims.¹¹

Moreover, the Swedish government guarantees the payment of wage claims up to a certain limit. During the sample period of this paper, wages earned during the last 12 months prior to bankruptcy filing plus an appropriate time of notice (at most another 6 months) were guaranteed by the government. In the U.S., there is no corresponding wage guarantee. It is conceivable that the Swedish wage guarantee causes some firms to file for bankruptcy earlier than later, in order to pass on the unpaid wage bill to the government.

1.2.2 Data sources

The empirical analyses is performed using the sample of Swedish bankruptcies compiled by Strömberg and Thorburn (1996), and restricted to firms with at least 20 employees.¹² As shown in Table 2, this sample is identified using information provided by UpplysningsCentralen AB (UC), a private company which collects information on all Swedish firms and individuals for

¹¹Swedish firms cannot issue several classes of unsecured debt with different seniority. As a result, the sample firms have no other senior debt than the claims that have priority by law.

¹²Swedish corporations are primarily small, privately held firms: In 1991, only 6% of the corporate population (12,637 corporations) had 20 employees or more.

use in, e.g., credit risk assessments. The UC data base contains a total of 1,159 bankruptcy filings from January 1, 1988 through December 31, 1991.

The sampling procedure then eliminates the following cases: 581 firms located outside the selected geographical area;¹³ 145 cases which are still in bankruptcy on June 30, 1995;¹⁴ 59 cases that are related to tax fraud charges; and 111 cases for which the bankruptcy file is either missing (e.g., has been transferred to another supervisory authority) or incomplete. In the final sample of 263 firms,¹⁵ 63 firms are liquidated piecemeal and 195 firms are sold as a going concern, while 5 cases have insufficient information to be classified either as a going concern sale or as a piecemeal liquidation. In this classification, going concern sale is defined as a sale without separating the firm's "core assets". Core assets include inventories, machinery, vehicles, unfinished products, intangible assets, industrial estate, and rental contracts.

For each firm in the sample, information on firm- and case-specific characteristics is collected from the bankruptcy file kept by the provincial supervisory authority. Information on pre- and post-bankruptcy balance sheet and accounting data is provided by UC. UC also supplies balance sheet and accounting data from the period 1987-1994 for the Swedish population of more

¹³The data collection was concentrated to the four largest administrative provinces in Sweden, i.e., Stockholms län, Göteborg- och Bohus län, Malmöhus län and Upplands län.

¹⁴While the firm's assets are quickly auctioned off in bankruptcy, the old and empty "corporate shell" remains on file with the court as an open bankruptcy case for several years to follow. The reason is that a case cannot be formally closed until all claims owned by the filing firm are fully collected, which may take several years.

¹⁵Of the 263 sample firms, 9 filed in 1988, 27 in 1989, 71 in 1990 and 156 in 1991.

than 15,000 firms that were operating on December 31, 1991, and which had at least 20 employees. This information is used below to construct industry distress measures.

This paper extends the original dataset and compiles information on the identity of the financing source (typically a bank) of the buyer, as well as the identity and stock ownership of the CEO. The former is from the national register of corporate floating-charge claims ("Inskrivningsmyndigheten för företagsinteckning"), and allows classification of each case as to whether or not the filing firm's bank participates in the financing of the successful buyer in the auction. Of the 195 going concern sales, the role of the bank is identified for 108 cases. The CEO identity and stock ownership are compiled by matching the information on management and owners in the bankruptcy file, with board information provided by UC. This matching process results in the identity of the CEO for 260 of the 263 sample firms as well as the stock ownership of 215 CEOs.

1.2.3 Sample characteristics

The sample firms represent more than 30 different 2-digit Standard Industrial Classification (SIC) groups. The largest number of cases, 76 firms, occur in the manufacturing industry. Of the remaining cases, 33 are in the construction industry, 30 firms are wholesale companies, 26 firms are hotels and restaurants, while 26 cases are from the transportation industry (primarily taxi cabs). All firms are privately held and most have concentrated owner-

ship. Of the 181 sample firms with available information on shareownership structure, 56% are wholly owned by one individual or family, and another 31% have a single shareholder who controls more than half of the voting equity. Moreover, 75% of the firms are run by an "owner-manager", defined as a CEO holding at least 10% of the firm's equity,¹⁶ while the remaining 25% of the firms are managed by an external CEO.

Table 3 lists selected pre-bankruptcy characteristics for the sample firms based on their last reported financial statement, dated on average 16.5 months (median 15.5 months) prior to filing. For comparison purposes, Table 3 also lists the corresponding information for publicly traded U.S. firms that file for Chapter 11 or initiate a workout.¹⁷ Throughout the paper, a comparison is made to studies of both privately held and publicly traded U.S. firms. The majority of U.S. studies examine bankruptcy filings by public corporations traded on the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX), and studies on private firms often lack central pieces of information. As a result, comparisons are sometimes made to U.S. publicly traded firms, attempting to adjust for the much greater size of such firms. Existing U.S. evidence does not indicate that the characteristics of Chapter 11 reorganizations (e.g., the fraction of surviving firms or the length of the

¹⁶The owner-managers hold on average 78% of the firm's equity (median 100%).

¹⁷The information on public firms in Chapter 11 is from Weiss (1990), Gilson, John and Lang (1990), Franks and Torous (1994) and Hotchkiss (1995), and the information on firms initiating workouts is from Gilson, John and Lang (1990) and Franks and Torous (1994).

reorganization) are substantially different across public and private firms. In the Swedish sample, the average book value of total assets one year prior to filing is only \$2.5 million (median \$1.3 million) and the average number of employees is 43 (median 29).

The pre-bankruptcy mean debt to assets ratio is almost identical across the Swedish firms and a weighted average of three samples of public firms in Chapter 11 (0.92 versus 0.91). However, the Swedish firms have on average a substantially lower proportion of long-term debt than both public and private firms filing for Chapter 11: 34% in Sweden vs. 58% and 64% in the U.S., respectively, measured as a fraction of total assets. This reflects the extensive (short-term) bank financing of Swedish firms. Furthermore, the current ratio (the ratio of current assets to short-term debt) is on average higher for the Swedish firms than for public Chapter 11 firms but similar to U.S. firms completing a workout (as reported by Franks and Torous (1994)).¹⁸ Moreover, the fraction of Swedish firms with negative earnings before interest and taxes (EBIT) in the year prior to filing is lower than that of Hotchkiss' (1995) sample of Chapter 11 firms. Overall, these statistics do not indicate that firms filing for cash auction bankruptcy are in any worse financial condition prior to filing than firms filing for Chapter 11.

Table 4 reports financial characteristics after filing for bankruptcy.¹⁹ The

¹⁸The higher the current ratio, the more liquid funds to pay off short-term debt.

¹⁹For the evidence on public firms in Chapter 11, see the references in note 17, as well as LoPucki and Whitford (1993) and Betker (1997). The evidence on private firms in Chapter 11 is from LoPucki (1983), White (1984) and Lawless, Ferris, Jayaraman and

Swedish firms' in-bankruptcy book value of total assets, which is estimated by the bankruptcy trustee, averages \$0.6 million, and is approximately equal to the size reported for private U.S. firms in Chapter 11. This in-bankruptcy book value is only one quarter of the average pre-filing book value of assets reported in Table 3 above, and the difference partly reflects pre-filing asset sales.²⁰ The realized auction value is reported in the filing documents. This value, which consists of the sum of the total proceeds from the sale of assets in the auction and the amount collected from accounts receivables and other claims owned by the firm, averages \$0.8 million. The median percentage auction premium, defined as the ratio of the realized auction value to the trustee's value estimate minus one, is 24%.²¹

Table 4 also provides information on the debt structure of the Swedish firms and of U.S. firms in Chapter 11. The average fraction of total liabilities consisting of secured debt is similar for the Swedish firms and the private Chapter 11 firms in White's (1984) study (39% versus 42%). Banks hold just over a third of the total liabilities of the Swedish firms (mean 36%), of which on average 94% (median 100%) is secured.²² Thus, the fraction of secured debt for the Swedish firms, which includes practically all bank debt, is also similar to the fraction of the sum of secured and bank debt for public

Makhija (1994).

²⁰For 30% of the sample firms, the bankruptcy trustee reports major asset sales prior to filing (which is likely to be an under-estimate of the true rate).

²¹Two observations on the auction premium were excluded due to missing data.

²²One quarter of the debt of *public* U.S. Chapter 11 firms studied by Gilson, John and Lang (1990) is bank debt.

U.S. firms (39% vs. 37%). Furthermore, reflecting the statutory seniority of audit, tax and wage claims in Sweden, the Swedish firms have a higher mean fraction of senior debt than the private firms in White's study (29% versus 5%), while the fraction of junior, unsecured debt is lower for the Swedish firms (33% versus 54%).

1.3 Determinants of bankruptcy venue

1.3.1 Auction prepack vs. in-bankruptcy auction

In the 1980s, it became increasingly popular for financially distressed firms in the U.S. to negotiate a "prepackaged" bankruptcy (prepack), i. e., a reorganization plan negotiated out-of-court and subsequently approved under Chapter 11.²³ In a similar fashion, claimholders of financially distressed firms in Sweden sometimes perform the financial restructuring out-of-court prior to filing for bankruptcy, a procedure which I similarly label "prepackaged going concern sale", or simply auction prepack. An auction prepack is an agreement to sell the firm's assets as a going concern either prior to bankruptcy filing (Swedish "inkr  m") or immediately upon filing.²⁴ The agreement must be approved by the floating charge claimholders (typically banks) and, subsequent to bankruptcy filing, by the bankruptcy trustee.²⁵ With this definition,

²³See, e.g., Betker (1995) and Tashjian, Lease and McConnell (1996) for empirical analyses of prepacks.

²⁴In an auction prepack, the financial claims typically remain against the firm's corporate shell that files for bankruptcy, and are paid off in the subsequent bankruptcy procedure.

²⁵Neither junior nor senior creditors can legally prevent an auction prepack as long as the trustee deems the transaction to be "fair".

there is a total of 53 auction prepacks in my sample (20% of all sample filings), of which 45 were executed prior to filing for bankruptcy and another 8 executed within one week following filing. Thus, I find that auction prepacks represent an important part of cash auction bankruptcies in Sweden, much as observed under Chapter 11.

In Chapter 11 prepacks, equityholders typically get to retain some equity and thus have a financial interest in lowering the costs of the restructuring. At the time of an auction prepack, however, the residual value of equity is basically close to zero. One possible motive for auction prepacks is owner and/or managerial incentives to retain control of the firm, deciding on the allocation of assets before the trustee steps in and takes control. Another possible explanation for auction prepacks is managerial reputational considerations, encouraging managers to minimize the costs of bankruptcy.

Table 6 shows the results of a probit regression for the probability that a sample firm selects an auction prepack versus an in-bankruptcy auction. The explanatory variables are defined in Table 5. The variable SECURED, which measures the proportion of secured debt in the firm's capital structure, is used as a proxy for the fraction of tangible assets. Auction costs are expected to be higher for firms the lower the value of SECURED. Firms with a high proportion of intangible assets are more difficult to value. Moreover, the value of intangible assets tends to get dissipated when the firm is liquidated piecemeal, which can be avoided by selecting an auction prepack. Auction

prepacks are made conditional on the acceptance of all floating-charge holders. The probability of a prepack is therefore also expected to decrease with the number of creditors holding floating-charge secured claims, here labeled FLOAT.

Industry distress reduces industry demand and increases the incentives to restructure out-of-court. Thus, the probability of an auction prepack is expected to be increasing in the degree of industry distress, here measured as the fraction of financially distressed firms in the industry, or DISTRESS.²⁶ A related argument is that assets which are unique to the industry are of a relatively low value to industry outsiders, and are therefore less likely to be sold piecemeal. Thus, a variable measuring the fraction of the firm's assets that are classified as industry unique, here denoted UNIQUE, is expected to have a positive impact on the probability of an auction prepack.²⁷

The model also includes a binary variable indicating whether or not the firm is run by an owner-manager (OWNERMGR). Equityholders and management may want to act while still being in control of the firm. The variable OWNERMGR, which is designed to capture the incentives of both, is expected to enter the regression with a positive sign. The probit model further includes a measure for the industry adjusted pre-bankruptcy gross margin

²⁶DISTRESS is the fraction of Swedish firms with over 20 employees and the same 4-digit SIC code that either reports an interest coverage ratio of less than one in the year of bankruptcy filing, or files for bankruptcy during the next calendar year.

²⁷UNIQUE is the fraction of the firm's assets that are unique to the industry (defined as machinery, equipment, inventory, intangible assets and work in progress) as estimated by the trustee upon bankruptcy filing.

(PROFMARG), which is expected to increase the probability of a going concern sale, and the log of pre-bankruptcy book value of assets (SIZE). Relatively large firms with multiple divisions may have synergies that are lost in a piecemeal liquidation, hence increasing the probability for a prepackaged going concern sale. Finally, the probit estimation adds a number of industry indicators.

Following Table 6, the probability of an auction prepack decreases with SECURED, as predicted. In other words, firms with a relatively high proportion of intangible assets are more likely to undertake prepacks. This is consistent with Gilson, John and Lang (1990), who find that firms restructuring their debt in a private workout tend to have a higher fraction of intangible assets than firms filing for Chapter 11. Moreover, the probability of an auction prepack is increasing in SIZE, again indicating that prepackaged going concern sales are undertaken by firms facing high expected auction costs. The result is, however, contrary to U.S. evidence reported by Betker (1997), that firms in traditional Chapter 11 proceedings have larger pre-bankruptcy assets than firms in Chapter 11 prepacks.

Furthermore, the coefficient for OWNERMGR is positive and significant at the 10%-level. One interpretation of this result is that owners of firms with greater separation between ownership and control (having external non-owner CEOs) have fewer private benefits that can get lost in the bankruptcy

auction, suggesting that prepacks are in part driven by control motives.²⁸ The coefficients for the number of secured debtholders (FLOAT), UNIQUE and DISTRESS are all insignificant, indicating that asset uniqueness and industry distress measures do not affect the auction prepack decision. Also, firm profitability does not appear to impact the choice of auction prepack as the coefficient for PROFMARG is insignificant. Overall, the regression model is significant with a pseudo R^2 of 10.2% and a likelihood ratio test statistic which rejects the null hypothesis of zero explanatory power with a p-value of 0.08.

1.3.2 In-bankruptcy going concern sale vs. piecemeal liquidation

A central issue in the debate over the relative merits of different bankruptcy codes concerns whether managers facing cash auction bankruptcy and possible job losses will delay filing "too long".²⁹ Presumably, "too long" means that going concern value is destroyed while postponing the restructuring of the firm, causing the firm to be of relatively low value when entering bankruptcy. In contrast, there is much less incentive for managers to delay a Chapter 11 filing since management retains substantial control rights throughout the Chapter 11 bankruptcy procedure. In this paper, more than 90% of the bankruptcy filings are made by the debtor (i.e. the manager).

²⁸Using the same sample, Thorburn (1998) finds that the probability of a repurchase by the pre-filing owner is higher for auction prepacks.

²⁹See White (1995) and Franks, Nyborg and Torous (1996).

Since the creditor can also file, at first sight this may seem to contradict the hypothesis of delayed filing. However, managers generally have an informational advantage concerning the financial status of the firm, and may effectively delay filing by withholding such information from creditors.

The bankruptcy auction results in either a piecemeal sale of assets or a sale of the firm as a going concern. In the total sample, 63 firms (24%) were liquidated piecemeal and 195 firms (76%) were sold as a going concern. Excluding auction prepacks (which are all going concern sales) and focusing on the 205 firms sold in bankruptcy by the trustee, 63 firms (31%) were liquidated piecemeal and 142 firms (69%) were sold as going concerns.

Interestingly, the 69% rate of going concern sales in Swedish bankruptcy auctions is close to that reported for Chapter 11 filings by private firms. White (1984) finds that in a sample of 64 small corporations filing for Chapter 11, 47% of the firms adopt reorganization plans, 23% are sold as a going concern and the remaining 30% are subsequently liquidated under Chapter 7. Thus, in White's sample, 70% of the firms survive with their assets continuing in their current use. This survival rate is also similar to the finding of Flynn (1989), who reports that in a sample of 2,395 Chapter 11 cases with confirmed reorganization plans from 1979-1989, 25% were plans to liquidate the firm, which implies a conditional survival rate of 75%.³⁰ As to Chapter 11 filings

³⁰Flynn's (1989) sample of confirmed plans constitute 17% of the population of cases over the ten-year period. Jensen-Conklin (1992) also study confirmed plans by small firms in Chapter 11, and finds that 25% were liquidation plans. LoPucki (1983) reports that 27% of his sample of 48 firms obtain confirmation of a reorganization plan and are still operating

by publicly traded firms, Weiss (1990) reports that in a sample of 35 cases, 86% successfully reorganize, while LoPucki and Whitford (1993) report a 74% survival rate for their 43 cases.

In sum, the 69% going concern sales rate in the Swedish sample is largely indistinguishable from the fraction of firms surviving intact from Chapter 11.³¹ One interpretation of this is that U.S. firms filing for Chapter 11 tend to be in a similar financial condition as the Swedish firms studied here, which is also consistent with the discussion in Section 2.2 above. If one assumes that only the lowest-quality firms are liquidated piecemeal, this finding also fails to support the notion that managers under a cash auction code tend to file "too late" relative to under a reorganization code.

The determinants of the probability that a firm is liquidated piecemeal as opposed to sold as a going concern in the bankruptcy auction are of interest in themselves. The fifth column of Table 6 reports the estimated coefficients in a model for the probability that the bankruptcy auction results in going concern sale, where the alternative is piecemeal liquidation. The explanatory variables are basically the same as for the auction prepack regression. However, the probit model now also includes a binary variable indicating

three years later. Since this ex post rate reflects firm-specific economic conditions over the three-year post-bankruptcy period, it understates actual survival rates. Also, LoPucki does not include going concern sales in Chapter 11, which leads to a further understatement of actual survival rates.

³¹However, it is substantially higher than the 29% rate of going concern sales reported by Ravid and Sundgren (1996) for a sample of 72 firms filing for Finnish cash auction bankruptcy.

whether a creditor (vs. the firm) filed the bankruptcy petition (CREDITOR). It is possible that firms that are forced into bankruptcy by a creditor are of a lower quality, or are less likely to retain incumbent management, which should decrease the probability of a going concern sale.

As shown in Table 6, the probability of a going concern sale decreases with SECURED. This is consistent with the earlier findings that SECURED also decreases the probability of an auction prepack. Moreover, CREDITOR is negative and significant, as predicted. The coefficients for UNIQUE and DISTRESS are again both insignificant, indicating that neither asset uniqueness nor industry distress measures affect the going concern sale vs. piecemeal liquidation decision. Interestingly, while the probability of auction prepack is increasing in OWNERMGR, this variable is insignificant for the outcome of the bankruptcy auction. This suggests that the trustee in fact controls the bankruptcy auction, with little influence by incumbent managers and owners. Finally, PROFMARG and SIZE produce insignificant coefficients, as do the industry indicators. The overall significance of the going-concern sale regression is lower than for the prepack regression, with a pseudo R^2 of 5.9%.

1.4 Bankruptcy costs and debt recovery rates

1.4.1 Direct bankruptcy costs

A central focus of interest when judging the efficiency of any bankruptcy code is the magnitude of bankruptcy costs.³² Total bankruptcy costs are the sum of direct costs, such as lawyer- and consulting fees, administrative costs, etc., and indirect costs which include the opportunity cost of management's time and potentially adverse reputational effects in product and capital markets. While indirect costs are difficult to quantify, estimates of the direct costs of bankruptcy have been the focus of several U.S. studies, and are presented in Table 7 along with cost estimates for the Swedish sample.

Panel I of Table 7 presents direct bankruptcy costs for the sample of 53 auction prepacks, and for prepack filings of public firms under U.S. Chapter 11. In the U.S., prepacks incur lower direct costs than traditional Chapter 11 filings with average costs, measured as a fraction of book value of pre-bankruptcy assets, of 2.4% (median 2.0%).³³ Auction prepacks are relatively inexpensive as well: the average direct costs are 2.5% (median 1.5%) in percent of pre-bankruptcy assets and 3.1% (median 2.6%) as a percentage of

³²The magnitude of bankruptcy costs may also be an important determinant of the firm's optimal capital structure. See e.g. Miller (1977), Warner (1977), Haugen and Senbeth (1978, 1988) and Harris and Raviv (1991).

³³The cost estimate for the Chapter 11 prepacks is from Betker (1995) and Tashjian, Lease and McConnell (1996), both of which examine 49 cases from 1986-1993. Note that these estimates include costs incurred prior to bankruptcy, while the Swedish estimate does not include pre-filing costs.

in-bankruptcy total liabilities.³⁴

As presented in Panel II of Table 7, the direct costs, in percent of the book value of pre-bankruptcy assets, is estimated to 3.6% (median 3.1%) for public firms in Chapter 11.³⁵ Moreover, measured in percent of in-bankruptcy book value of assets, Lawless, Ferris, Jayaraman and Makhija (1994) report that, for a sample of 22 private firms in Chapter 11, the average direct costs are 14.5%.³⁶ In comparison, direct bankruptcy costs in the Swedish sample of in-bankruptcy auctions averages 6.4% (median 4.5%) of book value of pre-bankruptcy assets, and 19.1% (median 13.2%) of the realized auction value.³⁷ Moreover, direct costs in percent of total liabilities averages 5.9% (median 4.3%). Thus, unconditional percentage direct costs are on average higher for small firms in cash auction bankruptcy than for large, public firms filing for Chapter 11. As shown next, there is a significant fixed costs component in the Swedish sample which helps explain the higher percentage costs of smaller firms.

Table 8 contains OLS estimates of the parameters in cross-sectional regressions explaining direct bankruptcy costs in percent of pre-bankruptcy

³⁴The literature does not report the ratio of costs to total liabilities. Since bankruptcy proceedings in many ways exists to serve debt, standardizing by total liabilities yields an economically meaningful percentage cost estimate.

³⁵This is a sample-size-weighted average of the evidence in Weiss (1990) and Betker (1997).

³⁶Lawless, Ferris, Jayaraman and Makhija (1994) report that the attorneys' fees constitute on average 55% of the total direct costs of the private firm Chapter 11 cases, while in Sweden, the trustee's fee constitute on average 57% of the direct costs.

³⁷The latter is comparable to the 16.9% (median 14.7%) reported by Ravid and Sundgren (1996) in their sample of 72 Finnish auction bankruptcies.

book value of assets for in-bankruptcy auctions as well as for the total sample. The model contains two binary variables for firm size: one covering the top third largest firms (LARGE), and the second the intermediate third largest firms (MEDIUM). In the presence of fixed bankruptcy cost components, these two variables are predicted to have a negative sign. Furthermore, the regression for in-bankruptcy auctions includes a binary variable indicating piecemeal liquidation (PIECEMEAL), and, for the sample of all filings, a binary variable indicating auction prepack (PREPACK). These two outcomes are likely to have lower direct costs than in-bankruptcy going concern sales, thus PIECEMEAL and PREPACK are expected to enter with negative coefficients.

Moreover, in order to capture cost-driving effects of market illiquidity on the trustee's level of auction sales effort, the regression includes the variables SECURED, UNIQUE and DISTRESS. The higher the level of SECURED, the greater its asset liquidity and the lower are expected bankruptcy costs. The higher the levels of UNIQUE and DISTRESS, the lower is the expected demand for the assets in the auction which in turn is expected to lead to higher bankruptcy costs. The model also contains a variable measuring the number of months that the firm's "corporate shell" is kept on file with the court as an open bankruptcy case (LENGTH), which is expected to produce a positive coefficient.³⁸

³⁸The time that the bankruptcy case is kept on file with the court as an open case should not be confused with the time that the firm's operations are run in bankruptcy

The second column of Table 8 reports the coefficient estimates from the regression on the subsample of 171 in-bankruptcy auctions, excluding auction prepacks. The regression is highly significant with an adjusted R^2 of 25.5% and a p-value for the F-statistic of 0.000. As indicated by the significantly negative size-dummies, direct bankruptcy costs have fixed components: The constant term is 6.7% (for the third smallest firms), and decreases by 3.7% for intermediate-sized firms and 6.1% for the largest firms.³⁹ The coefficient of *PIECEMEAL* is also negative and significant, suggesting that piecemeal liquidations have lower direct costs than in-bankruptcy going concern sales, as expected.

Interestingly, the regressions in Table 8 indicate that bankruptcy costs are increasing in the degree of industry distress, possibly because the bankruptcy trustee must increase her sales effort to find a high-valuation bidder in distressed industries. Moreover, the coefficient for *LENGTH* is positive and significant, suggesting that the direct costs of bankruptcy increase with the time that the case is kept on file with the court.⁴⁰ There is, however, no evidence that the measures for asset type and uniqueness affect direct costs.

before being auctioned off. Importantly, the Pearson correlation between the time the case is on file with the court and the time the firm is run in bankruptcy is a low 0.056 (2-tailed p-value of 0.481).

³⁹Direct bankruptcy costs in dollar terms are also found to be concave in U.S. studies, see, e.g., Warner (1977), Ang, Chua and McConnell (1982) and Betker (1997).

⁴⁰This may raise the issue of whether the cost estimates presented in this paper are biased, since the sample selection procedure eliminates 145 open bankruptcy cases (see Section 1.2.2). However, within the sample, the (unconditional) Pearson correlation between the percentage direct costs and time on file is a low 0.073 (2-tailed p-value of 0.274), providing no support for the existence of such bias in the cost estimates.

Overall, there are significant fixed costs in cash auction bankruptcy: The unconditional direct costs for the largest third of the Swedish firms, excluding prepacks, are on average 3.7% (median 2.5%). These cost estimates are similar (or lower) to the direct costs reported for the much larger public firms in Chapter 11. In light of the fixed components in bankruptcy costs, the results in Table 8 indicate that the auction procedure provides a relatively low-direct-cost mechanism for reorganizing severely distressed firms.

Column 5 of Table 8 reports the coefficient estimates based on the total sample of 213 filings, including auction prepacks. The regression is again highly significant and the coefficient estimates are generally consistent with the regression on the subsample of in-bankruptcy auctions. Bankruptcy costs decrease with firm size and increase with DISTRESS and LENGTH, with no detectable impact of SECURED and UNIQUE. As expected given the results in Table 7, the coefficient for PREPACK is negative and highly significant. The largest third Swedish firms executing auction prepacks have unconditional average direct costs of 1.9% (median 1.3%) of pre-bankruptcy assets. This is also lower than the average direct costs reported for prepackaged bankruptcies in Chapter 11 noted above.

Table 8, as well as the above comparison with the costs of Chapter 11 proceedings, leave out one important fundamental, namely the total time spent in bankruptcy. The time spent in bankruptcy affects indirect costs in terms of the opportunity cost of managerial time and negative reputa-

tional effects in product and capital markets. The average time in Swedish bankruptcy (i.e., time from filing to the date the assets are auctioned off) for in-bankruptcy going concern sales is 2.4 months with a median of 1.5 months (see Panel II of Table 7).⁴¹ This is significantly lower than the average length of Chapter 11 proceedings: For the 2,395 small firm cases in Flynn (1989), the average time in bankruptcy is reported to be 25 months with a median of 22 months.⁴²

Not surprisingly, a Chapter 11 prepack is much shorter than the traditional Chapter 11 proceeding: The average Chapter 11 prepack lasts 3 months (median 2 months) from filing for the plan to be confirmed by court. Auction prepacks are ever less time-consuming than what is observed for Chapter 11 prepacks (see Panel I of Table 7). The typical auction prepack is executed 62 days (median 4 days) *before* filing for bankruptcy (with no further delay due to filing). Moreover, as reported by Betker (1995) and Tashjian, Lease and McConnell (1996), it takes on average 17 months for a Chapter 11 prepack to be set up prior to filing. In sum, there are strong indications that Chapter 11 prepacks are substantially more time-consuming than the typical auction bankruptcy case in Sweden.

⁴¹Only 1 of 150 Swedish firms was operating for more than one year in bankruptcy before being auctioned off as a going concern.

⁴²Jensen-Conklin (1992) reports 22 months for her sample of 45 small-firm Chapter 11 cases, while, in the sample of 20 small firms studied by LoPucki (1983), the court confirms the reorganization plan on average 10 months after filing. The average time in Chapter 11 appears to be the same for public and private firms, see Gilson, John and Lang (1990), Weiss (1990), Franks and Torous (1994), Betker (1997) and Hotchkiss (1995).

1.4.2 Debt recovery rates

A creditor's expected payoff in bankruptcy affects the incentive to renegotiate debt outside of bankruptcy. Moreover, actual debt recovery rates provide important information on the economic value of firms filing for bankruptcy as well as the nature of the bankruptcy proceeding itself. This section addresses debt recovery rates in Sweden and compares the results to Chapter 11.

Before turning to the Swedish evidence, a caveat on measurement issues: In a Chapter 11 reorganization, claims on the bankrupt firm are settled mainly with new financial claims.⁴³ Hence, in studies of Chapter 11, reported recovery rates are estimates based largely on the face value of non-traded claims and their value 2-3 years after filing. In light of the relatively high rate of subsequent firm default (approximately one third of firms emerging from Chapter 11 need to restructure again within five years, see Hotchkiss (1995)), such estimates are likely to over-state true recovery rates. In contrast, recovery rates in the Swedish sample are based on actual cash payments only, and are thus without estimation error. Moreover, the bulk of the cash distributions in Sweden are paid out within a few months after bankruptcy filing. While the high quality of the Swedish evidence presented here is interesting in of itself, the econometric difficulties associated with the U.S. evidence make the following comparison to the Swedish evidence somewhat tenuous.

⁴³For a sample of public firms in Chapter 11, Franks and Torous (1994) report that 71% of distributions are paid with financial claims and only 29% are paid in cash.

Panel I of Table 9 presents recovery rates, measured as the proportion of the debt's face value repaid in bankruptcy, for the 53 auction prepacks, and for the 49 prepack filings by public U.S. firms examined in Tashjian, Lease and McConnell (1996). The recovery rate in Swedish auction prepacks, averaged across both secured and unsecured debt, is 32% (median 31%). However, secured creditors receive on average 74% (median 89%) while junior, unsecured creditors receives on average nothing, reflecting the strict adherence to APR.

In comparison, the average overall recovery rate for public firms filing Chapter 11 prepacks is 73%, with secured creditors recovering 99% and unsecured creditors 64%. This indicates that creditors in U.S. prepacks recover a substantially higher proportion of face value than creditors in Swedish prepacks. Keep in mind, however, the above caveat concerning measurement errors in the U.S. evidence. Moreover, U.S. prepack samples referenced earlier include more than 40% LBO firms. As argued by Jensen (1989), LBO corporations, with their unique capital and ownership structure, have strong incentives to privatize bankruptcy costs (i.e., keep the firm out of court).

Panel II of Table 9 shows recovery rates in bankruptcy restructurings (excluding prepacks). Overall recovery rates of Swedish firms, including unsecured claims, are slightly higher than those reported above for auction prepacks: 35% (median 34%).⁴⁴ The comparable U.S. evidence is for large,

⁴⁴Ravid and Sundgren (1996) report a similar recovery rate in their sample of 72 bankruptcies in Finland.

publicly traded firms in Chapter 11, where Franks and Torous (1994) report a median recovery rate across all debt categories of 51%. In other words, while recovery rates are similar across auction prepacks and in-bankruptcy auctions, debtholders recover substantially more in Chapter 11 prepacks than in traditional Chapter 11 proceedings. Again, the selection process leading to Chapter 11 prepacks appears to differ substantially from the process generating traditional Chapter 11 cases, a difference that is not observed to the same extent in the Swedish auction system.

Focusing on the different classes of debt in the sample of in-bankruptcy auctions, secured creditors in Sweden receive on average 69% (median 83%) of the face value of their debt, banks receive 68% (median 81%), while junior debt on average recovers 2% (median 0%). The recovery rates for secured debt and banks are similar to those found in the U.S., where Franks and Torous (1994) report 80% median recovery for secured debtholders and 86% median recovery for banks of public firms reorganizing under Chapter 11. However, the zero recovery rate for junior debtholders in Sweden contrasts sharply with the 29% junior debt median recovery rate reported for Chapter 11. Again, while the latter reflects deviations from APR, the cash settlement in Swedish auction bankruptcy prevents deviations from APR.

Sweden experienced an economic down-turn in 1991, which led to a general decline in asset prices towards the end of the sample period. Panel III of Table 9 presents a subsample of 58 Swedish firms filing for bankruptcy during

1988-1990 (i.e., excluding filings in 1991) and subsequently auctioned off as going concerns. This subsample is to a greater extent than the total sample of Swedish firms comparable to the sample in Franks and Torous (1994) who study completed reorganizations in the 1985-1990 period.

Moreover, Panel III of Table 9 also presents a subsample of 12 U.S. firms reorganizing under Chapter 11, for which market values were available for all securities received in the reorganization (hence avoiding the usual measurement errors resulting from using book values). Interestingly, the overall recovery rate in the Swedish subsample is on average 40% (median 40%), and secured debtholders and banks recover on average 78% and 79% (median 85% and 92%), respectively. Ignoring the time factor in the repayment, the median overall recovery rate of the U.S. firms of 41% is similar to the recovery rate reported for the Swedish subsample.

In sum, when accounting for the measurement problems in the U.S. data, overall recovery rates appears to be similar across the two bankruptcy regimes. Banks and secured creditors tend to recover a similar fraction in cash auction bankruptcy and in Chapter 11, while junior debt and equity receive a disproportionate share of the proceeds under Chapter 11. The cash auction ensures settlement of claims according to APR, an arguably attractive feature of this bankruptcy system.⁴⁵

Table 10 reports OLS estimates of coefficients in regressions with total

⁴⁵ Jensen (1991) argues that the observed deviations from APR under the U.S. Chapter 11 will generate large inefficiencies, e.g., by increasing firms' cost of capital.

recovery rates and recovery rates of secured debt as dependent variables, respectively. In general, recovery rates are expected to increase with the fraction of secured debt (SECURED) and with pre-bankruptcy firm performance (PROFMARG), and to decrease with the creditor filing indicator (CREDITOR). Moreover, recovery rates are expected to be higher in auction prepacks (PREPACK) reflecting a control premium, and lower in piecemeal liquidations (PIECEMEAL) reflecting loss of going concern value. Furthermore, recovery rates are expected to decrease with firm size (SIZE), industry distress factors (DISTRESS) and with the fraction unique assets (UNIQUE).

To account for effects on asset prices of the economic downturn in 1991, the regression includes a binary variable indicating that the firm filed for bankruptcy in 1991 (FILING91) which is expected to have a negative impact on recovery rates. The regression model also includes a binary variable for the case that the pre-filing owner buys back the assets of the firm (REPURCHASE). To the extent owners tend to repurchase the bankrupt firm when they have private information indicating that the price is low, REPURCHASE is expected to enter with a negative coefficient. Similarly, the financing of the successful buyer in the auction by the filing firm's bank (BANK) is expected to be associated with lower recovery rates.

The regressions reported in Table 10 are significant (with adjusted R^2 of 14.4% and 22.2%, respectively) and several of the sign predictions on the coefficients are as expected. Recovery rates are increasing in SECURED,

and decreasing in CREDITOR and FILING91. The estimated coefficient for PIECEMEAL is negative in the first specification, indicating that overall recovery rates tend to be lower in piecemeal liquidations than in in-bankruptcy going concern sales (which do not enter with a separate dummy in the regression), while PREPACK is insignificant. Surprisingly, recovery rates increase with BANK, indicating that the filing firm's bank finances the successful buyer in cases where the payoff to debtholders is relatively high. The payoff to secured debtholders is also increasing in REPURCHASE, suggesting that banks tend to recover more when the pre-filing owner buys back the assets. Moreover, while PROFMARG is insignificant for the overall payoff to creditors it has a negative impact on the recovery rates of secured debt. There is little evidence that recovery rates depend on firm size, industry distress or asset uniqueness.

1.5 Industry distress and auction premiums

As argued by Shleifer and Vishny (1992), potential buyers in distressed industries may be liquidity constrained, which reduces demand in the bankruptcy auction.⁴⁶ This section examines potential determinants of the auction premium, defined as $\ln(p_l/p_e)$, where p_l is the realized auction value and p_e is the trustee's initial estimate of the value of the assets. The trustee's estimate

⁴⁶Demand is reduced provided the buyer is constrained to pay in cash, which is the case in the Swedish bankruptcy auctions studied here. The liquidity constraint argument is weaker in auctions where the buyer can issue securities (e.g., stock) as means of payment. See also Aghion, Hart and Moore (1994).

p_e , which incorporates information that is publicly available at the beginning of the auction, is best viewed as the value of the assets in a piecemeal liquidation (or the value of assets in place). As before (Table 4), the auction value p_l is the sum of the proceeds from the cash auction and the value of accounts receivables and other outstanding claims owned by the firm. On average, the cash proceeds component represent 45% (median 41%) of the total auction value. Moreover, the auction premium reflects the bidder's estimate of the going concern value of the bankrupt firm as well as any new value-related information emerging during the auction procedure. For example, an unexpectedly high demand in the auction will produce a relatively large auction premium. As shown earlier in Table 4, in percentage terms, the average auction premium is 92% with a median of 24%.

The presumption that the trustee's estimate p_e represents the value of the assets in a piecemeal liquidation is supported by evidence. The alternative hypothesis is that p_e is an estimate of the liquidation value as well as the firm's quasi-rent. Since quasi-rents represent the return to resource specialization, p_e should then vary with empirical measures of the degree of uniqueness of the firm's assets. Moreover, quasi-rents are also likely to vary with a measure of the industry's degree of financial distress, as distress reduces in particular the demand for the firm's specialized resources. A regression of p_e on the variables firm size (SIZE), pre-filing profitability (PROFMARG), a dummy indicating creditor filing (CREDITOR), the fraction of unique

assets (UNIQUE), a measure for the degree of industry financial distress (DISTRESS) and industrial proxies, produces insignificant coefficients for all variables but SIZE which is significant by necessity (it is simply a scale variable).⁴⁷

Table 11 presents OLS estimates of the coefficients in a cross-sectional regression of the auction premium on a vector of explanatory variables which includes the fraction of assets that are unique to the industry (UNIQUE), the degree of industry distress (DISTRESS), firm size (SIZE), pre-bankruptcy profitability (PROFMARG), the dummy variable indicating creditor filing (CREDITOR), and the dummy variable indicating that the filing firm's bank finances the successful buyer in the auction (BANK), all of which have been used in earlier tables. Moreover, the regression includes a binary variable REPURCHASE, indicating that the firm's old owners successfully buy back the firm through the auction. The auction premium is expected to decrease with UNIQUE, DISTRESS, SIZE and CREDITOR, and to increase with PROFMARG, BANK and REPURCHASE. The two latter variables relax possible liquidity constraints in distressed industries, increasing demand in the cash auction.

The regression is significant with an R^2 of 18.8% and a p-value for the F-statistic of 0.000. The auction premium decreases with firm size and the fraction of unique assets, and is higher when creditors file for bankruptcy and

⁴⁷The regression is significant with an R^2 of 28% and a p-value of the F-statistic of 0.000.

when the old bank finances the successful buyer.⁴⁸ There is no evidence that industry distress, the profit margin, or a repurchase by the pre-bankruptcy owner affect the auction premium.⁴⁹

The evidence that participation by the firm's old bank significantly increases auction premiums is important and raises the issue of whether the simple OLS regression is mis-specified. That is, the auction premium regime may be different when the firm's old bank participates due to the bank's private incentives and knowledge of the bankrupt firm. When the bank holds the marginal debt claim to be paid off in the auction, helping finance the buyer may induce a higher auction premium and thus produce a higher recovery rate for this particular creditor. The buyer may agree to a higher auction premium in cases where the purchase effectively eliminates the buyer's personal liability to the bank (through a personal loan guarantee⁵⁰). In other words, by purchasing the assets with new bank financing from the old bank, the buyer effectively erases his or her personal liability in return for a higher auction premium. Banks may also ask the buyer to raise the auction pre-

⁴⁸An alternative specification includes a binary variable indicating piecemeal liquidations (PIECEMEAL) which, however, produces an insignificant coefficient. Moreover, excluding the 32 auction prepacks yields similar results.

⁴⁹Strömberg (1997), who examines the cross-sectional variation in auction *values* (as opposed to premiums), also reports that the pre-bankruptcy owner's decision to repurchase the firm does not statistically affect the auction value. Thus, the result in Table 11 appears to be robust to whether one examines auction values or auction premiums. See also Thorburn (1998) for an analysis of the effects of repurchases by pre-filing owners and the possibility of managerial self-dealing.

⁵⁰In Sweden, owners of small private firms are in fact often requested to personally guarantee the firm's bank debt.

mium in return for a lower interest on the loan in order for bank managers to effectively hide credit losses (i.e., reflecting an agency problem within the bank).

To explore whether the bank's incentives to participate in the auction in fact creates a separate auction premium regime, I use the following switching regime model with endogenous switching and identical regime variables X_i :⁵¹

$$\ln(p_l/p_e) = \beta'_1 X_i + u_{1i} \quad \text{iff } \gamma' Z_i \geq u_i \quad (\text{iff bank finances buyer}) \quad (1.1)$$

$$\ln(p_l/p_e) = \beta'_2 X_i + u_{2i} \quad \text{iff } \gamma' Z_i < u_i \quad (\text{iff bank does not finance}) \quad (1.2)$$

where β is a vector of coefficients for the characteristics X_i in the model for the auction premium, and γ is a coefficient vector in the bank's decision to participate in the auction, which is determined by the vector of characteristics Z_i . In this formulation, the auction premium is described by equation (1.1) when $\gamma' Z_i \geq u_i$, i.e., the bank decides to finance the buyer in the auction, where u_i is the residual in a probit regression of the bank's decision to finance the successful buyer with explanatory variables Z_i , and where it is assumed that u_i is correlated with u_{1i} and u_{2i} .

Using all sample observations on $\ln(p_l/p_e)$, the expected auction premium can be written as:

$$E[\ln(p_l/p_e)] = \beta'_1 X_i \Phi_i + \beta'_2 X_i (1 - \Phi_i) + \phi_i (\sigma_{2u} - \sigma_{1u}) \quad (1.3)$$

$$= \beta'_2 X_i + (\beta'_1 - \beta'_2) X_i \Phi_i + \phi_i (\sigma_{2u} - \sigma_{1u}) \quad (1.4)$$

⁵¹See Maddala and Nelson (1975) and Maddala (1983).

where $\phi_i = \phi(\gamma'Z_i)$ and $\Phi_i = \Phi(\gamma'Z_i)$ are the values of the standard normal density and the cumulative normal distributions, respectively, evaluated at $\gamma'Z_i$, and σ_{1u} and σ_{2u} are the standard deviations of u_{1i} and u_{2i} , respectively.

The estimation proceeds by using the second term in equation (1.4) to identify which of the individual explanatory variables in X_i that have identical coefficients across the two regimes. Denote this subvector \bar{X}_i and the complement subvector \underline{X}_i , so that $X_i = (\bar{X}_i, \underline{X}_i)$. With this partitioning of the X-matrix, one can rewrite equation (3) for the expected value of the auction premium as follows:

$$E[\ln(p_l/p_e)] = \beta'\bar{X}_i + \beta'_1\underline{X}_i\Phi_i + \beta'_2\underline{X}_i(1 - \Phi_i) + \phi_i(\sigma_{2u} - \sigma_{1u}) , \quad (1.5)$$

where β is the vector of coefficients that are identical across regimes.

Table 12 presents the coefficient estimates in the probit regression of $\gamma'Z_i$, i.e., the bank's choice model. The bank finances the successful buyer in 50 cases and elects not to participate in another 116 cases.⁵² The choice model includes variables defined earlier as well as a binary variable indicating that the firm's CEO has been with the firm for at least two years (TENURE) as well as an indicator variable for pre-filing asset sales (ASSETSALE) to sister and parent companies.⁵³ The latter is constructed based on information in the trustee's records and takes a value of one if any mentioning of such sales

⁵²This regression includes both piecemeal liquidations and going concern sales. Separate analysis of going concern sales produces similar results.

⁵³This variable excludes sales to third parties. Redefining ASSETSALE to include third party sales does not materially alter the results.

are recorded. It is expected that the probability of bank participation will increase with PROFMARG, TENURE, PREPACK, UNIQUE, DISTRESS and REPURCHASE, and decrease with CREDITOR and ASSETSALE.

The probit regression is significant with a pseudo R^2 of 18.1% and a p-value for the log-likelihood ratio of 0.001. Focusing on the significant coefficients, the probability of bank participation is higher in auction prepacks and when the old owner repurchases the firm, both as expected. Moreover, the bank is less likely to participate in the presence of pre-filing asset sales.

Column 2 of Table 13 reports the coefficient estimates of equation (1.5). The independent variables are identical to the ones used for the OLS single-regime equation, except for the variable BANK (which is now accounted for through the choice model) as well as the correction term ϕ_i . As it turns out, the common regime variables \bar{X}_i includes all the variables except PROFMARG. Thus, Table 13 reports two coefficient estimates (β_1 and β_2) for PROFMARG.

The switching regime model produces similar coefficient estimates as the single regime OLS regression for the common regime variables, with one important exception. The industry distress factor is now significantly *positive*, indicating that a higher degree in industry distress tends to *increase* auction premiums.⁵⁴ This finding is counter-intuitive and fails to support arguments

⁵⁴Excluding the 30 prepack cases produces similar results as regards the signs and significance levels of UNIQUE and DISTRESS. However, this exclusion also eliminates 17 of a total of 50 cases where the bank finances the buyer, which causes the difference in the coefficients between the two premium regimes to become insignificant.

that industry distress tends to depress auction values. The result possibly reflects increased (effective) sales effort by the bankruptcy trustee in cases where there is concern that industry-wide distress may reduce auction demand.

The finding that auction premiums increase with industry distress differs from the result of Pulvino (1997a), who finds that when relatively distressed airlines sell airplanes they tend to receive prices that are below an estimate of their true intrinsic values. While Pulvino does not analyze auction premiums, to the extent that firm-specific financial distress in Pulvino's sample is positively correlated with industry-wide financial distress, this suggests that airline auction premiums are negatively correlated with industry distress.

As a further check on the robustness of the results in the switching regime model, Table 13 also reports results where I have excluded all premium observations where the bank finances the buyer in the auction. In this procedure, the effect of the bank's decision to participate enters only through the probabilities $\phi_i = \phi(\gamma'Z_i)$ and $\Phi_i = \Phi(\gamma'Z_i)$, where the choice model $\gamma'Z_i$ is the same as before. A two-step estimation method is used.⁵⁵ With the sample restricted to cases where the bank does not participate, the (single-regime) expected auction premium is

$$E[\ln(p_l/p_e)] = \beta_2'X_i + \eta \frac{\phi_i}{1 - \Phi_i} . \quad (1.6)$$

⁵⁵See Heckman (1979) and Maddala (1983), and Eckbo, Maksimovic and Williams (1990) and Pulvino (1997b) for applications.

The first step estimates the bank's choice probabilities, while the second step is a weighted least squares (WLS) estimation of equation (1.6).⁵⁶

The results of the two-step estimation are reported in Column 5 of Table 13, where the "inverse Mill's ratio" is $\phi_i/(1 - \Phi_i)$.⁵⁷ The coefficient for the inverse Mill's ratio is significant, indicating that the hypothesized selectivity by the bank is present in this data set.⁵⁸ Interestingly, the industry distress variable continues to have a significantly positive impact on auction premiums. Thus, the finding that auction premiums tend to be higher in distressed industries appears robust. The remaining variables continue to receive similar coefficient values and significance as reported in the earlier econometric model specifications.⁵⁹

Overall, the results of this section provides no support for the popular hypothesis that industry financial distress forces asset fire-sales in cash auction bankruptcy. If anything, auction premiums tend to increase with industry distress. Moreover, the results indicate that auction premiums decrease with the firm's fraction of unique assets as well as with firm size.

⁵⁶The WLS weights are constructed using the adjusted standard errors from an OLS estimation of equation (1.6). See Maddala (1983), pp. 224-226.

⁵⁷ Φ_i is the cumulative normal distribution evaluated at $\gamma'Z_i$, where $\gamma'Z_i$ is the model in a probit regression of the bank's decision *not* to finance the buyer. In equation (1.6), I analyze the bank's decision to finance the buyer, therefore the inverse Mill's ratio includes $1 - \Phi_i$.

⁵⁸The negative sign implies that the residual term in the probit regression is negatively correlated with the residual term in the equation for the auction premium.

⁵⁹Again, excluding the observations on auction prepacks produces significant coefficients for UNIQUE and DISTRESS, however, since relatively few observations on bank participation remains, the coefficient for the "inverse Mill's ratio" is insignificant.

1.6 Conclusions

There is an international trend away from cash auction bankruptcy and towards adopting Chapter 11 style reorganization codes.⁶⁰ This trend takes place despite a largely unresolved empirical debate as to the relative economic effects of cash auction bankruptcy. This paper studies 263 firms filing for cash auction bankruptcy in Sweden over the period 1988-1991, and makes systematic comparisons to extant U.S. evidence on Chapter 11. The Swedish bankruptcy code is a cash auction procedure similar to Chapter 7 of the U.S. bankruptcy code. However, while Chapter 11 of the U.S. bankruptcy code allows firms to reorganize under court supervision, no such reorganization provision exists in Sweden. Thus, every Swedish firm filing for bankruptcy is subsequently auctioned off, either as a going concern or piecemeal, under the supervision of an independent, court appointed trustee.

The analysis yields several interesting results: First, in Sweden, 25% of the going concern sales (20% of all filings) are auction prepacks in which the buyer negotiates the purchase of the firm's assets prior to filing for bankruptcy. This rate of prepacks is similar to the rate reported for publicly traded firms filing for Chapter 11 (Betker (1995)). Second, direct bankruptcy costs decrease with firm size and the percentage costs for the largest third sample firms are similar to (or lower than) costs reported for publicly traded

⁶⁰Several European countries, including the UK, France, Germany, Finland, Norway and Sweden, have during the last 20 years changed (or are proposing changes to) their bankruptcy regulation, much in the direction of the U.S. Chapter 11.

U.S. firms in Chapter 11. Moreover, indirect costs are almost certainly greater under Chapter 11 due to the much longer proceeding (2-3 years in the U.S. vs. 1-2 months in Sweden).

Third, there is no support for the proposition that filings under an auction bankruptcy code are made "too late": Private firms in auction bankruptcy appears to be in no worse financial condition prior to filing than public firms in Chapter 11. Perhaps as a result, approximately 70% of the Swedish firms are auctioned off as going concerns (the remaining 30% are piecemeal liquidations) which is a similar "survival" rate to that observed for Chapter 11 filings.

Fourth, overall recovery rates, across all debtholders, are similar for private firms restructuring in cash auction bankruptcy and for public firms in Chapter 11 (approximately 40%). Secured creditors and banks recover approximately the same percentage of face value under the two bankruptcy regimes, on average 80% (median 85-90%) in Sweden vs. a median of 80-85% for public firm Chapter 11 filings. Due to the strict adherence to APR, unsecured debtholders in Sweden receive basically nothing, which contrasts to Chapter 11 where unsecured debt is reported to receive a median of 29%.

Fifth, auction premiums are decreasing in the fraction of unique assets, as expected. Surprisingly, the evidence also indicates that industry distress has a *positive* impact on auction premiums, a result which is robust to regime-shift and self-selection model estimation. The finding possibly reflects in-

creased marketing sales effort by the bankruptcy trustee in cases where industry distress tends to reduce auction demand. This conjecture also fits with the finding that direct costs increase with industry distress measures. Overall, there is no evidence that industry financial distress forces asset fire-sales and depresses asset prices in cash auction bankruptcy.

Easterbrook (1990) suggests that, if auctions are more efficient than court supervised debt reorganizations, then one should observe firms being sold under Chapter 11 proceedings. In fact, the 1980s saw the emergence of an active market for claims of firms in Chapter 11: 7% of the public companies that filed for Chapter 11 between 1979 and 1988 left bankruptcy after merging with another firm. Moreover, so-called "vulture funds", which specialize in claims of distressed firms, have taken significant positions in most of the public Chapter 11 cases in recent years.⁶¹ To the extent that the emergence of vulture funds as well as other "out-of-court" solutions such as prepacks and public debt exchanges are a response to the introduction of Chapter 11 in 1978, then this may be viewed as evidence that market transactions (i.e., auctions) often dominate court supervised reorganizations also in the U.S. environment.

This view is certainly consistent with the evidence presented here which indicates that cash auction bankruptcy is a speedy, low cost process. Overall, the results suggest that a mandatory auction procedure represents an

⁶¹Conti, Kozlowski and Ferleger (1992), Lieb (1993), and Hotchkiss and Mooradian (1997).

economically efficient mechanism for resolving financial distress under court supervision.

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Table 1

Legal rules under Swedish cash auction bankruptcy and Chapter 11 of the U.S. Bankruptcy Code.¹

Characteristic:	Swedish cash auction bankruptcy	U.S. Chapter 11
<i>Who may file?</i>	The firm, or any individual creditor.	The firm, or a joint filing of minimum 3 creditors with unsecured claims exceeding \$ 5,000.
<i>Who controls the firm in bankruptcy?</i>	The independent court-appointed trustee. Firm is auctioned off piecemeal or as a going concern.	Incumbent management. A trustee takes control only in case of mismanagement or fraud. Management has exclusive right to propose a reorganization plan during the first 120 days, plus an additional 60 days to seek acceptance.
<i>Voting rules to approve of reorganization:</i>	None. Firm is auctioned off.	1/2 in number of votes and 2/3 in value of the claims in the debt class.
<i>"Cram down" possible?²</i>	No. Firm is auctioned off.	Yes. Each debt class must get at least what creditors would receive in a liquidation.
<i>Payment method:</i>	Cash only.	Cash and securities, including common stock.
<i>Deviations from APR:</i>	No deviations.	Deviations frequently observed.
<i>Seizure of collateral by secured creditors:</i>	No seizure, except in limited circumstances when collateral is in creditor's physical possession.	No seizure. All creditors are stayed.
<i>Does interest accrue during the proceeding?</i>	Yes, on secured and senior debt.	No, interest does not accrue.
<i>Can new debt financing be raised?</i>	New debt financing is legal, but in practice infeasible and never observed.	Yes, so called debtor-in-possession financing allows new and senior debt to be issued.
<i>Government wage guarantee:</i>	Yes, up to a certain limit.	No guarantee.

¹ In Sweden, as an alternative to cash auction bankruptcy, an insolvent firm can file for so called composition ("ackord"), which is a court-supervised procedure for renegotiation of *junior* debt claims only. However, the composition procedure provides no protection for the firm against its secured and senior creditors, and is therefore almost never used. In preliminary work, Eckbo and Thorburn (1997) find that in a sample of 1,650 financially distressed firms, almost 300 firms file for bankruptcy over the next two years, while only 4 firms file for composition.

² In a "cram down", the Chapter 11 bankruptcy judge forces an opposing class of debtholders to accept a proposed reorganization plan.

Table 2

The distribution of Swedish corporate bankruptcy filings in the population and in the sample, 1988-1991.

	1988	1989	1990	1991	1988-1991
Population of bankruptcy filings ¹	3,533	4,941	7,415	13,345	29,235
UC population of bankruptcy filings by firms with more than 20 employees ²	39	125	303	692	1,159
Cases outside the sample geographical area	- 26	- 64	- 154	- 337	- 581
Cases pending in bankruptcy on June 30, 1995	0	- 14	- 20	- 111	- 145
Cases related to tax fraud charges	0	- 8	- 24	- 27	- 59
Cases with incomplete information ³	- 4	- 12	- 34	- 61	- 111
Number of cases in the sample⁴	9	27	71	156	263

¹ Source: Statistics Sweden.

² Source: UpplysningsCentralen (UC) AB, a private company collecting information on all Swedish firms and individuals for use in credit risk assessments, etc. Firms that undergo bankruptcy are quickly auctioned off, while the old and empty "corporate shell" remains on file with the court as an open bankruptcy case for several years to follow. The reason is that a case cannot be formally closed until all claims owned by the filing firm are fully collected, which takes several years. As a result, the UC database, which is restricted to bankruptcy cases that remained open on December 31, 1991, covers virtually the entire population of filings over the sample period.

³ For example, the bankruptcy file could not be found, the case had been transferred to another region, or the firm was not operating within 18 months prior to bankruptcy filing.

⁴ This is also the number of cases in Strömberg and Thorburn (1996) and Thorburn (1998).

Table 3

Pre-bankruptcy characteristics for the sample of 263 Swedish firms filing for cash auction bankruptcy 1988-1991, and for public U.S. firms filing for Chapter 11 or initiating workouts.

	Swedish firms in cash auction bankruptcy ¹			Public U.S. firms in Ch. 11 ²		Public U.S. firms initiating workouts ³	
	mean	median	std dev	mean	median	mean	median
Sample size ⁴	263			90		62	
Book value of assets (\$ millions) ⁵	2.4	1.3	3.63	288.0	46.0	633.0	101.0
Number of employees ⁶	43	29	48.3	3,000	2,000	5,000	1,000
Debt to assets ratio ⁷	.92	.93	.214	.91	.84	.88	.80
Long-term debt/book value of assets ⁶	.34	.35	.244	.58	.45	.64	.55
Current ratio ⁸	1.39	1.23	.974	1.06	.99	1.38	1.39
Percentage firms with negative EBIT ⁹	46	-	-	62	-	-	-

¹ The figures are book values (denoted in 1991 prices) from the last financial statement reported prior to bankruptcy filing, dated on average 16.5 months (median 15.5 months) prior to filing.

² The information on publicly traded firms in Ch. 11 is from Weiss (1990), Gilson, John and Lang (1990), Franks and Torous (1994) and Hotchkiss (1995). Weiss studies 35 firms that filed for Ch. 11 between 1979 and 1986; Gilson et. al analyze 89 firms that filed for Ch. 11 during 1978-1987; Franks and Torous examine 38 Ch. 11 cases completed during 1985-1990; Hotchkiss uses a sample of 197 firms that filed for Ch. 11 during 1979 and 1988 and later emerged as public companies. The figures are from the financial statements of the year-end of the last fiscal year prior to bankruptcy filing.

³ The data on workouts of financially distressed firms is from Franks and Torous (1994) and Gilson, John and Lang (1990). Franks and Torous analyze 45 successful public exchange offers initiated during 1983-1990; Gilson et. al study 80 large, publicly traded firms that privately restructured their debt during 1978-1987. The numbers are from the financial statements of the year-end of the last fiscal year prior to initiating a workout.

⁴ The number is an average of the sample sizes in Weiss (1990), Gilson, John and Lang (1990), Franks and Torous (1994) and Hotchkiss (1995) for the Ch. 11 firms, and the sample sizes in Franks and Torous (1994) and Gilson, John and Lang (1990) for firms initiating a workout.

⁵ The book value of assets is, for firms in Ch. 11, a sample-size-weighted average of the sample means and medians in Weiss (1990), Gilson, John and Lang (1990) and Hotchkiss (1995), and from Gilson et. al. for firms initiating workouts.

⁶ The U.S. evidence is from Gilson, John and Lang (1990).

⁷ Debt to assets ratio is defined as book value of total liabilities divided by the market value of equity (book value for the Swedish sample and for the sample in Gilson, John and Lang (1990)) plus the face value of debt. The Ch. 11 figure is a sample-size-weighted average of the means and medians reported by Weiss (1990), Gilson et. al. and Franks and Torous (1994), while the workout figure is a sample-size-weighted average of the means and medians reported in Gilson et. al. and Franks and Torous.

⁸ Current ratio is the ratio of current assets to short term debt. The U.S. evidence is reported by Franks and Torous (1994).

⁹ Percentage of firms with negative earnings before interest and taxes (EBIT). The Ch. 11 figure is reported by Hotchkiss (1995).

Table 4

Financial characteristics in bankruptcy for the sample of 263 Swedish firms filing for cash auction bankruptcy 1988-1991, and for public and private U.S. firms filing for Chapter 11.

	Swedish firms in cash auction bankruptcy			Public U.S. firms in Ch. 11 ¹		Private U.S. firms in Ch. 11 ²	
	mean	median	std dev	mean	median	mean	median
Sample size ³	263			79		46	
Book value of assets in \$ million (trustee's estimate) ⁴	.6	.3	1.08	-	-	1.2	.3
Auction value in \$ million ⁵	.8	.4	1.21	-	-	-	-
Percentage auction premium ⁶	92%	24%	-	-	-	-	-
Secured debt / total liabilities ⁷	.39	.38	.248	.12	.00	.42	-
Bank debt / total liabilities ⁸	.36	.33	.247	.25	.20	-	-
Senior debt / total liabilities ⁹	.29	.24	.211	-	-	.05	-
Junior debt / total liabilities ⁹	.33	.28	.213	-	-	.54	-

¹ The information on public firms in Ch. 11 is from Weiss (1990), Gilson, John and Lang (1990), LoPucki and Whitford (1993), Franks and Torous (1994), Hotchkiss (1995) and Betker (1997). LoPucki and Whitford study 43 corporations that filed for Ch. 11 following 1979, and had a reorganization plan confirmed before March, 1988; Betker examines 75 Ch. 11 filings between 1986-1993.

² The evidence on private firms in Ch. 11 is from LoPucki (1983), White (1984) and, for direct costs, Lawless, Ferris, Jayaraman and Makhija (1994). LoPucki examines 48 firms that filed for Ch. 11 in the Western District of Missouri in 1980, White studies 64 corporations filing for Ch. 11 during 1980-1982 in the Southern District of New York, and Lawless et. al. examine 27 private business bankruptcies that filed for Ch. 11 in the Western District of Tennessee during 1980-1991, and were closed in 1991 or 1992.

³ The sample size is an average of the sample sizes in Weiss (1990), Gilson, John and Lang (1990), LoPucki and Whitford (1993), Franks and Torous (1994), Hotchkiss (1995) and Betker (1997). for public firms in Ch. 11, and of the sample sizes in LoPucki (1983), White (1984) and Lawless, Ferris, Jayaraman and Makhija (1994) for private firms in Ch. 11.

⁴ For the Swedish firms, the trustee's initial estimate of the value of the bankrupt firm's assets. The evidence on private firms in Ch. 11 is a sample-size-weighted average of the sample means and medians in LoPucki (1983) and White (1984). Lawless, Ferris, Jayaraman and Makhija (1994) report a mean value of non-secured assets of \$.4 (median .06) million.

⁵ The auction value is the sum of the total proceeds from the sale of the firm's assets in the bankruptcy auction and the value of accounts receivables and other claims owned by the firm (and collected by the trustee).

⁶ The percentage auction premium is the ratio of the realized auction value to the trustee's value estimate minus one. This estimate excludes two observations due to missing data.

⁷ The evidence on public U.S. firms is from Gilson, John and Lang (1990) and the evidence on private firms is from White (1984).

⁸ For the Swedish firms, bank debt constitutes on average 88% (median 100%) of the secured debt. The evidence on public U.S. firms is from Gilson, John and Lang (1990).

⁹ The evidence on private U.S. firms is from White (1984).

Table 5
Definition of variables

Variable name	Variable definition
I. Firm characteristics:	
SIZE	Log of book value of total assets in the firm's last financial statement prior to filing.
LARGE	Binary variable indicating that the firm belongs to the 88 sample firms (i.e. 1/3) with the largest pre-bankruptcy book value of total assets, ranging from \$2.1 mill. to \$4.2 mill.
MEDIUM	Binary variable indicating that the firm belongs to the 88 sample firms (i.e. 1/3) with the mid pre-bankruptcy book value of total assets, ranging from \$0.9 million to \$2.1 mill.
PROFMARG	Pre-bankruptcy gross margin (defined as earnings before interest, taxes, depreciations and amortizations divided by total sales) of the firm minus the contemporaneous median gross margin of all Swedish firms with more than 20 employees and the same 4-digit SIC code.
UNIQUE	Fraction of the firm's assets that are unique to the industry (defined as machinery, equipment, inventory, intangible assets and work in progress) as estimated by the trustee upon bankruptcy filing.
SECURED	Fraction of secured debt to total debt at bankruptcy filing.
FLOAT	Number of floating charge holders at bankruptcy filing.
OWNERMGR	Binary variable indicating that the CEO owns more than 10% of the firm's equity.
TENURE	Binary variable indicating that the CEO was in place two years prior to filing.
DISTRESS	Fraction of Swedish firms with over 20 employees and the same 4-digit SIC code that either reports an interest coverage ratio of less than one in the year of bankruptcy filing, or files for bankruptcy during the next calendar year.
ASSETSALE	Binary variable indicating that the filing documentation reports major pre-filing asset sales to a sister or a parent company in the 2 years prior to bankruptcy filing.
II. Auction characteristics:	
CREDITOR	Binary variable indicating that a creditor files the bankruptcy petition.
FILING91	Binary variable indicating that the firm files for bankruptcy in 1991.
PREPACK	Binary variable indicating that a going concern sale of the firm's assets is executed prior to or immediately upon (within 7 days) bankruptcy filing.
PIECEMEAL	Binary variable indicating that the firm's assets are sold piecemeal in the bankruptcy auction.
BANK	Binary variable indicating that the filing firm's bank finances the successful buyer of the firm's assets in the auction.
REPURCHASE	Binary variable indicating that the pre-bankruptcy owner buys back the assets of the firm. Pre-bankruptcy owner is defined as an equityholder or a group company of the filing firm, or, if the ownership of the acquirer is unknown, cases where the acquiring firm's board includes all member of the filing firm's board.
LENGTH	Number of months that the firm's "corporate shell" is kept on file with the court as an open bankruptcy case.

Table 6

Parameter estimates in conditional probit regressions of the probability of auction prepack vs. in-bankruptcy auction, and of in-bankruptcy going concern sale vs. piecemeal liquidation. Sample of Swedish firms filing for cash auction bankruptcy, 1988-1991.

	Auction prepack (y=1) vs. in-bankruptcy auction (y=0) ¹			In-bankruptcy going concern sale (y=1) vs. piecemeal liquidation (y =0)		
	Expected sign of coefficient	coefficient	p-value	Expected sign of coefficient	coefficient	p-value
Constant		- 6.621	.005		- .074	.971
Explanatory variables:²						
SECURED	< 0	- 1.247	.023	< 0	- .906	.058
FLOAT	< 0	- .128	.522	-	-	-
DISTRESS	> 0	- .765	.305	< 0	- .716	.333
UNIQUE	> 0	.243	.459	> 0	.003	.986
OWNERMGR	> 0	.482	.099	> 0	- .295	.278
CREDITOR	-	-	-	< 0	- .691	.058
PROFMARG	> 0	.165	.849	> 0	.378	.600
SIZE	> 0	.375	.008	> 0	.112	.367
Industry indicators with p-values less than 0.10:³						
none	-	-	-	-	-	-
Sample size: y=1		35			117	
y=0		170			49	
Pseudo R-square		.102			.059	
Likelihood ratio test		19.16	.084		11.79	.463

¹ An auction prepack is a going concern sale of the firm's assets just prior to bankruptcy filing (31 cases), or an agreement to make a going concern sale immediately upon bankruptcy filing (4 cases).

² See Table 5 for variable definitions.

³ Industry indicators were included for manufacturing, construction, wholesale and retail, hotels and restaurants, and transportation.

Table 7

Direct bankruptcy costs and time in bankruptcy for the sample of 263 Swedish firms filing for cash auction bankruptcy 1988-1991, and for public and private U.S. firms filing for Chapter 11.

	Swedish firms in cash auction bankruptcy			Public U.S. firms in Ch. 11 ¹		Private U.S. firms in Ch. 11 ²	
	mean	median	std dev	mean	median	mean	median
I: Prepacks³							
Sample size ⁴	53			49			
Direct costs / pre-bankruptcy assets ⁵	.025	.015	.027	.024	.020	-	-
Direct costs / total liabilities	.031	.026	.022	-	-	-	-
Time in bankruptcy (months) ⁶	- 2.2	- .2	4.12	2.9	1.9	-	-
II: In-bankruptcy restructurings							
Sample size ⁷	210			79		46	
Direct costs / pre-bankruptcy assets ⁸	.064	.045	.057	.036	.031	-	-
Direct costs / assets in bankruptcy ⁹	.191	.132	.189	-	-	.145	-
Direct costs / total liabilities	.059	.043	.056	-	-	-	-
Time in bankruptcy (months) ¹⁰	2.4	1.5	3.40	23	19	25	22

¹ The information on public firms in Ch. 11 is from Weiss (1990), Gilson, John and Lang (1990), LoPucki and Whitford (1993), Franks and Torous (1994), Hotchkiss (1995) and Betker (1997), and, on Ch. 11 prepacks, from Betker (1995) and Tashjian, Lease and McConnell (1996). Betker (1995) and Tashjian et al. both analyze 49 firms filing for Ch. 11 during 1986-1993, of which 30 firms are included in both samples.

² The evidence on private firms in Ch. 11 is from LoPucki (1983), White (1984) and, for direct costs, Lawless, Ferris, Jayaraman and Makhija (1994).

³ For Swedish firms, prepacks are going concern sales carried out or negotiated prior to bankruptcy filing. For U.S. firms, prepacks are bankruptcy filings for which a reorganization plan is pre-negotiated out-of-court.

⁴ The U.S. figure is an average of the sample sizes in Betker (1995) and Tashjian, Lease and McConnell (1996).

⁵ For the Swedish firms, the time between bankruptcy filing and the sale of the assets as a going concern. The evidence on Ch. 11 prepacks is an average of the mean and median in Betker (1995) and Tashjian, Lease and McConnell (1996).

⁶ The evidence on Ch. 11 prepacks is an average of the mean and median in Betker (1995) and Tashjian, Lease and McConnell (1996).

⁷ The sample size is an average of the sample sizes in Weiss (1990), Gilson, John and Lang (1990), LoPucki and Whitford (1993), Franks and Torous (1994), Hotchkiss (1995) and Betker (1997) for public firms in Ch. 11, and of the sample sizes in LoPucki (1983), White (1984) and Lawless, Ferris, Jayaraman and Makhija (1994) for private firms in Ch. 11.

⁸ The evidence on public firms in Ch. 11 is a sample-size-weighted average of the means and medians reported in Weiss (1990) and Betker (1997). The results of Warner (1977) and Altman (1984) are not reported, since they both study firms filing for bankruptcy prior to the 1978 enactment of Ch. 11.

⁹ The evidence on private firms in Ch. 11 is from Lawless, Ferris, Jayaraman and Makhija (1994). White (1984) reports direct costs as a percentage of payments to creditors of 3.4% for 15 Ch. 11 firms with confirmed reorganization plans, and of 10% for 5 Ch. 11 firms whose operations are sold as a going concern. The results of Ang, Chua and McConnell (1982) are not reported here since their study predates the 1978 enactment of Ch. 11.

¹⁰ For 113 Swedish firms, the time between filing and sale of the assets as a going concern. The evidence on public Ch. 11 firms is a sample-size-weighted average of the means and medians reported in Weiss (1990), Gilson, John and Lang (1990), Franks and Torous (1994), Hotchkiss (1995) and Betker (1997). The evidence on private Ch. 11 firms is from Flynn (1989), who in a sample of 2,395 cases reports an average time in bankruptcy of 25 months (median 22 months). Jensen-Conklin (1992) reports an average time in bankruptcy for Ch. 11 private firm cases of 22 months (45 cases). LoPucki (1983) reports the time between filing and confirmation of a reorganization plan for a sample of 22 private firms to be 10 months.

Table 8

OLS coefficient estimates in regressions of direct bankruptcy costs in percent of pre-bankruptcy book value of total assets for the sample of Swedish firms filing for cash auction bankruptcy, 1988-1991.¹

Sample criteria:	Sample of in-bankruptcy auctions ²			Sample of all filings, including prepacks		
	Expected sign of coefficient	coefficient	p-value	Expected sign of coefficient	coefficient	p-value
Constant	> 0	.067	.001	> 0	.077	.000
Explanatory variables:³						
LARGE	< 0	-.061	.000	< 0	-.055	.000
MEDIUM	< 0	-.037	.000	< 0	-.034	.000
PIECEMEAL	< 0	-.019	.021	< 0	-.017	.025
SECURED	< 0	-.003	.880	< 0	-.006	.689
PREPACK	-	-	-	< 0	-.035	.000
UNIQUE	> 0	.003	.542	> 0	.005	.356
DISTRESS	> 0	.059	.026	> 0	.042	.054
LENGTH	> 0	.001	.029	> 0	.001	.092
Industry indicators with p-values less than 0.10:⁴						
none	-	-	-	-	-	-
Sample size		171			213	
R-square adjusted		.255			.277	
F-value		5.85	.000		7.24	.000

¹ Direct costs are the administrative, advisory and legal fees incurred in bankruptcy (including paid net VAT on the trustee's fee) divided by book value of total assets as reported in the last financial statement prior to filing.

² The sample includes all in-bankruptcy going concern sales and piecemeal liquidations, but excludes auction prepacks.

³ See Table 5 for variable definitions.

⁴ Industry indicators were included for manufacturing, construction, wholesale and retail, hotels and restaurants, and transportation.

Table 9

Debt recovery rates for the sample of 263 firms filing for cash auction bankruptcy in Sweden 1988-1991, and for public U.S. firms filing for Chapter 11.¹

	Swedish firms in cash auction bankruptcy			Public U.S. firms in Ch. 11 ²	
	mean	median	std. dev.	mean	median
I: Prepacks³					
Sample size	53			49	
All debt	.316	.313	.225	.73	-
Secured debt	.744	.885	.324	.99	-
Bank debt ⁴	.748	.889	.327	-	-
Senior debt	.263	.188	.283	1.00	-
Junior debt	.012	.000	.072	.64	-
II: In-bankruptcy restructurings					
Sample size	210				38
All debt classes	.352	.335	.212	-	.51
Secured debt	.692	.825	.327	-	.80
Bank debt ⁴	.682	.807	.341	-	.86
Senior debt	.271	.188	.280	-	.47
Junior debt	.022	.000	.111	-	.29
III: Sub-sample of in-bankruptcy restructurings⁵					
Sample size	58				12
All debt classes	.404	.396	.183	-	.41
Secured debt	.779	.852	.254	-	-
Bank debt ⁴	.794	.916	.255	-	-
Senior debt	.340	.239	.327	-	-
Junior debt	.056	.000	.164	-	-

¹ Recovery rate is defined as the payment in bankruptcy to a class of debtholders divided by the face value of claims of that debt class.

² The information on large firms in Ch. 11 is from Franks and Torous (1994), who examine 38 Chapter 11 cases completed during 1985-1990. The evidence on Ch. 11 prepacks is from Tashjian, Lease and McConnell (1996), who study 49 large firms filing for bankruptcy during 1986-1993.

³ For Swedish firms, auction prepacks are going concern sales of the firms' assets, carried out or negotiated prior to bankruptcy filing. For U.S. firms, prepacks are bankruptcy filings for which a reorganization plan is pre-negotiated out-of-court.

⁴ Bank debt constitutes on average 88% (median 100%) of the secured debt for the Swedish firms.

⁵ The Swedish subsample consists of 58 firms filing for cash auction bankruptcy in 1988-1990 and sold as going concerns. The U.S. subsample contains 12 firms that completed their Chapter 11 restructuring in 1985-1990, and for which market values were available for all claims received in the reorganization.

Table 10

OLS estimates of coefficients in regressions of debt recovery rates. Sample of Swedish firms filing for cash auction bankruptcy, 1988-1991.¹

	Overall recovery rate			Recovery rate of secured debt		
	Expected sign of coefficient	coefficient	p-value	Expected sign of coefficient	coefficient	p-value
Constant		.431	.133		1.180	.006
Explanatory variables:²						
SIZE	< 0	-.009	.624	< 0	-.024	.344
PROFMARG	> 0	-.108	.306	> 0	-.248	.099
CREDITOR	< 0	-.060	.261	< 0	-.096	.224
PREPACK	> 0	-.028	.541	> 0	-.045	.499
PIECEMEAL	< 0	-.077	.084	< 0	-.103	.108
FILING91	< 0	-.083	.014	< 0	-.135	.043
SECURED	> 0	.302	.000	-	-	-
UNIQUE	< 0	-.004	.870	< 0	.018	.587
DISTRESS ³	< 0	-.112	.466	< 0	-.318	.156
REPURCHASE	< 0	.026	.535	< 0	.113	.059
BANK	< 0	.086	.041	< 0	.210	.001
Industry indicators with p-values less than 0.10:⁴						
none	-	-	-	-	-	-
Sample size		169			163	
R-square adjusted		.144			.222	
F-value		2.77	.001		4.08	.000

¹ Debt recovery rates are the payment in bankruptcy to a class of debtholders divided by the face value of the total claims of that debt class.

² See Table 5 for definition of the variables.

³ To avoid multicollinearity, the residuals from a regression of FILING91 to DISTRESS are used.

⁴ Industry indicators were included for manufacturing, construction, wholesale and retail, hotels and restaurants and transportation.

Table 11

OLS parameter estimates in a cross-sectional regression of the auction premium for 168 firms in Swedish cash auction bankruptcy, 1988-1991.¹

	Expected sign of coefficient	Coefficient	P-value
Constant	-	2.542	.007
Explanatory variables:²			
SIZE	< 0	-.163	.070
PROFMARG	> 0	-.140	.729
CREDITOR	< 0	.642	.003
UNIQUE	< 0	-.245	.006
DISTRESS	< 0	.623	.156
BANK	> 0	.318	.024
REPURCHASE	> 0	-.025	.856
Industry indicators with p-values less than 0.10:³			
Manufacturing	-	-.396	.034
Sample size		168	
R-square adjusted		.188	
F-value		4.21	.000

¹ The auction premium is defined as $\ln(p_i/p_e)$, where p_i is the realized auction value and p_e is the trustee's initial estimate of the value of the bankrupt firm's assets.

² See Table 5 for definition of the variables.

³ Industry indicators were also included for construction, hotels and restaurants, wholesale and retail, and transportation.

Table 12

Conditional probit estimation for the probability of the filing firm's bank financing the successful buyer in the auction. Sample of 166 Swedish firms in cash auction bankruptcy, 1988-1991.

Filing firm's bank finances (y=1) vs. does not finance (y=0) the successful buyer in the auction. ¹			
	Expected sign of coefficient	coefficient	p-value
Constant		- 1.498	.397
Explanatory variables:²			
SIZE	-	.036	.764
PROFMARG	> 0	.874	.381
TENURE	> 0	.136	.575
CREDITOR	< 0	-.647	.186
ASSETSALE	< 0	-.638	.093
PREPACK	> 0	.959	.001
UNIQUE	> 0	-.107	.471
DISTRESS	> 0	.094	.908
REPURCHASE	> 0	.914	.000
Industry indicators with p-values less than 0.10:³			
none		-	-
<hr/>			
Sample size: y=1		50	
y=0		116	
Pseudo R-square		.181	
Log likelihood ratio		36.88	.001
Degrees of freedom		14	

¹ The independent variable takes the value of zero for both going concern sales in which the buyer is not financed by firm's bank and for auctions in which the firm is liquidated piecemeal.

² See Table 5 for definition of the variables.

³ Industry indicators were included for manufacturing, construction, hotels and restaurants, wholesale and retail, and transportation.

Table 13

Parameter estimates in a switching regime model and a Heckman two-step model for the auction premium in Swedish cash auction bankruptcy.¹

	Expected sign of coefficient	Switching regime model: ²		Heckman two-step model: ³	
		coefficient	p-value	coefficient	p-value
Constant	-	1.742	.087	2.710	.019
Explanatory variables:⁴					
SIZE	< 0	-.127	.037	-.163	.034
PROFMARG	> 0	-	-	-.218	.636
PROFMARG _{BANK = 1}	> 0	1.252	.335	-	-
PROFMARG _{BANK = 0}	> 0	-1.431	.525	-	-
CREDITOR	< 0	.651	.002	.433	.077
UNIQUE	< 0	-.231	.007	-.419	.100
DISTRESS	< 0	.754	.076	.924	.088
REPURCHASE	> 0	.107	.439	.315	.228
ϕ_i		.667	.671	-	-
$\phi_i / (1 - \Phi_i)$		-	-	-.790	.018
Industry indicators with p-values less than 0.10:⁵					
Manufacturing		-.362	.045	-.525	.019
Sample size		166		116	
R-square adjusted		.169		.204	
F-value		3.58	.000		

¹ The auction premium is defined as $\ln(p_i/p_e)$ where p_i is the realized auction value and p_e is the trustee's initial estimate of the value of the bankrupt firm's assets.

² The model is $E[\ln(p_i/p_e)] = \beta' \bar{X}_i + \beta_1' \bar{X}_i \Phi_i + \beta_2' \bar{X}_i (1 - \Phi_i) + \phi_i(\sigma_{u_i} - \sigma_{1u_i})$, where \bar{X}_i is the subvector of explanatory variables that have identical coefficients across the two regimes and \bar{X}_i is its complement, β is the vector of coefficients that are identical across regimes, β_1 and β_2 are the coefficient vectors for regime 1 and 2, respectively, ϕ_i is the standard normal density and Φ_i is the cumulative normal distribution function evaluated at $\gamma'Z_i$, where $\gamma'Z_i$ is the model describing the bank's decision to finance the buyer in the auction (estimated in Table 12), and σ_{u_i} is the standard deviation of the residual u_{ji} in the model of each regime: $\ln(p_{ji}/p_{ei}) = \beta_j'X_i + u_{ji}$ ($j=1,2$). The estimation uses all 166 observations.

³ The model is $E[\ln(p_i/p_e)] = \beta'X_i + \eta(\phi_i / (1 - \Phi_i))$, where X_i is the vector of explanatory variables, β' is the vector of coefficients, ϕ_i is the standard normal density and Φ_i is the cumulative normal distribution function evaluated at $\gamma'Z_i$, where $\gamma'Z_i$ is the model describing the bank's decision to finance the buyer (estimated in Table 12). The sample is restricted to 116 cases where the bank does not finance the buyer.

⁴ See Table 5 for definition of the variables.

⁵ Industry indicators were also included for construction, hotels and restaurants, wholesale and retail, and transportation.

Chapter 2

Compensation and firm performance

Managerial Compensation and Corporate Performance following Cash Auction Bankruptcy¹

by

Karin S. Thorburn

Abstract

This paper provides large-sample evidence on CEO compensation changes, turnover and corporate performance following cash auction bankruptcy in Sweden. Mandatory bankruptcy auctions appear to impose substantial costs on top level managers: the median loss of CEO compensation is 40% over the two years following auction bankruptcy filing and the CEO turnover rate during bankruptcy is 64%. While CEO personal wealth effects and turnover are dramatic, the operating profitability of the auctioned firms is, however, typically at par with industry norms. Thus, there is no support in this paper for the hypothesis that managers in a cash auction bankruptcy system tend to file "too late". In comparison, extant evidence on the U.S. bankruptcy code (in particular Hotchkiss (1995)), which permits managers to maintain control of the firm during Chapter 11 reorganization proceedings, indicates much lower CEO turnover rate (33%) and poorer operating performance by bankrupt firms relative to their industry competitors.

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2.1 Introduction

The design of the bankruptcy code impacts managerial behavior and affects the costs of corporate restructurings. Critics of Chapter 11 of the U.S. bankruptcy code, which allows incumbent management to retain control of the firm while securityholders renegotiate the financial claims, argue that court-supervised reorganization may exacerbate agency problems.² On the other hand, critics of bankruptcy auctions (such as those used to liquidate firms under Chapter 7) claim that markets tend to undervalue distressed firms.³ Thorburn (1998) provides some first systematic empirical evidence on the outcome of bankruptcy auctions in a legal environment which precludes Chapter 11-style reorganizations. She finds that cash auction bankruptcy in Sweden is relatively cost-efficient and on average produces firm recovery rates that are no lower than those reported for Chapter 11 in the U.S.. Junior, unsecured debtholders, however, recover very little in the Swedish auction system, which she attributes to the strict adherence to absolute priority rules that the cash auction system permits. Finally, her empirical analysis provides little support for the hypothesis that mandatory auctions in financially distressed industries produce asset "fire sales" at particularly depressed auction

²See, e.g., Roe (1983), Baird (1986), Bebchuk (1988), Jensen (1991), Bradley and Rosenzweig (1992), Bradley (1997), Hansen and Thomas (1997) and Hart, La Porta Drago, Lopez-de-Silanes and Moore (1997).

³E.g., Shleifer and Vishny (1992), Aghion, Hart and Moore (1994), White (1995), Franks, Nyborg and Torous (1996) and Pulvino (1997).

premiums.

While Thorburn (1998) studies costs and recovery rates resulting from small firm bankruptcy auctions, this paper focuses on managerial wealth effects and post-bankruptcy corporate performance. The central hypothesis under investigation is that managers, attempting to avoid losing corporate control benefits, tend to file for bankruptcy "too late". Under this hypothesis, management postpones bankruptcy filing and undertakes value dissipating investments or substitutes assets to increase risk. Since a firm that files "too late" effectively destroys going concern value, this should reduce the likelihood of long-term post-bankruptcy survival. Thus, the *delayed filing hypothesis* predicts significant managerial wealth losses and substandard corporate performance following bankruptcy. The degree of delay is examined both relative to industry competitors in Sweden and relative to the extant evidence on the performance of firms emerging from the Chapter 11 in the U.S..

The empirical evidence supports the first part of the prediction of the delayed filing hypothesis: The median loss of CEO total compensation is 40% over the two years following bankruptcy filing, an income loss which is significantly larger than what is observed for the median CEO of a control sample of non-bankrupt Swedish firms. Moreover, the CEO turnover rate during the Swedish bankruptcy auction is substantially higher than what

has been reported for Chapter 11 cases (64% versus 33%)⁴. Thus, cash auction bankruptcy imposes significant costs on top level management, which in turn means that the prospect of auction bankruptcy represents a significant managerial disciplinary force.

On the other hand, the evidence does not support the second part of the prediction of the delayed filing hypothesis: The five-year post-bankruptcy operating performance of firms that are auctioned as going concerns is statistically indistinguishable from the firms' industry competitors. In comparison, extant evidence on the U.S. indicates significantly poorer operating performance by firms emerging from Chapter 11 relative to the industry.⁵ Moreover, the fraction of Swedish firms that need to restructure their debt again over the five-year period appears to be similar to debt-restructuring rates for public firms emerging from Chapter 11. In sum, while cash bankruptcy auctions provide a swift exchange of CEOs, the average surviving firm appears relatively healthy, which contradicts the delayed filing hypothesis.

The analysis produces several additional findings. First, the percentage drop in CEO compensation following bankruptcy is shown to be independent of whether or not the CEO remains with the firm. This is consistent with a conditionally competitive managerial labor market, where the bankruptcy event eliminates managerial rents. Thus, there does not appear to be a salary-

⁴The evidence on Chapter 11 is from Hotchkiss (1995) and Gilson (1989).

⁵Hotchkiss (1995).

related benefit for CEOs to file early in order to maximize the probability of remaining with the firm. The paper does find, however, that the loss of CEO income increases with industry distress, possibly reflecting a relatively low demand for managerial services in declining industries.

Second, the probability of CEO turnover increases as the firm's pre-filing industry-adjusted operating profitability decreases. This suggests that auctions tend to sort out good from bad managers and, if anything, the average CEO has an incentive to file "early" rather than late. Also, the lowest CEO turnover rate is found in the sample of firms where the major shareholder buys back the firm in the auction. While this may raise the issue of managerial self-dealing, there is no evidence of systematically lower auction premiums in those auctions where managers remain with or pre-filing owners retain control over the firm. Overall, there is little indication that managers use valuable private information in their decision to stay with the company.

Third, three quarters of the sample firms emerge more highly levered than the industry median, a tendency also observed in the U.S.. The estimated probability that a firm refiles for bankruptcy over a five-year period following the initial bankruptcy auction increases with the firm's debt to assets ratio. Whether or not the CEO stays with the firm has no statistically discernible effect on the refiling probability, which seems contrary to evidence reported by Hotchkiss (1995) for firms restructuring under Chapter 11. Surprisingly,

the refiling probability is higher for emerging firms financed by the filing firm's bank, which is difficult to square with the argument that the bank is privately informed about firm quality and will use this information in its decision to finance the buyer in the auction.

The paper is organized as follows. Institutional details, data sources and sampling procedures are contained in Section 2. Section 3 presents evidence on managerial compensation changes and turnover, while post-bankruptcy firm performance and refiling probabilities are examined in Section 4. Section 5 concludes the paper.

2.2 Data and sample characteristics

2.2.1 Swedish cash auction bankruptcy

When a firm files for cash auction bankruptcy in Sweden, the control rights are immediately transferred to an independent, court-appointed trustee with a fiduciary responsibility towards creditors. Importantly, the firm has no option to file for a court-supervised reorganization such as the U.S. Chapter 11. In Sweden, the bankruptcy trustee organizes a mandatory sale of the firm's assets in an auction, either piecemeal or as a going concern. In this auction, which typically is a first-price open-bid auction, only cash bids are permitted. While secured creditors can not seize collateral, except in very

limited circumstances, interest continues to accrue on secured claims during the proceedings. The cash proceeds from the auction are distributed to creditors strictly according to absolute priority rules (APR), typically leaving nothing for the equityholders.

The bankruptcy auction is supervised by the provincial supervisory authority ("Tillsynsmyndigheten i Konkurs"). This supervision, the legal constraints on the trustee, as well as the value of the trustee's own reputation, all increase the trustee's incentive to fulfill her fiduciary responsibility towards creditors and to act independently of the firm's management and equityholders.⁶

In comparison, the U.S. Chapter 11 procedure allows incumbent management to continue the operations of the firm in bankruptcy. Management has an exclusive right to propose a reorganization plan during the first 4 months, and during a routinely granted extension of that period, plus another 2 months to seek approval of the plan. The bankrupt firm receives an automatic stay of creditors and has the option of senior debtor-in-possession financing. The bankruptcy judge can force creditors to accept a reorganization plan in a so called "cram down". Shareholders participate in the voting of the plan and often get to retain some equity (suggesting deviations from APR). Thus, in the U.S., management has strong incentives to choose re-

⁶Note that if a shareholder of the filing firm places an early bid for the assets, the trustee is still requested to go ahead and arrange an open auction.

organization under Chapter 11 as opposed to liquidation under Chapter 7, which is precisely the reason why a study of a pure cash auction bankruptcy system such as the Swedish is of interest.⁷

2.2.2 Data sources

This paper examines the sample of 263 Swedish bankruptcy cases compiled by Thorburn (1998). As shown in Table 1, the database of Upplysnings-Centralen (UC) AB identifies a total of 1,159 bankruptcy filings by Swedish firms with at least 20 employees during the period January 1, 1988 to December 31, 1991. The sampling procedure eliminates the following cases: 581 firms located outside the selected geographical area;⁸ 145 cases pending in bankruptcy on June 30, 1995;⁹ 59 cases related to tax fraud charges; and 111 cases with a missing or incomplete bankruptcy file. In the final sample of 263 bankruptcy cases, 9 were filed in 1988, 27 in 1989, 71 in 1990 and 156 in 1991. A total of 63 firms are liquidated piecemeal and 195 firms are sold as a going concern, while 5 cases have insufficient information to be classified either as a going concern sale or as a piecemeal liquidation. A going concern

⁷See Thorburn (1998) for a more detailed description of the legal rules of Swedish cash auction bankruptcy and a comparison to the U.S. Chapter 11.

⁸The sample is limited to firms located in one of the four largest administrative provinces in Sweden, i.e., Stockholms län, Göteborg- och Bohus län, Malmöhus län and Upplands län.

⁹While the firm's assets are quickly auctioned off in bankruptcy, the old and empty "corporate shell" often remains on file with the court for several years. This is to allow every single claim owned by the filing firm to be collected.

sale is defined as a joint sale of the firm's "core assets", which are assets essential for the firm's continued operations.¹⁰

For each firm in the sample, information on firm- and case-specific characteristics is collected from the bankruptcy file kept by the provincial supervisory authority. The financing source (typically a bank) of the successful buyer in the auction is identified from the national register of corporate floating charge claims (Inskrivningsmyndigheten för företagsinteckning). Moreover, 260 of the 263 sample firms' CEOs are identified by matching the information on management and owners in the filing documents, with board information supplied by UC. UC also provides balance sheet and accounting data from the period 1987-1995 for the Swedish population of 16,000 firms that were either pending in bankruptcy or operating on December 31, 1991, and which had at least 20 employees. This information is used to obtain pre-filing characteristics of the sample firms and to construct industry medians and distress measures.

In addition to the data compiled by Thorburn (1998), post-bankruptcy balance sheet and accounting data for 158 of the sample firms auctioned as going concerns is obtained from UC. Moreover, UC provides the personal tax returns of 258 of the sample firms' CEOs for the years 1988-1991 and

¹⁰Such assets include, e.g., inventory, machinery, vehicles, unfinished products, intangible assets, industrial estate and rental contracts.

1993-1994.¹¹ For comparative purposes, tax returns are also obtained for a randomly selected sample of CEOs of 1,346 non-bankrupt Swedish firms with at least 20 employees.

2.2.3 Sample characteristics

All sample firms are privately held and have concentrated ownership: of the 181 firms with available information on shareownership structure, 87% have a single shareholder (or family) who controls at least 50% of the voting equity. Moreover, the firms are typically run by an "owner-manager": of the 215 firms for which the CEOs shareholdings are known, 49% of CEOs own more than half of the firm's equity. Only 25% of sample firms are managed by CEOs holding less than 10% of the firm's equity. The sample firms represent over 30 different 2-digit Standard Industrial Classification (SIC) groups. Almost one third (76) of firms are in manufacturing industries. Moreover, approx. 10% (33) of the sample firms are in the construction industry, another 30 firms are in the wholesale business, while there are 26 firms in each of the hotel and restaurant industry and the transportation industry, respectively.

Table 2 lists selected financial characteristics for the sample firms. The pre-filing characteristics are based on the last reported financial statement,

¹¹For particular reasons, the 1990 and 1991 tax returns could be obtained for only 130 of the CEOs, and the 1992 tax returns could not be obtained at all.

dated on average 16.5 months (median 15.5 months) prior to filing. The pre-filing debt to assets ratio averages 0.92 (median 0.93), confirming that filing firms are highly leveraged. Yet, only 46% of firms report negative pre-filing earnings before interest and taxes (EBIT), and the average current ratio is 1.39 (median 1.23).¹² Thus, it appears as if the financial situation of the sample firms deteriorates rapidly over the last year prior to bankruptcy filing.¹³

Table 2 also reports the realized auction value, defined as the sum of the proceeds from the sale of the firm's assets in the bankruptcy auction and the value of accounts receivables and other outstanding claims held by the firm and collected by the trustee. This value is on average \$0.8 million (median \$0.4 million) which, as reported by Thorburn (1998), represents a median increase of 25% of the trustee's value estimate. The trustee's estimate is lower than the pre-filing book value of assets in Table 2 primarily because firms tend to sell off assets to generate liquidity over the year prior to the bankruptcy filing date.

With an average book value of total assets of \$2.4 million (median \$1.3 million) and an average number of employees of 43 (median 29), the sample firms studied here are of an order of magnitude smaller than public firms filing

¹²Current ratio is defined as the ratio of current assets to short term debt

¹³Thorburn (1998) reports that the pre-filing financial characteristics of the sample firms are similar to those reported for public firms filing for Chapter 11.

for Chapter 11. There is no comparable small firm evidence on managerial compensation changes, turnover and post-bankruptcy firm performance for Chapter 11 cases.¹⁴ Thus, throughout this paper rough comparisons are made to U.S. publicly traded firms in Chapter 11 for which data is available, keeping in mind the much greater size of such firms.

2.3 Managerial compensation changes, turnover and self-dealing

Bankruptcy imposes costs on managers by lowering managerial compensation as well as by lowering or eliminating corporate control benefits. The significance of the costs imposed on management is central to the delayed filing hypothesis, under which managers are assumed to fear bankruptcy sufficiently to deviate from firm value maximization.¹⁵

2.3.1 CEO compensation changes

This section provides evidence on the reduced wage cost for managers of firms filing for cash auction bankruptcy in Sweden. The cost is estimated as

¹⁴The related evidence on Chapter 11 is for large firms listed on the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX).

¹⁵The idea that bankruptcy imposes considerable costs on managers is also a critical assumption underlying several capital structure models. In Ross (1977), for example, the manager increases the firm's leverage (and risk of default) to signal that he has favorable information about the firm. The signal is credible due to the assumed managerial cost of bankruptcy.

the change in total CEO compensation C , defined as net income before tax reported in the CEO's personal tax return.¹⁶

Panel A of Table 4 presents relative changes in CEO total compensation (ΔC) over the seven years -3 through +4, where year 0 is the year of bankruptcy filing. Since Sweden implemented a major tax reform in 1991, in Panel A, ΔC is restricted to be measured within a single tax regime. As shown, in the period prior to bankruptcy filing (from year -3 to -1) the sample CEOs typically experience an annual growth in total compensation: the median value of $\Delta C^{-3,-2}$ is 9% (mean 72%) and the median value of $\Delta C^{-2,-1}$ is 3% (mean 131%). However, in the year just prior to filing, 59% of CEOs incur a decline in their total compensation, with a median $\Delta C^{-1,0}$ of -16% (mean -14%). Moreover, following bankruptcy filing, most CEOs suffer from a further substantial drop in their total compensation. Over the two-year period subsequent to filing, 70% of CEOs experience a reduction in total compensation and the median $\Delta C^{0,2}$ is -40% (mean -10%). Following year +2, the typical CEO again reports a non-negative annual ΔC .

To further verify the compensation loss incurred by CEOs of the filing firms, Panel B of Table 4 reports the adjusted relative change in total compensation ΔC_{adj} , where $\Delta C_{adj,i} = \Delta C_i - \Delta C_{ind,i}$ and $\Delta C_{ind,i}$ is the median contemporaneous relative change in total compensation of the CEOs in a

¹⁶Net income before tax is the sum of cash and stock compensation, taxable benefits, self-employed income and capital gains net of deductions and capital losses.

control sample of 1,346 non-bankrupt Swedish firms. As shown in Column 1, the median annual ΔC_{adj} is negative and large over the years -2 through +2, suggesting that the compensation loss of the sample CEOs is significantly larger than that observed for the median CEO in the control sample. Specifically, over the two years following bankruptcy filing, the median $\Delta C_{adj}^{0,2}$ is -.60 (p-value of 0.001). That is, the median percentage change in income for the CEOs in the control sample exceeds that of the sample CEOs with a median of 60 percentage points. Moreover, over the whole five-year period from year -2 to +3, the median $\Delta C_{adj}^{-2,3}$ is -.66 (p-value of 0.000).

Column 4 of Panel B presents the adjusted absolute change in total compensation ΔD_{adj} , where $\Delta D_{adj,i} = \Delta D_i - \Delta D_{ind,i}$, and ΔD_i is the absolute change in total compensation of the sample CEOs and $\Delta D_{ind,i}$ is the median contemporaneous absolute change in total compensation of the CEOs in the control sample. Over the two years following bankruptcy filing, the median $\Delta D_{adj}^{0,2}$ is \$-16,000 and over the five year period starting two years prior to filing, the median $\Delta D_{adj}^{-2,3}$ is \$-30,000. Again, this indicates that the sample CEOs suffer financially compared to their colleagues of non-bankrupt firms. While these amounts may seem small by U.S. standards, it should be noted that the sample CEOs report an average total compensation, C , in year -2 of \$40,000 (median \$26,000). Overall, the evidence presented in Table 4 suggests that managers tend to incur large compensation losses when their firms file for cash auction bankruptcy.

CEOs of large U.S. corporations in financial distress also experience reductions in their compensation. Gilson and Vetsuypens (1993) report that more than 75% of the firms in their sample reduce CEO cash compensation at least once in the years -3 to +1, relative to bankruptcy filing (29 firms) or the initiation of a private debt restructuring (48 firms). In particular, during years -3 to 0, 43% of all reductions exceed 25% and 17% of reductions exceed 50%. Thus, the evidence indicates that bankruptcy is costly for CEOs under both a reorganization and an auction bankruptcy code.

To examine potential determinants of the magnitude of the compensation loss incurred by CEOs of the filing firms, the following censored Tobit model is used:

$$\Delta C_i^{-2,3} = \beta' X_i + u_i \quad \text{iff} \quad \Delta C_i^{-2,3} > -1 \quad (2.1)$$

$$\Delta C_i^{-2,3} = -1 \quad \text{iff} \quad \Delta C_i^{-2,3} \leq -1, \quad (2.2)$$

where $\Delta C_i^{-2,3}$ is the relative change in CEO total compensation from year -2 to +3, β is a vector of coefficients for the characteristics X_i , and u_i are residuals that are assumed to be independently and normally distributed with mean zero and a constant variance σ^2 . Equation (2.2) describes cases where the reported loss in total compensation is -100%, i.e., where the CEO's net income before tax in year +3 is zero. Since the income before tax is reported as zero also when the CEO has to forego unused tax shields,¹⁷ the observed

¹⁷That is, when the sum of deductions and capital losses exceed the sum of cash and stock compensation, taxable benefits and capital gains.

$\Delta C_i^{-2,3}$ is censored below at -1.

Table 5 reports parameter estimates in a maximum likelihood (ML) estimation of the censored Tobit model described in equations (2.1) and (2.2). The estimation uses 164 observations, where $\Delta C_i^{-2,3}$ takes the value of -1 in 19 cases. The explanatory variables are defined in Table 3. For CEOs that have been in office for at least two years, the firm's operating profitability is used as a measure for managerial quality (QUALITY). Specifically, QUALITY is defined as an interaction variable between TENURE (a binary variable indicating that the CEO's pre-filing tenure exceeds two years), and the firm's industry-adjusted gross margin (PROFMARG).¹⁸ Assuming that the market for managerial services is competitive conditional on bankruptcy filing, QUALITY is expected to enter the regression with a positive sign.

Moreover, CEOs that over time have developed skills that are specialized with the firm incur larger compensation losses given the bankruptcy event. Thus, $\Delta C^{-2,3}$ is expected to decrease in the variable TENURE, which enters the regression separately. The model also contains a binary variable taking the value of one if the CEO retains his or her position in the firm post-bankruptcy (CEOSTAYS). If there are wealth-related benefits for the CEO to remain with the firm, $\Delta C^{-2,3}$ will increase in CEOSTAYS.

¹⁸PROFMARG is the gross margin reported in the last financial statement prior to filing, minus the contemporaneous median gross margin of all Swedish firms with more than 20 employees and the same 4-digit SIC code.

As documented in Thorburn (1998), a substantial fraction of the bankruptcy filings in Sweden are auction prepacks which are agreements to sell the firm's assets as a going concern either prior to bankruptcy filing or immediately upon filing. CEOs might undertake auction prepacks for reputational reasons, in order to reduce potential negative wealth effects of bankruptcy filing. To the extent auction prepacks are driven by CEO wealth considerations, the indicator for auction prepacks (PREPACK) is expected to produce a positive coefficient. Moreover, it is possible that the demand for managerial services is low in declining industries. As a result, $\Delta C^{-2,3}$ is expected to decrease in the degree of industry distress (DISTRESS), measured as the fraction of financially distressed firms in the industry.¹⁹ The model also controls for the CEO's age (AGE) and pre-filing compensation level (INCOME),²⁰ and for firm size (SIZE, defined here as log of the firm's pre-filing book value of assets) and industry classification.

The coefficient estimates of the ML estimation are presented in Column 2 of Table 5. The log likelihood function has a value of -150.6 and several of the sign predictions are borne out. Interestingly, the percentage drop in CEO compensation is statistically independent of whether or not the CEO remains with the firm post-bankruptcy. Thus, there does not appear to be

¹⁹DISTRESS is the fraction of Swedish firms with over 20 employees and the same 4-digit SIC code that either reports an interest coverage ratio of less than one in the year of bankruptcy filing, or files for bankruptcy during the next calendar year.

²⁰INCOME is log of the CEO's total compensation C in year -2 relative to bankruptcy filing.

a direct wage-related benefit for CEOs to file early in order to maximize the probability of remaining with the firm. As expected, the income loss is increasing in the degree of industry distress, possibly reflecting a low demand for managerial services in declining industries. The coefficient for PREPACK is positive and significant, i.e., CEOs undertaking auction prepacks on average experience smaller compensation losses. This suggests that managerial reputational concerns may constitute an important motive for auction prepacks. Moreover, the variables INCOME and AGE both produce negative coefficients, while the measures for managerial quality (QUALITY) and specialization with the firm (TENURE) lack explanatory power, as does SIZE. Three of the industry indicators, construction, hotels and restaurants and transportation, are negative and significant.

2.3.2 Managerial turnover

While there is no evidence of a wage-related cost of managerial turnover, an involuntary loss of corporate control in the bankruptcy auction can be costly to the manager through the loss of non-pecuniary benefits, self-esteem and reputation. This section provides evidence on CEO turnover for the Swedish firms, and reports turnover rates over a two-year period prior to filing and during the bankruptcy proceeding itself. The CEO in office two years prior to filing can be identified for 258 of the 263 sample firms. Of these 258 CEOs, 91 (35%) are replaced by the time the firm files for cash auction bankruptcy.

There is a considerable increase in this CEO turnover rate when the firm files for bankruptcy. Of the CEOs in place at filing, 63 (24%) CEOs lose their positions due to a piecemeal liquidation of the firm's assets. Of the 195 sample firms whose assets are sold as going concerns, 162 can be classified as to whether or not the CEO remains with the firm post-bankruptcy. Of this sample of 162, the incumbent CEO retains his or her position in 80 cases (49%), while in the remaining 82 cases the post-bankruptcy operations are run by a new CEO. Overall, as many as 64% of CEOs in place at filing lose (or trade) their positions through the bankruptcy auction.²¹

Given the incentives of owner-managers to develop firm-specific skills, continued employment in the firm may be essential for the firm's survival as a going concern. As a result, the overall turnover rates through auction bankruptcy depend to a great extent on whether or not the CEO is a major shareholder of the firm. In the group of 143 owner-managers, i.e., CEOs holding at least 10% of the firm's equity, 60 (42%) continue to run the firm following auction bankruptcy. In contrast, in the group of 45 non-owner external managers, only 9 (20%) retain their positions post-bankruptcy. The difference in turnover rates between owner-managers and external CEOs is statistically significant at conventional levels (p -value of 0.008).²²

²¹Of the 258 CEOs in place two years prior to filing, only 25% remain with the firm post-bankruptcy.

²²A similar observation is made for public U.S. (non-bankrupt) firms. Specifically, the probability of top executive turnover tend to be negatively correlated with the equity ownership of officers and directors. See, e.g., Ofek (1993), Denis and Denis (1994), Mikkelsen

These results can be compared to extant findings for Chapter 11 cases. In a sample of publicly traded firms emerging from Chapter 11, Hotchkiss (1995) finds that 55% of the firms have replaced the CEO that was in office two years prior to filing at the time of filing, while 70% were replaced by the end of the Chapter 11 proceedings. Similar figures are reported by Gilson (1989) who finds that, of senior management in office two years prior to filing, 45% remain in the year the firm files for Chapter 11, and 29% remain two years later.²³ Thus, one third of CEOs with a tenure exceeding two years at the time of bankruptcy filing lose their position during the Chapter 11 reorganization. Contrary to the Swedish evidence, managerial turnover rates appear to decrease as firms file for Chapter 11.

The difference between the turnover rates in Sweden and the ones reported by Hotchkiss and Gilson in part reflects the fact that the small private firms in the Swedish sample are frequently run by an owner-manager. As discussed above, owner-managers tend to develop skills that are specialized with the firm, and may therefore be pivotal for the success of the firm's continued operations. Consistent with the difference in corporate governance between the samples, the pre-filing rate of top executive turnover seems to be lower in Sweden than in the U.S. (35% vs. 55%). The evidence, however, suggests

and Partch (1997) and Denis, Denis and Sarin (1997).

²³Management turnover in Chapter 11 has also been examined by Ang and Chua (1981), Gilson and Vetsuypens (1993), LoPucki and Whitford (1993) and Betker (1995), who report similar results.

that turnover rates are substantially *higher* in Swedish auction bankruptcy than for Chapter 11 cases (64% vs. 33%). Thus, cash auction bankruptcy appears to force (or allow) significant top level management turnover, despite the considerable shareholdings by Swedish CEOs. Overall, bankruptcy auctions seem to impose significant costs on top level management, supporting the first part of the delayed filing hypothesis.

The probability that a manager will be fired depends on his or her value to the firm and ability to control the firing decision. The manager's value to the firm is, in its turn, a function of both managerial quality and specialization with the firm. Moreover, since the Swedish CEOs often have substantial shareholdings, the outcome of the bankruptcy auction decides whether owner-managers retain control over the decision to fire/retain top management. Column 2 of Table 6 contains the estimated coefficients for a probit model for the probability that the incumbent CEO has lost ($y=1$) or retained ($y=0$) his or her position in the firm when the bankruptcy auction is completed. The CEOs are classified as having lost their position if the firm is liquidated piecemeal, or if it is sold as a going concern and a new CEO is appointed to run the operations post-bankruptcy.

As a measure for managerial quality, the probit model includes the variable QUALITY, defined as the firm's pre-filing operating profitability for CEOs with a tenure of at least two years (and zero otherwise). Assuming

that lower quality managers are more likely to lose their job, *QUALITY* is expected to enter the regression with a negative sign. Moreover, through repeated lending agreements, a firm's major creditors tend to acquire information about the quality of the firm's management. This information is particularly useful if the creditor also decides to finance the successful buyer in the auction. Such financing will in part be made conditional on retaining/firing of what the creditor views as high/poor quality incumbent management. To capture this effect, a binary variable *BANK*, indicating that the old bank finances the new buyer in the auction, is included in the model. To the extent banks tend to finance firms with high quality management, *BANK* is expected to decrease the probability that the CEO is forced to leave the firm.

As discussed earlier, managers with a long tenure may have acquired firm-specific knowledge which increases their value to the firm. The variable *TENURE*, indicating a CEO tenure exceeding two years, is therefore expected to produce a negative coefficient. CEO turnover is also expected to depend on the firm's size (*SIZE*). Managers of small firms tend to perform a number of functions throughout the entire business organization, while large-firm CEOs devote a greater proportion of their time to the pure management function. Again, the firm-specific human capital developed by the small-firm manager suggests that CEO changes are more costly for small than large firms. Thus, the variable *SIZE* is expected to enter the model with a positive

sign.

Auction prepacks are in part driven by managerial motives to retain control of the financially distressed firm. To capture this effect, a binary variable indicating that the bankruptcy filing is an auction prepack (PREPACK) is included in the probit model, and is expected to enter with a negative sign. Furthermore, given the large shareholdings of many CEOs, the decision to fire the CEO is partly under the CEO's own control. This is particularly true when the major shareholders of the bankrupt firm decide to repurchase the firm in the auction. For this reason, the model includes a binary variable REPURCHASE which takes on a value of one when the pre-filing owner of the firm buys back the assets in the auction.²⁴ The model also controls for the degree of industry financial distress (DISTRESS). Industry distress reduces industry demand and increases the chance for piecemeal liquidation of the firm's assets in bankruptcy, thus increasing the CEO's chances to lose control. Moreover, the estimation includes a number of industry indicators which help proxy for intra-industry variation in the probability of CEO turnover.

The resulting coefficient estimates are reported in Table 6.²⁵ As predicted, the coefficient for QUALITY is negative and significant, i.e., the probability

²⁴REPURCHASE is defined as cases when a shareholder or group company of the filing firm buys the firm in the auction, and, when the owner of the buying firm is unknown, cases where the buying firm's board includes all members of the filing firm's board.

²⁵A separate estimation for a subsample of going concern sales produces similar results.

of CEO turnover increases as the firm's pre-filing profitability decreases. This suggests that the auctions tend to sort out higher quality managers by forcing lower-quality managers to leave. Thus, if anything, the average CEO has an incentive to file "early" (to increase the odds in favor of retaining his or her job) rather than "late". This is consistent with Gilson (1989), who finds that the probability of managerial turnover in a sample of financially distressed firms decreases with stock returns.

Furthermore, the coefficient for REPURCHASE is negative and significant: The lowest managerial turnover rate is found in the sample of firms where the major shareholder buys back the firm in the auction.²⁶ The variable BANK also produces a negative coefficient, possibly indicating that banks use some private information about the quality of the entrepreneur in their decision to continue to finance the firm.²⁷ Moreover, the variables TENURE, SIZE, DISTRESS and PREPACK all lack explanatory power, as do the industry indicators.²⁸ Overall, the model has a pseudo R^2 of 55% and a likelihood ratio test statistic of 112.3, which is statistically significant at conventional levels.

²⁶In an alternative specification, REPURCHASE is replaced with a variable indicating that the firm is run by an owner-manager, which also produces a negative and significant coefficient.

²⁷There is surprisingly little correlation between BANK and REPURCHASE. Of the auctions where both variables are known, the filing firm's bank finances 31 repurchases and 32 non-owner successful bidders, and a new bank finances 29 repurchases and 20 non-owner winning bidders.

²⁸For public U.S. (non-distressed) firms, Denis, Denis and Saryan (1997) report that the probability of top executive turnover decreases with firm size.

2.3.3 Managerial self-dealing and repurchases by pre-bankruptcy owners

This section examines whether there is evidence that managers or owners of the filing firm are able to obtain preferential terms in the auction ("self-dealing"). This is a concern when management has private information that the firm is undervalued, or if the trustee violates the fiduciary responsibility towards creditors by accepting a low bid from a shareholder, effectively cutting short the search for competitive bids. Non-owner CEOs prefer staying with firms that are undervalued in the auction, since the performance of these firms post-bankruptcy will benefit from the correction of the market's assessment of firm value. In this section, it is assumed that the CEO controls the decision to leave or remain with the firm.

The focus of the analysis is on the auction premium, defined as $\ln(p_l/p_e)$, where p_l is the realized auction value and p_e is the trustee's initial estimate of the value of the assets. The trustee's estimate, which incorporates publicly available information about the firm at the beginning of the auction, is best viewed as the value of the assets in a piecemeal liquidation (or the value of assets in place).²⁹ The auction premium, which averages 92% (median 24%), reflects the bidder's estimate of the going concern value of the bankrupt firm as well as any new value-related information emerging during the auction

²⁹See Thorburn (1998) for a more extensive discussion of the trustee's value estimate p_e and the auction premium.

procedure. For example, an unexpectedly high demand in the auction will produce a relatively large auction premium.

The incumbent CEOs decision to remain with the firm post-bankruptcy, and the associated values of the auction premium, are modeled using the following two-equation system:

$$\ln(p_i/p_e) = \beta'_1 X_i + u_{1i} \quad \text{iff} \quad \gamma' Z_i \geq u_i \quad (\text{i.e., iff CEO remains}) \quad (2.3)$$

$$\ln(p_i/p_e) = \beta'_2 X_i + u_{2i} \quad \text{iff} \quad \gamma' Z_i < u_i \quad (\text{i.e., iff CEO leaves}) \quad (2.4)$$

β_1 and β_2 are parameter vectors in the model generating auction premiums, γ is a parameter vector in the model for the CEO's choice to remain with the firm, and where it is assumed that u_{1i} and u_{2i} are correlated with u_i . In this formulation, the CEO retains his or her job when $\gamma' Z_i \geq u_i$ (equation 2.3), where u_i is the residual in a probit regression of CEO turnover with explanatory variables Z_i .

The objective of the following analysis is to examine whether the auction premiums reflect a selectivity bias from the CEO's decision to leave the firm. If managers chose to stay when they have private information that the firm is undervalued, the observed auction premiums will, in these cases, not reflect efficient market prices. The analysis therefore excludes all observations on the auction premium for cases when the CEO retains his or her job. To correct for the resulting selection bias (and test for self-selection), a Heckman two-

step estimation method is used.³⁰ With the sample restricted to 110 cases where the CEO leaves the firm, the expected auction premium is

$$E[\ln(p_l/p_e)] = \beta'_2 X_i + \eta \frac{\phi_i}{\Phi_i}, \quad (2.5)$$

where $\phi_i = \phi(\gamma'Z_i)$ and $\Phi_i = \Phi(\gamma'Z_i)$ are the values of the standard normal density and the cumulative normal distributions, respectively, evaluated at $\gamma'Z_i$. The first step estimates the CEO's choice probabilities (reported in Table 6 above), while the second step is a weighted least squares (WLS) estimation of equation (2.5).³¹

The results of the two-step estimation are reported in Column 2 of Table 7, where ϕ_i/Φ_i is the inverse Mill's ratio. The vector of explanatory variables includes the fraction of assets that are unique to the industry (UNIQUE), the degree of industry distress (DISTRESS), firm size (SIZE), industry-adjusted firm profitability (PROFMARG), an indicator for creditor filing (CREDITOR), and the inverse Mills' ratio estimated from the probit regression in Table 6. The auction premium is expected to decrease in UNIQUE, DISTRESS, SIZE and CREDITOR, and to increase in PROFMARG. As presented in Column 2 of Table 7, the auction premium decreases with asset uniqueness and the dummy for creditor filing.³² Importantly, the coefficient

³⁰See Heckman (1979) and Maddala (1983).

³¹The WLS weights are constructed using the adjusted standard errors from an OLS estimation of equation (2.5), see Maddala (1983).

³²This is consistent with Thorburn (1998), who also examines potential determinants of the auction premium, however, focusing on the decision of the filing firm's bank to finance the buyer in the auction.

for the inverse Mill's ratio is insignificantly different from zero, providing no evidence of a bias in the auction premium resulting from the CEOs decision to retain his or her position with the firm.³³

The hypothesis of self-dealing at preferential premiums is further examined by focusing on the owner's decision to repurchase the firm in the auction. The analysis uses the two-step estimation technique described above, however, equations 2.3 and 2.4 now applies to the owner's decision to buy vs. not buy back the firm, respectively. Column 5 of Table 6 presents the coefficient estimates in the probit regression of the owner's choice model, $\gamma'Z_i$. The pre-filing owner repurchases the firm's assets in 89 cases and elects not to repurchase in another 138 cases.³⁴ The choice model includes variables defined earlier. It is expected that the probability of the owner choosing not to repurchase will decrease with PROFMARG, UNIQUE, DISTRESS and PREPACK, and increase with SIZE. The probit regression has a pseudo R^2 of 4.9% and a p-value for the log-likelihood ratio of 0.132. Focusing on the significant coefficients, the probability of a repurchase is higher for auction prepacks. This supports the hypothesis presented by Thorburn (1998) that control constitutes a motive for shareholders to undertake auction prepacks.

The results of the second step in the estimation (i.e., the WLS estimation

³³Similarly, there is no evidence of a bias in the auction *value* from the CEOs decision.

³⁴This regression includes both piecemeal liquidations and going concern sales. Separate analysis of going concern sales produces similar results.

of the auction premium) are presented in Column 4 of Table 7. The model includes the explanatory variables used to examine the above hypothesis of managerial self-selection. In addition, a binary variable indicating that the filing firm's bank financed the successful buyer (BANK) is included. As reported in Table 7, the inverse Mill's ratio is again insignificant, providing little support for the notion that shareholders use private information to repurchase assets when the firm is undervalued.³⁵

Overall, there is no evidence that managers or owners self-deal in the bankruptcy auction and systematically retain control of the firm when auction premiums are low.

2.4 Post-bankruptcy firm performance

An optimal bankruptcy procedure should encourage economically viable firms to continue, while terminating inefficient firms. The delayed filing hypothesis predicts that firms filing for auction bankruptcy is of a relatively poor quality compared to firms filing for Chapter 11 reorganization. Thorburn (1998), however, shows that a similar fraction of firms survive as a going concern through Swedish bankruptcy auctions and U.S. Chapter 11 reorganizations. Given Thorburn's observation, the delayed filing hypothesis implies

³⁵This result is consistent with Strömberg (1997) who, in a related sample of Swedish bankruptcy auctions, finds no evidence of a selectivity bias in the auction *value* from the owner's decision to repurchase the firm.

that firms emerging from auction bankruptcy is of a relatively low quality, which should show in a poorer post-bankruptcy performance.

This section provides some evidence on the ex-post efficiency of the restructuring resulting from cash auction bankruptcy. Specifically, it reports the rate of bankruptcy refilings and the post-bankruptcy performance of firms sold as going concerns in the bankruptcy auction. In this section, the "emerging" firm is defined as the firm (or corporate shell) that buys and continues the operations of a firm in cash auction bankruptcy. For the 195 going concern sales in sample, the buyer in the auction can be identified in 158 cases. Of these cases, 114 buying firms (72%) are empty corporate shells with no operations prior to the acquisition of the bankrupt firm's assets, and the remaining 44 buyers (28%) merge the acquired assets into their own ongoing operations.

2.4.1 Frequency of bankruptcy refiling

Table 8 shows the cumulated proportion of the 158 emerging firms that refiles for bankruptcy during a five-year period following the bankruptcy auction. 59 firms (37%) refile for bankruptcy within five years of the auction, of which 39 firms (25%) file in the first two years. For the 59 firms that refile for bankruptcy, the median time between the bankruptcy auction and re-entering bankruptcy is 20 months (mean 23 months). It is possible that the

significant fraction of Swedish firms that refiles relatively shortly after the bankruptcy auction reflects the poor business conditions that prevailed during the first two years of the post-bankruptcy sample period. Sweden experienced an economy-wide financial and economic down-turn in 1991, producing a peak in the national rate of corporate bankruptcy filings in 1992.³⁶ While the economic climate generally improved towards the mid 1990's, the emerging firms' operations may initially have suffered from unusually unfavorable economy-wide business conditions.

The fraction of emerging firms that need to restructure their debt is similar for the small firms sold in cash auction bankruptcy and public firms reorganized under U.S. Chapter 11.³⁷ In a sample of 197 publicly traded firms emerging from Chapter 11, Hotchkiss (1995) finds that 32% are involved in a second bankruptcy or debt restructuring over the five years following the initial restructuring, with a median time of 3.8 years. Similarly, LoPucki and Whitford (1993) find that 12 of the 36 largest companies emerging from Chapter 11 by March 1988 (33%) reenter bankruptcy.³⁸ Since the unconditional probability of bankruptcy is lower for large public firms than for small

³⁶The bankruptcy filing rate for Swedish firms with more than 20 employees exceeded 5% in both 1991 and 1992. Note that 140 (89%) of the 158 sample firms emerged from auction bankruptcy in 1990 or 1991.

³⁷There are practically no workouts or court supervised debt renegotiations in Sweden, see Eckbo and Thorburn (1997). Thus, the fraction of firms filing for bankruptcy provides a close approximation for the fraction of firms that need to restructure their debt.

³⁸See also Gilson (1997), who reports that one quarter of 108 publicly traded firms that filed for Chapter 11 (51 firms) or privately restructured their debt (57 firms) needed a subsequent debt restructuring.

private firms,³⁹ it is reasonable to expect the rate of relapses back into severe financial distress to be higher in the Swedish sample than in the U.S. samples above. Thus, a cross-country comparison of the unconditional rates of firms in need of a subsequent debt restructuring may hide important differences dependent on firm size.

In her sample of public firms emerging from Chapter 11, Hotchkiss (1995) shows that the probability of a second debt restructuring or bankruptcy filing is higher when the pre-filing CEO remains with the firm. Thus, there appears to be a bias in the Chapter 11 procedure towards allowing low quality CEOs to stay with the firm. In contrast, as presented in Columns 2-4 of Table 8, whether or not the incumbent CEO retains control of the firm post-bankruptcy have no statistically discernible effect on the bankruptcy refiling rate in Sweden. That is, by forcing a high managerial turnover rate (see Section 3.2 above), bankruptcy auctions seem to eliminate the lowest quality CEOs. It is possible that auction bankruptcy is relatively successful in allowing the market for corporate control to discipline managers.

Thorburn (1998) shows that auction premiums and creditor recovery rates tend to be higher when the filing firm's bank finances the successful buyer in the auction. To the extent the higher premiums and recovery rates reflect the bank's private information about high firm quality, the post-bankruptcy

³⁹See, for instance, Altman (1993).

refiling rate of these firms should be relatively low. Surprisingly, Columns 5-7 of Table 8 show that the cumulated rate of bankruptcy refilings within 2-5 year of the initial bankruptcy auction is significantly *higher* for emerging firms financed by the filing firm's bank. Specifically, while 54% of firms financed by the bank refiles for bankruptcy within five years of the auction, only 26% of firms financed by a new bank refiles in the same time period (p-value of 0.002). The corresponding refiling fractions within two years of the initial auction is 44% and 17%, respectively (p-value of 0.001). This evidence raises the possibility that the bank's decision to finance the buyer in the bankruptcy auction reflects internal agency problems within the bank. For example, bank managers may prefer lower immediate credit losses (by increasing demand in the auction) to lower expected future profits (by financing economically inefficient firms with a high risk of subsequent default).

Table 9 shows two conditional probit regressions for the probability that the emerging firm refiles for bankruptcy within five years of the auction (dependent variable=1). The first regression estimates the parameter values in a sample of 103 firms continuing the operations following cash auction bankruptcy. As before, the explanatory variables are defined in Table 3. The variable BANK indicates that the filing firm's bank financed the buyer of the assets in the bankruptcy auction. To the extent the bank's financing decision reflects private information about high firm quality, the probability of refiling is expected to decrease in BANK.

Moreover, to control for effects from the continued involvement of the incumbent manager, the model includes a binary variable indicating that the CEO remains with the firm post-bankruptcy (CEOSTAYS).⁴⁰ If the bankruptcy procedure consistently fails to eliminate incompetent managers (as indicated by the Chapter 11 evidence), CEOSTAYS is likely to produce a positive coefficient. The variable MERGER indicates that the buying firm merges the filing firm's assets into its own operations (vs. is an empty corporate shell), and is expected to enter the model with a negative sign.

The probability of refiling is expected to increase in the degree of industry distress (DISTRESS), and to decrease in the firm's pre-bankruptcy profitability (PROFMARG), used as a proxy for firm quality. Using the pre-filing firm size (SIZE) as a measure for the size of the post-bankruptcy firm, the variable SIZE is expected to enter the regression with a negative sign. The model also includes three industry indicators, which together comprise three quarters of the firms used in the estimation.⁴¹

The regression results are presented in Column 2 of Table 9. Consistent with the evidence in Table 8, the coefficient for BANK is positive, suggesting that bank managers may use other criteria than firm quality in their decision to refinance the filing firm.⁴² Contrary to results reported for Chapter 11,

⁴⁰Specifically, to avoid multicollinearity, the model uses the residuals from a regression of BANK on CEOSTAYS.

⁴¹These industry indicators are manufacturing, construction and wholesale and retail.

⁴²Of course, the observation of a negative ex-post return does not exclude an ex-ante

the probability of refiling is independent of whether the incumbent manager retains control or not.⁴³ There is also no evidence that the probability of refiling increases with the degree of industry distress or decreases with the firm's pre-filing profitability. Moreover, MERGER and PREMIUM both produce insignificant coefficients, as do all the industry indicators. Overall, the regression has a pseudo R^2 of 5.3% and is insignificant with a log likelihood ratio of 7.81 (p-value of 0.554).

The second regression in Table 9 uses a subsample of 71 emerging firms that report a financial statement for their first year of post-bankruptcy operations. This subsample contains 16 firms that refiled ($y=1$) and 55 firms that did not refile ($y=0$) for bankruptcy within five years of the auction. The model includes the same explanatory variables as the first regression, with the exception of the pre-filing financial characteristics PROFMARG and SIZE. Instead, the estimation adds three variables measuring the emerging firm's financial characteristics: POSTSIZE (log of book value of assets), POSTLEV (industry-adjusted debt to assets ratio) and POSTPROFIT (industry-adjusted ratio of operating income to assets), all from the first year of post-bankruptcy operations.

anticipated positive return.

⁴³In an alternative specification, CEOSTAYS is replaced with REPURCHASE (indicating that the pre-filing owner retains control), which also produces an insignificant coefficient. Moreover, eliminating BANK also produces an insignificant coefficient for the original CEOSTAYS variable.

The results of the second specification are reported in Column 4 of Table 9. The regression is statistically significant with a pseudo R^2 of 25% and a log likelihood ratio of 19.2 (p-value of 0.038). For the joint set of explanatory variables, the coefficient estimates are similar to those reported above: the probability of refiling increases with BANK, while CEOSTAYS, MERGER, DISTRESS and the industry indicators all lack explanatory power. Importantly, the coefficient for POSTLEV is positive and significant, suggesting that the ability of emerging firms to avoid a second default is decreasing in their debt to assets ratio. Highly levered firms are more sensitive to fluctuations in their cash flow, and are therefore more likely to run into difficulties of serving their debt, resulting in a higher conditional probability of bankruptcy. The two remaining variables measuring post-bankruptcy firm characteristics, POSTSIZE and POSTPROFIT, both produce insignificant coefficients.

2.4.2 Industry-adjusted post-bankruptcy performance

This section provides some further ex-post evidence on the efficiency of the restructuring through cash auction bankruptcy, by presenting operating performance and financial characteristics of the emerging firms and comparing them to contemporaneous industry medians.⁴⁴ Table 10 shows five years of post-bankruptcy performance for 115 Swedish firms sold as going concerns

⁴⁴The sample firms are compared to the median of all Swedish firms with over 20 employees and the same 4-digit SIC code, and the U.S. firms with the median of all Compustat firms with the same 2-digit SIC code.

in the bankruptcy auction, and of large, publicly traded firms emerging from the U.S. Chapter 11, as reported by Hotchkiss (1995).⁴⁵

As presented in Panel I of Table 10, firms emerging from cash auction bankruptcy have a profitability (defined as earnings before interest, taxes, depreciations and amortizations divided by sales) in line with the contemporaneous industry median over the whole five-year period, and less than 22% of firms run operating losses in any one year. Similar results follow when normalizing the net earnings (EBITDA) with book value of total assets, as shown in Panel II. These numbers are consistent with the idea that the auction procedure succeeds in efficiently allocating and restructuring the operations of the distressed firms, and contradicts the delayed filing hypothesis. In contrast, 40% of firms emerging from Chapter 11 continue to run operating losses and the firms perform significantly worse than the industry over several years (p-value of less than 0.05). As suggested by Hotchkiss (1995), it is possible that this indicates that the Chapter 11 procedure fails to successfully rehabilitate distressed firms.⁴⁶

A majority of the Swedish firms experience an annual growth in revenues

⁴⁵ Of the 115 Swedish firms, 24 (21%) refiles for bankruptcy within 5 years of the auction. This rate is lower than the refiling rate for the full sample of 158 emerging firms, however, there is no evidence that the refiling probability decreases with, e.g., operating profitability. Moreover, while the numbers presented in this section may suffer from a survivorship bias, the evidence in Hotchkiss (1995) is affected by a similar bias.

⁴⁶ See also Mooradian (1994) for a theoretical model in which Chapter 11 allows inefficient firms to continue.

and book value of total assets following the bankruptcy auction, see Panel III and IV of Table 10. Moreover, more than half of firms report a non-negative growth in the number of employees (Panel V of Table 10). The growth rate of the sample firms is, however, in line with the median growth rate in the respective industry. Furthermore, as shown in Panel VI of Table 10, capital expenditures (measured as a fraction of total assets) are typically also in line with industry norms.⁴⁷ While firms emerging from cash auction bankruptcy tend to grow in line with the rest of the industry, firms emerging from Chapter 11 appears to grow at a higher-than-industry rate. Columns 6-7 of Panels III-V show that the U.S. firms have an above industry level of growth in revenues, assets and employees in the first two years of post-bankruptcy operations. However, as mentioned before, this growth is not followed by an increase in profitability.

Table 11 presents five years of post-bankruptcy financial characteristics of the 115 emerging Swedish firms. As reported in Panel I of Table 11, the median firm in the sample emerges with a debt to assets ratio (book value of total debt to book value of total assets) of 0.90.⁴⁸ In particular, 72% of sample firms emerge more highly levered than the median firm in the industry. During the first three years of post-bankruptcy operations, the sample firms' debt to assets ratio exceeds the contemporaneous industry

⁴⁷ Only in the second year of post-bankruptcy operations do sample firms report a higher level of capital expenditures than the industry median (significant at the 5%-level).

⁴⁸ Surprisingly, 10% of emerging firms report a debt to assets ratio exceeding one.

median with a median of 10 percentage points (p-value less than 0.01). Not until five years after the bankruptcy auction, do emerging firms report a leverage in line with the rest of the industry.

The observation that firms emerge highly levered from bankruptcy is not unique for Swedish cash auction bankruptcy. Gilson (1997) reports that 70% of 51 publicly traded U.S. firms emerged from Chapter 11 more highly levered than the industry median.⁴⁹ He suggests that the leverage of Chapter 11 firms remains high due to an increase in their optimal leverage ratio, but points to the fact that the capital structure of Chapter 11 firms potentially could be "sticky". In contrast, firms auctioned off in Swedish bankruptcy continue under a new corporate identity, and the capital structure of the emerging firm is set up independently of the filing firm. The evidence presented here thus supports Gilson's (1997) view that firms' optimal leverage ratio increases conditional on bankruptcy. The high leverage of firms emerging from cash auction bankruptcy could, for example, be explained by creditors' incentives to gain early control of the firm in case of a second default, and to discipline managers.⁵⁰

Panel II of Table 11 shows the emerging firms' interest coverage ratio, defined as the ratio of earnings before interest, taxes, amortizations and depreciations plus financial income to financial costs. Despite the high in-

⁴⁹ Gilson (1997) defines leverage as long term debt to book value of assets.

⁵⁰ See, e.g., Jensen (1986, 1989) and Wruck (1990).

debtedness, at least two third of firms have an interest coverage exceeding one in any single year. Yet, the interest coverage ratio is lower than the industry median in the second and third year of post-bankruptcy operations (significant at the 5% and 10% level, respectively). Due to their high leverage, the emerging firms appears to be more sensitive to fluctuations in their income than the typical firm in the industry.

Not only the level, but also the structure of the sample firms' debt differ from the industry norm, as shown in Panel III and IV of Table 11. First, firms have a significantly higher fraction of long term debt than the industry (7-11 percentage points). Second, the fraction of claims secured by floating charge collateral exceeds the industry norm with a median of 15-25 percentage points. Floating charge collateral is typically used to back up the short term financing provided by banks, e.g., to protect credit lines or other operating capital. These particular characteristics in the debt structure of emerging firms sustain throughout the whole 5 year period (significant at the 1% level). The evidence indicates that creditors, in response to the high risk of subsequent default, require more collateral than usual to provide financing to firms emerging from cash auction bankruptcy.

2.5 Conclusions

The form of the bankruptcy code affects the ex-ante incentives of managers to file for bankruptcy. Thus, the U.S. Chapter 11 procedure, which allows incumbent management to retain control while the firm is reorganized, may induce managers to file "early". However, if agency costs exacerbated by the Chapter 11 proceeding are sufficiently large, mandatory bankruptcy auctions could provide a more efficient restructuring of the firm.

On the other hand, management dreading a loss of job security and personal wealth as a result of the bankruptcy auction, may file "too late" relative to what is observed under Chapter 11. Under the delayed filing hypotheses, "too late" means that the filing firm's operations have suffered too long under financial stress, resulting in emerging firms that are of a relatively low quality. The concomitant threat of job losses probably explains the political trend in several European countries towards adopting Chapter 11-type reorganization provisions.⁵¹

This paper provides some first evidence on managerial wealth effects and post-bankruptcy corporate performance following bankruptcy auctions. The analysis uses a sample of 263 small firms filing for Swedish cash auction

⁵¹For example, UK, France, Germany, Finland, Norway and Sweden have changed or are proposing to change their bankruptcy regulation to include Chapter 11-style provisions for court supervised reorganizations.

bankruptcy, compiled by Thorburn (1998). Importantly, the evidence is produced by a legal environment where the bankruptcy code contains no provisions for a Chapter-11 style reorganization of the firm.

The evidence suggests that mandatory cash auctions act as a substantial managerial disciplinary force. First, CEOs appear to incur considerable wealth losses when their firm files for cash auction bankruptcy. Over the two years following filing, 70% of CEOs report a reduction in total compensation and the median CEO experiences a compensation loss of 40%. This income loss is significantly larger than what is observed for the median CEO of a control sample of non-bankrupt Swedish firms. Moreover, the size of the compensation loss is statistically independent of whether or not the CEO remains with the firms, consistent with a conditionally (on bankruptcy filing) competitive managerial labor market. This suggests that the CEOs lack wage-related motives for either delaying or rushing their bankruptcy filing. The loss of CEO income, however, does increase with the degree of industry distress, possibly reflecting low demand for managerial services in declining industries. Furthermore, CEOs undertaking auction prepacks experience on average smaller compensation losses, suggesting that auction prepacks may be driven by managerial reputational concerns.

Second, managerial turnover during the bankruptcy procedure is considerable: 64% of incumbent CEOs lose (or trade) control of the firm through

the bankruptcy auction. This rate seems higher than managerial turnover rates reported for public firms reorganizing under the U.S. Chapter 11. In Sweden, this turnover also takes place in a much shorter period of time: firms typically spend 1-2 months in cash auction bankruptcy vs. 2-3 years in Chapter 11.⁵² The estimated probability of CEO turnover decreases with the filing firm's operating profitability, suggesting that the auction helps sort out high from low quality managers. Overall, in order to keep private benefits of control, it appears that the average CEO in Sweden has an incentive to file "early" rather than "late".

While the evidence suggests that managers dread the prospects of cash auction bankruptcy (like any form of bankruptcy), the results provide little support for the low post-bankruptcy firm quality predicted by the delayed filing hypothesis. If anything, the results suggests that auctions, relative to Chapter 11, produce viable restructurings of firms: The typical firm auctioned as a going concern shows a five-year post-bankruptcy operating profitability that is in line with its industry competitors, and only 20% of auctioned firms report operating losses. This contrasts with the evidence in Hotchkiss (1995) that public firms emerging from Chapter 11 perform significantly worse than their industry competitors, and that 40% of these firms continue to run operating losses for several years.

⁵²See Thorburn (1998) for evidence on the length of Swedish auction bankruptcy, and, e.g., Gilson, John and Lang (1990), Weiss (1990) and Franks and Torous (1994) for evidence on Chapter 11 proceedings.

Moreover, the proportion of Swedish firms refiling for bankruptcy over a five-year period following the initial auction is arguably comparable to (or possibly lower if adjusted for firm size) than debt-restructuring rates reported for public firms emerging from Chapter 11. Three quarters of the firms emerge from cash auction bankruptcy more highly levered than the median firm in the industry, which is similar to evidence for the U.S.. Interestingly, the estimated probability of refiling for bankruptcy increases in the firm's post-bankruptcy leverage, while the continued involvement of the filing firm's CEO has no statistically discernible effect.

In sum, the evidence reported here provides little support for the delayed filing hypothesis. While Swedish cash auction bankruptcy appears to constitute a considerable potential threat to managers, there is no evidence of wealth-related or control-related incentives for managers to delay filing. Moreover, the subsequent performance of firms sold as going concerns in the bankruptcy auction does not suggest that Swedish firms are of a relatively poor quality when filing. The rejection of the delayed filing hypothesis is consistent with Thorburn (1998), who finds that firms' pre-filing financial characteristics and debt recovery rates are similar across Swedish cash auction bankruptcy and the U.S. Chapter 11. Overall, the results of this paper comply with the view that mandatory auctions provide a relatively efficient bankruptcy mechanism, at least for the Swedish small-firm environment.

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Table 1

The distribution of Swedish corporate bankruptcy filings in the population and in the sample, 1988-1991.

	1988	1989	1990	1991	1988-1991
Population of bankruptcy filings by all firms ¹	3,533	4,941	7,415	13,345	29,235
UC population of bankruptcy filings by firms with at least 20 employees ²	39	125	303	692	1,159
Cases outside the sample geographical area	- 26	- 64	- 154	- 337	- 581
Cases pending in bankruptcy on June 30, 1995 ³	0	- 14	- 20	- 111	- 145
Cases related to tax fraud charges	0	- 8	- 24	- 27	- 59
Cases with incomplete information ⁴	- 4	- 12	- 34	- 61	- 111
Number of cases in the sample⁵	9	27	71	156	263

¹ Source: Statistics Sweden.

² Source: UpplysningsCentralen (UC) AB, a private company collecting information on all Swedish firms and individuals for use in credit risk assessments, etc. The UC database, which is restricted to bankruptcy cases that remained open on December 31, 1991, covers virtually the entire population of filings over the sample period.

³ While the firm's assets are quickly auctioned off in bankruptcy, the old and empty "corporate shell" often remains on file with the court for several years. This is to allow all claims owned by the filing firm to be collected by the trustee.

⁴ For example, the bankruptcy file could not be found, the case had been transferred to another province, or the firm was not operating within 18 months prior to bankruptcy filing.

⁵ This is also the number of cases in Thorburn (1998).

Table 2
**Financial characteristics for the sample of 263 Swedish firms filing for cash
 auction bankruptcy in 1988-1991.**

	mean	median	std. dev.	min	max
Sample size	263				
Pre-filing book value of assets in \$ mill. ¹	2.4	1.3	3.63	.05	29.4
Number of employees	43	29	48.3	20	450
Pre-filing debt to assets ratio ²	.92	.93	.214	.05	2.8
Percentage of firms with negative EBIT ³	46	-	-	-	-
Current ratio ⁴	1.39	1.23	.97	.13	11.1
Auction value in \$ mill. ⁵	.8	.4	1.21	.01	13.5

¹ Book value of assets in 1991 prices from the last pre-filing financial statement, dated on average 16.5 months (median 15.5 months) prior to bankruptcy filing.

² Book value of total debt to book value of total assets from the last pre-filing financial statement.

³ Fraction (in percent) of firms with negative earnings before interest and taxes (EBIT).

⁴ Current assets divided by short term debt.

⁵ Auction value is the total proceeds from the sale of the firm's assets in bankruptcy, including accounts receivables and other claims held by the firm and collected by the trustee, as reported in the bankruptcy file.

Table 3
Definition of variables

I. Pre-bankruptcy firm characteristics:

SIZE	Log of book value of total assets in the last reported pre-filing financial statement.
PROFMARG	Pre-filing gross margin (defined as earnings before interest, taxes, depreciations and amortizations divided by total sales) minus the contemporaneous median gross margin of all Swedish firms with more than 20 employees and the same 4-digit SIC code.
TENURE	Binary variable indicating that the CEO was in place 2 years prior to filing.
QUALITY	Interaction variable defined as TENURE * PROFMARG.
AGE	CEO age at bankruptcy filing.
INCOME	Log of the CEO's income before tax in year -2 relative to bankruptcy filing.
UNIQUE	Fraction of the firm's assets that are unique to the industry (defined as machinery, equipment, inventory, intangible assets and work in progress) as estimated by the bankruptcy trustee upon filing.
DISTRESS	Fraction of Swedish firms with over 20 employees and the same 4-digit SIC code that either reports an interest coverage ratio less than one in the year of bankruptcy filing, or files for bankruptcy during the next calendar year.

II. Auction characteristics:

CREDITOR	Binary variable indicating that a creditor files the bankruptcy petition.
PREPACK	Binary variable indicating that a going concern sale of the firm's assets is executed prior to or immediately upon (within 7 days) bankruptcy filing.
BANK	Binary variable indicating that the filing firm's bank finances the successful buyer of the firm's assets in the auction.
REPURCHASE	Binary variable indicating that the pre-bankruptcy owner buys back the assets of the firm. Pre-bankruptcy owner is defined as a shareholder or a group company of the filing firm, or, if the ownership of the buyer is unknown, cases where the buying firm's board includes all member of the filing firm's board.
MERGER	Binary variable indicating that the buyer in the auction merges the assets into its ongoing operations as opposed to that the buying firm has no business activities prior to the acquisition of the filing firm's assets.
CEOSTAYS	Binary variable indicating that the filing firm's CEO retains his or her position with the firm post-bankruptcy.

III. Post-bankruptcy firm characteristics:

POSTSIZE	Log of book value of total assets in the auctioned firm's first post-bankruptcy financial statement, dated on average 12 months (median 13 months) after the auction.
POSTLEV	Book value of debt to total assets in the auctioned firm's first post-bankruptcy financial statement, minus the contemporaneous median debt to assets ratio of all Swedish firms with more than 20 employees and the same 4-digit SIC code.
POSTPROFIT	The ratio of operating profits (defined as earnings before interest, taxes, depreciations and amortizations) to total assets for the auctioned firm's first year of post-bankruptcy operations, minus the contemporaneous median ratio of operating profits to total assets for all Swedish firms with more than 20 employees and the same 4-digit SIC code.

Table 4

Change in CEO total compensation over the years -3 through + 4 relative to bankruptcy filing. Sample of 260 Swedish firms filing for cash auction bankruptcy in 1988-1991.¹

Panel A: Relative change in CEO compensation (ΔC).²

	Median	Mean	Standard deviation	Fraction $\Delta C < 0$	p-value ³	Sample size
Year -3 to -2	.027	.718	3.96	.46	.447	140
Year -2 to -1	.093	1.309	12.20	.41	.053	142
Year -1 to 0	-.163	-.144	.72	.59	.262	51
Year 0 to 2	-.396	-.100	1.07	.70	.001	73
Year 2 to 3	.162	3.632	22.97	.36	.003	120
Year 3 to 4	-.010	.464	3.43	.50	1.00	54

Panel B: Adjusted relative (ΔC_{adj}) and absolute (ΔD_{adj}) change in CEO total compensation, where $\Delta I_{adj} = \Delta I - \Delta I_{ind}$, $I = \{C, D\}$, and ΔI_{ind} is the median contemporaneous change in CEO total compensation for a control sample of 1,346 non-bankrupt firms.

	Median ΔC_{adj}	p-value ⁴	Sample size ΔC_{adj}	Median ΔD_{adj} (USD)	p-value ⁵	Sample size ΔD_{adj}
Year -3 to -2	-.076	.520	140	- 3,530	.009	144
Year -2 to -1	-.138	.033	142	- 9,390	.000	152
Year -1 to 0	-.161	.034	128	- 1,630	.971	139
Year 0 to 2	-.596	.001	82	- 16,090	.000	96
Year 2 to 3	.058	.035	125	- 2,610	.265	146
Year 3 to 4	-.138	.048	54	- 7,670	.000	63
Year -2 to +3	-.656	.000	195	- 29,710	.000	204

¹ Total compensation, C , is defined as the CEO's net income before tax reported in his or her personal tax return. Net income before tax is the sum of cash and stock compensation, taxable benefits, self-employed income and capital gains net of deductions and capital losses.

² Sweden implemented a major tax reform in 1991. In Panel A, ΔC is restricted to be measured within a single tax regime.

³ P-value of rejecting the null-hypothesis that the fraction of $\Delta C < 0 = 0.5$, using a binomial test.

⁴ P-value of rejecting the null-hypothesis that $\Delta C_{adj} = \Delta C - \Delta C_{ind} = 0$, using a Wilcoxon matched-pairs signed-ranks test.

⁵ P-value of rejecting the null-hypothesis that $\Delta D_{adj} = \Delta D - \Delta D_{ind} = 0$, using a Wilcoxon matched-pairs signed-ranks test.

Table 5

Parameter estimates in a ML estimation of a censored Tobit model of the relative change in CEO total compensation (ΔC) over year -2 to +3 relative to filing. Sample of 164 Swedish firms filing for cash auction bankruptcy in 1990-1991.¹

	Expected sign of coefficient	Coefficient	p-value
Constant		4.845	.025
Explanatory variables:²			
QUALITY	> 0	.018	.989
TENURE	< 0	.321	.225
SIZE	> 0	-.130	.295
AGE	< 0	-.035	.034
CEOSTAYS ³	> 0	.074	.751
PREPACK	> 0	.560	.044
INCOME	< 0	-.007	.001
DISTRESS	< 0	-1.333	.080
Industry dummies with p-values less than 0.10⁴			
Construction	-	-.912	.023
Hotels and restaurants	-	-.837	.087
Transportation	-	-1.154	.023
Sample size		164	
Log likelihood function		-150.57	

¹ The regression excludes two observation of the adjusted percentage change in income due to data errors. Of the 164 cases, 19 CEOs reported a change in their total compensation of -100%.

² See Table 3 for variable definitions.

³ CEOSTAYS produces an insignificant coefficient also when excluding QUALITY and PREPACK.

⁴ Industry indicators were also included for manufacturing, and wholesale and retail.

Table 6

Parameter estimates in conditional probit regressions of the probability of CEO turnover and the pre-bankruptcy owner not repurchasing the firm. Sample of 227 Swedish firms filing for cash auction bankruptcy in 1988-1991.

	Incumbent CEO loses (y=1) vs. retains (y=0) control			Owner does not (y=1) vs. do repurchase (y=0) the firm ¹		
	Expected sign of coefficient	coefficient	p-value	Expected sign of coefficient	coefficient	p-value
Constant		.717	.764		-.409	.789
Explanatory variables:²						
QUALITY	< 0	- 3.184	.072	-	-	-
TENURE	< 0	.179	.596	-	-	-
SIZE	> 0	.073	.633	> 0	.047	.617
PREPACK	< 0	-.296	.401	< 0	-.470	.032
REPURCHASE	< 0	- 2.419	.000	-	-	-
BANK	< 0	-.932	.004	-	-	-
DISTRESS	> 0	-.542	.621	< 0	.091	.883
PROFMARG	-	-	-	< 0	-.807	.252
UNIQUE	-	-	-	< 0	-.176	.393
Industry indicators with p-values less than 0.10:³						
None	-	-	-	-	-	-
Sample size: y=1		112			138	
y=0		51			89	
Pseudo R-square		.550			.049	
Likelihood ratio test		112.3	.000		15.00	.132

¹ Pre-bankruptcy owner is defined as an equityholder or group company of the filing firm, or cases where the acquiring firm's board includes all members of the filing firm's board.

² See Table 3 for variable definitions.

³ Industry indicators were also included for manufacturing, construction, wholesale and retail, hotels and restaurants, and transportation.

Table 7

WLS parameter estimates in a Heckman two-step estimation of the auction premium in Swedish cash auction bankruptcy, correcting for self-selection by incumbent CEOs and owners, respectively.¹

Self-selection by:	Expected sign of coefficient	CEO ²		Owner of filing firm ³	
		coefficient	p-value	coefficient	p-value
Constant	-	1.727	.096	2.750	.047
Explanatory variables:⁴					
SIZE	< 0	-.103	.144	-.147	.069
PROFMARG	> 0	-.248	.549	-.060	.916
CREDITOR	< 0	.396	.094	.506	.053
UNIQUE	< 0	-.277	.002	-.226	.064
DISTRESS	< 0	.733	.141	.383	.509
BANK	> 0	-	-	.250	.267
ϕ_i/Φ_i		.110	.478	-.558	.456
Industry indicators with p-values less than 0.10:⁵					
Manufacturing		-.480	.032	-	-
Sample size		110		110	
R-square adjusted		.162		.177	

¹ The auction premium is defined as $\ln(p_i/p_e)$ where p_i is the realized auction value and p_e is the trustee's estimate of the auction value, both as reported in the bankruptcy file.

² The model is $E[\ln(p_i/p_e)] = \beta'X_i + \eta(\phi_i/\Phi_i)$, where X_i is the vector of explanatory variables, β' is the vector of coefficients, ϕ_i is the standard normal density and Φ_i is the cumulative normal distribution function evaluated at $\gamma'Z_i$, where $\gamma'Z_i$ is the choice model describing the probability that the incumbent CEO lose control of the firm through bankruptcy (estimated in Table 4). The sample is restricted to 110 cases where the CEO lost control through the bankruptcy auction.

³ The model is $E[\ln(p_i/p_e)] = \beta'X_i + \eta(\phi_i/\Phi_i)$, where X_i is the vector of explanatory variables, β' is the vector of coefficients, ϕ_i is the standard normal density and Φ_i is the cumulative normal distribution function evaluated at $\gamma'Z_i$, where $\gamma'Z_i$ is the model describing the decision of the filing firm's owner not to repurchase the firm in the bankruptcy auction (estimated in Table 4). The sample is restricted to 110 cases where the pre-filing owner did not repurchase the assets.

⁴ See Table 3 for definition of the variables.

⁵ Industry indicators were also included for construction, hotels and restaurants, wholesale and retail, and transportation.

Table 8

Cumulated fraction of refilings into bankruptcy, divided by whether the filing firm's CEO retains control and whether its bank finances the buyer in the auction. Sample of 158 Sweidsh firms emerging from cash auction bankruptcy, 1988-1992.

Year relative to the bankruptcy auction	All firms	Incument CEO retains control of the firm			Filing firm's bank finances buyer		
		Yes	No	P-value of diff. ¹	Yes	No	P-value of diff. ¹
+ 1	.095	.086	.104	.709	.135	.091	.435
+ 2	.247	.271	.208	.367	.442	.167	.001
+ 3	.310	.329	.286	.575	.500	.242	.004
+ 4	.342	.357	.312	.561	.519	.258	.004
+ 5	.373	.429	.312	.143	.538	.258	.002
Median time to refiling (in months) ⁵	20.0	20.5	18.5	.280	19.5	16.0	.796
Sample size	158	70	77		52	66	

¹ Two-tailed p-value for rejecting the null-hypothes that the sample proportions and median time to bankruptcy refiling, respectively, are equal.

Table 9

Parameter estimates in a conditional probit estimation of the probability of refiling ($y=1$) vs. not refiling ($y=0$) into bankruptcy within 5 years of the auction. Sample of 103 Swedish firms that emerge from cash auction bankruptcy, 1988-91.

	Expected sign of coefficient	Coefficient	P-value	Coefficient	P-value
Constant		.597	.791	- 1.735	.574
Explanatory variables:¹					
BANK	< 0	.453	.093	.974	.026
CEOSTAYS ²	> 0	.299	.287	-.213	.629
MERGER	< 0	-.078	.796	.656	.169
DISTRESS	> 0	.561	.529	.251	.878
PROFMARG	< 0	- 2.114	.141	-	-
SIZE	< 0	-.084	.534	-	-
POSTSIZE	< 0	-	-	-.024	.913
POSTLEV ³	> 0	-	-	4.015	.020
POSTPROFIT	< 0	-	-	1.949	.343
Industry dummies with p-values less than 0.10:⁴					
none	-	-	-	-	-
Sample size: $y=1$		45		16	
$y=0$		58		54	
Pseudo R-square		.055		.255	
Likelihood ratio		7.81	.554	19.17	.038

¹ See Table 3 for variable definitions.

² To avoid multicollinearity, the residuals from a regression of BANK on CEOSTAYS are used.

³ The significance level of POSTLEV is robust to the exclusion of BANK.

⁴ Industry indicators were included for manufacturing, construction and wholesale and retail.

Table 10

Post-bankruptcy performance of 115 Swedish firms sold as going concerns in cash auction bankruptcy, 1988-1991, and of large U.S. firms emerging from Chapter 11.

Year ²	Swedish firms sold as going concerns in cash auction bankruptcy, 1988-1991					U.S. firms emerging as public companies from Ch 11 ¹			
	Sample size	Median	Prop. < 0	Ind-adj. median ³	Fraction < industry	Prop. < 0	Ind-adj. median ⁴	Prop. < ind.	Sample size
I: Net operating income / total sales⁵									
Year + 1	111	.043	.22	.005	.49	.41	-.063 ^a	.74	191
Year + 2	103	.064	.21	-.007	.54	.39	-.056 ^a	.71	170
Year + 3	88	.071	.16	-.003	.52	.36	-.044 ^a	.71	146
Year + 4	85	.079	.15	.001	.47	.38	-.050 ^a	.69	120
Year + 5	45	.096	.11	.020 ^b	.37	.37	-.045 ^a	.67	97
II: Net operating income / book value of total assets⁵									
Year + 1	111	.106	.23	.026	.40	.41	-.051 ^a	.66	191
Year + 2	105	.096	.21	.002	.49	.39	-.046 ^a	.65	170
Year + 3	90	.108	.17	-.002	.51	.36	-.037 ^a	.68	146
Year + 4	87	.127	.15	.020	.46	.38	-.040 ^a	.64	120
Year + 5	46	.179	.13	.046 ^b	.40	.37	-.044 ^a	.67	97
III: Annual relative change in total revenues									
Δ (+1 to +2)	104	.015	.48	.027	.48	.40	.079 ^{aa}	-	167
Δ (+2 to +3)	88	.076	.32	.029 ^b	.45	.42	.074 ^{aa}	-	143
Δ (+3 to +4)	81	.111	.26	.060	.43	.45	.030	-	119
Δ (+4 to +5)	45	.040	.42	-.030	.58	.43	.031 ^{aa}	-	97

^{aa}, (^a), ^b Denote that the industry-adjusted median is significantly different from zero at the 1%, (5%) and 10% level respectively, based on a two-tailed Wilcoxon signed rank test.

¹ Year +1 denotes the financial statement of the first year following the purchase of the filing firm's operations, etc. Δ (+1 to +2) refers to the difference between the financial statement of the first and second year following the purchase of the filing firm's operations, etc.

² The evidence on Ch 11 is from Hotchkiss (1995), who examines 197 publicly traded firms filing for Ch 11 between October 1979 and September 1988, and subsequently emerging as public companies.

³ The contemporaneous median of all Swedish firms with at least 20 employees and the same 4-digit SIC code is subtracted from each observation. Column 5 reports the median of these differences.

⁴ Hotchkiss (1995) deduct the median of a portfolio of COMPUSTAT firms with the same 2-digit SIC code.

⁵ Net operating income is annualized earnings before interest, taxes, depreciations and amortizations. Normalizing with book value of total assets produces similar results.

Year ²	Swedish firms sold as going concerns in cash auction bankruptcy, 1988-1991					U.S. firms emerging as public companies from Ch 11 ¹			
	Sample size	Medi- an	Prop. < 0	Ind-adj. median ³	Fraction < industry	Prop. < 0	Ind-adj. median ⁴	Prop. < ind.	Sample size
IV: Annual relative change in book value of total assets									
Δ (+1 to +2)	103	.022	.48	.011	.47	.43	.061 ^{aa}	-	167
Δ (+2 to +3)	89	.029	.43	-.002	.51	.52	-.003	-	143
Δ (+3 to +4)	83	.077	.36	.010	.48	.50	-.002	-	119
Δ (+4 to +5)	46	.054	.46	-.023	.52	.45	.010 ^b	-	97
V: Annual relative change in number of employees									
Δ (+1 to +2)	99	.000	.47	.008	.48	.48	.029 ^{aa}	-	167
Δ (+2 to +3)	84	.000	.34	.020	.48	.54	.000	-	143
Δ (+3 to +4)	76	.000	.43	-.036	.59	.56	.000	-	119
Δ (+4 to +5)	40	.000	.35	-.045 ^a	.69	.55	.000	-	97
VI: Capital expenditures to book value of total assets⁵									
Year + 2	103	.026	.17	.008 ^a	.45	-	-	-	-
Year + 3	89	.019	.11	-.003	.57	-	-	-	-
Year + 4	84	.024	.19	-.003	.52	-	-	-	-
Year + 5	46	.034	.24	-.013	.57	-	-	-	-

^{aa}, ^(a), ^b Denote that the industry-adjusted median is significantly different from zero at the 1%, (5%) and 10% level respectively, based on a two-tailed Wilcoxon signed rank test.

¹ Year +1 denotes the financial statement of the first year following the purchase of the filing firm's operations, etc. Δ (+1 to +2) refers to the difference between the financial statement of the first and second year following the purchase of the filing firm's operations, etc.

² The evidence on Ch 11 is from Hotchkiss (1995), who examines 197 publicly traded firms filing for Ch 11 between October 1979 and September 1988, and subsequently emerging as public companies.

³ The contemporaneous median of all Swedish firms with at least 20 employees and the same 4-digit SIC code is subtracted from each observation. Column 5 reports the median of these differences.

⁴ Hotchkiss (1995) deduct the median of a portfolio of COMPUSTAT firms with the same 2-digit SIC code.

⁵ Capital expenditures are the annualized change in book value of property, plant and equipment plus depreciations over the fiscal year.

Table 11

Post-bankruptcy financial characteristics of 115 Swedish firms that purchased assets from firms filing for auction bankruptcy in 1988-1991.

Year ¹	Sample size	Median	Fraction < 1.00	Fraction < 0	Industry adjusted median ²	Fraction < industry median
I: Debt to assets ratio³						
+ 1	111	.902	.90	-	.105 ^{aa}	.28
+ 2	105	.895	.88	-	.104 ^{aa}	.27
+ 3	90	.877	.88	-	.094 ^{aa}	.32
+ 4	87	.832	.90	-	.069 ^{aa}	.36
+ 5	46	.760	.91	-	-.001	.50
II: Interest coverage ratio⁴						
+ 1	112	2.21	.26	-	-.385	.54
+ 2	102	1.62	.33	-	- 1.17 ^a	.69
+ 3	89	2.09	.24	-	- 1.86 ^b	.68
+ 4	85	3.31	.21	-	- 1.68	.60
+ 5	44	5.33	.18	-	- .575	.52
III: Long term debt / total liabilities⁵						
+ 1	111	.361	-	-	.098 ^{aa}	.34
+ 2	106	.343	-	-	.074 ^{aa}	.39
+ 3	91	.333	-	-	.073 ^{aa}	.42
+ 4	87	.309	-	-	.115 ^{aa}	.41
+ 5	46	.350	-	-	.086 ^a	.40
IV: Floating charge claims / total liabilities⁶						
+ 1	113	.350	-	-	.173 ^{aa}	.38
+ 2	107	.350	-	-	.152 ^{aa}	.36
+ 3	95	.411	-	-	.187 ^{aa}	.32
+ 4	90	.353	-	-	.162 ^{aa}	.34
+ 5	48	.415	-	-	.252 ^{aa}	.33

^{aa}, ^a, ^b Denote that the industry adjusted median is significantly different from zero at the 1%, (5%) and 10% level respectively, based on a two-tailed Wilcoxon signed rank test.

¹ Year +1 denotes the financial statement of the first year following the purchase of the filing firm's assets, etc. Δ (+1 to +2) refers to the difference in the financial statements of the first and second year following the purchase, etc.

² The median of the contemporaneous population of Swedish firms with at least 20 employees and the same 4-digit SIC code is subtracted from each observation. Column 6 reports the median of these differences.

³ Book value of total debt to book value of total assets.

⁴ The interest coverage ratio, defined as earnings before interest, taxes, amortizations and depreciations plus financial income divided by financial costs, is truncated at 0 and 100.

⁵ Book value of long term debt to book value of total liabilities.

⁶ Registered floating charge security, truncated at total liabilities minus trade credits, divided by book value of total liabilities.

Chapter 3

Gains from takeovers

Gains to Bidder Firms Revisited¹

by

B. Espen Eckbo and Karin S. Thorburn

Abstract

In corporate acquisitions, target gains are substantial, while bidders typically earn insignificant announcement returns. With a large sample of foreign (U.S.) and domestic bidders in Canada, we find significant gains to the relatively small, infrequent domestic acquirors. The much larger and active foreign bidders earn insignificant announcement returns, which is consistent with the presence of an attenuation bias due to relative size and partial anticipation. Interestingly, we also find that gains to domestic bidders are significantly positive when the payment method is all-stock. This contrast with extant U.S. evidence where the all-stock bids tend to elicit a negative market reaction to the implicit equity issue. Finally, we reject the hypothesis that the superior performance of domestic bidders is caused by foreign direct investment controls.

¹ An early version of this paper was presented at the 1996 European Finance Meetings. We appreciate the comments of the EFA discussant Antonio Mello.

3.1 Introduction

The proposition that a competitive market for corporate control effectively limits managerial divergence from shareholder wealth maximization implies that corporate takeovers are beneficial to shareholders of *both* firms involved in the transaction. However, while there is substantial evidence that shareholders of target firms on average realize large capital gains from corporate takeovers, the evidence on the profitability of takeovers for shareholders of bidder firms is mixed. Studies measuring abnormal stock price behavior around takeover events in the U.S. report average bidder firm performance which ranges from significantly positive in all-cash tender offers and horizontal mergers in the 1960s, to significantly negative in all-stock exchange mergers in the 1980s. Gains to bidders are generally found to be lower the greater the degree of observed competition from the target, whether from incumbent management or from rival bids.² Furthermore, there is some evidence, particularly from studies examining corporate earnings, of a declining average bidder firm performance over the two-to-five year period following merger announcements which some authors argue should be attributed to

²See Jensen and Ruback (1983), Roll (1986), and Jarrell, Brickley and Netter (1988) for extensive reviews of the evidence prior to 1988. Recent large-sample studies of U.S. acquisitions include Loderer and Martin (1990) who examine 5,100 mergers and acquisitions 1966-1984, and Schwert (1996) who study 1,814 mergers and acquisitions between 1971-1990. U.S. tender offers are analyzed in Jarrell and Poulsen (1989), and in Betton and Eckbo (1997) who study 1,353 tender offers from 1971-1990, respectively.

the merger itself.³

While the empirical evidence is consistent with the proposition that competition among bidder firms grants most (if not all) of the rents from merger activity to target shareholders, it is also widely recognized that standard event-study methodology tends to produce attenuated estimates of the total returns to bidder firms. This attenuation bias arises when public knowledge of the acquiring firm's prior merger activity leads to partial anticipation of future merger bids.⁴ Furthermore, when the target firm is small relative to the bidder, as is typical in studies sampling U.S. mergers, the power of the event-study methodology to register a given dollar gain is also relatively weak.⁵ Third, a takeover announcement may trigger subsequent events, such as a negative regulatory response or target management resistance, which implies that the abnormal return at the initial announcement underestimates the total gains from the takeover.⁶

As a result of these econometric difficulties, the question of the true mag-

³See, e.g., Ravenscraft and Scherer (1987, 1989).

⁴See, e.g., Asquith, Bruner and Mullins (1983), Schipper and Thompson (1983). Malatesta and Thompson (1985) and Eckbo, Maksimovic and Williams (1990) present examples of alternative econometric treatments of partial anticipation.

⁵Jarrell (1983) and Jensen and Ruback (1983) highlight this point. In the "Large Merger Series" of the Federal Trade Commission's Statistical Report on Mergers and Acquisitions, a typical sample source prior to 1985, the bidder firm is on average more than ten times the size of the target (measured by the value of total equity).

⁶Eckbo, Maksimovic and Williams (1990) and Betton and Eckbo (1997) present alternative econometric procedures designed to control for sequential events triggered by takeover announcements.

nitude of the gains to bidder firms remains an important, but largely unresolved empirically issue. We address this controversy using a sample exceeding 1,800 domestic and foreign (all U.S.) successful acquisitions in Canada over the period 1964-1983. This sample presents an interesting opportunity to examine the performance of two distinct groups of bidders (foreign and domestic) operating in the same (Canadian) corporate control market, and it increases our knowledge of the general performance of U.S. bidder firms. Also, comparisons of the performance of the two sets of bidders to a great extent control for changes over time in the underlying structure of the corporate control market. This is relevant in terms of separating, e.g., the effect of bidder size (which varies across the two bidder groups) from the effect of increased competition in the takeover market (which affects both bidder groups equally). In studies of U.S. domestic acquisitions, it has been shown that bidder gains are largest in the 1960s and for the smallest bidder firms,⁷ but it is not clear whether size *per se* or the generally less competitive acquisition market in the 1960s is the main explanation for the positive bidder returns during this time period.⁸

We begin by reporting evidence that successful domestic bidders on av-

⁷E.g., Jarrell and Poulsen (1989) and Loderer and Martin (1990).

⁸Competition in the U.S. market for corporate control increased from the 1960s to the 1970s due to the introduction of disclosure requirements and a mandatory minimum offer period in public tender offer in 1970 (The Williams Act) in particular, and the emergence of investment-bank brokered deals in the 1970s in general. For empirical analyses of disclosure rules, see Jarrell and Bradley (1980) on U.S. tender offers and Eckbo and Langohr (1989) on public tender offers in France.

erage earn significantly positive abnormal stock returns over the month of the first press-announcement of the acquisition as well as over the two-day announcement period itself. This finding is robust with respect to alternative estimation procedures, and it is also to some extent supported by performance measures based on accounting returns. In contrast, the average performance of U.S. bidders in Canada is indistinguishable from zero and significantly lower than the average performance of domestic bidders.

The domestic and foreign (U.S.) bidders in our sample differ substantially with respect to relative size and acquisition frequency, and we show that both factors tend to reduce the estimated abnormal returns. This suggests that problems of attenuation bias due to bidder size and partial anticipation of takeover activity affect the samples of domestic and foreign bidders differently, and are most severe in the sample of U.S. bidders. While not tested in this paper, the apparent attenuation bias raises the odds that the more general finding in the extant literature of zero gains to the average U.S. bidder firm also suffers from similar econometric measurement problems.

The paper discusses three potential economic explanations for the superior announcement returns of domestic bidders. First, we stratify our sample according to the payment method in the acquisition (all-cash, all-stock, or a mix of cash and stock). A number of theories suggest that the bidder's choice of payment method reflects private information about the

bidder's own stand-alone value or the value of the target's resources under the bidder's control.⁹ The evidence discussed here suggests that the valuation impact of the payment method is significantly different in Canada than in the U.S.. In particular, all-stock offers generate significantly positive average announcement effects in Canada, which contrasts with the significantly negative market reaction documented by Travlos (1987) for mergers in the U.S.. There is substantial evidence that U.S. equity markets are characterized by adverse selection, which tend to cause a negative market reaction to the average equity issue.¹⁰ There is much less evidence of a similar negative market reaction to equity issues internationally, including to domestic issues in Canada [Eckbo and Verma (1992)]. Thus, the superior domestic bidder performance possibly reflects a lower degree of adverse selection associated with the implicit equity issue in a Canadian domestic all-stock acquisition.

A second class of economic hypotheses concern the possibility that domestic bidders, perhaps due to a superior knowledge of Canadian markets, are in a better position than foreign bidders to exploit economic synergies following the takeover. Determining the source of synergy gains requires data on acquisition-induced changes in the firms' organizational structure, financing- and production/investment strategy, which is generally unavailable. However, an examination of horizontal vs. conglomerate acquisitions

⁹See, e.g., Hirshleifer (1995) for a review.

¹⁰See Eckbo and Masulis (1995) for a review.

fails to support the hypothesis that the superior domestic bidder performance is concentrated to horizontal cases.

The third economic hypothesis that we examine concerns the effects of foreign investment controls in effect during the second half of our sample period. In 1973, foreign bidders were required to seek prior government approval before acquiring Canadian target firms. This approval procedure imposes costs on foreign bidders to the extent that it delays the acquisition process and/or reduces the foreign bidder's bargaining power with the target firm. Interestingly, we show that Canadian bidders outperform U.S. foreign bidders also in the sample period before the foreign review process existed, and that foreign bidders exempted from the review process earn insignificant abnormal returns as well. Thus, the foreign investment review procedure does not explain our finding of superior performance of domestic acquirors. Our overall conclusion is therefore that this superior performance most likely reflects the attenuating effects of relative size and partial anticipation, as well as potentially lower adverse selection effects of all-stock offers by domestic bidders.

The paper is organized as follows. Section 2 describes the data selection procedure and provides evidence on the sample-wide average profitability of bidder firms using both abnormal stock returns and abnormal earnings. Section 3 examines potential statistical effects of acquisition frequency and

relative bidder size on the estimates of abnormal stock returns. Section 4 addresses our hypotheses related to the payment method, industry competition, and regulations, while section 5 concludes the paper.

3.2 Average gains to domestic and foreign bidders

In this section we present estimates of average monthly and daily abnormal stock price performance around the acquisition announcement, as well as annual abnormal earnings. In order to gauge the sensitivity of the conclusions to the method of estimation, we show results using both percentage returns and dollar values, different estimation periods relative to (before and after) the event, as well as alternative specifications of the return generating process.¹¹

3.2.1 Sample selection

Our sample of domestic acquisitions is compiled by by Eckbo (1986), while the foreign acquisitions are sampled from the Merger Register of the Canadian Department of Consumer and Corporate Affairs.¹² To be included in

¹¹Note that since the various estimation procedures tend to impose different data requirements, the sample sizes in the subsequent tables tend to differ somewhat.

¹²The Merger Register is also the original data source for the sample of domestic cases in Eckbo (1986). The Merger Register contains a total of 9294 merger and acquisition bids

the sample, it is required that

- (1) the merger bid occurred between January 1964 and December 1982,
- (2) at the time of the acquisition, either the target firm was listed on the Toronto Stock Exchange (TSE) or the bidder firm was listed on the TSE or the New York Stock Exchange (NYSE),
- (3) the date of the first press announcement of the acquisition is identified in the Merger Register,
- (4) the acquisition bid was successful (i.e., not rejected by shareholders or later abandoned by managers),
- (5) there was no indication that the bid was opposed by or hostile to the incumbent target management,
- (6) sufficient (defined below) stock return data for TSE-listed bidder firms is available on the University of Laval data tape,¹³ and

announced between January 1945 and December 1983, of which 7559 were announced after January 1, 1964. The Register records all mergers in industries subject to the 1910 Combines Investigation Act, given the merger is announced in the news media, including newspapers, trade journals, and business magazines in Canada, the United States and Britain.

¹³This tape contains monthly stock returns for approximately 65 percent of all TSE-listed firms, beginning January 1963. The TSE-listed firms excluded by the Laval tape are for the most part stocks with extremely low capitalization ("penny stocks"). We also use daily stock returns based on the data tape supplied by the University of Western Ontario. This daily tape does restrict the sample.

(7) sufficient (defined below) stock return data for NYSE-listed bidder firms is available on the University of Chicago CRSP monthly returns tape.

As shown in Table 1, of the population of 7,559 acquisition bids reported in the Merger Register over the sample period, a total of 1,846 acquisitions are included in the sample. Of the target firms in these acquisitions, all are Canadian firms, and 345 are listed on the TSE. Moreover, there are 394 NYSE-listed (foreign) and 1,261 TSE-listed (domestic) bidders in the sample.

3.2.2 Sample-wide average abnormal returns

Table 2 and Figure 1 show monthly abnormal stock returns to the TSE- and NYSE-listed bidder firms and the TSE-listed target firms over the 25-month period -12 through 12 relative to the month of the first press announcement of the acquisition. The abnormal returns are computed using the market model in excess return form:

$$r_{jt} - r_{ft} = \alpha_j + \beta_j(r_{mt} - r_{ft}) + \epsilon_{jt}, \quad (3.1)$$

where r_{jt} is the continuously compounded rate of return on security j over month t , r_{ft} is the continuously compounded rate of return on (U.S. or Canadian) Treasury bills which mature at the end of month t ,¹⁴ r_{mt} is the continu-

¹⁴The U.S. risk-free rate was derived from the T-bills on the CRSP bond tape, while the Canadian rate was derived using information published by the Bank of Canada.

ously compounded rate of return on the value-weighted portfolio of all stocks traded in the market over month t ;¹⁵ and ϵ_{jt} is assumed to be a normally, identically distributed, serially uncorrelated zero mean disturbance term.

In order to account for the possibility that the merger event itself changes the regression constant α_j and/or the systematic risk β_j , two sets of coefficients are estimated under this procedure, one based on data before the merger event and one based on data after the event. The first set of coefficients, (α_j^b, β_j^b) , is estimated using a maximum of 48 and a minimum of 24 monthly returns drawn backwards from relative month -13 through month -60. The second set of coefficients, (α_j^a, β_j^a) , is estimated using a maximum of 48 and a minimum of 24 monthly returns drawn forwards from relative month 13 through month 60. Month zero is the month of the first press-announcement of the merger. Abnormal return over event month τ is then computed as

$$\hat{\gamma}_{j\tau} = \begin{cases} r_{j\tau} - [r_{f\tau} + \hat{\alpha}_j^b + \hat{\beta}_j^b(r_{m\tau} - r_{f\tau})] & \text{for } -12 \leq \tau \leq 0 \\ r_{j\tau} - [r_{f\tau} + \hat{\alpha}_j^a + \hat{\beta}_j^a(r_{m\tau} - r_{f\tau})] & \text{for } 1 \leq \tau \leq 12, \end{cases} \quad (3.2)$$

where superscript “hat” denotes OLS-estimate. Thus, in Table 2, a pre-event benchmark is used to estimate abnormal returns up through month 0, while a post-event benchmark is used to estimate performance after month 0.¹⁶

¹⁵The U.S. market is provided by CRSP, while the Canadian market was derived using the firms on the Laval tape.

¹⁶If a firm has insufficient data to perform the regression in the ‘after’ period, the ‘before’ coefficients (α_j^b, β_j^b) are used to predict returns up through month 2. Similarly, when there

Table 2 reports the average abnormal return for month τ relative to the event ($\frac{1}{N_\tau} \sum_{j=1}^{N_\tau} \hat{\gamma}_{j\tau}$, where N_τ is the number of firms in the sample having valid abnormal returns in month τ), and the cumulative average abnormal return. A Z-statistic, which in large samples has a standard normal distribution provided the merger events are independent, is used to infer statistical significance.¹⁷ A visual impression of the cumulative average abnormal return for each subsample is presented in Figure 1. The 332 targets listed on the TSE earn on average cumulative abnormal returns of 11.40% over the 12 months prior to and including the month of the acquisition announcement, with a significant 3.59% over the announcement month itself ($Z=6.25$). The 1261 domestic bidder firms listed on the TSE earn on average 3.64% over the period from month -12 through month 0, with a significant 1.27% in the announcement month ($Z=4.51$). In contrast, the 390 foreign bidders listed in the NYSE show no significant average abnormal returns over any of the event periods.

Table 3 provides information on the robustness of the abnormal return estimates from Table 2 with respect to the estimation period, and the use of

is insufficient data to perform the regression in the 'before' period, the 'after' coefficients (α_j^a, β_j^a) are used to predict backwards through month -2.

¹⁷The Z-statistic represents the average standardized abnormal return (where an unbiased estimate of the standard deviation of $\gamma_{j\tau}$ is constructed using the procedure described in Theil (1971, pp. 122-123)), multiplied by $\sqrt{N_\tau}$. Furthermore, the Z-value for the average abnormal returns cumulated over L event months τ_1 through τ_2 is given by $\frac{1}{\sqrt{L}} \sum_{\tau=\tau_1}^{\tau_2} Z_\tau$. This Z-statistic presumes that the monthly average abnormal returns are serially independent as well.

monthly versus daily stock returns. In Table 3, and throughout the rest of the paper, the month 0 abnormal return is estimated by adding a dummy variable d_{jt} to equation (1), where d_{jt} takes on a value of one in the announcement month and zero otherwise:

$$r_{jt} - r_{ft} = \alpha_j + \beta_j(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}. \quad (3.3)$$

In this model, the event parameter γ_j directly isolates the component of the firm's return which is due to the acquisition.¹⁸ Panel I of table 3 reports the average estimate of γ_j when the estimation period is month -60 through -13. The average announcement-month abnormal return to TSE-listed bidders is 1.13% or \$6.89 million, both of which are statistically significant at the 1% level or higher. Using a post-event estimation period (panel II) yields a slightly higher event parameter: on average 1.81% or \$9.48 million. The abnormal return to NYSE-listed bidders remain insignificant regardless of the estimation. Finally, TSE-listed bidders also realize an average two-day announcement period abnormal return of 0.81% (panel III), or \$0.84 million, with Z-values of 4.23 and 3.40, respectively. In sum, the finding of significantly positive average abnormal stock returns to TSE-listed bidders, and insignificant gains to NYSE-listed bidders, appear robust.

¹⁸As explained by Thompson (1985), the estimate of γ_j from equation (3) is identical to that obtained from the earlier two-step procedure (equations (1) and (2)) provided the acquisition events are uncorrelated with the excess return on the market portfolio.

3.2.3 Sample-wide average abnormal changes in earnings

Tables 4 and 5 report estimates of average abnormal earnings changes using an analogous event-study methodology. Table 4 reports abnormal earnings parameters for year -1 and year 0 relative to the year of the acquisition, using the following conditional "market" model:

$$\Delta E_{jt} = \alpha_{ej} + \beta_{ej} \Delta E_{mt} + \gamma_{ej,-1} d_{jt,-1} + \gamma_{ej0} d_{jt,0} + \epsilon_{ejt} \quad (3.4)$$

where ΔE_{jt} is firm j 's change from period $t-1$ to t in earnings before interest and taxes (EBIT) as found on the 1978 and 1987 Compustat tapes.¹⁹ ΔE_{mt} is the change in the equal-weighted sum of ΔE_{jt} across all Compustat firms in year t , constructed using U.S. companies only for the U.S. bidders in the sample, and Canadian firms only for the domestic bidders in the sample. The estimation period is year -6 through year 0 (the year of the acquisition). The dummy variable $d_{jt,-1}$ takes on a value of one in year -1, while d_{jt0} takes on a value of one in year 0, and zero otherwise. The regression is run only once for a given firm over a given estimation period since the estimated value of, e.g., γ_{ej0} will reflect the cumulative effect of all acquisitions undertaken by firm j in year 0.

The abnormal earnings model is estimated for the maximum number of

¹⁹Data on E_{jt} for the Canadian bidders in the sample is drawn from the Canadian section of the U.S. Compustat tape, and from a separate Compustat file for Canadian firms.

target and bidder firms for which a complete set of earnings data is available. The estimated values of β are all highly significant, indicating that individual firm earnings are highly correlated with the general earnings of the market. There is a significant difference in the abnormal earnings change for TSE-listed and NYSE-listed bidders. The former group experience significantly positive percent abnormal earnings changes in year -1 and year 0 of 11.19% and 19.57%, while NYSE-listed bidders on average realize significantly negative percent abnormal earnings changes over the same two-year period of -9.27% and -19.69% respectively. From panel III we also see that TSE-listed targets earn large positive percent abnormal earnings over years -1 and 0 (on average 61.61% and 54.70%). In sum, domestic acquisitions tend to occur after a period of superior earnings performance, while foreign bidders tend to make a bid after a period of abnormally low (negative) changes in earnings.

Table 5 reports estimates of post-acquisition annual earnings changes for bidder firms,²⁰ estimated as the event parameter γ_{ejn} in the following modified version of model (4):

$$\Delta E_{jt} = \alpha_{ej} + \beta_{ej} \Delta E_{mt} + \gamma_{ejn} d_{jtn} + \epsilon_{ejt}, \quad (3.5)$$

where the variables are defined as before. The estimation period includes years -6 through -1 plus the event year n , where $n = 1, 2, 3$, respectively. To illustrate, when estimating γ_{ej2} (the abnormal earnings in year 2 after the

²⁰Data on target firms are not available for this purpose.

year of the merger), the estimation uses data from years -6 through -1, plus year 2, excluding years 0 and 1.

Table 5 indicates that the generally positive pre-acquisition abnormal earnings performance of TSE-listed bidders is typically followed by a negative drift in abnormal earnings except in year +2. NYSE-listed bidders continue the negative pre-acquisition abnormal earnings performance, particularly over years +1 and +2.

Overall, the results indicate that TSE-listed bidders show superior earnings performance as well as superior stock price performance relative to NYSE-listed bidders in Canada. We now turn to an examination of various possible explanations for this differential performance. For this purpose, the analysis focuses in particular on the announcement-month abnormal return estimated from equation (3).

3.3 Attenuation bias due to relative size and acquisition frequency

3.3.1 Acquisition frequency and partial anticipation

The issue of partial anticipation of merger bids is emphasized by Schipper and Thompson (1983) who show that 30 firms announcing acquisition programs on average earn significantly positive announcement-induced abnormal

returns.²¹ Furthermore, using the Schipper-Thompson sample, Malatesta and Thompson (1985) show that over a 60 month period following the acquisition program announcement the monthly abnormal return conditional on a takeover event is significantly positive, while the abnormal return conditional on no takeover event is significantly negative. This evidence is consistent with the hypothesis that acquisition attempts subsequent to program announcements are partially anticipated (at a constant rate) and valuable for the sample firms.

Also addressing the issue of partial anticipation, Asquith, Bruner and Mullins (1983) hypothesize that the market's probability of a merger event increases in response to initial merger bids. However, based on the market reaction to the first four bids of 156 firms that initiated merger programs after eight years without a bid, they find little evidence that the major gain to the acquisition program is capitalized into the bidder's stock price on announcement of the early mergers. Loderer and Martin (1990) also examine abnormal bidder returns as a function of prior acquisition frequency, using acquisition series up to 10 acquisitions. They identify significantly positive average bidder gains in only one category: for the first bid by bidders with no prior acquisitions.

²¹ McConnell and Muscarella (1985) find that the market on average reacts positively to announcements of more general increases in corporate capital expenditure programs as well.

Table 6 contains information on the effect of acquisition frequency on the monthly abnormal return estimates to TSE-listed and NYSE-listed bidders. Our analysis follows the structural regression approach of Malatesta and Thompson (1985). Thus, suppose that expected returns conditional only on knowledge of the market return follow the Sharpe-Lintner-Mossin CAPM, i.e., a model such as equation (3.1) without the constant term α_j . Let u_{jt} denote a mean zero independently distributed disturbance term in such a CAPM regression. Furthermore, let v_j denote the expected economic value of the acquisition (here expressed as a percentage of the initial security value) and q_j the (constant) probability that an acquisition will occur in any given period, respectively. Moreover, as before, the dummy variable d equals one if the event takes place and zero otherwise. As pointed out by Malatesta-Thompson, in an efficient market, the unconditional expectation of u_{jt} is zero, i.e.,

$$(1 - q_j)(v_j|d = 1) - q_j(v_j|d = 0) = -q_jv_j + (v_j|d = 1) = 0. \quad (3.6)$$

Since the right-hand side of (6) equals zero, we can add a constant term $\alpha_j = -q_jv_j$ and conditional event parameter $\gamma_j = v_j$ to the CAPM equation without changing the equilibrium expected stock return, which effectively yields equation (3.3). In other words, assuming CAPM and the particular Malatesta-Thompson partial anticipation structure, our event parameter γ_j measures directly the expected *economic* value (v_j) of the acquisition, while the sum $\alpha_j + \gamma_j$ equals the *announcement* effect $((1 - q_j)v_j)$ of the acquisition.

Since the announcement effect is the change in value due to resolution of uncertainty concerning whether or not the firm will undertake an acquisition attempt in period t , partial anticipation of the acquisition attenuates the announcement effect relative to the economic effect.

The joint hypothesis that (1) the expected economic impact of the acquisitions is positive and constant ($v_j > 0$) and (2) acquisition attempts are anticipated to occur with constant probability ($q_j > 0$), can now be stated as

$$\gamma_j > 0 \text{ and } \alpha_j < 0. \quad (3.7)$$

Table 6 lists the average estimates for α and γ for ten subsamples classified by the number of acquisitions N_j undertaken per bidder firm over the sample period. A low N_j means that the group contains infrequent acquirors, while high values of N_j constitute high frequency bidders. Three of the ten α -estimates are significantly negative for TSE-listed bidders, while six of ten α s are significantly negative for NYSE-bidders, indicating a greater degree of attenuation (in the Malatesta-Thompson sense) of the market's reaction to takeover news involving foreign bidders. Notice also that the significant average gains demonstrated earlier for TSE-listed bidders "evaporates" for values of N_j greater than 12, again possibly due to a worsening partial anticipation effect.

Table 6 does not, however, give unambiguous support for a *differential*

attenuation bias due to partial anticipation for the two categories of bidders. While the α -values tend to be negative and more significant for NYSE-bidders, the percentage of the sample consisting of high-frequency bidders appears to be higher for NYSE-listed bidders only around the mid-range values of N_j . Thus, the impact of partial anticipation due to high-frequency bidding activity appears non-linear at best.²²

²² Asquith, Bruner and Mullins (1983) propose a test of the early anticipation hypothesis which differs from Malatesta-Thompson. They argue that if the stock price reaction to the initiation of an acquisition program fully reflects investors' expectations of subsequent acquisition attempts, then the *announcement* effect of successive acquisition attempts should decrease. This contrasts with the Malatesta-Thompson model which implies a constant announcement effect for successive acquisition attempts even if the attempts are partially anticipated. The following hypothesis combines the constant-value-constant-probability assumption of Malatesta-Thompson with the Asquith-Bruner-Mullins notion that the initial bid leads the market to anticipate a subsequent acquisition program: Rewrite equation (3.3) as

$$r_{jt} - r_{ft} = \alpha_{j1} + \alpha_{j2}d_t^* + \beta_j(r_{mt} - r_{ft}) + \gamma_j d_t + \epsilon_{jt}, \quad (3.8)$$

where d_t^* is a dummy variable which takes on a value of one over the entire estimation period remaining after the *initial* acquisition attempt by bidder j , and γ_j is the economic effect of the initial –and each of the subsequent– acquisitions which can be viewed as being part of an acquisition program. The hypothesis is now that

$$\alpha_{j2} = -\Delta q_j v_j < 0, \quad (3.9)$$

where $\Delta q_j = q'_j - q_j$, and q'_j is the (constant) probability of future acquisitions conditional on the initial acquisition attempt. We estimated α_1, α_2 and γ_j averaged over a sample of frequent acquirors. Included in this sample were only those acquirors which (1) did not merge over a five-year period, and (2) then merged with at least three targets over the subsequent five-year period. (This is in the spirit of the definition of an acquisition program as defined in Asquith, Bruner and Mullins (1983).) The results, which are available upon request, gives some support to the conclusion from Table 6 that the degree of partial anticipation is somewhat stronger in the U.S. sample than in the sample of Canadian bidders.

3.3.2 Bidder gains as a function of relative size

Another type of measurement problem arises because a given dollar gain is measured with less precision when the total equity value of the bidder firm is large. As argued by Jarrell (1983), suppose a firm with N equal-sized divisions acquires a target that generates synergistic gains for one division only, and that the returns to the individual divisions are mutually independent with identical variance. Then the t -statistic used to test for significance of the abnormal returns is given by t^*/\sqrt{N} , where t^* is the t -value of the abnormal return to the division benefitting from the acquisition. Thus, as the number of divisions not affected by the takeover increases, the t -value of the measured merger-induced abnormal return decreases. For example, if $N = 10$, and if the size of the target equals the size of the bidder's representative division (i.e., the bidder is ten times the size of the target), t^* must exceed a value of six for the *measured* t -statistic to exceed a value of two.²³

Asquith, Bruner and Mullins (1983) regress the merger-induced abnormal returns to bidder firms on the relative size of target to bidder and find a statistically significant coefficient, which is consistent with the presence of a size-related measurement problem. Loderer and Martin (1990) estimate cross-sectional models of bidder returns which indicate that bidder returns

²³ "It is like attempting to estimate the change in GM's stock price from an important firm-specific event using only a time series of returns to the value-weighted NYSE index." Jarrell (1983, p. 6).

are significantly higher when the offer value exceed 30% of the acquiring firm's equity value, and significantly lower when the market value of the bidder's equity exceeds \$150 million. They find evidence of significantly positive acquiring firm returns only in the smallest size category. Jarrell and Poulsen (1989) also find evidence that bidder abnormal returns tend to increase with the relative size of the target.

In our Canadian data, the average total equity value of the TSE-listed targets is approximately the same for both groups of bidders, while the total equity value of the average U.S. bidder is more than eight times the value of the average domestic bidder. Moreover, as shown in Table 7, of 1226 TSE-listed bidders, 905 or 74% have an equity value of \$100 mill. or less, while of 341 NYSE-listed bidders, only 61 or 18% of the bidders fall in this size category. Since the average target size is similar across the domestic and foreign bidders, a ranking of the bidders on bidder size is highly correlated with a ranking on the relative size of the target. Since relatively few of the target firms have publicly traded equity, we focus in Table 7 on the total equity value of bidders in order to maximize sample size.

The results in Table 7 for TSE-listed bidders show a tendency for percentage bidder abnormal returns to decrease with increasing bidder size. For the 309 smallest bidders, with total equity values less than \$10 million, the average abnormal return is 4.05% with a highly significant Z-value of 5.40. For

bidder equity values exceeding \$40 million (543 cases or 44% of the sample), the average abnormal returns are largely insignificant (with the exception of $60 < V_{j,t-1} \leq 70$). Notice also that when bidder gains are measured in terms of dollar values, seven of the eleven size groups (including the largest, where $V_{j,-1} > \$100\text{mill.}$) indicate statistically significant bidder gains, with no clear relationship to bidder size. These results support the argument that estimates of a given dollar gain to bidder firms, particularly when measured as a percentage of equity, suffers an attenuation bias which increases with bidder equity size.

Turning to the NYSE-listed bidders in Table 7, there is little evidence of significant bidder gains regardless of the size group and whether one measures gains in percentage or dollar terms. If anything, there is slight evidence of positive gains in the very smallest size group ($V_{j,-1} < \$100 \text{ mill.}$), with an average $\hat{\gamma}$ of 2.12% (Z-value 1.89) or \$1.69 mill. (Z-value 1.67). These results are as expected since even the smallest NYSE-listed bidders are large compared to the TSE-listed bidders, thus creating potentially serious measurement problems across all size groups.

The evidence thus far has demonstrated that domestic, TSE-listed bidders on average realize statistically significant, positive gains from acquisition announcements. This contrasts with gains to U.S. bidders in Canada, which are generally found to be statistically insignificant. Moreover, the

statistical results appear to reflect attenuation biases related to acquisition frequency and relative bidder size, which are more severe in the sample of foreign (NYSE-listed) bidders than for the generally smaller domestic bidder firms with generally lower acquisition frequencies. We next explore further the potential sources of the domestic bidder gains.

3.4 Potential sources of domestic bidder gains

3.4.1 The payment method

Several studies report that takeover premia and merger-induced abnormal returns are systematically related to the payment method. Huang and Walkling (1987), Franks, Harris and Mayer (1988), and Eckbo and Langohr (1989) show that gains to target firms in the U.S., England and France, respectively, are significantly higher in all-cash offers than in takeovers in which the bidder and target firms exchange common stock.²⁴ Studying merger bids in the U.S., Travlos (1987) reports significantly negative two-day announcement period average abnormal stock returns to bidder firms in all-stock mergers, while the corresponding bidder firm performance in all-cash mergers is zero or positive.

²⁴As reported by Eckbo and Langohr (1989), the impact of the payment method on target gains is not restricted to control-oriented takeovers but carry over to minority buyouts as well.

The literature focuses in particular on taxes and information asymmetries to explain these empirical regularities. The tax codes in the countries represented by the above studies generally award a tax-deferred status to a pure exchange merger while requiring capital gains taxes to be paid immediately in an all-cash purchase.²⁵ Thus, it is frequently hypothesized that the bidder must raise the offer premium in an all-cash offer in order to compensate target shareholders for the tax penalty associated with this particular method of payment. However, while tax considerations are certain to play a role in the bidder's choice of payment method, tax arguments do not appear to explain the relatively large premium in all-cash offers. Eckbo and Langohr (1989) find that the value of the option to tender, which is the logical place to look for a tax-related compensation to target shareholders, is as high in all-stock offers as in all-cash offers.²⁶ Furthermore, Franks, Harris and Mayer (1988) report that a superior target performance in all-cash offers is found in UK takeovers that took place *before* the introduction of capital gains taxes on such transactions.

Asymmetric information may also play a role in the choice of the medium

²⁵The payment method may also dictate the bidder's accounting treatment of the acquisition, thus affecting depreciation tax shields and accounting-based managerial compensation schemes. [see, e.g., Carleton, Guilkey, Harris and Stewart (1983)]. For a general discussion of tax arguments, see Gilson, Scholes, and Wolfson (1988).

²⁶With atomistic target shareholders, a necessary condition for an offer to succeed is that the offer price exceeds the conditional expected post-offer target share price. The incentive to tender is essentially the premium over this post-offer price. Eckbo and Langohr (1989) use this premium to define the value of the option to tender and argue that the bidder must include in this premium any required compensation for personal taxes.

of exchange in takeovers. To illustrate, suppose the true bidder value is common knowledge while the true target value is private information (one-sided information asymmetry). The bidder knows the distribution over possible target values including its maximum, t^* , and the strategy is to bid t^* in order to guarantee success. Then, if the bidder pays with cash, the expected value of the bid is

$$t^* - E(t | \text{accept}) > 0, \quad (3.10)$$

which we label "the expected overpayment cost of cash". Alternatively, the bidder can offer payment in the form of securities in the combined firm (all-stock offer). Let z denote the fraction of the equity in the combined firm offered to the target. In order to guarantee success, the offer must satisfy

$$z(b + t^*) = t^* \longrightarrow z = \frac{t^*}{b + t^*}, \quad (3.11)$$

where b is the known bidder value. As a result, the expected value to the bidder of an all-stock offer z is

$$z[b + E(t | \text{accept})] - E(t | \text{accept}) = \frac{b(t^* - E(t | \text{accept}))}{b + t^*} > 0, \quad (3.12)$$

which we label "the expected overpayment cost of stock". Comparing the two expected overpayment costs, since $\frac{b}{b+t^*} < 1$, the bidder in this situation strictly prefers securities over cash as the method of payment. Intuitively, while the value of a cash offer does not depend on the true value of the target ex post, payment in bidder shares forces the target to share in the overpayment cost.

Of course, if we allow the true value of the bidder to be private information as well (two-sided information asymmetry), then the above preference for a stock offer may be reversed if the bidder shares are undervalued by the target. Let \hat{b} denote target belief about bidder value. In this case, the all-stock offer z which guarantees success is given by

$$z(\hat{b} + t^*) = t^* \longrightarrow z = \frac{t^*}{\hat{b} + t^*}, \quad (3.13)$$

and the difference between the expected overpayment cost of an all-stock and an all-cash offer is

$$t^* \frac{(b - \hat{b}) - (t^* - E(t | \text{accept}))}{b + E(t | \text{accept})} \quad (3.14)$$

which can be positive or negative depending on whether the target overvalues ($b - \hat{b} > 0$) or undervalues ($b - \hat{b} < 0$) the bidder shares.

Hansen (1987), Fishman (1989) and Eckbo, Giammarino and Heinkel (1990) define various tradeoffs between expected overpayment costs, undervaluation costs and, in the case of bids with a success-probability less than one, the cost of lost synergy gains, to derive signaling equilibria where the market reacts to the information concerning the bidders choice of payment method. In particular, Eckbo, Giammarino and Heinkel (1990) derive a fully separating equilibrium consistent with the use of a mix of cash and securities, and where the proportion of the total bid value paid in cash is a signal of the true bidder value. Thus, the difference between the average gains to bidders in the U.S. and Canadian samples studied here may to some extent reflect

differences in the signaling effect of the payment method.

Table 8 shows the average abnormal returns to bidders across categories of payment methods for a subset of our domestic acquisitions. The abnormal return estimation follows our equation (3.3), i.e., γ_j is the abnormal return parameter.²⁷ All-cash offers on average lead to a statistically insignificant increase of 1.43% in the bidder's share value over the event month. The large group of all-stock offers have statistically significant average abnormal return of 2.93%. Third, as reported by Eckbo, Giammarino and Heinkel (1990) as well, the average bidder presenting a mixed offer gains a highly significant 5.68% abnormal return over the announcement month.²⁸

²⁷Strictly speaking, a comparison of average abnormal returns in Table 8 is not straightforward since the different offer categories arise under different informational regimes. In particular, while mixed offers require the assumption of two-sided information asymmetry, all-stock offers also arise when the bidder value is common knowledge (as indicated above). Moreover, following Eckbo, Giammarino and Heinkel (1990), all-cash offers arise only when the target value is common knowledge.

²⁸The hypothesis that the average abnormal return in mixed offers is the same as in the all-cash or all-stock offers is rejected at the 1% level of significance. Using a subsample of the cases in Table 8, Eckbo, Giammarino and Heinkel (1990) perform regression tests of the hypothesis that the incremental gain in mixed offers represents an average signaling gain or simply a larger average synergy revaluation in this particular offer category. Their model implies that the announcement effect (bidder abnormal return) is increasing and convex in the proportion of the bid that is paid in cash, i.e.,

$$\gamma_j = h_j\left(\frac{C_j}{\bar{t}}\right), \quad h'_j, h''_j > 0, \quad (3.15)$$

where \bar{t} is the average pre-bid target value, and the "'' and "'' denote first and second derivatives, respectively. Assuming the prior distributions over true bidder and target values are constant across sample bids, they estimate this model cross-sectionally. They find no direct support for the signaling explanation for the relatively large announcement effect of mixed cash-stock offers.

While we do not have data on the payment method in the sample of foreign acquisitions, the results in Table 8 are comparable to extant evidence on the effect of the payment method on bidder gains in the U.S.. Travlos (1987) report that average bidder returns in all-cash offers are small but negative, while average bidder returns in all-stock offers are positive. The negative impact of all-stock offers in the U.S. thus contrasts with the significantly positive effect of all-stock offers in Canadian domestic acquisitions. While not tested here, one potential explanation for this difference is that the equity issue implicit in an all-stock offer suffers from an adverse selection problem of the type analyzed in Myers and Majluf (1984), and that the potential for adverse selection is greater for U.S. than for Canadian domestic firms.

3.4.2 Industry competition

Intuitively, synergistic gains are more likely to occur when there is a horizontal relationship between the bidder and target firms. Thus, it is possible that domestic bidders tend to outperform foreign acquirors because purely domestic acquisitions tend to involve more closely related bidder and target firms. Table 9 sheds some light on this issue by showing average abnormal returns for horizontal versus non-horizontal acquisitions in our sample for which product market information could be identified from Moody's manuals or the Standard & Poor's directories. A relationship is defined as horizontal if the target and bidder firms operate in the same major two-digit or four-digit

Standard Industrial Classification (SIC) industry, respectively. As seen from the table, there is little indication that a horizontal relationship between the bidder and the target increases the average gains to bidders.²⁹ The largest, significant abnormal returns occur in the "2-digit non-horizontal" category for TSE-listed bidders, while there is no evidence of significantly positive gains to NYSE-listed bidders, horizontal or otherwise.

Eckbo (1992) examine the effect of the merger announcement on the equity values of product market rivals of the target firms in 116 of the domestic 4-digit horizontal and 89 of the non-horizontal cases in Table 9. The results are summarized in Table 10.³⁰ Table 10 shows that the average rival firm performance is a significantly negative -1.51% (Z-value -2.14) in the horizontal merger sample, and positive and marginally significant in the non-horizontal sample (2.42%, Z-value of 1.84). A χ^2 -test rejects on a 1% level the hypothesis that the individual rivals' event parameters (γ_j) are equal, indicating that the merger affects some rivals negatively and others positively. These results are consistent with the hypothesis that the typical horizontal merger cause a value-reduction of the industry rivals, possibly because the merger is expected to create a competitive advantage for the bidder and target firms.³¹

²⁹While not shown in Table 9, a similar conclusion emerges when examining abnormal returns targets.

³⁰See Eckbo (1992) for a description of the rival firm selection procedure. Eckbo also examine effects of U.S. domestic mergers which are not part of our sample. Rival firms for the foreign, NYSE-listed bidders in our data base have not been identified.

³¹Eckbo (1992) also estimates cross-sectionally potential determinants of the industry wealth effect in Table 10. The results indicates that the gains to bidders and targets

3.4.3 Foreign direct investment controls

Between 1974 and 1984 (i.e., over the latter part of our sample period), acquisitions of Canadian firms by foreign bidders were regulated under the 1973 Foreign Investment Review (FIR) Act, enforced by the Foreign Investment Review Agency (FIRA). Under Section 2(2) of the FIR Act, a foreign bidder were required to disclose plans to expand, modernise, relocate or close existing target facilities, and the extent of Canadian participation on both ownership and control of the merged firm. On the basis of the disclosed information, FIRA would determine (possibly after negotiations with the bidder) whether the acquisitions would provide “significant benefits” to Canada.³²

As shown in Table 11, between 1974 and December 1984, FIRA reviewed approximately 2,100 foreign acquisition attempts, of which 9 percent were disallowed. Of the 394 foreign acquisition in our data base, 172 were reviewed (and allowed) by FIRA. The Merger Register tends to record success-

in Canadian domestic mergers increase with the pre-merger level of concentration, and decreases with the number of rivals and the merger-induced change in industry concentration. Moreover, the higher the increase in industry concentration caused by the merger, the lower the wealth impact on other firms in the same industry, which is inconsistent with the hypothesis that the merger gains are the result of increased market power. During the sample period of this paper, Canadian horizontal mergers enjoyed a virtual unrestricted antitrust regulatory environment.

³²Canadian participation was a key consideration in industries dominated by foreign ownership. Avoiding bankruptcy is also considered a “significant benefit” in this context. “Small” acquisitions (i.e., targets with less than 250,000 dollars in assets, less than 3 million in revenues, and less than 100 employees) do not have to meet the “significant benefit” test, only a “no detriment” test. A brainchild of then Prime Minister Trudeau, the power of FIRA to review foreign acquisitions was substantially curtailed in 1985, with the election of conservative Prime Minister Mulroney.

ful acquisitions only, and there are no disallowed FIRA cases in the sample. Almost all of the remaining 222 cases took place before the FIR Act became effective.

The hypothesis of interest is that compliance with the requirements under the FIR Act transferred some or all of the expected rents from the acquisition to target shareholders, or to other Canadian interests protected by FIRA in its bilateral negotiations with the bidder firm.³³ Table 12 provide some direct evidence on this issue. NYSE-listed bidder firms earn negative but insignificant abnormal stock returns regardless of whether or not the case was reviewed by FIRA. Moreover, TSE-listed bidders continue to show significantly positive announcement-month abnormal returns both before and during FIRA's review activity. In sum, there is no apparent effect of FIRA's activities on the average U.S. bidder in our sample. In particular, the results reject the hypothesis that FIRA's review activity has made the NYSE-listed bidders in Canada worse off.

Notice also that TSE-listed bidders earn lower abnormal returns during the 13-month period -12 through 0 during the period with FIRA review

³³Since the sample is restricted to foreign bidders listed on the NYSE, we tend to pick up the *largest* foreign acquisitions (measured in terms of the asset size of the bidder) reviewed by FIRA. The largest foreign acquisitions tend to be the most politically controversial, which further strengthens FIRA's bargaining power. Thus, if FIRA has succeeded in extracting a significant portion of the gains to successful foreign bidders, it will more likely show up in the sample used here than in a randomly selected sample of FIRA cases. In other words, our sample is most likely biased towards finding evidence which supports the conclusion that FIRA has successfully extracted rents from foreign acquirors.

(-2.16% versus 4.38% before 1974). Similarly, there is no evidence of an increase in the gains to TSE-listed targets during the period with FIRA reviews. Thus, if FIRA succeeded in transferring rents from the NYSE-listed foreign bidders to Canadian interests, there is no evidence in Table 12 that domestic bidders or targets benefitted from such a transfer.³⁴

3.5 Conclusions

Large-sample extant evidence indicates that gains to bidder firms in the U.S. are largely insignificant. While the evidence is consistent with the hypothesis that competition among bidder firms drives the rents from acquisition activity to the target shareholders, it is also widely recognized that measured bidder abnormal returns may contain an attenuation bias. The bias arises when the bidder is large relative to the target (and therefore also relative to the dollar gain in the transaction), when the market anticipate takeovers based on the bidder's record as a frequent acquiror, and when an acquisition event triggers subsequent negative regulatory responses, such as an antitrust

³⁴The proposition that FIRA effectively helps target shareholders extract a larger share of the total merger gains can also be examined using samples of target firms in foreign acquisitions before and after FIRA was established. Only 10 of the 172 mergers reviewed by FIRA involve a TSE-listed target firm present in the data base. Although not included in Table 12, the cumulative average abnormal return for these 10 targets turns out to be 13.3% over the -12,0 interval, compared to 10.3% for the remaining targets involved in acquisitions not reviewed by FIRA. With a sample size of 10, one should interpret this evidence with care. Overall, there is no evidence that the enforcement of the FIR Act has affected either the level or distribution of merger gains between the two parties directly involved in the transaction.

suit. As a result, it is difficult to assess the true performance of U.S. bidders.

This paper addresses the controversy over the true gains to bidder firms by studying a large sample of domestic and foreign acquisitions in Canada. The foreign bidders are all U.S. firms listed on the NYSE. We find robust evidence that domestic bidders realize significantly positive announcement-month (and two-day announcement period) abnormal stock returns. At the same time, U.S. bidders in Canada earn statistically insignificant abnormal returns. This evidence is also corroborated by abnormal annual earnings data.

The paper performs several investigations into the possible source of the differential performance of the two categories of bidder firms. We show that U.S. bidders are both substantially larger (in terms of total equity) than domestic bidders, and have higher acquisition frequencies, which suggests that the insignificant U.S. bidder performance in part is explained by an attenuation bias.

However, we also show that the market tends to react positively to domestic bids where the payment for the target shares is in the form of bidder shares (all-stock offers). This is in contrast to extant U.S. evidence which indicates that all-stock offers on average generate a negative market reaction in domestic acquisitions. The negative market reaction is consistent with adverse selection effects in U.S. issue markets, and our analysis opens the

possibility that the greater announcement-returns to domestic all-cash offers is the result of lower adverse selection effects of Canadian targeted domestic equity issues.

Furthermore, we provide some information on the hypothesis that the superior bidder gains in domestic mergers is driven by expectations of gaining a competitive advantage in product markets. We do not, however, detect a significant difference between the announcement returns to foreign and domestic bidders in horizontal acquisitions. Eckbo (1992) reports that domestic Canadian merger announcements tend to cause a negative impact on the share prices of the industry rivals of the target firms, which is consistent with the 'competitive advantage' hypothesis. We do not have corresponding industry evidence on foreign bids in Canada, an interesting topic for future research in this area.

Finally, we test the proposition that the relatively poor U.S. bidder performance in Canada reflects foreign direct investments controls during the second half of our sample period. It turns out that our U.S. bidders performed poorly also before such policies were introduced. Thus, regulatory policies are unlikely to explain our finding of a superior performance of domestic bidder firms.

Appendix: Cross-equation test of event parameter restrictions for non-merging industry rivals

The following details the computation of the cross-equation χ^2 statistic reported in Table 10. The null hypothesis is that

$$H_0 : \gamma_{ij} = 0, \quad i = 1, \dots, R_j. \quad (3.16)$$

H_0 states that the event parameters across the R_j individual rival firms associated with the j 'th merger in the sample are jointly equal to zero. The system of R_j rival firm market model equations can be written as (dropping, for convenience, subscript j)

$$r = X\delta + \epsilon, \quad (3.17)$$

$$r' = [r'_1 \dots r'_R], \text{ the } 1 \times TR_j \text{ vector of returns}$$

$$X = [I \otimes \bar{X}], \text{ a } TR_j \times 3R_j \text{ matrix}$$

$$\bar{X} = [\underline{1} \ r_m \ d], \text{ the } T \times 3 \text{ matrix of regressors}$$

$$\delta' = [\alpha_1 \beta_1 \gamma_1 \dots \alpha_R \beta_R \gamma_R], \text{ the } 1 \times 3R_j \text{ vector of coefficients,}$$

$$\epsilon = [\epsilon'_1 \dots \epsilon'_R], \text{ a } 1 \times TR_j \text{ vector of error terms.}$$

In this notation, I is the $R_j \times R_j$ identity matrix, $\underline{1}$ is the $T \times 1$ unity vector, \otimes indicates the Kronecker or direct product operator, and $\epsilon \sim MVN(0; \Sigma \otimes I)$. The $R_j \times R_j$ contemporaneous covariance matrix Σ is estimated from the residuals produced by the first-pass OLS regression of system (3.6).

Since this is a system of R_j “seemingly unrelated” regressions with identical regressors, OLS estimation of each equation is asymptotically efficient and provides identical parameter estimates to a generalized least squares procedure [Zellner (1962)]. However, significance tests of cross-equation constraints on the R_j event parameters require a procedure which accounts for the contemporaneous cross-correlation of the error terms ϵ . This is particularly important in the present application where the R_j rival firms are operating in the same product market and are simultaneously affected by the merger announcement. Thus, restate H_0 as

$$H_0 : \underline{0} = C_3 \underline{\delta}, \quad (3.18)$$

where $\underline{0}$ is a $R_j \times 1$ vector of zeros; $C_3 = [I \otimes \underline{e}_3']$ is a $R_j \times 3R_j$ matrix; and \underline{e}_3 is a 3×1 vector where the third element equals one and the remaining two elements equal zero. Replacing the true values of $\underline{\delta}$ and Σ with their OLS estimates, the following quadratic form has a limiting χ^2 distribution with R_j degrees of freedom under H_0 [Theil (1971, pp. 312-317)]:

$$\hat{\underline{\delta}}' C_3' \{C_3 [X' (\hat{\Sigma}^{-1} \otimes I_T) X]^{-1} C_3'\}^{-1} C_3 \hat{\underline{\delta}} \sim \chi^2(R). \quad (3.19)$$

To simplify this quadratic form, note that

$$[X' (\hat{\Sigma}^{-1} \otimes I_T) X]^{-1} = \hat{\Sigma} \otimes (\overline{X}' \overline{X})^{-1}, \quad (3.20)$$

and, in our application,

$$\{C_3 [\hat{\Sigma} \otimes (\overline{X}' \overline{X})^{-1}] C_3'\}^{-1} = \{\hat{\Sigma} \otimes \underline{e}_3' (\overline{X}' \overline{X})^{-1} \underline{e}_3\}^{-1} = \frac{1}{(\overline{X}' \overline{X})_{33}^{-1}} \hat{\Sigma}^{-1}, \quad (3.21)$$

where $(\overline{X'X})_{33}^{-1}$ is the (3, 3) element of $(\overline{X'X})^{-1}$. Finally,

$$C'_3 \left\{ \frac{1}{(\overline{X'X})_{33}^{-1}} \hat{\Sigma}^{-1} \right\} C_3 = \frac{1}{(\overline{X'X})_{33}^{-1}} [\hat{\Sigma}^{-1} \otimes \underline{c}_3 \underline{c}'_3], \quad (3.22)$$

where the 3x3 matrix $\underline{c}_3 \underline{c}'_3$ contains a value of one in element (3, 3) and zeros otherwise. Thus, we have the statistic used in Table 11:

$$\frac{1}{(\overline{X'X})_{33}^{-1}} \hat{\gamma}' \hat{\Sigma}^{-1} \hat{\gamma}, \quad (3.23)$$

where $(\overline{X'X})_{33}^{-1}$ is the (3, 3) element of $(\overline{X'X})^{-1}$ and $\hat{\gamma}$ is the $R_j \times 1$ vector of event parameters.

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Table 1
The Annual Number of Domestic and Foreign Acquisitions in the Population and in the Sample,
1964-1983

Year of acquisition announcement	Acquisitions in population ¹	Acquisitions in sample ²			
		Total	TSE-listed bidders	TSE-listed targets ³	NYSE-listed bidders
1964	197	54	40	4	14
1965	224	57	41	5	14
1966	196	42	34	5	7
1967	212	62	40	10	18
1968	378	128	81	18	40
1969	471	113	87	14	21
1970	409	102	74	9	23
1971	380	114	91	16	15
1972	428	140	112	20	16
1973	354	143	105	29	21
1974	277	106	86	19	9
1975	265	98	67	22	21
1976	316	103	69	30	12
1977	394	145	75	47	41
1978	448	41	21	8	16
1979	510	106	55	26	32
1980	415	81	56	17	20
1981	498	95	68	19	15
1982	573	77	29	16	37
1983	614	39	30	11	2
<hr/>					
1964-82	7,559	1,846	1,261	345	394

¹ The population is the Merger Register, compiled annually by Consumer and Corporate Affairs Canada, which covers reported mergers and acquisitions in industries subject to the Combines Investigation Act. The Merger Register contains a total of 9,294 cases over the period January 1945 through December 1983.

² The sample is drawn from the Merger Register over the period 1964-83 and requires that, at the time of the merger, either the target firm was listed on the Toronto Stock Exchange (TSE) or the bidder was listed on the TSE or the New York Stock Exchange (NYSE). Furthermore, a case was excluded if the Merger Register did not give the day of the press announcement, and if the firm did not satisfy the minimum data requirement for estimating abnormal stock returns, as described in the text.

³ Of the 345 TSE listed targets, 166 were targets of TSE listed bidder firms and 48 were targets of NYSE listed bidder firms. The remaining 131 targets were acquired by bidders whose shares were not publicly traded.

Table 2

Monthly Average Abnormal Stock Returns to Canadian Targets and Domestic and Foreign (U.S.) Bidders.
Total Sample, 1964-83.

Percent average monthly abnormal return over the year prior to and following the month of the first press announcement of the acquisition (month 0) where the abnormal return to firm j over month τ is computed as the excess return market model prediction error

$$\hat{\gamma}_{j\tau} = \begin{cases} r_{j\tau} - [r_{f\tau} + \hat{\alpha}_j^b + \hat{\beta}_j^b(r_{m\tau} - r_{f\tau})] & \text{for } -12 \leq \tau \leq 0 \\ j\tau - [r_{f\tau} + \hat{\alpha}_j^a + \hat{\beta}_j^a(\bar{r}_{m\tau} - r_{f\tau})] & \text{for } 1 \leq \tau \leq 12, \end{cases}$$

where $r_{j\tau}$, $r_{f\tau}$ and $r_{m\tau}$ are the continuously compounded rates of return to firm j , the risk-free asset and the value-weighted market index over event month τ , and the market model coefficients are estimated using a minimum of 24 and a maximum of 48 months from the before-event period -60 through -13 ($\hat{\alpha}_j^b$, $\hat{\beta}_j^b$) or the after-event period 13 through 60 ($\hat{\alpha}_j^a$, $\hat{\beta}_j^a$).¹

Event month	Bidders on the TSE ² ($N = 1261$)			Bidders on the NYSE ³ ($N = 390$)			Targets on the TSE ⁴ ($N = 332$)		
	Average $\hat{\gamma}_\tau$ (%)	Z_τ	Cumulative average (%)	Average $\hat{\gamma}_\tau$ (%)	Z_τ	Cumulative average (%)	Average $\hat{\gamma}_\tau$ (%)	Z_τ	Cumulative average (%)
-12	-0.45	-0.92	-0.45	-0.46	-1.26	-0.46	-0.41	-0.81	-0.41
-11	0.07	1.39	-0.38	0.79	1.84	0.33	0.09	0.36	-0.32
-10	0.61	2.57	0.23	0.11	0.56	0.43	0.49	1.30	0.18
-9	0.19	1.71	0.42	0.76	2.04	1.20	-0.27	-0.29	-0.09
-8	-0.41	-0.95	0.01	-0.61	-1.97	0.58	0.74	0.78	0.66
-7	-0.12	0.04	-0.11	0.41	0.79	0.99	-0.02	-1.19	0.64
-6	0.04	1.01	-0.07	0.21	0.78	1.20	-0.15	0.05	0.49
-5	0.63	2.07	0.55	-0.22	-0.52	0.98	-0.22	-0.09	0.27
-4	0.66	3.17	1.21	-0.71	-1.83	0.26	1.03	2.64	1.29
-3	0.28	0.54	1.49	-0.13	0.38	0.38	0.14	2.78	2.77
-2	0.43	2.09	1.93	0.39	1.53	0.52	1.18	2.46	3.95
-1	0.44	1.96	2.37	-0.11	-0.40	0.41	3.86	7.75	7.81
0	1.27	4.51	3.64	-0.19	-0.79	0.22	3.59	6.25	11.40
1	-0.18	-0.03	3.45	-0.40	-1.19	-0.17	-0.88	-1.59	10.51
2	0.12	0.83	3.57	0.17	0.39	-0.00	0.24	0.14	10.75
3	0.26	0.59	3.82	-0.49	-1.05	-0.49	2.70	2.05	13.45
4	0.79	2.94	4.62	-0.06	-0.12	-0.55	-1.28	-0.79	12.17
5	-0.45	-0.91	4.17	-0.13	0.47	-0.68	-0.40	-1.25	11.78
6	-0.31	-1.00	3.86	-0.46	-0.37	-1.13	0.08	0.66	11.86
7	0.03	0.73	3.89	-0.72	-1.72	-1.85	-1.42	-1.65	10.45
8	0.47	1.78	4.36	0.07	0.27	-1.79	0.03	-0.27	10.48
9	-0.25	-0.79	4.12	-0.59	-1.07	-2.38	0.73	1.14	11.21
10	-0.44	-0.57	3.67	-0.67	-1.16	-3.05	0.25	0.99	11.46
11	-0.77	-1.37	2.90	-0.05	-0.04	-3.09	0.21	0.73	11.67
12	0.11	0.61	3.01	-0.40	-0.20	-3.49	-1.80	-2.21	9.87
[-12, -1]		4.24	2.37		0.56	0.41		4.55	7.81
[1, 12]		0.81	-0.63		-1.53	-3.72		-0.59	-1.53

¹ The reported Z_τ - value of the average abnormal return is distributed approximately standard normal and is given by $Z_\tau \equiv (1/\sqrt{N_\tau}) \sum_j \hat{\gamma}_{j\tau} / SE(\gamma_{j\tau})$, where $SE(\gamma_{j\tau})$ is the estimated standard error of the abnormal return $\gamma_{j\tau}$ and N_τ is the total number of cases with valid (non-missing) abnormal returns in period τ .

² The average market value of total equity in month -12 is CAD\$69 mill.

³ The average market value of total equity in month -12 is US\$450 mill.

⁴ The average market value of total equity in month -12 is CAD\$53 mill.

Table 3
Announcement-Induced Average Abnormal Returns to Domestic and Foreign Bidders under
Alternative Estimation Procedures. Total Sample 1964-83.

OLS-estimates of the abnormal return coefficient γ_j in the excess return market model

$$r_{jt} - r_{ft} = \alpha_j + \beta(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where r_{jt} , r_{ft} and r_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in the event period and zero otherwise; and ϵ_{jt} is a zero mean disturbance term. The event period is the month of the acquisition announcement when using monthly stock returns and the day of the announcement and the previous day when using daily stock returns.

Sample	Sample size (N)	Average $\hat{\gamma}_j^1$	Percent positive	Percent significant (5%)		Z- value ²
				positive	negative	
I. <u>Pre-event estimation period: Month -60 through month -13³</u>						
Bidders on TSE	1099	1.13%	52.0	5.5	2.5	3.30
	1097	6.89 mill.	56.0	12.0	6.8	10.10
Bidders on NYSE	371	0.16%	50.0	2.6	2.7	0.12
	367	-6.81 mill.	54.0	9.0	8.2	0.11
II. <u>Post-event estimation period: Month 13 through month 60³</u>						
Bidders on TSE	1227	1.81%	55.2	5.3	2.5	5.75
	1225	9.48 mill.	52.0	7.3	3.4	7.17
Bidders on NYSE	343	0.87%	55.1	2.3	1.2	2.01
	340	-0.23 mill.	59.4	3.2	3.5	1.87
III. <u>Post-event estimation period: Day -1 through day 480⁴</u>						
Bidders on TSE	464	0.81%	53.7	7.1	2.2	4.23
	430	0.64 mill.	53.3	6.1	3.0	3.40
Bidders on NYSE	385	0.08%	50.4	3.9	2.6	0.57

¹ "Mill" indicates that γ_j has been estimated after premultiplying the terms $(r_{jt} - r_{ft})$ and $(r_{mt} - r_{ft})$ with $V_{j,t-1}$, the prior end-of-period market value of total equity (in millions of dollars).

² $Z = (1/N) \sum_j \hat{\gamma}_j / SE(\gamma_j) \sim N(0, 1)$, where N is the sample size and $SE(\gamma_j)$ is the estimated standard error of γ_j .

³ To be included, a firm must have a minimum of 24 valid returns over the 48-month period. The dummy variable takes on a value of 1 in event month 0. The twelve months (-12 through -1) in the before-event estimation and (1 through 12) in the after-event estimation procedure are excluded.

⁴ To be included, a firm must have 150 valid return observations drawn over the 480 trading-day estimation period. When using daily stock returns, the risk-free rate r_{ft} is excluded from the regression. Furthermore, with daily data the total event period abnormal return is $2\hat{\gamma}_j$, which is the number reported in the table. The average $\hat{\gamma}_j$ for the NYSE-listed bidders is reported in % terms only due to lack of access to the CRSP daily stock price file.

Table 4

Average Abnormal Earnings to Canadian Targets and Domestic and Foreign (U.S.) Bidders in the Year Prior to and the Year of the Acquisition, 1964-83.

OLS-estimates of the abnormal earnings coefficients γ_{ej} in the following market model:

$$\Delta E_{jt} = \alpha_{ej} + \beta_{ej} \Delta E_{mt} + \gamma_{ej,-1} d_{jt,-1} + \gamma_{ej,0} d_{jt,0} + \epsilon_{ejt}$$

where ΔE_{jt} is firm j 's change in earnings before interest and taxes (EBIT) over year t , E_{mt} is the equal-weighted average EBIT across all firms on the S&P Compustat tape over year t , and ϵ_{ejt} is a mean zero error term. The estimation period is year -6 through year 0 (the year of the merger). The dummy variable $d_{jt,-1}$ takes on a value of one in year -1, while $d_{jt,0}$ takes on a value of one in year 0, and zero otherwise. The market model is estimated using the first difference (as above), and the percent change, $(E_{jt} - E_{j,t-1})/E_{j,t-1}$, in earnings from period $t-1$ to t . Total sample of bidders and targets with a complete set of earnings data available on the combined 1978 and 1987 S&P Compustat tapes.¹

Sample	Form of earnings variable	Average coefficient (Z-value and percent positive in parentheses) ²			
		$\hat{\alpha}$	$\hat{\beta}$	$\hat{\gamma}_{e,-1}$	$\hat{\gamma}_{e,0}$

<u>I. Bidder firms listed on the TSE (N = 303)</u>					
First difference (mill.)	0.55 (18.20;72.3)	0.82 (16.04;67.3)	3.92 (20.27;61.7)	1.87 (17.94;62.0)	
Rate of change (%)	60.76 (20.71;75.2)	-1.48 (10.94;62.0)	111.86 (17.32;53.1)	19.57 (5.19;53.5)	

<u>II. Bidder firms listed on the NYSE (N = 215)</u>					
First Difference (mill.)	7.87 (16.85;75.8)	1.29 (13.79;74.9)	-11.68 (11.58;56.7)	2.07 (10.19;55.4)	
Rate of change (%)	11.93 (18.08;76.3)	1.86 (10.38;67.4)	-9.27 (4.77;45.6)	-19.69 (-0.59;40.5)	

<u>III. Target firms listed on the TSE (N = 79)</u>					
First Difference (mill.)	-1.09 (2.21;55.7)	0.39 (6.42;69.6)	-3.73 (-0.33;54.4)	7.81 (3.98;62.0)	
Rate of change (%)	1.09 (3.97;64.6)	0.10 (4.50;62.0)	61.61 (3.85;46.8)	54.70 (6.06;60.8)	

¹ Data on EBIT for the Canadian firms in the sample is drawn from the Canadian firms on the U.S. Compustat file and from a separate Compustat file for Canadian firms. The market EBIT is constructed using U.S. companies only for the sample of bidders listed on the NYSE, and Canadian companies only when regressing the model using Canadian firms. The regression is run only once for a given firm over a given estimation period; i.e., the estimated value of, e.g., γ_{j0} for a given firm in principle covers the cumulative effect of all mergers undertaken by that firm over that year. When the regression uses the percent change in earnings, data from year -7 is added in order to create an observation for year -6.

² $Z = (1/\sqrt{N}) \sum_j \hat{\gamma}_{ej} / SE(\hat{\gamma}_{ej}) \sim N(0,1)$, where N is the sample size and $SE(\hat{\gamma}_{ej})$ is the estimated standard error of γ_{ej} .

Table 5

Average Abnormal Earnings to Canadian Targets and Domestic and Foreign (U.S.) Bidders over the Three Years following the Acquisition, 1964-83.

OLS-estimates of the abnormal earnings coefficient γ_n in the following market model:

$$\Delta E_{jt} = \alpha_{ej} + \beta_{ej} \Delta E_{mt} + \gamma_{ejn} d_{jtn} + \epsilon_{ejt}$$

where ΔE_{jt} is firm j 's change in earnings before interest and taxes (EBIT) over year t , E_{mt} is the equal-weighted average EBIT across all firms on the S&P onipustat tape over year t , and ϵ_{ejt} is a mean zero error term. The estimation period includes year -6 through year -1 plus the year used to define the dummy variable d_{jtn} . When estimating γ_{ejn} for year $n=+1$, the estimation period is -6 through -1 plus year +1, excluding year 0; similarly for years $n=+2$ and $n=+3$. The market model is estimated using the first difference (as above), and the percent change, $(E_{jt} - E_{j,t-1})/E_{j,t-1}$, in earnings from $t-1$ to t . Total sample of bidders with a complete set of earnings data available on the combined 1978 and 1987 S&P Compustat tapes.¹

Sample	Form of earnings variable	Average $\hat{\gamma}_{ejn}$ (Z-value and percent positive in parentheses) ²		
		Year $n=+1$	Year $n=+2$	Year $n=+3$
<hr/>				
<u>I. Bidder firms listed on the TSE ($N = 298$)</u>				
	First difference (mill.)	1.75 (10.70;59.1)	-0.10 (17.80;57.4)	4.02 (17.60;54.0)
	Rate of change (%)	-60.60 (-2.05;47.3)	6.03 (21.56;47.7)	-22.88 (15.78;40.3)
<u>II. Bidder firms listed on the NYSE ($N = 161$)</u>				
	First difference (mill.)	-0.22 (2.29;53.4)	-3.95 (-0.52;54.0)	19.77 (7.12;55.3)
	Rate of change (%)	-24.66 (-3.83;38.5)	-29.54 (-9.78;37.3)	-16.32 (-1.36;37.3)

¹ Data on EBIT for the Canadian firms in the sample is drawn from the Canadian firms on the U.S. Compustat file and from a separate Compustat file for Canadian firms. The market EBIT is constructed using U.S. companies only for the sample of bidders listed on the NYSE, and Canadian companies only when regressing the model using Canadian firms. The regression is run only once for a given firm over a given estimation period; i.e., the estimated value of, e.g., γ_{j0} for a given firm in principle covers the cumulative effect of all mergers undertaken by that firm over that year. When the regression uses the percent change in earnings, data from year -7 is added in order to create an observation for year -6.

² $Z = (1/\sqrt{N}) \sum_j \hat{\gamma}_{ejn} / SE(\hat{\gamma}_{ejn}) \sim N(0, 1)$, where J is the sample size and $SE(\hat{\gamma}_{ejn})$ is the estimated standard error of γ_{ejn} .

Table 6
Average Monthly Abnormal Returns to Domestic and Foreign (U.S.) Bidders Classified by the
Bidder's Acquisition Frequency over the Sample Period, 1964-83.¹

OLS-estimates of the constant term α and the abnormal return coefficient γ in the excess return market model

$$\tilde{r}_{jt} - r_{ft} = \alpha_j + \beta(\tilde{r}_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where \tilde{r}_{jt} , r_{ft} and \tilde{r}_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in the event period and zero otherwise; and ϵ_{jt} is a zero mean disturbance term. The estimation period is month +13 through month +60, i.e., excluding months +1 through +12.

(Z-value and percent positive in parenthesis)

Total Number of acquisitions (N_j) per bidder firm over the 1964-83 period	1,227 bidder firms listed on the TSE			328 bidder firms listed on the NYSE		
	No. of firms ²	Average $\tilde{\alpha}$ (%)	Average $\tilde{\gamma}$ (%)	Number of firms	Average $\tilde{\alpha}$ (%)	Average $\tilde{\gamma}$ (%)
$1 \leq N_j \leq 2$	272 (22.2)	-2.45 (-4.36;41.5)	0.95 (0.72;50.4)	32 (9.8)	-2.29 (-6.18;28.1)	1.58 (1.13;59.4)
$3 \leq N_j \leq 5$	200 (16.3)	-0.16 (-0.65;49.3)	2.85 (5.31;59.0)	59 (18.0)	-1.96 (-7.89;32.2)	-0.36 (-0.52;47.5)
$6 \leq N_j \leq 7$	165 (13.4)	2.23 (3.37;60.0)	2.47 (2.75;55.2)	45 (13.7)	-1.41 (-4.37;37.8)	-0.24 (0.04;40.0)
$8 \leq N_j \leq 10$	160 (13.0)	-2.73 (-3.27;45.0)	1.00 (1.51;55.6)	77 (23.5)	-1.91 (-7.54;29.9)	1.34 (1.49;61.0)
$11 \leq N_j \leq 12$	77 (6.3)	-1.15 (-0.07;48.1)	2.23 (2.70;58.4)	38 (11.6)	-1.41 (-4.36;31.6)	0.10 (0.13;50.9)
$13 \leq N_j \leq 15$	41 (3.3)	0.01 (-0.19;46.3)	-0.49 (-0.86;53.7)	34 (10.3)	-0.28 (0.04;58.8)	2.55 (1.86;61.8)
$16 \leq N_j \leq 17$	49 (4.0)	1.46 (2.37;71.4)	2.36 (1.79;57.1)	15 (4.6)	0.21 (1.04;53.3)	0.69 (0.09;60.0)
$18 \leq N_j \leq 20$	18 (1.5)	10.63 (6.54;77.8)	-2.47 (-1.42;38.9)	17 (5.2)	-1.36 (-2.82;29.4)	0.65 (0.03;52.9)
$21 \leq N_j \leq 22$	20 (1.6)	6.53 (4.81;85.0)	0.48 (0.45;45.0)	3 (0.9)	1.76 (1.62;66.7)	-3.46 (-.64;33.3)
$23 \leq N_j \leq 25$	25 (2.0)	-2.75 (-2.12;32.0)	0.58 (0.46;52.0)	8 (2.4)	-1.49 (-1.58;25.0)	2.00 (0.87;62.5)

¹ For the bidder firms listed on the TSE, the total acquisition activity is given by the number of targets in the sample, based on the information in the Canadian *Merger Register*. For the bidder firms listed in the NYSE, the total acquisition activity is given by the number of targets announced in the *Wall Street Journal* over the sample period.

² The number of firms in percent of the total sample is in parentheses.

Table 7

Average Monthly Abnormal Returns to Domestic and Foreign (U.S.) Bidders Classified by the Market Value of the Bidder's Total Equity, 1964-83.

OLS-estimates of the abnormal return coefficient γ in the excess return market model

$$\bar{r}_{jt} - r_{ft} = \alpha_j + \beta(\bar{r}_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where \bar{r}_{jt} , r_{ft} and \bar{r}_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in the event period and zero otherwise; and r_{jt} is a zero mean disturbance term. The estimation period is month +13 through month +60, i.e., excluding months +1 through +12. $V_{j,-1}$ is the market value of total equity of the bidder firm in the month prior to the month of the acquisition announcement.¹

(Z-value and percent positive in parenthesis)

1,226 bidder firms listed on the TSE				341 bidder firms listed on the NYSE			
Range of $V_{j,-1}$ (mill.)	No. of Firms ²	Average $\bar{\gamma}$ (%)	Average $\bar{\gamma}$ (mill.)	Range of $V_{j,-1}$ (mill.)	No. of firms ²	Average $\bar{\gamma}$ (%)	Average $\bar{\gamma}$ (mill.)
$0 < V_{j,-1} \leq 10$	309 (25.2)	4.05 (5.40;61.2)	-0.02 (3.20;50.9)	$0 < V_{j,-1} \leq 100$	61 (17.9)	2.12 (1.89;59.0)	1.69 (1.67;65.0)
$10 < V_{j,-1} \leq 20$	184 (15.0)	2.02 (3.11;55.0)	0.23 (2.01;52.2)	$100 < V_{j,-1} \leq 200$	62 (18.1)	-1.32 (-0.76;45.2)	1.56 (-0.79;54.8)
$20 < V_{j,-1} \leq 30$	118 (9.6)	1.54 (1.89;53.4)	0.13 (2.44;51.3)	$200 < V_{j,-1} \leq 300$	42 (12.3)	2.66 (1.65;50.0)	6.30 (2.67;5.2.23)
$30 < V_{j,-1} \leq 40$	73 (5.9)	-1.60 (-1.69;41.1)	-0.46 (-0.11;46.6)	$300 < V_{j,-1} \leq 400$	30 (.88)	0.84 (-0.36;53.3)	13.68 (-0.41;60.0)
$40 < V_{j,-1} \leq 50$	64 (5.2)	0.81 (1.00;54.7)	0.41 (2.07;51.6)	$400 < V_{j,-1} \leq 500$	16 (4.7)	1.78 (1.12;62.5)	8.61 (0.91;75.0)
$50 < V_{j,-1} \leq 60$	41 (3.3)	2.40 (1.29;58.5)	1.19 (5.27;65.8)	$500 < V_{j,-1} \leq 600$	14 (4.1)	1.41 (0.78;64.3)	11.73 (0.74;71.4)
$60 < V_{j,-1} \leq 70$	47 (3.8)	2.57 (2.18;66.0)	1.75 (4.54;59.6)	$600 < V_{j,-1} \leq 700$	21 (6.2)	2.09 (1.39;62.0)	13.36 (1.08;66.72)
$70 < V_{j,-1} \leq 80$	28 (2.3)	1.72 (0.82;50.0)	-0.02 (1.69;39.3)	$700 < V_{j,-1} \leq 800$	15 (4.4)	1.00 (0.55;73.3)	8.56 (0.72;73.3)
$80 < V_{j,-1} \leq 90$	23 (1.9)	0.00 (0.96;56.5)	0.22 (0.44;66.2)	$800 < V_{j,-1} \leq 900$	10 (2.9)	-0.38 (0.19;50.0)	-6.823 (0.32;50.0)
$90 < V_{j,-1} \leq 100$	19 (1.5)	2.63 (1.57;0.58)	1.55 (1.42;52.6)	$900 < V_{j,-1} \leq 1000$	9 (2.6)	-0.88 (-0.55;33.3)	-13.30 (-0.77;22.2)
$100 < V_{j,-1}$	321 (26.1)	0.44 (0.60;51.6)	35.76 (2.39;51.4)	$1000 < V_{j,-1}$	61 (17.9)	0.49 (0.77;60.7)	-24.16 (-0.02;67.4)

¹ "Mill" indicates that γ_j has been estimated after premultiplying $\bar{r}_{jt} - r_{ft}$ and $(\bar{r}_{mt} - r_{ft})$ with $V_{j,k-1}$, i.e., the prior end-of-period market value of total equity (in millions of dollars). $Z = (1/\sqrt{J}) \sum_j \gamma_j / SE(\gamma_j) - N(0, 1)$, where J is the sample size and $SE(\gamma_j)$ is the estimated standard error of γ_j .

² In this column, the number of firms in percent of the total sample is given in parentheses.

Table 8
Average Abnormal Returns to Domestic (Canadian) Bidders Classified by the Payment Method, 1964-83.

OLS-estimates of the abnormal return coefficient γ_j in the excess return market model

$$r_{jt} - r_{ft} = \alpha_j + \beta(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where r_{jt} , r_{ft} and r_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in month 0 and zero otherwise; and ϵ_{jt} is a zero mean disturbance term. The estimation period is month 13 through month 60, plus month 0.¹

(Z-values and percent positive in parentheses)²

Payment method	Sample size ²	Average $\hat{\gamma}_j$	
		\$ million	%
All-cash	N=90	3.11 (1.80;47.9)	1.17 (1.93;60.4)
All-stock	N=268	2.99 (2.18;65.0)	2.93 (2.21;61.7)
Cash and Stock	N=58	5.10 (4.61;64.9)	5.21 (3.72;64.9)

¹ Information on the payment method is from the Merger Register, the Financial Post data base, or the manuals of Moody's Corporation.

² $Z = (1/\sqrt{N}) \sum_j (\hat{\gamma}_j / \hat{\sigma}_{\gamma_j}) \stackrel{as}{\sim} N(0, 1)$ where $\hat{\sigma}_{\gamma_j}$ is the OLS estimate of the standard deviation of γ_j .

Table 9

Average Abnormal Returns to Domestic (Canadian) and Foreign (U.S.) Bidders in Horizontal and Non-Horizontal Acquisitions, 1964-83.

OLS-estimates of the abnormal return coefficient γ_j in the excess return market model

$$r_{jt} - r_{ft} = \alpha_j + \beta(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \varepsilon_{jt}$$

where r_{jt} , r_{ft} and r_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in month 0 and zero otherwise; and ε_{jt} is a zero mean disturbance term. The estimation period is month 13 through month 60, excluding months 1 through 12. Total sample of bidder firms classified by whether or not the merging firms operate in the same 2-digit Standard Industrial Classification (SIC) industry ("2-digit horizontal") or in the same 4-digit SIC industry ("4-digit horizontal").¹

(Z-values and percent positive in parentheses)

Type of acquisition	Bidder firms listed on the TSE ($N = 491$)			Bidder firms listed on the NYSE ($N = 182$)		
	No. of firms	Average $\hat{\gamma}_0$ (%)	Average $\hat{\gamma}_0$ (mill.) ²	No. of firms	Average $\hat{\gamma}_0$ (%)	Average $\hat{\gamma}_0$ (mill.) ²
2-digit horizontal	158	1.14 (1.37;55.1)	18.42 (1.54;51.3)	63	1.11 (1.09;57.1)	-22.33 (0.67;65.1)
4-digit horizontal	89	1.31 (0.92;57.1)	33.73 (1.48;52.4)	18	0.26 (-0.20;44.4)	-115.60 (-2.16;55.6)
2-digit non-horizontal	333	1.94 (2.84;55.9)	4.91 (2.35;52.9)	119	0.57 (1.07;52.9)	-1.51 (0.87;55.1)

¹ 4-digit SIC codes were collected from Moody's manuals and from the Standard & Poor's directories for as many firms as could be found. A given acquisition is included in this table only if at least one 4-digit SIC code could be identified for each of the bidder and target firms. $Z = (1/\sqrt{N}) \sum_j \hat{\gamma}_j / SE(\gamma_j) \sim N(0, 1)$, where N is the sample size and $SE(\gamma_0)$ is the estimated standard error of γ_j .

² The dollar value of the estimated γ_j is obtained by running the regression after pre-multiplying the dependent variable and the market factor by $V_{j,t-1}$, the prior end-of-period market value of total equity.

Table 10
Percent Average Abnormal Returns to Non-Merging Industry Rivals in Domestic (Canadian)
Acquisitions, 1964-83

OLS-estimates of the abnormal return coefficient γ_j in the excess return market model

$$r_{jt} - r_{ft} = \alpha_j + \beta(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where r_{jt} , r_{ft} and r_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in month 0 and zero otherwise; and ϵ_{jt} is a zero mean disturbance term. The estimation period is month -60 through month -13, and event month 0, relative to the merger announcement. The publicly traded industry rivals are identified in Eckbo (1992) using the major four-digit industry of the target.¹

Merger Category	Number of mergers (N)	Average no. of rivals per merger	Average $\hat{\gamma}_j$	Z- value ²	χ^2 - value ³ (d.f.)
Nonhorizontal	89 (1.84;89)	7 (1.63;89)	2.42%	1.84	602 (623) ⁴
Horizontal	116	9	-1.51%	-2.14	1316 (1044) ⁵

¹ The source of the information in this table is Eckbo (1992), who uses a subsample of the acquisitions in this paper for which it is possible to identify at least one publicly traded rival firm.

² Assuming the mergers represent independent events, it follows that $z_j = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{\hat{\gamma}_j}{\hat{\sigma}_{ij}}$ is distributed approximately standard normal under the hypothesis of zero abnormal return, where $\hat{\sigma}_{ij}$ is the OLS-estimate of the standard error of γ_j .

³ In this test, the null hypothesis is that the abnormal returns across the rival firms associated with a given merger are jointly equal to zero, i.e., $H_0: \gamma_{ij} = 0, i = 1, \dots, R_j$. As shown in the Appendix, the test statistic for H_0 is

$$\frac{1}{(\bar{X}'\bar{X})_{33}^{-1}} \hat{\gamma}' \hat{\Sigma}^{-1} \hat{\gamma} \sim \chi^2(R_j),$$

where $\bar{X} = [\underline{1} \ x_m \ d]$ is the $T \times 3$ matrix of market model regressors for merger j , $(\bar{X}'\bar{X})_{33}^{-1}$ is the (3,3) element of $(\bar{X}'\bar{X})^{-1}$, Σ is the $R_j \times R_j$ contemporaneous residual covariance matrix estimated from the first-pass OLS regression of the R_j individual market model equations, and $\hat{\gamma}$ is the $R_j \times 1$ vector of event parameters. The table reports the sum of the N values of this χ^2 statistic across a sample of N mergers (which itself has a limiting χ^2 distribution with $\sum_j^N R_j$ degrees of freedom), and in parenthesis the percent of the N individual χ^2 values that reject H_0 at a 5% level of significance.

⁴ The degrees of freedom equals the number of rival firms across the N industry portfolios in the sample, i.e., $\sum_j^N R_j = 602$. In this sample, H_0 is rejected for 6.1% of the individual industry portfolios at the 5% level of significance.

⁵ The degrees of freedom equals the number of rival firms across the N industry portfolios in the sample, i.e., $\sum_j^N R_j = 1316$. In this sample, H_0 is rejected for 8.1% of the individual industry portfolios at the 5% level of significance.

Table 11

The Annual Number of Foreign Acquisitions Reviewed by the Canadian Foreign Investment Review Agency (FIRA) in the Population and in the Sample.¹

Year of acquisition	Population		Sample (NYSE bidders)	
	Cases approved by FIRA	Cases disapproved by FIRA	Cases approved by FIRA	Cases not reviewed by FIRA
1964-74	0	0	0	200
1975	63	12	21	0
1976	110	22	8	4
1977	153	19	23	18
1978	241	11	16	0
1979	297	26	32	0
1980	331	29	20	0
1981	215	36	15	0
1982	248	36	37	0
1983	469	13	2	0
1975-83	2,127	204	172	222

¹ The population is all cases listed in the FIRA annual reports over the sample period. We count the cases in the 74-75 report (the first report issued by FIRA) in year 1975, the 75-76 report in year 1976, etc. Since our sampling source is the Consumer and Corporate Affairs Canada's Merger Register (see Table 1), we pick up only cases which were approved by FIRA in our sample. Furthermore, the sample in this table is restricted to cases where the bidder firm is listed on the New York Stock Exchange.

Table 12

Average Abnormal Returns to Canadian Targets and Domestic and Foreign (U.S.) Bidders Before and During FIRA's Merger Review Activity.

OLS-estimates of the abnormal return coefficient γ_j in the excess return market model

$$r_{jt} - r_{ft} = \alpha_j + \beta(r_{mt} - r_{ft}) + \gamma_j d_{jt} + \epsilon_{jt}$$

where r_{jt} , r_{ft} and r_{mt} are the continuously compounded rates of return to security j , the risk-free asset and the value-weighted market index over period t ; d_{jt} takes on a value of one in the event period and zero otherwise; and ϵ_{jt} is a zero mean disturbance term. The estimation period is month -60 through month -13, while the event period is either the 13-month period month -12 through month 0 (the announcement month) or the announcement month itself.

Sample	Sample size (N)	Event Period	Average ¹ $\hat{\gamma}_j$	Percent positive	Z- value ²
I. <u>Foreign bidders listed on the NYSE</u>					
NYSE-bidders not reviewed by FIRA	222	Month 0 only	-0.76% (-2.5 mill.)	51.1	-1.59
		Month -12 through 0	-0.84% (-8.2 mill.)	45.8	-0.37
NYSE-bidders reviewed by FIRA	172	Month 0 only	-0.73% (-8.8 mill.)	43.3	-1.64
		Month -12 through 0	0.29% (-1.1 mill.)	47.7	0.03
II. <u>Domestic bidders listed on the TSE</u>					
TSE-bidders before FIRA (1964-73)	586	Month 0 only	0.72% (0.3 mill.)	53.0	2.10
		Month -12 through 0	4.38% (4.5 mill.)	51.2	3.71
TSE-bidders during FIRA (1974-83)	513	Month 0 only	0.80% (1.2 mill.)	52.6	2.07
		Month -12 through 0	-2.16 (3.6 mill.)	47.5	-0.34
III. <u>Domestic targets listed on the TSE²</u>					
TSE-targets before FIRA (1964-73)	151	Month 0 only	6.17% (0.4 mill.)	58.9	6.46
		Month -12 through 0	15.27% (2.3 mill.)	55.4	5.07
TSE-targets during FIRA (1974-83)	262	Month 0 only	2.35% (0.6 mill.)	57.8	4.02
		Month -12 through 0	7.61% (5.3 mill.)	55.0	3.51

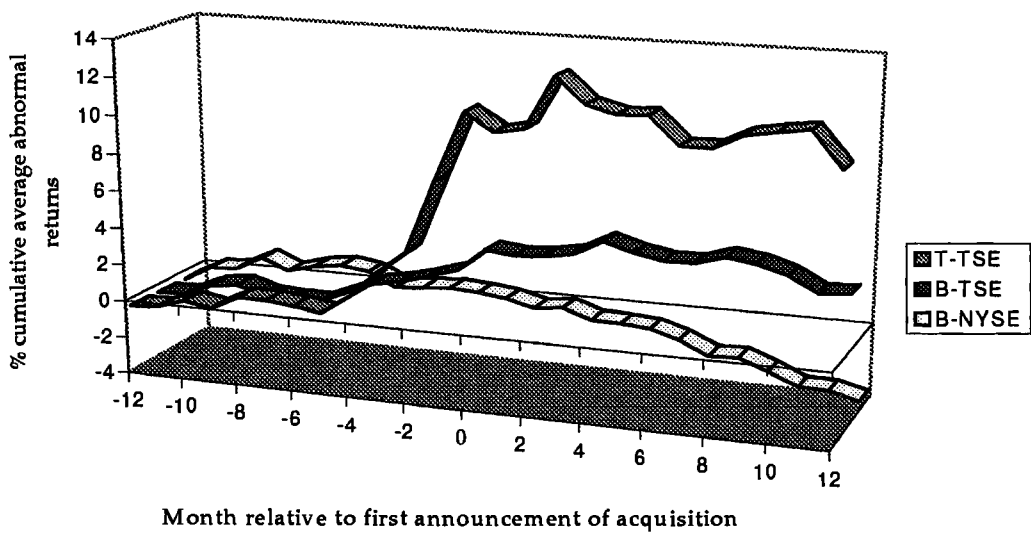
¹ "Mill" indicates that γ_j has been estimated after premultiplying the terms $(r_{jt} - r_{ft})$ and $(r_{mt} - r_{ft})$ with $V_{j,t-1}$, the prior end-of-period market value of total equity (in millions of dollars). To be included, a firm must have a minimum of 24 valid returns over the 48-month period -60 through -13.

² $Z = (1/N) \sum_j \hat{\gamma}_j / SE(\gamma_j) \sim N(0, 1)$, where N is the sample size and $SE(\gamma_j)$ is the estimated standard error of γ_j .

Figure 1

Percent Monthly Cumulative Average Abnormal Stock Returns to Canadian Targets and Domestic and Foreign (U.S.) Bidders 1964-1983.

The sample contains 332 target firms listed on the Toronto Stock Exchange (T-TSE), 1,261 bidder firms listed on the Toronto Stock Exchange (B-TSE) and 390 bidder firms listed on the New York Stock Exchange (B-NYSE). All bids are for Canadian targets. Abnormal returns are computed using market model residuals (equation 2), and the estimation period is five years or 60 monthly return observations. See Table 2 for details.



Chapter 4

Resolution of distress: A review

Företag i finansiell kris och konkurs¹

av

Karin S. Thorburn

Abstract

This paper provides a survey of much of the academic literature on the resolution of financial distress. Firms tend to resolve their financial difficulties through one or more of the following mechanisms: (1) asset sales, (2) equity issues, (3) merger with a healthy firm, (4) voluntary reorganization of the financial claims, and (5) formal bankruptcy. While most financially distressed firms sell assets, equity holders are typically unwilling to provide new equity capital. Private debt restructurings appear to be faster and less costly for the firm compared to a formal bankruptcy proceeding. Out-of-court restructurings occasionally fail, however, reflecting fre-rider problems, information asymmetries or conflicts of interest between the firm's claimants. Moreover, firms frequently lower their bankruptcy costs by filing pre-negotiated "pre-packaged" bankruptcy petitions.

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4.1 Introduktion

Under slutet av 1980-talet uppmärksammades företag i finansiell kris och konkurs av en växande skara akademiker inom ekonomi och finans. Bakom detta intresse låg bl.a. uppkomsten (och fallet) av "junk-bond"-marknaden i USA, den ökande användningen av skuldfinansiering av företagsförvärv och s.k. LBOs,² USAs sparbankskris, samt det ökande antalet företagskonkurser. Den här artikeln ger en översikt över den akademiska litteratur som behandlar hur företag löser sina finansiella kriser, med fokusering på vad olika konkursförfaranden innebär för företaget. Notera att den diskussion som följer och de empiriska studier som refereras till nästan uteslutande hänför sig till USA.

Med finansiell kris avses att företagets likvida tillgångar inte är tillräckliga för att betala de fordringar som förfaller, dvs en kassaflödes-baserad definition. Detta i sig innebär inte att företagets skulder överstiger dess tillgångar, vilket dock kan vara fallet. Förutom betalningsproblem, kan en finansiell kris medföra att ineffektiviter i företagets investeringsbeslut uppkommer, t.ex. genom att lönsamma investeringar inte genomförs då medel saknas (s.k. underinvestering), eller att mycket riskfyllda projekt genomförs i syfte

²Med junk-bond avses räntebärande värdepapper med låg prioritet och hög risk, och som därför ger hög ränta. En LBO eller "leverage buy-out" är ett företagsförvärv som huvudsakligen är lånefinansierat, där transaktionen struktureras så att företagets likviditet kan användas till att betala räntor.

att företaget skall bli solvent vid ett gynnsamt utfall.³ Det positiva med en finansiell kris är att den kan initiera hälsosamma förändringar i företagens verksamhet, strategi, ledning och/eller styrelse.

I stora drag kan de sätt på vilka ett företag i finansiell kris kan gå tillväga för att lösa sina problem delas upp i följande fem grupper: (1) försäljning av tillgångar, (2) tillskott av nytt kapital, (3) sammanslagning med annat företag, (4) frivillig rekonstruktion av skuldsidan, och (5) formell konkurs. Innebörden av dessa olika tillvägagångssätt går igenom nedan i nämnd ordning. Observera att ett företag med finansiella problem vanligtvis använder sig av mer än ett av de olika alternativen.

4.2 Försäljning av tillgångar

Vid försäljning av tillgångar anpassas företagens tillgångssida till dess skuldsida. Trots att försäljningen minskar aktieägarnas optionsvärde av rörelsen, är detta en mycket vanligt förekommande åtgärd bland företag i finansiell kris, i synnerhet för bolag med flera divisioner. Brown, James och Moordian (1994) visar att aktiekurserna endast rör sig marginellt då företag i finansiell kris annonserar att de avser sälja ut tillgångar. Kurserna stiger emellertid signifikant för de företag som genom försäljningen undviker att senare gå i konkurs eller använder försäljningsintäkterna till att betala ner

³Se Jensen och Meckling (1976) och Myers (1977).

lån. Vidare finner Asquith, Gertner och Scharfstein (1994) att företag som senare går i konkurs avyttrar mindre tillgångar före konkurs än företag som kan rekonstruera sin skuldsida på frivillig väg. Troligen föredrar köparna att, om möjligt, förvärva tillgångar i skydd av konkurslagstiftningen då förvärv av tillgångar utanför konkurs medför större risker t.ex. för återvinning eller i form av sämre garantier.

Ett argument mot försäljning av tillgångar vid finansiell kris är att dessa kan komma att säljas till användare utanför branschen till ett pris som understiger deras pris i bästa användning, s.k. "brandförsäljning".⁴ Om alla företag i branschen har likviditetsproblem samtidigt saknas likvida medel också hos potentiella köpare med god branschkännedom. Tillgångarna kan därmed komma att säljas till "outsiders", under vilkas kontroll de är mindre värda. Situationen torde förvärras ytterligare om tillgångarna är branschspecifika och endast har en mindre grupp potentiella användare. En nyligen genomförd studie i USA tyder på att säljarens finansiella situation kan ha betydelse för det pris en given tillgång säljs för. Pulvino (1996) finner att flygbolag som har finansiella problem säljer flygplan till ett genomsnittligt pris som är 13% lägre än ett estimerat hedoniskt pris (skattat sant värde), medan flygbolag utan finansiella problem säljer flygplan till ett pris som i genomsnitt överstiger det hedoniska priset med 9%. Därtill ökar flygbolag utan finansiella problem sin köpaktivitet i perioder då flygplanspriserna är

⁴Shleifer och Vishny (1992).

relativt låga.

4.3 Kapitaltillskott

Som alternativ till att förändra tillgångssidan kan företaget välja att struktureras om sin skuldsida av balansräkningen. Bolaget kan vända sig till sina aktieägare eller till kapitalmarknaden i syfte att skaffa ytterligare eget kapital. Dock kan företaget ha problem att attrahera nytt eget kapital vid en finansiell kris. Mot bakgrund av den låga prioriteten hos eget kapital är risken överhängande att antingen de tillförda medlen eller avkastningen från den investering som avses genomföras används till att betala ner befintliga skulder. Störst möjlighet har bolaget att få ett tillskott av eget kapital om investerarna kan erbjudas projektfinansiering, då den investering som skall genomföras inte belastas av företagets sedan tidigare dåliga finansiella situation.⁵ Ett kapitaltillskott i form av projektfinansiering gör att en potentiellt lönsam investering kan genomföras, vilket reducerar ineffektiviteter orsakade av underinvestering. Dock leder det på kort sikt inte till en lösning av företagets finansiella problem.

⁵Se t.ex. Myers (1977) eller Berkovitch och Kim (1990).

4.4 Sammanslagning eller ägarbyte

Förvärv av företag i finansiell kris skiljer sig från förvärv av finansiellt sunda företag. Förutom potentiella synergier mellan köparens och säljarens verksamheter kan det också finnas finansiella synergier mellan köpare och säljare. På ett tidigt stadium när ett företags vinst först vänder neråt, är det mycket vanligt att det blir uppköpt. I en grupp amerikanska börsbolag med vikande resultat finner John, Lang och Netter (1992) att en tredjedel blev uppköpta och ytterligare en tredjedel utsattes för uppköpsförsök.

Vid senare, allvarigare stadier av finansiell kris kan ett förvärv av en finansiellt stark köpare signalera en satsning på verksamheten i krisbolaget. I och med att långivarnas förtroende för företaget kan återupprättas torde de också vara mer benägna att bistå vid en sanering av bolagets dåliga finanser. Clark och Ofek (1994) visar t.ex. att köparen ofta betingar sitt förvärv av ett företag i finansiell kris på att större långivare (och ibland också arbetstagare) ger eftergifter i form av nedskrivning av fordringar. Vad avser mekanismerna bakom förvärv av företag med finansiella problem finns relativt lite forskning gjord, både empiriskt såväl som teoretiskt. Klart är dock att den typen av företagsförvärv förekommer, i alla fall i USA: under perioden 1978-1988 blev 7% av de amerikanska börsnoterade bolag som sökt konkurs uppköpta av ett annat bolag (medan de var i konkurs). I USA har också ett antal fonder speliserat sig på handel av värdepapper utställda av bolag i finansiell kris,

s.k. "vulture funds".

4.5 Frivilliga uppgörelser med fordringsägare

I många fall är det bäst för både företaget och fordringsägare om en uppgörelse kan nås på frivillig basis, utan att det offentliga rättssystemet involveras. Eftergifter kan antingen förhandlas fram vid en "privat" förhandling med en eller några institutionella placerare, t.ex. banker eller försäkringsbolag (s.k. underhandsackord), eller genom utbyte av företags utestående program av företagscertifikat eller obligationer för upplåning på kapitalmarknaden ("public debt exchange offers"). Sådana villkorsförändringar kan omfatta allt ifrån en reduktion av ränta eller lånebelopp, en förlängd löptid, eller att låntagarna i utbyte för vissa fordringar får aktier i bolaget.

Frivilliga uppgörelser är generellt att föredra framför konkurs: Gilson, John och Lang (1990) visar att privata rekonstruktioner kan genomföras på en betydligt kortare tid, samt medför lägre direkta kostnader i form av arvoden till advokater, investmentbanker, etc, jämfört med motsvarande förfarande i konkurs. De finner vidare att aktiemarknaden reagerar positivt då ett företag med finansiella problem annonserar att det har kommit överens med sina långgivare på frivillig väg. I allmänhet genomförs förhandlingar om privata uppgörelser på ett relativt tidigt stadium i företags finansiella kris: långgivarna får betydligt högre procentuell utdelning på sina fordringar vid

privata uppgörelser än de får i konkurs.⁶ Det är dock tveksamt om frivilliga uppgörelser reducerar eventuella ineffektiviteter i företagets investeringsbeslut, beskrivna ovan.⁷

Trots de uppenbara fördelarna kan i många fall en frivillig uppgörelse inte komma till stånd. Orsakerna bakom att privata uppgörelse ibland inte kan träffas sammanfattas i den akademiska litteraturen i (i) "free-rider" problem, (ii) informations-asymmetrier och (iii) intressekonflikter. Med free-rider problem avses att den individuella fordringsägaren, givet att han har en obetydlig del av företagets skulder, har incitament att *inte* acceptera en förändring av lånevillkoren. Företaget kan bli solvent endast under förutsättning att alla övriga fordringsägare medger en nedskrivning av lånen. Då den som motsätter sig eftergifter behåller sin gamla, högre fordran, ökar värdet av denna i samband med att de andra långivarna reducerar sin fordran. Om varje enskild fordringsägare resonerar på detta sätt kommer ingen att gå med på någon eftergift, och därmed omintetgörs varje försök till frivillig uppgörelse.

I USA förstärks free-rider beteendet genom att 1939 års s.k. "Trust Indenture Act" föreskriver att samtliga fordringsägare till ett certifikat- eller obligationslån *enhälligt* skall godkänna en förändring av lånets löptid, slutbelopp, ränta eller kupong. I praktiken har dock tekniker utvecklats (s.k.

⁶Franks och Torous (1994).

⁷Gertner och Scharfstein (1991).

"coersive tender offers") för att kringgå detta krav, som är i det närmaste omöjligt att uppfylla. Ägare till företagets certifikat- eller obligationslån erbjuds att dels byta ut sin fordran mot en fordran i ett nytt marknadslån med t.ex. lägre slutbelopp, men högre prioritet ("exchange offer"), dels rösta för en förändring av villkoren i det gamla lånet som förhindrar att företaget ger ut lån med högre prioritet ("exit concent"). Eftersom det senare beslutet kan genomföras med en majoritetsröst eller supermajoritetsröst, samt utbytet betingas av ett sådant beslut, blir de långivare som avstår från att delta sittande med en fordran som har lägre prioritet än det nya lånet. Resultatet av denna teknik blir att samtliga fordringsägare till ett marknadslån har starka incitament att delta i en restrukturerings av lånet.

Det andra hindret till en frivillig uppgörelse, informations-asymmetrier, avser en situation där externa långivare inte är överens med de som har insider-information och representerar företaget/ägarna om företagets riktiga värde, eller att de senare upplevs ge en inkorrekt bild av företagets värde. Självklart kan en frivillig överenskommelse inte komma till stånd då parterna är oense i en så viktig fråga som företagets egentliga finansiella och ekonomiska situation eller om de saknar tillit till varandra. Det tredje hindret består i potentiella intressekonflikter mellan olika klasser av långivare och aktieägare, vilka leder till att koallitioner formas. I närvaro av sådana allianser riskerar omförhandlingen att leda till ett för företaget ineffektivt

utfall, vilket medför en minskning av företagets totala värde.⁸

I verkligheten kännetecknas företag som lyckas restruktureras sina skulder på frivillig väg (jämfört med företag i konkurs) av en relativt låg andel skulder med säkerhet i företagets tillgångar, ett litet antal olika klasser av fordringar, en mindre komplex struktur på sina företagscertifikatprogram och obligationslån, samt ett större beroende av bankfinansiering än upplåning direkt från kapitalmarknaden.⁹ Det första resultatet indikerar att fordringsägare till företag som har mycket immateriella tillgångar eller tillväxtpotentialer, vilka går förlorade om verksamheten styckas i konkurs, är mer benägna att finna en lösning på frivillig basis. De senare resultaten indikerar att strukturen på företagets lån är av betydelse för hur komplex en eventuell omförhandling är, och därmed avgörande för företagets möjlighet att nå en privat uppgörelse. Intressant nog visar det sig att banker och andra stora institutionella investerare ofta betingar sina eftergifter på att ett utbyte av företagets marknadslån, som vanligtvis har lägre prioritet, kan genomföras.

4.6 Konkurs

Ett konkursförfarande kan lösa de potentiella konflikter som diskuterats ovan genom att tillhandahålla en given struktur för förhandlingarna, vilket bl.a.

⁸Se Bulow och Shoven (1978).

⁹Gilson, John och Lang (1990) och Asquith, Gertner och Scharfstein (1994).

kan eliminera free-rider problem,¹⁰ samt reducera eventuella informations-asymmetrier.¹¹ Därtill fyller ett konkursförfarande en viktig funktion i att förhindra att långgivare rusar till företaget för att vara först att få betalt eller tvingar fram en försäljning av säkerheter, ett s.k. "creditors' race", vilket tvingar omkull en verksamhet som har tillfälliga likviditetsproblem men kan vara långsiktigt lönsam.¹²

4.6.1 Konkurskostnader

Konkurs kan dock vara kostsamt, både i form av direkta kostnader, vilka avser administrativa kostnader för domare, advokater, m.m., samt indirekta kostnader, med vilka avses en försämring i företagets marknadssituation och en minskad försäljning, att nyckelpersonal slutar eller att företagsledningen använder sin tid till tidsödande finansiella omförhandlingar istället för till viktiga affärsbeslut. Omfattningen av konkurskostnaderna har debatterats flitigt, och är av central betydelse bl.a. för att bedöma betydelsen av de teorier om optimal kapitalstruktur där konkurskostnaderna, vid någon punkt, anses uppväga skattefördelar av lånefinansiering.¹³ Å andra sidan hävdas att konkurskostnaderna aldrig kan överstiga marknadens kostnad för en transaktion där verksamheten säljs till en tredje part som ger företaget en konkurren-

¹⁰Brown (1989).

¹¹Giammarino (1989) visar hur informations-asymmetrier kan motivera företagets fordringsägare att välja ett dyrbarare konkursförfarande framför en frivillig uppgörelse.

¹²Se Diamond och Dybvig (1983) för en diskussion av "bank runs".

¹³Se t.ex. Miller (1977) och Harris och Raviv (1991).

skraftig kapitalstruktur och därmed undviker alla konkurskostnader.¹⁴ Empiriska studier visar att de direkta kostnaderna av konkurs i USA i genomsnitt uppgår till ca 3-5% av värdet av bolagens totala tillgångar före konkurs.¹⁵ De indirekta kostnaderna är betydligt svårare att mäta, men uppskattas till ca 11-17% av balansomslutningen.¹⁶

Jensen (1989) har förklarat det ökande antalet LBOs och företagsförvärv som huvudsakligen är skuldfinansierade som marknadens sätt att "privatisera konkurskostnaderna". Han menar att företag med hög skuldsättningsgrad tvingas ta itu med eventuella lönsamhetsproblem på ett tidigt stadium, då dessa snabbt resulterar i svårigheter att betala räntor och skulder. Därmed är chansen större att dels verksamheten går att rädda, dels att detta sker utanför konkurs, vilket medför lägre kostnader för företaget. Därtill har LBOs ofta s.k. "strip-financing", vilket innebär att en investerare äger ett flertal av företagets olika värdepapper, alltifrån aktier och lån med låg prioritet till lån med hög prioritet. Genom strip-financing minskar intressekonflikterna mellan olika klasser av lån/värdepapper, vilket i sin tur underlättar för att frivilliga överenskommelser utanför konkurs kan träffas.

¹⁴Haugen och Senbeth (1978, 1988).

¹⁵Se Weiss (1990) och Betker (1997).

¹⁶Altman (1984) estimerar skillnaden mellan prognostiserad vinst och realiserad vinst.

4.6.2 USAs "Chapter 11"

USA införde 1978 ett nytt kapitel i sin konkurslagstiftningen, det s.k. "Chapter 11". Ett konkursförfarande i Chapter 11 innebär att företagets finansiella (och operationella) sida restruktureras vid en omförhandling mellan befintliga fordrings- och aktieägare, under tillsyn av konkursdomstol. I princip fortsätter den innevarande ledningen driften av företaget under hela konkursförfarandet. Bolaget åtnjuter ett mycket starkt skydd i Chapter 11: någon ytterligare ränta utgår inte på skulderna och säkerheter får inte beslagtas. Vidare kan ledningen, efter konkursdomarens godkännande, ta upp nya lån med s.k. superprioritet, d.v.s. med högre prioritet än befintliga lån, för att genomföra nyinvesteringar, o.d. Under de fyra första månaderna i konkurs äger ledningen en exklusiv rätt att föreslå en restruktureringsplan. Denna tidsfrist förlängs rutinmässigt. Vidare har ledningen två månader på sig för att söka godkännande från borgenärer för planen, innan någon annan medges rätt att föreslå en alternativ restruktureringsplan.

För att en framlagd plan skall godkännas föreskriver Chapter 11 att två tredjedelar i belopp och hälften i antal fordringsägare i en klass av fordringar skall rösta för planen. Därtill har domaren rätt att tvinga en klass att godkänna en plan om den utdelning de får enligt planen överstiger den (hypotetiska) utdelning de skulle ha fått vid en likvidation av verksamheten, en s.k. "cram down". I allmänhet betalas borgenärerna med nya fordringar

på företaget snarare än kontant: Franks och Torous (1994) rapporterar i sin studie att endast 29% av utdelningen i Chapter 11 var kontant betalning, medan resterande 71% var i form av lån till eller aktier i företaget.

I USA finns också ett "Chapter 7", vilket påminner om det svenska konkursförfarandet. I Chapter 7 försäljs företags tillgångar i en auktion, och skulderna betalas med de likvida medel som auktionen inbringar. Ett företag som försätts i konkurs har alltid möjlighet att välja under vilket förfarande konkursen skall administreras. Således är det rimligt att anta att alla företag med minsta chans till en lyckad restrukturerings i USA väljer att administreras under Chapter 11, medan bolagen i Sverige i praktiken saknar motsvarande alternativ. Statistiken visar att mer än hälften av alla aktiebolag och samtliga börsnoterade bolag som söker konkurs i USA påbörjar ett Chapter 11-förfarande.

Effektiviteten hos USAs Chapter 11 har debatterats flitigt på senare år. Klart är att röstreglerna och möjligheten till cram-down minskar eventuella free-rider problem som kan finnas vid förhandlingarna. Genom att räntebetalningarna stoppas, vilket förbättrar företags likviditet, samt möjligheterna till ny finansiering med prioritet har företaget möjlighet att öka sina investeringar i Chapter 11. Om detta är bra eller dåligt beror på vilka ineffektiviteter företaget har i sina investeringsbeslut (se introduktionen). T.ex. förbättras effektiviteten för företag med ett underinvesteringsproblem, medan

det ökar ineffektiviteten hos ett företag som har ett överinvesteringsproblem, d.v.s. som före konkurs genomförde projekt med negativt nuvärde i hopp om att kunna undvika konkurs vid ett lyckosamt utfall. Till försvar för att aktieägarna i regel får behålla en stor del av företagets aktiekapital, till trots för att fordringsägarna inte fått fullt betalt, framförs att detta gör dem villiga att gå i konkurs relativt "tidigt" (så att verksamheten kan omorganiseras innan problemen har blivit alltför allvarliga), samt att inte genomföra investeringar som minskar företagets totala värde.

Chapter 11 har anklagats för att tillåta ekonomiskt olönsamma företag att fortsätta sin verksamhet alldeles för länge. Som skräckexempel framförs ibland Eastern Airlines, vilket tilläts bedriva sin verksamhet under skydd av Chapter 11 i flera år, medan värdet på tillgångarna blev allt lägre samtidigt som VDs lön höjdes vid flera tillfällen. Förutom snedvriden konkurrens resulterade förfarandet i miljard-förluster för fordringsägarna, jämfört med den finansiella situation som rådde då företaget försattes i konkurs.¹⁷

Ett flertal empiriska studier har kartlagt vad som sker i Chapter 11.¹⁸ Förfarandet är långdraget och det tar i genomsnitt 2-3 år tills bolagets restruktureringsplan är godkänd och företaget kan lämna konkurs. Cirka tre fjärdedelar av bolagen fortsätter sin verksamhet efter konkurs, medan en

¹⁷Se Weiss och Wruck (1997).

¹⁸Se t.ex. Franks och Torous (1989, 1994), Gilson, John och Lang (1990), Weiss (1990), LoPucki och Whitford (1993), Hotchkiss (1995) och Betker (1997).

fjärdedel av företagen likvideras. Vid utdelning är avvikelser från absolut prioritet mycket vanliga, framför allt för oprioriterade fordringsägare till förmån för aktieägare. Detta kan delvis bero på att det är svårt att värdera de värdepapper som erläggs som betalning, men beskrivs också av Franks och Torous (1989) som en betalning för aktieägarnas option att kunna förlänga förfarandet. Betker (1995b) visar att avvikelser från prioritetsordningen till förmån för aktieägarna minskar då fordringsägarna har mer inflytande över bolaget och förhandlingarna, t.ex. genom att ha utsett egna styrelsemedlemmar eller då VDs ersättning är knuten till fordringsägarnas utdelning. Vidare visar Eberhardt, Moore och Roenfeldt (1990) att aktiemarknaden vid konkurs korrekt prissätter dessa senare avvikelser från absolut prioritet.

De företag som kommer ut ur Chapter 11 är i regel högre skuldsatta än median-företaget i branschen. Hotchkiss (1995) visar att företag som kommer ut från Chapter 11 har dålig lönsamhet relativt andra bolag i branschen, och över 40% av företagen har ett negativt rörelseresultat under flera år efteråt. Hon finner vidare att rörelseresultatet är negativt korrelerat med hur länge den gamla ledningen är kvar i företaget. Inom 5 år har en tredjedel av företagen i hennes undersökning på nytt fått allvarliga finansiella problem och gått i konkurs en andra gång eller fått till stånd en frivillig uppgörelse med fordringsägarna. Alderson och Betker (1995) jämför en portfölj med bolag som kommer ut ur Chapter 11 med en investering i S&P500-index (ett index för aktieutvecklingen hos de största börsnoterade bolagen i USA) och

finner att portföljen med före detta konkursbolag ger en högre avkastning än nämnda index. Svagheten med denna studie är emellertid att den inte beaktar att de två investeringarna sannolikt har mycket olika riskprofil.

Vid en restrukturerings i Chapter 11 sker ofta en avsevärd förändring av ägarbild. Gilson (1990) visar att en väsentlig del av aktiekapitalet efter ett avslutat Chapter 11-förfarande ofta hamnar hos långivarna: i hans undersökning fick banker 36% av företagets aktiekapital och utsåg ofta sina egna representanter i styrelsen. Det är också mycket stor omsättning på styrelsemedlemmar: hälften av de som satt i styrelsen före konkurs var kvar i styrelsen då restruktureringen var genomförd. Rent generellt leder rekonstruktionsförfarandet i Chapter 11 till att aktieägandet blir mer koncentrerat, med några få stora ägare kvar då företaget kommer ut ur konkurs.

Trots det som sagts om att Chapter 11 är orienterad mot ledning och aktieägare, är konkurs personlig kostsam för ledningen. Omsättningen på företagsledare är stor: av de som var VD i bolagen två år före konkurs fanns endast en tredjedel kvar som VD då företaget kom ut ur Chapter 11.¹⁹ Ingen av de som slutade återfanns heller som VD för något annat börsnoterat bolag under de tre år som följde deras avgång. VD-bytet är många gånger initierat av företagets banker. De VD:ar som stannar kvar får ofta stora lönesänkningar och deras ersättning görs mer känslig för företagets resultat.

¹⁹Gilson (1989) och Hotchkiss (1995).

Vidare får nya VDar som rekryteras internt i genomsnitt 35% lägre lön än sin föregångare, medan VDar rekryterade externt i genomsnitt får 35% högre lön.²⁰

Sammanfattningsvis kan sägas om Chapter 11 att företag tillbringar flera år i konkurs, att omsättningen på företagsledare är relativt stor, att VDar som stannar i bolaget oftast får kraftiga lönesänkningar, att en hög andel av de företag som kommer ut får finansiella problem igen, och att avvikelser ofta sker från regeln om absolut prioritet.

4.6.3 Trender

Under senare delen av 1980-talet började en variant mellan frivilliga uppgörelser och konkurs att förekomma, s.k. "pre-packaged bankruptcies" (eller "prepacks"). Vid en prepack biläggs till konkursansökan en framförhandlad restruktureringsplan, vilken många gånger redan är röstad om. I jämförelse med en frivillig uppgörelse innebär en prepack att bolaget omfattas av röstreglerna samt erbjuds skattefördelar i Chapter 11. Skattefördelarna avser dels att nedskrivning av skulder under inga omständigheter är en beskattningsbar vinst i Chapter 11, medan den beskattas vid en privat överenskommelse i det fall bolaget anses bli solvent, dels att gamla förlustavdrag kan gå förlorade vid en frivillig uppgörelse (men inte i Chapter 11) i det fall mer än halva aktiekapitalet byter

²⁰Gilson och Vetsuypens (1993).

ägare. I jämförelse med ett traditionellt Chapter 11-förfarande är prepacks betydligt billigare både i form av direkta kostnader, vilka i prepacks i genomsnitt uppskattas till ca 2,5% av balansomslutningen, och tid i konkurs: en prepack tar i genomsnitt ca 1,5 år att sätta upp, men är endast ca 2 månader i konkurs.²¹ Intressant nog är LBOs med sin speciella skuld- och ägarstruktur en typisk kandidat för prepacks.

Redan under 1992 var så mycket som var fjärde konkursansökan av ett amerikanskt börsnoterat företag en prepack. Incitamenten för en prepack relativt en privat uppgörelse har dessutom ökat sedan dess till följd av ett uppmärksammat domslut 1992 i det s.k. LTV-fallet. Domen innebar att fordringsägare som frivilligt gått med på en nedskrivning av lånebeloppet, endast fick tillgodoräkna sig det nya, lägre beloppet som fordran vid en inom kort påföljande konkurs. Till följd, har risken ökat för långivare med att göra eftergifter i en privat uppgörelse utanför domstol.

En annan intressant marknadsutveckling i USA, som nämnts ovan, är vulture funds, vilka specialiserar sig på handel av värdepapper från företag i finansiell kris. Vulture funds köper i typiska fall upp större block av fordringar ofta i flera olika klasser, i syfte t.ex. att påverka utgången vid omröstning av en restruktureringsplan i Chapter 11. Dessa fonder tar ofta en aktiv roll i målföretagets styrelse och ledning, och i ett stort antal fall får de, framför

²¹Se Betker (1995a) och Tashjian, Lease och McConnell (1996).

allt via förvärv av banklån med hög prioritet, kontroll över företaget efter avslutad konkurs.²²

4.6.4 Hypotetiska konkursförfaranden

Vid kritik av Chapter 11, har betonats nyttan av att använda marknadens värdering av ett företag i konkurs för att bestämma utdelningen till fordringsägare. Roe (1983) har t.ex. föreslagit att företaget i konkurs skall finansieras med 100% nytt eget kapital. För att fastställa hur mycket av detta nya aktiekapital som företagets kreditorer skall få i utdelning, menar Roe att 10% av aktierna först skall säljas på marknaden. Baserat på marknadens prissättning av den utsålda andelen kan värdet på företaget estimeras. Roe föreslår vidare att fordringsägarna sedan betalas med de nya aktierna i bolaget i enlighet med prioriteten hos deras fordran. I mitt tycke finns det stora problem med Roe's förslag; dels är jag tveksam till om ett sådant förfarande skulle ge företaget en sund finansiell struktur eller god ägarstruktur, dels måste likviditeten i marknaden vara tillräcklig för att alla mindre, individuella fordringsägare som inte vill bli sittande med aktier skall kunna sälja dem utan förlust.

Bebchuk (1988) kritiserar Roe's förslag med motiveringen att marknaden inte korrekt kommer att prissätta den initiala andel aktier som säljs för

²²Hotchkiss och Mooradian (1997).

att fastställa bolagets värde. Han föreslår istället att alla fordringsägare som utdelning i konkurs ska få optioner på företaget, vilka har ett lösenpris motsvarande det totala beloppet på samtliga lån med högre prioritet. Företaget överlämnas till den låneklass som har högst prioritet (klass A). Tanken är att fordringsägarna i den klass lån som har näst högst prioritet (klass B) skall avgöra om företaget är värt mer än värdet på lånet till klass A. Ifall de anser verksamheten vara mer värd, köper de bolaget av klass A och klass A har därmed fått full utdelning i konkursen. På motsvarande vis kan sedan klassen lån med tredje högst prioritet (klass C) bestämma om de skall köpa företaget av klass B till ett pris av klass B's totala lånebelopp plus klass A's totala lånebelopp, vilket medför att klass B också får full utdelning, o.s.v. Bebchuk argumenterar för att nyttan i ett sådant system är att värderingen av bolaget alltid görs av den som äger en fordran med restvärde.

Själv är jag tveksam till hans förslag som något annat än en intellektuell övning. Bebchuk utelämnar all diskussion om hur olika fordringsägare inom en klass skall kunna komma överens om värdet av företaget eller varför en sådan värdering skulle vara mer korrekt och mindre kostsam än marknadens värdering. Liksom Roe (1983) saknas dessutom en diskussion om implikationerna av en bristande marknadslikviditet både för ägarstruktur och utdelning till mindre fordringsägare.

4.6.5 Konkursförfarande med obligatorisk auktion

Sverige har ett konkursförfarande i vilket företagets tillgångar säljs i en auktion och i realiteten saknas kraftfulla rekonstruktionsalternativ typ USAs Chapter 11.²³ När ett bolag försätts i konkurs tar en oberoende konkursförvaltare över ansvaret för verksamheten. Han arrangerar en auktion, genom vilken företagets tillgångar säljs mot kontant betalning. Kreditorerna betalas sedan kontant i enlighet med gällande prioritetsregler.

Till trots för att Chapter 11-förfarandet har visat sig vara utdraget, kostsamt och kanske låter för många företag överleva, samt att mycket liten forskning finns som behandlar skillnaden mellan ett auktionsförfarande i konkurs och ett rekonstruktionsförfarande, pågår en trend i hela Västeuropa mot att införa regler för rekonstruktion i konkurs liknande Chapter 11. Tyskland, Frankrike, Storbritanien, Norge, Finland och Sverige kan nämnas som exempel på länder som har förändrat eller utreder förändringar av konkurslagstiftningen i riktning mot USAs Chapter 11.

Förspråkare för ett auktionsförfarande i konkurs pekar på fördelen med att använda marknadens värdering av tillgångarna, jämfört med en oin-

²³Det svenska ackordet omfattar bara oprioriterade skulder och ger företaget ett mycket svagt skydd jämfört med USA's Chapter 11. I realiteten används ackord bara av ett mycket litet antal företag. I ett preliminärt arbete finner Eckbo och Thorburn (1997) att av 1.650 svenska företag med finansiella problem 1991 gick 300 i konkurs, medan endast 4 gjorde ett offentligt ackord.

tresserad konkursdomstol som i Chapter 11.²⁴ Auktionen separerar dessutom beslutet om tillgångarnas användning från beslutet om vad de är värda. Genom auktionen bestäms den framtida användningen av tillgångarna av den budgivare som värderar dessa högst (och som har satsat sina egna pengar), medan alla fordringsägare till ett företag i Chapter 11 också skall komma överens om vad som skall ske med verksamheten. Slutligen underlättar den kontanta betalningen i auktionen en betalning av fordringarna i enlighet med gällande prioritetsregler.

Opponenterna till auktioner i konkurs menar att de kan förstöra värden genom att tvinga fram en försäljning under marknadspriset (brandförsäljning) och därmed överföra kontrollen över tillgångarna till ägare som inte använder dem på bästa sätt. Dessutom framförs ibland argumentet att ett auktionsförfarande är så strängt mot företagsledningen att denna fördröjer konkurs så länge som möjligt. Detta i sin tur medför ineffektiva investeringsbeslut före konkurs som leder till kapitalförstöring.

I Thorburn (1998a,b) studerar jag 263 svenska konkurser under åren 1988-1991 av bolag med över 20 anställda. Syftet är att empiriskt undersöka effekten av ett auktionsförfarande samt att jämföra resultaten med studier av Chapter 11. Min slutsats är att en obligatorisk auktion i konkurs framstår som ett ekonomiskt relativt effektivt sätt att restrukturerar företag i finan-

²⁴Se t.ex. Baird (1986), Jensen (1991) och Bradley och Rosenzweig (1992).

siell kris. I Thorburn (1998a) finner jag att de direkta konkurskostnaderna (justerade för företagets storlek) är lika stora eller lägre i det svenska auktionsförfarandet än i Chapter 11 och att de indirekta kostnaderna troligen är avsevärt lägre, då den tid företagen är i konkurs är betydligt kortare i Sverige (ca. 1-2 månader vs. 2-3 år). Det finns inga indikationer på att de svenska företagen i högre utsträckning än bolag i Chapter 11 fördröjer sin konkurs: bolagen har ungefär samma finansiella nyckeltal ett år före konkurs, andelen företag som fortsätter sin verksamhet efter konkurs är ungefär densamma, och utdelningen till fordringsägare är ungefär lika i de två systemen.

I Thorburn (1998a) visas också att auktionspremiem (definierat som auktionspriset delat med konkursförvaltarens uppskattning av tillgångarnas värde) minskar med tillgångarnas grad av bransch-specificitet. Förvånande nog tenderar auktionspremiem att vara högre i branscher med finansiella problem, vilket motsäger hypotesen att auktionen kan tvinga fram en brandförsäljning till underpris. Detta resultat kan möjligen vara ett resultat av att konkursförvaltaren ökar sin försäljningsansträngning för att motverka negativa effekter på efterfrågan till följd av dålig likviditet i branschen (vilket också visar sig i högre direkta kostnader, men oförändrad utdelning, då branschen är finansiellt pressad). Slutligen finner jag i Thorburn (1998b) att det är en relativt hög omsättning bland VDar hos de svenska konkursbolagen jämfört med Chapter 11, vilket indikerar att auktionen på ett överlägset sätt utnyttjar marknaden för företagskontroll för att disciplinera företagsledningen. Dessutom visar sig

svenska företag ha ett relativt gott rörelseresultat (jämfört med branchen som helhet) under en femårs-period efter konkursauktionen.

4.7 Slutord

Sammanfattningsvis kan sägas att det är långt kvar tills vi med någon större säkerhet kan uttala oss om vilken typ av konkursförfarande som på bästa och billigaste sätt rekonstruerar ett företag i svår finansiell kris. Det är en gåta varför lagstiftare generellt verkar vara så förtjusta i USAs Chapter 11, till trots för de forskningsresultat som pekar på många av dess brister och den ringa kunskap som finns om effekterna av andra typer av konkursförfaranden.

För mig personligen framstår ett marknadsbaserat förfarande som det överlägset bästa för att skilja ut livskraftiga företag för fortsatt drift ifrån ekonomiskt olönsamma verksamheter som bör avslutas (och tillgångarna användas i alternativa verksamheter), jämfört med ett segdraget förhandlande à la Chapter 11. Däremot finns det nog utrymme för öka likviditeten i konkursauktionen och därmed förbättra både prissättningen och allokeringen av tillgångarna, utan att öka kostnaderna. Auktionen skulle kunna vara mer strukturerad och konkursföretagen göras tillgängliga för en vidare krets av potentiella köpare, t.ex. genom att ett standardiserat prospekt upprättas av en investmentbank och att informationen sprids via internet. Låt oss hoppas att vi snart får se en konkursbörs i Sverige där marknadskrafterna till

fullo utnyttjas och tillåts bestämma över konkursföretagens öde.

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Appendix

Curriculum Vitae Karin S. Thorburn

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March 1998

Born 1964 in Sweden. 2 children, 5 and 6 years.

1. EDUCATION

1998: Ph.D. (expected) in Finance, Stockholm School of Economics.
Dissertation: "Cash Auction Bankruptcy and Corporate Restructuring".

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- B. Espen Eckbo, Gösta Olson Professor of Finance (finbee@hhs.se)
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1987: MBA ("Civilekonom"), Stockholm School of Economics, majoring in Economics and Finance.

1986: Exchange student in the second year of the MBA program at the Wharton School of Business, University of Pennsylvania.

2. FELLOWSHIPS

- Doctoral student fellowship, Department of Finance, Stockholm School of Economics.
- NÖDFOR fellowship in 1994 and 1997, for research in corporate bankruptcy.
- Peter Wallenberg's scholarship in 1986 for international industrial entrepreneurship.

3. RESEARCH

Research and teaching interests

Empirical and theoretical corporate finance (corporate bankruptcy and restructuring, takeovers, corporate governance and managerial compensation).

Journal publications

Thorburn, Karin S., 1997, Comment on "Top management compensation and the structure of the board of directors in commercial banks", *European Finance Review* 1 (2), 261-264.

Book chapters

Thorburn, Karin S., 1997, Företag i finansiell kris och konkurs, in "Från optionsprissättning till konkurslagstiftning", EFI's annual book, Stockholm School of Economics, Stockholm, 15-30.

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Working papers

Thorburn, Karin S., 1998, Cash auction bankruptcy: Costs, recovery rates and auction premiums, working paper, Stockholm School of Economics ('revise and resubmit' at the *Journal of Financial Economics*).

Thorburn, Karin S., 1998, Managerial compensation and corporate performance following cash auction bankruptcy, working paper, Stockholm School of Economics.

Eckbo, B. Espen and Karin S. Thorburn, 1998, Gains to bidder firms revisited, working paper, Stockholm School of Economics. (under review at the *Journal of Financial and Quantitative Analysis*).

Other work in progress

Eckbo, B. Espen and Karin S. Thorburn, 1997, The resolution of financial distress in a cash auction bankruptcy environment, mimeo, Stockholm School of Economics.

Research grant reports

Strömberg, Per and Karin S. Thorburn, 1996, An empirical examination of Swedish corporations in liquidation bankruptcy, EFI research grant report, Stockholm School of Economics.

4. PAPER PRESENTATIONS

Finance Workshops

Presented working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums" at:

- University of Vienna (November 1996)
- The Norwegian School of Economics and Business Administration (December 1996, April 1998)
- The Norwegian School of Management (November 1997)
- The Stockholm School of Economics (November 1997)
- University of Illinois (January 1998)
- Dartmouth College (January 1998)
- Duke University (January 1998)
- Harvard University (January 1998)
- University of Toronto (January 1998)
- Pennsylvania State University (February 1998)
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Annual Academic Association Meetings

1998: *Western Finance Association Meeting*, Monterrey, U.S.A., To present working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums".

1997: *European Finance Association Meeting*, Vienna, Austria. Presented working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums".

Discussant for "Bankruptcy and workouts among large firms in Italy: two waves of financial distress", by Roberto

Barontini, Massimo Belcredi, Lorenzo Caprio and Alberto Floreani.

- 1996: *European Finance Association Meeting*, Oslo, Norway. Presented working paper "Gains to bidder firms revisited", coauthored with B. Espen Eckbo.

Discussant at the European Finance Review Symposium for "Top management compensation and the structure of the board of directors in commercial banks", by Lazarus Angbazo and Narayanan Ranga.

- 1995: *European Finance Association Meeting*, Milan, Italy. Discussant for "Prepacks: An empirical analysis of prepackaged bankruptcies" by Elizabeth Tashjian, Ronald C. Lease and John J. McConnell.

- 1994: *European Finance Association Meeting*, Brussels, Belgium. Discussant for "The design of bankruptcy law: A case for management bias in bankruptcy renegotiations", by Elazar Berkovitch, Ronen Israel and Jamie Zender.

Invited Conferences

- 1998: *Utah Winter Finance Conference*, Salt Lake City, USA. Presented working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums".

Esbrit and Riksbanken's Jubileumsfond Seminar on Bankruptcy. Presented working papers "Cash auction bankruptcy: Costs, recovery rates and auction premiums" and "Managerial compensation and corporate performance following cash auction bankruptcy".

Discussant for "Does a reorganization law improve the efficiency of the insolvency law? The Finnish example" by Stefan Sundgren.

- 1997: *The Norwegian Research Council's Seminar on Economic Crime*. Presented working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums".

Stockholm International Seminar on Risk Behavior and Risk Management, Stockholm, Sweden. Presented working paper "Cash auction bankruptcy: Costs, recovery rates and auction premiums".

- 1993: *Financial Distress Workshop*, Sjöåkra, Sweden. Presented working paper "Large debtholders and the restructuring of financially distressed firms", coauthored with Clas Bergström and Peter Högfeldt.

5. TEACHING EXPERIENCE

- 1996-97: Guest lectures on corporate bankruptcy in Ph.D. courses at the Norwegian School of Management, Oslo, and at the Stockholm School of Economics. Guest lectures in MBA courses at the Norwegian Financial Analysts Association.
- 1992-93: Teaching Assistant (giving lectures) in dynamical systems and dynamic optimization, Ph.D. course at the Stockholm University.
- 1992-93: Teaching Assistant (giving lectures) in financial markets at the undergraduate level, Department of Finance, Stockholm School of Economics.

1985-87: Teaching Assistant (giving lectures) in mathematics and statistics at the undergraduate level, Department of Statistics, Stockholm School of Economics.

6. OTHER EXPERIENCE

Contract research

1997: Performed contract research for the Swedish Ministry of Justice (JU 1996:02). Report entitled An empirical analysis of recovery rates in Swedish bankruptcies.

Advisory roles

1991-97: Member of the Board of Directors for Uppsala Bostadsrättsföreningars Centraförening e.k. för., a company with 35 employees and a turnover of appr. \$ 2 million.

1995-96: Member of the Center for Business and Policy Studies' (SNS) reference group for the report "Creating an effective Swedish reconstruction law" by Professor Theodore Eisenberg, Cornell Law School.

Business employment

1993-94: *ABB Aros Stockbroker AB*, Sweden.
Corporate finance assignments on a consulting basis.

1989-91: *ABB Financial Services AB*, Sweden.
Business development and special projects at the holding company of the ABB Financial Services Group, comprising some 40 companies world wide.

1987-89: *ABB Treasury Center (Sweden) AB*, Sweden.

Consultant and from March 1989 Senior Consultant at
ABB Treasury Consulting.

1987: *SHB Kapitalplacering AB, Sweden.*
Money market analyst at the mutual fund manager of
Svenska Handelsbanken.

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1994

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Normark, P., Medlemsägda företag. Organisering av strategiska förändringar.

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Thodenius, B., Användningen av ledningsinformationssystem i Sverige: Lägesbild 1993. Research Report.

Sjöholm, G., Redovisningsmått vid bolagisering. Utformning och effekter.

Wijkström, F., Det organiserade ideella arbetet i Sverige. Research Report.

Wirsäll, N-E., Holmlöv, P.G., Den nyckfulle Svensson. Reflektioner efter ett seminarium om strategier för handeln. Fonden för Handels- och Distributions-forskning, EFI.

1995

Becker, T., Essays on Stochastic Fiscal Policy, Public Debt and Private Consumption.

Blomberg, J., Ordning och kaos i projekt-samarbete - en socialfenomenologisk upplösning av en organisationsteoretisk paradox.

Brodin, B., Lundkvist, L., Sjöstrand, S-E., Östman, L., Styrelsearbete i koncerner
Brännström, T., Bias Approximation and Reduction in Vector Autoregressive Models. Research Report.

Ekonomisk politik i omvandling. red. Jonung, L.

Gunnarsson, J., Wahlund, R., Hushållens finansiella strategier.

En explorativ studie.

Fonden för Handels- och Distributions-forskning, EFI.

Höök, P., Chefsutveckling ur könsperspektiv - Mentorskap och nätverk på Vattenfall - Research Report.
Levin, J., Olsson, P., Looking Beyond the Horizon and Other Issues in Company Valuation. Research Report.
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Sandberg, J., Statistisk metod - dess vetenskapliga hemvist, grundläggande principer och möjligheter inom samhällsvetenskapen. Research Report.
Sandberg, J., How Do We Justify Knowledge Produced by Interpretative Approaches? Research Report.
Schuster, W., Redovisning av konvertibla skuldebrev och konvertibla vinstandelsbevis - klassificering och värdering.
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Söderqvist, T., Benefit Estimation in the Case of Nonmarket Goods. Four Essays on Reductions of Health Risks Due to Residential Radon Radiation.
Thorén, B., Användning av information vid ekonomisk styrning - månadsrapporter och andra informationskällor.

1996

Advancing your Business. People and Information Systems in Concert. red. Lundeberg, M., Sundgren, B.
Att föra verksamheten framåt. Människor och informationssystem i samverkan. red. Lundeberg, M., Sundgren, B.
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Andersson, P., Concurrence, Transition and Evolution - Perspectives of Industrial Marketing Change Processes.
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Strömberg, P., Thorburn, K., An Empirical Investigation of Swedish Corporations in Liquidation Bankruptcy. Research Report.
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Thodenius, B., Användningen av ledningsinformationssystem i Sverige: Lägesbild 1995. Research Report.

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Wijkström, F., Den svenska ideella sektorn och pengarna. Research Report.

Örtendahl, M., Health and Time - A Problem of Discounting.

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Alexius, A., Essays on Exchange Rates, Prices and Interest Rates.

Andersson, B., Essays on the Swedish Electricity Market.

Berggren, N., Essays in Constitutional Economics.

Ericsson, J., Credit Risk in Corporate Securities and Derivatives. Valuation and Optimal Capital Structure Choice.

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Från optionsprissättning till konkurslagstiftning. red. Bergström, C., Björk, T. **Hagerud, G.E.**, A New Non-Linear GARCH Model.

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Sällström, S., On the Dynamics of Price Quality.

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Thorén, B., Berg-Surwee, U., Områdesarbete i Östra Hökarängen - ett försök att studera effekter av decentralisering.

Zhang Gang., Chinese Rural Enterprises Between Plan and Market.

Åhlström, P., Sequences in the Process of Adopting Lean Production.

Åkesson, G., Företagsledning i strategiskt vakuum. Om aktörer och förändringsprocesser.

Åsbrink, S., Nonlinearities and Regime Shifts in Financial Time Series.

1998

Gredenhoff, M., Bootstrap Inference in Time Series Econometrics.

Johansson, S., Savings Investment, and Economic Reforms in Developing Countries.

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Wijkström, F., The Non-Profit Sector in Sweden.

Zethraeus, N., Essays on Economic Evaluation in Health Care. Evaluation of Hormone Replacement Therapy and Uncertainty in Economic Evaluations.

