Bankruptcy Auctions: Costs, debt recovery, and firm survival[1]

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Abstract

This paper provides large-sample evidence on the Swedish auction bankruptcy system. Compared to U.S. Chapter 11, bankruptcy auctions are substantially quicker and have lower costs. Three-quarters of the firms survive the auction as going concern, which is similar to Chapter 11 survival rates. Also, based on market values, auctions produce total debt recovery rates that are comparable to recovery rates in Chapter 11 reorganizations. The cash settlement enforces adherence to absolute priority rules. Overall, the evidence provides little support for the view that auction bankruptcy causes managers to delay filing relative to what happens under the U.S. reorganization code.

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. Managers are thus encouraged to select a court-supervised debt renegotiation under Chapter 11 rather than file for liquidation in Chapter 7. In contrast, the Swedish bankruptcy code, which constitutes the empirical laboratory of this study, has no effective reorganization provisions and all bankruptcy filings are resolved through a public auction requiring payment in cash. In this auction, the firm is either liquidated piecemeal or survives as a going concern. The auction is run by an independent, court-appointed trustee, and incumbent management and shareholders immediately lose their control rights.

The relative efficiency of court-supervised reorganizations and bankruptcy auctions is a largely unexplored empirical issue and systematic evidence on the outcomes of auction bankruptcy is sparse.[1] In this study, I present evidence on 263 small-firm bankruptcy auctions in Sweden and perform a systematic comparison with extant evidence on Chapter 11 cases.[2] To enhance comparability with the generally large-firm based U.S. evidence, the analysis includes control variables reflecting firm size, financing- and ownership structure. The paper further adds to the bankruptcy literature by including controls for industry distress, asset uniqueness, and operating profitability relative to the filing firm's competitors. Furthermore, the paper is the first to single out prepackaged bankruptcy filings under an auction system, which I label "auction prepacks".

There is an ongoing debate as to the merits of an auction bankruptcy system. Proponents point to the benefits of market valuation over court-administered value assessment.[3] Sale to the

[1] Ravid and Sundgren (1998) examine 72 bankruptcy auctions in Finland.

[2] There is no comparable evidence on Chapter 7 cases. Also, although 99.5% of all Chapter 11 filings are by small, privately held firms of the type studied here (Altman, 1993), available studies of Chapter 11 bankruptcies focus on large, publicly traded companies. Note also that the prospect of empirical biases due to filing firms' self-selection into alternative bankruptcy chapters (such as Chapter 11 v. Chapter 7) is not a concern in the Swedish, single-chapter environment.

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

highest-valuation bidder also reduces the scope for agency conflicts and disagreement among existing claimholders, and thus lowers bankruptcy costs. Moreover, the cash-payment requirement allows settlement of debt claims strictly according to absolute priority rules (APR). On the other hand, opponents of the auction system warn that it is likely to induce delayed filing and costly pre-filing asset substitution due to adverse managerial incentives and agency conflicts between equity- and debtholders. Moreover, it has been argued that auctions involve a substantial risk of losses due to asset "fire-sales".[4]

The empirical analysis below addresses this debate by focusing on three important characteristics of the outcomes of bankruptcy auctions. First, I provide evidence on *firm survival rates*, i.e., to what extent the auction system promotes continuation of the bankrupt firm as a going concern. Of the 263 cases, 75% survive as going concern, either through pre-filing auction prepack (20%) or through post-filing auction sale. In the remaining 25% of the cases, the firm's assets are liquidated piecemeal. The 75% survival rate is similar to the percentage of small firms that survive as going concern through Chapter 11 proceedings, as reported by White (1984). I also find that, as expected, the probability of going-concern sale increases with the proportion of intangible assets. Auction prepacks are more likely to occur the larger the firm and, interestingly, when the firm is run by an owner-manager.[5] Shareholders have few incentives to initiate a prepack (their equity claims are eradicated at that point), however, owner-managers may in fact be concerned with their candidacy for being rehired by the new owners.

Second, I provide evidence on *bankruptcy costs*. Direct costs in percent of pre-filing assets average 6.4% across the total sample (ex-prepacks) and 3.7% for the one-third largest firms. Auction prepacks are generally low-cost (2.5%). Regressions indicate that direct costs have a significant fixed component (thus the size-effect) and are lower for piecemeal liquidations. Interestingly, direct costs are increasing in industry distress. One possible explanation for this result is that the trustee increases marketing efforts in response to lower auction demand induced by industry distress. The direct cost estimate for the largest firms in my sample correspond closely to the 3.6% average cost

[4] E.g., Shleifer and Vishny (1992), Aghion, Hart and Moore (1994), Berkovitch and Israel (1995) and White (1995).
[5] For evidence on the effects of auction bankruptcy on CEO turnover and compensation, see Thorburn (1998).

of large-firm Chapter 11 cases reported by Weiss (1990) and Betker (1997).[6] Moreover, there is reason to believe that *total* (the sum of direct and indirect) costs are lower in Sweden. Indirect costs increase with the length of time spent in bankruptcy, and Swedish bankruptcy auctions are unquestionably speedy: on average 2 months from filing to sale as going concern. In contrast, it typically takes about 2 *years* to resolve small-firm reorganizations under Chapter 11.[7]

Third, I report evidence on *debt recovery rates*. Importantly, the cash settlement from the auction yields the market value of the recovery directly. Overall, debtholders recover 35% of the face value of their claims, with a 40% recovery rate for going concern sales. In comparison, Franks and Torous (1994) provide market-value estimates for a subsample of 12 Chapter 11 cases (all successful reorganizations) and find that the median overall recovery is 41%.[8] I find that secured- and bank debt receive on average 69%, while junior creditors recover only 2% on average. The distribution of recovery rates is skewed, with a median of 82% and 0%, respectively. As expected, recovery rates are higher in going-concern sales than in piecemeal liquidations, lower the greater the fraction of intangible assets, and lower in years with a general economic downturn. Interestingly, secured debtholders recover more when the old owner buys back the firm and when the old bank finances the buyer in the auction. While not pursued here, this evidence suggests that the decision to repurchase/refinance the bankrupt firm in part reflects private information about firm value.

Overall, this study concludes that the Swedish auction bankruptcy system promotes firm survival rates, bankruptcy costs and debt recovery rates which compare favorably with the reorganization system in the U.S. Moreover, the evidence provides little support for the view that auction bankruptcy causes managers to significantly delay filing at the detriment of firms' going concern value relative to what is observed under the U.S. reorganization code.

The rest of 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

[6] The 3.6% is computed as a sample-size weighted average across the two studies.

[7] See, e.g., Flynn (1989).

[8] This is the only study that I am aware of that reports recovery rates based entirely on market values of claims distributed in the Chapter 11 settlement. Franks and Torous (1994) also report recovery rates for their full sample of 38 firms, largely using face value of debt claims. In light of the default rates following Chapter 11 documented by Hotchkiss (1995), debt face values significantly exceed debt market values. With face values, debt recovery rates have a median of 51% in Chapter 11.

venue and firm survival (auction prepack, going concern sale, piecemeal liquidation). Section 4 examines direct bankruptcy costs, while debt recovery rates are discussed in Section 5. Section 6 concludes the paper.

2 Data and sample characteristics

2.1 Highlights of the Swedish auction bankruptcy code

Table 1 summarizes central characteristics of Swedish auction bankruptcy and shows the comparable rules under Chapter 11 in the U.S.. In Swedish bankruptcy, the incumbent management team is immediately replaced by an independent, court-appointed trustee with a fiduciary responsibility towards creditors. The trustee organizes the sale of the firm in an open ascending (English) auction, either piecemeal or as a going concern. The auction typically attracts 3-4 bidders and payments are restricted to cash only. The bulk of cash represents bank debt financing provided to the buying corporation, much like in a leveraged buyout. As under Chapter 11, the operations of a firm in auction bankruptcy are protected through automatic stay of creditors and debtor-in-possession financing.[9] Interestingly, while new debt financing is legal under the code, it is never observed.

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 incentives to fulfill his or her responsibility to the filing firm's creditors. This is in contrast to the U.S. reorganization code which provides a strong protection of managers and equityholders. During the Chapter 11 proceeding, incumbent managers remain in control of the firm. Management has an exclusive right to propose a reorganization plan during the first four months plus another two months to seek approval of the plan. Moreover, shareholders participate in the voting of the proposed plan and are often allowed to retain some equity.

The cash proceeds from the bankruptcy auction are distributed to creditors strictly according to APR. Payment of administrative and advisory costs of the bankruptcy proceeding receive super-

[9] Secured creditors have the right to seize collateral that currently is in their physical possession. This type of possession is, however, rare.

priority along with operating expenses incurred by the firm while in bankruptcy.[10] Secured claims are entitled to the proceeds from sale of collateral, and any unpaid part of the claim is considered an unsecured claim. The vast majority of firms have so-called "floating-charge" secured claims pledging as collateral the movable property of the firm, defined as operational assets such as machinery, inventory and accounts receivables. Debt claims are paid in the following order: secured claims (including floating-charge secured claims), certain audit claims, tax claims, wage claims and, lastly, unsecured (or junior) claims.[11] Audit, tax and wage claims have statutory priority to the unsecured claims, and are classified as senior claims in this paper.[12]

2.2 Data sources

I analyze a sample of Swedish bankruptcies compiled by Strömberg and Thorburn (1996) that are restricted to firms with at least 20 employees. This sample is identified from UpplysningsCentralen AB's (UC) data base, which contains a total of 1,159 bankruptcy filings from January 1, 1988 through December 31, 1991.[13] Of these 1,159 filings, the sampling procedure eliminates the following cases: 581 firms located outside the selected geographical area;[14] 145 cases which are pending in bankruptcy on June 30, 1995; 59 cases that are related to tax fraud charges; and 111 cases for which the bankruptcy file is either missing or incomplete. In the final sample of 263 firms, 63 firms are liquidated piecemeal and 195 firms are sold as a going concern, while 5 cases have insufficient information to be classified as either a going concern sale or a piecemeal liquidation.[15] In this classification, going concern sale is defined as a joint sale of firm's core assets. Core assets are defined as assets essential for the continued operations, and include inventories, machinery, vehicles, unfinished products, intangible assets, industrial estate, and rental contracts.

[10] The super-priority of operating expenses helps protect firms from being closed down due to negative cash flows.

[11] Swedish priority rules prescribe equal treatment of all unsecured claims. Since firms effectively cannot issue different classes of unsecured debt, I also use the term junior debt for the unsecured claims.

[12] These claims are often referred to as priority claims in U.S. bankruptcy. Note that the Swedish government guarantees the payment of wage claims up to a certain limit, while there is no corresponding guarantee in the U.S.

[13] 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. 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.

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

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

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. Pre-bankruptcy financial statements are obtained from UC. Moreover, UC also provides annual financial statements from the period 1987-1994 for the Swedish population of more than 15,000 firms that had at least 20 employees and which were operating on December 31, 1991. This information is used below to construct industry distress and profitability measures.

The paper extends the original dataset and compiles information on the identity of the financing source (typically a bank) of the buyer in the auction, as well as the stock ownership of the incumbent 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 old bank is identified for 108 cases. CEO stock ownership is compiled by matching the information on management and owners in the bankruptcy file, with board information provided by UC. This matching process produces the stock ownership for 215 CEOs.

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 ownership. 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 at least half of the voting equity. Moreover, 75% of the firms are run by an "owner-manager", defined as a CEO holding 10% or more of the firm's equity, while the remaining firms are managed by an external CEO.

Table 2 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) before filing.

For comparison purposes, Table 2 also presents the corresponding information for much larger, publicly traded U.S. firms that file for Chapter 11, as reported by Weiss (1990), Gilson, John and Lang (1990), Franks and Torous (1994) and Hotchkiss (1995) . 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 sample firms are highly levered with a pre-filing mean debt-to-assets ratio of 92%. Interestingly, this ratio is almost identical to the 91% debt ratio averaged across three Chapter 11 samples. Moreover, reflecting the extensive use of (short-term) bank financing, the Swedish firms have on average only 34% of long-term debt in their capital structure (v. 58% for U.S. firms). Capturing liquidity, the sample firms' current ratio, defined as current assets to short-term debt, is on average 1.39 v. a lower 1.06 for Chapter 11 firms. Also, less than half of sample firms (46%) report negative earnings before interest and taxes (EBIT) in the year prior to filing. This, again, is less than the 62% of firms with negative EBIT in Hotchkiss' (1995) sample of Chapter 11 cases. Overall, the statistics indicate that the firms filing for auction bankruptcy are in a comparable financial condition prior to filing as the firms filing for Chapter 11.

Table 3 shows the sample firms' financial characteristics after filing for bankruptcy. The firms' realized auction value averages $0.8 million (median $0.4 million), and is similar to the book value reported for private U.S. firms in Chapter 11.[16] The auction value, which is reported in the filing documents, is the sum of the total proceeds from the sale of assets in the auction, accounts receivables, and other claims owned by the firm and collected by the trustee. This value is only one-third of the average pre-filing book value of assets reported in Table 2 above, and the difference partly reflects pre-filing asset sales.[17]

Table 3 also provides information on the debt structure of the sample firms and, for comparison, of U.S. firms in Chapter 11. For the average firm in the sample, 39% of the total liabilities is secured debt. This is similar to the 42% mean fraction of secured debt reported by White (1984) for privately

[16] The evidence on privately held firms in Chapter 11 is from LoPucki (1983), White (1984) and Lawless, Ferris, Jayaraman and Makhija (1994). For the evidence on publicly traded firms in Chapter 11, see the references in Table 2, as well as LoPucki and Whitford (1993) and Betker (1997).

[17] The bankruptcy files document that 30% of sample firms sell assets over the two-year period prior to filing.

held firms in Chapter 11. Banks hold just over a third of the debt of firms in auction bankruptcy (mean 36%), of which on average 94% (median 100%) is secured. Thus, the sample firms' 39% mean fraction of secured debt, which includes practically all bank debt, is comparable to the 37% average fraction of secured- and bank debt reported for publicly traded U.S. firms. Moreover, of the Swedish firms' total debt, on average 29% is senior and 33% is unsecured (junior). In comparison, White (1984) reports a lower fraction of senior debt (mean 5%) and a higher fraction of junior debt (mean 54%) for small firms in Chapter 11.

3 Bankruptcy venue and firm survival

3.1 Auction prepacks

Financially distressed firms in Sweden often chose to arrange the sale of the firm as a going concern *prior* to filing for bankruptcy. I label this procedure "prepackaged going concern sale", or simply auction prepack. Auction prepacks mimic the sale of the firm's assets that otherwise takes place after filing for bankruptcy.[18] The prepack agreement must be approved by the floating-charge claimholders (typically banks) and, following filing, by the bankruptcy trustee. A significant 53 cases (20%) of the total sample are auction prepacks.

Since shareholders receive nothing in either auction prepacks or in regular auction bankruptcy, the selection of the prepack option is driven by the interests of the distressed firm's managers and debtholders.[19] Below, I present evidence of lower direct costs in auction prepacks, which directly benefit debtholders. Thus, managers that successfully promote the auction prepack solution are likely to build reputational value. Consistent with this, Thorburn (1998) shows that CEOs undertaking auction prepacks on average suffer smaller compensation losses when their firms file for bankruptcy.

Table 5 shows the results of a probit regression for the probability that a sample firm selects an auction prepack (PREPACK=1) versus a traditional bankruptcy auction (PREPACK=0). The

[18] The old equityholders retain their claims on the "empty" corporate shell until filing.

[19] The forces behind auction prepacks are potentially different from those behind prepackaged Chapter 11 filings, where shareholders typically retain some equity in the reorganized firm. Also, a significant fraction of Chapter 11 prepacks (approx. 40%) involve failed LBO firms whose unique capital structure (e.g, strip financing) align the incentives of equity- and debtholders, see, e.g., Jensen (1989).

estimation uses 205 observations, of which 35 cases are auction prepacks.[20] The probit model is described by the following equation:

$$Prob(PREPACK) = \alpha_0 + \alpha_1 SECURED + \alpha_2 FLOAT_i + \alpha_3 DISTRESS + \alpha_4 UNIQUE$$
$$+\alpha_5 OWNERMGR + \alpha_6 PROFMARG_i + \alpha_7 SIZE + \alpha_8 INDUSTRY + \epsilon \qquad (1)$$

The explanatory variables are defined in Table 4. 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. Firms with a high proportion of intangibles are more difficult to value. Thus, the expected auction costs are higher the lower the value of SECURED. Also, the value of intangible assets tends to get dissipated if the firm is liquidated piecemeal, which can be avoided through a prepackaged filing. Both arguments predict that SECURED will enter the regression with a negative coefficient, $\alpha_1 < 0$. Since the execution of an auction prepack requires approval by all creditors holding claims secured by floating-charge collateral, the probability of a prepack is expected to decrease with the number of floating-charge claimholders ($\alpha_2 < 0$), here labeled FLOAT.

Industry distress reduces liquidity among competitors and increases the chance for asset fire-sales, thus increasing creditors' incentive to restructure out-of-court. The variable DISTRESS, defined as the fraction of financially distressed firms in the industry, is therefore predicted to produce a positive coefficient, $\alpha_3 > 0$. A related argument is that industry unique assets are of a relatively low value to industry outsiders, i.e., sell at a substantial discount in a piecemeal liquidation. Thus, a variable measuring the fraction of assets that are classified as industry unique (e.g., machinery, equipment, inventory, intangible assets and work in progress) here denoted UNIQUE, is expected to have a positive impact on the likelihood that an auction prepack is selected, i.e., $\alpha_4 > 0$.

The model also includes a binary variable indicating that the firm is run by an owner-manager (OWNERMGR). Owner-managers have both the power and incentives to execute auction prepacks, suggesting that the variable OWNERMGR should enter the regression with a positive sign, $\alpha_5 > 0$. The probit model further contains a measure for the firm's pre-filing operating profitability relative

[20] The regression eliminates 18 auction prepack cases due to missing information on one or more of the explanatory variables. A separate estimation using a subsample of going concern sales produces similar results.

to its industry competitors (PROFMARG), predicted to increase the probability of a prepackaged going concern sale ($\alpha_6 > 0$). Moreover, relatively large firms with multiple divisions may have synergies that are lost in a piecemeal liquidation, hence increasing expected auction costs. The variable SIZE, measured as the log of pre-filing book value of assets, is therefore predicted to produce a positive coefficient, $\alpha_7 > 0$. Finally, the probit estimation adds a number of industry indicators, described by the vector INDUSTRY.

As shown in Table 5, the probability of an auction prepack decreases with SECURED, as expected. Firms with a higher proportion intangibles (and thus high expected bankruptcy costs) are more likely to select the prepack option.[21] Moreover, the coefficient for SIZE is positive, again suggesting that prepackaged bankruptcy is more predominant among firms facing relatively high expected auction costs.[22] As predicted, the variable OWNERMGR produces a positive coefficient $\alpha_5 > 0$. Importantly, this supports the notion that managerial reputational concerns constitute an driving force behind the execution of auction prepacks. The coefficients for FLOAT, UNIQUE and DISTRESS are all insignificant, indicating that the prepack decision is not affected by the number of secured debtholders, asset uniqueness and industry distress. Also, the relative profitability of the firm has no statistically discernible impact for the probability of an auction prepack. Overall, the regression model is significant with a pseudo R^2 of 10.2% and a likelihood ratio test statistic with a p-value of 0.08.

3.2 Firm survival

A central issue concerns whether managers facing auction bankruptcy and possible job losses will delay filing.[23] A delay means that going concern value is destroyed while the restructuring of the firm is postponed, causing the firm to be of relatively low value when entering bankruptcy.[24]

[21] This result is consistent with Gilson, John and Lang (1990), who find that firms restructuring their debt in a private workout tend to have relatively more intangible assets than firms filing for Chapter 11.

[22] In contrast, Betker (1997) reports that firms in traditional Chapter 11 proceedings on average have larger pre-filing assets than firms in Chapter 11 prepacks.

[23] See, e.g., White (1995) and Franks, Nyborg and Torous (1996).

[24] In this paper, more than 90% of the bankruptcy filings are made by the distressed firm. 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.

Managers have potentially fewer incentives to delay a Chapter 11 filing since they retain substantial control rights throughout the bankruptcy proceeding. Thus, the delayed filing hypothesis predicts that firms filing for auction bankruptcy are less likely to survive as going concern than firms filing for Chapter 11.

In the total sample of auction bankruptcies, 75% of firms survive as going concern. Excluding auction prepacks (which are all going concern sales) and focusing on the 205 firms sold by the trustee in a public auction, 63 firms (31%) are liquidated piecemeal and 142 firms (69%) are sold as going concern. The fifth column of Table 5 reports the estimated coefficients in a model for the probability that the firm survives as a going concern as opposed to being liquidated piecemeal in the auction. The estimation uses a subsample of 166 firms sold by the trustee in bankruptcy, of which 49 firms were liquidated piecemeal.[25] The probability of a going concern sale is defined as follows:

$$Prob(SURVIVAL) = \alpha_0 + \alpha_1 SECURED + \alpha_2 CREDITOR + \alpha_3 DISTRESS + \alpha_4 UNIQUE + \alpha_5 OWNERMGR + \alpha_6 PROFMARG_i + \alpha_7 SIZE + \alpha_8 INDUSTRY + \epsilon \quad (2)$$

A priori, I expect a going concern sale to be driven by much the same factors as an auction prepack. Thus, the model in (2) contains the same variables as the prepack model in equation (1), with the exception of FLOAT which is left out. Moreover, equation (2) includes a binary variable indicating whether a creditor (v. the firm) files the bankruptcy petition (CREDITOR). If firms that are forced into bankruptcy by a creditor are of lower quality, this should reduce the probability of survival, i.e., the prediction is $\alpha_2 < 0$. Furthermore, since a piecemeal liquidation would dissipate the value of intangible assets, the probability of a going concern sale is expected to decrease with SECURED ($\alpha_1 < 0$). The likelihood of firm survival is also predicted to be lower in down-sizing (or distressed) industries, captured by DISTRESS, thus $\alpha_3 < 0$. To the extent the firm's equityholders can influence the trustee's sales effort, the variable OWNERMGR is expected to produce $\alpha_5 > 0$, reflecting a greater expected loss of managerial private benefits when the firm is liquidated piecemeal.

[25] Similar results are obtained in an estimation using an extended sample that includes 35 auction prepacks.

The model also contains the variables UNIQUE, PROFMARG and SIZE, which are all expected to increase the likelihood of a going concern sale.

As predicted, $\alpha_1 < 0$, i.e., firms with a large fraction of intangible assets tend to be auctioned as going concern. This result is consistent with the earlier finding that SECURED also decreases the probability of an auction prepack. Moreover, the coefficient for CREDITOR, α_2, is negative and significant, as expected. While the probability of an auction prepack is increasing in OWNERMGR, this variable has no significant impact on the outcome of the bankruptcy auction, possibly indicating that the trustee acts independently of equityholders and managers during the auction. As before, the coefficients for UNIQUE and DISTRESS are insignificant, suggesting that neither asset uniqueness nor industry distress affect the going concern sale v. piecemeal liquidation decision. Finally, PROFMARG and SIZE produce insignificant coefficients, as do the industry indicators. The overall significance of this regression is lower than for the above prepack regression, with a pseudo R^2 of 5.9%.

Interestingly, the three-quarter survival rate in Swedish bankruptcy is close to survival rates reported for Chapter 11 filings by privately held firms. White (1984) finds that in a sample of 64 small corporations filing for Chapter 11, 47% of firms adopt reorganization plans, 23% are sold as going concern and the remaining 30% are subsequently liquidated under Chapter 7. Thus, in White's sample, 70% of the firms continue operating with their assets 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 small 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%.[26] As to Chapter 11 filings 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 survival rate in auction bankruptcy is largely indistinguishable from the fraction of

[26] Flynn'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 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.

firms surviving Chapter 11 filings. One interpretation of this is that U.S. firms filing for Chapter 11 tend to be in a similar economic condition as the Swedish firms studied here, which is also consistent with the discussion in Section 2.3 above. If one assumes that only the lowest-quality firms are liquidated piecemeal, this finding also fails to support the hypothesis that managers delay filing under an auction bankruptcy code relative to what is observed under a reorganization code.

4 Bankruptcy costs

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. In this section, I report estimates of direct costs as well as the length of time the firm spends in auction bankruptcy.[27]

4.1 Direct bankruptcy costs

As shown in Panel I of Table 6, direct costs in bankruptcy auctions (ex-prepacks) average 6.4% (median 4.5%) of pre-filing assets.[28] Moreover, as presented in Panel II of Table 6, auction prepacks are relatively inexpensive: the average direct costs are 2.5% (median 1.5%). As expected, scaling costs with market value of assets in bankruptcy (i.e., with the realized auction proceeds) produces a much higher cost estimate for bankruptcy auctions of on average 19.1% (median 13.2%).[29] To make the Swedish results comparable to U.S. studies I focus in the following primarily on costs measured as a fraction of pre-filing book value of assets.

Table 7 contains OLS estimates of the parameters in two cross-sectional regressions explaining direct bankruptcy costs in percent of pre-filing assets. The regression model is as follows:[30]

$$COSTS = \alpha_0 + \alpha_1 LARGE + \alpha_2 MEDIUM_i + \alpha_3 PIECEMEAL + \alpha_4 PREPACK$$

[27] The magnitude of bankruptcy costs is an important determinant of the firm's capital structure. See e.g. Miller (1977), Warner (1977), Haugen and Senbeth (1978, 1988) and Harris and Raviv (1991).

[28] Costs based on pre-filing book value of assets are biased downwards. However, market values of assets prior to filing are generally not available.

[29] This estimate, however, may contain a potential upward bias if the auction produces asset fire-sales.

[30] I also examined an alternative model specification which includes the indicator variable REPURCHASE. This variable, which indicates whether or not the old owner repurchases the firm in the auction, produces an insignificant coefficient. While not reported in Table 7, this result is inconsistent with the conjecture that the trustee sells the assets to the old owner in order to reduce the trustee's own sales effort.

$$+\alpha_5 SECURED + \alpha_6 UNIQUE_i + \alpha_7 DISTRESS + \alpha_8 LENGTH + \alpha_9 INDUSTRY + \epsilon \quad (3)$$

As before, the explanatory variables are defined in Table 4. The model contains two binary variables for firm size: one covering the one-third largest firms in the sample (LARGE), and the second the one-third intermediate sized firms (MEDIUM). In the presence of fixed bankruptcy costs, these two variables should have negative signs, thus I expect $\alpha_1 < 0$ and $\alpha_2 < 0$. The regressions further include a binary variable indicating piecemeal liquidation (PIECEMEAL), and, for the extended sample, an indicator for auction prepack (PREPACK). Both these outcomes are likely to incur lower direct costs than going concern sales in bankruptcy, hence PIECEMEAL and PREPACK are predicted to enter with negative coefficients ($\alpha_3 < 0$ and $\alpha_4 < 0$).

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 lower the level of intangible assets (the higher SECURED), the greater its asset liquidity and the lower are expected bankruptcy costs, thus $\alpha_5 < 0$. Moreover, 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. Both UNIQUE and DISTRESS are therefore predicted to enter with positive coefficients, $\alpha_6 > 0$ and $\alpha_7 > 0$. 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 $\alpha_8 > 0$.[31] Finally, the probit regression includes a vector of industry dummies, INDUSTRY.

The second column of Table 7 reports the coefficient estimates from a regression using a subsample of 171 traditional bankruptcy auctions (excluding auction prepacks). The regression is significant with an adjusted R^2 of 25.5%. As indicated by the negative size-dummies α_1 and α_2, direct bankruptcy costs have significant fixed components: The constant term is 6.7% (for the one-third smallest firms in the sample), and decreases by 3.7% for intermediate-sized firms and 6.1% for the one-third largest firms.[32] Consequently, the unconditional direct costs for the one-third largest

[31] The time the case is kept on file with the court should not be confused with the time the firm operates in bankruptcy before being auctioned off. Importantly, the Pearson correlation between the time the case is kept on file and the time between filing and going concern sale is a low 0.056 (2-tailed p-value of 0.481).

[32] Direct bankruptcy costs in dollar terms are found to be concave also in the U.S., see, e.g., Warner (1977), Ang,

firms in my sample, excluding prepacks, are on average 3.7% (median 2.5%) of pre-filing assets.[33]

The coefficient for PIECEMEAL, α_3, is also negative and significant, suggesting that piecemeal liquidations have lower direct costs than going concern sales, as expected. Interestingly, the regressions in Table 7 indicate that bankruptcy costs are increasing in the degree of industry distress, possibly because the bankruptcy trustee must increase sales efforts to find a high-valuation bidder in distressed industries. Moreover, the coefficient for LENGTH, α_8, 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.[34] There is, however, no evidence that the measures for asset type and uniqueness affect direct costs.

Column 5 of Table 7 reports the coefficient estimates based on a sample of 213 firms that also includes 42 auction prepacks. The regression is again significant and the coefficient estimates are generally consistent with the above results for the subsample of traditional auctions. The direct 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 6, the coefficient for PREPACK, α_4, is negative and significant. The one-third largest Swedish firms undertaking auction prepacks have unconditional average direct costs of 1.9% (median 1.3%) of pre-bankruptcy assets.

For comparison purposes, Table 6 also contains extant evidence on costs for much larger, publicly traded firms reorganizing in Chapter 11. The direct costs for Chapter 11 cases, in percent of book value of pre-filing assets, is estimated to 3.6% (median 3.1%).[35] This cost estimate corresponds closely to the 3.7% average costs reported for the one-third largest cases in my auction bankruptcy sample. Moreover, for a sample of 22 privately held small firms in Chapter 11, Lawless et al. (1994) report average direct costs, measured as a fraction of book value of assets in bankruptcy, of 14.5%. In light of the fixed cost components, the statistics indicate that the auction procedure very well

Chua and McConnell (1982) and Betker (1997).

[33] Measured in percent of market value of assets in bankruptcy, the direct costs for the one-third largest firms are on average 14.4% (median 9.7%).

[34] This 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 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.

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

may provide a relatively low-direct-cost mechanism for restructuring firms in bankruptcy.[36]

As in Sweden, prepacks in the U.S. incur lower direct costs than traditional bankruptcy cases. The direct costs for prepackaged Chapter 11 filings by publicly traded firms, measured as a fraction of pre-filing assets, are on average 2.4% (median 2.0%), see Panel II of Table 6.[37] This is somewhat higher than the direct costs reported for the one-third largest firms executing auction prepacks (mean 1.9%). Overall, prepackaged filings are relatively low-cost under either bankruptcy system.

4.2 Time in bankruptcy

Table 7 and the above comparison with the costs of Chapter 11 proceedings leave out one important fundamental, namely the total time firms operate under bankruptcy protection. Indirect costs, in terms of the opportunity cost of managerial time and negative reputational effects in product and capital markets, increase with the time the firm spends in bankruptcy. For firms sold as going concern in a traditional bankruptcy auction (excluding prepacks), the average time from filing to the date the assets are sold is 2.4 months with a median of 1.5 months, see Panel I of Table 6. Moreover, only 1 of the 142 Swedish firms surviving the auction as going concern operates for more than one year in bankruptcy. Not surprisingly, auction prepack procedures are much shorter than the typical auction bankruptcy case (Panel II of Table 6). Auction prepacks are executed a median of 4 days *before* filing for bankruptcy (with no further delay due to filing).[38]

The time spent in auction bankruptcy is significantly lower than the average length of a Chapter 11 proceeding: 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.[39] Prepackaged Chapter 11 filings are also less time-consuming than the traditional Chapter 11 proceeding. Betker (1995) and Tashjian, Lease and McConnell (1996) find that the average Chapter 11 prepack for publicly traded firms lasts 3

[36] Hansen and Thomas (1998) argue that a conservative estimate of total direct costs for auctioning off large firms in bankruptcy would be 2% of assets.

[37] The cost estimate for the Chapter 11 prepacks is an average of the estimates in 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.

[38] Because of two outliers (prepacks executed very early), the average prepack is executed 2.2 months prior to filing.

[39] Jensen-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 similar for large publicly traded and small privately held firms, see, e.g., Gilson et al. (1990), Weiss (1990), Franks and Torous (1994), Betker (1997) and Hotchkiss (1995).

months (median 2 months) from filing for the plan to be confirmed by court. Moreover, it takes on average 17 months for a Chapter 11 prepack to be set up prior to filing. Thus, there are strong indications that large firm Chapter 11 prepacks require more time than even the typical small firm auction bankruptcy case in Sweden.

5 Debt recovery rates

A creditor's expected payoff in bankruptcy affects his or her incentives to renegotiate debt outside of formal bankruptcy. Moreover, debt recovery rates provide important information on the economic value of firms filing for bankruptcy as well as indirect and direct costs imposed by the bankruptcy proceeding itself. This section examines creditors' recovery rates in Swedish auction bankruptcy.

Panel I of Table 8 presents recovery rates, measured as the proportion of the debt's face value repaid in bankruptcy, in traditional bankruptcy auctions (i.e., excluding prepacks). Importantly, recovery rates in my sample are based entirely on market values since the cash settlement in the auction permits a cash distribution to creditors. The overall recovery rate for Swedish firms, averaged across both secured and unsecured debt, is 35% (median 34%). Focusing on the different classes of debt, secured creditors receive on average 69% (median 83%) of the face value of their debt, and banks receive 68% (median 81%). Junior debt, however, on average recovers only 2% (median 0%), reflecting the strict adherence to APR in auction bankruptcy.

For comparability with U.S. studies, Panel II of Table 8 reports recovery rates for a subsample of 58 firms auctioned as going concern during 1988-1990.[40] The average overall recovery rate is 40% (median 40%), with secured debtholders and banks receiving an average of 79% and 78%, respectively (median 85% and 92%) and junior creditors 6% (median 0%). Thus, all claimholders appear to recover a higher fraction when the auction preserves the firm as a going concern. Moreover, Panel III shows recovery rates for the 53 auction prepacks. The overall recovery rate in Swedish prepacks is slightly lower than that reported above for traditional bankruptcy auctions: mean 32% (median 31%). Secured creditors (and banks) receive on average 74% (median 89%) while junior, unsecured creditors again receive basically nothing.

[40] This subsample excludes firms sold in the recession year of 1991, when market prices were exceptionally low.

Table 9 reports OLS estimates of coefficients in two regressions with total recovery rates (169 observations) and recovery rates for secured debt (163 observations) as dependent variables. The regression model has the following specification:

$$\begin{aligned} RECOVERY = \alpha_0 + \alpha_1 PROFMARG + \alpha_2 SECURED_i + \alpha_3 CREDITOR + \alpha_4 PIECEMEAL \\ + \alpha_5 PREPACK + \alpha_6 SIZE_i + \alpha_7 UNIQUE + \alpha_8 DISTRESS + \alpha_9 FILING91 \\ + \alpha_{10} REPURCHASE + \alpha_{11} BANK + \alpha_{12} INDUSTRY + \epsilon \end{aligned} \quad (4)$$

Firms with a high prefiling cash flow performance, captured by PROFMARG, are likely to have a higher going concern value, thus I predict $\alpha_1 > 0$. Because the value of intangible assets may get dissipated in the bankruptcy auction, recovery rates are expected to increase in SECURED, i.e., $\alpha_2 > 0$. Moreover, to the extent creditor filing implies lower firm quality, CREDITOR will produce a negative coefficient ($\alpha_3 < 0$). Creditors are further expected to recover less in piecemeal liquidations (PIECEMEAL) reflecting loss of going concern value ($\alpha_4 < 0$). Debt recovery is also assumed to decrease with firm size (SIZE), the fraction industry unique assets (UNIQUE) and industry distress (DISTRESS).

Sweden experienced an economy-wide downturn in 1991, which led to a general decline in asset prices towards the end of the sample period. To account for the effects of this recession, 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, thus $\alpha_9 < 0$. The model further contains a binary variable for the case that the pre-filing owner buys back the assets of the firm (REPURCHASE). If owners tend to repurchase the firm when they have private information that it is of relatively high quality, REPURCHASE should enter with a positive coefficient ($\alpha_{10} > 0$). Similarly, the financing of the successful buyer in the auction by the filing firm's bank (BANK) is expected to be associated with higher recovery rates ($\alpha_{11} > 0$). The model also controls for auction prepacks (PREPACK) and industry characteristics, described by the vector INDUSTRY.

The regressions reported in Table 9 are significant (with adjusted R^2 of 12.2% and 22.1%, respectively) and several of the sign predictions are borne out. Recovery rates are increasing in

SECURED, possibly reflecting a lower liquidity for intangible assets. As expected, the coefficient for FILING91, α_9, is negative, indicating generally lower auction prices during the period of economic recession. Moreover, consistent with Table 8, the estimated coefficient for PIECEMEAL, α_4, is negative, suggesting that recovery rates tend to be lower in piecemeal liquidations than in going concern sales (which do not enter with a separate dummy in the regression), while α_5 for PREPACK is insignificant.

Furthermore, recovery rates are higher when the old bank refinances the buyer in the auction ($\alpha_{11} > 0$). The coefficient for REPURCHASE ($\alpha_{10} > 0$) is positive in the second regression, indicating that secured creditors (banks) on average recover more when the old owner buys back the firm. Contrary to expectations, however, there is little evidence that recovery rates depend on pre-filing operating profitability, creditor filing, industry distress or asset uniqueness. Also, SIZE, α_6, produces a statistically insignificant coefficient, failing to indicate any systematic variation in recovery rates with firm size.

Before turning to the U.S. evidence, a caveat on measurement issues. In a Chapter 11 reorganization, the claims on the bankrupt firm are settled mainly with new financial claims (as opposed to cash).[41] Recovery rates reported for Chapter 11 are therefore based largely on the face value of non-traded claims. In light of the significant default rates following Chapter 11 documented by Hotchkiss (1995), the face value of debt significantly overstates its market value. Consistent with this, Eberhart, Moore and Roenfeldt (1990) report a value-weighted ratio of market-to-face value of 80% for debt claims distributed in Chapter 11 to the creditors of Wickes Companies.

I know of only one study that reports recovery rates for Chapter 11 cases entirely based on market values: Franks and Torous (1994) provide market-value based estimates of recovery rates for a subsample of 12 publicly traded firms that successfully completed their Chapter 11 reorganization, as shown in Panel II of Table 8. They find a median overall recovery rate of 41%, which compares to the 40% recovery rate for Swedish firms auctioned as going concern. For the full sample of 38 Chapter 11 cases, Franks and Torous (1994) report a median overall recovery rate of 51%, based

[41] For the Chapter 11 reorganizations studied by Franks and Torous (1994), 71% of distributions are paid with new financial claims.

largely on *face values* (which may overstate true recovery rates). If the firms in their two samples have similar economic values and default probabilities, the difference in recovery rates provides further indirect evidence that face values overstate market values. Moreover, for the latter sample, Franks and Torous report a median recovery of 80% for secured debtholders, 86% for banks and 29% for junior debt. The substantial payment promised to junior debtholders in Chapter 11 represents a deviation from APR.[42] In contrast, as pointed out earlier, the cash payment in the auction ensures that claims are settled according to absolute priority, a decidedly attractive feature of auction bankruptcy.[43]

While recovery rates are similar across auction prepacks and traditional bankruptcy auctions, debtholders seem to recover substantially more in prepackaged than in traditional Chapter 11 filings. Tashjian, Lease and McConnell (1996) report that creditors of publicly traded firms filing Chapter 11 prepacks recover on average 73% of the face value of their debt claims. Moreover, the mean recovery rate of secured creditors is a high 99% and for unsecured creditors it is 64%. While not explored here, this difference between the Swedish and the U.S. evidence possibly reflects the different selection processes behind prepacks under the two bankruptcy systems alluded to in Section 3.1 above.

6 Conclusions

There is an international trend away from pure auction bankruptcy systems towards Chapter 11 style reorganization codes.[44] This trend takes place despite a largely unresolved empirical debate as to the relative efficiency of bankruptcy auctions. In this study, I examine 263 small firms filing for auction bankruptcy in Sweden over the period 1988-1991, and make systematic comparisons to extant evidence on U.S. Chapter 11 cases. The Swedish bankruptcy code is an auction procedure

[42] See, e.g., Frank and Torous (1989), Eberhart, Moore and Roenfeldt (1990) and Weiss (1990).

[43] Jensen (1991) argues that the observed deviations from APR under the U.S. Chapter 11 generates large inefficiencies by increasing firms' cost of capital. Others, however, have argued that ex post deviations from APR are potentially beneficial in terms of reducing underinvestment inefficiencies as well as the time spent in bankruptcy reorganization, see e.g. Franks and Torous (1989) and Weiss (1990).

[44] Several 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.

similar to Chapter 7 of the U.S. bankruptcy code. However, while U.S. firms may chose a court-supervised reorganization under Chapter 11, no such provisions effectively exist 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, three-quarters of firms survive the bankruptcy auction as going concern. This survival rate is similar to small (and large) firm survival rates observed for U.S. Chapter 11 filings. Moreover, in Sweden, one-quarter 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. The probability of a going concern sale increases with the fraction of intangible assets. Interestingly, auction prepacks are more likely to occur when the firm is run by an owner-manager, perhaps reflecting managerial concerns with post-bankruptcy reputation.

Second, direct bankruptcy costs are found to decrease with firm size and be lower in piecemeal liquidations and auction prepacks. The percentage costs (measured as a fraction of pre-filing assets) average 6.4% for the total sample and 3.7% for the one-third largest firms. The latter estimate is similar to costs reported for much larger publicly traded U.S. firms in Chapter 11. Direct costs are also increasing in industry distress, possibly reflecting a higher sales effort by the trustee when industry demand is low. Importantly, indirect costs are almost certainly lower under auction bankruptcy due to the significantly shorter time firms operate in bankruptcy: 1-2 months in Sweden v. approximately 2 *years* in the U.S..

Third, debtholders recover on average 35% of their debt in auction bankruptcy. Secured creditors and banks recover approximately 70% on average (median 80%), while junior creditors recover almost nothing. Using market values (thus avoiding a potential upward bias in face values), overall debt recovery rates seem to be similar across firms in auction bankruptcy and publicly traded firms filing for Chapter 11 (typically 40% for firms surviving as going concern). However, junior creditors receive a relatively smaller piece of the pie in auction bankruptcy, reflecting the strict adherence to absolute priority made possible by the cash settlement in the auction.

Easterbrook (1990) suggests that if auctions are more efficient than court supervised debt

reorganizations, 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. During the last decade, vulture funds specializing on claims of distressed firms have taken significant positions in most of the large Chapter 11 cases.[45] Moreover, Hotchkiss and Mooradian (1998) find positive abnormal stock returns on acquisition announcements for both target firms in Chapter 11 and bidders, signaling a positive market reaction to the ending of the Chapter 11 proceeding. The emergence of vulture funds as well as other out-of-court solutions such as prepacks and public debt exchanges is further evidence that market transactions (such as auctions) often dominate court supervised reorganizations also in the U.S. environment.

The results in this paper suggest that auction bankruptcy is a speedy, low cost procedure compared to reorganizations under the U.S. Chapter 11. Moreover, firm survival rates, debt recovery rates and pre-filing financial characteristics are comparable across the two systems. Overall, the evidence does not support the conjecture that, compared to Chapter 11, there is a great risk of managers destroying going concern value by delaying filing for auction bankruptcy.

[45] See, e.g., Lieb (1993), and Hotchkiss and Mooradian (1997).

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Table 1

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

Characteristic:	Swedish auction bankruptcy	U.S. Chapter 11
Who may file?	The firm, or any individual creditor.	The firm, or a joint filing of minimum 3 creditors with unsecured claims exceeding $5,000.
Who controls the firm in bankruptcy?	An 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 for the plan.
Voting rules to approve of reorganization:	None. Firm is auctioned off.	1/2 in number of votes and 2/3 in value of the claims in the debt class.
Is a "cram down" possible?[2]	No. Firm is auctioned off.	Yes. Each debt class must get at least what the creditors would receive in liquidation.
Payment method:	Cash only.	Cash and securities, including common stock.
Deviations from APR:	No deviations.	Deviations frequently observed.
Seizure of collateral by secured creditors:	No seizure, except in limited circumstances when collateral is in creditor's physical possession.	No seizure. All creditors are stayed.
Is debt serviced during the proceeding?	No. Stop of interest and principal payments.	No. Stop of interest and principal payments.
Does interest accrue during the proceeding?	Yes, on secured debt if the value of collateral is sufficiently high.	Yes, on secured debt if the value of the collateral is sufficiently high.
Can new debt financing be raised?	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.
Government wage guarantee:	Yes, up to a certain limit.	No guarantee.

[1] In Sweden, as an alternative to auction bankruptcy, an insolvent firm can file for composition ("ackord"), which is a court-supervised procedure for renegotiation of *junior* debt claims. The composition procedure, however, provides no protection for the firm against its secured and senior creditors, and is therefore almost never used. In preliminary work, Eckbo and Thorburn (1998) 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

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

	Swedish firms in auction bankruptcy[1]			Publicly traded U.S. firms in Ch. 11[2]	
	Mean	Median	Std dev	Mean	Median
Sample size[3]	263			90	
Book value of assets in $ million[4]	2.4	1.3	3.63	288.0	46.0
Number of employees[5]	43	29	48.3	3,000	2,000
Debt to assets ratio[6]	.92	.93	.214	.91	.84
Long-term debt / book value of assets[5]	.34	.35	.244	.58	.45
Current ratio[7]	1.39	1.23	.974	1.06	.99
Percentage firms with negative EBIT[8]	46	-	-	62	-

[1] The numbers 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) before 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 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.

[4] 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).

[5] The U.S. evidence is from Gilson, John and Lang (1990).

[6] 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).

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

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

Table 3

Financial characteristics in bankruptcy for the sample of 263 Swedish firms filing for auction bankruptcy in 1988-1991, and for publicly traded and privately held U.S. firms filing for Chapter 11.

	Swedish firms in auction bankruptcy			Publicly traded U.S. firms in Ch. 11[1]		Privately held 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 [4]	-	-	-	-	-	1.2	.3
Auction value in $ million[5]	.8	.4	1.21	-	-	-	-
Secured debt / total liabilities[6]	.39	.38	.248	.12	.00	.42	-
Bank debt / total liabilities[7]	.36	.33	.247	.25	.20	-	-
Senior debt / total liabilities[8]	.29	.24	.211	-	-	.05	-
Junior debt / total liabilities[8]	.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 et al. (1994) for private firms in Ch. 11.

[4] 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 et al. (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 evidence on public U.S. firms is from Gilson, John and Lang (1990) and the evidence on private firms is from White (1984).

[7] 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).

[8] The evidence on private U.S. firms is from White (1984).

Table 4
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 one-third of sample firms (88 firms) 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 one-third of sample firms (88 firms) with the mid pre-bankruptcy book value of total assets, ranging from $0.9 million to $2.1 mill.
PROFMARG	Pre-bankruptcy operating profitability (defined as earnings before interest, taxes, depreciation and amortization divided by total sales) minus the contemporaneous median operating profitability of all Swedish firms with more than 20 employees and the same 4-digit SIC code as the sample firm.
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 debt holders secured with floating-charge collateral at bankruptcy filing.
OWNERMGR	Binary variable indicating that the CEO owns more than 10% of the firm's equity.
DISTRESS	Fraction of Swedish firms with over 20 employees and the same 4-digit SIC code as the sample firm 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.
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 a going concern sale of the firm's assets is negotiated prior to filing and executed prior to or immediately upon (within 7 days of) 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 equity holder 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 5

Parameter estimates in probit regressions of the probability of auction prepack vs. in-bankruptcy auction, and of in-bankruptcy going concern sale vs. a piecemeal sale. Sample of 205 Swedish firms filing for auction bankruptcy in 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	Coeffi-cient	p-value	Expected sign of coefficient	Coeffi-cient	p-value
Constant		- 6.621	*.005*		- .074	.971
Explanatory variables:[2]						
SECURED	< 0	- 1.247	*.023*	< 0	- .906	*.058*
FLOAT	< 0	- .128	.522	-	-	-
CREDITOR	-	-	-	< 0	- .691	*.058*
DISTRESS	> 0	- .765	.305	< 0	- .716	.333
UNIQUE	> 0	.243	.459	> 0	.003	.986
OWNERMGR	> 0	.482	*.099*	> 0	- .295	.278
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 prior to bankruptcy filing (31 cases), or a pre-filing agreement to execute a going concern sale immediately upon bankruptcy filing (4 cases).

[2] See Table 4 for variable definitions.

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

Table 6

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

	Swedish firms in 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: Traditional auctions / reorganizations in bankruptcy							
Sample size[3]	210			79		46	
Direct costs / book value of pre-filing assets[4]	.064	.045	.057	.036	.031	-	-
Direct costs / market value of assets in bankruptcy	.191	.132	.189	-	-	-	-
Direct costs / book value of assets in bankruptcy[5]	-	-	-	-	-	.145	-
Time in bankruptcy (months)[6]	2.4	1.5	3.40	23	19	25	22
II: Prepacks[7]							
Sample size	53			49			
Direct costs / book value of pre-filing assets	.025	.015	.027	.024	.020	-	-
Time in bankruptcy (months)[8]	- 2.2	- .2	4.12	2.9	1.9	-	-

[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] The sample size is an average of the sample sizes in Weiss (1990), Gilson et al. (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 et al. (1994) for private firms in Ch. 11.

[4] 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.

[5] The evidence on private firms in Ch. 11 is from Lawless et al. (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.

[6] 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.

[7] For Swedish firms, prepacks are going concern sales negotiated prior to bankruptcy filing. For U.S. firms, prepacks are bankruptcy filings for which a reorganization plan is negotiated out-of-court. The evidence on Ch. 11 prepacks is an average of the means and medians in Betker (1995) and Tashjian, Lease and McConnell (1996).

[8] For the Swedish firms, the time between bankruptcy filing and the sale of the assets as a going concern.

Table 7

OLS coefficient estimates in regressions of direct bankruptcy costs in percent of pre-filing book value of total assets for 213 Swedish firms filing for 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*
PREPACK	-	-	-	< 0	- .035	*.000*
SECURED	< 0	- .003	.880	< 0	- .006	.689
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 in-bankruptcy going concern sales and piecemeal liquidations, but excludes auction prepacks.

[3] See Table 4 for variable definitions.

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

Table 8

Debt recovery rates for the sample of 263 firms filing for auction bankruptcy in Sweden 1988-1991, and for public U.S. firms filing for Chapter 11.[1]

	Swedish firms in auction bankruptcy			Public U.S. firms in Ch. 11[2]		
	Market values			Face values		Market values
	Mean	Median	Std. dev.	Mean	Median	Median
I: Traditional bankruptcy auctions						
Sample size	210					
All debt classes	.352	.335	.212	-	-	-
Secured debt	.692	.825	.327	-	-	-
Bank debt[3]	.682	.807	.341	-	-	-
Senior debt	.271	.188	.280	-	-	-
Junior debt	.022	.000	.111	-	-	-
II: Firms surviving as going concern[4]						
Sample size	58				38	12
All debt classes	.404	.396	.183	-	.51	.41
Secured debt	.779	.852	.254	-	.80	-
Bank debt[3]	.794	.916	.255	-	.86	-
Senior debt	.340	.239	.327	-	.47	-
Junior debt	.056	.000	.164	-	.29	-
III: Prepacks[5]						
Sample size	53			49		
All debt	.316	.313	.225	.73	-	-
Secured debt	.744	.885	.324	.99	-	-
Bank debt[3]	.748	.889	.327	-	-	-
Senior debt	.263	.188	.283	1.00	-	-
Junior debt	.012	.000	.072	.64	-	-

[1] Recovery rate is defined as the payment 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] Bank debt constitutes on average 88% (median 100%) of the secured debt for the Swedish firms.

[4] The Swedish subsample consists of 58 firms filing for bankruptcy in 1988-1990 and auctioned as going concern. 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 distributed in the reorganization.

[5] For Swedish firms, auction prepacks are going concern sales that are negotiated prior to bankruptcy filing. For U.S. firms, prepacks are filings for which a reorganization plan is negotiated out-of-court.

Table 9

OLS estimates of coefficients in regressions of debt recovery rates. Sample of 168 Swedish firms filing for auction bankruptcy in 1988-1991.[1]

	Overall recovery rate			Recovery rate for secured debt		
	Expected sign of coefficient	Coefficient	p-value	Expected sign of coefficient	Coefficient	p-value
Constant		.498	*.087*		1.185	*.005*
Explanatory variables: [2]						
PROFMARG	> 0	- .107	.322	> 0	- .224	.146
SECURED	> 0	.301	*.001*	-	-	-
CREDITOR	< 0	- .059	.306	< 0	- .128	.138
PIECEMEAL	< 0	- .094	*.042*	< 0	- .110	*.098*
PREPACK	> 0	- .026	.569	> 0	- .034	.609
SIZE	< 0	- .008	.644	< 0	- .022	.376
UNIQUE	< 0	- .003	.901	< 0	.018	.595
DISTRESS	< 0	- .112	.480	< 0	- .351	.130
FILING91	< 0	- .099	*.035*	< 0	- .138	*.045*
REPURCHASE	> 0	.016	.706	> 0	.114	*.060*
BANK	> 0	.070	*.087*	> 0	.195	*.001*
Industry indicators with p-values less than 0.10:[3]						
none	-	-	-		-	-
Sample size		168			162	
R-square adjusted		.122			.221	
F-value		2.46	*.001*		4.05	*.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 4 for definition of the variables.

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