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ABSTRACT

We test for fire-sale tendencies in automatic bankruptcy auctions. We find evidence consistent with fire-sale discounts when the auction leads to piecemeal liquidation, but not when the bankrupt firm is acquired as a going concern. Neither industry-wide distress nor the industry affiliation of the buyer affect prices in going-concern sales. Bids are often structured as leveraged buyouts, which relaxes liquidity constraints and reduces bidder underinvestment incentives in the presence of debt overhang. Prices in “prepack” auctions (sales agreements negotiated prior to bankruptcy filing) are on average lower than for in-auction going-concern sales, suggesting that prepacks may help preempt excessive liquidation when the auction is expected to be illiquid. Prepack targets have a greater industry-adjusted probability of refiling for bankruptcy, indicating that liquidation preemption is a risky strategy.

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1. Introduction

Will a bankruptcy system that automatically puts bankrupt firms up for auction produce fire-sales? While direct evidence on this issue is sparse, legal and financial scholars have expressed skepticism towards the workings of automatic bankruptcy auctions. For example, the perceived risk of auction fire-sales helped motivate the 1978 U.S. bankruptcy reform introducing court-supervised

debt renegotiations under Chapter 11. Provisions for court-supervised reorganization were also adopted in several member states of the European Union in the 1990s. Observing the reform process in Europe, Hart (2000) comments that “I’m not aware of any group—management, shareholders, creditors, or workers—who is pushing for cash auctions.” The auction mechanism is unpopular in large part due to widespread—but largely untested—concerns with illiquidity and fire-sales.¹

Since a debt renegotiation system such as Chapter 11 involves costs of its own, the comparative efficiency of automatic auctions is an empirical issue.² Interestingly,

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¹ Shleifer and Vishny (1992) formalize this concern in a model of industry illiquidity and conclude that, “We agree with Easterbrook (1990) that the policy of automatic auctions for the assets of distressed firms, without the possibility of Chapter 11 protection, is not theoretically sound.” (p. 1344).

² The literature on Chapter 11 points to costs associated with conflicts of interests and excessive continuation resulting from managerial control over the restructuring process. For early warnings of agency problems in Chapter 11, see, e.g., Baird (1986), Bebchuk (1988), Jensen (1989), Aghion, Hart, and Moore (1992), Bebchuk and Chang (1992), Bradley and Rosenzweig (1992), and Baird (1993).

there is growing use of relatively low-cost, market-based mechanisms to resolve bankruptcy in the U.S., indicating substantial concern with traditional Chapter 11 proceedings. These include “prepackaged” bankruptcies with a reorganization plan in place at filing (Betker, 1995; Lease, McConnell, and Tashjian, 1996), acquisition of distressed debt by “vulture” investors in order to make voting more efficient (Hotchkiss and Mooradian, 1997), and voluntary sales in Chapter 11 (Hotchkiss and Mooradian, 1998; Maksimovic and Phillips, 1998). Baird and Rasmussen (2003) report that more than half of all large Chapter 11 cases resolved in 2002 used the auction mechanism in one form or another, and that another quarter were prepacks.

This paper presents the first comprehensive empirical analysis of the tendency for automatic bankruptcy auctions to induce fire-sale discounts in prices and debt recovery rates. We study bankruptcies in Sweden, where filing firms are automatically turned over to a court-appointed trustee who organizes an open, cash-only auction. All targets are subject to a single uniform selling mechanism (open, first-price auction), and the bids alone determine the auction outcome (continuation sale or piecemeal liquidation). As a result, the cross-sectional variation in auction prices is determined largely by demand-side conditions, which is ideal for the identification of fire-sale discounts. Our sample of 258 bankrupt firms are all private (bankruptcies among publicly traded Swedish firms were rare over the sample period), and the average pre-filing sales is about \$8 million (2007 dollars). This is similar to the average sales for firms filing for Chapter 11 (Chang and Schoar, 2007).

A fire-sale discount results when the observed auction price is lower than an estimate of the assets' fundamental value (taken to represent the value in best alternative use). The literature highlights temporary demand-side conditions that may give rise to such a discount. For example, since financial distress tends to be contagious within an industry (Lang and Stulz, 1992), high-valuation industry rivals may themselves be financially constrained and unable to bid in the auction (Shleifer and Vishny, 1992; Aghion, Hart, and Moore, 1992). Industry debt overhang may also attenuate industry rivals' incentive to invest in the bankrupt firm (Myers, 1977; Clayton and Ravid, 2002). As industry rivals are unwilling to bid, the risk increases that relatively low-valuation industry outsiders win the auction—at fire-sale prices. The chance of this happening is greater for unique or specific assets with few potential buyers (Williamson, 1988).

Several U.S. studies present evidence on fire-sale discounts in voluntary asset sales, both in and out of Chapter 11. For example, Pulvino (1998, 1999) provides evidence of fire-sale discounts for the sale of individual aircrafts. Ramey and Shapiro (2001) and Officer (2007) study liquidity discounts associated with distressed plant closings and corporate targets outside of bankruptcy, and Acharya, Bharath, and Srinivasan (2007) examine recovery rates for U.S. firms defaulting on their debt. Our empirical setting differs fundamentally from these studies in that we examine *mandatory* auctions of entire bankrupt firms.

Much is known about the workings of the Swedish auction bankruptcy system. Thorburn (2000) presents

evidence that the auctions are speedy (lasting on average 2 months) and have low direct bankruptcy costs. Moreover, she finds that recovery rates are similar to those reported by Franks and Torous (1994) for a sample of Chapter 11 cases with market value data for the new debt securities. She also reports that direct bankruptcy costs are lowest for bankruptcy filings where the target has privately worked out an acquisition agreement just prior to filing. These “auction prepacks” play an important role in the empirical analysis below. Eckbo and Thorburn (2003) show substantial CEO turnover and wealth decline following bankruptcy filing, and find that firms sold as going-concern typically perform at par with industry rivals. Eckbo and Thorburn (2008) find that the bankrupt firm's main creditor (always a bank) actively promotes auction liquidity by financing a bidder. The bank also has an incentive to use bid financing to engineer greater auction premiums (and therefore higher debt recovery rates), which the evidence supports.

Strömberg (2000) develops and tests a model for the decision of the previous owner to repurchase the bankrupt firm (a saleback). He finds that salebacks are more likely to occur when industry financial distress is high, and conjectures that salebacks help preempt excessive liquidation. The auction price data presented below (not available in Strömberg's analysis) directly addresses this conjecture. If the transacting parties view piecemeal liquidation as the relevant alternative to a saleback, prices will on average be lower in salebacks than in non-saleback going-concern sales. Instead, we show that prices in these two categories of going-concern sales are indistinguishable. There is no evidence that saleback prices resemble those in piecemeal liquidations. Instead, we find significant average price discounts in *auction prepacks* relative to other going-concern sales, which is consistent with liquidation preemption.

Since severe economic decline causes firms to exit their industries at low prices (efficient liquidation), studies of fire-sale discounts face a fundamental identification problem: is a given low sales price due to temporary financial- or permanent economic distress? Similar to Pulvino (1998), we deal with this problem by estimating a cross-sectional model for the asset's fundamental value. This value estimate accounts for the tendency for firms that are liquidated piecemeal to have significantly lower economic value than firms that are acquired as going concerns. We then compute the difference between actual and model prices, also referred to as the “price residual.” A fire-sale discount is said to exist if the price residual is adversely affected by measures of industry-wide illiquidity and financial distress. Since this fire-sale test is joint with the fundamental value model, we check for robustness to alternative model specifications, including a model that allows for endogenous selection of the going-concern versus piecemeal liquidation outcomes.

The main empirical results are as follows. First, there is evidence of conditional fire-sale discounts in auctions that lead to *piecemeal liquidation*. This conclusion holds for both auction prices and debt recovery rates, and it is robust to a model that allows the liquidation outcome to

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