

The determinants of recovery rates in the US corporate bond market

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Recovery rate* in bond market factors:

- Modeling
- Empirical prediction based on the default day prices
- Empirical prediction based on resolution of default
- **Empirical analysis based on the average 30 days after default prices**

*Доля средств, получаемых кредитором при дефолте

Main findings

The least price is observed in the default day

The most trading volume is observed in the default day

Industry, credit rating, seniority of bond, default event type* are significant factors of recovery rate

CDS existing and covenants are positive factors for recovery rate, as long as liquidity

Equity ratio and default barrier are significant factors

Federal funds rate and Federal Funds – Treasury slope are positive factors

Systematic and industry specific default rates are negative factors for recovery rate
Results are not window-sensitive (i.e. they were able to define recovery rate as 90 days average instead of 30 days and get the same results)

* The result is from descriptive statistics. Regression didn't confirm this

Data sources

- Default events types: Mergent Fixed Income Securities Database, NYU Salomon Center Master Default Database
- Transaction information (including price, volume): TRACE database
- Macroeconomics: Bloomberg
- CDS: Markit
- Covenants: Mergent Fixed Income Securities Database
- Accounting date: Compustat

Recovery rate

i – bond, j – firm, t – default event day,

T – window size (30 days)

$\pi_{i,j,t}$ – recovery rate

$K_{i,j,s}$ – the number of trades at day s , $k_{i,j,s}$ – transaction

p – price

i.e. the recovery rate is the average price of bond within 30 days after default

$$\pi_{i,j,t} = \frac{1}{T+1} \sum_{s=t}^{t+T} \left(\frac{1}{K_{i,j,s}} \sum_{k_{i,j,s}} p_{s,k_{i,j,s}} \right)$$

Other important variables:

$$\text{Default barrier} = \frac{\text{Short-term debt} + \frac{1}{2}\text{Long-term debt}}{\text{Total assets}}$$

Default barrier is a common measure of default probability

$d_{i,j,s}$ – **price dispersion** at day s ; $m_{i,j,s}$ – price mean at day s

v_k – volume of transaction k ;

i.e. this is dispersion of price weighted by volume of trade

It is measure of liquidity, higher price dispersion means lower liquidity

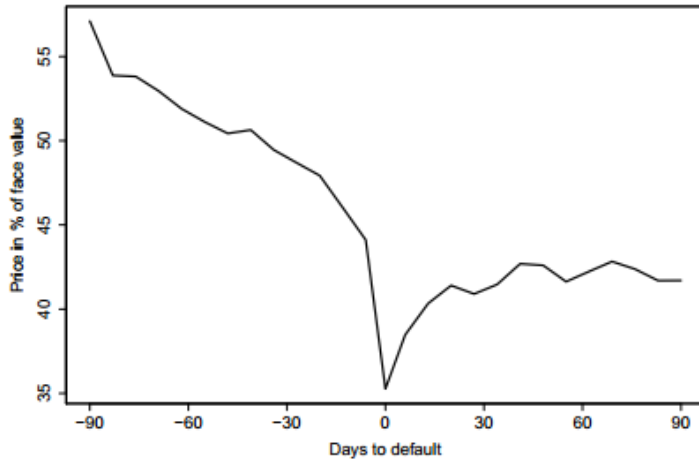
$$d_{i,j,s} = \sqrt{\frac{1}{\sum_{k_{i,j,s}} v_{k_{i,j,s}}} \cdot \sum_{k_{i,j,s}} \left(\frac{p_{k_{i,j,s}}}{m_{i,j,s}} - 1 \right)^2 \cdot v_{k_{i,j,s}}}$$

The main regression results

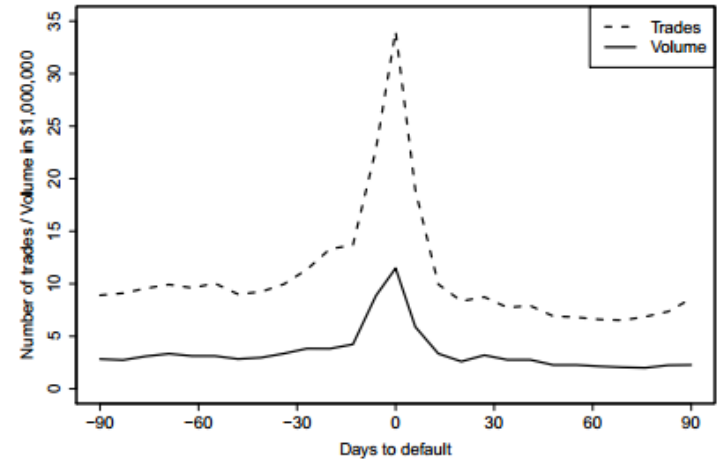
Model	(6)		
Intercept	13.1919 (11.4184)	Receivables	0.1638* (0.0865)
Amount issued	0.6603 (0.8613)	Profitability	-0.0642 (0.0546)
Maturity	-0.6164*** (0.0631)	Total assets	2.1414* (1.1302)
Coupon	0.7089** (0.3139)	Employees	0.0839 (0.1742)
Rating	-1.0579*** (0.3836)	Market default rate	-3.3428*** (1.1457)
CDS availability	6.1844*** (2.0805)	Industry default rate	-0.6561*** (0.1068)
Investment covenant	4.4075** (1.9355)	Federal Funds rate	7.0241*** (1.4479)
Dividend covenant	-1.7356 (2.1808)	Slope	7.4729*** (1.6254)
Financing covenant	9.7090*** (2.0492)	Volume	0.0785 (0.2183)
Event covenant	-2.5204 (1.8549)	Trades	0.0140 (0.0212)
Equity	0.1279*** (0.0526)	Amihud	0.0797 (0.3125)
Default barrier	-0.2175*** (0.0649)	Price dispersion	-4.9700*** (0.3300)
LTD issuance	-0.0029 (0.0285)	Adjusted R^2	0.66
Intangibility	-0.0587 (0.0467)	Observations	1,809
		Event dummies	Yes
		Industry dummies	Yes
		Seniority dummies	Yes

Descriptive plots

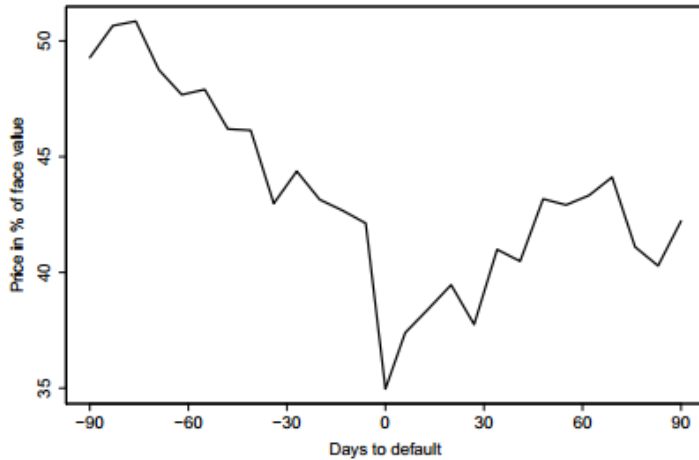
All bonds



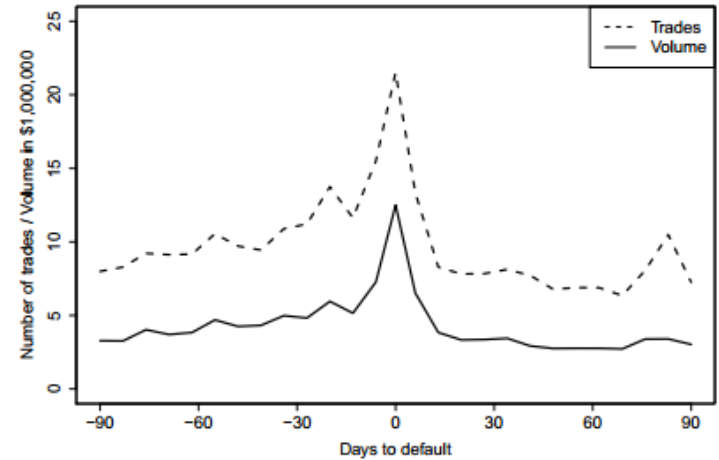
All bonds



Nonfinancial

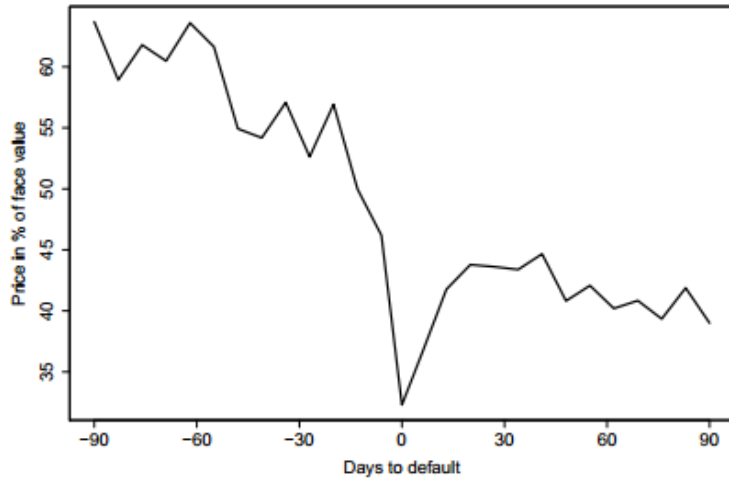


Nonfinancial

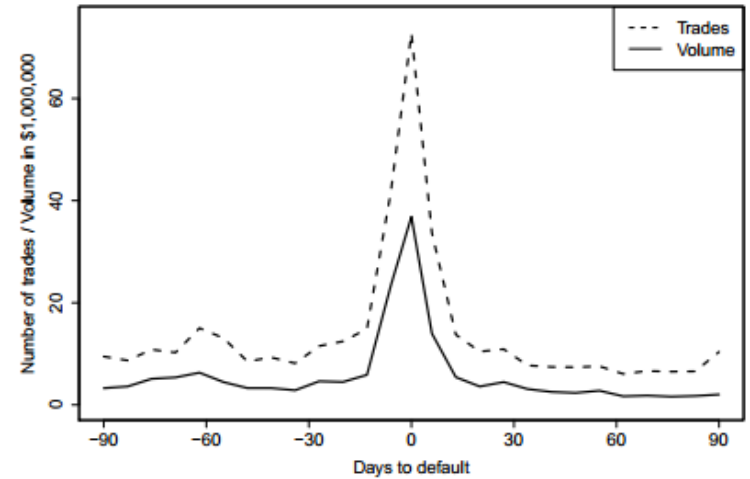


Descriptive plots

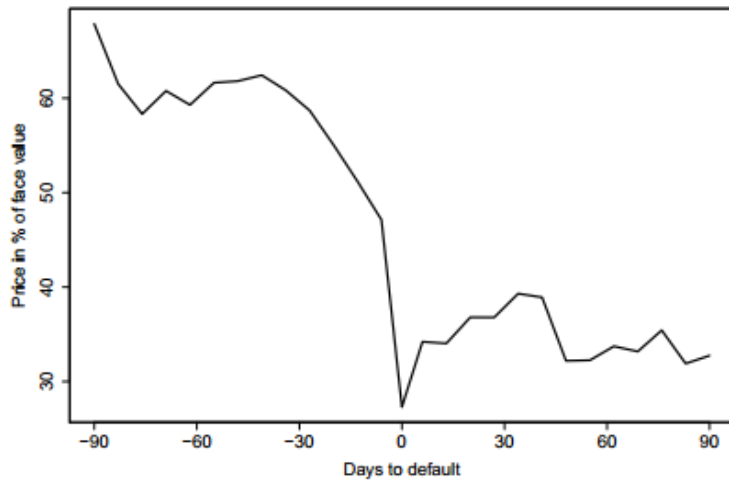
Financial



Financial



Investment grade



Investment grade

