

# Internet Appendix for "Takeover Defense Provisions, Firm Volatility, and the Cost of Corporate Loan Finance" \*

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## I. Data Appendix

We excluded all financial firms with SIC codes between 6000 and 6999. We use dummy variables for Fama-French industry classification, year, and loan purpose.

Firm level risk factors and the takeover measure were observed in the calendar year prior to the calendar year in which the loan was originated. Loan contract specific explanatory variables were obviously observed concurrently with the loan. Macro variables, the term spread and the corporate spread, were observed in the same calendar quarter as the dependent variable.

1. Spread: All-in drawn spread.
2. Loan Size: Loan amount in millions \$USD.
3. Maturity (months): Loan maturity in months.
4. No of lenders: Number of lenders in the syndicate.
5. Takeover: 24-G-Index.
6. Equity Vol.: Calculated using weekly stock returns. To calculate weekly returns, we use stock price data from CRSP for the last trading day of each week after adjusting stock prices for stock splits. We estimate equity volatility as the standard deviation of firms' weekly stock returns for each calendar year, which we annualize by multiplying by  $100 \times \sqrt{52}$ .

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\*The views expressed in this paper are those of the authors alone and do not necessarily reflect those of the Office of the Comptroller of the Currency, the U.S. Department of the Treasury, the Federal Reserve Bank of Richmond, or the Federal Reserve System.

7. ROA Vol.: Calculated using the standard deviation of the ratio of a borrower's quarterly EBITDA-to-assets ratio (earnings before interest taxes and depreciation divided by total assets). We calculate the volatility of firms' return on assets (ROA) volatility as the standard deviation of firms' EBITDA-to-assets ratio using four quarters beginning with data from the fourth quarter of the calendar year prior to loan origination through the first quarter of the same calendar year.
8. Market cap.: Market capitalization of the firm in billions of USD in the month before the loan initialization.
9. EBITDA/Sales: ebitda/sales from Compustat.
10. Leverage:  $((dltt + dlc)/at)$  from Compustat.
11. Modified Altman-Z: Altman z-score without the leverage.  $1.2*((act - lct)/at) + 1.4*(re/at) + 3.3*(ebit/at) + .999*(sale/at)$  from Compustat.
12. Credit spread: Difference of Moody's Seasoned Baa Corporate Bond Yield and Moody's Seasoned Aaa Corporate Bond Yield. (BAA-AAA from FRED)
13. Term spread: Difference of 10-Year Treasury Constant Maturity Rate and 1-year 1-Year Treasury Constant Maturity Rate.(GS10-GS1 from FRED)

## II. Additional Results

Table I. Main OLS / IV Results Cluster Standard Errors by Borrower and Year

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	OLS no vol		OLS no vol		OLS		OLS		IV-1st		IV-2nd		IV-1st		IV-2nd	
	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007	1991-2004	1991-2007
Takeover	0.016***	0.013***	0.007	0.003	0.007	0.003	0.569***	0.007	0.568***	0.004	0.005	0.006	0.568***	0.004	-0.001	0.006
Equity Vol	0.005	0.005	0.005	0.017***	0.016***	0.017***	0.091	0.005	0.075	0.020***	0.006	0.024***	0.075	0.006	0.006	0.024***
log(Market Cap).	-0.258***	-0.263***	-0.226***	-0.232***	-0.226***	-0.232***	-1.731***	-0.218***	-1.643***	-0.218***	-0.218***	-0.218***	-1.643***	-0.218***	-0.218***	-0.218***
EBITDA/Sales	-0.850***	-0.783***	-0.632***	-0.578***	-0.632***	-0.578***	-10.839**	-0.580***	-9.912***	-0.580***	-0.580***	-0.580***	-9.912***	-0.580***	-0.580***	-0.580***
Leverage	0.126	0.123	0.103	0.100	0.103	0.100	3.764	0.107	3.195	0.107	0.106	0.106	3.195	0.106	0.106	0.106
	0.915***	0.883***	0.813***	0.784***	0.813***	0.784***	6.328***	0.788***	5.583***	0.788***	0.788***	0.788***	5.583***	0.788***	0.788***	0.788***
Altman-Z	0.071	0.066	0.052	0.055	0.052	0.055	2.058	0.065	1.814	0.065	0.069	1.814	2.058	0.069	0.069	1.814
	-0.168***	-0.168***	-0.125***	-0.130***	-0.125***	-0.130***	-2.221***	-0.115***	-1.912***	-0.115***	-0.115***	-0.115***	-1.912***	-0.115***	-0.115***	-0.115***
Maturity	0.016	0.014	0.014	0.012	0.014	0.012	0.498	0.016	0.458	0.016	0.013	0.458	0.498	0.013	0.013	0.458
	-0.000	0.000	0.000	0.001	0.000	0.001	-0.004	0.000	-0.004	0.000	0.001	0.001	-0.004	0.000	0.001	0.001
No of lenders	0.001	0.001	0.001	0.001	0.001	0.001	0.008	0.001	0.007	0.001	0.001	0.001	0.007	0.001	0.001	0.001
	-0.000	-0.001	0.000	-0.000	0.000	-0.000	-0.026	0.000	-0.025	0.000	0.000	0.000	-0.025	0.000	0.000	0.000
Performance Pricing	0.001	0.001	0.001	0.001	0.001	0.001	0.027	0.001	0.022	0.001	0.001	0.001	0.022	0.001	0.001	0.001
	-0.026	-0.071**	-0.012	-0.053	-0.012	-0.053	-0.814**	-0.008	-0.922***	-0.008	-0.008	-0.046	-0.922***	-0.008	-0.046	-0.046
Term Loan	0.034	0.036	0.033	0.033	0.033	0.033	0.372	0.033	0.297	0.033	0.032	0.372	0.297	0.032	0.032	0.372
	0.688***	0.579***	0.664***	0.565***	0.664***	0.565***	1.374	0.658***	0.715	0.658***	0.560***	1.374	0.715	0.560***	0.560***	1.374
Corp. spread	0.079	0.065	0.079	0.062	0.079	0.062	0.937	0.077	0.712	0.077	0.062	0.937	0.712	0.062	0.062	0.937
	0.067	-0.006	0.131	0.047	0.131	0.047	-3.592***	0.147	-2.750**	0.147	0.070	-2.750**	-2.750**	0.070	0.070	-2.750**
Term spread	0.129	0.111	0.134	0.117	0.134	0.117	1.101	0.140	1.064	0.140	0.122	1.064	1.064	0.122	0.122	1.064
	0.021	0.030	0.020	0.030	0.020	0.030	0.072	0.020	0.045	0.020	0.030	0.045	0.045	0.030	0.030	0.045
ROA vol.	0.032	0.026	0.033	0.027	0.033	0.027	0.224	0.033	0.221	0.033	0.027	0.221	0.221	0.027	0.027	0.221
							147.035***		136.199***			136.199***	136.199***			136.199***
							19.987		17.422			17.422	17.422			17.422
R-squared	0.607	0.598	0.639	0.629	0.639	0.629	0.526	0.637	0.548	0.637	0.623	0.548	0.548	0.623	0.623	0.548
N	7502	9659	7502	9659	7502	9659	7502	7502	9659	7502	9659	9659	9659	9659	9659	9659
Under-Id								0.002		0.002	0.001	0.001		0.001	0.001	0.001
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table II. Main OLS / IV Results Cluster Standard Errors by Borrower and Year

	(1) OLS no vol 1991-2004	(2) OLS no vol 1991-2007	(3) OLS 1991-2004	(4) OLS 1991-2007	(5) IV-1st 1991-2004	(6) IV-2nd 1991-2004	(7) IV-1st 1991-2007	(8) IV-2nd 1991-2007
Democracy	0.034	0.008	-0.010	-0.038	2.715***	-0.019	2.832***	-0.057
Dictator	-0.153***	-0.119**	-0.123***	-0.089**	0.796	0.038	0.650	0.044
Equity Vol	0.042	0.050	0.036	0.045	-1.563	-0.117***	-1.406*	-0.078*
			0.017***	0.017***	0.901	0.034	0.763	0.044
			0.001	0.001		0.020***		0.024***
log(Market Cap.)	-0.261***	-0.265***	-0.228***	-0.233***	-1.806***	-0.221***	-1.702***	-0.220***
EBITDA/Sales	0.015	0.013	0.012	0.011	0.306	0.017	0.256	0.015
	-0.818***	-0.760***	-0.607***	-0.561***	-10.341**	-0.562***	-9.450**	-0.482***
Leverage	0.129	0.124	0.104	0.099	3.840	0.107	3.288	0.103
	0.918***	0.883***	0.814***	0.783***	6.363***	0.792***	5.567***	0.744***
Altman-Z	0.071	0.067	0.052	0.055	2.022	0.064	1.804	0.068
	-0.170***	-0.170***	-0.125***	-0.130***	-2.282***	-0.116***	-1.957***	-0.115***
Maturity	0.016	0.014	0.014	0.012	0.504	0.016	0.464	0.013
	-0.000	0.000	0.000	0.001	-0.003	0.000	-0.003	0.001
No of lenders	0.001	0.001	0.001	0.001	0.008	0.001	0.007	0.001
	-0.000	-0.001	0.000	-0.000	-0.029	0.000	-0.029	0.000
Performance Pricing	0.001	0.001	0.001	0.001	0.026	0.001	0.022	0.001
	-0.025	-0.071**	-0.011	-0.054	-0.796**	-0.008	-0.908***	-0.047
	0.035	0.036	0.033	0.034	0.367	0.033	0.295	0.033
Term Loan	0.690***	0.579***	0.664***	0.565***	1.466	0.658***	0.746	0.559***
	0.078	0.066	0.078	0.062	0.933	0.077	0.720	0.062
Corp. spread	0.074	-0.002	0.136	0.050	-3.469***	0.149	-2.686**	0.071
	0.128	0.110	0.134	0.117	1.043	0.140	1.024	0.122
Term spread	0.021	0.030	0.020	0.031	0.069	0.020	0.038	0.031
	0.033	0.026	0.033	0.027	0.225	0.034	0.222	0.027
ROA vol.					150.224***		138.690***	
					19.541		17.402	
R-squared	0.606	0.598	0.639	0.630	0.519	0.638	0.541	0.624
N	7502	9659	7502	9659	7502	7502	9659	9659
Under-Id						0.002		0.001
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes