Internet Appendix for Bankruptcy Spillovers

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This appendix contains additional analysis that demonstrates and supports the robustness of the findings in the main text. Each table has a self-contained description of its results.

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Derivations of local labor demand

In order to derive the local labor demand function, we need to take first order conditions of the profit maximization function of the firm, with respect to both labor and flexible capital. This generates the two following equations:

$$\log w_r = \log \rho_j A_r + \log \alpha + (1-\alpha)(1-\mu) \log F_j - (1-\alpha) \log L_j + (1-\alpha)\mu \log K_j \tag{7}$$

$$\log i = \log \rho_j A_r + \log(1-\alpha)\mu + (1-\alpha)(1-\mu) \log F_j + \alpha \log L_j - (1-(1-\alpha)\mu) \log K_j \tag{8}$$

Solving the second equation for $\log K_j$ and substitution this expression into the first equation allows us to solve for L_j and generate the firm's demand curve:[1]

$$\log L_j = \frac{\log(\rho_j A_r)}{(1-\alpha)(1-\mu)} - \frac{1-(1-\alpha)\mu}{(1-\alpha)(1-\mu)} \log w_r + \kappa$$

Therefore, the local labor demand curve for the local economy is obtained by aggregating the firm's demand curve over all firms in the local economy:

$$\log L_r = \log \sum L_j = \log \sum \rho_j^{\frac{1}{(1-\alpha)(1-\mu)}} + \frac{\log A_r}{(1-\alpha)(1-\mu)} - \frac{1-(1-\alpha)\mu}{(1-\alpha)(1-\mu)} \log w_r + \kappa$$

[1] Where $\kappa = -\frac{\mu}{(1-\mu)} \log i + \log F_j + \frac{1-(1-\alpha)\mu}{(1-\alpha)(1-\mu)} \log \alpha + \frac{\mu}{(1-\mu)} \log[(1-\alpha)\mu]$

Figure A.1
Establishment Survivorship by Size

This figure uses the universe of establishments in the Longitudinal Business Database (LBD) over the years of the sample, 1992-2005, and plots the probability of establishment survival for 5 years as a function of establishment size, measured by number of employees.

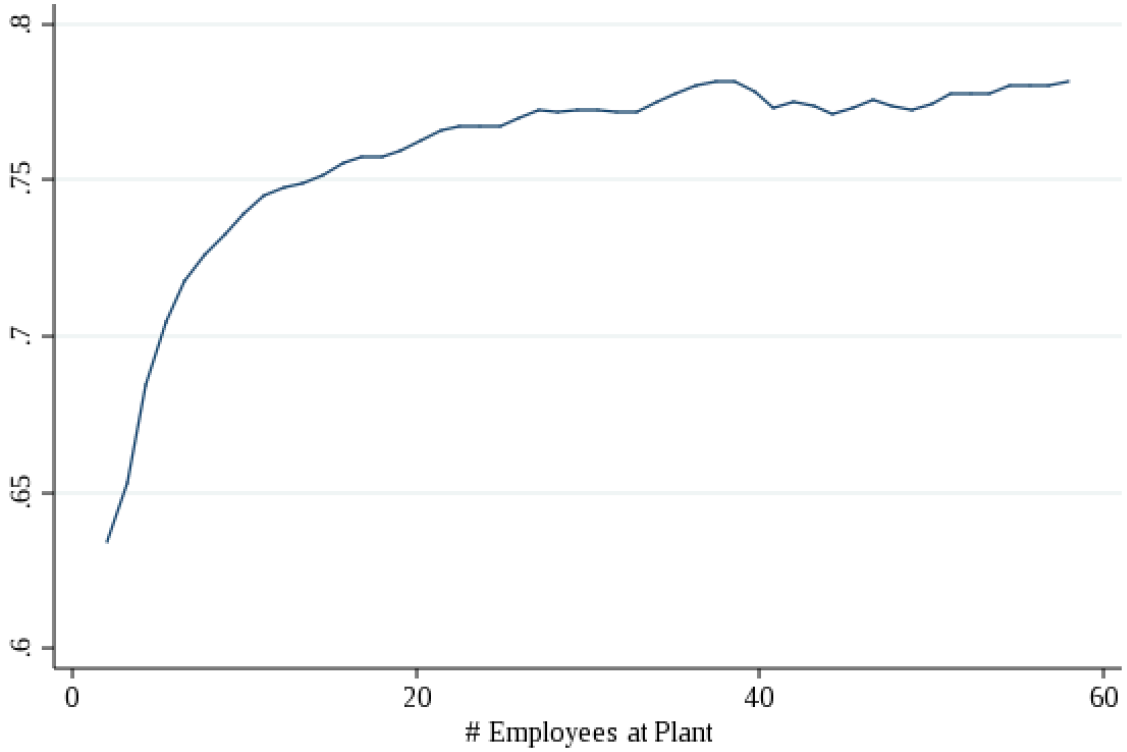

Table A.1
Robustness of First Stage

This table reports versions of the first stage regression including further controls, to demonstrate that additional controls do not affect the coefficient of the instrument. Regressions are identical to those of Table II but with added control variables. *Multi-establishment firm* is a dummy variable equal to one if the firm has more than one establishment. Other control variables are self-explanatory. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable:	Liquidation				
	(1)	(2)	(3)	(4)	(5)
Share of cases converted	0.588***	0.587***	0.587***	0.587***	0.586***
	(0.066)	(0.066)	(0.066)	(0.066)	(0.066)
a. Firm-level controls					
log(employees of bankrupt firm)	-0.029***	-0.029***	-0.029***	-0.030***	-0.030***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
log(establishments of bankrupt firm)	-0.016***	-0.016***	-0.016***	-0.016***	-0.014***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Multi-establishment firm					-0.005
					(0.014)
b. Establishment-level control					
log(employees of bankrupt establishment)	0.010***	0.010***	0.010***	0.010***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
c. Block-level control					
log(employees at block of bankrupt establishment)	-0.026***	-0.025***	-0.025***	-0.025***	-0.025***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
d. Employment change in the 3 years prior to bankruptcy					
% change in employment (block level)	-0.000			-0.000	-0.000
	(0.000)			(0.000)	(0.000)
% change in employment (block-group level)		-0.011***		-0.005	-0.005
		(0.003)		(0.003)	(0.003)
% change in employment (tract level)			-0.033***	-0.027***	-0.027***
			(0.008)	(0.009)	(0.009)
e. Block composition					
% employment in non-tradable					0.011
					(0.015)
% employment in services					0.029**
					(0.013)
Division-year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
F-stat for instrument	80.09	80.1	80.28	80.33	80.08
Adjusted R-squared	0.191	0.192	0.192	0.192	0.192
Observations	91,000	91,000	91,000	91,000	91,000

Table A.2
Exclusion Restriction Tests

This table reports tests of the exclusion restriction condition. Reduced-form regression results are presented where the instrument, *share converted*, is entered directly as an independent variable. We run these regressions separately on the sub-sample of firms that remain in Chapter 11 reorganization and on the sub-sample that is converted to Chapter 7 liquidation. Dependent variables and control variables are identical to those in Table IV. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable:	Employment		
Sample:	Full	Reorganized	Liquidated
	(1)	(2)	(3)
Share converted	-0.025**	-0.012	-0.004
	(0.010)	(0.014)	(0.016)
Control variables	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Adjusted R-squared	0.16	0.19	0.34
Observations	91,000	75,000	16,000

Table A.3
Robustness of Main Results

This table shows the robustness of the estimated effect of liquidation on local non-bankrupt firms. Each line shows 2SLS regression coefficients similar to those in column (2) of Table IV. In row (1), we winsorize the dependent variables (5-year change in employment or number of establishments) at the 10th and 90th percentiles, instead of at the 5th and 95th percentiles as we do in the main analysis. In row (2), we remove blocks whose employment drops to 0 after 5 years. Rows (3) and (4) split the sample by below- and above-median size, in terms of number of employees at the time of bankruptcy. In row (5), we remove blocks which contain more than one establishment owned by the bankrupt firm. Finally, in row (6), we drop blocks with multiple bankrupt establishments from any bankrupt firm. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	Observations	Employment
10% trimming of dependent variable	91,000	-0.039***
		(0.014)
Drop blocks with -100% employment change	82,000	-0.051***
		(0.019)
Below-median block employment	46,000	-0.038*
		(0.022)
Above-median block employment	45,000	-0.056**
		(0.027)
Remove blocks with more than 1 plant from same bankruptcy	81,000	-0.043***
		(0.016)
Remove blocks with more than 1 plant from any bankruptcy	71,000	-0.045***
		(0.017)

Table A.4
Small and Young Firms

This table shows how the effects of liquidation vary depending on the presence of fragile firms in the same block as the bankrupt establishment. The variable *many small* identifies census blocks with an above-median share of establishments with less than 10 employees, while *many small & young* identifies blocks with an above-median share of establishments with less than 10 employees and that are less than 5 years old. We interact these dummy variables with the instrument *share converted* in the first stage regression, and *liquidated* in the second stage. Further, we fully interact all control variables and fixed effects with these indicator variables. The interacted variables in the second stage show that the effects of liquidation are significantly stronger in areas with small and young firms. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Employment	
Model	IV-2SLS	IV-2SLS
Liquidation	-0.006	-0.0348
	(0.022)	(0.0248)
Liquidation * many small	-0.073**	
	(0.034)	
Liquidation * many small & young		-0.060*
		(0.034)
Control variables	Yes	Yes
Division-year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	91,000	91,000

Table A.5
Excluding Shopping Malls

This table shows that the main results are unaffected when we drop census blocks that are likely to contain shopping malls. These regressions are identical to those in column (2) of Table IV except for the sample restrictions. In columns (1) and (2), we remove census blocks that may contain shopping malls by dropping any block in which over 90% (column 1) or 75% (column 2) of total employment is in the non-tradable sector. In the remaining two columns, we follow an alterntaive procedure to identify shopping malls by identifying blocks in which at least 5 non-tradable establishments (column 3) or 10 non-tradable establishments (column 4) have the same address (i.e. same street name and number). These are likely to be shopping malls because they contain many stores in the same building. In these columns, we also exclude any block in which an establishment has "mall," "shopping center," or "shopping ctr" in its address. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Employment			
	<90% Non-trad.	<75% Non-trad.	<5 establ. same address	<10 establ. same address
	(1)	(2)	(3)	(4)
Liquidation	-0.038**	-0.038**	-0.039**	-0.037**
	(0.017)	(0.018)	(0.018)	(0.019)
Control variables	Yes	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	82,000	69,000	83,000	87,000

Table A.6
Services Excluding NAICS 71 and NAICS 81

This table repeats the anlaysis shown in Panel B of Table VIII with a slightly altered definition of the services sector. In the main text, we follow the Census Bureau's definition of the service sector. Here, we re-classify NAICS 71 ("Arts, Entertainment, and Recreation") and NAICS 81 ("Other Services") to the non-tradable sector because some of these firms rely on foot traffic to generate demand, similar to other non-tradable firms. This reclassification does not affect the results. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable	Employment in services industries			
Treatment	All	Non-tradable	Services	Tradable
	(1)	(2)	(3)	(4)
Liquidation	-0.028**	-0.046**	-0.043*	-0.008
	(0.011)	(0.022)	(0.025)	(0.016)
Control variables	Yes	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	91,000	53,000	26,000	12,000

Table A.7
Dense and Rural Areas

This table tests whether the effects of liquidation vary across dense and rural areas. In each column we split the sample by areas that are above or below median by three measures of density: population density (measured at the county level), number of establishments in the census block, and number of employees in the census block. In all three cases, we interact the indicator for above-median density with *liquidation* and, correspondingly, the instrument *share converted* in the first stage. We also interact all control variables and fixed effects with the density indicator. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable	Employment		
	(1)	(2)	(3)
Liquidation	-0.026	-0.035	-0.033
	(0.038)	(0.025)	(0.023)
Liquidation * pop. density	-0.025		
	(0.043)		
Liquidation * high no. plants		-0.014	
		(0.036)	
Liquidation * high no. employees			-0.019
			(0.035)
Control variables	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Observations	91,000	91,000	91,000

Table A.8
Plant Outcome Summary Stats

Table IX in the main text shows that negative spillovers are largest when the bankrupt establishment is either vacant or changes industries. This table displays summary statistics on the status of the bankrupt establishments five years after the bankruptcy. Variable definitions correspond to those used in Table IX.

	All		Chapter 7 (Liquidation)		Chapter 11 (Reorganization)	
	N	Mean	N	Mean	N	Mean
Occupied	91,000	68.90%	16,000	56.08%	75,000	71.67%
Continuer	91,000	23.40%	16,000	2.84%	75,000	27.79%
Reallocated - same 2-digit NAICS	91,000	25.06%	16,000	23.67%	75,000	25.36%
Reallocated - different 2-digit NAICS	91,000	20.44%	16,000	29.57%	75,000	18.52%
Years vacant	91,000	1.32	16,000	2.11	75,000	1.15

Table A.9
Other Establishment Outcomes

This table displays the effects of liquidation on other outcome measures. In column (1), the dependent variable is the percent change in wages per employee in the affected census block over a five-year period after the bankruptcy. In columns (2) - (5), we focus on outcomes for which data exists only for manufacturing establishments (the Census Bureau collects this information through surveys of manufacturing establishments, but not for the full LBD). The dependent variables are, respectively, the total value of shipments (TVS), total factor productivity (TFP), operating margin (OM, defined as shipments minus labor and material costs, all divided by shipments), and investment (the ratio of capital expenditures to capital stock). In all cases, we define these variables as changes in the five years following the bankruptcy filing, as in the main analysis. All regressions are estimated by 2SLS with the full set of controls as in column (3) of Table II. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

		Manufacturing			
Dependent Variable:	Wages	TVS	TFP	OM	Investment
Model	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
	(1)	(2)	(3)	(4)	(5)
Liquidation	0.004	-0.018	0.021	0.006	0.001
	(0.006)	(0.041)	(0.032)	(0.013)	(0.005)
Control variables	Yes	Yes	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	91,000	9,000	9,000	9,000	9,000

Table A.10
Heterogeneity by Relative Size - Quintiles

This table presents estimates from regressions similar to those in Table V. In Table V, we calculate the relative size of the bankrupt establishment based on the ratio of block employment to bankrupt establishment employment. In this table we evenly divide the sample into quintiles across the distribution of the relative size and display the main regression results for each subsasmple. The dependent variable is the annualized percentage change in employment in the Census block of the bankrupt establishment (excluding employment of the bankrupt establishment) in the five years following the bankruptcy filing. Standard errors, clustered at the division-by-year level, are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable	Employment				
Block-to-Estab. Emp Ratio	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
	(1)	(2)	(3)	(4)	(5)
Liquidation	-0.049*	-0.076**	-0.043	-0.016	-0.002
	(0.029)	(0.032)	(0.047)	(0.050)	(0.047)
Control variables	Yes	Yes	Yes	Yes	Yes
Division-year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	18,000	18,000	18,000	18,000	18,000