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A Online Appendix Figures and Tables

Figure A.1: The Effect on the Characteristics of Firms' Senior Management (With All Controls)

Notes: The figure reports yearly coefficients (β_τ) and 95 percent confidence intervals from equation 1. Each panel reports results for a different dependent variable, as indicated in the heading of the panel. The dependent variables are in natural logarithms. The main explanatory variables are the fraction of Jewish managers in 1932, interacted with a fixed effect for each year. The interaction with 1932, the last year before the Nazis gained power, is the excluded interaction. Coefficients and standard errors are scaled to reflect the effect on the average firm with Jewish managers in 1932. The average such firm lost 22 percent of its managers after 1932. All regressions include firm and year fixed effects and the following control variables: an indicator for any connections to the Nazi Party, an indicator for whether the firm published its 1932 financial statement in January, firm age in 1932, firm nominal capital in 1932, and industry fixed effects. All controls are interacted with a full set of year fixed effects. The data include the years 1928, 1932, 1933, and 1938. Standard errors are clustered at the firm level.

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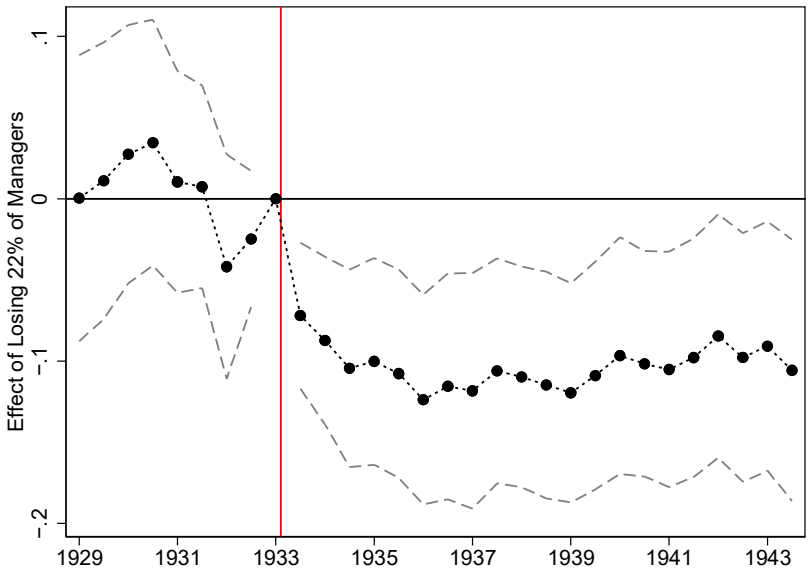
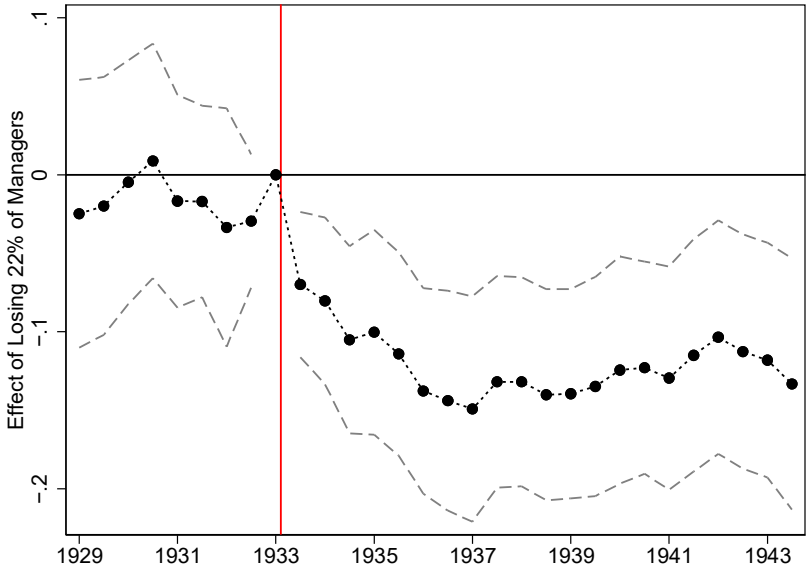
Figure A.2: The Effect on Stock Prices, Adjusted for Dividend Payments

(a) With Firm and Year Fixed Effects



(b) With All Controls



Notes: This figure is identical to Figure 3, except that the stock prices in the dependent variable are adjusted for dividend payments. We adjust for dividend payments by assuming that investors immediately reinvest the dividend paid out by a firm into the stock of that firm (see Appendix B.2.3 for details). This adjustment means that the coefficients measure the effect of losing Jewish managers on the return of investing (on January 10, 1933) into the average firm with Jewish managers in 1932, relative to investing into a firm without Jewish managers in 1932.

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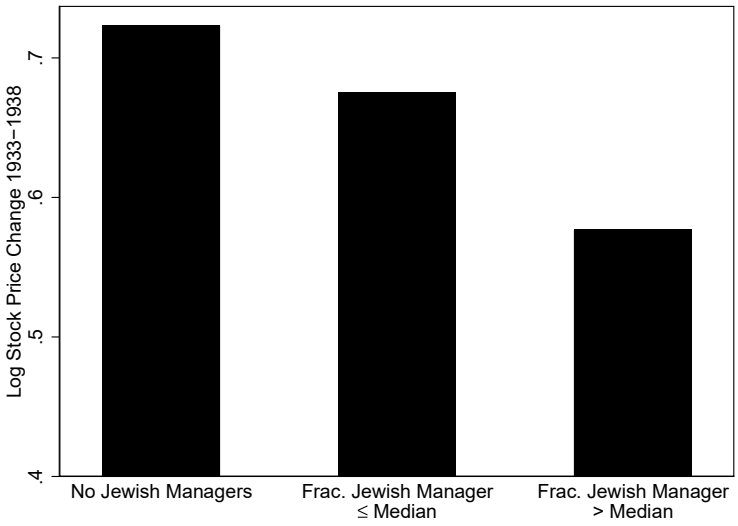
Figure A.3: Stock Price Changes 1933-1938



Notes: The figure shows the average log stock price change between January 1933 (before the Nazis came to power) and July 1938 (when virtually no Jewish managers remained in German firms). We plot the average stock price change for three groups of firms: firms without Jewish managers in 1932; firms where the fraction of Jewish managers in 1932 was positive but below the median; and firms where the fraction of Jewish managers in 1932 was above the median. The stock market generally trended upward from 1933 to 1938. But stock prices increased less for firms that had employed a higher fraction of Jewish managers in 1932.

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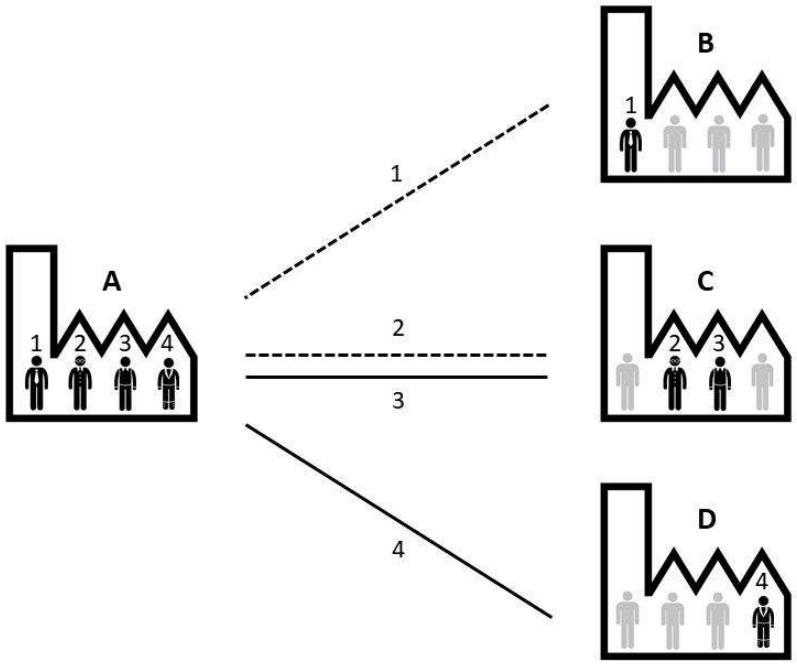
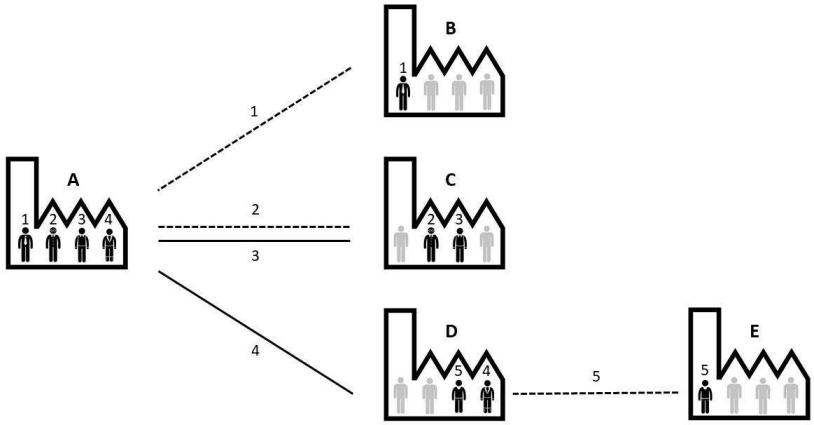
Figure A.4: Measuring Managerial Connections Using Degree Centrality



Notes: The figure shows a simple example of firm connections through managers. The focal firm is firm A, which employed managers 1-4. Managers 1 and 2 were Jewish. Manager 1 was connected to firm B; managers 2 and 3 to firm C; and manager 4 to firm D. Hence, firm A had 3 connections overall. Jewish managers were responsible for the full link to firm B, 0.5 of the link to firm C, and 0 of the link to firm D. Hence, for firm A:

$$Importance\ of\ Jews\ for\ Managerial\ Connections\ (1932) = \frac{(\overbrace{1}^{Firm\ B} + \overbrace{0.5}^{Firm\ C} + \overbrace{0}^{Firm\ D})}{3} = 0.5.$$

Figure A.5: Example of a Second Degree Managerial Connection



Notes: The figure shows a simple example of firm connections through managers. The focal firm is firm A, which employed managers 1-4. Managers 1 and 2 were Jewish. Firms D and E employed another manager 5 who was also Jewish. Manager 5 was responsible for a second degree link between firm A and firm E.

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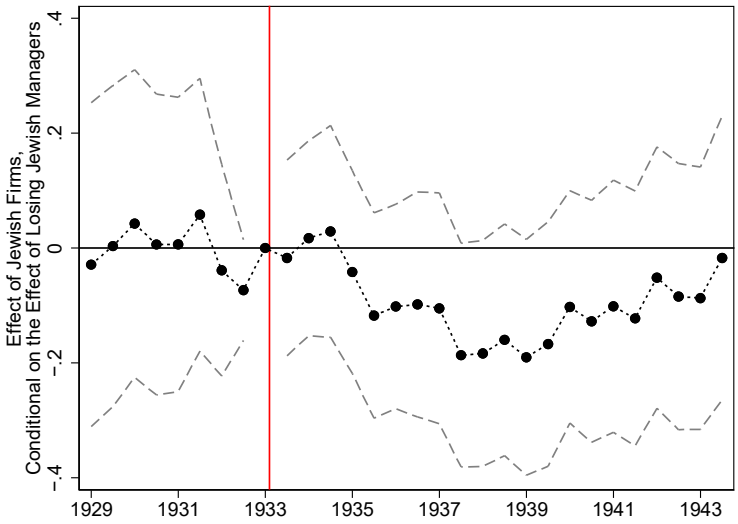
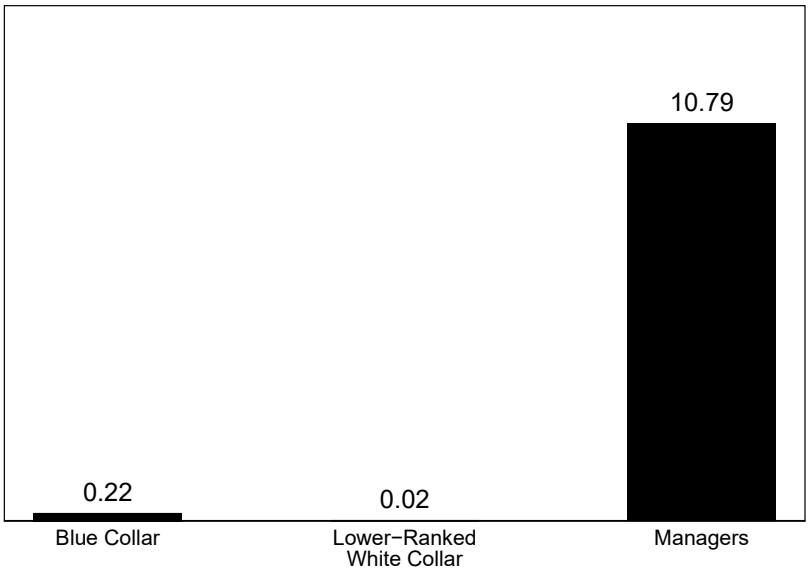
Figure A.6: The Effect on Stock Prices of Firms Perceived as Jewish



Notes: The figure reports coefficients (β_τ) and 95 percent confidence intervals from a regression similar to equation 3. The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable is an indicator for whether the firm was perceived as Jewish by contempories, interacted with a fixed effect for each time period. The interaction with January 1933, the last period before the Nazis gained power, is the excluded interaction. The regression also controls for the fraction of Jewish managers in 1932, interacted with a full set of time fixed effects, and all controls used in Figure 3, panel (b). Standard errors are clustered at the firm level.

Figure A.7: The Share of Jews in Region-Sector Cells With Few Lower-Ranked Jewish Employees



Notes: The figure reports the average percentage of blue collar workers (left bar), lower-ranked white color workers (middle bar) and managers (right bar) in the sample of firms in region-sector cells with the lowest quartiles of both blue collar workers and lower-ranked white collar employees. This sample is equivalent to the estimation sample for columns 5 and 6 in Appendix Table A.15. The data on lower-ranked employees are from the 1933 census (see Appendix Section B.5 for details). The data on managers are from *Handbuch der Deutschen Aktiengesellschaften 1932*.

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Table A.1: Robustness to Alternative Stock Price Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Variable: log(Stock Price)	Exclude 1932		5-day Window		3-day Window		Monthly Stock Prices	
Frac. Jewish Managers (1932)	-0.530***	-0.512***	-0.484***	-0.468***	-0.489***	-0.467***	-0.456***	-0.445***
× Post 1933	(0.148)	(0.149)	(0.141)	(0.139)	(0.144)	(0.142)	(0.137)	(0.137)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Controls		Yes		Yes		Yes		Yes
Number of Observations	11841	11841	11781	11781	11330	11330	12762	12762
Number of Firms	655	655	653	653	653	653	654	654
R^2	0.502	0.565	0.554	0.612	0.545	0.605	0.571	0.626

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window (columns 1 and 2), plus-minus five-day window (columns 3 and 4), or plus-minus three-day window (columns 5 and 6) around January 10th and July 10th of each year. Stock prices in columns 7 and 8 are averaged over the entire month of January and July of each year. We exclude the observations for 1932 in columns 1 and 2. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.2: Summary Statistics on Firms in 1932 by the Importance of Jews for Managerial Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Importance of Jews for								
		No Jewish	Managerial Connections			Managerial Education			Managerial Experience		
	All Firms	Managers	00-20	20-80	80-100	00-20	20-80	80-100	00-20	20-80	80-100
Number of senior managers	11.89	8.64	13.30	14.59	10.00	13.88	14.10	7.25	14.48	13.52	9.60
Number of Jewish senior managers	1.88	0.00	1.48	3.56	3.65	2.04	3.96	2.88	1.64	3.94	5.00
Fraction of Jewish senior managers	0.14	0.00	0.13	0.24	0.35	0.16	0.27	0.42	0.12	0.29	0.46
Managers with tenure since 1928	7.54	5.43	8.18	9.38	6.50	8.82	8.99	4.50	9.37	8.54	3.80
Managers with experience since 1928	9.21	6.37	10.18	11.66	7.53	10.70	11.36	5.13	11.52	10.62	5.40
Managers with university education	4.94	3.11	5.72	6.56	3.15	5.83	6.43	2.25	6.30	5.94	3.40
Managers with graduate education	3.22	1.97	3.57	4.34	2.32	3.75	4.26	1.88	4.25	3.80	2.80
Connections to large and medium-sized German firms	51.04	24.26	58.32	74.58	38.29	60.12	75.48	32.13	64.52	69.59	47.40
Nazi connection	0.17	0.09	0.27	0.21	0.03	0.20	0.23	0.00	0.24	0.19	0.00
Nominal capital (in million RM)	36.36	4.72	156.89	20.71	5.80	100.40	14.41	4.16	114.06	15.61	3.37
Nominal capital (in million RM) without conglomerates	11.98	4.72	18.17	17.05	5.80	19.01	14.41	4.16	17.95	15.61	3.37
Firm age (in years)	42.06	42.89	39.68	42.86	37.26	41.29	41.95	38.00	42.61	40.46	58.60
Balance sheet reported in January	0.68	0.66	0.70	0.68	0.74	0.71	0.67	0.63	0.69	0.69	0.80

Notes: The data on managers, their characteristics, and control variables are for the year 1932 and were collected from various historical sources (see Section 2 for details). The measures for the importance of Jews for various managerial characteristics are described in Section 4.2 and Table 4.

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Table A.3: The Effect on the Characteristics of Firms' Senior Management, Using the Inverse Hyperbolic Sine

	(1)	(2)	(3)	(4)
Dep. Variable:	# of Managers with Tenure since 1928	# of Managers with Experience since 1928	# of Managers with University Education	# of Connections
Frac. Jewish Managers (1932)	-0.971***	-0.689***	-0.225**	-0.627***
× Post 1933	(0.116)	(0.097)	(0.093)	(0.156)
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Number of Observations	2538	2538	2538	2538
Number of Firms	655	655	655	655
R^2	0.714	0.634	0.011	0.256

Notes: The heading of each column lists the dependent variable. All dependent variables are transformed using the inverse hyperbolic sine, an approximation to the log that permits using zero values. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the years after 1932. The data include the years 1928, 1932, 1933, and 1938. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.4: The Effect on the Characteristics of Firms' Senior Management (Binary Treatment Indicator)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dep. Variable: log(# of Managers with Tenure since 1928), # of obs./firms: 2412/655						
Firm with Jewish Managers (1932)	-0.229***	-0.229***	-0.228***	-0.227***	-0.228***	-0.219***
× Post 1933	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.032)
R^2	0.746	0.746	0.747	0.747	0.747	0.755
Panel B: Dep. Variable: log(# of Managers with Experience since 1928), # of obs./firms: 2493/655						
Firm with Jewish Managers (1932)	-0.154***	-0.168***	-0.167***	-0.165***	-0.163***	-0.157***
× Post 1933	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.031)
R^2	0.656	0.660	0.660	0.662	0.662	0.677
Panel C: Dep. Variable: log(# of Managers with University Education), # of obs./firms: 2408/645						
Firm with Jewish Managers (1932)	-0.151***	-0.140***	-0.141***	-0.138***	-0.138***	-0.130***
× Post 1933	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
R^2	0.025	0.029	0.030	0.037	0.037	0.060
Panel D: Dep. Variable: log(# of Connections), # of obs./firms: 2510/655						
Firm with Jewish Managers (1932)	-0.198***	-0.210***	-0.211***	-0.208***	-0.210***	-0.198***
× Post 1933	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
R^2	0.253	0.255	0.259	0.260	0.261	0.281
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Nazi Connection × Time FE		Yes	Yes	Yes	Yes	Yes
Reporting Period × Time FE			Yes	Yes	Yes	Yes
Firm Age × Time FE				Yes	Yes	Yes
Nominal Capital × Time FE					Yes	Yes
Industry FE × Time FE						Yes

Notes: The heading of each panel lists the relevant dependent variable. The main explanatory variable is an indicator for whether the firm had any Jewish managers in 1932, interacted with an indicator for the years after 1932. The control variables are identical to Table 3. The data include the years 1928, 1932, 1933, and 1938. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.5: The Effect on the Total Number of Managers

	(1)	(2)	(3)	(4)
Dep. Variable:	# of Managers		log(# of Managers)	
Jewish Managers (1932)	0.072		0.007	
× Post 1933	(0.099)		(0.004)	
Frac. Jewish Managers (1932)		0.346		-0.085
× Post 1933		(0.944)		(0.057)
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
All Controls	Yes	Yes	Yes	Yes
Number of Observations	2538	2538	2538	2538
Number of Firms	655	655	655	655
R^2	0.429	0.429	0.359	0.358

Notes: The dependent variable in columns 1 and 2 is the number of managers. The dependent variable in columns 3 and 4 is the natural logarithm of the number of managers. The first explanatory variable measures the number of Jewish managers in 1932. The second explanatory variable measures the fraction of Jewish managers in 1932. The two explanatory variables are interacted with an indicator for the years after 1932. The control variables include: an indicator for any connections to the Nazi Party, an indicator for whether the firm published its 1932 financial statement in January, firm age in 1932, firm nominal capital in 1932, and industry fixed effects. We also control for the log of the total number of managers in 1928 because there was a secular decrease in the number of managers in firms that had large boards in 1928. All controls are interacted with a full set of year fixed effects. The data include the years 1928, 1932, 1933, and 1938. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.6: Robustness to Various Industry Classifications

	(1)	(2)	(3)	(4)
Dep. Variable: log(Stock Price)				
Frac. Jewish Managers (1932)	-0.464***	-0.432***	-0.436***	-0.433***
× Post 1933	(0.138)	(0.135)	(0.139)	(0.141)
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
All Other Controls	Yes	Yes	Yes	Yes
Industry FE (10 Categories)	Yes			
Industry FE (22 Categories)		Yes		
Industry FE (43 Categories)			Yes	Yes
Number of Observations	12710	12710	12710	11962
Number of Firms	655	655	655	620
R^2	0.622	0.648	0.688	0.679

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. In column 1, we control for 10 industry fixed effects, interacted with 30 time dummies. The industry categorization is based on Ziegler (2000b). In column 2, we control for 22 industry fixed effects, interacted with 30 time dummies. The industry categorization is based on the sectoral classification in *Handbuch der Deutschen Aktiengesellschaften* 1932. In column 3, we control for 43 industry fixed effects, interacted with 30 time dummies. This industry categorization is hand-coded using detailed narrative descriptions of each firm's activities in *Handbuch der Deutschen Aktiengesellschaften*. In column 4, we use the same industry classification as in column 3 but drop industries with fewer than 5 firms. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.7: The Effect on Stock Prices (Binary Treatment Indicator)

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable: log(Stock Price)						
Firm with Jewish Managers (1932)	-0.147***	-0.138***	-0.137***	-0.142***	-0.140***	-0.133***
× Post 1933	(0.043)	(0.042)	(0.041)	(0.041)	(0.041)	(0.041)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Nazi Connection × Time FE		Yes	Yes	Yes	Yes	Yes
Reporting Period × Time FE			Yes	Yes	Yes	Yes
Firm Age × Time FE				Yes	Yes	Yes
Nominal Capital × Time FE					Yes	Yes
Industry FE × Time FE						Yes
Number of Observations	12710	12710	12710	12710	12710	12710
Number of Firms	655	655	655	655	655	655
R^2	0.566	0.568	0.570	0.579	0.581	0.621

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable is an indicator for whether the firm had any Jewish managers in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.8: The Effect of Dismissals in 1933 and Dismissals After 1933

	(1)	(2)
Dep. Variable: log(Stock Price)		
Firms with dismissals in 1933		
Frac. Jewish Managers (1932)	-0.408***	-0.343**
× 𝟙(1933)	(0.154)	(0.157)
Frac. Jewish Managers (1932)	-0.534***	-0.490***
× Post 1934	(0.146)	(0.149)
Firms with all dismissals after 1933		
Frac. Jewish Managers (1932)	-0.100	0.039
× 𝟙(1933)	(0.217)	(0.209)
Frac. Jewish Managers (1932)	-0.307	-0.440**
× Post 1934	(0.235)	(0.224)
Firm FE	Yes	Yes
Time FE	Yes	Yes
All Controls		Yes
Number of Observations	12710	12710
Number of Firms	655	655
R^2	0.567	0.622

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variables measures the fraction of Jewish managers in 1932, interacted with an indicator for (a) July 1933, (b) January 1934 and all months after, (c) July 1933 in firms with dismissals after 1933, and (d) January 1934 and all months after in firms with dismissals after 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.9: Firms With At Least One Jewish Manager

	(1)	(2)	(3)	(4)
	At least 1 Jewish Manager		Without Conglomerates	
Dep. Variable: log(Stock Price)				
Frac. Jewish Managers (1932)	-0.298	-0.370*	-0.297	-0.393**
× Post 1933	(0.195)	(0.188)	(0.196)	(0.187)
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
All Controls		Yes		Yes
Number of Observations	8648	8648	8593	8593
Number of Firms	408	408	406	406
R^2	0.565	0.626	0.566	0.630

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The sample contains all firms with at least one Jewish manager. In addition, we drop two conglomerate firms in columns 3 and 4. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.10: Firms Not in Cartels Vs. Firms in Cartels

	(1)	(2)	(3)	(4)
Dep. Variable: log(Stock Price)	Firms Not in Cartels		Firms in Cartels	
Frac. Jewish Managers (1932)	-0.552***	-0.471***	-0.195	-0.307
× Post 1933	(0.165)	(0.159)	(0.211)	(0.232)
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
All Controls		Yes		Yes
Number of Observations	9433	9433	3277	3277
Number of Firms	495	495	160	160
R^2	0.540	0.612	0.665	0.715

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. In columns 1 and 2, the sample contains firms that were not members of a cartel. In columns 3 and 4, the sample contains firms that were members of a cartel. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.11: Heterogeneity by Industry Dependence on Managers

	(1)	(2)	(3)	(4)
	Industry Heterogeneity According to: Share of Managers			
Dep. Variable: log(Stock Price)	Below Median		Above Median	
Frac. Jewish Managers (1932)	-0.246	-0.399	-0.606***	-0.439***
× Post 1933	(0.221)	(0.243)	(0.171)	(0.166)
Number of Observations	5337	5337	7373	7373
Number of Firms	291	291	364	364
R^2	0.588	0.625	0.558	0.631
Firm FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
All Controls		Yes		Yes

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. We identify an industry's dependence on managers by calculating the share of middle- and upper-level managers in an industry out of all employees, using data from the 1933 census. In columns 1 and 2, the sample contains firms in industries below the median. In columns 3 and 4, the sample contains firms in industries above the median. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.12: Managers in Chief and Regular Positions

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable: log(Stock Price)						
Frac. Jewish Managers in Chief Executive	-0.297***	-0.312***			-0.231*	-0.252**
Positions (1932) × Post 1933	(0.110)	(0.104)			(0.123)	(0.115)
Frac. Jewish Managers in Regular			-0.292**	-0.290**	-0.208	-0.204
Positions (1932) × Post 1933			(0.125)	(0.126)	(0.138)	(0.137)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Controls		Yes		Yes		Yes
Number of Observations	12710	12710	12710	12710	12710	12710
Number of Firms	655	655	655	655	655	655
R^2	0.565	0.621	0.564	0.620	0.566	0.622

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. We define managers in chief positions to be the top hierarchical level of the executive board and the chairmen of the supervisory board (i.e., managers performing functions akin to a modern CEO). The remaining board members are regular managers. The first main explanatory variable measures the fraction of Jewish managers in chief positions in 1932, interacted with an indicator for the months after January 1933. The second main explanatory variable measures the fraction of Jewish managers in regular positions in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.13: Katz and Eigenvector Centrality to Account for Changes in Higher Order Connections

Dep. Variable: log(Stock Price)	(1) Degree Centrality	(2) Katz Centrality $\alpha = 0.0005$	(3) Katz Centrality $\alpha = 0.001$	(4) Katz Centrality $\alpha = 0.005$	(5) Katz Centrality $\alpha = 0.01$	(6) Eigenvector Centrality
$\mathbb{1}[0 <$ Importance of Jews for Managerial Characteristics (1932) $< 0.20]$	0.077	0.080	0.081	0.152	0.264	
× Post 1933	(0.065)	(0.068)	(0.071)	(0.111)	(0.165)	
$\mathbb{1}[0.20 \leq$ Importance of Jews for Managerial Connections (1932) $< 0.80]$	-0.115**	-0.107*	-0.112**	-0.092*	0.058	0.030
× Post 1933	(0.057)	(0.056)	(0.056)	(0.050)	(0.156)	(0.398)
$\mathbb{1}[0.80 \leq$ Importance of Jews for Managerial Connections (1932)]	-0.215**	-0.208*	-0.212**	-0.112	0.073	0.433
× Post 1933	(0.107)	(0.106)	(0.106)	(0.087)	(0.163)	(0.395)
$\mathbb{1}[0.20 \leq$ Importance of Jews for Managerial Education (1932) $< 0.80]$	-0.142**	-0.143**	-0.143**	-0.146**	-0.176***	-0.175***
× Post 1933	(0.063)	(0.063)	(0.063)	(0.063)	(0.064)	(0.064)
$\mathbb{1}[0.80 \leq$ Importance of Jews for Managerial Education (1932)]	-0.655***	-0.655***	-0.655***	-0.668***	-0.714***	-0.713***
× Post 1933	(0.216)	(0.217)	(0.217)	(0.207)	(0.209)	(0.210)
$\mathbb{1}[0.20 \leq$ Importance of Jews for Managerial Experience (1932) $< 0.80]$	0.068	0.061	0.063	0.028	-0.018	-0.014
× Post 1933	(0.067)	(0.066)	(0.066)	(0.061)	(0.063)	(0.056)
$\mathbb{1}[0.80 \leq$ Importance of Jews for Managerial Experience (1932)]	0.142	0.136	0.135	0.107	0.053	0.066
× Post 1933	(0.188)	(0.188)	(0.186)	(0.197)	(0.197)	(0.194)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	12710	12710	12710	12710	12710	12710
Number of Firms	655	655	655	655	655	655
R^2	0.631	0.631	0.631	0.631	0.629	0.629

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The explanatory variables are described in Table 5. The difference to Table 5 is that the underlying measure of connections varies in each column (either degree centrality, forms of Katz centrality, or eigenvector centrality), as indicated in the top row of the table. The measures of connections are described in detail in Section D. The main explanatory variables are all interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.14: Connections to Banks and Non-Banks

Dep. Variable: log(Stock Price)	(1)	(2)	(3)	(4)	(5)	(6)
	All Connections		Connections to Banks		Connections to Non-Banks	
𝟙[0 < Importance of Jews for Managerial Connections (1932) < 0.20]	-0.034	-0.003	-0.075	-0.077	-0.046	-0.021
× Post 1933	(0.058)	(0.059)	(0.054)	(0.054)	(0.058)	(0.059)
𝟙[0.20 ≤ Importance of Jews for Managerial Connections (1932) < 0.80]	-0.179***	-0.164***	-0.189***	-0.152***	-0.186***	-0.167***
× Post 1933	(0.048)	(0.046)	(0.053)	(0.050)	(0.048)	(0.046)
𝟙[0.80 ≤ Importance of Jews for Managerial Connections (1932)]	-0.250**	-0.295***	-0.169**	-0.184***	-0.141	-0.209**
× Post 1933	(0.103)	(0.098)	(0.069)	(0.065)	(0.101)	(0.106)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Controls		Yes		Yes		Yes
Number of Observations	12710	12710	12710	12710	12710	12710
Number of Firms	655	655	655	655	655	655
R^2	0.568	0.625	0.567	0.622	0.568	0.624

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variables are indicators for whether Jewish managers were responsible for: 1) less than 20 percent, 2) 20 percent to less than 80 percent, and 3) more than 80 percent of managerial connections. In columns 1 and 2, connections refer to connections to all firms. In columns 3 and 4, connections refer only to connections to banks. In columns 5 and 6, connections refer only to connections to non-banks. For firms without Jewish managers in 1932, all of the reported indicator variables in all columns are zero. The main explanatory variables are all interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.15: Region-Sector Cells With Few Lower-Ranked Jewish Employees

Dep. Variable: log(Stock Price)	(1)	(2)	(3)	(4)	(5)	(6)
	Below 25th Percentile of Jewish Employees:					
	Blue Collar Workers		Lower-Ranked White Collar Employees		Both Categories	
Frac. Jewish Managers (1932)	-0.776**	-0.689*	-0.750**	-0.758**	-0.857**	-0.860**
× Post 1933	(0.338)	(0.370)	(0.329)	(0.365)	(0.367)	(0.416)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Controls		Yes		Yes		Yes
Number of Observations	2824	2824	2888	2888	2342	2342
Number of Firms	165	165	165	165	136	136
R^2	0.569	0.662	0.588	0.667	0.578	0.666

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. In columns 1 and 2, we only include firms in regions-sector cells below the 25th percentile among blue collar workers. In columns 3 and 4, we only include firms in regions-sector cells below the 25th percentile among lower-ranked white collar employees. In columns 5 and 6, we only include firms in regions-sector cells below the 25th percentile among both blue collar workers and lower-ranked white collar employees. The data for the lower-ranked employees are from the 1933 German census. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.16: Firms Without Large Jewish Shareholders

	(1)	(2)
Dep. Variable: log(Stock Price)		
Frac. Jewish Managers (1932)	-0.480***	-0.489***
× Post 1933	(0.156)	(0.157)
Firm FE	Yes	Yes
Time FE	Yes	Yes
All Controls		Yes
Number of Observations	11329	11329
Number of Firms	589	589
R^2	0.560	0.621

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. We drop firms from the sample where a Jewish individual or a Jewish firm (for example, a Jewish private bank) was a large shareholder. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.17: Testing for Spillover Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable: log(Stock Price)						
Frac. Jewish Managers (1932)	-0.463***	-0.471***	-0.430***	-0.427***	-0.426***	-0.421***
× Post 1933	(0.138)	(0.135)	(0.144)	(0.141)	(0.145)	(0.142)
Avg. Frac. Jewish Managers (Industry)	-0.108	-0.180			-0.100	-0.170
× Post 1933	(0.256)	(0.254)			(0.254)	(0.252)
Avg. Frac. Jewish Managers (Region)			-0.283	-0.386	-0.278	-0.380
× Post 1933			(0.359)	(0.348)	(0.358)	(0.347)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls		Yes		Yes		Yes
Number of Observations	12710	12710	12710	12710	12710	12710
Number of Firms	655	655	655	655	655	655
R^2	0.566	0.582	0.566	0.582	0.566	0.582

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The first main explanatory variable measures the fraction of Jewish managers in 1932 at firm *i*. The second main explanatory variable measures the (weighted) average fraction of Jewish managers in 1932 in all other firms in the same industry. We use the industry classification with 43 categories (see Appendix Table A.6). Results are similar if we use the classification with 10 categories. The third main explanatory variable measures the (weighted) average fraction of Jewish managers in 1932 in all other firms in the same region. The three main explanatory variables are interacted with an indicator for the months after January 1933. We weight firms by nominal capital to calculate the average fraction of Jewish managers in all other firms in the same industry or region. For this weighting, we winsorize nominal capital at the 99.5th percentile, to ensure the three largest firms do not bias the average values excessively. The results are similar when we include unweighted measures of the average fraction of Jewish managers in the same industry or region in the regressions. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.18: The Effect on Dividends and Return on Assets in Firms Favored by the Nazis

	(1)	(2)
Dep. Variable:	Dividends	Return on Assets
Frac. Jewish Managers (1932)	-3.227*	-0.433***
× Post 1933	(1.814)	(0.107)
Firm FE	Yes	Yes
Time FE	Yes	Yes
All Controls	Yes	Yes
Number of Observations	2019	167
Number of Firms	171	96
R^2	0.408	0.816

Notes: The dependent variable in column 1 is the annual dividend payment, measured as a percentage of the nominal stock value. The data in column 1 include the years 1929 to 1943. The dependent variable in column 2 is the return on assets, measured as the ratio of profits before interest payments and taxes to total assets. The data in columns 2 include the years 1931, 1936, and 1940. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. The sample of favored firms contains firms with connections to the Nazi Party and firms that received forced labor workers from the Nazi government, excluding firms historically perceived as Jewish. The control variables are identical to Table 4. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.19: The Effect on Dividends and Return on Assets: Jewish Managers Vs. Firms Perceived As Jewish

	(1)	(2)
Dep. Variable:	Dividends	Return on Assets
Jewish Firm	-0.710	-0.026
× Post 1935	(0.520)	(0.045)
Frac. Jewish Managers (1932)	-1.444*	-0.172*
× Post 1933	(0.777)	(0.090)
Firm FE	Yes	Yes
Time FE	Yes	Yes
All Controls	Yes	Yes
Number of Observations	7379	492
Number of Firms	655	289
R^2	0.241	0.561

Notes: The dependent variable in column 1 is the annual dividend payment, measured as a percentage of the nominal stock value. The data in column 1 include the years 1929 to 1943. The dependent variable in column 2 is the return on assets, measured as the ratio of profits before interest payments and taxes to total assets. The data in columns 2 include the years 1931, 1936, and 1940. The first main explanatory variable is an indicator for firms historically perceived as Jewish, interacted with an indicator for the months after January 1935. The second main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.20: The Effect on Dividends and Return on Assets: Correlated Demand Shocks

	(1) No Retail	(2) No Arms Producers	(3) No Iron and Steel, Machines, Chemicals	(4) No Construction	(5) Non-International Firms	(6) No Firm-Specific Demand Shocks
Panel A: Dep. Variable: Dividends						
Frac. Jewish Managers (1932)	-1.501*	-1.774**	-1.607	-1.662**	-2.122**	-0.998
× Post 1933	(0.782)	(0.797)	(1.131)	(0.788)	(0.963)	(0.889)
Number of Observations	7287	7041	4408	7005	4573	5962
Number of Firms	647	626	386	620	419	544
R^2	0.240	0.236	0.208	0.233	0.224	0.290
Panel B: Dep. Variable: Return on Assets						
Frac. Jewish Managers (1932)	-0.183**	-0.215***	-0.140	-0.220***	-0.259***	-0.216**
× Post 1933	(0.082)	(0.082)	(0.119)	(0.083)	(0.078)	(0.094)
Number of Observations	486	461	256	464	289	401
Number of Firms	286	271	152	275	172	238
R^2	0.561	0.569	0.400	0.577	0.543	0.583
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The dependent variable in Panel A is the annual dividend payment, measured as a percentage of the nominal stock value. The data in Panel A include the years 1929 to 1943. The dependent variable in Panel B is the return on assets, measured as the ratio of profits before interest payments and taxes to total assets. The data in Panel B include the years 1931, 1936, and 1940. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. We drop from the sample: firms in the retail sector (column 1); firms that the Reichswehr had listed as important for armaments production, based on Hansen (1978) (column 2); firms producing iron and steel, machines, and chemicals (column 3); firms in the construction sector (column 4); firms that were internationally active (columns 5); firms that were hit by firm-specific product demand shocks between 1933 and 1941 according to *Handbuch der Deutschen Aktiengesellschaften 1941* (column 6). The control variables are identical to Table 4. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.21: Robustness to Various Controls for Firm Size

Dep. Variable: log(Stock Price)	(1)	(2)	(3)	(4)	(5)	(6)
		Full Sample		Without Conglomerates	Firm Size ≤ Median	Firm Size > Median
Panel A: Measure of Firm Size: Nominal Capital						
Frac. Jewish Managers (1932)	-0.464***	-0.406***	-0.406***	-0.439***	-0.596**	-0.474***
× Post 1933	(0.138)	(0.136)	(0.135)	(0.134)	(0.266)	(0.161)
Number of Observations	12710	12710	12710	12655	5170	7540
Number of Firms	655	655	655	653	335	320
R^2	0.622	0.628	0.635	0.626	0.660	0.630
Panel B: Measure of Firm Size: Total Number of Managers						
Frac. Jewish Managers (1932)	-0.416***	-0.381***	-0.368***	-0.401***	-0.493**	-0.433**
× Post 1933	(0.135)	(0.136)	(0.137)	(0.136)	(0.215)	(0.169)
Number of Observations	12710	12710	12710	12655	5950	6760
Number of Firms	655	655	655	653	345	310
R^2	0.624	0.624	0.634	0.625	0.657	0.623
Panel C: Measure of Firm Size: Both Nominal Capital and Total Number of Managers						
Frac. Jewish Managers (1932)	-0.417***	-0.375***	-0.362***	-0.403***		
× Post 1933	(0.135)	(0.135)	(0.133)	(0.135)		
Number of Observations	12710	12710	12710	12655		
Number of Firms	655	655	655	653		
R^2	0.625	0.629	0.647	0.627		
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
All Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Size	Yes			Yes	Yes	Yes
Log of Firm Size		Yes				
Deciles of Firm Size			Yes			

Notes: The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. We use the full sample in columns 1 to 3. In column 4, we drop conglomerates. In column 5, the sample contains only firms below the median for the respective firm size measure (panel A: nominal capital, panel B: total number of managers). In column 6, the sample contains only firms above the median for the respective firm size measure. Column 1 and columns 4 to 6 control for the level of the respective firm size measure, column 2 for natural logarithm of the firm size measure, and column 3 for deciles of the firm size measure. In addition, all specifications include control variables identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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Table A.22: Firms That Are Regularly Traded or Never Delisted

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Variable: log(Stock Price)	≥ 15 Stock Prices		≥ 25 Stock Prices		30 Stock Prices		Never Delisted	
Frac. Jewish Managers (1932)	-0.421***	-0.445***	-0.396**	-0.420***	-0.700***	-0.720***	-0.432***	-0.482***
× Post 1933	(0.146)	(0.145)	(0.157)	(0.154)	(0.235)	(0.233)	(0.158)	(0.155)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Controls		Yes		Yes		Yes		Yes
Number of Observations	10645	10645	8755	8755	3690	3690	9907	9907
Number of Firms	401	401	306	306	123	123	371	371
R^2	0.574	0.639	0.597	0.666	0.570	0.677	0.583	0.647

Notes: We include firms that were traded on at least 15 Januarys or Julys between January 1929 and July 1943 in columns 1 and 2. We include firms that were traded on at least 25 Januarys or Julys in columns 3 and 4. We include firms that were traded on all 30 Januarys or Julys in columns 5 and 6. We include only firms that were never delisted in columns 7 and 8. The dependent variable is the natural logarithm of the stock price. Stock prices are averaged in a plus-minus 10-day window around January 10th and July 10th of each year. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the months after January 1933. The control variables are identical to Table 4. The data include the months January and July for the years from 1929 to 1943. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

Table A.23: The Effect on Firm Delisting and Firm Exit

	(1)	(2)	(3)	(4)	(5)	(6)
	Linear Probability Model		Extended Cox Hazard Model		Linear Probability Model	
Dep. Variable:	Delisting Indicator		Delisting Indicator		Firm Exit Indicator	
Frac. Jewish Managers (1932)	-0.018	-0.038			0.084	0.059
	(0.128)	(0.130)			(0.074)	(0.072)
Frac. Jewish Managers (1932)			-0.415	-0.280		
× Post 1933			(0.448)	(0.459)		
All Controls		Yes		Yes		Yes
Number of Firms	655	655	655	655	655	655
R^2	0.000	0.051			0.003	0.026

Notes: Columns 1 and 2 report the results of a cross-sectional, linear probability model. The dependent variable in columns 1 and 2 is an indicator that is equal to 1 if the firm was delisted from the Berlin Stock Exchange after January 1933. The main explanatory variable measures the fraction of Jewish managers in 1932. Columns 3 and 4 report the results of an extended Cox hazard model, with time-varying coefficients. The data include two periods, before and after January 1933. The dependent variable in columns 3 and 4 is the natural logarithm of the relative hazard of being delisted in the relevant period. The main explanatory variable measures the fraction of Jewish managers in 1932, interacted with an indicator for the period after January 1933. Columns 5 and 6 report the results of a cross-sectional, linear probability model. The dependent variable in columns 5 and 6 is an indicator for firm exit. The main explanatory variable measures the fraction of Jewish managers in 1932. In columns 1-2 and 5-6, the control variables include: an indicator for any connections to the Nazi Party, an indicator for whether the firm published its 1932 financial statement in January, firm age in 1932, firm nominal capital in 1932, and industry fixed effects. In columns 3-4, the control variables are as above, but all are interacted with fixed effects for the periods before and after January 1933. Standard errors are clustered at the firm level. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1.

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B Online Appendix: Data Construction

B.1 Information on Managers

In 1932, a total of 784 stocks were listed on the Berlin Stock Exchange. *Handbuch der deutschen Aktiengesellschaften* reports only information on German firms, so we exclude 25 stocks of foreign firms. We also exclude eight stocks for which the *Handbuch* does not report board members and two stocks that were never traded in our sample period. A total of 41 firms issued multiple stocks, so we choose the most frequently traded stock for these firms. Of the remaining 708 firms, we exclude 16 stocks of firms in liquidation in January 1933 and 37 stocks of firms that merged with other firms during our sample period and where the merger resulted in a change of the stock name reported in the *Monatskursblatt*.

The data on senior managers of all firms listed on the Berlin Stock exchange in 1932 are from four editions of the *Handbuch der deutschen Aktiengesellschaften (1928, 1932, 1933, and 1939),* which is a compilation of annual reports of all joint stock firms in Germany (see Figure B.1 for a sample page). Until 1933, the *Handbuch* included amendments, so that the list of senior managers reflects the status at the end of the respective years (1928, 1932, and 1933). In 1939, the *Handbuch* did not publish amendments so that the list of senior managers reflects the status at the time of the publication of the annual report. We therefore refer to the relevant years as 1928, 1932, 1933, and 1938.

Figure B.1: Example Page from *Handbuch der deutschen Aktiengesellschaften* 1932

Bayerische Motoren-Werke, Akt.-Ges.

in **München,** Lerchenauer Strasse 76.

Gegründet: 19./2., 20./2. u. 2./3. 1916; eingetr. 8./3. 1916 unter der Firma Bayer. Flugzeugwerke (bis 4./7. 1922). Zweigniederl. in Eisenach.

Zweck: Herstell. u. gewerbsmässiger Vertrieb von Motoren u. allen damit ausgestatteten Fahrzeugen, deren Zubehör, sowie allen Erzeugnissen der Maschinen-, Metall- u. Holzindustrie. Zur Zeit befasst sich die Ges. mit der Herstellung von Flugzeugmotoren sowie von Motorrädern u. Automobilen.

Entwicklung: Die Ges. erwarb 1922 die gesamten Einricht., Patente u. Konstruktionen sowie alle aus dem Motorenbau stammenden Rechte u. Pflichten, ferner auch den Namen der damaligen Firma Bayerische Motoren Werke, A.-G., den sie seit dieser Zeit führt. Die

Kurs: In Berlin: Ende 1926—1930: 180, 200.75, 232, 81, 54%; 1931 (30./6.): 48.75%. In München Ende 1926—1930: 181, 198, 232.50, 81, 52.50%; 1931 (30./6.): 46%. Zulassung von RM. 5 000 000 Akt. in Berlin u. München Juni 1926 genehmigt. Zulassung von RM. 5 000 000 Em. v. April 1927 im Juni 1927 in Berlin u. München. Zulassung von RM. 6 000 000 Akt. (Em. v. Juli 1928) im Sept. 1928 in Berlin u. München. Sämtl. Aktien sind zugelassen.

Dividenden: 1924—1931: 10, 10, 12, 14, 14, 7, 0, 0%.

Vorstand: Dipl.-Ing. F. J. Popp, Max Friz, Franz Klebe, Fritz Klopfer, München.

Prokuristen: Dr. Franz Brenner, München; Ingobert Starke, München; L. C. Grass, Eisenach; Curt Ebersbach, Eisenach; Albert Kandt, Eisenach.

Aufsichtsrat: Vors. Bank-Dir. Dr. E. G. von Stauss; Stellv. Bankier Karl Hagen, Stellv. Dir. Max H. Schmid, Louis Hagen jr., Bank-Dir. Dr. Wilhelm Kleemann, Berlin; Dir. Wilhelm Kissel, Stuttgart; Dipl.-Ing. Hans Noris, München; Justizrat Dr. h. c. Albert Pinner, Bankier Max von Wassermann, Berlin; Bankdir. Ludwig Weil, München; vom Betriebsrat: R. Vigier, F. Ifland.

Notes: The figure displays the entry for Bayerische Motoren-Werke (BMW) from the 1932 edition of the *Handbuch der deutschen Aktiengesellschaften*, pp 435-437.

B.1.1 Harmonizing Manager Names

We manually harmonize the spelling of thousands of manager names. This allows us to match managers across firms in the same volume of the *Handbuch* and/or across different volumes of the *Handbuch.* For example, "Philipp Heineken" is sometimes abbreviated as "Phil. Heineken" or "Ph. Heineken." The harmonization also allows us to match managers to sources on Jewish managers.

B.1.2 Measuring Manager Characteristics

Tenure and Experience

After harmonizing the spelling of manager names, we merge the list of all managers who were present 1932 to the list of managers who were present in 1928. This allows us to measure tenure and experience as senior managers since 1928.

University Education

We classify managers as managers with a university education if the *Handbuch* lists them with the following characteristics:

1. Professor title (Prof.)

2. PhD (Dr.), but not honorary doctorates

3. Professions that require a university degree (for example, Diplomingeneur, Rechtsanwalt, Architekt, Chemiker)

4. Civil service positions that require a university degree (for example, Justizrat, Ministerialdirektor, Finanzrat)

Sometimes, the same manager reports a characteristic (for example, a PhD degree) in the annual report of one firm but does not report the characteristic in the annual report of another firm. If a characteristic is reported at least once for a manager in a certain volume of the *Handbuch* we classify the manager as holding that characteristic (for example, a university degree) for all firms in that year.

Graduate Education and Field of Dissertation

We classify managers as managers with graduate education as those who have a PhD (Dr.) degree using the information from the *Handbuch der Deutschen Aktiengesellschaften*. In addition we hand-collect the field of study (in particular STEM versus social sciences) for each manager with graduation education using the following steps:

1. We search for each manager with graduate education in *https://www.worldcat.org/* and limit the search to "thesis/dissertations" published between 1880 and 1930. This search yields between 0 and 64 possible dissertation matches for each university educated manager.

2. We then conduct an extensive biographical search (using information in *World Biographical Information* System, see below, complemented by an extensive Google search) for each manager to uniquely assign the correct dissertation to each manager with graduate education. Using the title of the PhD dissertation we assign a field (for example, chemistry, law, and so on) to each dissertation (for example, Walter Dyckerhoff who was a senior manager at *Portland-Zementwerke Dyckerhoff-Wicking A.G* wrote a dissertation entitled "About the course of mineral formation when heating mixtures of lime, silica, and alumina." We classify this dissertation as a STEM dissertation.)

3. For managers where steps 1 and 2 do not yield a unique dissertation because a) no dissertation could be found on *https://www.worldcat.org/* or b) because it is impossible to uniquely assign one of the dissertation, we conduct another biographical search to obtain the field of graduate education, using information in *World Biographical Information System* and Google searches.

4. For managers where steps 1 to 3 do not result in a field of graduate education, we use information from *Handbuch der Deutschen Aktiengesellschaften* to assign the field of graduate education. For instance, some managers list the exact PhD title which allows us to infer the

field of the PhD (for example, *Dr. jur.* indicates that somebody has obtained a graduate degree in law).[47]

Overall, 1,181 managers holding 2,106 positions in 1932 had a graduate degree. Using our algorithm, we can assign a field of study to 870 managers, holding 1,667 positions. The regressions reported in Table 6 control for indicators representing the share of Jewish managers with a graduate degree for which we cannot assign a field of study.

Number of Connections

For each of the four years 1928, 1932, 1933, and 1938, we count the number of managerial connections to 4,378 German stock corporations. These corporations were listed in Berlin and/or had nominal capital of at least 500,000 RM. 7 firms listed in Berlin had nominal capital below 500,000 RM. The majority of German stock corporations were not listed on any stock market and rarely traded.

To measure connections, we harmonize the spelling of manager names across firms and consider additional information about each manager (for example, whether he holds a PhD degree or information on his place of residence) to identify unique managers. We consider connections to 4,387 firms with 41,522 senior manager positions in 1928, 4,378 firms with 39,054 senior manager positions in 1932, 4,074 firms with 34,816 senior manager positions in 1933, and 3,200 firms with 27,299 senior manager positions in 1938.

B.1.3 Information on the Jewish Origin of Managers

As described in the main text, we consult multiple sources to identify Jewish managers.

1. Münzel (2006)
   Münzel (2006) analyses Jewish board members in the 300 largest joint stock firms. We extract all Jewish board members from his book.

2. Windolf (2011)
   Windolf (2011) compiles a list of Jewish board members in German firms. We use this list to identify additional Jewish board members.

3. *Biographisches Handbuch der deutschsprachigen Emigration nach 1933*
   The *Biographisches Handbuch* contains short biographies of Jewish business people who emigrated from Nazi Germany. We extract all individuals who are listed under the business heading.

4. Köhler (2008)
   Studies private bankers of Jewish origin. This allows us to identify Jewish board members who were also private bankers.

[47] The results are robust to only using steps 1 to 3 for the field assignment of graduate degrees.

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For managers who did not appear in these sources, we conduct a manual search in:

5. *World Biographical Information System* (WBIS)
   The database combines biographical information from various collections of biographies, for example *Deutsches Biographisches Archiv* (DBA) and *Jüdisches Biographisches Archiv* (JBA). We search the WBIS for all managers who did not appear in sources 1 to 4 to check whether they were of Jewish origin. Jews are identified if they appear in the *Jüdisches Biographisches Archiv* (JBA), Ekkehard (1929), Lowenthal (1981), Tetzlaff (1982), Walk (2014), or if they list their religion as Jewish in any other source. The following example provides an overview of the procedure.

   Example World Biographical Information System (WBIS)

   The 1932 edition of the *Handbuch der deutschen Aktiengesellschaften* lists Alfred Zielenziger as manager of *Deutsche Hypothekenbank AG* and *Schultheiss-Patzenhofer Brauerei AG*. Since Zielenziger is not listed among the managers in sources 1 to 4 we follow a manual search through *World Biographical Information System* (WBIS). We find three entries in *Deutsches Biographisches Archiv* (DBA) and two entries in *Jüdisches Biographisches Archiv* (JBA). Figure B.2 reports the respective entries from the DBA. The entries from JBA are identical to entries (b) and (c) from DBA and therefore not reported. We identify Alfred Zielenziger as Jewish because he appears in Lowenthal (1981) and Walk (2014), which are biographical sources on Jews in Germany.

Figure B.2: Example of Alfred Zielenziger

(a) Wenzel (1929)

ZIELENZIGER ALFRED, Bankier; Inh. d. Fa. Alfred Zielenziger & Co., Bankgesch., Produktenhandel, Berlin W 8, Taubenstr. 25 / Berlin-Charlottenburg 2, Bismarckstr. 106 / Früher Vorstmitgl. d. Getreide-Kredit-Aktiengesellschaft, Bankgeschäft, Berlin. — Stellv. Vors. d. AR. d. Getreide-Kreditbank AG., Berlin; Mitgl. d. AR. d. Berliner Dampfmühlen-AG., Ostwerke AG., Berlin; Deutsche Hypothekenbank (AG.), Berlin. Union-Bauges. Berlin, Herz Ölfabriken AG. Bis 28 Vors. d. AR. d. Getreide-Ind. & -Commission AG., Berlin. — Mitgl. d. I. u. HK. Berlin; Aussch.-Mitglied d. Bezirksgr. Berlin d. Reichsverb. d. Deutsch. Groß- u. Überseehandels e. V.; Vors. d. Berliner Börsenvorst., Abt. Produktenbörse; 29 1. Stellv. d. Vors. d. Gesamtbörsenvorst. Vors. d. Vereins Berliner Getreidehändler E. V. Mitgl. d. Landeseisenbahnrats Berlin d. Deutsch. Reichsbahn; stellv. Mitgl. d. Reichs-Eisenbahnrats. — KomRat.

Deutscher Wirtschaftsführer. Bearb. von Georg Wenzel. 1929 (363)

(b) Lowenthal (1981)

ZIELENZIGER, Alfred
Geb. 1861 (Frankfurt/Oder); Kaufmann (Getreidehandel: Firmen S. & M. Simon, Siegfried Elton & Co., Berliner Getreidebank), 1929-1933 Erster Vorsitzender der Berliner Produktenbörse, Stellv. Vorsitzender des Gesamtvorstandes der Berliner Börse.

Lowenthal, Ernst G.: Juden in Preussen. 1981

(c) Walk (2014)

134. Walk, Joseph: Kurzbiographien zur Geschichte der Juden 1918-1945. Hrsg. vom Leo Baeck Institute, Jerusalem. München, New York, London, Paris: Saur 1988. XVIII, 452 S.

Zielenziger, Alfred
geb. 1861 Frankfurt/Oder, gest. ?, Kaufmann

Inh. Firma Siegfried Elton Co.; Berliner Getreidebank; seit 1900 Mitgl. des Börsenvorst.; seit 1905 Mitgl. der Industrie- und Handelskammer, Berlin; 1929-33 Vors. der Berliner Produktenbörse; stellvertr. Vors. des Gesamtvorst. der Berliner Börse.

BN: Kaznelson, S. 735; Feder, S. 431; Lowenthal, Preußen, S. 250.

Notes: The figure displays the entries for Alfred Zielenziger from *World Biographical Information System (WBIS)* based on Wenzel (1929), Lowenthal (1981), and Walk (2014).

Finally, we hand-check all managers who did not appear in sources 1-5 by conducting an internet search to find information on their ancestry.

6. Internet Search

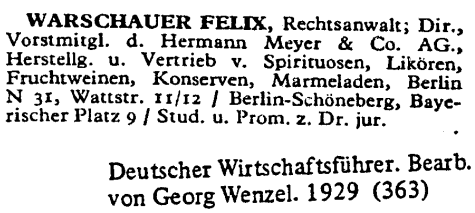
   For example, for managers based in Berlin, we look up *Jüdisches Addressbuch für Großberlin, 1931* (available at: https://digital.zlb.de/viewer/resolver?urn=urn:nbn:de:kobv:109-1-2414417) and verify whether they can be matched by name and address with an entry in the address book. The following example provides an overview of the procedure.

   Example Internet Search

   The 1932 edition of the *Handbuch der deutschen Aktiengesellschaften* lists Dr. Felix Warschauer as manager of *Hermann Meyer & Co. AG.* Since Dr. Warschauer is not listed among the managers in sources 1 to 4, we follow a manual search through WBIS. We find one entry in *Deutsches Biographisches Archiv* (DBA). The entry in Wenzel (1929) lists Dr. Warschauer with an address in Berlin (Berlin-Schöneberg, Bayerischer Platz 9, see Figure B.3), but does not contain information on his religion. The Berlin address allows us to check for an entry in the *Jüdisches Addressbuch für Großberlin, 1931* which lists addresses of Jews in Berlin. We find Dr. Felix Warschauer with the same address in the *Jüdisches Addressbuch für Großberlin, 1931* (see Figure B.3) and hence classify him as a Jew.

Figure B.3: Example of Dr. Felix Warschauer

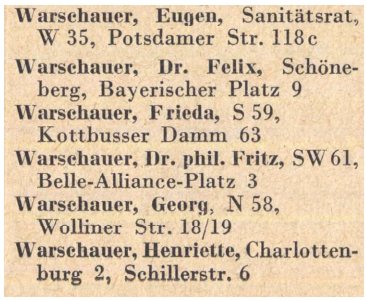
(a) Wenzel (1929)



WARSCHAUER FELIX, Rechtsanwalt; Dir., Vorstmitgl. d. Hermann Meyer & Co. AG., Herstellg. u. Vertrieb v. Spirituosen, Likören, Fruchtweinen, Konserven, Marmeladen, Berlin N 31, Wattstr. 11/12 / Berlin-Schöneberg, Bayerischer Platz 9 / Stud. u. Prom. z. Dr. jur.

Deutscher Wirtschaftsführer. Bearb. von Georg Wenzel. 1929 (363)

(b) Jüdisches Adressbuch für Großberlin, 1931



Warschauer, Eugen, Sanitätsrat, W 35, Potsdamer Str. 118c
Warschauer, Dr. Felix, Schöneberg, Bayerischer Platz 9
Warschauer, Frieda, S 59, Kottbusser Damm 63
Warschauer, Dr. phil. Fritz, SW 61, Belle-Alliance-Platz 3
Warschauer, Georg, N 58, Wolliner Str. 18/19
Warschauer, Henriette, Charlottenburg 2, Schillerstr. 6

Notes: The left subfigure displays the entries for Dr. Felix Warschauer from *World Biographical Information System (WBIS)* based on Wenzel (1929). The right subfigure displays the entry for Dr. Felix Warschauer from *Jüdisches Adressbuch für Großberlin, 1931, p. 420.*

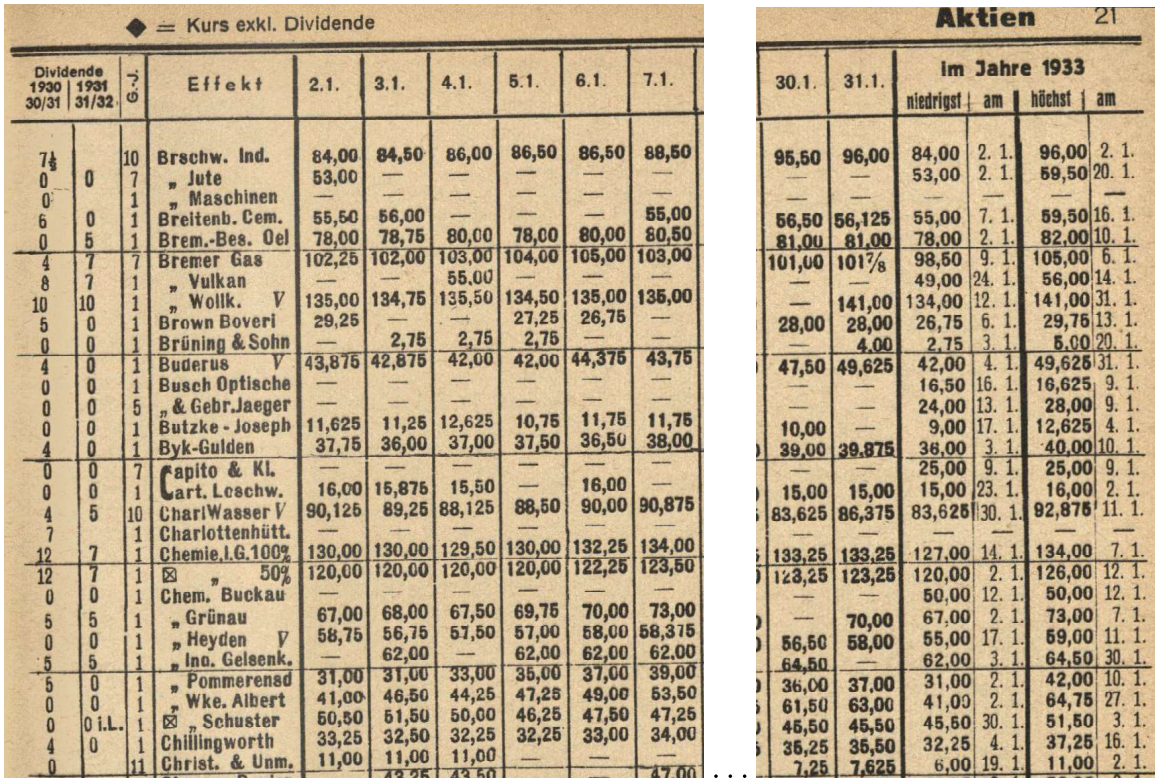
B.2 Information on Firms

B.2.1 Stock Price Data

We manually digitize all stock prices for January and July of each year between 1929 and 1943 from historical listings (called *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse*) of the

Berlin Stock Exchange. Figure B.4 provides an example of page 21 from the January 1933 edition. Because of the German banking crisis in 1931/1932 the Berlin Stock Exchange was closed in January 1932. We therefore collect stock prices for April and October for 1932.

Figure B.4: Example Page from *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse*



◆ = Kurs exkl. Dividende

Dividende 1930 30/31	Dividende 1931 31/32	G.-J.	Effekt	2.1.	3.1.	4.1.	5.1.	6.1.	7.1.
7½		10	Brschw. Ind.	84,00	84,50	86,00	86,50	86,50	88,50
0	0	7	„ Jute	53,00	—	—	—	—	—
0		1	„ Maschinen	—	—	—	—	—	—
6	0	1	Breitenb. Cem.	55,50	56,00	—	—	—	55,00
0	5	1	Brem.-Bes. Oel	78,00	78,75	80,00	78,00	80,00	80,50
4	7	7	Bremer Gas	102,25	102,00	103,00	104,00	105,00	103,00
8	7	1	„ Vulkan	—	—	55,00	—	—	—
10	10	1	„ Wollk. V	135,00	134,75	135,50	134,50	135,00	135,00
5	0	1	Brown Boveri	29,25	—	—	27,25	26,75	—
0	0	1	Brüning & Sohn	—	2,75	2,75	2,75	—	—
4	0	1	Buderus V	43,875	42,875	42,00	42,00	44,375	43,75
0	0	1	Busch Optische	—	—	—	—	—	—
0	0	5	„ & Gebr.Jaeger	—	—	—	—	—	—
0	0	1	Butzke - Joseph	11,625	11,25	12,625	10,75	11,75	11,75
4	0	1	Byk-Gulden	37,75	36,00	37,00	37,50	36,50	38,00
0	0	7	Capito & Kl.	—	—	—	—	—	—
0	0	1	Cart. Leschw.	16,00	15,875	15,50	—	16,00	—
4	5	10	ChariWasser V	90,125	89,25	88,125	88,50	90,00	90,875
7		1	Charlottenhütt.	—	—	—	—	—	—
12	7	1	Chemie.I.G.100%	130,00	130,00	129,50	130,00	132,25	134,00
12	7	1	☒ „ 50%	120,00	120,00	120,00	120,00	122,25	123,50
0	0	1	Chem. Buckau	—	—	—	—	—	—
5	5	1	„ Grünau	67,00	68,00	67,50	69,75	70,00	73,00
0	0	1	„ Heyden V	58,75	56,75	57,50	57,00	58,00	58,375
5	5	1	„ Ing. Gelsenk.	—	62,00	—	62,00	62,00	62,00
5	0	1	„ Pommerensd	31,00	31,00	33,00	35,00	37,00	39,00
0	0	1	„ Wke. Albert	41,00	46,50	44,25	47,25	49,00	53,50
0	0 i.L.	1	☒ „ Schuster	50,50	51,50	50,00	46,25	47,50	47,25
4	0	1	Chillingworth	33,25	32,50	32,25	32,25	33,00	34,00
0		11	Christ. & Unm.	11,00	11,00	11,00	—	—	—

Aktien 21

30.1.	31.1.	Im Jahre 1933 niedrigst	am	höchst	am
95,50	96,00	84,00	2. 1.	96,00	2. 1.
—	—	53,00	2. 1.	59,50	20. 1.
—	—	—	—	—	—
56,50	56,125	55,00	7. 1.	59,50	16. 1.
81,00	81,00	78,00	2. 1.	82,00	10. 1.
101,00	101⅞	98,50	9. 1.	105,00	6. 1.
—	—	49,00	24. 1.	56,00	14. 1.
—	141,00	134,00	12. 1.	141,00	31. 1.
28,00	28,00	26,75	6. 1.	29,75	13. 1.
—	4,00	2,75	3. 1.	5,00	20. 1.
47,50	49,625	42,00	4. 1.	49,625	31. 1.
—	—	16,50	16. 1.	16,625	9. 1.
—	—	24,00	13. 1.	28,00	9. 1.
10,00	—	9,00	17. 1.	12,625	4. 1.
39,00	39,875	36,00	3. 1.	40,00	10. 1.
—	—	25,00	9. 1.	25,00	9. 1.
15,00	15,00	15,00	23. 1.	16,00	2. 1.
83,625	86,375	83,625	30. 1.	92,875	11. 1.
—	—	—	—	—	—
133,25	133,25	127,00	14. 1.	134,00	7. 1.
123,25	123,25	120,00	2. 1.	126,00	12. 1.
—	—	50,00	12. 1.	50,00	12. 1.
—	70,00	67,00	2. 1.	73,00	7. 1.
56,50	58,00	55,00	17. 1.	59,00	11. 1.
64,50	—	62,00	3. 1.	64,50	30. 1.
36,00	37,00	31,00	2. 1.	42,00	10. 1.
61,50	63,00	41,00	2. 1.	64,75	27. 1.
45,50	45,50	45,50	30. 1.	51,50	3. 1.
35,25	35,50	32,25	4. 1.	37,25	16. 1.
7,25	7,625	6,00	19. 1.	11,00	2. 1.

Notes: The figure displays the top left and top right of page 21 of the January 1933 edition of *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse*. The columns of the left panel report (from left to right) the dividend in 30/31, the dividend in 31/32, the reporting period, the stock name, and the stock prices of the trading days indicated as column titles. The columns of the top left panel (from left to right) report additional stock prices and the lowest (niedrigst) and highest (höchst) stock price and the respective dates in the calender year 1933.

Name Changes: We track stocks even if they change names (for example, *Krauß & Comp.* changed its name to *Lokomot. Krauß* in July 1934). In most cases, the reported highest and lowest stock prices over the calendar year reveal that the stocks changed names. For example, in July 1934 *Lokomot. Krauß* reported a lowest stock price over the calendar year of 67 for January 19, 1934, which exactly matches the stock price of *Krauß & Comp.* on that day. In addition, we verify all name changes by consulting the narrative information in the *Handbuch der deutschen Aktiengesellschaften.*

Stock Consolidations: Between 1929 and 1943, the stocks of some firms were consolidated. For example, *Dresdner Bank* stocks were consolidated on August 4, 1932 at an old-stock:new-stock ratio of 10:3. As a result, the reported stock price increased by 333 percent. We account for these

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consolidations by dividing all stock prices by the consolidation ratio (3.333 in our example) after each consolidation.

The exact dates of stock consolidations are indicated in the monthly publications of *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse.* To obtain consolidation ratios we exploit information on adjustments to the highest and lowest stock prices that are reported in *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse.*[48] After a consolidation, the highest and lowest stock prices are adjusted to reflect the consolidation. This allows us to calculate exact consolidation ratios. For example, the highest and lowest stock price for *Dresdner Bank* were reported as $18\frac{1}{2}$ and 24 in July 1932 but the reporting changed to $61\frac{2}{3}$ and 80 in August 1932 (*Dresdner Bank* stocks were consolidated on August 4, 1932).

In exceptional cases, the highest *and* lowest stock price changes in the same month as the consolidation. In those cases, we use the change in the stock price on the date of the consolidation to infer the consolidation ratio. For example, *Brown Boveri* stocks were consolidated on January 4, 1935. As the consolidation happened early in the year, highest and lowest stock prices were reported only after the consolidation and we can therefore not observe adjustments in the reporting of highest and lowest stock prices. We therefore use the ratio of stock prices on the last trading day before the consolidation (January 3, 1935, stock price:$14\frac{3}{4}$) and the stock price on the day of the consolidation (January 4, 1935, stock price: 74). The consolidation ratio is therefore 5.02 (74/14.75) in this example.

Deduction of Subscription Rights: Between 1929 and 1943 some firms issued new stocks and offered existing shareholders a subscription right to prevent stock dilution. Starting from the day this subscription right is executed, the monthly publications of *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse* report stock prices excluding the subscription right. For example, *Deutscher Eisenhandel AG* issued new stocks in 1936 and offered existing shareholders a subscription right. The subscription right is valued 6.5 percent and deducted starting from August 10, 1936. As a consequence, the stock price drops mechanically from 138.50 on August 8, 1936 to 132 on August 10, 1936. We adjust for these deductions by multiplying all subsequent stock prices by an adjustment factor, defined as the ratio of the old price with subscription right divided by the old price minus the subscription right.[49] In the case of *Deutscher Eisenhandel AG* this adjustment factor is given by 1.049 ($\frac{138.50}{138.50-6.50}$).

B.2.2 Dividend Data

The historical listings (called *Börse und Wirtschaft*, later *Monatskursblatt Berliner Börse*) of the Berlin Stock Exchange report dividend payments for the sample firms (see Figure B.4 for an example). As stocks that get delisted early in the year do not report the latest dividend payment, we augment

[48] Highest and lowest stock prices are reported for the calendar year.

[49] This adjustment is standard practice in the construction of long-run stock indices. It assumes that the value of the subscription right is re-invested into the same stock to prevent stock dilution (Ronge 2002, p. 58).

the data from the Berlin exchange with information on dividend payments from the *Handbuch der deutschen Aktiengesellschaften (1935 and 1941).*

Dividends are generally reported in percent of nominal capital. Insurance firms, however, report dividends in Reichsmark (RM) per stock. To obtain a consistent database we convert the latter into percent of nominal capital.

B.2.3 Stock Price Adjustments for Dividend Payments

For Appendix Figure A.2, we compute stock prices by taking into account that investors receive annual dividend payments in addition to capital gains. We collect dividends and their payment dates from *Monatskursblatt Berliner Börse* and augment dividend payments with data from *Handbuch der deutschen Aktiengesellschaften 1925 and 1941.* To compute stock prices that reflect total returns, we adjust stock prices for price changes that are entirely due to dividend payments (following standard practice as outlined in Ronge 2002). After a dividend payment, we multiply the stock price by an adjustment factor, which is defined as the ratio of the pre-payment price divided by the pre-payment price minus the dividend. We use the last observed price in our dataset prior to the dividend payment as the pre-payment price. In some cases, the exact dividend payment date is missing in the *Monatskursblatt Berliner Börse.* As the average firm in our sample pays the dividend between May and June (but closer to June 1), we use June 1 as the pre-payment price for dividend payments with missing dates.

B.2.4 Return on Assets

We digitize data on profits and assets from the 1932 and 1941 editions of the *Handbuch der deutschen Aktiengesellschaften.* The 1932 edition of the *Handbuch der deutschen Aktiengesellschaften* reports the income statements and balance sheets for the year 1931, while the 1941 edition reports the years 1936 and 1940. The return on assets is the ratio of profits before interest payments and taxes (calculated from the income statement) to total assets (from the balance sheet). To calculate profits before interest payments and taxes, we use the book value of profits and subtract the profit carryforward from the previous year, subtract the net income from the sale of own stocks, subtract the net income from payments out of reserve funds, add depreciation, add taxes, and add interest payments.

Many of the 655 firms in our estimation sample do not report the income statement and balance sheet items that are required for the calculation of the return on assets. As a result, the data allow us to calculate the return on assets for 289 firms in at least one year (1931, 1936, or 1940). Two firms do not report values in 1936 or 1940, so we use the 1937 and 1939 values, respectively. Dropping these observations from the sample does not affect the results.

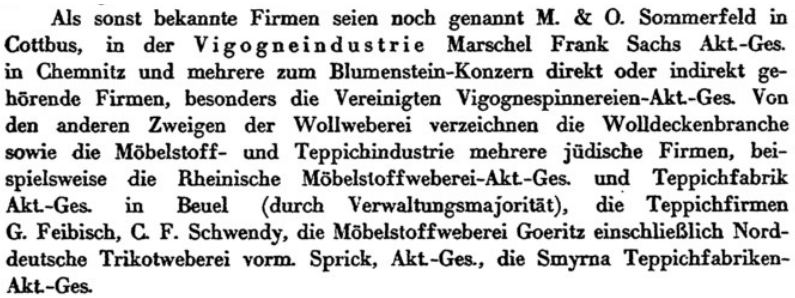
B.2.5 Firm Age, Nominal Capital, Reporting Period, Industry

We collect data on firm age, nominal capital, and the industry of the firm from *Handbuch der deutschen Aktiengesellschaften (1932).* We collect data on the period during which the balance sheet is reported from *Monatskursblatt Berliner Börse.*

B.2.6 Information on Jewish Firms

We consult historic sources that identify Jewish firms (Bruer 1927; Landsberg 1927a,b; Priester 1927; Mosse 1987). We extract all firms that are listed as Jewish in at least one of the sources. Figure B.5 provides an example from Landsberg (1927b). The author describes the historical development of the textile industry and lists Jewish firms in various sub-industries, for example, the furniture and carpet industry. In the excerpt, Landsberg lists among other firms *G. Feibisch* and *Nordeutsche Trikotweberei AG*, which are listed on the Berlin Stock Exchange.

Figure B.5: Example from *Landsberg (1927b)*



Als sonst bekannte Firmen seien noch genannt M. & O. Sommerfeld in Cottbus, in der Vigogneindustrie Marschel Frank Sachs Akt.-Ges. in Chemnitz und mehrere zum Blumenstein-Konzern direkt oder indirekt gehörende Firmen, besonders die Vereinigten Vigognespinnereien-Akt.-Ges. Von den anderen Zweigen der Wollweberei verzeichnen die Wolldeckenbranche sowie die Möbelstoff- und Teppichindustrie mehrere jüdische Firmen, beispielsweise die Rheinische Möbelstoffweberei-Akt.-Ges. und Teppichfabrik Akt.-Ges. in Beuel (durch Verwaltungsmajorität), die Teppichfirmen G. Feibisch, C. F. Schwendy, die Möbelstoffweberei Goeritz einschließlich Norddeutsche Trikotweberei vorm. Sprick, Akt.-Ges., die Smyrna Teppichfabriken-Akt.-Ges.

Notes: The figure displays an excerpt from page 108 of Landsberg (1927b).

B.2.7 Identifying Jewish Shareholders

We collect information on all large shareholders of the 655 firms listed on the Berlin Stock Exchange from the 1932 edition of the *Handbuch der deutschen Aktiengesellschaften.* We match the list of these large shareholders with our lists of Jewish managers and Jewish firms. For shareholders that are not listed in these sources we conduct an internet search to find further information on the respective individual or firm. The following example provides an overview of the procedure.

Example Internet Search

One example of a firm listed on the Berlin Stock Exchange is *Baroper Walzwerk AG.* The firm reports Wolf *Netter & Jacobi-Werke KGaA* as one of its large shareholders. We first check whether *Wolf Netter & Jacobi-Werke KGaA* appears in sources about Jewish firms (see Section B.2.6). After not finding it in these sources, we conduct an internet search for *Wolf Netter & Jacobi-Werke KGaA.* We find *Wolf Netter & Jacobi-Werke KGaA* in the database *Jewish Businesses in Berlin 1930-1945* (available at: https://www2.hu-berlin.de/djgb/www/find?language=en_US), which is based on the

research of Kreutzmüller (2017). This allows us to classify *Wolf Netter & Jacobi-Werke KGaA* as a large Jewish shareholder of *Baroper Walzwerk AG*.

B.3 Further Details on Industry Classifications

In the main specification, we control for 10 industry categories each interacted with 30 time dummies, i.e., 300 additional regression coefficients. The industry categorization is based on the industry classifications developed by Ziegler (2000b). This is our preferred categorization because finer industry categorizations result in industry groups with relatively few firms. We also show robustness checks with finer industry classifications (see Appendix Table A.6). The data for the finer classifications come from *Handbuch der Deutschen Aktiengesellschaften* 1932. The *Handbuch* orders firms by 22 industry categories. Some of these categories include quite a large number of the 655 firms. For example, the category "metal industry, machine tools, vehicles, ships, and auto industry" includes a relatively diverse set of firms.

The entry of each of the 655 firms describes the firm's activities. We carefully read each of those entries to identify the main activity of each firm to split them into finer industries, for instance, a separate category for metal industry, for machine tools, and so on. This results in an industry classification with 43 categories. The finer industry classification is used to classify industries into STEM and non-STEM industries for the results presented in Table 6 and to estimate industry-level spillovers shown in Appendix Table A.17.

B.4 Further Details on Cartels

We hand-collect data on membership in cartels for all 655 firms in our data. The data come from *Handbuch der Deutschen Aktiengesellschaften* in 1932. We carefully read the entry on cartel memberships of each of the 655 firms in our sample and record their memberships.

While about 75 percent of firms in our sample do not belong to a cartel, about 25 percent are members of one or more cartels. For example, the chemical firm *Schering Kahlbaum A.G.* was member of the Deutsches Bromsalz-Syndikat (German Bromide Syndicate) and the Deutsche Boraxvereinigung G.m.b.H (German Borax Union).

B.5 Further Details on Measures of Lower-Level Jewish Employees

We collect measures of lower-level Jewish employees from publications of the German statistical agency (*Statistik des Deutschen Reichs*) that are based on the German census of 1933. The publications report the number of Jews by occupational level (for example, workers, blue collar workers, and white collar workers), sector (manufacturing or services), and region (for example, East Prussia without Königsberg) or large city (for example, Berlin, Hamburg, Breslau, or Königsberg). Whenever we are able to use the city-level information, we do so (for about 33 percent of the sample). Otherwise, we use the regional information. We also obtain similar information for all German

workers and then calculate the share of Jews among blue collar workers (category "l" in the census data) and lower-level white collar workers (category "a" in the census data).

C Online Appendix: Further Robustness Checks Stock Price Results

We conduct a number of additional robustness checks for the stock price results. We find that various ways to control for firm size do not affect the findings, including parametric and non-parametric controls for nominal capital, for the total number of managers, and for both variables simultaneously (Appendix Table A.21, columns 1-3). There is no heterogeneity in the effects by firm size (columns 4-6).

Some firms were not traded in the plus-minus 10-day window around each January 10th and July 10th, either because the stocks were relatively illiquid, or because firms were no longer listed on the Berlin Stock Exchange. The results are robust to restricting the sample to regularly traded firms and become even larger, in absolute magnitude, if we restrict the sample to firms without any missing observations (Appendix Table A.22). The results are also robust to limiting the sample to firms that were never delisted (columns 7-8).

We investigate whether firms that lost Jewish managers were more likely to be delisted from the stock market. We regress an indicator for whether the firm was delisted after January 1933 on the fraction of Jewish managers in 1932. The coefficient is negative, small, and insignificant, indicating that firms with Jewish managers were not more likely to be delisted (Appendix Table A.23, column 1). The results are similar if we add the full set of control variables (column 2), or if we estimate an extended Cox hazard model (columns 3-4).

D Online Appendix: What Type of Connections Matter? - Katz and Eigenvector Centrality

We analyze network measures, which capture higher order links between firms. We start with different forms of *Katz centrality*, which are based on the seminal work of Katz (1953). Katz centrality measures the centrality of a firm recursively: a firm is more central if it is connected to other central firms, which themselves are connected to other central firms, and so on. In our context, Katz centrality measures influence in a network by taking into account not just direct managerial links between firms, but also indirect links that arise because other firms are connected to each other. Katz centrality computes the number of direct neighbors in the network (first degree connections) and also connections to all other firms in the network (higher order connections). The Katz centrality of firm i is defined as:

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$$Katz_i(\alpha, \beta) = \alpha \sum_j A_{ij} Katz_j + \beta.$$

The parameter β controls the initial centrality.[50] The parameter α (known as attenuation factor) determines how much higher order connections are penalized. Each connection between a pair of firms is assigned a weight α^k, which is determined by α and the distance k between nodes. For example, a first degree connection (a direct managerial link between firms) receives a weight of α, a second degree connection receives a weight of α^2, and so on. A_{ij} refers to an element of the adjacency matrix A of the firm-level network. A lists which firms are linked through their managers.[51]

With α approaching 0, Katz centrality converges to degree centrality, and in the limit only first degree connections are considered. As α increases, higher order connections receive increasing weights. The highest possible α is the inverse of the highest positive eigenvalue of the adjacency matrix A. In that case, Katz centrality converges to a measure known as *eigenvector centrality* (Bonacich 1987).[52] (For α greater than the largest eigenvalue, the algorithm to compute Katz centrality does not converge.)

We measure the importance of Jewish managers for their firms' Katz centrality as:

$$Importance\ of\ Jews\ for\ Katz\ Centrality\ (1932)_i = \frac{Katz_i^{All} - Katz_i^{Non-Jews}}{Katz_i^{All}},$$

where $Katz_i^{All}$ refers to firm i's Katz centrality based on Jewish and non-Jewish managers in 1932 and $Katz_i^{Non-Jews}$ refers to firm i's Katz centrality based only on non-Jewish managers in 1932.[53]

We investigate how changes in different network centrality measures, which were caused by the removal of Jewish managers, affected firm performance. Specifically, we show results for different values of α, from close to 0 to the highest possible α (eigenvector centrality). The results indicate that changes to Katz centralities with a low value of α have large effects on stock prices

[50] Firms with no direct connections therefore have a Katz centrality of β. Because we construct a ratio of Katz centralities (see below), the results are invariant to using different levels of β.

[51] The summation of each row of matrix A corresponds to the degree centrality (see above) of the firm represented in that row.

[52] Eigenvector centrality is at the heart of Google's PageRank algorithm (Brin and Page 1998).

[53] In contrast to degree centrality, where $\frac{Degree\ Centrality^{Jews}}{Degree\ Centrality^{All}} = \frac{Degree\ Centrality^{All} - Degree\ Centrality^{Non-Jews}}{Degree\ Centrality^{All}}$, for Katz centrality $\frac{Katz^{All} - Katz^{Non-Jews}}{Katz^{All}} \neq \frac{Katz^{Jews}}{Katz^{All}}$, because higher order connections result from connections through both Jewish and non-Jewish managers. $\frac{Katz^{Jews}}{Katz^{All}}$ would mismeasure changes in firm i's higher order connections if the higher order connections were not linked through a direct chain of Jewish managers. In the example shown in Appendix Figure A.5, we have added a manager 5 who was Jewish. Firm A's network due to only Jewish managers includes first degree links to firms B and C (but not the link to firm E, because the link to firm D comes from a non-Jewish manager). The complete network includes first degree links to firms B, C, D and one second-order link to firm E. With the dismissal of Jewish managers, firm A loses one first degree link to firm B, half a first degree link to firm C, and one second degree link to firm E. This is captured by the ratio $\frac{Katz^{All} - Katz^{Non-Jews}}{Katz^{All}}$.

(Appendix Table A.13, columns 2-3). For low α, second and higher order connections receive almost no weight and the measure is very close to degree centrality. For example, for $\alpha = 0.0005$, first order connections receive a weight of 0.0005 and second order connections receive a weight of $0.0005^2 = 0.00000025$ and so on.

As we increase α, changes to Katz centrality measures have less of an effect on firm performance (Appendix Table A.13, columns 4-5). In our data, the highest positive eigenvalue is 84.65 and its inverse, and thus the highest possible α, is 0.0118.[54] There is no evidence that changes in eigenvector centrality, which gives maximum weight to higher order connections, affect stock prices (column 6). Taken together, the results suggest that changes in first order connections had large effects on stock prices, but that changes in higher order connections were less important.[55]

[54] We approximate the eigenvector centrality with a Katz centrality using the highest possible α. The ratio $\frac{Katz^{All} - Katz^{Non-Jews}}{Katz^{All}}$ is only meaningful if it is based on Katz centralities that are calculated with the same value of α. The network based on all manager connections has a higher eigenvalue than the network based on only non-Jewish managers. Hence, eigenvector centrality scores in the two networks would be calculated on the basis of different largest eigenvalues, and the eigenvector centrality scores would no longer be comparable.

[55] Note that considering higher order connections moves more and more firms into the treatment group. Even firms that did not lose Jewish managers become treated because they lose higher order connections. When we chose a relatively high α, no firm that had employed Jewish managers lost less than 20 percent of its direct and higher order connections, and we can therefore not separately estimate the coefficient with less than 20 percent of all characteristics.

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