

Internet Appendix

Corporate Leverage and Employees' Rights in Bankruptcy

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A. Questionnaire on Employees' Rights in Bankruptcy Procedures

Consider an employee of a medium or large company, hired with a permanent employment contract, and suppose that the company becomes **insolvent**. Typically this results in one of two types of bankruptcy procedures:

1. **liquidation** of the company's assets;
2. **reorganization** aimed at preserving the company (at least in part) as a going concern.

This questionnaire aims at determining the degree of protection of the employee's claims on the insolvent company in your country under either scenario.

It also aims at elucidating creditors' rights in the choice between liquidation and reorganization.

1. LIQUIDATION

1.1. Which is the **priority in the distribution** of the proceeds from liquidation? Please rank them by assigning a lower number to higher-priority creditors:¹

Type of creditors	Priority in the distribution	Amount for which priority is valid (write "100%" if priority applies to the entire claim)
Creditors with lien on property (e.g., bank mortgage)		
Administrative expenses incurred by the trustee		
Post-petition credit extended to debtor		
(a) Unpaid wages and salaries <i>and</i> (b) severance pay of employees		
Claims for contributions to employee pension benefit plans		
Income and other taxes due to local or central government		
Unsecured creditors		No priority

¹ If a claim in one of the first 6 lines is treated on a par with unsecured credit, please write "no priority" in last column.

1.2. Is there a government fund protecting employees' claims if they cannot be repaid fully in bankruptcy?

Type of claim	Does such a fund exist?	Is there a limit to the guaranteed amount? (If so, please indicate it.)	If such a fund pays off employees' claims, does it acquire the employees' priority in liquidation?
Unpaid wages and salaries			
Severance pay			
Claims for contributions to employee pension benefit plans			

1.3. Since 1980, have there been considerable changes to the rules regarding the protection of the claims of employees (wages, severance pay and pension benefits) in the liquidation of a bankrupt company? If so, please describe the main ones.

2. REORGANIZATION

2.1. Are there different reorganization procedures for companies in your country? Please list the most widely used ones below, in order of importance:

Name of procedure in your language	English translation (or one-line description)	Date of introduction of the procedure (if after 1980)
(i)		
(ii)		
(iii)		

2.2. Consider the two most common forms of reorganization procedures indicated under (i) and (ii) above:

Reorganization procedure:	(i)	(ii)
Can the reorganization plan impair the claims of employees without their consent?		
Under the plan, can employees be dismissed more easily than in normal circumstances? If so, specify how their protection is attenuated.		
Can collective bargaining agreements previously entered into by the debtor be modified by the reorganization plan?		
Must the employees' representatives (e.g. unions) be informed of the plan?		
Must the plan be proposed to employees' representatives (e.g. unions) for approval?		
If the employees do not approve the plan, can it still be carried out if authorized by court (possibly in a modified version)?		

2.3. Since 1980, have there been considerable changes to the rules regarding the protection of the claims of employees (wages, severance pay and pension benefits) in reorganization? If so, please describe the main ones.

3. CHOICE BETWEEN LIQUIDATION AND REORGANIZATION

3.1. Consider again the reorganization procedures described above:

Reorganization procedure:	(i)	(ii)
What is the fraction of creditors who must agree to the reorganization plan? (Indicate whether it refers to the number of creditors or to the claims' value, and whether the fraction refers to unsecured creditors or to all creditors.)		
If not enough creditors agree to it, can the reorganization plan still be authorized by a court decision?		

3.2. If there have been considerable changes to the above rules since 1980, please describe the main ones.

3.3. **In your own professional experience**, how frequently have you observed insolvency by a company ending up with the liquidation of assets (as opposed to reorganization)?

Approximate frequency of liquidation of assets by insolvent companies in your experience	Less than 25%	Between 25% and 50%	Between 50% and 75%	Between 75% and 100%
Please tick relevant box:				

B. Additional Results and Robustness Checks

The following tables present additional results and robustness checks of the estimates shown in the paper.

Table B.1 shows the correlation matrix for the main explanatory variables used in the regressions presented in the paper, namely, our measures of employees' rights in bankruptcy, unemployment insurance benefits, employment protection legislation, and union density.

The table shows that the seniority rankings of workers' three claims (wages, severance pay, and pension contributions) are closely correlated. Workers' seniority in liquidation is correlated inversely with their rights in firm restructuring, with public insurance coverage in bankruptcy and with unemployment insurance in the first two years of joblessness. While these correlations are not statistically significant (except for the seniority of unpaid wages and public insurance coverage), they nevertheless suggest that these dimensions of workers' legal rights in bankruptcy tend to be substitutes rather than complements: in countries where workers have higher claim seniority, they are less likely to be protected by insurance and they have fewer rights in corporate restructuring. They are also less likely to be protected by trade unions, as union density is lower in such countries.

Workers' seniority is not significantly correlated with union density, which suggests that seniority is an important dimension of workers' rights not captured by the level of unionization. Instead workers' rights in firm restructuring are positively and significantly correlated with union density: hence, in countries where workers have stronger rights in the restructuring of distressed firms, they are also better equipped to exercise such rights via more representative trade unions.

Moreover, employees' rights in bankruptcy are not significantly correlated with two country characteristics that in principle might be important determinants of leverage, namely the protection of creditor rights and the effective corporate tax rate (hence the tax shield offered by debt), which implies that our new measures can play an independent role in accounting for corporate leverage.

Finally, the coverage offered by the government insurance fund in bankruptcy is positively and significantly correlated with public unemployment insurance, showing that governments rely on both of these policy tools to offer insurance protection to workers.

One insight from the theoretical model is that in countries where labor is senior to all creditors, firm leverage should lose all of its strategic power. So, even if the parameters are such that leverage is increasing in seniority (because bankruptcy costs C are low enough), the model predicts a non-monotonicity if seniority reaches its highest possible level ($\theta = 1$), also for unconstrained firms. We investigate this prediction of our model in **Tables B.2.1** and **B.2.2**, where we extend the specification of our regressions to allow for this possible non-monotonicity in the effect of seniority “at the top”, i.e. for $\theta = 1$. To identify cases in which employees have “top seniority”, we construct a “Top Worker Seniority” dummy variable that equals 1 in countries where workers’ claims for wages and/or pensions are senior to all commercial debt claims (i.e., all claims except for unpaid taxes due to the local and central government and for administrative expenses incurred by the trustee), and 0 otherwise. We use an expanded version of the specification of Table 3 by adding an interaction between this dummy and the real estate shock, and of the specification of Table 6 by adding an interaction between this dummy and the profitability shock. The results, which are presented in Columns 1 to 3 of Tables B.2.1 and B.2.2 respectively, show that this interaction has a negative and significant coefficient, while the coefficient of the interaction between seniority and the shock remains positive and significant. Moreover, the estimated value of the first coefficient almost precisely offsets that of the second for countries that provide the highest seniority to workers. This is consistent with the non-monotonicity predicted by the model, and with the idea that debt loses all strategic value vis-à-vis employees when these have top seniority. In Columns 4 and 5 of Tables B.2.1 and B.2.2, we also show the results obtained estimating these expanded specifications separately for large and small firms: the non-monotonicity is present only for large firms, in line with the idea that the strategic debt model applies only to financially unconstrained firms.

We then proceed to investigate the relationship between employee seniority and the leverage decision using changes of the market leverage as dependent variable, rather than book leverage as in Tables 3 and 6: this is done in **Tables B.3.1** and **B.3.2**, which respectively present the specifications shown in columns 1-3 of Tables 3 and 6. In Columns 4 and 5 of Tables B.3.1 and B.3.2, we show the results obtained by repeating the estimation separately for large and small firms (as done in Columns 1 and 2 of Tables 5 and 7): the results are similar to those found in the baseline regressions shown in Tables 3 and 5.

The subsequent six tables in this Appendix present extensions and robustness checks of the regressions of Table 3 of the paper (that are based on the real estate shocks). Specifically, **Table B.4.1** repeats the estimation of these regressions using a measure of the real estate shocks based on regional real estate price indices. The value of a firm's land is obtained by multiplying its initial level of land by the real estate price index of the corresponding region, and scaling it by the lagged book value of the firm's property, plant and equipment (PPE). The real estate price indices used in this computation are commercial property values, which are available only for 20 countries of our sample.

These regional price indices are drawn from the Property Market Analysis (PMA) database, which contains commercial property price indices at city and regional levels. This database provides price indices for three market segments: (i) office space, (ii) retail space, and (iii) logistics facilities.² We use the data for office space, since it is available for the longest time span, covering our entire sample period 1988-2015. However, the PMA data cover only 18 of our sample countries, reducing the size of our sample. The number of cities covered differs among countries. For example, there are data on two cities in Italy (Rome and Milan), four in Australia (Sydney, Melbourne, Brisbane and Perth), and seven in Germany (Frankfurt, Berlin, Cologne, Dusseldorf, Hamburg, Munich and Stuttgart).

These data give a more accurate measure of the impact of changes in real estate prices on firms' asset value because they refer to commercial rather than residential real estate and permit valuation of real estate holdings by applying the real estate index for the region where the firm is incorporated. As these data require matching each firm with the relevant commercial real estate market, for countries where price indices are available for several cities, we match each firm with the city nearest the firm's headquarters. Where data are available for only a single city, all companies in the country are matched with that city: for example, Swedish companies are all matched with Stockholm, Irish ones with Dublin.

Table B.4.1 shows the estimates obtained with this measure of real estate assets. These specifications include regional-level (instead of country-level) fixed effects in combination with other fixed effects. The predictions of the strategic debt model are confirmed by these regional or municipal data on commercial property prices.

Table B.4.2 shows that the results of Table 3 are robust to replacing the measure of seniority based on pension claims with the average worker seniority of the three claims of employees:

² We thank Raimund Noss from PMA Ltd for providing the PMA city and regional commercial real estate data.

pension contributions, wages, and severance pay. The estimates reported in **Table B.4.3** shows that the results are also robust to replacing our measure of employees' rights in restructuring with their "effective rights in restructuring", i.e. the interacted variable described in Section 5.2.3.

Table B.4.4 reports the estimates of the specifications in Table 3 that are obtained by replacing union density with employment protection legislation (EPL) as the measure of workers' wage bargaining power: also in this case, the results are qualitatively unchanged.

Table B.4.5 expands the specifications shown in Columns 3 and 5 of Table 3 to include also interactions of the real estate shock with unemployment insurance (measured by the gross replacement rate in the respective country and year) and with corporate tax rates (as a proxy for the tax-shield benefits of leverage). The coefficient estimates of these additional interactions are not significantly different from zero, and leave all the other estimates qualitatively unchanged.

In **Table B.4.6** the specifications of Columns 2 and 3 of Table 3 are re-estimated separately for short- and long-term debt, i.e. maturities up to and beyond 1 year. The results in Columns 1 and 2, where the dependent variable is the change in short-term debt, are stronger both statistically and economically than those in Columns 3 and 4 that show the changes in long-term debt. Hence, these estimates corroborate our conjecture that firms use short-term debt more aggressively in response to stronger workers' rights in bankruptcy.

Finally, **Table B.5** presents the coefficient estimates of the first-stage regression for the change in profitability (whose second-stage estimates are shown in Table 6, Column 3), only for the percentage changes of the five commodity prices: oil, gold, iron ore, platinum, copper. That is, for brevity we do not report the coefficients of the other explanatory variables included in the second-stage regression; for the same reason, we do not show the estimates of the first-stage regressions for the other four interactions between the change in profitability and (i) worker seniority, (ii) government insurance coverage, (iii) union density, and (iv) workers' rights in restructuring.

Table B.1. Correlations between measures of workers' rights in bankruptcy and employment protection

The table presents the correlation between the main variables that measure employees' rights in bankruptcy, unemployment insurance benefits, employment protection legislation, and union density. P-values are shown in parenthesis. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Workers' Seniority (Wages)	Workers' Seniority (Severance Pay)	Workers' Seniority (Pension)	Workers' Rights in Restructuring	Government Insurance Coverage (Pension)	Unemployment Insurance Benefits	Employment Protection Legislation	Union Density
Workers' Seniority (Wages)	1							
Workers' Seniority (Severance Pay)	0.5968*** (0.00)	1						
Workers' Seniority (Pension)	0.5580*** (0.00)	0.4326*** (0.01)	1					
Workers' Rights in Restructuring	-0.1970 (0.32)	-0.1385 (0.37)	0.0772 (0.71)	1				
Government Insurance Coverage (Pension)	-0.2763* (0.09)	-0.2123 (0.11)	-0.0453 (0.41)	0.1052 (0.58)	1			
Unemployment Insurance Benefits	-0.1254 (0.52)	-0.2742 (0.11)	-0.1226 (0.53)	0.1171 (0.54)	0.5201*** (0.00)	1		
Employment Protection Legislation	0.2563* (0.09)	0.2879* (0.09)	0.2944* (0.08)	-0.2212 (0.51)	-0.0210 (0.51)	-0.0664 (0.74)	1	
Union Density	-0.2947 (0.15)	-0.2385 (0.25)	-0.0206 (0.92)	0.4248** (0.03)	0.3621* (0.08)	0.343 (0.10)	-0.0760 (0.72)	1

Table B.2.1: Employees' rights in bankruptcy, real estate shocks and capital structure: allowing for a non-monotonic effect of top employee seniority

This table presents the coefficient estimates of a panel regression estimated for 22,592 firms from 29 countries over the period 1988-2015. The dependent variable is the change in book leverage ratio in all specifications. Column 4 presents the coefficient estimates of the panel regressions for observations in the upper tercile of the firm distribution by size in each country, and Column 5 the lower tercile by size. Firm size is measured by total assets. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are defined in Appendix B. Top Worker Seniority is a dummy variable that takes the value of 1 if a country's Worker Seniority takes the value of 6 or higher and zero otherwise. Firm control variables, used in the specifications of Columns 3, 4 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Sample	All Firms	All Firms	All Firms	Large Firms	Small Firms
Real Estate Shock × Worker Seniority	0.0078*** (2.80)	0.0071*** (2.77)	0.0067** (2.43)	0.0131*** (3.01)	-0.0087** (-2.61)
Real Estate Shock × Top Worker Seniority	-0.0109* (-1.86)	-0.0108* (-1.85)	-0.0101* (-1.77)	-0.0220* (-1.93)	-0.0082 (-1.15)
Real Estate Shock × Government-Insurance Coverage	0.0051* (1.83)	0.0049* (1.71)	0.0041 (1.51)	0.0118** (2.19)	-0.0064 (-1.61)
Real Estate Shock × Union Density	0.0006** (2.11)	0.0005* (1.89)	0.0004* (1.70)	0.0011** (2.32)	-0.0009** (-2.31)
Real Estate Shock × Worker Rights in Restructuring	-0.0049** (-2.07)	-0.0044* (-1.92)	-0.004* (-1.72)	-0.0061** (-2.20)	0.0018 (1.60)
Real Estate Shock	0.0304*** (6.44)	0.0284*** (5.80)	0.0251*** (5.44)	0.0221*** (6.02)	0.0303*** (7.01)
Firm Control Variables	No	No	Yes	Yes	Yes
Fixed Effects	Country, Industry, Year	Country- Industry, Year	Country- Industry- Year	Country- Industry- Year	Country- Industry- Year
R ²	0.11	0.10	0.12	0.14	0.08
Number of Observations	291,418	291,418	291,418	99,282	96,120

Table B.2.2: Employees' rights in bankruptcy, profitability shocks and capital structure: allowing for a non-monotonic effect of top employee seniority

This table presents the IV estimates of a panel regression for 22,592 firms from 29 countries. The dependent variable is the change in book leverage ratio in all specifications. Column 4 presents the coefficient estimates of the panel regressions for observations in the upper tercile of the firm distribution by size in each country, and Column 5 the lower tercile by size. Firm size is measured by total assets. Firm profitability is measured as EBITDA scaled by total assets. The change in profitability and its interactions with Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are instrumented with the percentage changes in five major commodity price indices. Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are defined in Appendix B. Top Worker Seniority is a dummy variable that takes the value of 1 if a country's Worker Seniority takes the value of 6 or higher and zero otherwise. Firm control variables, used in the specifications of Columns 3, 4 and 5, are the changes in total assets, asset tangibility, market-to-book ratio, and CapEx ratio (defined in Appendix B). T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level).

	(1)	(2)	(3)	(4)	(5)
Sample	All Firms	All Firms	All Firms	Large Firms	Small Firms
Profitability Shock × Worker Seniority	0.0160*** (2.75)	0.0149** (2.52)	0.0137** (2.43)	0.0205*** (3.10)	-0.0094** (-2.53)
Real Estate Shock × Top Worker Seniority	-0.0182* (-1.88)	-0.0163* (-1.76)	-0.0151 (-1.58)	-0.0212* (-1.85)	-0.0027 (-0.94)
Profitability Shock × Government-Insurance Coverage	0.0546* (1.85)	0.0508* (1.79)	0.0493* (1.68)	0.1319** (2.11)	-0.0688* (-1.94)
Profitability Shock × Union Density	0.0037** (2.22)	0.0035** (2.11)	0.0032** (2.00)	0.0104*** (2.95)	-0.0065** (-2.49)
Profitability Shock × Worker Rights in Restructuring	-0.0249** (-2.10)	-0.0241** (-1.99)	-0.0223* (-1.91)	-0.0681** (-2.05)	0.0201 (1.47)
Profitability Shock	0.0305** (2.01)	0.0301* (1.81)	0.0275* (1.82)	0.0311* (1.92)	0.0205 (1.57)
Firm Control Variables	No	No	Yes	Yes	Yes
Fixed Effects	Country, Industry, Year	Country- Industry, Year	Country- Industry, Year	Country- Industry, Year	Country- Industry, Year
R ²	0.08	0.08	0.08	0.10	0.09
Number of Observations	291,418	291,418	291,418	99,282	96,120
F-tests of First Stage Regressions:					
Profitability Shock × Seniority	341	356	360	248	231
Profitability Shock × Employment Protection	288	301	299	201	195
Profitability Shock × Rights in Restructuring	315	318	319	207	206
Profitability Shock × Government-Insurance Coverage	329	340	345	231	228
Profitability Shock	299	322	334	206	202

B.3.1: Employees' rights in bankruptcy, real estate shocks and capital structure: using changes in market leverage as dependent variable

This table presents the coefficient estimates of a panel regression estimated for 22,592 firms from 29 countries over the period 1988-2015. The dependent variable is the change in market leverage ratio in all specifications. Column 4 presents the coefficient estimates of the panel regressions for observations in the upper tercile of the firm distribution by size in each country, and Column 5 the lower tercile by size. Firm size is measured by total assets. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are defined in Appendix B. Firm control variables, used in the specifications of Columns 3, 4 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Sample	All Firms	All Firms	All Firms	Large Firms	Small Firms
Real Estate Shock × Worker Seniority	0.0091*** (3.51)	0.0089*** (3.23)	0.0085*** (3.09)	0.0208*** (3.97)	-0.0090** (-2.51)
Real Estate Shock × Government-Insurance Coverage	0.0059* (1.95)	0.0054* (1.83)	0.0049* (1.72)	0.0106** (2.29)	-0.0048* (-1.71)
Real Estate Shock × Union Density	0.0007** (2.40)	0.0007** (2.37)	0.0007** (2.31)	0.0014*** (3.01)	-0.0008** (-2.60)
Real Estate Shock × Worker Rights in Restructuring	-0.0051** (-2.49)	-0.0050** (-2.39)	-0.0049** (-2.20)	-0.0100** (-2.40)	0.0037 (1.62)
Real Estate Shock	0.0415*** (6.84)	0.0392*** (6.20)	0.0351*** (6.01)	0.0671*** (6.05)	0.0876*** (7.04)
Firm Control Variables Fixed Effects	No Country, Industry, Year	No Country- Industry, Year	Yes Country- Industry- Year	Yes Country- Industry, Year	Yes Country- Industry- Year
R ²	0.11	0.11	0.11	0.15	0.15
Number of Observations	291,418	291,418	291,418	99,282	96,120

**B.3.2: Employees' rights in bankruptcy, profitability shocks and capital structure:
using changes in market leverage as dependent variable**

This table presents the IV estimates of a panel regression for 22,592 firms from 29 countries. The dependent variable is the change in market leverage ratio in all specifications. Column 4 presents the coefficient estimates of the panel regressions for observations in the upper tercile of the firm distribution by size in each country, and Column 5 the lower tercile by size. Firm size is measured by total assets. Firm profitability is measured as EBITDA scaled by total assets. The change in profitability and its interactions with Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are instrumented with the percentage changes in five major commodity price indices. Worker Seniority, Government Insurance Coverage, Union Density, and Worker Rights in Restructuring are defined in Appendix B. Firm control variables, used in the specifications of Columns 3, 4 and 5 are the changes in total assets, asset tangibility, market-to-book ratio, and CapEx ratio (defined in Appendix B). T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level).

	(1)	(2)	(3)	(4)	(5)
Sample	All Firms	All Firms	All Firms	Large Firms	Small Firms
Profitability Shock × Worker Seniority	0.0197*** (3.45)	0.0182*** (3.26)	0.0164*** (2.99)	0.0251*** (4.39)	-0.0102** (-2.63)
Profitability Shock × Government-Insurance Coverage	0.0637** (2.22)	0.0615** (2.06)	0.0601* (1.90)	0.1511** (2.59)	-0.0701** (-2.09)
Profitability Shock × Union Density	0.0047** (2.60)	(0.0041)** (2.32)	0.0040** (2.29)	0.0138*** (3.50)	-0.0081*** (-2.96)
Profitability Shock × Worker Rights in Restructuring	-0.0278** (-2.59)	-0.0242** (-2.37)	-0.0235** (-2.18)	-0.0750** (-2.46)	0.0197 (1.37)
Profitability Shock	0.0392** (2.38)	0.0349** (2.20)	0.0294** (1.98)	0.0327** (2.07)	0.0262* (1.91)
Firm Control Variables	No	No	Yes	Yes	Yes
Fixed Effects	Country, Industry, Year	Country- Industry, Year	Country- Industry, Year	Country- Industry, Year	Country- Industry, Year
R ²	0.09	0.10	0.10	0.14	0.10
Number of Observations	291,418	291,418	291,418	99,282	96,120
F-tests of First Stage Regressions:					
Profitability Shock × Seniority	337	345	347	329	278
Profitability Shock × Employment Protection	289	302	312	209	186
Profitability Shock × Rights in Restructuring	311	320	318	270	229
Profitability Shock × Government-Insurance Coverage	328	341	330	282	238
Profitability Shock	309	311	327	211	198

Table B.4.1: Employees' rights in bankruptcy, regional real estate shocks and capital structure

This table presents the coefficient estimates of a panel regression estimated for 22,592 firms from 29 countries over the period 1988-2015. The dependent variable in each specification is indicated at the top of the corresponding column. Debt Issuance equals one if Net Debt Issuances normalized by lagged book assets exceed 1%, and zero otherwise. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding region and scaled by the lagged book value of the firm's PPE. Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Δ Book Leverage	Δ Book Leverage	Δ Book Leverage	Debt Issuance	Debt Issuance
Real Estate Shock × Worker Seniority	0.0076*** (2.81)	0.0072*** (2.73)	0.0069** (2.45)	0.0039*** (3.58)	0.0038*** (3.42)
Real Estate Shock × Government-Insurance Coverage	0.0045** (2.04)	0.0043* (1.92)	0.0041* (1.81)	0.0063** (1.99)	0.0057 (1.61)
Real Estate Shock × Union Density	0.0006** (2.39)	0.0006** (2.28)	0.0005** (2.08)	0.0004*** (2.73)	0.0003** (2.47)
Real Estate Shock × Worker Rights in Restructuring	-0.043** (-2.19)	-0.0040** (-2.03)	-0.0037* (-1.92)	-0.0040** (-2.56)	-0.0036** (-2.42)
Real Estate Shock	0.0315*** (5.81)	0.0303*** (5.56)	0.0275*** (5.41)	0.0204*** (4.99)	0.0197*** (4.53)
Union Density	0.0004 (1.38)	0.0004 (1.25)	- -	0.0199 (1.41)	- -
Firm Control Variables	No	No	Yes	No	Yes
Fixed Effects	Region, Industry, Year	Region-Industry, Year	Region-Industry-Year	Region-Industry, Year	Region-Industry-Year
R ²	0.08	0.08	0.09	0.18	0.19
Number of Observations	198,507	198,507	198,507	198,507	198,507

Table B.4.2: Regressions with real estate shocks and average worker seniority

This table presents the coefficient estimates of a panel regression estimated for 22,592 firms from 29 countries over the period 1988-2015. The dependent variable in each specification is indicated at the top of the corresponding column. Debt Issuance equals one if Net Debt Issuances normalized by lagged book assets exceed 1%, and zero otherwise. In this table, seniority is the average of the seniority level of unpaid wages, employers' unpaid contributions to pension plans, and unpaid severance pay. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Δ Book Leverage	Δ Book Leverage	Δ Book Leverage	Debt Issuance	Debt Issuance
Real Estate Shock \times Average Worker Seniority	0.0096*** (2.94)	0.0092*** (2.76)	0.0088** (2.50)	0.0051*** (4.29)	0.0050*** (3.95)
Real Estate Shock \times Government-Insurance Coverage	0.0056* (1.94)	0.0054* (1.87)	0.0047 (1.60)	0.0074** (2.01)	0.0072* (1.87)
Real Estate Shock \times Union Density	0.0007** (2.62)	0.0007** (2.59)	0.0007** (2.47)	0.0004*** (2.97)	0.0004*** (2.71)
Real Estate Shock \times Worker Rights in Restructuring	-0.0054** (-2.31)	-0.0050** (-2.05)	-0.0046** (-1.90)	-0.0038** (-2.60)	-0.0035** (-2.31)
Real Estate Shock	0.0315*** (6.91)	0.0302*** (6.85)	0.0283*** (6.73)	0.0201*** (5.91)	0.0192*** (5.81)
Union Density	0.0004 (1.34)	0.0004 (1.31)	- -	0.0228 (1.23)	- -
Firm Control Variables	No	No	Yes	No	Yes
Fixed Effects	Country, Industry, Year	Country-Industry, Year	Country-Industry-Year	Country-Industry, Year	Country-Industry-Year
R ²	0.07	0.07	0.09	0.14	0.15
Number of Observations	291,418	291,418	291,418	291,418	291,418

Table B.4.3: Regressions with real estate shocks and effective worker rights in firm restructuring

This table presents the coefficient estimates of a panel regression estimated for 22,592 firms from 29 countries over the period 1988-2015. The dependent variable in each specification is indicated at the top of the corresponding column. Debt Issuance equals one if Net Debt Issuances normalized by lagged book assets exceed 1%, and zero otherwise. Effective Rights in Restructuring is the interaction between employees' Rights in Restructuring (used in previous tables) and a variable that equals 0.25, 0.5, 0.75 or 1 depending on whether restructuring requires creditors' unanimity, qualified majority, simple majority or no majority. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Δ Book Leverage	Δ Book Leverage	Δ Book Leverage	Debt Issuance	Debt Issuance
Real Estate Shock \times Worker Seniority	0.0080*** (2.98)	0.0075*** (2.82)	0.0072** (2.57)	0.0037*** (2.71)	0.0036** (2.44)
Real Estate Shock \times Government-Insurance Coverage	0.0049* (1.93)	0.0048* (1.89)	0.0044* (1.72)	0.0065** (2.01)	0.0065* (1.71)
Real Estate Shock \times Union Density	0.0007** (2.48)	0.0007** (2.42)	0.0006** (2.31)	0.0004** (2.61)	0.0003** (2.47)
Real Estate Shock \times Effective Worker Rights in Restructuring	-0.0059** (-2.25)	-0.0051** (-2.02)	-0.0046* (-1.78)	-0.0051** (-2.63)	-0.0049** (-2.57)
Real Estate Shock	0.0302*** (6.42)	0.0279*** (6.27)	0.0251*** (6.04)	0.0207*** (5.27)	0.0196*** (5.15)
Union Density	0.0004 (1.32)	0.0004 (1.28)	- -	0.0214 (1.11)	- -
Firm Control Variables Fixed Effects	No Country, Industry, Year	No Country- Industry, Year	Yes Country- Industry- Year	No Country- Industry, Year	Yes Country- Industry- Year
R ²	0.06	0.06	0.07	0.12	0.14
Number of Observations	291,418	291,418	291,418	291,418	291,418

Table B.4.4: Regressions with real estate shocks with employment protection legislation (EPL) as measure of employees' bargaining power

This table presents the coefficient estimates of a panel regression estimated for 22,418 firms from 28 countries over the period 1988-2015. The dependent variable in each specification is indicated at the top of the corresponding column. Debt Issuance equals one if Net Debt Issuances normalized by lagged book assets exceed 1%, and zero otherwise. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding region and scaled by the lagged book value of the firm's PPE. Employment Protection Legislation (EPL) measures the difficulty of individual and collective dismissals in each country, and ranges from 0 to 6, with 6 indicating the highest level of worker protection, drawn from OECD data and other sources. Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Δ Book Leverage	Δ Book Leverage	Δ Book Leverage	Debt Issuance	Debt Issuance
Real Estate Shock \times Worker Seniority	0.0081*** (2.94)	0.0080*** (2.82)	0.0079** (2.60)	0.0041*** (3.77)	0.0039*** (3.63)
Real Estate Shock \times Government-Insurance Coverage	0.0050* (1.90)	0.0047* (1.75)	0.0043 (1.59)	0.0066** (2.00)	0.0063* (1.70)
Real Estate Shock \times EPL	0.0115** (2.18)	0.0111** (2.11)	0.0108* (1.91)	0.0078** (2.01)	0.0063* (1.91)
Real Estate Shock \times Worker Rights in Restructuring	-0.0040** (-2.20)	-0.0039** (-2.19)	-0.0036** (-2.13)	-0.0044*** (-2.67)	-0.0044** (-2.58)
Real Estate Shock	0.0310*** (6.27)	0.0277*** (6.10)	0.0245*** (5.83)	0.0200*** (5.29)	0.0179*** (5.03)
Employment Protection Legislation	0.0003* (1.70)	0.0002 (1.51)	- -	0.0211* (1.68)	
Firm Control Variables	No	No	Yes	No	Yes
Fixed Effects	Country, Industry, Year	Country- Industry, Year	Country- Industry- Year	Country- Industry, Year	Country- Industry- Year
R ²	0.07	0.07	0.08	0.12	0.13
Number of Observations	288,830	288,830	288,830	288,830	288,830

Table B.4.5: Regressions with real estate shocks, public unemployment insurance and corporate tax rates

This table presents the coefficient estimates of a panel regression estimated for 122,592 firms from 29 countries over the period 1988-2015. The dependent variable in each specification is indicated at the top of the corresponding column. Debt Issuance equals one if Net Debt Issuances normalized by lagged book assets exceed 1%, and zero otherwise. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Unemployment Insurance is the gross replacement rate, i.e. the ratio of unemployment benefits received by a worker in the first two years of unemployment to the worker's last gross wage, drawn from Ellul et al. (2018). Corporate Tax Rate is the effective corporate tax rate computed from all taxes applicable to a standardized firm operating in each country, drawn from Djankov et al. (2010). Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. All independent variables are lagged 1 year. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	(1)	(2)	(3)	(4)
	Δ Book Leverage	Debt Issuance	Δ Book Leverage	Debt Issuance
Real Estate Shock \times Worker Seniority	0.0076*** (3.10)	0.0045** (2.61)	0.0077*** (3.21)	0.0043*** (2.96)
Real Estate Shock \times Government-Insurance Coverage	0.0043 (1.60)	0.0064* (1.80)	0.0047* (1.83)	0.0069* (1.91)
Real Estate Shock \times Union Density	0.0006** (2.14)	0.0004*** (2.86)	0.0006** (2.23)	0.0004*** (3.02)
Real Estate Shock \times Rights in Restructuring	-0.0041*** (-2.16)	-0.0038** (-2.26)	-0.0047** (-2.21)	-0.0036** (-2.49)
Real Estate Shock \times Unemployment Insurance	0.0011 (0.82)	0.0010 (0.78)	- -	- -
Real Estate Shock \times Corporate Tax Rates	- -	- -	0.0009 (0.73)	0.0009 (0.71)
Real Estate Shock	0.0314*** (6.07)	0.0202*** (5.90)	0.0293*** (5.76)	0.0201*** (5.61)
Firm Control Variables	Yes	Yes	Yes	Yes
Fixed Effects	Country- Industry- Year	Country- Industry- Year	Country- Industry- Year	Country- Industry- Year
R ²	0.10	0.15	0.08	0.14
Number of Observations	291,418	291,418	291,418	291,418

Table B.5: Regressions with real estate shocks: short-term vs. long-term debt

This table presents the coefficient estimates of a panel regression for 22,592 firms from 29 countries. The dependent variable is the change in the short-term book leverage ratio in Columns 1 and 2, and change in long-term book leverage in Columns 3 and 4. Short-term debt is defined as debt with maturity up to one year, and long-term debt is defined as the debt with a maturity over one year. Real Estate Shock is the percent change of the value of the firm's real estate, defined as the historical cost of its land in the year in which the firm first appears in the dataset, inflated by the real estate price index of the corresponding country and scaled by the lagged book value of the firm's PPE. Firm control variables, used in the specifications of Columns 3 and 5, are the changes in total assets, asset tangibility, profitability (defined as EBITDA normalized by total assets), market-to-book ratio, and CapEx ratio which are defined in Appendix B. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Δ Short-term Leverage (1)	Δ Short-term Leverage (2)	Δ Long-term Leverage (3)	Δ Long-term Leverage (4)
Real Estate Shock \times Worker Seniority	0.0140*** (3.40)	0.0132*** (3.20)	0.0067* (1.89)	0.0062* (1.79)
Real Estate Shock \times Government-Insurance Coverage	0.0091** (1.97)	0.0086* (1.85)	0.0052* (1.73)	0.0040 (1.39)
Real Estate Shock \times Union Density	0.0014*** (2.73)	0.0011** (2.33)	0.0005 (1.48)	0.0005 (1.44)
Real Estate Shock \times Rights in Restructuring	-0.0082** (-2.11)	-0.0081* (-1.91)	-0.0067* (-1.80)	-0.0045 (-1.47)
Real Estate Shock	0.0238*** (5.74)	0.0225*** (5.43)	0.0207*** (4.82)	0.0201*** (4.37)
Firm Control Variables Fixed Effects	No Country- Industry-Year	Yes Country- Industry-Year	No Country- Industry-Year	Yes Country- Industry-Year
R ²	0.16	0.18	0.09	0.10
Number of Observations	270,315	270,315	270,315	270,315

Table B.6 First-stage estimates of the regression for change in profitability

This table presents the coefficient estimates of the first-stage of the regression for the change in profitability, defined as EBITDA scaled by total assets; the corresponding second-stage estimates are shown in Column 3 of Table 6. Change in profitability is instrumented by five major commodity price indices. As shown in the table, first-stage coefficients are allowed to vary across 15 NAICS industries. The estimates are based on data for 22,592 firms from 29 countries controlling for country-industry and year effects. T-statistics are reported in parenthesis. Standard errors are clustered at the country level. Asterisks (*, ** and ***) indicate statistical significance (at the 10%, 5% and 1% level, respectively).

	Oil	Gold	Iron Ore	Platinum	Copper
Agriculture, forestry, fishing	-0.0942*** (-3.97)	-0.0536 (-1.08)	-0.0807*** (-3.51)	0.0251 (0.92)	-0.0488* (-1.71)
Mining, quarrying, and oil and gas extraction	0.5941*** (19.47)	0.5253*** (12.38)	0.5280*** (18.84)	0.4384*** (9.48)	0.5087*** (14.10)
Construction	-0.0812** (-1.98)	0.0610 (1.44)	0.0962** (2.34)	0.0790** (1.97)	-0.2100*** (-10.67)
Manufacturing	-0.2264*** (-8.70)	-0.1511*** (-5.36)	-0.3019*** (-14.51)	-0.2066*** (-8.70)	-0.4019*** (-19.79)
Wholesale trade	0.0811* (1.72)	0.0549 (1.17)	0.1002** (2.13)	0.0704* (1.68)	-0.1019** (-2.16)
Retail trade	-0.1162*** (-2.77)	-0.1093** (-2.21)	-0.1497*** (-3.49)	-0.1502** (-2.24)	-0.2039*** (-7.57)
Transportation and warehousing	-0.2019*** (-5.02)	0.0915 (1.02)	-0.2038*** (-5.32)	-0.0991* (-1.93)	-0.2943*** (-8.16)
Information	-0.0518 (-1.56)	0.0144 (0.25)	-0.0541 (-1.72)	-0.0050 (-0.47)	-0.8622** (-1.97)
Professional, scientific and technical services	0.1619 (1.33)	-0.0513 (-0.96)	0.0402 (0.40)	-0.0484 (-0.98)	0.0594 (0.49)
Real estate and rental and leasing	-0.1044** (-2.55)	-0.0835** (-2.14)	0.0420 (1.49)	0.0403 (1.05)	-0.1828*** (-5.51)
Admin. and support, waste mgt. and remediation services	0.0421 (1.02)	-0.0337 (-0.78)	0.0312 (0.76)	-0.0308 (-0.71)	0.0300 (0.74)
Educational services	-0.0611** (-2.12)	0.0489 (0.80)	-0.0452 (-0.75)	-0.0447 (-0.53)	-0.0635* (-1.71)
Health care and social assistance	0.0211 (1.02)	0.0169 (0.82)	0.0224 (1.08)	-0.0230 (-0.91)	0.0580* (1.85)
Entertainment and recreation	-0.1065*** (-3.07)	-0.0852** (-2.46)	-0.1129** (-3.25)	0.0163 (1.35)	-0.1401*** (-3.86)
Accommodation and food services	-0.0509 (-1.55)	-0.0407 (-1.24)	-0.0540* (-1.69)	-0.0556 (-1.29)	-0.1057** (-2.75)

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