Replication guide for 'Corporate debt booms, financial constraints, and the investment nexus'

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This document describes the folder structure, the data and the code used in the paper and in the online appendix.

1 Folder structure

- **Codes**. Contains two sub-folders, *Paper* and *Appendix*, with a similar structure. The master code file is *main_paper.do* and *main_appendix.do*, which replicate all results (figures and tables) in the paper and online appendix, by calling on the other do files. This is the only do file that needs to be run to generate all results. Bear in mind that access to Compustat data is required to generate all results.
- **Data**. Contains two sub-folders:
  - RawData. All the raw datasets used in the paper.
  - ConstructedData. Datasets created by running the Stata codes.
- **Figures**. Folder where the figures are stored when running the Stata codes. The figures are saved in Stata eps-format.
- **Tables**. Folder where the tables are stored when running the Stata codes. Most tables are saved in latex-format.

2 Data

2.1 Publicly available data

US national. Data for the US national aggregate are mainly sourced from FRED. Below I provide the Stata names and description of the main variables used in the paper.

- *debtgdp_nfc*. Sum of debt securities and loans of the nonfinancial corporate business sector divided by nominal GDP. Source: FRED codes BCNSDODNS and GDP.

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- *debt_asset_nfc*. Sum of debt securities and loans divided by total assets of the nonfinancial corporate business sector. Source: FRED codes BCNSDODNS and TABSNNCB.
- *Cdebtgdp_nfc*. Debt booms computed as the 12-quarter change in the corporate debt-to-GDP ratio.
- *debtgap_nfc*. The debt gap is computed as the cyclical component of the Hamilton (2018) filter, with the forecasting horizon set at h=20.
- *Cdebt_asset_nfc*. Debt booms computed as the 12-quarter change in the corporate debt-to-asset ratio.
- *nber*. Recession dummy as defined by the NBER. Source: FRED code USRECQM.
- *tight*. Dummy variable taking the value of one for periods when the net percentage of banks reporting a tightening in standards for C&I loans to large and middle-market nonfinancial firms is above 10%, and zero otherwise. Source: Senior Loan Officer Opinion Survey (SLOOS) on bank lending practices sourced from FRED code DRTSCILM.
- *cpi*. Consumer Price Index for All Urban Consumers (CPI-U). Source: FRED code CPIAUCSL.
- *ebp*. Excess bond premium from Gilchrist and Zakrajšek (2012).
- *dlrgpdi*. Percentage change in the logarithm of US national real gross private domestic investment. Source: FRED code GPDIC1 and author's calculations.

Firm-level data

- *delaycon*. Index of financial constraints based on firms' 10-Ks reports. Higher values represent firms that are at risk of delaying their investments due to liquidity concerns. Source: Hoberg and Maksimovic (2015).

2.2 Proprietary data

Firm-level data. The final dataset from S&P Compustat has been downloaded in October 2022. Below I list the main variables with the respective description. Source is S&P Compustat North America, unless stated otherwise.

- *tdebt_asset*. Book value of total debt (short plus long term) divided by total assets.

- *ncasset_asset*. The net liquid asset ratio is computed as current assets (cash and short-term investments, receivables, inventories, and other current assets) net of current liabilities (short-term debt, accounts payable, income taxes payable, and other current liabilities) divided by total assets.

- *lrasset*. The logarithm of total real assets in 2009 USD.

- *tobin*. Tobin's Q, referring to the market value of the firm over the replacement cost of its assets.

- *Ctdebt_asset*. Debt booms computed as the 12-quarter change in the corporate debt-to-asset ratio.

- *dlrcapex_4q*. Percentage change in the logarithm of real (tangible) capital expenditures. It includes funds used by a firm to acquire, upgrade, and maintain its physical assets (property, plants, buildings, technology, and equipment). I take the four-quarter centered moving average of the raw variable.

- *atrisk*. Dummy variable taking the value of one if the firm is defined as financially vulnerable. Vulnerable firms are those falling in the top tertile of the leverage ratio and in the bottom tertile of the net liquid asset ratio.

- *resil*. Dummy variable taking the value of one if the firm is defined as financially resilient. Resilient firms are those falling in the bottom tertile of the leverage ratio and in the top tertile of the net liquid asset ratio.

- *beta_iv*. Sensitivity of firm debt booms to industry debt booms. This is the estimated variable used as the main instrument for firm debt booms.

- *beta_capex*. Sensitivity of firm investment growth to industry investment growth. This estimated variable is included as a control in all IV regressions.

- *beta_ebp*. Sensitivity of firm investment growth to the excess bond premium. This estimated variable is included as a control in all IV regressions.

- *roa*. Return on assets (ROA) computed as the four-quarter centered moving average of earnings before interest and taxes (EBIT) divided by total assets.

- *dlrprccq*. Percentage change in the logarithm of the firm's stock price.

- *dlrsales_4q*. Percentage change in the logarithm of real sales. I take the four-quarter centered moving average of the raw variable.

- *dlrintinv_4q*. Percentage change in the logarithm of real intangible investment. I take the four-quarter centered moving average of the raw variable. The proxy of intangible investment follows Peters and Taylor (2017) by summing Research and Development (R&D) costs and 30% of Selling, General, and Administrative (SG&A) expenses.

- *int_h*. Dummy variable taking the value of one for high-intangible firms, i.e., firms with intangible investment to capital stock above the median sample.

- *icr*. Interest coverage ratio (ICR) computed as the ratio of EBIT to interest expenses.

- *dlemp*. Year-on-year percentage change in the logarithm of the total number of employees. The raw annual data is interpolated into the quarterly frequency.

- *pd12*. Probability of default in 12 months, a modified version of Merton's distance-to-default model, sourced from the National University of Singapore's Credit Research Initiative (CRI).

- *apk*. Asset turnover ratio computed as the four-quarter centered moving average of sales divided by total assets.

- *stdebt_shr*. Share of short-term debt in total debt.

- *int_rate*. Implicit interest rate paid by firms on their outstanding debt. I take the four-quarter rolling sum of interest expenses divided by total debt.

- *downgr_100*. Dummy variable taking the value of one when there is a rating downgrade in a particular quarter. I take S&P credit ratings from Capital IQ.

- *downgr_invgr_100*. Dummy variable taking the value of one when there is a rating downgrade for investment-grade firms (rated BBB- or above) in a particular quarter. I take S&P credit ratings from Capital IQ.

- *EPS_id_l*. Dummy variable taking the value of one for firms with high-growth opportunities. A particular firm is considered to have high-growth opportunities if the financial analysts' forecasts for the one-year ahead earnings per share (EPS) of that firm stand above the forecasts of the same indicator for the median peer in the same industry. Data are taken from analysts' earnings forecasts from the Institutional Brokers' Estimate System (I/B/E/S) dataset.

- *sic_nt*. Dummy variable taking the value of one for nontradable firms. Following Müller and Verner (2023), the nontradable sector includes firms operating in construction, whole-

sale and retail trade, transportation, or in services. In turn, the tradable sector includes firms belonging to manufacturing, agriculture, or mining.

- *oth_atrisk_ind_asset_shr*. The asset-weighted share of vulnerable firms in each industry (at the two-digit SIC level).

- *age_l*. Dummy variable capturing young firms, taking the value of one if a firm's age is below the median sample. Age of the firm is the year of foundation from Capital IQ. When it is missing, I compute age based on the Initial Public Offering Date (ipodate) from Compustat.

- *vulcl_a*. Robustness check for capturing vulnerable firms based on the first quintile of the average sample credit lines ratio (over total assets) from Dealogic.

References

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