Global Firm Dynamic, Productivity, (Mis)Allocations

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Corporate Leverage, Credit Cycles and Growth: Insights from Europe, United States and Emerging Markets

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3. Identification and robust empirical evidence
   - Hard to identify causal effects with VARs and/or with limited macro observations in reduced form regressions
   - Can have more power for identification and establish robust stylized facts using micro data
Corporate Debt/GDP: Advanced and Emerging Countries

Source: Data from BIS. Figure from Kalemli-Ozcan, Liu, Shim, 2019.
1. Why firms increase their leverage during booms?
2. Is firm leverage an important propagator of aggregate boom-bust cycles?
3. Does firm leverage affect monetary policy transmission and risk-taking?
4. How does firm leverage relate to productivity and growth?

A key theme: Importance of granular big data for identification and for macro implications
Today’s talk will draw from:

Europe:
1. Debt Overhang, Rollover Risk, and Corporate Investment: Evidence from the European Crisis, 2019 (with Luc Laeven, David Moreno)
2. Capital Allocation and Productivity in South Europe, QJE, 2017 (with Gopinath, Karabarbounis, Villegas-Sanchez)

U.S.:
1. Risk-Taking and Monetary Policy Transmission: Evidence from Loans to SMEs and Large Firms, 2021 (with Caglio and Darst)
2. Leverage over the life cycle of U.S. Firms, 2019 (with Dinlersoz, Hyatt, Penciakova)

Emerging Markets:
1. Exchange Rate Appreciations and Corporate Risk Taking, IMF ARC 2019, IMFER 2021 (with Liu, Shim)
2. U.S. Monetary Policy and International Risk Spillovers, Jackson Hole Symposium, 2019
3. International Spillovers and Local Credit Cycles, RESTUD, forthcoming (with di Giovanni, Ulu, Baskaya)
Europe
Corporate Debt and Investment to GDP: Europe and U.S.
Understanding Investment Bust in Europe

- **Big Data:** Match firms to their banks and banks to their sovereigns in Euro area countries

- Firm-level datasets that are nationally representative covering SMEs; mimic official size distribution—less than 250 employee firms account for 60+ percent of economic activity.

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  1. Low aggregate demand/high future uncertainty/high sovereign risk (affects all firms in a given country)
  2. Low bank credit supply (affects all firms who borrowed from bad banks)
  3. **Firm leverage and rollover risk** (affects firms differentially as a function of their short-term debt based leverage)
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*Firm debt overhang can explain a large fraction of sluggish investment in Europe*
Firm Debt Overhang and Investment in Europe—No recovery after 5 years

- Leveraged firms in periphery countries decrease investment more and do not recover.
Why European firms accumulated debt during the boom?

Declining interest rates with the EU integration incentivized firms to finance investment with short-term debt.
How firm leverage affects productivity?

Firm-level heterogeneity in accessing finance have implications on aggregate productivity when all firms face a lower interest rate

- ↓ in real interest rate $\rightarrow$ ↑ in desired capital ($K$) for all firms
- Firms with high net worth: ↑ $K$, face ↓ returns to $K$
- Firms with low net worth: cannot expand $K$, face ↑ returns to $K$
- Dispersion of capital returns ↑ within a 4-digit sector and aggregate TFP ↓
- Importance of size-dependent borrowing constraint for aggregate outcomes, evidence?
Leverage and Firm Size in Europe
U.S.
Similar picture in the U.S. for firm size and firm leverage.

..one needs financial data on small firms to get a meaningful variation in firm size
Problem: Lack of data in the U.S. on private firms financial positions

- Extensive literature on employment/growth dynamics of U.S. firms
- Far less is known about how these firms finance their growth
- What is known about firms’ financing behavior derives primarily from publicly-listed firms in Compustat:
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- Non-Compustat firms’ financial conditions must have important macroeconomic implications:
  - They account for over half of economic activity
  - Most susceptible to the effects of financial shocks
Listed Firms are not representative of the Aggregate Economy in the U.S.

- Mean size (emp) = 20 in LBD, 6200 in CS
- Mean size (assets) = $4.6M in LBD/ORBIS, $12M in Y-14, $2180M in CS
Leverage and Firm Size in U.S.: Same convex relation as in Europe

Private Firms

Public Firms
Why does heterogeneity in firm financing matter?

1. Misallocation of Capital and TFP
2. Firm innovation and TFP
3. Transmission of monetary policy
Micro data matching firms' real decisions to their financial decisions is a must for progress in this literature.
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  ⇒ Akcigit and Kerr (2018, JPE)

- **Small firms** are more financially constrained
  ⇒ Gopinath, Kalemli-Ozcan, Karabarbounis, Villegas-Sanchez (2017, QJE)

- **Young firms** are more financially constrained
  ⇒ Dinlersoz, Hyatt, Kalemli-Ozcan, Penciokova (2019)

- **Small firms** financial constraints relaxation depends on the interaction between the heterogeneity in collateral and the interest rates
  ⇒ Caglio, Darst, Kalemli-Ozcan (2021)
Heterogeneity in Finance and Firm Growth

Micro data matching firms’ real decisions to their financial decisions is a must for progress in this literature.

- Extensive heterogeneity in financial intermediaries’ entry and lending interacting with global finance
  \[\Rightarrow\] Rey (2013, JH); Combria and Rey (2020); Kalemli-Ozcan (2019, JH); di Giovanni, Kalemli-Ozcan, Ulu, Baskaya (2021, RESTUD)

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**Finance can work against Creative Destruction if:**

- Large incumbent firms borrow and suffer from long periods of debt overhang
  \[\Rightarrow\] sluggish investment
  \[\Rightarrow\] low entry of young and smaller innovators
  \[\Rightarrow\] low growth.

- Understanding heterogeneity in finance can help us how finance can work for and against creative destruction.
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Share of Bank Debt in Private Firms’ Financing in FR-Y-14 (U.S. Credit Registry)
Heterogeneity in financial constraints

In the macro-finance literature, two types of constraints for firm i:

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COVID type shock reminds us the other type:

$$\Delta k_i \leq \frac{earnings}{cash_i}$$

This means:

$$b_i \leq \frac{k_i}{r_i}$$

Evidence from SMEs in emerging markets and in U.S.

⇒ Low rates induce higher borrowing, without changing the pledged collateral during shocks
Emerging Markets
Corporate Leverage will be driven by:

- Low borrowing costs
- But also by **external shocks and capital flows** \(\Rightarrow\) affect borrowing costs and exchange rates that affect net worth
- Important role for domestic banks who intermediate capital flows
- Important role for **foreign currency debt**
How to Link External Shocks to Domestic Credit Growth in EM?

(a) GFC and Non-Core Liabilities ($\rho = -0.51$)

(b) GFC and Lending Rates ($\rho = 0.52$)

(c) GFC and UIP ($\rho = 0.61$)

(d) GFC and Collateral ($\rho = 0.01$)
Main Lessons
Takeaways

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2. Corporate de-leveraging can lead to sluggish investment after large financial crises.
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2. Corporate de-leveraging can lead to sluggish investment after large financial crises.

3. Corporates increase leverage (risk-taking) during the booms given low borrowing costs and higher networth (more collateral).

4. Capital flows and exchange rate fluctuations have an additional role in increasing corporate leverage in emerging markets by reducing borrowing costs and decreasing the value of FX debt on the balance sheet (higher net worth for mismatch firms).

5. During booms, both local currency and FX borrowing will increase, leaving corporates vulnerable to both exchange rate shocks and funding shocks.

6. Larger firms can borrow more, and such heterogeneity in access to finance has implications for aggregate productivity and growth.
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Implications for Policy

- Large literature that says: credit booms predict busts (macro data from many countries)

- Narrative in the U.S.: household leverage more important than firm leverage → Not true when representative firm/bank data is used

- Focusing only on public/large firms leverage and growth dynamics will miss the importance of SME leverage as such firms are the ones who are financially constrained to begin with

- During low rates risk-taking works through financially constrained small firms, where financial constraints relax with low rates and not solely due to high collateral values

Policies that aim to promote growth, should limit leverage on low productivity firms, and make sure high productivity firms have access to finance, especially during periods of low interest rates.