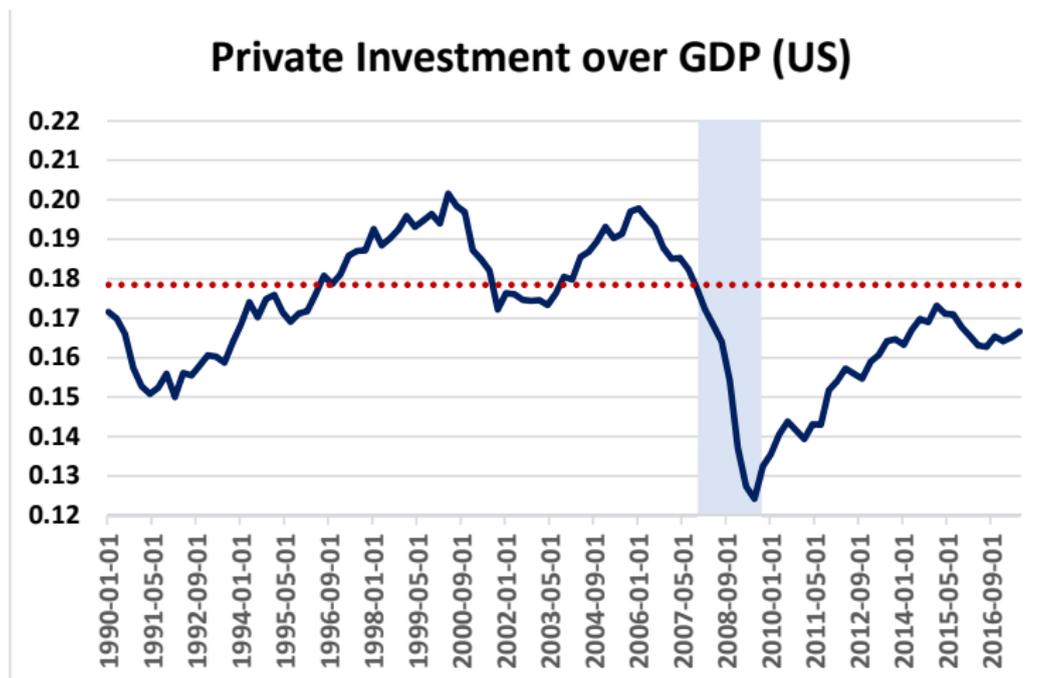


“Corporate Debt Structure, Precautionary Savings, and Investment Dynamics” by Jasmine Xiao

Discussion: Michal Szkup (UBC)

CAFRAL, December 7-8

# Investment in US 1990-2017



- ▶ Slow recovery of investment following recent recession

# Introduction

- ▶ **What explains the slow recovery?**
  - ▶ supply-side stories (e.g., financial crises and lack of liquidity)
  - ▶ demand-side stories (e.g., households' debt overhang, no profitable opportunities?)
- ▶ **This paper contributes to this debate:**
  - ▶ A new channel: Precautionary savings by firms

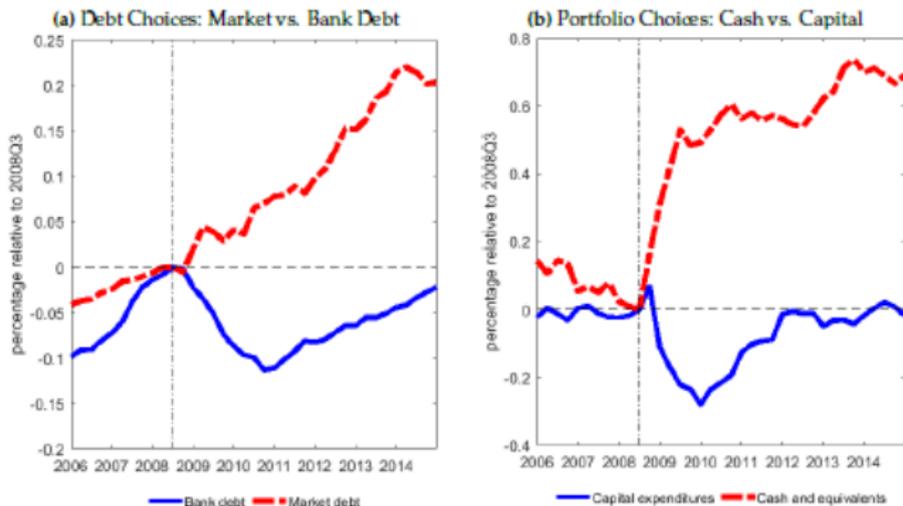
# This paper

## Contribution

1. Documents stylized facts about dynamics of asset and liabilities of firms following the last recession
2. Propose a novel mechanism that:
  - ▶ consistent with these facts
  - ▶ leads to slow recovery of investment
3. Quantifies this channel using a GE model

# Debt Choice and Cash Holdings

Figure 1: Aggregate Evidence on Debt Composition and Firms' Balance Sheet Policies



## ► Motivating observations:

1. An increase in the bond issuance compared to bank debt
2. An increase in holdings of cash relative to capital expenditure



# The Model

- ▶ **General equilibrium model:**

1. households
2. final good producers
3. two types of financial intermediaries
  - ▶ bank lenders
  - ▶ market lenders
4. intermediate good producers

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# An Intermediate Good Producer

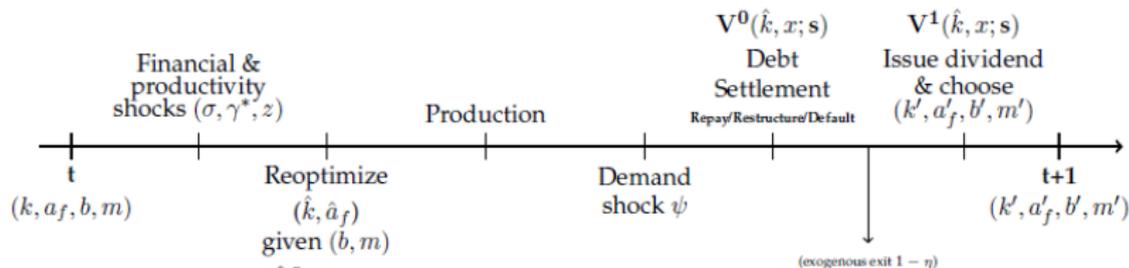


Figure 4: Overview and Timing of Intermediate Goods Firms' Problem

- ▶ Individual balance sheet: capital ( $k_t$ ), cash ( $a_f$ ), bank debt ( $b$ ), market debt ( $m$ )
- ▶ Individual uncertainty: productivity and demand
- ▶ Limited Liabilities + Costly default

# Key Trade-offs faced by Intermediate Goods Producers

## 1. **Liabilities:**

- ▶ Market debt: Lower intermediation costs
- ▶ Bank debt: offers ability to restructure debt

## 2. **Assets:**

- ▶ Capital: offers higher profit if demand high
- ▶ Cash: decreases volatility of profits and hence probability of default

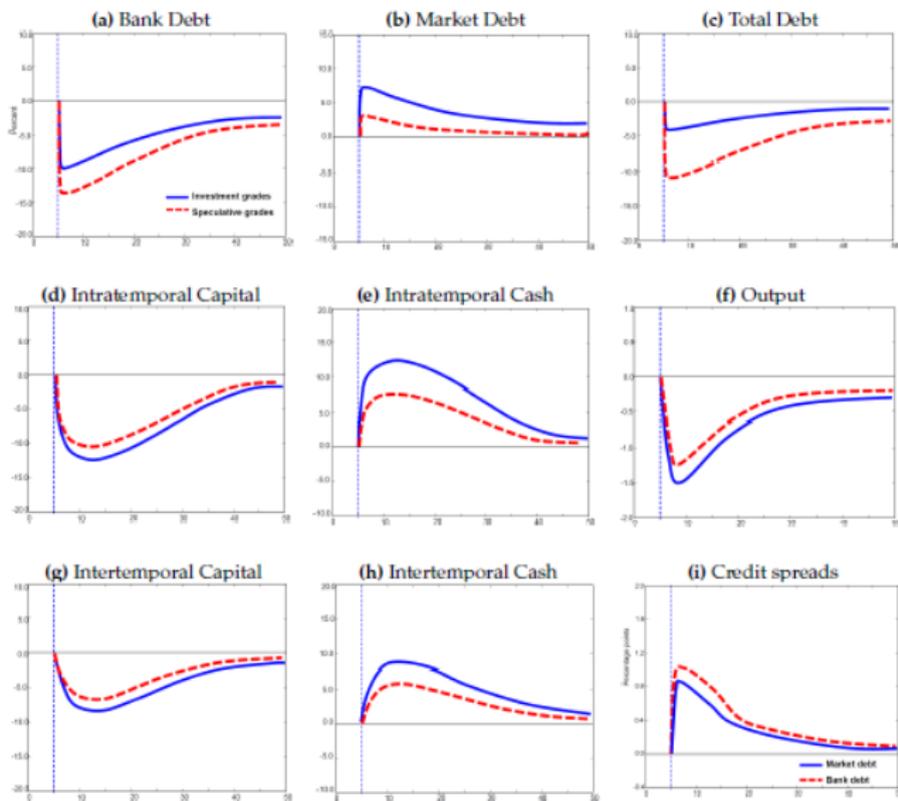
### ▶ **Precautionary saving motive:**

- ▶ Replacing bank debt with market debt exposes firms to higher default risk (less room for restructuring)
- ▶ To decrease probability of default the firms increase their cash holdings

# Mechanism

- ▶ **Shock to the cost of intermediation by banks**
  - ▶ higher cost decreases volume of bank lending
- ▶ **To finance their investment firms switch to market debt**
  - ▶ market debt cannot be restructured
- ▶ **To decrease likelihood of default firms**
  - ▶ substitute capital for cash holdings
- ▶ **This mechanism weaker for speculative grade firms**
  - ▶ market debt too costly
  - ▶ low assets prevent from driving this cost down

# Results: Benchmark Model



# Comparison with the Data

- ▶ Missing: The comparison with the data
- ▶ Qualitatively, the model generates dynamics observed in the data:
  - ▶ a switch to market debt by investment grade firms
  - ▶ a larger increase in cash holdings among investment grade firms
  - ▶ (weakly) lower investment by the investment grade firms
- ▶ How close are these results to what we observed in the data?
  - ▶ how far the financial shock with precautionary motive can explain the decline of investment

# Validation

- ▶ Useful to provide validation of the model
- ▶ The model delivers interesting predictions
  1. The largest increase in cash holdings by firms with the medium level of assets
  2. The largest fall in investment by firms with the medium level of assets
- ▶ Is this supported in the data?

# Some other comments

## The strength of precautionary saving motive

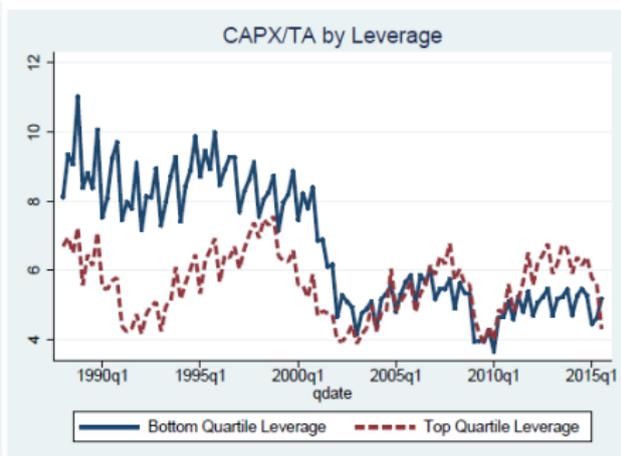
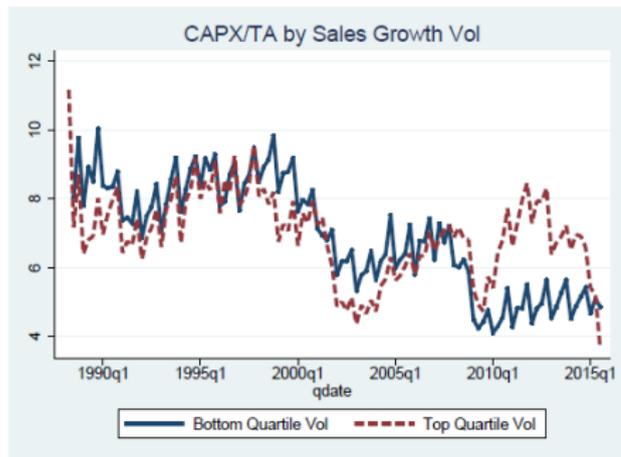
- ▶ **The size of  $\chi$  (bankruptcy cost)**
  - ▶ the empirical literature estimates the average bankruptcy costs to be 20-25%
- ▶ **Only short-term debt**
  - ▶ in the model all debt is one-period
  - ▶ the precautionary channel would be much weaker if market debt was long-term
- ▶ **Market debt cannot be restructure**
  - ▶ what if it is possible but costly?

# Why did investment recover slowly?

- ▶ **This paper contributes to the debate on slow recovery of investment**
  - ▶ Introduces new channel: Precautionary savings by firms
  - ▶ Quantifies new channel within the proposed framework
- ▶ **Other explanations in the literature**
  - ▶ Reduced supply and higher cost of credit
  - ▶ Firms Debt Overhang
  - ▶ Household Debt Overhang

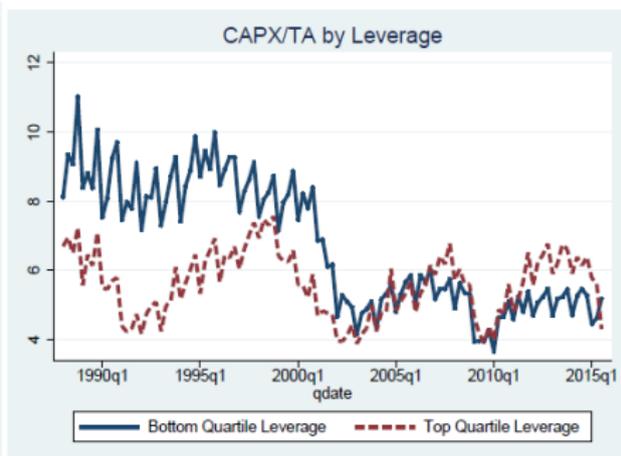
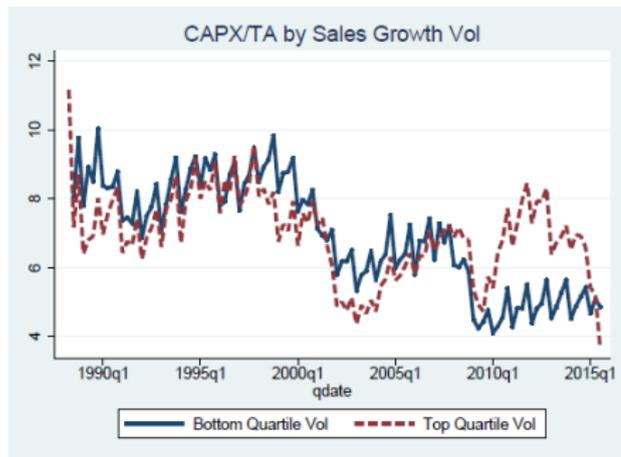
# Firms Debt Overhang

- ▶ CapX by “safe” and “risky” firms following recession:



# Firms Debt Overhang

- ▶ CapX by “safe” and “risky” firms following recession:



- ▶ In Perla, Pflueger and Szkup (2017) we argue that this is consistent with debt overhang story

# Debt Overhang and Over-investment

## ▶ Simple continuous time model:

- ▶ equity holders run a firm that generates instantaneous cash flows  $Z$
- ▶ each instant of time repay  $L$
- ▶ can walk away any time

## ▶ FOC for investment

$$\left[ \begin{array}{c} \text{Marginal Increase} \\ \text{in PV of cash flows} \end{array} \right] - \left[ \begin{array}{c} \text{Change in the value of} \\ \text{existing debt} \end{array} \right] = \text{Marginal cost} \\ \text{of Investment}$$

## ▶ Change in the value of existing debt under limited liabilities:

- ▶ positive when equity financing
- ▶ negative when debt financing

# What drives over-investment?

## ▶ **Intuition:**

- ▶ Investment financed with debt expropriates existing debt holder

## ▶ **Mechanism:**

- ▶ Higher leverage  $\implies$  Higher probability of default  $\implies$  Lower PV of payments promised to the existing debt holders
- ▶ Higher probability of default due to higher leverage benefits equity holders. Why?
  - ▶ New debt (includes claims on the liquidation value of firm) & priced fairly  $\implies$  equity holders the pass value of firm in liquidation to themselves