Payout-Based Asset Pricing
Gonçalves and Stathopoulos

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Asset Pricing with Corporate Payouts

Counterpart of Investment Policy

$$\textbf{Output} = \textbf{Investment} + \textcolor{red}{\textbf{Payout}}$$

- Firm optimization behavior characterizes investment/payout policy
- Observing payouts lead to inference about firms' optimization environment
  - ▸ Aggregate state of the economy
  - ▸ Expected returns ...

Standard Investment Based Asset Pricing

Hayashi

$$V_0 = \max_{\{I\}} \int_0^{+\infty} e^{-\int_0^s r_u du} \left[\pi_s - I_s \left(1 + \Phi(I_s, K_s)\right)\right] ds \tag{1}$$

- Investment is capital augmenting: $\partial_t K_t = I_t - \delta K_t$
- Φ is an adjustment cost function (typically convex):

$$\Phi(I, K; Z) = K \cdot \phi\left(\frac{I}{K}; Z\right) = \frac{a_0 K}{(1+\alpha)Z}\left(\frac{I}{K}\right)^{1+\alpha}$$

Standard Investment Based Asset Pricing

First order conditions

$$q = 1 + \Phi_I(I, K)$$

Marginal cost equates the benefit of a **new** unit of capital:

- Standard tests of Hayashi (Summers 1981)
    - Investment policy: $q - 1 = \Phi_I$
- Quadratic adjustment costs

$$\frac{I}{K} = \frac{Z}{\text{constant}} \cdot (q - 1)$$

Poor empirical performance

Standard Investment Based Asset Pricing

Hayashi is missing a bunch of things

- Risk
- General equilibrium (demand side)
- Cross-section (heterogeneity across firms)
- Measurement (what is K? what is I? What is q?)

Standard Investment Based Asset Pricing

This paper: Payouts

Investment is messy

- How can we aggregate the dynamics of different types of investment
  - Intangibles, R&D, financial assets

Payouts are cleaner

- Observables
- "Fungible" Dollars!

$$\frac{Y - \text{Payout}}{K} = \frac{Z}{\text{constant}} \cdot (q - 1)$$

This paper: Payouts

Discussion Plan

1 The theory
  ▶ How different is this from investment-based asset pricing

2 Some stylized facts around payouts and q-theory

3 What about "insulation"?

Plan

- Specify a full production side
  - Firm optimization: link optimal investment policy to "exogenous" variables
- Exogenous demand side
  - Consumption process dynamics C = payout demand = D^d
  - Relative demand for debt and equity

$$\text{equity payout demand} = d^s Y$$

$$\text{debt payout demand} = d^b Y$$

  - Demand side does not have to be consistent with SDF (CCAPM-type optimization)?

Textbook (Cochrane)

Therefore, there is nothing wrong in adopting one of the following strategies for empirical work:

1. Form a statistical model of bond and stock returns, solve the optimal consumption-portfolio decision. Use the equilibrium consumption values in $p = E(mx)$.
2. Form a statistical model of the consumption process, calculate asset prices and returns directly from the basic pricing equation $p = E(mx)$.
3. Form a completely correct general equilibrium model, including the production technology, utility function and specification of the market structure. Derive the equilibrium consumption and asset price process, including $p = E(mx)$ as one of the equilibrium conditions.
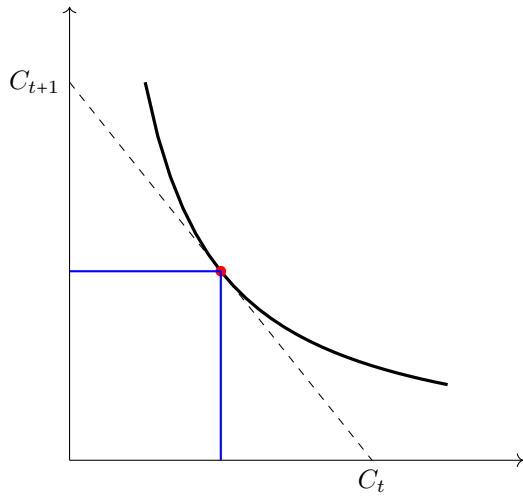
Figure: Endowment Economy
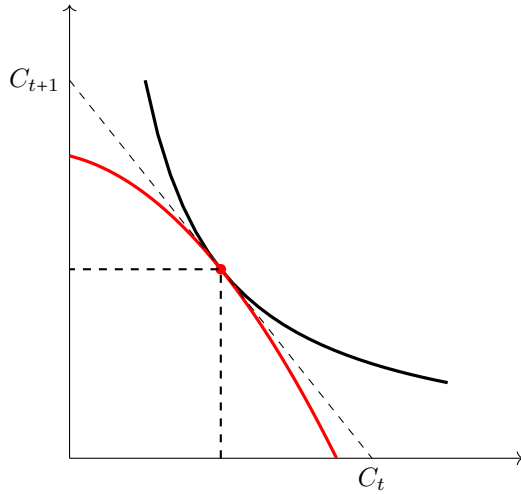
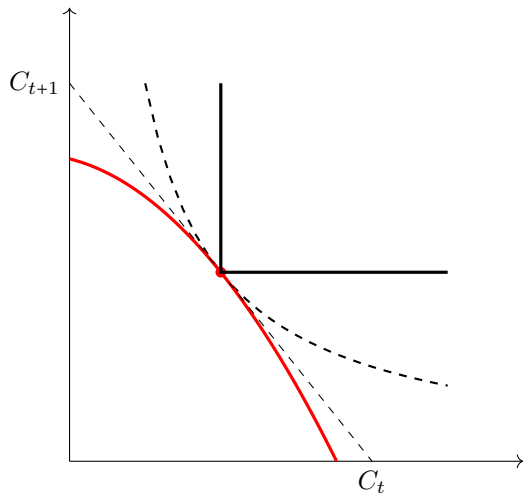Figure: General Equilibrium Model with Production

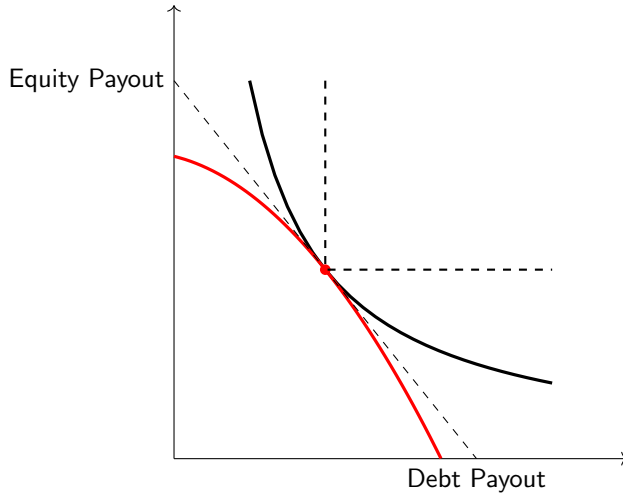Figure: Production based asset pricing with exogenous "demand" consumption

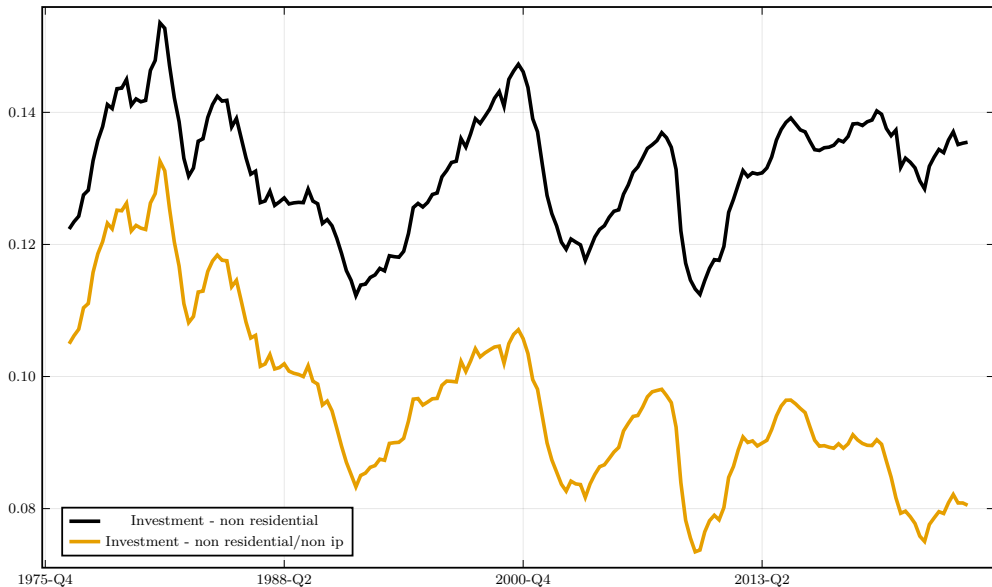Figure: Production based asset pricing with exogenous relative demand

Plan

Some facts around payouts

1. Firm investment has declined over the last 50 years
2. Payout has increased over the last 20 years
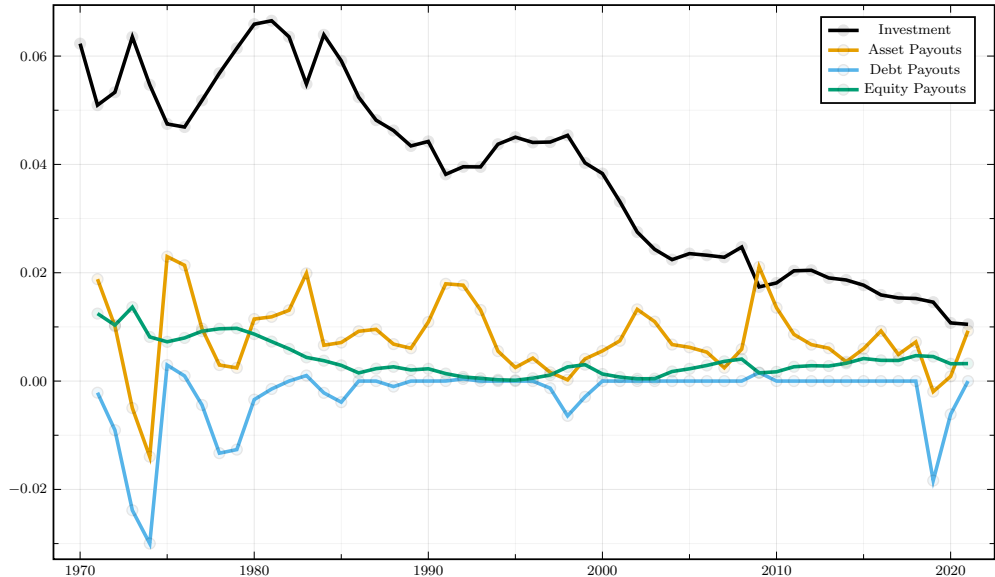3. Firms optimize their internal savings

Investment Decline (NIPA)
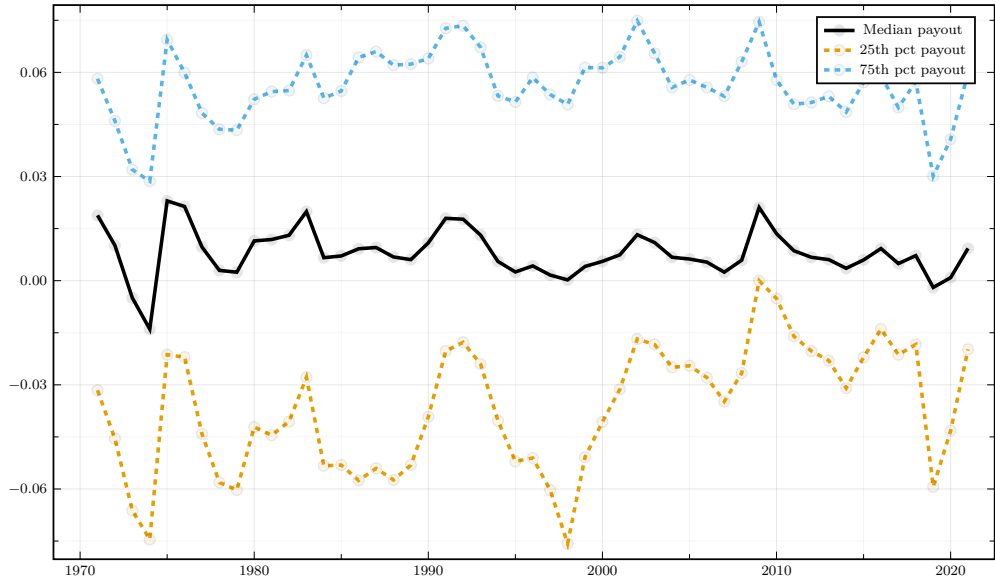
Private non residential investment as a fraction of GDP.

Investment decline and payouts (Compustat)

Investment and payouts for compustat firms.

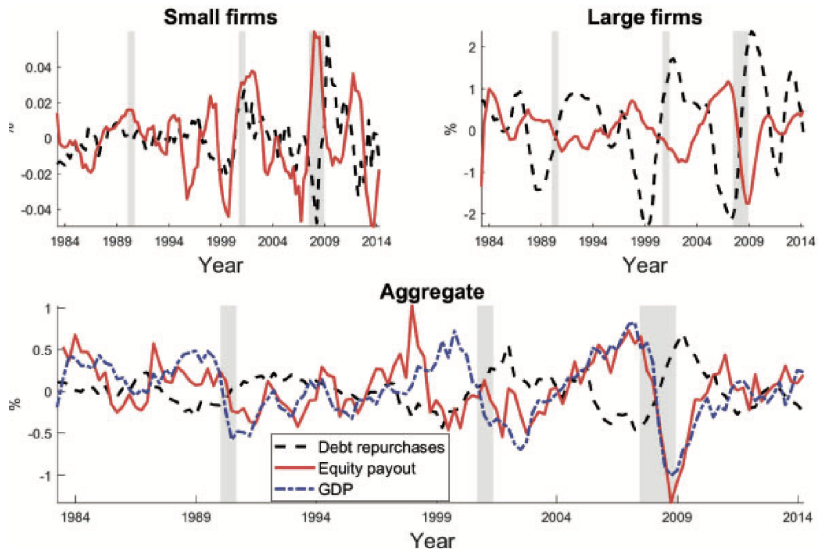# Investment decline and payouts (Compustat)

Heterogeneity of payouts for compustat firms.
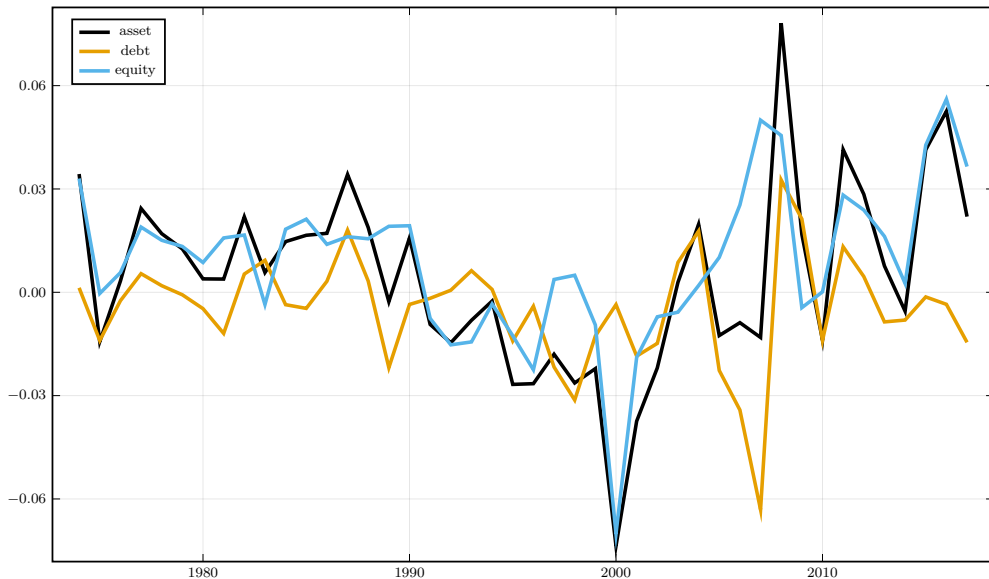
(Optimal) Firm Financing ...

over the Business Cycle (Begenau and Salomao)
Difference between small and large firms in payout and financing policy.

Aggregate Corporate Payouts

Total Corporate Payouts in the U.S. (Davidyuk, Richard, Shaliastovich and Yaron).
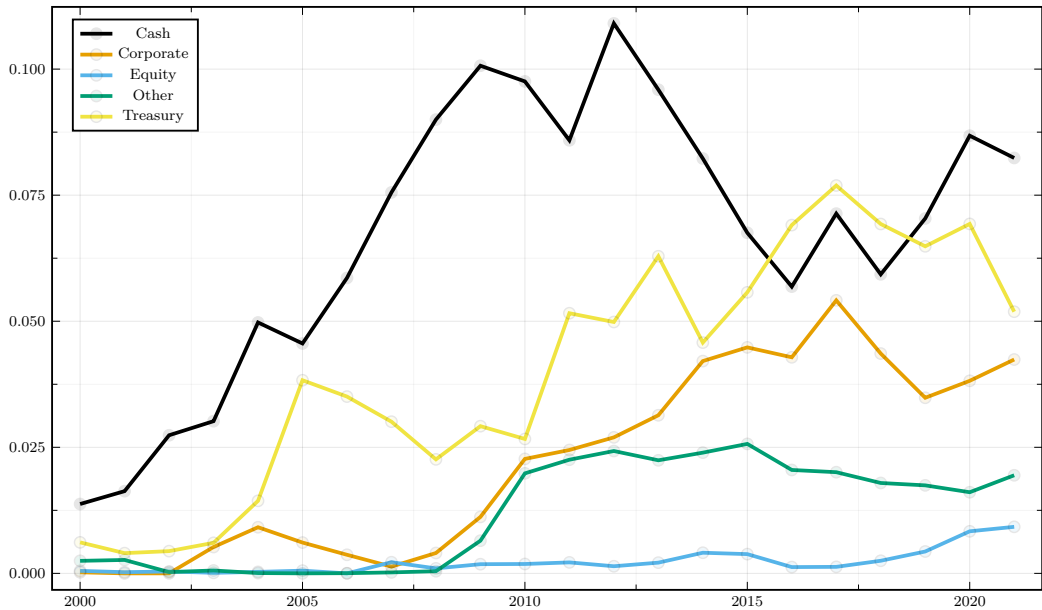
What is investment?

Where does leftover cash go?

- Physical investment
- Other ... financial investments

- Darmouni and Motta
  "Bond portfolios have grown to be at least as large as cash-like instruments."

What is investment?

Plan

■ Firms demand and outcomes are not always reflected on the outside ...

$$Y = \underbrace{\text{phys. inv.} + \text{fin. inv.}}_{\text{I}} + \text{wages} + \underbrace{\text{debt payouts} + \text{equity payouts}}_{\text{payouts}}$$

Final Thoughts

Interesting Paper! Go read it.

Take away

- The payout view of investment is interesting
- Potentially lots of new facts on firms' optimization behavior
- Fruitful are of future research in firm dynamics and empirical asset pricing