Corporate Debt, Repayment and Maturity Structure, and Monetary Policy Transmission

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Bank of Canada Deputy Governor Sharon Kozicki: "(...) so far, this cash flow channel has not only had the largest effects, it has also been more important than in past cycles". (19 September, 2023)

In this paper I aim;

- to examine the role of cash outflow exposure in the monetary policy transmission mechanism
- to discuss how the effectiveness of credit channel changes in the long term floating rate debt economies
- to highlight the role of debt maturity

Cash flow channel of monetary policy transmission under different repayment structures and debt maturities.

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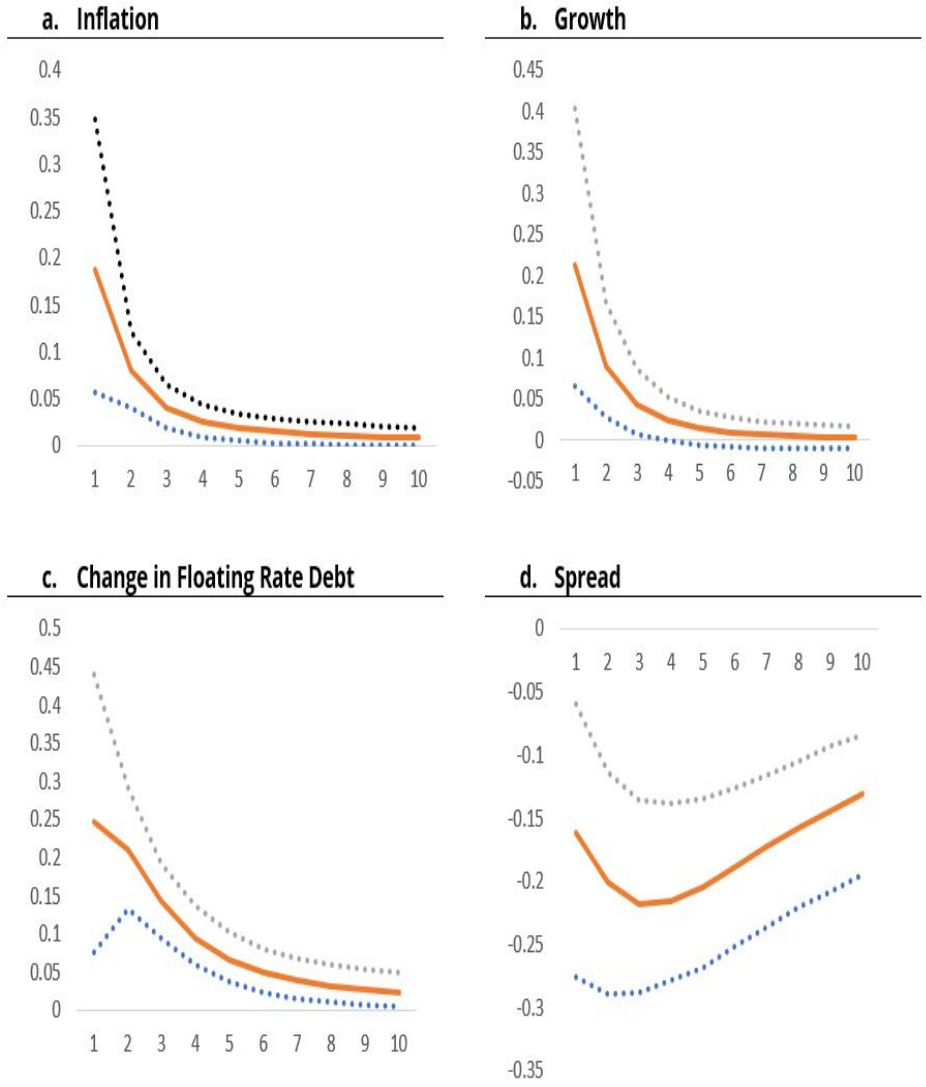
Firm liability structure and associated cash flows matter for firm behavior and that financial market participants price stocks accordingly

An Introductory SVAR

Variables	**Shocks**			
	Supply Sh.	Demand Sh.	Floating Debt Sh.	Policy Sh.
Inflation	+	+		+
Growth	−	+		+
Floating rate			+	+
Spread		+		−

Impulse Responses to a Loosening Monetary Policy Shock from SVAR



The Model:

- Simple NK-DSGE model with corporate debt and nominal rigidities, which is inspired by Iacoviello (2005).
- The entrepreneur is limited in terms of borrowing: they are subject to collateral constraints á la Kiyotaki and Moore (1997).
- Long-term debt is modelled as a perpetuity whose repayments decrease geometrically.
  - repayment due at t+1 $r_t^L B_t^L$
  - at t+2 $\phi r_t^L B_t^L$
  - .....
  - at t+k $\phi^{k-1} r_t^L B_t^L$
- Let j_t^L to be the sum of real outstanding payments due in time t and b_t^L the real amount of debt.

$$j_t = \frac{1}{\pi_t}(\phi j_{t-1} + r_{t-1}^L b_{t-1}^L). \tag{1}$$

The Floating Rate Economy:

- Repayment is done at a decaying rate of ϕ with a floating rate r_t^L, determined one period in advance.
  - repayment due at t+1 $r_t^L b_t^L$
  - at t+2 $\phi r_{t+1}^L b_t^L$
  - .....
  - at t+k $\phi^{k-1} r_{t+k-1}^L b_t^L$

  Call j_t the sum of payments due in time t.

$$j_t = \frac{1}{\pi_t}(\phi j_{t-1} \frac{r_{t-1}^L}{r_{t-2}^L} + r_{t-1}^L b_{t-1}^L). \tag{2}$$

The Household's Optimization:

- Maximize the discounted lifetime utility:

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left\{ log C_t - \frac{L_t^{1+\eta}}{1+\eta} \right\}, \tag{3}$$

- subject to the budget constraint:

$$C_t + b_t^L + d_t^S = j_t + \frac{1}{\pi_t} r_{t-1} d_{t-1}^S + w_t L_t + t_t. \tag{4}$$

$$j_t = \frac{1}{\pi_t} (\phi j_{t-1} + r_{t-1}^L b_{t-1}^L). \tag{5}$$

The Entrepreneur's Optimization:

- Maximize the discounted lifetime utility:

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \gamma^t \{log C_t^e\} \tag{6}$$

- subject to the budget constraint:

$$C_t^e + j_t + w_t L_t + q_t[k_t - (1-\delta)k_{t-1}] = b_t^L + x_t^L A_t^L (k_{t-1})^{\alpha} (L_t)^{1-\alpha}, \tag{7}$$

- investment is limited by a borrowing constraint (two options);

$$r_t^L b_t^L \leq \mathbb{E}[\chi_t^L q_{t+1}(1-\delta)\pi_{t+1} k_t] \tag{8}$$

Alternatively,

$$\mathbb{E}[j_{t+1}] \leq \mathbb{E}[\chi_t^L q_{t+1}(1-\delta)\ k_t]. \tag{9}$$

Capital Producing Firms and Monetary Policy

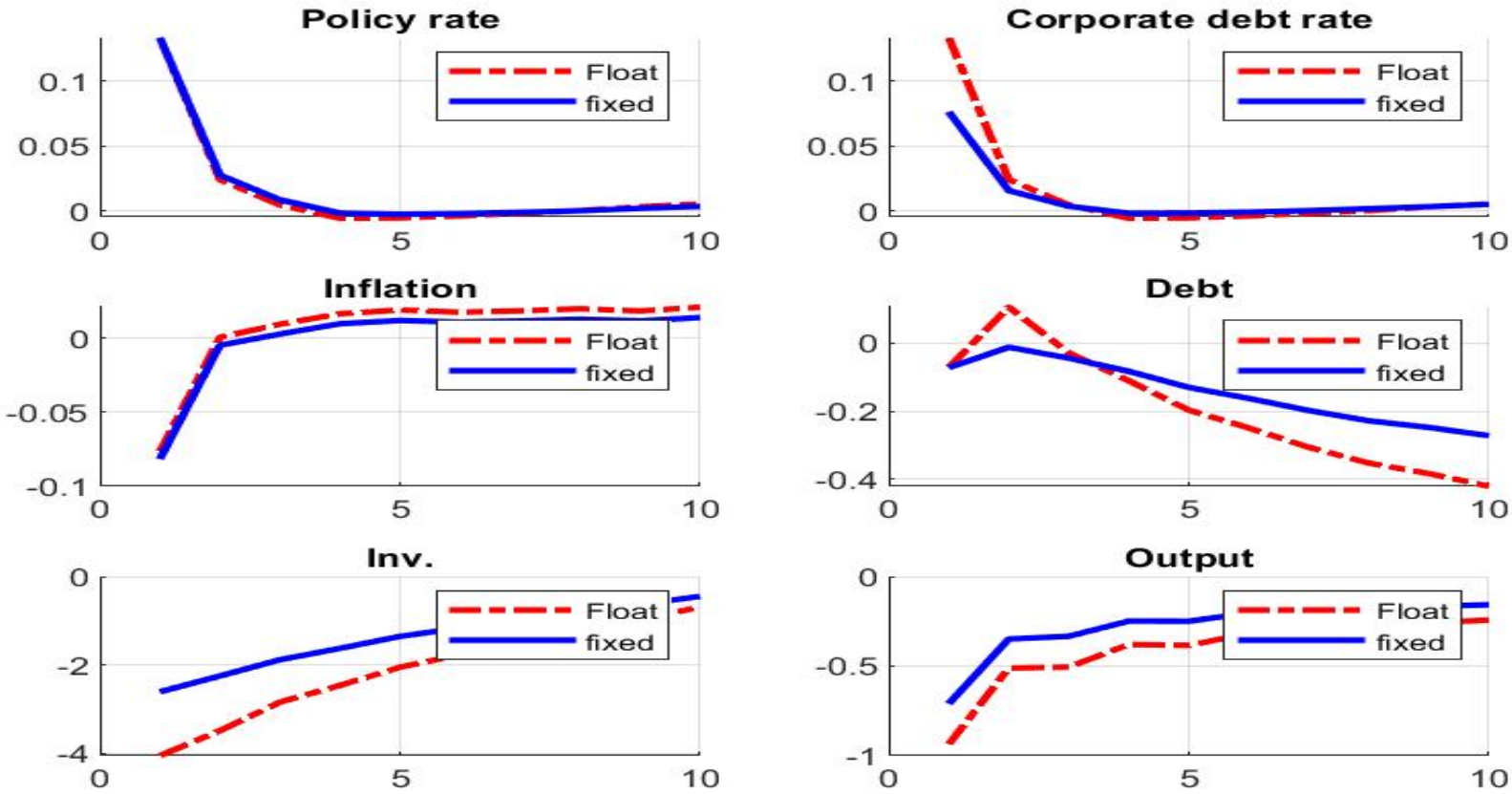
- capital accumulation is subject to investment adjustment cost represented by a function S(.);

$$\max_{I_t} \; \mathbb{E}_t \sum_{k=0}^{\infty} \Lambda_{t,t+k}[q_{t+k}(1 - S(.))I_{t+k} - I_{t+k}] \tag{10}$$

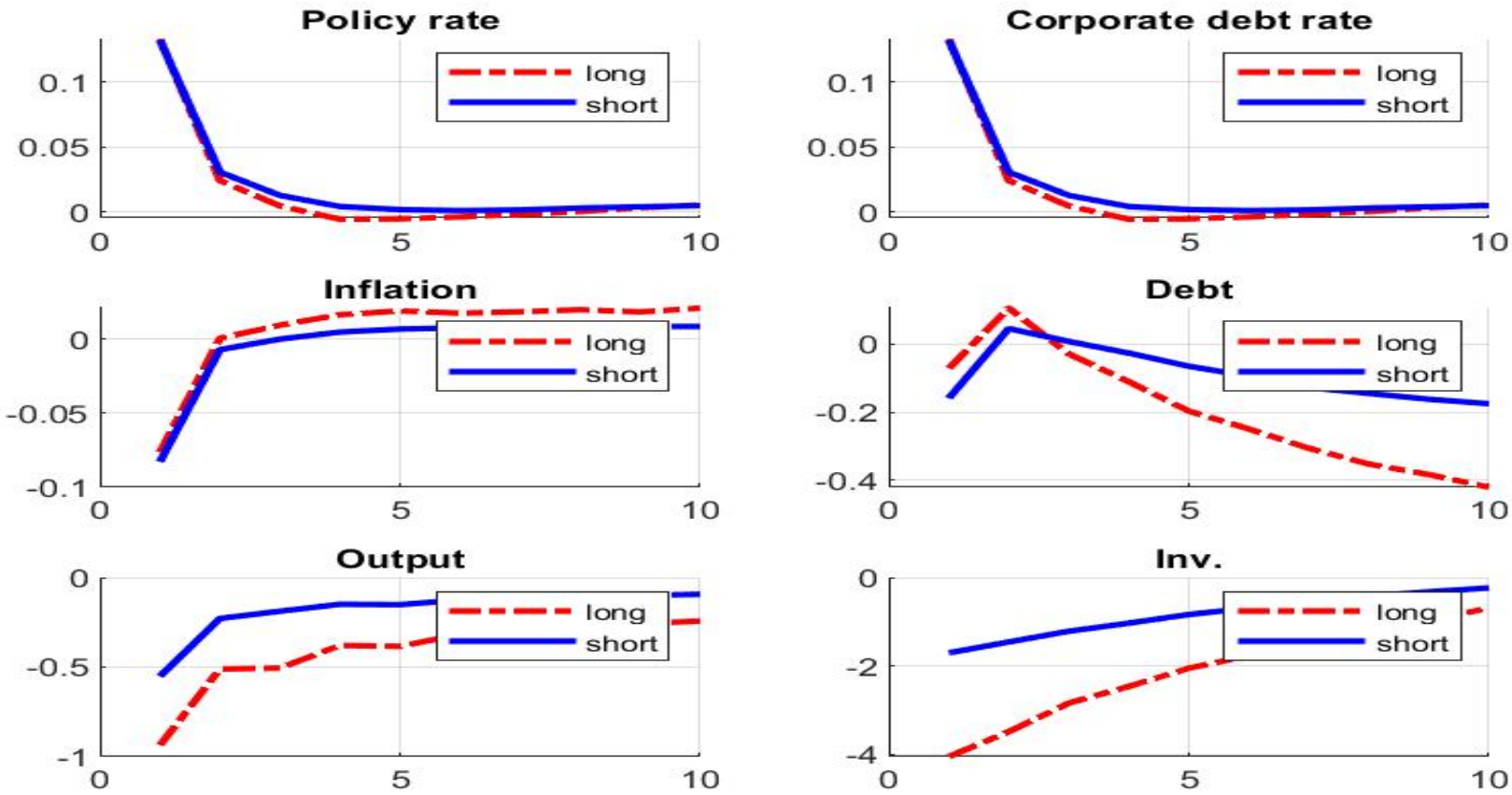
- The monetary authority chooses the one-period risk-free interest rate, r_t^S, following a Taylor rule;

$$r_t = (r_{t-1})^{r_R} \left[\pi_{t-1}^{1+r_\pi} \left(\frac{Y_{t-1}}{Y_{SS}} \right)^{r_y} \bar{rr} \right]^{1-r_R} e_{R,t}. \tag{11}$$

Comparison of Fixed and Floating: A Positive Monetary Policy Shock



Comparison of Maturity Effect for Floating: A Positive Monetary Policy Shock



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- Possible interactions with macro-prudential policies
- Modeling firm level heterogeneity
- Firm-level choices in response to monetary policy (choice of debt structure, hedging)

- Thank you