

# Discussion of “Does Firms’ Financing in Foreign Currency Matter for Monetary Policy?” by Volha Audzei, Jan Bruha, and Ivan Sutoris

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## Main features of the paper

- The paper adds firms' decisions to have domestic or foreign loans to an otherwise standard multi-country NK DSGE model. Demand for loans is driven through the working capital channel: firms borrow capital from HHs and need to pay in advance.
- There are Home (H) and Foreign (F) countries modeled explicitly, and Rest of the World (RoW) whose demand for exports is a function of H and F mutual exports to each other.
- Investment and consumption goods are produced in both countries, HHs could invest in both subject to adjustment costs.
- Oil is used in production and consumption, but it doesn't play a separate role in this paper.

# New channel of transmission I

- The firms select their FCL share by solving mean-variance problem. Foreign-Home interest rate differential, expected exchange rate depreciation, and covariance of expected returns matter for the decision.
- Firms pay premium over the foreign interest rate, with the wedge  $\Xi_t$  depending on trade balance, current FCL share, and expected FCL share change, plus a shock.
- Changing FCL share in response to shocks gives the firms another margin to affect their marginal costs and to dampen the effect of unfavorable exchange rate movements.

## New channel of transmission II

- The effect on macroeconomic outcomes is small: with  $FCL=60\%$  in the steady state, in response to the  $1\%$  foreign interest rate shock output is 0.06 p.p. higher than in the baseline model with  $FPL=0$ .
  - At this point (10 periods after the shock), baseline output is about 0.35% lower.
  - This is the maximum difference I could see in the output variable, for other periods and other shocks the difference seems to be smaller than 1/6th.
- Foreign cost push shock seems to be an exception, as the difference in IRF of output reaches 1 p.p. And the FCL share drops by 50 p.p.
  - The paper doesn't include the picture with actual (rather than differential) IRFs to this shock, so it's hard to understand why the differential here is so different from the other responses?
- The relative difference in responses could be large for variables that respond weakly under the baseline, such as wages or labor hours.

## Comments: Financing Wedge I

- The key equation for the novel transmission mechanism is (2.8), the wedge between **F**oreign policy rate and the rate at which **H**ome firms are borrowing in the foreign currency:

$$\begin{aligned}\tilde{R}_t^f &= \Xi_t R_t^f, \\ \Xi_t &= \exp\left(\alpha - \eta_a \frac{TB_t}{TB} - \eta_s \kappa_t + \eta_{sg} \left(\frac{E_t \kappa_{t+1}}{\kappa_{t-1}} - 1\right) + \epsilon_t^k\right).\end{aligned}$$

- Direct effect of the changes is small: in response to most shocks, the share is expected to change by  $\pm 20$  p.p. This implies that the wedge hardly moves:

$$\Xi_t = \dots \cdot \exp\left(0.01 \cdot \left(\frac{0.40}{0.60} - 1\right)\right) = \dots \cdot 0.9967.$$

This implies that the firms' foreign currently loans are incredibly strongly sensitive to the tiny interest rate differentials.

## Comments: Financing Wedge II

- This sensitivity comes from the assumed decision rule of the firms, a mean-variance problem whose solution strongly depends on  $Cov\left(R_t, \tilde{R}_t^f \Delta S_{t+1,t}\right)$ .
- The exchange rate is assumed to satisfy Uncovered Interest Parity (UIP), which doesn't necessarily hold in reality at short horizons.
- If the exchange rates react differently to the interest rate differentials, will there be such a strong reaction of FCL?
- It also would be nice to see empirical evidence on switching in the financing source, and whether the size of the effect is comparable to that assumed here.
- In real life, most repeated financing is happening through credit lines which could be utilized to larger or smaller extent. This might amplify your result, as there won't be a significant reason to have adjustment costs in FCL share.

## Comments: Financing Wedge III

- One could tell a story with  $\eta_s < 0$  instead. This will probably affect the covariance and thus the results, but if  $\kappa_t$  is just a function of the interest rate differential, this might not be a problem.
- I didn't get the calibration of  $\overline{TB} = 0.4$  : is it 40% of GDP?

## Comments: Feedback Direction? I

- Apparently, the IRFs of the FCL share and access for finance costs are essentially the same for all considered shocks, if FCL is allowed to adjust.
- The only reason there is a significant difference between the IRFs with flexible and fixed *FCL* is the adjustment cost, implicit in the term  $\eta_{sg} \left( \frac{E_t \kappa_{t+1}}{\kappa_{t-1}} - 1 \right)$  in the expression for the wedge.
- Presence of this term leads to time-varying wedge  $\Xi_t$  and thus to time-varying marginal costs. The steady state value of  $\kappa$  matters somewhat for macroeconomic outcomes ( $Y$ ,  $C$ ,  $I$ , labor, etc.), but not the trajectory of response of  $\kappa$  itself.
- This probably means that  $\kappa$  depends only on the covariance term,  $Cov \left( R_t, \tilde{R}_t^f \Delta S_{t+1,t} \right)$ , and this covariance term isn't really affected by the macroeconomic developments.



## Comments: Feedback Direction? II

- In other words,  $\kappa$  affects the macroeconomy, but beyond the interest rate differential, there is very little general equilibrium feedback into  $\kappa$ .
- Is it intuitive from the economic point of view / what you wanted to achieve?

# Comments: Policy Experiment #1

- In this policy experiment, the policymaker is not aware of the FCL channel and makes a mistake.
- The mistake is modeled by adding the MP shocks such that in the first 4 periods the interest rate is the same as in the model with *FCL* fixed at 0.
- But the policymaker doesn't need to 'know' about the FCL channel, as the Taylor rule is written in terms of observables.
- This policy experiment, then, is about policymaker observing counterfactual inflation and output in the economy without time-varying wedge, rather than about the policy mistake.

## Comments: Specification of Exports to RoW

- Exports to RoW are implicitly modeled as

$$\begin{aligned} X_{H,t} &= M_{F,t}^{\beta_x} \exp(\epsilon_t^{nt}), \\ \ln X_{H,t} &= \beta_x \ln M_{F,t} + \epsilon_t^{nt}. \end{aligned}$$

- Here  $X$  are *total* exports from the **H**ome country, and  $M$  are **F**oreign country's imports from the **H**ome country.
- By definition,  $X > M$ , but then  $\beta_x$  is called a *share*, thus less than 1.
- Negative exports to RoW probably won't matter in the log-linearized model, but this needs to be checked / clarified.

# Conclusion

- This is a very interesting paper with a novel channel for transmitting domestic and foreign MP shocks, as well as the exchange rate shocks.
- Some interesting modeling tricks meant to make the model palatable for calibration/estimation without exploding the number of parameters.
- Perhaps, simple empirical calibration of the FCL share's dependence on the interest rate differential, and modeling it in a reduced form, could work as well or better.

THANK YOU FOR YOUR  
ATTENTION!