

# Foreign Exchange Interventions, Signalling and Intermediary Constraints

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## A very neat paper

- ▶ Foreign Exchange Interventions (FXI) in Brazil
- ▶ Separate out 'anticipated' and 'unanticipated' interventions for the past 20 years
- ▶ They use (intraday) spot and futures prices as well as auction data
- ▶ Surprise sales of USD reserves results in appreciation of Real (BRL) and a decline in the magnitude of CIP violations.
- ▶ Argue that this is 'consistent with dollar liquidity provision reducing the relative cost of borrowing USD via FX forward and swap markets, improving efficiency.'
- ▶ Intermediary constraints matter

- ▶ Exc rate was a pure shock absorber (we were a commodity currency)
  - ▶ Banking supervision was left to the people
  - ▶ Macro-prudential was called “regulation”
  - ▶ Capital controls? Never heard of that
  - ▶ We were looking for inflation under every rock.
  - ▶ It was a good life. Simple but good.
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- ▶ How times changed: RBNZ changed. Even the IMF changed!

## Context - IPF (what some EMs have been doing for a long time)

- ▶ Central bank governors (committees) are the most powerful people:
  - ▶ Monetary policy, prudential supervision, macroprudential, FXI, Capital Controls (CFMs)
  - ▶ Little accountability and transparency on FXIs.
  - ▶ Think about monetary policy reviews, evaluations for a number of central banks.
- ▶ Towards a rule?
- ▶ Is FXI an independent rule? Can you do FXIs in a persistent way without moving the interest rates?
  - ▶ RBA during Asian Financial Crisis, Turkey.

A synthetic forward exchange rate

$$F_t^n = S_t \left( \frac{1 + r_t^{f,n}}{1 + r_t^n} \right)^n \quad (1)$$

where  $r_n$  and  $r^{f,n}$  are the domestic and foreign  $n$  – year bond rates. In response to a news announcement,

$$\Delta f_t^n \cong \Delta S_t - \Delta \left[ n(r_t^n - r_t^{n,f}) \right] \quad (2)$$

⇒ The change in the forward rate measures the relative response of the spot exchange rate and the interest differential to news

Let  $r_L$  be the interest rate on a long term bond. The  $n$  year forward rate can be expressed in terms of the change in the long term forward rate and the change in the yield curve.

$$\Delta f_t^n \cong \Delta S_t - \Delta \left[ n(r_t^n - r_t^{n,f}) \right] \quad (3)$$

Now  $\Delta S_t \cong \Delta f_t^L + \Delta \left[ n(r_t^L - r_t^{L,f}) \right]$

$$\Rightarrow \Delta f_t^n \cong \Delta f_t^L + [L\Delta r_t^n - n\Delta r_t^n] - [L\Delta r_t^{L,f} - n\Delta r_t^{n,f}] \quad (4)$$

- ▶ term  $\Delta f_t^L$  : Long term forward, second
- ▶ term: change in domestic yield curve

Let  $r_L$  be the interest rate on a long term bond. The  $n$  year forward rate can be expressed in terms of the change in the long term forward rate and the change in the yield curve.

$$\Delta f_t^n \cong \Delta S_t - \Delta \left[ n(r_t^n - r_t^{n,f}) \right] \quad (5)$$

Now  $\Delta S_t \cong \Delta f_t^L + \Delta \left[ n(r_t^L - r_t^{L,f}) \right]$

$$\Rightarrow \Delta f_t^n \cong \Delta f_t^L + [L\Delta r_t^n - n\Delta r_t^n] - [L\Delta r_t^{L,f} - n\Delta r_t^{n,f}] \quad (6)$$

- ▶ term  $\Delta f_t^L$  : Long term forward, second
- ▶ term in blue is the change in domestic yield curve

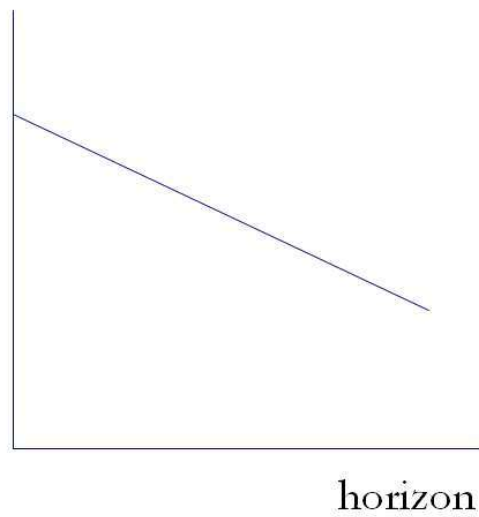
## In terms of commodity price/future market language

- ▶ Different types of shocks or news/events will have different effects on these variables.
  1. If the spot exchange rate responds more to news than long term interest rate differentials, the forward rate shifts in response to news.
  2. Changes in yield curve are represented as twists around the long term forward rate.
- ▶ Different types of news might have distinctive “signature” effects on the forward exchange rate schedule.
- ▶ Equivalently: different types of news might have distinctive “signature” effects on the relative size of the response of interest rates and the spot exchange rate to news.
- ▶ What do we want the FXIs to do? What are we trying to undo?

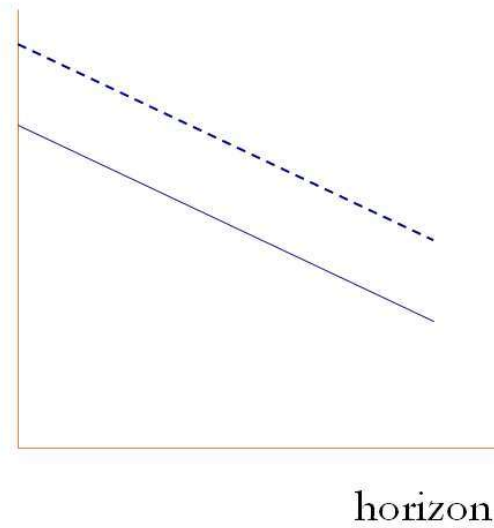


- Economic news that affects long run foreign exchange earnings (discovery of oil?) would shift the whole forward exchange rate schedule upwards.

Forward rate

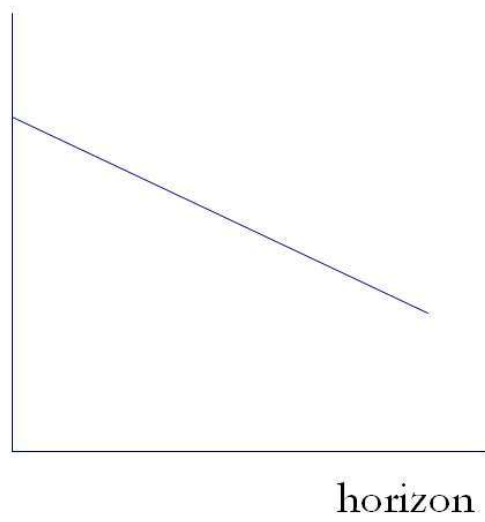


Forward rate

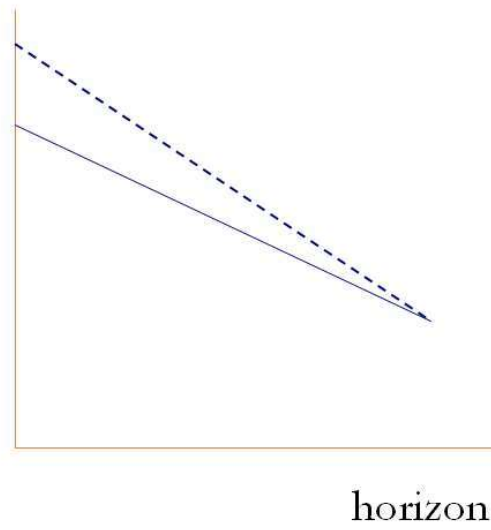


- Monetary policy tightening should twist the curve

Forward rate



Forward rate



## Estimating them jointly

Almost all papers estimate the effect of macroeconomic news on exchange rates and interest rates separately (except Faust et al 2007, JME).

1. It (potentially) improves the efficiency of the estimates, as there are good reasons to believe the error terms in the separate regressions are correlated.
  - ▶ Doing this in local projections context might be complicated
2. The relative size of the coefficients is important: do exchange rates respond by a similar amount to news as long-term bond rates?
3. The relative size of the response is a direct measure of the response of forward exchange rates to news

## Anticipated/Unanticipated Interventions

- ▶ Unexpected: Those where the operational date is on the same day as the date of the announcement
- ▶ Expected: for which the operational date is later than the date of announcement

## Auctions data

- ▶ The use of auctions data from traditional swaps and reverse swaps
- ▶ Is there a potential for an IO type structural estimation?
- ▶ Hortacsu and McAdams (2010, JPE), *Mechanism Choice and Strategic Bidding in Divisible Good Auctions: An Empirical Analysis of the Turkish Treasury Auction Market*
- ▶ Structural IO models are (slowly) becoming popular in macro
- ▶ Not for the sake of using fancy techniques: (Better?) counterfactuals.

## Some minor comments

- ▶ What happens to the other currency pairs? Real-Canada, Real-Euro?
- ▶ Monetary policy announcements/shocks in the same window?
- ▶ Jorda (2005) LP with controls - controls can be problematic. Angrist and Frandsen (2019) in first stage of the the 2SLS context: Use machine learning. Improvements.