Discussion of
Exchange Rate Disconnect Revisited
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Consider the setup in Itskhoki and Mukhin (2021).

Log TFP process(es)

\[ \alpha_t = \rho \alpha_{t-1} + \sigma_\alpha \varepsilon_\alpha^t. \]

Financial (noise trader asset demand) shock

\[ \psi_t = \rho \psi_{t-1} + \sigma_\psi \varepsilon_\psi^t. \]

Key ingredients:
- home bias in the product market,
- financial market frictions.
The Backus-Smith puzzle

- General condition in int’l macro models:

\[
\Delta c_t - \Delta c_t^* = \kappa_\alpha (\Delta \alpha_t - \Delta \alpha_t^*) - \gamma \kappa q \Delta q_t
\]

so sign of \(\text{cov}(\Delta q_t, \Delta c_t - \Delta c_t^*)\) hinges on \(\text{cov}(\Delta q_t, \Delta \alpha_t - \Delta \alpha_t^*)\):

\[
\frac{\text{cov}(\Delta q_t, \Delta c_t - \Delta c_t^*)}{\text{var}(\Delta q_t)} = -\gamma \kappa q + \kappa_\alpha \frac{\text{cov}(\Delta q_t, \Delta \alpha_t - \Delta \alpha_t^*)}{\text{var}(\Delta q_t)}
\]

- With complete markets:

\[
\Delta q_t = \frac{\sigma \kappa_\alpha}{1 + \gamma \sigma \kappa q} (\Delta \alpha_t - \Delta \alpha_t^*)
\quad \Delta c_t - \Delta c_t^* = \frac{\kappa_\alpha}{1 + \gamma \sigma \kappa q} (\Delta \alpha_t - \Delta \alpha_t^*)
\]

\(\alpha_t \uparrow \rightarrow q_t \uparrow\) and \(c_t - c_t^* \uparrow\)

- In incomplete markets models with \(\frac{\text{cov}(\Delta q_t, \Delta \alpha_t - \Delta \alpha_t^*)}{\text{var}(\Delta q_t)} \approx 0\), we get \(\text{cov}(\Delta q_t, \Delta c_t - \Delta c_t^*) < 0\).

\(\psi_t \uparrow \rightarrow q_t \uparrow\) and \(c_t - c_t^* \downarrow\)
The UIP puzzle

Furthermore, we have:

\[ r_t - r_t^* = -\frac{\sigma \kappa_\alpha}{1 + \gamma \sigma \kappa_q} (1 - \rho)(\alpha_t - \alpha_t^*) + \frac{\gamma \sigma \kappa_q}{1 + \gamma \sigma \kappa_q} \psi_t \]

\[ E_t[\Delta q_{t+1}^*] = -\frac{\sigma \kappa_\alpha}{1 + \gamma \sigma \kappa_q} (1 - \rho)(\alpha_t - \alpha_t^*) - \frac{1}{1 + \gamma \sigma \kappa_q} \psi_t, \]

so the currency expected excess return is

\[ \lambda_{t+1} = E_t[\Delta q_{t+1}^*] - [r_t - r_t^*] = -\psi_t. \]

\[
\begin{align*}
\alpha_t \uparrow & \quad \rightarrow \quad E_t[\Delta q_{t+1}^*] \downarrow \quad \text{and} \quad r_t - r_t^* \downarrow \\
\psi_t \uparrow & \quad \rightarrow \quad E_t[\Delta q_{t+1}^*] \downarrow \quad \text{and} \quad r_t - r_t^* \uparrow
\end{align*}
\]
Colacito and Croce (2013)

- We don’t necessarily need market incompleteness, just $q$ variation arising from shocks that don’t affect the current supply of goods.

- Example: Colacito and Croce (2013). Instead of having $\psi$ shocks, they have LRR: shocks in $z$, the slow-moving, predictable component of consumption growth rates.
This paper: disturbances of interest

- Productivity process driven by tech disturbances $\varepsilon^\alpha$:

$$\alpha_t = \sum_{k=0}^{\infty} a_k \varepsilon^\alpha_{t-k}$$

- Signal $\eta$ that contains information about future $\varepsilon^\alpha$, but contaminated by noisy disturbances $\varepsilon^v$:

$$\eta_t = \sum_{k=1}^{\infty} \zeta_k \varepsilon^\alpha_{t+k} + \sum_{k=0}^{\infty} \nu_k \varepsilon^v_{t-k}$$

- Assume that process $\alpha$ is observable, but process $\eta$ is not. How to recover $\varepsilon^\alpha$ and $\varepsilon^v$?
This paper: recovering the disturbances

- To recover $\varepsilon^\alpha$ and $\varepsilon^v$, follow Chahrou and Jurado (2022).

- Instead of using unobservable signal $\eta_t$, use $b_t = E_t[\alpha_{t+h}]$, adopting the assumption that agents’ expectations are optimal econometric forecasts:

$$b_t = E_t[\alpha_{t+h}] = E[\alpha_{t+h}|\mathcal{H}_t(y)]$$

- Two-stage procedure:
  1. Fit an unstructured VAR model.
  2. Recover the disturbances by using the identifying restrictions.
     - Recover $\varepsilon^\alpha$ from $\alpha$: fundamental disturbances in $\alpha$.
     - Recover $\varepsilon^v$ from $\alpha$ and $b$: fundamental disturbances in the part of $b$ that is independent of $\alpha$ at all leads and lags.
The tech disturbance $\varepsilon^\alpha$ is (partly) anticipated.

The noise disturbance $\varepsilon^v$ does not affect $\alpha$. 
The authors find that, together, $\varepsilon^{\alpha}$ and $\varepsilon^{v}$ account for 64% (36%) of the wide-band (business cycle) variation in $q$.

Furthermore, $q$ is driven mainly by shocks that do not affect the current supply of goods:

“We find that 85% of the exchange rate variation due to our two types of shocks is generated by anticipation of future outcomes (both accurate and in error), and only about 15% of our results can be attributed to current and past productivity disturbances.”
IR to tech disturbance \( (\varepsilon^\alpha) \)

- \( q_t \downarrow, \quad c_t - c^*_t \uparrow \)
- \( E_t[\Delta q^*_{t+1}] \downarrow, \quad r_t - r^*_t \uparrow \)
IR to noise disturbance ($\varepsilon^y$)

- $q_t \downarrow$, $c_t - c_t^* \uparrow$
- $E_t[\Delta q_{t+1}^*] \downarrow$, $r_t - r_t^* \uparrow$
Interpretation

- Tech disturbances $\varepsilon^\alpha$ are recovered only using $\alpha$. Finding anticipation enhances the credibility of LRR-type models.

- Noise disturbances $\varepsilon^v$ are recovered using both $\alpha$ and $b$.
  - Are expectations $b$ consistent with any survey data?
  - If $\varepsilon^v$ is correctly recovered, what can we learn about it?
  - In particular, are they $\psi$-type shocks? Suggestive evidence in Lilley, Maggiori, Neiman and Schreger (2022).
Summary

- Very interesting empirical exercise, using state-of-the-art econometric methods to identify disturbances of interest.

- In my view, provides some evidence in support of mechanisms in both LRR models and models with financial frictions.

- Need to understand better:
  - the nature of signals about future technology shocks,
  - the nature of noise disturbances.