Beyond Bilateral Flows:

Indirect Connections and Exchange Rates

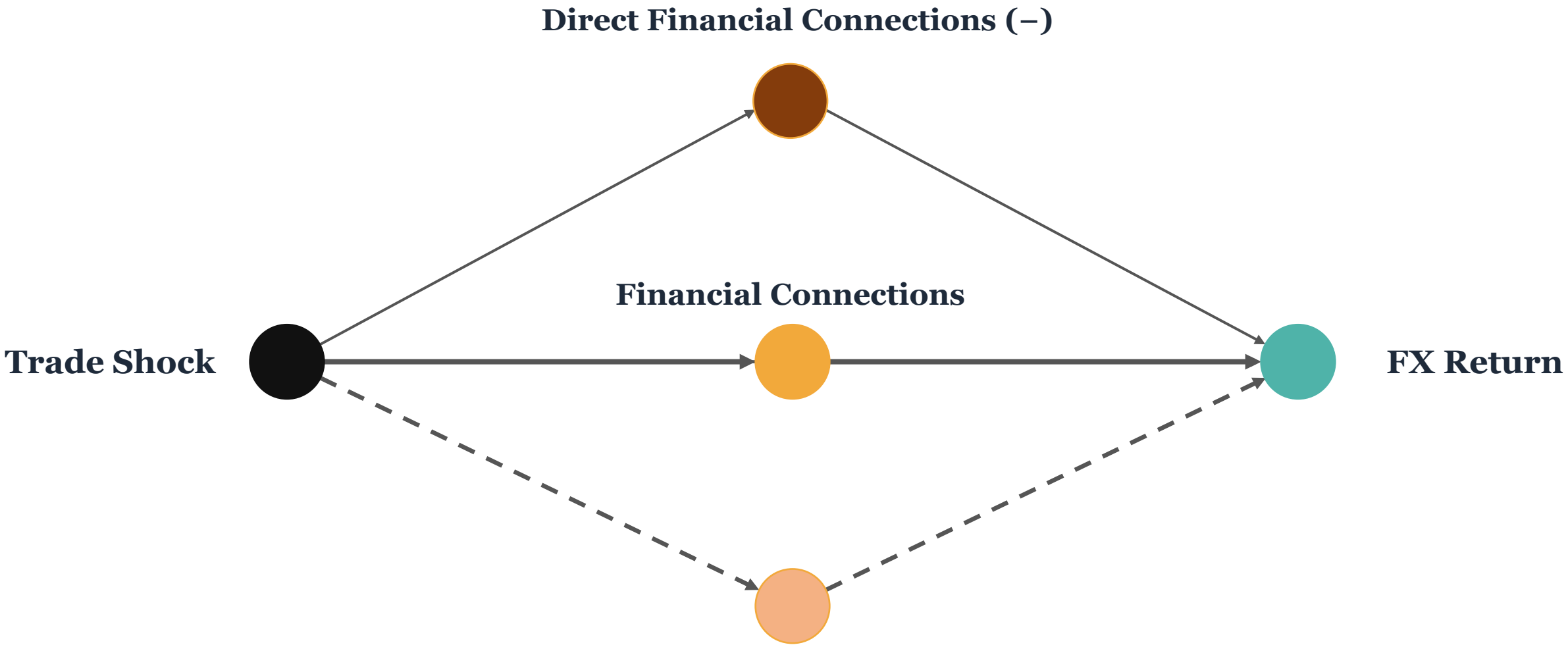
Bahaj · Della Corte · Massacci · Seyde (May 2026)

Discussant

Huanhuan Zheng
City University of Hong Kong

The Paper in One DAG

How a trade shock moves the exchange rate — mediated by direct and indirect financial connections



Strengths of the Paper

1 A clean N-country extension of Gabaix–Maggiori (2015)

Neumann-series representation (Lemma 2) makes the direct vs. indirect effect transparent and tractable.
Proposition 2 gives the sign of dampening vs. amplification a precise sufficient condition.

2 Direct mapping from model to data

BIS LBSR by residency measure the bilateral intermediation capacity
Gross-positions-as-Λ is well-defended both theoretically and empirically
Instrument financial connections with GIV to strengthen identification

3 Predictions match the data at the right margins

Asymmetric prediction survives in a long panel.
Figure 5's size-monotonicity that δ strictly increases with the large-country threshold is exactly what Proposition 1(iv) predicts, and would be hard to engineer if the model were wrong.

PART I

Comments on the Model

1. Strong assumption that trade shares equal country size
2. Absence of Portfolio choice and asset-pricing structure

Comment 1. Strong assumption that trade shares equal country sizes

The model imposes a very strong structure on trade:

- Import demand weights are tied to country size
- Country size enters the financial propagation matrix
- The same size object becomes central in both trade and finance

This is analytically convenient, but it blurs two separate channels:

- Trade-network structure
- Financial-network structure

Is it possible to do the following?

- Generalize the model to an arbitrary trade-share matrix, not one pinned to country size
- Derive the propagation equation with both a trade matrix and a financial matrix
- Show analytically when financial network effects survive after conditioning on trade network structure

Comment 2. Absence of Portfolio choice and asset-pricing structure

The model extends Gabaix and Maggiori (2015), but strips away much structure:

- Zero net interest rates
- Exogenous portfolio flows
- No endogenous asset demand beyond local bonds
- No risk premia except those embedded in intermediaries' constraints

Potential solutions:

- Justify stripped-down mechanism
- Show that the empirical results are robust to broader asset-pricing forces
- Show results survive once interest rates and risk premia can absorb some of the external imbalance
- Endogenize portfolio demand for foreign assets

PART II

Comments on the Empirics

3. The “trade shock” measure
4. Indirect financial connection
5. Representativeness of bilateral banking position
6. Endogeneity concerns
7. Exchange-rate disconnect literature
8. Model and estimation clarification

Comment 3. The “trade shock” measure

The paper identifies "trade shocks" via residuals from PCA on net exports:

- Residuals from a factor model are not exogeneous and can reflect many things:
  - Import/Export demand
  - Commodity price movements
  - Terms-of-trade shocks

Show that the trade shocks are informative

or use external instruments for trade-balance shocks

- For the US: tariff shocks (Fajgelbaum et al., QJE 2020)
- For commodity-exporting EMs: world commodity-price shocks (Fernández et al., JIE 2017)
- For a broader sample: VAT-rate changes (Benzarti–Carloni, AEJ-EP 2019)—administrative shocks to import demand that are orthogonal to the financial cycle.

Comment 4. Indirect financial connection

Indirect financial connection is measured by the eigenvector centrality of the banking network:

- Gross banking positions reflect many things besides intermediation elasticity
- It captures overall network prominence, not necessarily the exact shock-propagation channel the theory describes.

More direct measures of based on the network origins (Acemoglu et al., 2016):

Bilateral financial connection between country *i* and *j*

$$d \ln y_i = \underbrace{dz_i}_{own\ effect} + \underbrace{\sum_{j=1}^{n} (h_{ij} - \mathbf{1}_{j=i}) \times dz_j}_{network\ effect},$$

Comment 5. Representativeness of bilateral banking position

Proxy for Λ_{ij} using bilateral banking positions

- Banks are only a slice of cross-border intermediation
- Non-bank financial institutions now hold over half of cross-border financial assets globally (FSB, 2025)
- Price matters more than positions for cross-border intermediation

Suggestions:

- Show that the results are robust to variations in banking intermediation
- Robustness tests using bilateral portfolio/investment positions
  - Portfolio Investment Positions by Counterpart Economy (formerly CPIS)
  - Direct Investment Positions by Counterpart Economy (formerly CDIS)

Comment 6. Endogeneity concerns

Endogeneity concerns

- The paper does a nice job using granular IV for the validation exercise with equity flows.
- The regressions linking indirect connections, trade shocks, and future exchange-rate returns remain mostly reduced-form panel regressions.
- Trade shocks and financial connections may co-move in crisis states.
- Capital gains may affect both foreign exchange return and financial connection

Suggestions:

- Push the identification strategy from Section 4.1 further into the main regressions.
- Run event-style exercises around clearly identified banking network disruptions.
- Include interactions with global financial conditions

Comment 7. Exchange-rate disconnect literature

Exchange-rate disconnect literature:

- Exchange rates are unpredictable from macroeconomic fundamentals (Meese and Rogoff, 1983)
- Financial shocks must drive ~90% of exchange-rate variance; trade fundamentals matter only conditionally (Itskhoki & Mukhin, 2021)
- Financial shocks are the dominant driver, and the relationship between flows and FX is highly state-dependent (Lilley, et al., 2022; Itskhoki & Mukhin, 2021, 2025)

The paper:

- Assumes inelastic capital flows—exactly what the disconnect literature requires.
- Adds to this strand of literature that the relation between trade shocks and FX depends on the financial connection (direct or indirect)

Comment 8. Model and estimation clarification

TABLE 4. EQUITY PORTFOLIOS AND EXCHANGE RATES

This table presents panel regression estimates based on the following specification

$$y_{j,t} = \alpha \texttt{Dir}_{j,t} + \beta \texttt{Equity}_{j,t} + \delta(\texttt{Equity}_j \times \texttt{Dummy}_{j,\alpha})_t + \texttt{Controls}_{j,t} + fe + \varepsilon_{j,t}$$

where $y_{j,t}$ is the *contemporaneous* exchange rate return of country j in percentage per annum, $\texttt{Dir}_j$ is *direct* connection (or gross banking intermediation) of country j relative to banks located in the reporting countries, $\texttt{Equity}_{j,t}$ is the net equity portfolio flow instrumented by granular instrumental variables as in Equation (12), $\texttt{Dummy}_{j,\alpha}$ is a dummy variable that equals one for a given level of gross financial intermediation, and $\texttt{Controls}_j$ includes twenty principal components extracted from portfolio shares from the country-specific matrix of portfolio shares. The dummy variable kicks in when $\texttt{Dir}_j$ is above zero (or its mean), above its half standard deviation, and above its standard deviation. We also include $\texttt{Dummy}_\alpha$ as a regressor, which is not displayed to save space. Standard errors (in parentheses) are clustered by country. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The sample runs at a quarterly frequency between September 2005 and January 2020. Cross-border claims and liabilities are from the restricted version of the Location Banking Statistics by residence held by the BIS. Mutual fund and exchange-trade funds' holdings of international equities are from S&P Global Capital IQ. Other data are from Datastream.

Dep. Variable:	(1) $y_{i,t}$	(2) $y_{i,t}$	(3) $y_{i,t}$	(4) $y_{i,t}$	(5) $y_{i,t}$	(6) $y_{i,t}$
$\texttt{Equity}_j$	1.473**	1.486***	1.989**	2.032***	1.671***	1.653***
	(0.578)	(0.506)	(0.780)	(0.710)	(0.622)	(0.525)
$\texttt{Dir} \times \texttt{Equity}_j$	−0.551	−0.545				
	(0.539)	(0.422)				
$\texttt{Dummy}_{\{\texttt{Dir}_j > 0.5\sigma\}} \times \texttt{Equity}_j$			−1.697*	−1.777**		
			(0.870)	(0.768)		
$\texttt{Dummy}_{\{\texttt{Dir}_j > 1\sigma\}} \times \texttt{Equity}_j$					−1.505*	−1.343**
					(0.806)	(0.587)
R^2	0.56	0.57	0.56	0.57	0.56	0.57

Comment 8. Model and estimation clarification

- Why not include the direct financial connection in the identification of the indirect financial connection?
- Do the roles of indirect financial connection vary with other state dependent variables like convenience yield, scale or nature of trade shocks?
- Does the difference between large and small economies also apply on direct financial connection?
- Are these results robust to additional controls like interest rate difference, alternative measures of trade shocks…?
- Why direct financial connection falls during crisis period while indirection financial connection stabilizes?
- Are trade shocks informative? Escalate during trade tensions during the US-China trade war, when the US imposed additional tariffs on steel import from Canada, Australia, etc in 2018?

Conclusion

A new financial-network mechanism for FX, distinct from existing trade-network and direct-intermediation channels

What it adds to existing literature

Inelastic FX (bilateral)

Gabaix–Maggiori (2015)
Koijen–Yogo (2020)
Camanho–Hau–Rey (2022)
Fang (2021)
Du–Hébert–Wang (2023)

→ Direct intermediation; 2-country focus.

Trade-network FX

Richmond (2019)
Jiang–Richmond (2023)
Hou–Sarno–Ye (2024)
Pellegrino–Spolaore–Wacziarg (2025)

→ Trade topology drives risk premia; financial frictions absent.

Banking-network spillovers

Bruno–Shin (2015)
Correa–Paligorova–Sapriza–Zlate (2021)
Minetti–Romanini–Ziv (2024, 2025)
Bahaj–Fuchs–Reis (2024)
→ Network of banks matters; FX returns not central.

Reference

1. Acemoglu, Daron, Ufuk Akcigit, and William Kerr. 2016. "Networks and the Macroeconomy: An Empirical Exploration." *NBER Macroeconomics Annual* 30 (1): 273–335.
2. Benzarti, Youssef, and Dorian Carloni. 2019. "Who Really Benefits from Consumption Tax Cuts? Evidence from a Large VAT Reform in France." *American Economic Journal: Economic Policy* 11 (1): 38–63.
3. Fajgelbaum, Pablo D., Pinelopi K. Goldberg, Patrick J. Kennedy, and Amit K. Khandelwal. 2020. "The Return to Protectionism." *Quarterly Journal of Economics* 135 (1): 1–55.
4. Fernández, Andrés, Stephanie Schmitt-Grohé, and Martín Uribe. 2017. "World Shocks, World Prices, and Business Cycles: An Empirical Investigation." *Journal of International Economics* 108 (S1): S2–S14.
5. Financial Stability Board. 2025. *Global Monitoring Report on Non-Bank Financial Intermediation 2025.* Basel: Financial Stability Board, December 16. https://www.fsb.org/2025/12/fsb-reports-continued-growth-in-nonbank-financial-intermediation-in-2024-to-256-8-trillion/.
6. Itskhoki, Oleg, and Dmitry Mukhin. 2021. "Exchange Rate Disconnect in General Equilibrium." *Econometrica* 89 (6): 2659–2696.
7. Itskhoki, Oleg, and Dmitry Mukhin. 2025. "What Drives the Exchange Rate?" Working paper.
8. Lilley, Andrew, Matteo Maggiori, Brent Neiman, and Jesse Schreger. 2022. "Exchange Rate Reconnect." *Review of Economics and Statistics* 104 (4): 845–855.
9. Meese, Richard A., and Kenneth Rogoff. 1983. "Empirical Exchange Rate Models of the Seventies: Do