The Global Dollar Cycle

Maurice Obstfeld
University of California, Berkeley

Haonan Zhou
Princeton University

BPEA Fall 2022 Conference
September 9, 2022
Overview

- The world economy is subject to synchronized cycles in asset prices, leverage, and capital flows – a global financial cycle.

- The US dollar exchange rate is a key correlate, driven by
  - Global risk appetite – “flight to safety” implies dollar appreciation.
  - Global financial conditions – tighter conditions correlate with stronger dollar.

- The global financial cycle is correlated with a global dollar cycle: Fluctuations in the dollar have global impact — owing to the dollar's unique global role.

- Since 2021H1: Persistent appreciation phase of USD.
  - Expect a slowdown in global activity, with strong spillovers to EMDEs.

- Economists are reaching a deeper understanding of these forces (models + data).
What this paper does

- Overview: 50 years of floating exchange rates and the US dollar’s dominant role.
  - Document dollar’s strong negative correlation with global variables.

- Dollar appreciation and EMDE economic outcomes: A local-projection approach.
  - Stronger dollar: Worsening macro aggregates, terms of trade, and financial conditions.
  - State-dependency: The role of policy regimes and balance sheet exposure.

- Factors that drive dollar appreciation: Theory-consistent exchange rate regressions.
  - Importance of long-term interest rate and the dollar liquidity premium.
  - Excess bond premium (Gilchrist and Zakrajšek, 2012): Consistently strong correlate of dollar; significant impact on EMDEs.

- Current phase of the dollar cycle: An unsettled future for dollar’s global role.
Global current account imbalances and financial flows, 1980-2020 (billions USD)

Source: International Monetary Fund, Balance of Payments Statistics.
A strong dollar – globally deflationary

Dollar appreciation and GDP growth in advanced and EMDE economies

Source: IMF; Federal Reserve H.10 release (FRED ticker DTWEXBGS); von Beschwitz, Collins and Datta (2019)
EMDEs are especially vulnerable

- Weaker institutions (including policy frameworks).
- Weaker policy transmission (Kalemli-Özcan (2019)).
- Market rigidities.
- Broader poverty.
- Shallower and more distorted financial markets.
- Dollar denominated liabilities (“original sin,” Eichengreen and Hausmann (1999)).
- Vulnerability to capital flow reversals (“original sin redux,” Carstens and Shin (2019)).
The dollar and EMDEs: Panel local projections

Quarterly frequency (mid-1990s to 2019, 26 EMDEs):

\[ y_{i,t+h} - y_{i,t-1} = \mu_{i,h} + \beta_h \Delta s_t + \gamma'_{h} \Delta z_t + \sum_{l=1}^{p} \delta'_{h,l} \Delta w_{i,t-l} + \varepsilon_{i,h,t} \]

\( y : \) \[
\begin{cases} 
(1) & \text{Macro aggregates (Y, C, I, G, X, M)} \\
(2) & \text{Prices, terms of trade, and bilateral exchange rates} \\
(3) & \text{Financial markets (credit, stock market, policy rate, EMBI spread)} 
\end{cases}
\]

- \( \Delta s_t: \) broad nominal dollar index (appreciation against advanced economy currencies).

- Global controls \( z_t : \) \[
\begin{cases} 
(1) & \text{EM real GDP dynamic factor} \\
(2) & \text{US monetary policy and financial conditions} 
\end{cases}
\]
EMDEs’ response to the dollar: Macro aggregates

Impulse responses: 10% appreciation of AE-dollar index (68% and 90% robust CI)
EMDEs’ response to the dollar: Prices and bilateral exchange rate

Impulse responses: 10% appreciation of AE-dollar index (68% and 90% robust CI)
EMDEs’ response to the dollar: Financial markets

Impulse responses: 10% appreciation of AE-dollar index (68% and 90% robust CI)
The dollar and EMDEs: The role of exchange rate regimes

State-dependent LP:
(Ramey and Zubairy, 2018)

Cushioning dollar shocks:

- Flexible exchange rate regimes (left panel).
- Credible inflation-targeting monetary framework.  
- Less balance sheet exposure.

IRF: 10% appreciation of AE-dollar index
(by FX regime, 68% robust CI)

Caveat: Selection bias.
Financial determinants of the dollar exchange rate

We use the modified uncovered interest parity (UIP) condition on government bond interest rates ($i$: US; $i^*$: foreign; superscript $L$ denotes interbank LIBOR rates):

$$i_t^* - (i_t + E_t s_{t+1} - s_t) = \rho_t + \lambda_t + \gamma_t,$$

where $\rho_t$ is the excess return, $\lambda_t$ is dollar liquidity, and $\gamma_t$ is Govt security liquidity: $i_t^L - i_t - (i_t^L - i_t^*)$.

Iterating forward, three empirical exchange rate equations relate $\Delta s_t$ to:

- Gov’t bond yield differential:
  
  $$\begin{align*} 
  (1) & \quad \text{Short-term yield} \\
  (2) & \quad \text{Long-term zero-coupon yield, term premium} \\
  (3) & \quad \text{Long-term zero-coupon yield} 
  \end{align*}$$

- US Treasury relative liquidity and the dollar: LIBOR cross-currency basis; relative LIBOR-government bond yield spread (more on these on next slide).

The role of covered interest parity (CIP) deviations

- G10 currencies: LIBOR dollar basis \( x_t^L = i_t^L* - (i_t^L + f_t - s_t) \) opens up after the GFC.

- Related concepts:
  - US Treasury basis: \( x_t = i_t^* - (i_t + f_t - s_t) \), could be large even before GFC.
  - LIBOR-Treasury relative spread (Treasury relative liquidity): \( \gamma_t = i_t^L - i_t - (i_t^L* - i_t^*) \)

- Identity:
  \[ x_t = x_t^L + \gamma_t. \]

- Absent financial frictions: US dollar-specific liquidity completely captured by \( x_t^L > 0 \).
- Imperfect financial markets: \( x_t^L \) stands in for dollar liquidity, controlling for \( \gamma_t \).

- Caveat: Two-way interaction between dollar appreciation and CIP deviations.
  - Risk appetite, exchange rate, and balance sheet constraints interact.
Dollar appreciation against G10 currencies is associated with...

- ↑ Gov’t bond yield differentials (US—foreign): both short-term and long-term.

- ↑ Treasury relative liquidity difference ($\gamma_t$, US—foreign): Only for long tenor (10-year).
  (Engel and Wu, 2022)

- ↑ Short-term and long-term LIBOR dollar basis ($x^L_t$) / Treasury basis ($x_t$), with different coefficients.
  (Jiang, Krishnamurthy and Lustig, 2021)

- ↑ Excess bond premium. ▶ Recent evolution

- Real exchange rate appreciation: Slow mean reversion.

- Considerable in-sample fit, stronger after the GFC.
  (Lilley, Maggiori, Neiman and Schreger, 2022)
Excess bond premium shocks and EMDE outcomes

Impulse responses: 2.5pp increase of Gilchrist and Zakrajšek (2012) excess bond premium
(68% and 90% robust CI)
Current phase: High inflation and a strong dollar

Global CPI inflation (pp, year-on-year)

Broad nominal dollar index (2016 = 100)
Current phase: Global tightening of policy rates

Advanced economies (EA=Euro Area)
Emerging markets

Year-on-year change in policy interest rate (pp), as of September 8th.
APPENDIX
The dollar and EMDEs: The role of monetary regimes

Impulse responses: 10% appreciation of AE-dollar index (68% robust CI)
The dollar and EMDEs: The role of external balance sheet exposure

Impulse responses: 10% appreciation of AE-dollar index (68% robust CI)
Empirical exchange rate equations

1. Short-term yield:

\[ \Delta s_t = \alpha + \beta_1 \Delta (i_t - i_t^*) + \beta_2 \Delta \rho_t + \beta_3 \Delta \lambda_t^$ + \beta_4 \Delta \gamma_t + X_{t-1} \delta + \epsilon_t, \]

2. Long-term (k-year) zero-coupon yield, term premium:

\[ \Delta s_t = \alpha + \beta_1 k \Delta \left( i_t^{(k)} - i_t^{(k)*} \right) + \beta_2 k \left( \tau_t^{(k)} - \tau_t^{(k)*} \right) + \beta_3 \Delta \rho_t + \beta_4 \Delta \lambda_t^$ + \beta_5 \Delta \gamma_t + X_{t-1} \delta + \epsilon_t \]

3. Long-term (k-year) zero-coupon yield only:

(with long-term dollar basis, liquidity returns)

\[ \Delta s_t = \alpha + \beta_1 k \Delta \left( i_t^{(k)} - i_t^{(k)*} \right) + \beta_2 k \Delta \rho_t^{(k)} + \beta_3 k \Delta \lambda_t^{(k)$} + \beta_4 k \Delta \gamma_t^{(k)} + X_{t-1} \delta + \epsilon_t. \]

- Monthly panel of G10 currencies.
- Overlapping quarterly (3-month tenor) / yearly (1-year tenor) changes.
Excess bond premium: Recent evolution

March 2020: 1.21; Jul 2022: 0.02; Aug 2022: -0.01.

Average (1973-current): 0.06; (2015-current): -0.09.