Future of International Finance

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Outline

01 **what have we done up to now? risk sharing across borders (exchange rates as shock absorbers)**

02 **where do we go from here? maybe it's not all about risk sharing? (exchange rate amplify shocks)**

Stand-in Households Sharing Risks

exchange rates adjust to enforce all Euler equations in all asset markets across borders (absorb shocks)

$$\Delta \log e_{t+1} = m^*_{t+1} - m_{t+1}$$

stand-in Domestic Household

stand-in Foreign Households

sharing risks across borders

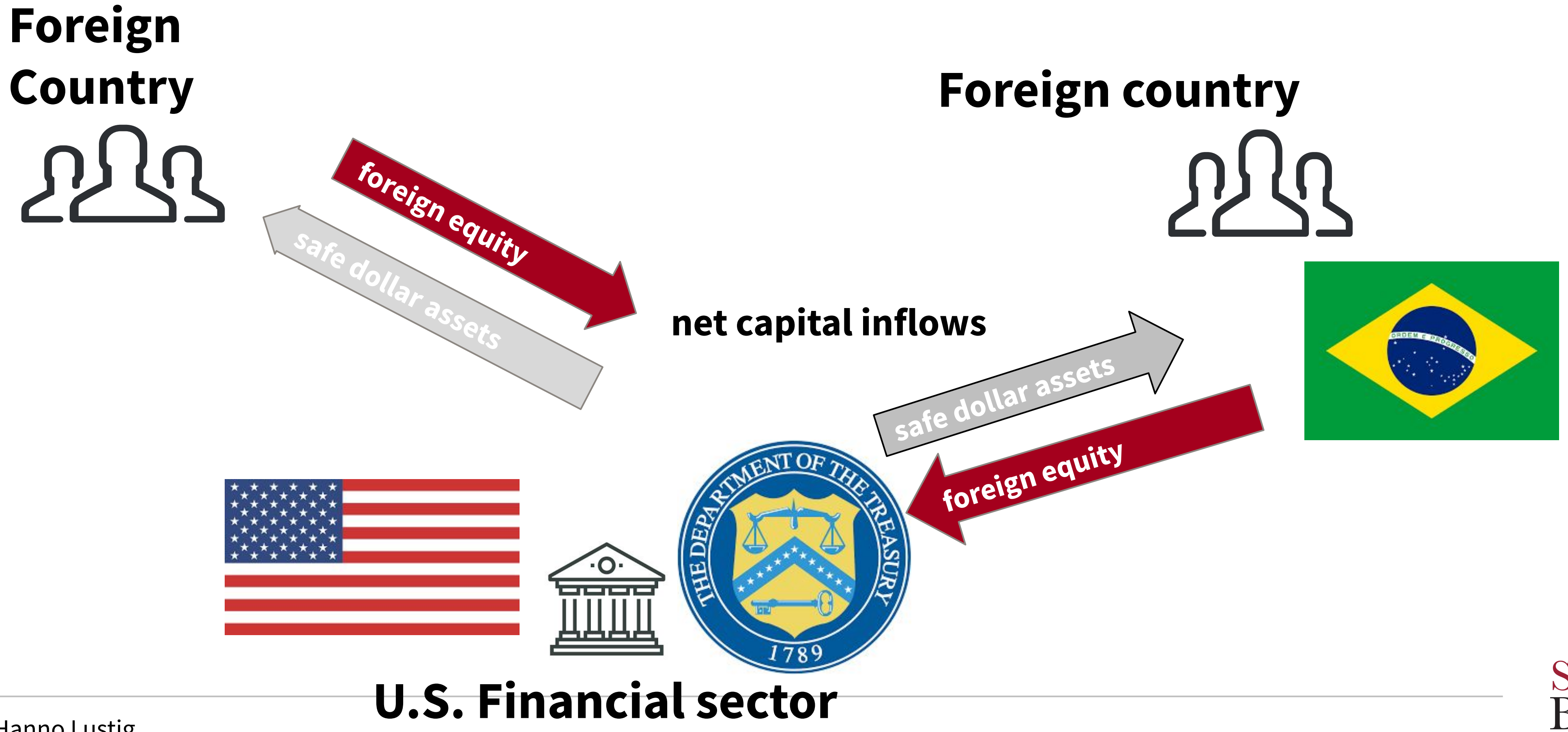
sharing risks within a country

Verdelhan, 2010; Colacito and Croce, 2011; Farhi and Gabaix, 2015
Hassan, 2013; Roussanov, Ready and Ward, 2017; Richmond, 2019*

*citations are not meant to be comprehensive

US is special: U.S. provides insurance

U.S. is less risk-averse or better at absorbing aggregate risk
(Gourinchas, Rey, and Govillot, 2009; Maggiori, 2017)



Challenges for the risk sharing view

Neo-classical Failures

$$\Delta \log e_{t+1} = m^*_{t+1} - m_{t+1}$$

- **countries do not seem to share risks efficiently**
  - aggregate quantities (e.g., consumption growth) are not that correlated across countries (Backus, Kehoe and Kydland, 1992)
- **exchange rate disconnect**:
  - changes in exchange rates disconnected from aggregate quantities that should determine M and M* (Backus and Smith, 2006)
  - exchange rates are not volatile (countercyclical) enough (Brandt, Cochrane and Santa Clara, 2006)
- **flows and exchange rates:**
  - no direct role for capital flows in determining exchange rates
  - but capital flows seem to matter for exchange rates (Maggiori, Neiman and Schreger, 2019)
- **no direct role for financial institutions**
  - but seem to matter for pricing in currency markets (He, Kelly and Manella, 2017; Du, Tepper and Verdelhan, 2017; Du, Hebert and Huber, 2019)

Determinants of the Exchange Rate

Cash Flow-Discount Rate Decomp.

$$s_t^{\$/*} = +\mathbb{E}_t \underbrace{\sum_{\tau=0}^{\infty} (y^*_{t+\tau} - y^{\$}_{t+\tau})}_{\text{CF}} - \mathbb{E}_t \underbrace{\sum_{\tau=0}^{\infty} (rx^*_{t+\tau})}_{\text{DR}} + \mathbb{E}_t \left[\lim_{j \to \infty} s_{t+j} \right]$$

- **exchange rates adjust to enforce bond investors' Euler equation across borders**
- (real) interest rate differences are very persistent
  - **high interest rate currencies** (e.g. AUD): need high currency risk premia
    - if not, they would keep appreciating
  - **low interest rate currencies** (e.g. CHF, YEN): need small or negative currency risk premia

- cash flow: interest rate difference
- discount rate: currency risk premium

- high interest rate currencies have to be riskier and they are (see e.g. Lustig, Roussanov and Verdelhan, 2011; Menkhoff, Sarno and Schmeling, 2012)

Exchange Rates and Capital Flows

Enforcing IBC

$$s_t^{\$/*} = +\mathbb{E}_t \sum_{\tau=0}^{\infty} (y_{t+\tau}^{*} - y_{t+\tau}^{\$}) - \mathbb{E}_t \sum_{\tau=0}^{\infty} (rx_{t+\tau}^{*}) + \mathbb{E}_t \left[\lim_{j \to \infty} s_{t+j}\right]$$

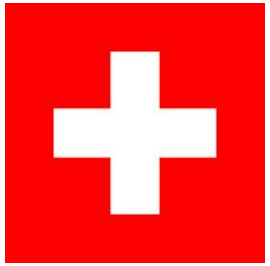
- **exchange rates adjust to enforce IBC**

- direct role for capital flows in determining exchange rates
  - **high interest rate** countries tend to run current account **deficits** (need capital) (e.g., Aus)
    - as interest rates decline in future, depreciation of domestic currency helps to restore NFA (*Gourinchas and Rey (2007)*'s valuation channel)
    - enforces country's IBC (intertemporal budget constraint)
      - assume borrowing in domestic currency, investing in foreign currency (e.g. CH)
  - **low interest rate** countries tend to run current account **surpluses** (invest capital)

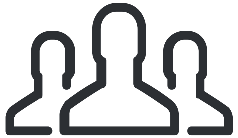
International Capital Flows: Carry Trade

- **exchange rates adjust to compensate banks**

Global Banks
(Maggiori and Gabaix, 2015)



Surplus Country
Low Interest Rate, low FX premium



Deficit Country
High interest rate country, high FX premium

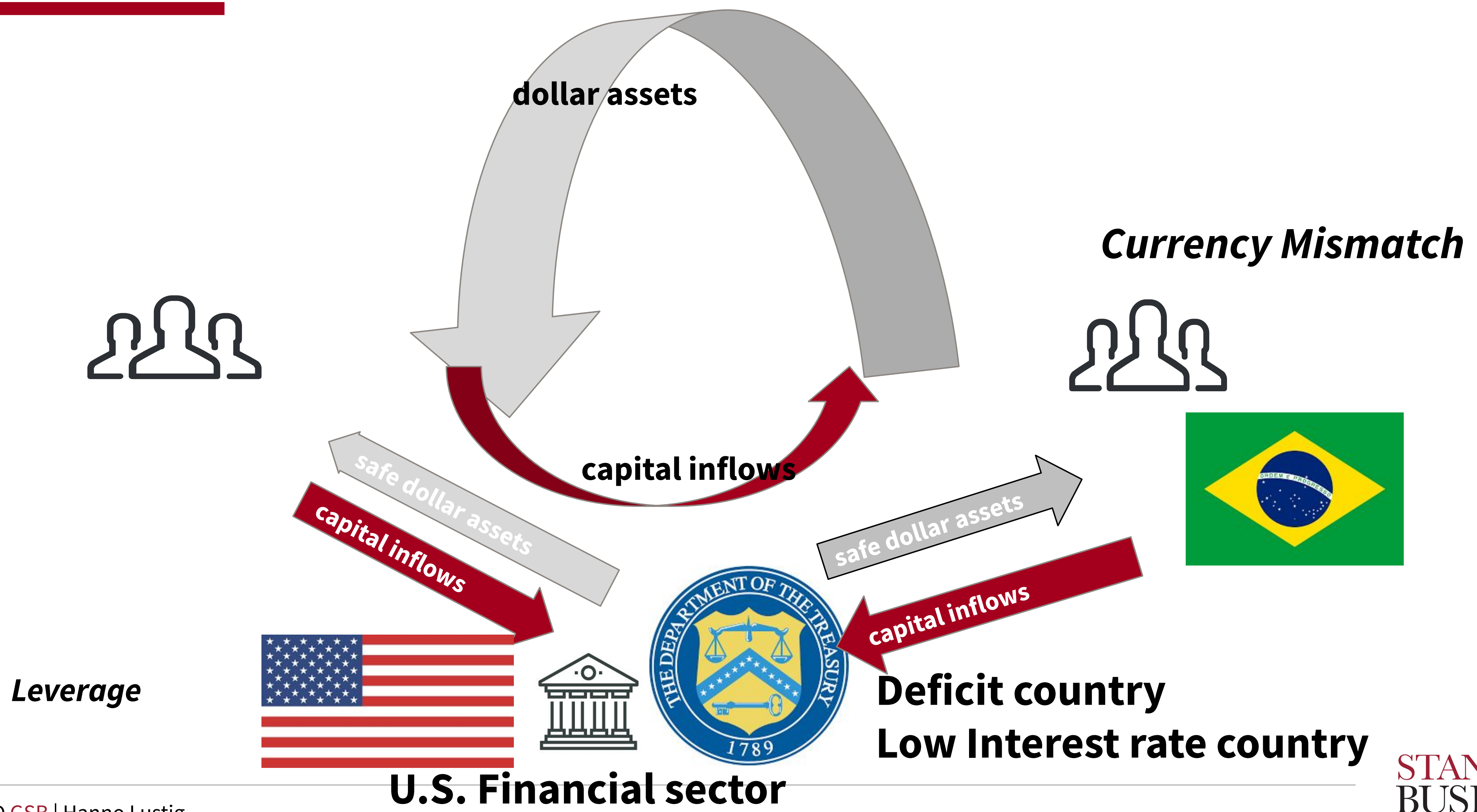
U.S. is very special

Labels matter

$$s_t^{*/\$} = \underbrace{\mathbb{E}_t \sum_{\tau=0}^{\infty} \lambda_{t+\tau}} + \mathbb{E}_t \sum_{\tau=0}^{\infty} (y_{t+\tau}^{\$} - y_{t+\tau}^{*}) + \mathbb{E}_t [\lim_{j\to\infty} s_{t+j}]$$

- **dollar exchange rate adjusts to reflect convenience yields (amplify shocks)**
- U.S. is a **low interest rate country**, but runs large and persistent current account **deficits**
- U.S. can have low interest rates without offsetting currency risk premia
  - foreign investors derive convenience yields from dollar safe assets (e.g. Treasurys) (see e.g. Gopinath and Stein, 2018; He, Krishnamurthy, Milbradt, 2019)
  - dollar exchange rate prices in convenience yields; dollar appreciates in bad times (Valchev, 2016; Jiang, Krishnamurthy, and Lustig, 2017,2018)
- U.S. earns seignorage revenue from creation of dollar safe assets
- U.S. financial system creates **substitutes for Treasurys**
  - more leverage in U.S.: see growth in MBS in run-up to **financial crisis** (shortage of dollar assets!)
  - Triffin dilemma (see e.g. Farhi and Maggiori, 2017)

Dollar Recycling (exorbitant privilege)



Agenda

Catching up with the rest of finance

- need better understanding of international capital flows and exchange rates
    - need better data, (see Neiman, Maggiori, and Schreger's Global Capital Allocation Project)
  - special role of the U.S. dollar and dollar safe assets
  - international flows leads to concentration of risk.
    - also in relation to Great Financial Crisis (excessive leverage)
    - currency mismatch in emerging and other markets

- need to analyze role of financial institutions and other institutional investors in intermediating these flows (see e.g., Avdjev, Du, Koch, and Shin, 2019) and determining exchange rates

- need new tools to study the effect of institutional investors on asset prices (e.g. Koijen, Yogo, 2018; and Koijen, Richmond, and Yogo, 2019)