

Currencies of External Balance Sheets

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August 2023

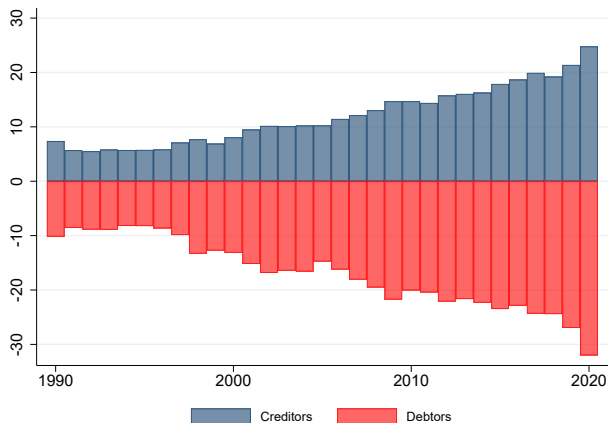
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Roadmap

- ◇ Motivation
- ◇ Constructing the Dataset
- ◇ Conceptual Framework
- ◇ Main Findings

Motivation

International stock imbalances (percent of world GDP) increased dramatically



Note: Differences between creditor and debtor positions are due to statistical discrepancies.

Source: External Wealth of Nations.

Motivation

- ◇ Understanding external balance sheets imbalances is high on the academic and policy agenda
 - Benefits and associated risks
 - ◇ Currency exposures play key role in the reallocation of wealth and vulnerability to external shocks
 - Vary across countries / time due to differences in the scale and composition of international balance sheets
 - ◇ Classic example
 - ADV: long position in FC, liabilities in DC
 - EMDE: short position in FC, liabilities in FC
- ⇒ FX depreciation would lead to
- Valuation gains in ADV
 - Valuation losses in EMDE

This Paper: Overview

- ◇ We assemble a comprehensive and up-to-date dataset of the currency composition of the external balance sheets
 - 50 countries over the period 1990–2020
 - Updates and extends Benetrix, Juvenal, Gautam, and Schmitz (2019)
 - Emphasis on analysis by asset class (FDI, PE, PD, OI, and FXR)
- ◇ Construct financially-weighted exchange rates
- ◇ Calculate valuation induced by ER and asset prices movements
- ◇ Compare valuation changes during the large crisis (COVID-19 versus GFC)
- ◇ Limitations: (i) sectoral mismatches; (ii) off-balance sheet items

Preview of Main Findings

- ◇ Dollar still dominates global external balance sheets
- ◇ Large improvement in currency composition across countries since 1990s (i.e *short* to *long* in FC) due to OI
- ◇ Financial and trade exchange rates are weakly correlated
- ◇ Comparing crisis periods: large wealth transfers "destabilizing" during COVID-19 versus "stabilizing" during GFC

Related Literature

- ◇ Valuation effects and stock-flow reconciliation
 - Lane and Milesi-Ferretti (2007); Gourinchas and Rey (2007) Gourinchas, Rey, and Truempler (2010); Forbes, Hjortsoe and Nenova (2017); Hale and Juvenal (2023)
- ◇ Currency composition of (aggregate) international balance sheets
 - Lane and Shambaugh (2010a, 2010b); Benetrix, Lane, and Shambaugh (2015); Benetrix, Juvenal, Gautam, and Schmitz (2019)
 - Shin and von Peter (2022); Arslanalp, Eichengreen, and Simpson-Bell (2022); Chinn, Ito, and McCauley (2021)
- ◇ Currency composition of (disaggregate) international balance sheets
 - Maggiori, Neiman, and Schreger (2019); Beck, Coppola, Lewis, Maggiori, Schmitz and Schreger (2023)
- ◇ Financial exchange rates: Goldberg and Krogstrup (2023)

Constructing the Dataset

- ◇ Dataset on the currency composition of the IIP
 - US dollar, euro, Japanese yen, Pound sterling, renminbi, DC, and other
- ◇ Coverage: 50 countries over 1990-2020
- ◇ Available data from literature: up to 2017 (BGJS 2019)
- ◇ Key contribution: **Actual data**
 - **IMF Survey to country authorities**
 - Currency composition of portfolio (equity and debt) assets from CPIS Table 2
 - Portfolio debt data and other investment data from BIS

Building Blocks

- ◇ **Survey data** used when available and extended backwards
- 1. With **“synthetic” data**
 - Banks cross-border positions reported to BIS (other investment)
 - BIS International Debt Issuance Statistics (portfolio debt liabilities)
- 2. With **estimations** based on geography of cross-border positions as in Lane and Shambaugh (2010)
 - Main inputs: CPIS and CDIS
 - Refined methods: different treatment for FDI equity and debt
- ◇ Dataset will be made publicly available along with key currency exposure measures and financial exchange rates

Conceptual Framework

Key metrics: FX^{AGG} (foreign currency exposure)

- ◇ Following Lane and Shambaugh (2010), define foreign currency exposure, FX^{AGG}

$$\begin{aligned} FX_{i,t}^{AGG} &= \omega_{i,t}^A s_{i,t}^A - \omega_{i,t}^L s_{i,t}^L \\ &= \sum_c \omega_{i,t}^{A,c} s_{i,t}^A - \sum_c \omega_{i,t}^{L,c} s_{i,t}^L \end{aligned}$$

- with $\omega_{i,t}^A$ and $\omega_{i,t}^L$ share of assets/liabilities denominated in FC
 - $s_{i,t}^A$, $s_{i,t}^L$ the share of assets/liabilities in a country's external balance sheet
 - c denotes asset class (FDI, PE, PD, OI, and FXR)
- ◇ Captures a country's external position's sensitivity to a uniform appreciation or depreciation of its currency relative to all other currencies

Conceptual Framework

Key metrics: financial exchange rate indices

- ◇ Following Lane and Shambaugh (2010), asset (I^A) and liability (I^L) weighted currency indices, given by

$$I_{i,t}^A = I_{i,t}^A \times (1 + \sum \omega^A \times \Delta E_{i,j,t})$$

$$I_{i,t}^L = I_{i,t}^L \times (1 + \sum \omega^L \times \Delta E_{i,j,t})$$

- with $\Delta E_{i,j,t}$ the percentage change in the bilateral exchange rate of the major currencies j (i.e. US dollar, euro, Japanese yen, Pound sterling, and renminbi) in period t
- ◇ Net financial exchange rate index (I^F) defined as

$$I_{i,t}^F = I_{i,t}^F \times (1 + \Delta I_{i,t}^A \times s_{i,t}^A - \Delta I_{i,t}^L \times s_{i,t}^L)$$

Conceptual Framework

Key metrics: valuation changes

- ◇ This allow us to calculate net valuation effects due to currency (VAL^{XR})

$$VAL_{i,t}^{XR} = I_{i,t}^A \times A_{i,t-1} - I_{i,t}^L \times L_{i,t-1}$$

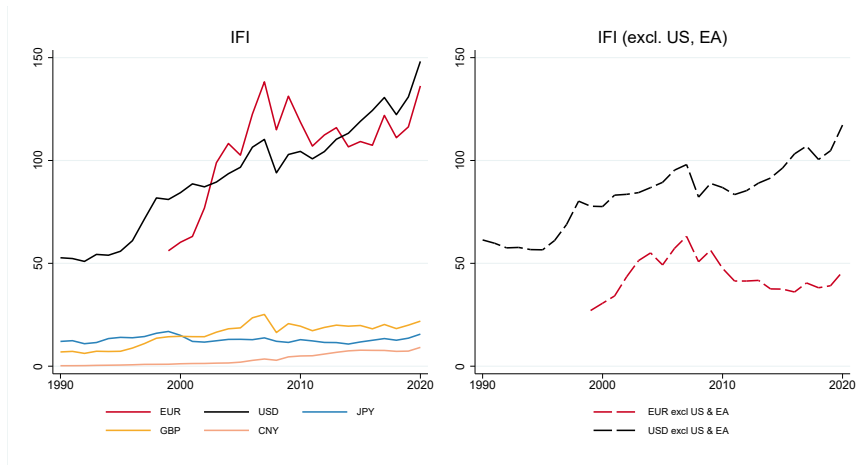
- ◇ and valuation effects due to other changes as a residual

$$NIIP_{i,t} - NIIP_{i,t-1} = FA_{i,t} + VAL_{i,t}^{XR} + VAL_{i,t}^{OTH}$$

- ◇ This is done for each asset class (FDI, PE, PD, OI, and FXR)

USD Still Dominates in Global Balance Sheets

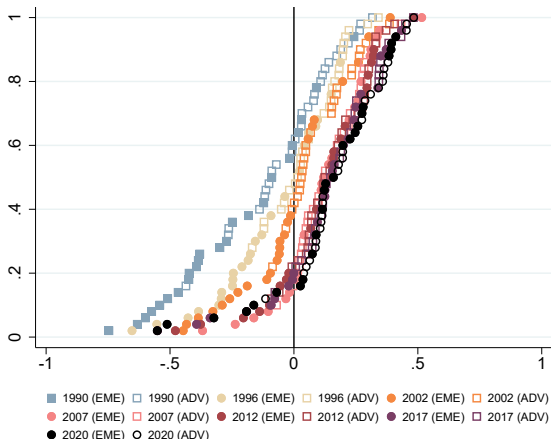
International financial integration (IFI) measure by currency



Note: $IFI = (A + L) / GDP$

Foreign Currency Exposures (FX^{AGG}) Became *Longer*

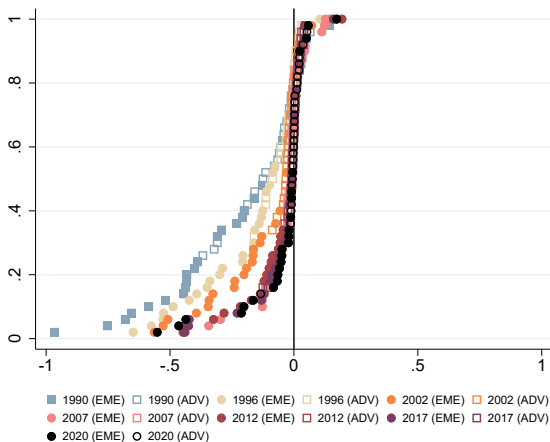
Cumulative distribution function for FX^{AGG}



Note: FX^{AGG} defined as net foreign assets denominated in FC as a share of total A and L

Improvement Mostly due to Other Investment

Cumulative distribution function for FX^{OI}

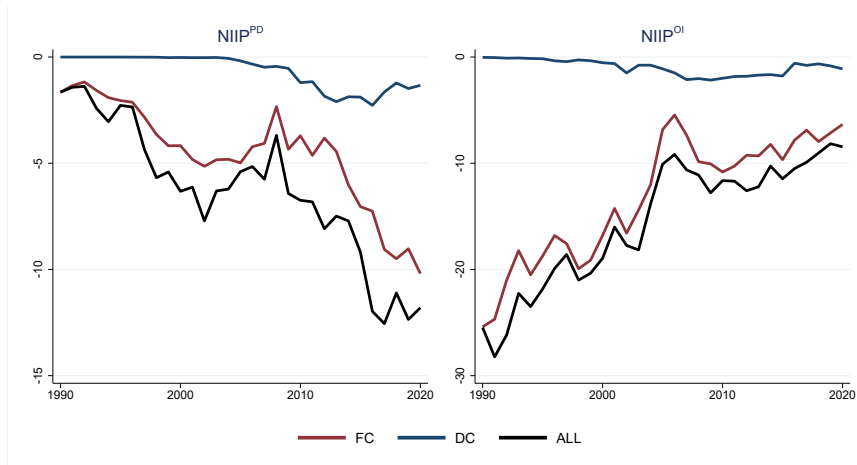


Note: FX^{OI} defined as net other assets denominated in FC as a share of total A and L

▶ Asset Classes

Vulnerabilities Remain in EMDE: Net Portfolio Debt in FC

EMDE: Median values of Net PD and OI positions by currency (percent of GDP)



Note: $NIIP^{PD}$ defined as net portfolio debt position in FC and DC; $NIIP^{OI}$ net other investment position in FC and DC

Correlation Between Financial and Trade Indices

Weak correlation between trade and financial indices, but heterogeneity across groups

	With Financial Indices			With Trade Indices		
	A, L	A^D, L^D	N^D, N^{EQ}	A, T	L, T	N, T
Full Sample	0.97	0.99	-0.71	0.46	0.48	0.15
Advanced Economies						
Full Sample	0.97	0.98	-0.49	0.45	0.46	0.35
Pre-GFC	0.98	0.99	-0.56	0.52	0.52	0.32
Post-GFC	0.98	0.99	-0.44	0.44	0.43	0.42
Emerging Economies						
Full Sample	0.97	1.00	-0.76	0.49	0.49	-0.26
Pre-GFC	0.99	1.00	-0.87	0.45	0.44	-0.28
Post-GFC	0.98	0.99	-0.89	0.51	0.49	0.27
Creditor Economies	0.97	0.98	0.20	0.51	0.51	0.41
Debtor Economies	0.97	0.99	-0.77	0.44	0.47	0.00

Note: Pairwise correlation. A and L denotes the financial exchange rates for gross assets and liabilities, A^D and L^D are gross debt assets and debt liabilities, and N^D, N^{EQ} net debt and net equity. T is the trade weighted exchange and N is the net financial exchange rate. Data covers 1990-2020. [▶ Debt/Equity](#)

Large Wealth Transfers During COVID vs. GFC

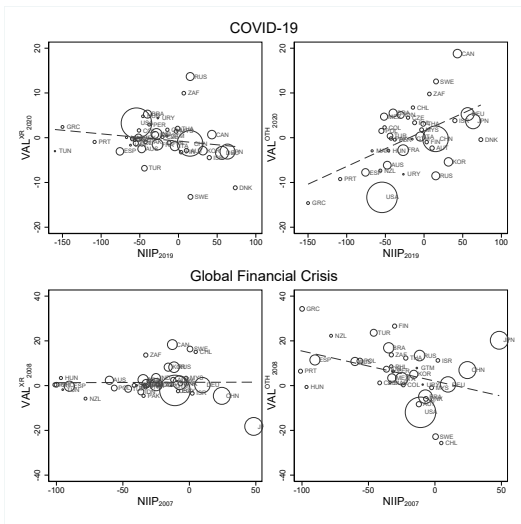
$$\Delta NIIP = FA_{i,t} + VAL_{i,t}^{XR} + VAL_{i,t}^{OTH}$$

	FA	$\Delta NIIP$	FX VAL			Price & Other VAL			Total VAL		
			ALL	D & FXR	Eq	ALL	D & FXR	Eq	ALL	D & FXR	Eq
COVID-19 (2020)											
Full sample	-0.1	-1.4	-0.3	-0.8	0.6	-1.0	0.5	-1.5	-1.3	-0.3	-1.0
Advanced Economies	-0.5	-2.8	-0.8	-1.1	0.3	-1.6	0.5	-2.1	-2.3	-0.5	-1.8
USA	-3.2	-13.3	3.3	-1.4	4.7	-13.3	0.3	-13.6	-10.1	-1.1	-9.0
Emerging Economies	0.6	1.1	0.6	-0.4	1.0	0.2	0.6	-0.6	0.9	0.1	0.4
Creditors Economies	1.3	4.7	-0.7	-0.6	-0.2	4.2	1.9	2.3	3.4	1.3	2.1
Debtors Economies	-1.1	-5.5	0.1	-1.0	1.1	-4.7	-0.4	-4.2	-4.7	-1.5	-3.1
GFC (2008)											
Full sample	-0.8	0.1	0.9	-1.9	2.7	0.6	2.3	-2.3	0.9	0.3	0.5
Advanced Economies	-2.4	-4.3	1.0	-2.2	3.1	-2.3	3.2	-6.4	-2.0	1.0	-3.3
USA	-5.4	-19.5	-2.1	0.9	-3.0	-11.9	1.3	-13.2	-14.1	2.2	-16.3
Emerging Economies	4.1	12.7	0.6	-1.0	1.6	9.3	-0.4	9.8	9.7	-1.7	11.4
Creditors Economies	4.6	10.2	0.3	-5.0	5.3	5.3	4.7	0.5	5.5	-0.3	5.8
Debtors Economies	-4.2	-5.6	1.2	-0.1	1.3	-2.4	0.9	-3.9	-2.0	0.7	-2.6

Note: In percent of GDP.

COVID vs GFC: Destabilizing Valuation Changes

VAL^{OTH} was "destabilizing" during COVID, contrary to GFC



Note: In percent of GDP. Circles proportional to GDP in USD

▶ Debt

▶ Equity

Summary of Main Findings

- ◇ Dollar still dominates global external balance sheets
- ◇ Large improvement in currency composition across countries since 1990s (i.e. *short* to *long* in FC)
 - Large improvement due to Other Investment Position
 - Very little change in currency weights in 2020
 - Vulnerability remains in EMDE: Portfolio debt in FC
- ◇ Financial exchange rates
 - Weak correlation with trade indices: debt versus equity
- ◇ Compare valuation effects: COVID-19 versus GFC
 - Large wealth transfers during both crisis periods
 - Contrary to GFC, VAL due to asset prices was "destabilizing" during COVID, mainly due to debt

Concluding Remarks

- ◇ An updated database for the currency composition of the NIIP
- ◇ An updated database of net financial exchange rates
- ◇ Key takeaways:
 - Dominant role of the USD remains
 - Large improvement in currency composition across countries since 1990s
 - Financial and trade exchange rates are weakly correlated
 - Valuation effects are large and potentially "destabilizing"
- ◇ Next steps:
 - By sectors; currency of derivative positions
 - Role of "Other statistical changes" versus asset prices in VAL^{OTH}