The Non-U.S. Bank Demand for U.S. Dollar Assets

Tobias Adrian Peichu Xie

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Motivation

Does the share of USD assets of non-US banks explain exchange rates?

a) Contemporaneous relationship

b) Causality by tracing out the supply curve of USD assets

c) As pricing factor for currency excess returns on the cross section

d) As forecasting factor

Related Literature

- **Special Role of the USD**:
  - **Provider of internal reserve currency**
  - **Positive and countercyclical premium for USD**

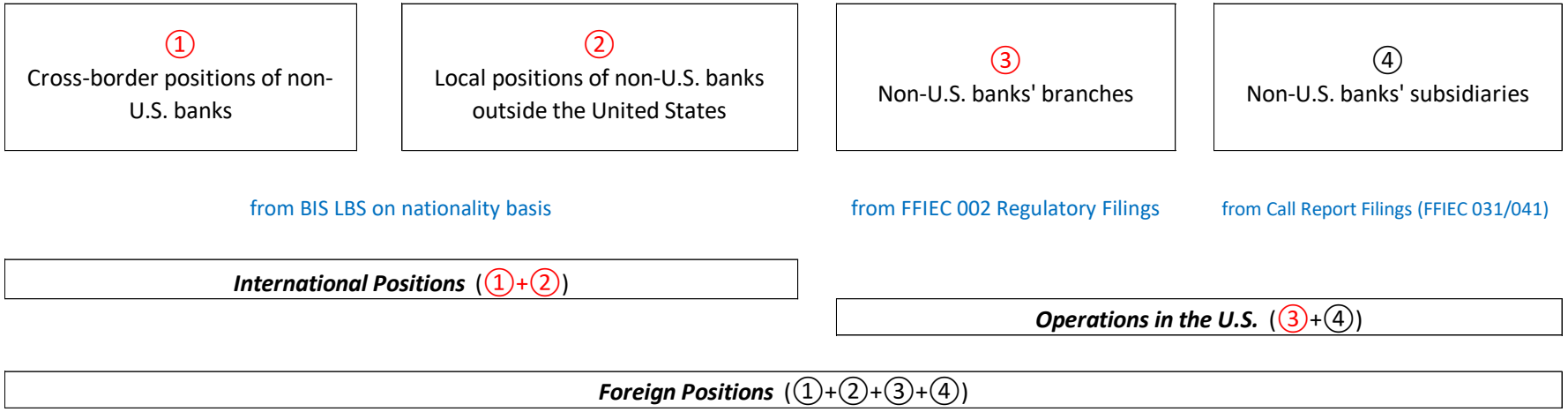
- **Meese-Rogoff Puzzle**:
  - **Exchange rate disconnect**
  - **Forward premium puzzle**
  - **Treasury premium and exchange rate**
  - **FX quantities (order flows) and exchange rate**

- **The "Global Financial Cycle" and the "Global USD Cycle"**

- **Intermediary Asset Pricing**

USD Asset Demand by Non-U.S. banks

- It is defined as the share of USD denominated assets to total assets of non-U.S. banks on nationality basis at economy level.
- Graphic representation of different aggregates in USD assets:



- Total assets: local positions in local currencies are obtained from FitchConnect and Factset.

Sample: 16 (managed) floating currencies from 16 economies; 2001Q1 – 2017Q4.

Appendix: Summary Statistics of Key Variables

Contemporaneous Relationship (USD vs. a Currency Basket)

$$\Delta\bar{s}_t = \alpha_1 + \beta_1 \Delta \bar{\boldsymbol{D}}_{\$,\boldsymbol{t}} + \beta_2 \Delta\bar{\Phi}_t + \beta_3 \Delta\left(\bar{y}_t^{Govt} - y_{\$,t}^{Govt}\right) + \beta \bar{X}_t + \varepsilon_t$$

	Dependent variable = Δs_t [Annualized %]						
	Cross-sectional Average						
Regressors	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Full Sample					Pre-GFC	Post-GFC
$\Delta D_{\$t}$ [%]	27.24***	25.03***	27.15***	24.66***	24.00***	14.41***	24.90***
	(5.05)	(4.61)	(5.15)	(4.80)	(4.84)	(4.48)	(5.55)
$\Delta\Phi_t$ [%]		11.00		12.17*	20.43***	-3.07	28.64**
		(7.74)		(7.18)	(5.55)	(21.16)	(11.01)
$\Delta(y_t - y_{\$t})$ [%]			-3.69	-4.86	-3.98	16.46*	-15.37
			(3.76)	(4.13)	(3.44)	(8.07)	(10.06)
Controls	N	N	N	N	Y	Y	Y
N	67	67	67	67	67	23	32
R^2	0.36	0.38	0.36	0.40	0.50	0.53	0.61

Appendix: Contemporaneous relationship (USD vis-à-vis Individual Currencies)

IV Strategy

Challenge: separate supply from demand

Solution: find exogenous demand shifters to identify supply

- Safety of substitute currencies (six non-USD currencies from G10):
  - Sovereign CDS spread of substitute Treasury securities
  - Treasury premium of substitute economies

- Balance sheet constraints of non-U.S. banks (measuring risk-taking capacities):
  - Leverage ratio of non-U.S. banks orthogonal to leverage ratio of U.S. brokers dealers

The First Stage

$$\Delta\overline{D}_{\$,t} = \alpha_1^1 + \beta_1^1 \Delta\overline{Sovereign\ CDS}_t^{sub} + \beta_2^1 \Delta\overline{\Phi}_t^{sub} + \beta_3^1 \Delta\overline{Leverage}_t + \beta^1 \overline{\boldsymbol{X}}_t + \varepsilon_t^1$$

	The first stage: Dependent variable = $\Delta D_{\$t}$ [%]				
Regressors	(1)	(2)	(3)	(4)	(5)
ΔSovereign CDS^{sub}_t [bps]	0.01**	0.01***	0.01**	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\Delta\Phi^{sub}_t$ [%]	-0.07	-0.74**	-0.01	-0.73*	-0.79*
	(0.34)	(0.37)	(0.35)	(0.38)	(0.40)
$\Delta Leverage_t$ [%]	2.98***	2.65***	3.06***	2.67***	2.63***
	(0.46)	(0.48)	(0.42)	(0.44)	(0.42)
Stock-Yogo *F* Statistics	15.59**	18.58**	24.61**	27.87**	32.38**
N	67	67	67	67	67
R^2	0.18	0.25	0.18	0.25	0.26

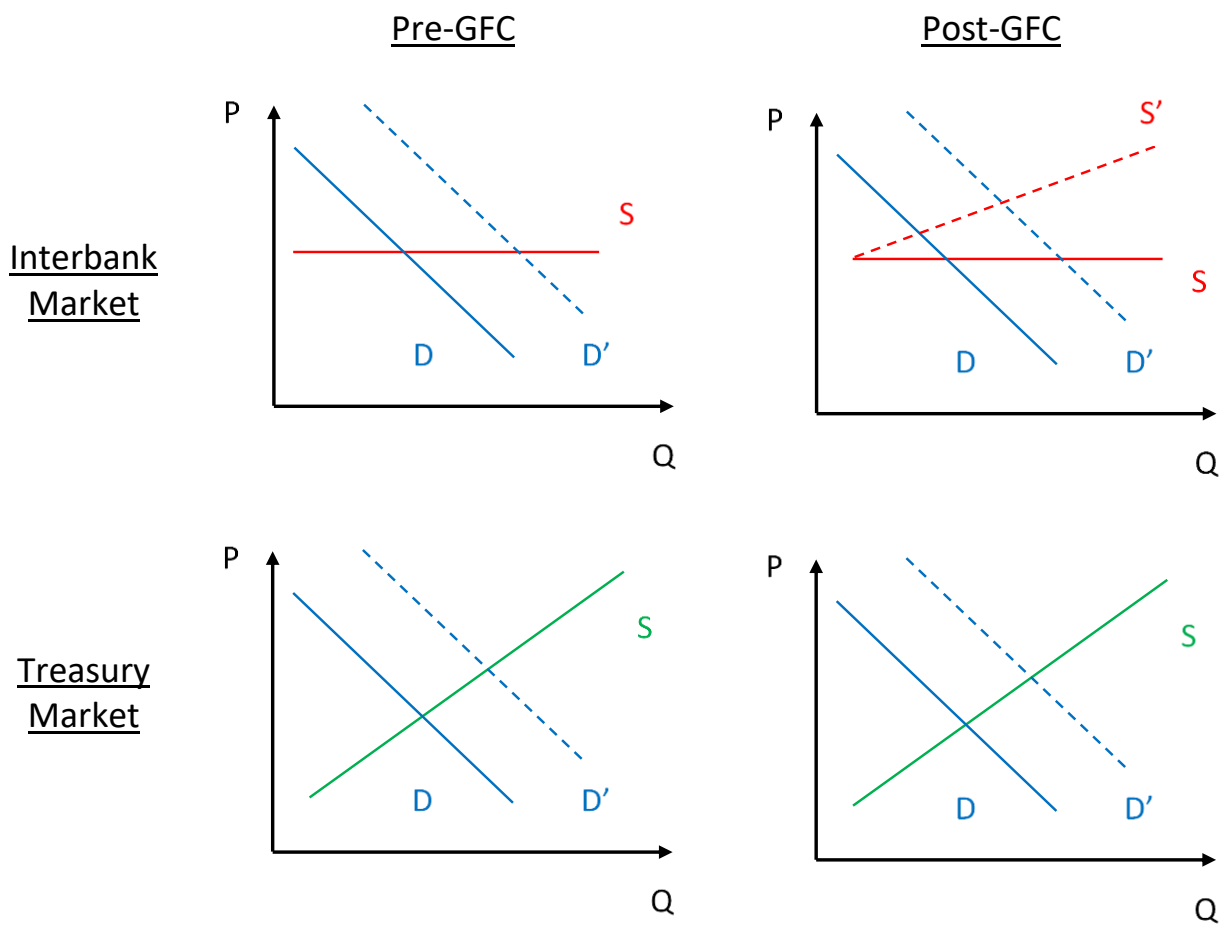
The Second Stage

$$\Delta\bar{s}_t = \alpha_1^2 + \beta_1^2 \Delta\hat{\bar{\boldsymbol{D}}}_{\$,\boldsymbol{t}} + \beta_2^2 \Delta\bar{\Phi}_t + \beta_3^2 \Delta\left(\bar{y}_t^{Govt} - y_{\$,t}^{Govt}\right) + \beta^2 \bar{\boldsymbol{X}}_t + \varepsilon_t^2$$

	OLS regression	The second stage: Dependent variable = Δs_t [Annualized %]				
Regressors	(0)	(1)	(2)	(3)	(4)	(5)
Fitted $\Delta D_{\$t}$ [%]	27.24***	51.54***	51.55***	51.74***	50.28***	41.76***
	(5.05)	(14.57)	(13.40)	(14.04)	(13.28)	(9.74)
$\Delta\Phi_t$ [%]			1.05		2.26	12.56*
			(9.54)		(9.24)	(7.01)
$\Delta(y_t - y_{\$t})$ [%]				-3.18	-3.42	-2.98
				(5.18)	(5.13)	(3.73)
Controls	N	N	N	N	N	Y
N	67	67	67	67	67	67
R^2	0.36	0.07	0.07	0.07	0.11	0.36
Endogeneity: Durbin-Wu-Hausman *F* statistics	-	8.18***	3.60*	8.72***	3.73*	3.10*
Overidentification: Sargan χ^2 Statistics	-	2.45	2.36	2.57	2.48	1.23

Three Channels on the Global Dollar Funding Market

Safe asset demand channel vs. Financial intermediation channel vs. U.S. Treasury channel



On Interbank Market:

- Pre-GFC, the supply curve is flat: FIs actively trade on CIP deviations.
- Post-GFC, the supply curve is upward sloping: balance sheet constraints prevent FIs from active trading.

On Treasury Market:

- Pre-GFC and Post-GFC, the supply curve is upward sloping: U.S. Treasury, ultimate supplier of T-bills, has other fiscal mandates but not a speculator.

Causal Relationship btw Safe Asset Demand, CIP Deviation, and U.S. Treasure Premium

$$\Delta\overline{\Phi}_t = \alpha_1^2 + \beta_1^2 \Delta\widehat{\overline{\boldsymbol{D}}}_{\$,\boldsymbol{t}} + \beta_2^2 \Delta\left(\bar{y}_t^{Govt} - y_{\$,t}^{Govt}\right) + \beta^2 \overline{\boldsymbol{X}}_t + \varepsilon_t^2$$

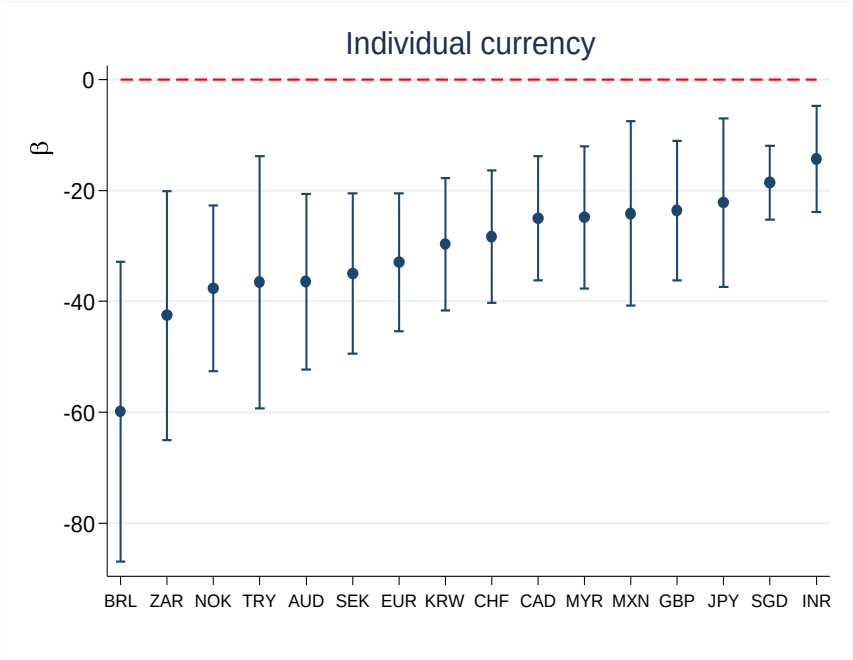
	The Second Stage			
	(1)	(2)	(3)	(4)
Dependent variables	$\Delta\Phi^{\text{Treasury}}{}_t$		$\Delta\Phi^{\text{Libor}}{}_t$	
Sample periods	Full	Post-GFC	Full	Post-GFC
Fitted $\Delta D_{\$t}$ [%]	0.46***	0.58**	0.29	0.20**
	(0.15)	(0.24)	(0.19)	(0.10)
Controls	N	N	N	N
N	67	32	67	32
R^2	0.18	0.19	0.06	0.20

Cross-section excess returns and global demand for USD

- Currency risk premia covary with global USD asset demand by non-US banks.

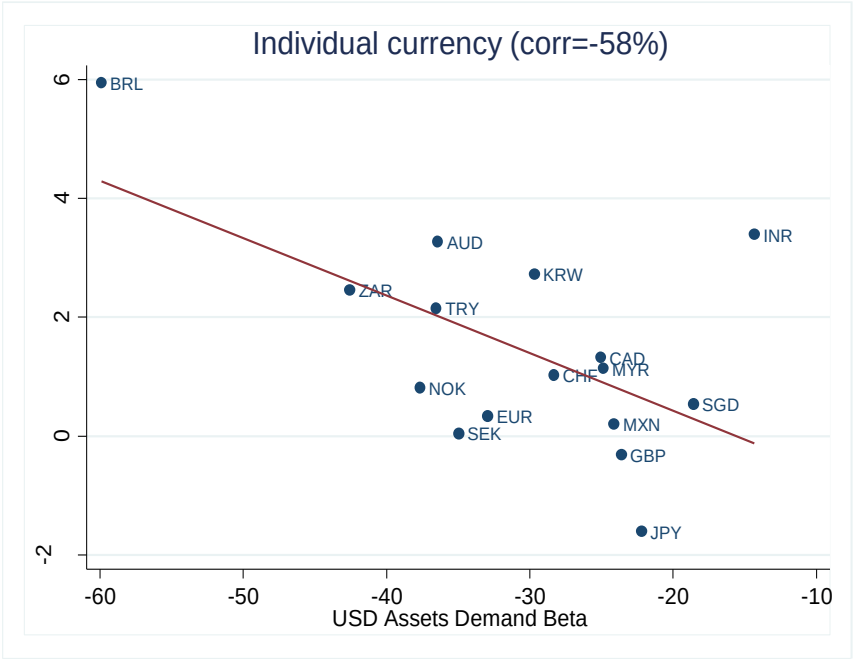
$$R_{j,t} = \alpha_j + \beta_j \Delta \boldsymbol{D}_{\$,\boldsymbol{t}} + \varepsilon_{j,t}$$

Where, $R_{j,t} \triangleq y^{Govt}_{j,t-1} - \Delta s_{j,t} - y^{Govt}_{\$,t-1}$



- Global USD asset demand acts as a risk factor pricing the cross-section of excess returns.

$$\overline{R}_j = \theta + \boldsymbol{\gamma}\widehat{\beta}_j + \mu_j$$



Appendix: Results at the currency-portfolio level provided by Lustig, Roussanov, and Verdelhan (2011)

In-sample Forecasting (USD vis-à-vis a Currency Basket)

$$\Delta \bar{s}_t^h = \alpha_1 + \beta_1 \bar{\boldsymbol{D}}_{\$,\boldsymbol{t}} + \beta_2 \bar{\Phi}_t + \beta_3 \left(\bar{y}_t^{Govt} - y_{\$,t}^{Govt} \right) + \varepsilon_{t+h}$$

	Dependent variable = Δs^h_t [Annualized %]				
	(1)	(2)	(3)	(4)	(5)
Regressors	h =1	h =4	h =8	h =12	h =20
$D_{\$t}$ [%]	-0.27	-2.22**	-2.75***	-2.54***	-2.02***
	(1.59)	(0.92)	(0.55)	(0.38)	(0.30)
Φ_t [%]	4.66	-4.34	-5.16**	-1.67	0.49
	(8.56)	(3.72)	(2.37)	(1.48)	(1.39)
$(y_t - y_{\$t})$ [%]	2.57	2.69**	1.74**	0.73	0.65*
	(1.92)	(1.16)	(0.71)	(0.50)	(0.37)
N	67	64	60	56	48
R^2	0.06	0.20	0.36	0.45	0.67

Appendix: In-sample forecasting (USD vis-à-vis individual currencies)

Mechanisms

- A coherent intermediary asset pricing story:
  - Risk-taking capacity of non-U.S. banks enters the pricing kernel of these marginal investors, thus
  - Prices the currency excess returns on the cross section
  - Drives the scarcity of safe USD assets and time-varying currency risk premia
- Time-varying currency risk premia are related to the demand of USD assets by non-U.S. banks, thus creating forcastability of the exchange rate:
  - Risk-bearing capacity of non-U.S. banks ↓ →
  - USD safe asset demand ↑ →
  - USD excess returns ↑ / USD appreciates →
  - expected future returns from holding USD assets ↓ →
  - USD reverts slowly over the one-to-five-year period

Out-of-sample forecasting performance

	Dependent variable = Δs^{20}_t [Annualized %]																
	(1) ALL	(2) AUD	(3) BRL	(4) CAD	(5) CHF	(6) EUR	(7) GBP	(8) INR	(9) JPY	(10) KRW	(11) MXN	(12) MYR	(13) NOK	(14) SEK	(15) SGD	(16) TRY	(17) ZAR
	Panel A: Diebold-Mariano Test																
$MSE_r - MSE_u$	13.49	9.64	59.16	8.28	3.76	6.35	4.22	28.11	12.72	-3.35	19.18	8.30	20.54	6.28	2.01	98.24	71.04
OOS-T statistics	2.40***	2.89***	1.65**	2.31***	0.86	2.34***	0.79	4.37***	1.21	-0.96	2.34***	2.18**	2.42***	2.39***	0.78	4.33***	2.68***
	Panel B: Clark-West Test																
$MSE_r - (MSE_u - Adj.)$	19.70	18.79	108.28	12.98	13.45	13.33	13.89	54.08	32.42	2.02	29.80	13.54	29.91	8.66	9.17	161.09	115.07
C-W statistics	2.47***	4.94***	2.30**	3.00***	1.91**	3.15***	2.00**	4.98***	2.88***	0.47	3.09***	3.27***	2.49***	2.52***	1.86**	4.34***	2.99***

Appendix: Out-of-sample forecasts methodology

Out-of-sample Forecasting Performance Comparison

- Compare the forecasting performance between 9 existing models (see, Rossi 2013) and respective augmented versions adding USD asset share as an additional predictor

Name of Models	$MSE_{existing} - MSE_{augmented}$	OSS-T statistics
(1) UIP model	6.19	2.32***
(2) Monetary model with flexbile prices (Frankel-Bilson model)	0.69	0.84*
(3) Monetary model with sticky prices (Dornbusch-Frankel model)	0.82	1.14**
(4) Productivity differentials model (Balassa-Samuelson model)	1.17	2.01***
(5) Taylor rule model	4.63	3.85***
(6) Net foreign asset model (Gourichas-Rey model)	8.15	2.61***
(7) U.S. dollar liquidity model (Adrian-Etula-Shin model)	7.53	2.41***
(8) U.S. Treasury premium model (Jiang-Krishnamurthy-Lustig model)	10.84	3.56***
(9) U.S. foreign bond flow model (Lilley-Neiman-Maggiori-Schreger model)	10.27	3.19***

Other Robustness

1. Robust to FP concept
2. Robust to use G10 currencies
3. Robust if use aggregates of all EA economies as the representative of EA
4. Robust if use relative safety of substitutes as IVs
5. Robust with economy and time fixed effects in contemporaneous relationship
6. Robust to different parameter settings in out-of-sample forecast

Summary

- Construct the USD asset share of non-U.S. banks to explain exchange rate
- Establish a causal relationship between the USD asset demand, the U.S. dollar exchange rate, the U.S. Treasury premium, and the CIP deviation
- Distinguish the “safe asset demand channel”, the “financial intermediation channel”, and the “US Treasury channel” using our instrumental variable strategy
- Document the USD asset demand of non-U.S. banks is a risk factor, which can explain currency excess returns in the cross section
- Forecast exchange rates both in-sample and out-of-sample

Appendix

Sample Coverage

- 26 economies: USD operations are considered to be of domestic importance (IMF 2019)
  - Germany is used as the representative for 8 Euro Area economies for same currency in our sample period.
  - China and Russia are excluded, because the relevant aggregates only span over 2 years.
  - Hong Kong SAR China is excluded for its adoption of the fixed exchange rate regime.
- 16 economies using 16 tender currencies with (managed) floating exchange rate regimes
  - 10 AEs: Australia, Canada, Switzerland, Euro Area (Germany), UK, Japan, Korea, Norway, Singapore, Sweden
  - 6 EMs: Brazil, India, Mexico, Malaysia, Turkey, South Africa
- Time period: 2001Q1 to 2017Q4 (non-balanced panel)

Summary Statistics of Key Variables

		(1) Australia	(2) Brazil	(3) Canada	(4) Switzerland	(5) Euro Area	(6) UK	(7) India	(8) Japan	(9) Korea	(10) Mexico	(11) Malaysia	(12) Norway	(13) Singapore	(14) Sweden	(15) Turkey	(16) South Africa	(17) Average
									Levels									
s_t [per USD]	mean	0.24	0.82	0.17	0.10	-0.20	-0.48	3.93	4.66	6.99	2.56	1.25	1.91	0.34	2.03	0.62	2.30	1.70
	std.	0.20	0.27	0.15	0.19	0.14	0.12	0.16	0.14	0.09	0.19	0.12	0.16	0.10	0.14	0.34	0.27	0.12
$D_{\$t}$ [%]	mean	6.67	3.75	14.61	27.80	8.60	9.07	7.79	8.89	4.19	4.69	4.70	5.22	5.82	10.98	12.54	7.90	9.54
	std.	1.46	0.63	1.74	2.66	1.64	1.74	1.93	2.64	0.35	1.64	1.01	1.90	1.31	2.49	1.39	0.88	1.14
Φ_t [%]	mean	-0.06	1.89	0.16	0.41	0.24	0.04	1.17	0.44	1.39	0.08	0.85	0.11	0.12	0.17	0.56	0.01	0.38
	std.	0.26	0.85	0.20	0.23	0.19	0.20	1.34	0.30	1.08	0.70	0.74	0.23	0.29	0.31	0.87	0.48	0.35
$(y_t - y_{\$t})$ [%]	mean	2.36	9.65	0.43	-0.97	-0.08	0.67	5.09	-1.43	1.73	4.36	2.33	1.12	-0.41	0.15	9.60	5.92	2.17
	std.	1.23	2.31	0.72	1.01	1.08	1.08	2.12	1.48	1.24	1.34	0.63	1.67	0.91	1.42	2.54	0.71	1.02
N. Obs.		68	44	68	68	68	68	65	68	52	62	41	68	56	68	52	34	68
									First differences									
Δs_t [%]	mean	-2.84	4.42	-1.35	-3.47	-1.88	0.28	1.75	-0.68	0.39	4.30	2.00	-0.67	-1.64	-1.44	8.11	6.06	0.21
	std.	24.97	35.30	17.57	18.93	20.30	19.08	14.89	22.23	19.62	21.10	17.43	24.06	11.62	22.97	26.35	23.97	15.27
$\Delta D_{\$t}$ [%]	mean	-0.05	-0.03	0.05	0.03	-0.06	-0.06	0.04	0.10	0.00	0.01	0.01	-0.01	0.07	-0.08	-0.08	0.01	0.00
	std.	0.62	0.47	0.79	1.28	0.51	0.49	0.38	0.42	0.29	0.96	0.52	2.10	0.31	0.96	0.92	0.64	0.33
$\Delta\Phi_t$ [%]	mean	-0.01	-0.01	0.00	0.00	-0.01	-0.01	0.02	0.00	-0.01	0.01	-0.02	-0.01	0.00	-0.01	-0.01	0.01	0.00
	std.	0.27	0.77	0.15	0.24	0.17	0.23	1.06	0.30	0.64	0.66	0.63	0.21	0.33	0.29	0.64	0.37	0.24
$\Delta(y_t - y_{\$t})$ [%]	mean	0.00	-0.04	-0.01	-0.02	-0.04	-0.03	-0.01	0.03	0.00	-0.04	0.03	-0.06	0.00	-0.03	-0.03	-0.05	-0.02
	std.	0.47	1.06	0.30	0.40	0.38	0.39	0.59	0.43	0.41	0.67	0.44	0.52	0.39	0.49	1.55	0.40	0.37
N. Obs.		67	43	67	67	67	67	64	67	51	61	40	67	55	67	51	33	67

Contemporaneous Relationship (USD vs. Individual Currencies)

$$\Delta s_{j,t} = \alpha_1 + \beta_1 \Delta \boldsymbol{D}_{\$,\boldsymbol{j},\boldsymbol{t}} + \beta_2 \Delta \Phi_{j,t} + \beta_3 \Delta \left(y_{j,t}^{Govt} - y_{\$,t}^{Govt} \right) + \beta \boldsymbol{X}_{j,t} + \varepsilon_t$$

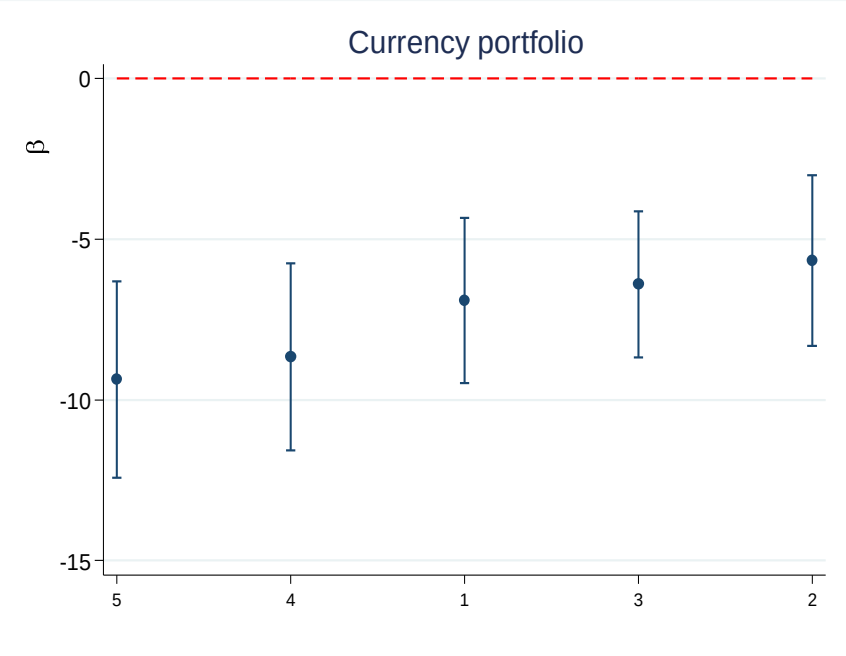
	Dependent variable = Δs_t [Annualized %]															
	Bilateral Relationship															
Regressors	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
	AUD	BRL	CAD	CHF	EUR	GBP	INR	JPY	KRW	MXN	MYR	NOK	SEK	SGD	TRY	ZAR
$\Delta D_{\$t}$ [%]	22.72***	65.93***	10.26***	6.52***	20.07***	-3.29	7.24	31.60***	24.54**	8.36***	14.84**	1.24	6.45***	2.98	15.72***	17.08
	(4.22)	(6.29)	(2.12)	(1.70)	(3.75)	(2.74)	(5.27)	(6.38)	(9.47)	(2.82)	(6.79)	(0.91)	(2.10)	(5.51)	(3.74)	(11.21)
$\Delta \Phi_t$ [%]	22.71***	6.69	29.24***	34.64***	35.03***	22.91***	4.40**	1.34	20.07***	-2.27	19.58***	41.85**	39.57***	5.63	8.60	11.47
	(8.15)	(4.38)	(10.44)	(8.74)	(11.39)	(8.16)	(1.97)	(4.81)	(4.14)	(8.31)	(3.79)	(19.01)	(7.80)	(8.78)	(5.77)	(16.58)
$\Delta(y_t - y_{\$t})$ [%]	-16.43***	-4.27	-18.41***	-17.62***	-12.68**	-17.10**	-1.55	-12.70***	-11.93**	4.91	-2.97	-17.85**	-15.20***	-1.04	4.65**	2.04
	(5.20)	(3.03)	(6.37)	(5.81)	(4.81)	(8.42)	(2.99)	(3.73)	(5.64)	(4.60)	(5.55)	(6.89)	(4.74)	(4.77)	(2.28)	(14.38)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	67	43	67	67	67	67	64	67	51	61	40	67	67	55	51	33
R^2	0.59	0.73	0.50	0.43	0.60	0.35	0.26	0.55	0.52	0.18	0.57	0.32	0.51	0.08	0.48	0.29

Cross-section excess returns and global demand for USD (for currency portfolios)

- Currency risk premia covary with global USD asset demand by non-US banks.

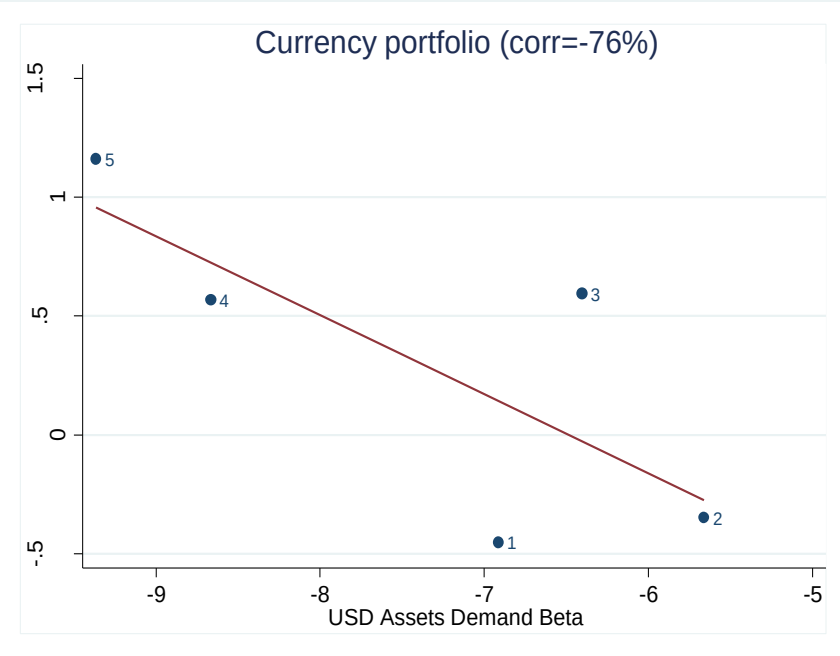
$$R_{j,t} = \alpha_j + \beta_j \Delta \boldsymbol{D}_{\$,\boldsymbol{t}} + \varepsilon_{j,t}$$

Where, $R_{j,t} \triangleq y^{Govt}_{j,t-1} - \Delta s_{j,t} - y^{Govt}_{\$,t-1}$



- Global USD asset demand acts as a risk factor pricing the cross-section of excess returns.

$$\bar{R}_j = \theta + \boldsymbol{\gamma}\hat{\beta}_j + \mu_j$$



In-sample Forecasting (USD vis-à-vis individual currencies)

Panel A: $\Delta s_{j,t}^{20} = \alpha_1 + \beta_1 D_{j,\$,t} + \varepsilon_{t+20}$ Panel B: $\Delta s_{j,t}^{20} = \alpha_1 + \beta_1 \overline{D}_{\$,t} + \varepsilon_{t+20}$

- The global component in USD asset share forecasts the bilateral exchange rate better
  - $D_{j,\$,t}$ predicts the USD for 10/16 currencies at 5% level; $\overline{D}_{\$,t}$ predicts the USD for 16/16 currencies at 5% level

	Dependent variable = Δs^{20}_{jt} [Annualized %]															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	AUD	BRL	CAD	CHF	EUR	GBP	INR	JPY	KRW	MXN	MYR	NOK	SEK	SGD	TRY	ZAR
Panel A: Individual USD Asset Share																
$D_{j\$t}$ [%]	-1.58***	-4.55***	0.67*	-0.26**	-1.53***	-1.07***	1.92***	1.25***	-3.39***	-0.77***	2.33***	0.95*	-1.31***	2.23***	-1.56***	-1.86**
	(0.24)	(0.85)	(0.34)	(0.12)	(0.27)	(0.38)	(0.33)	(0.41)	(0.81)	(0.19)	(0.67)	(0.48)	(0.11)	(0.23)	(0.12)	(0.84)
N	48	43	48	48	48	48	45	48	32	43	21	48	48	36	48	14
R^2	0.24	0.57	0.04	0.07	0.30	0.13	0.53	0.11	0.29	0.27	0.33	0.05	0.72	0.63	0.77	0.33
Panel B: Cross-Sectional Average USD Asset Share																
$D_{\$t}$ [%]	-2.87***	-3.94***	-2.63***	-1.38***	-2.78***	-1.88***	-2.01***	-1.56***	-1.49***	-0.59**	-5.46***	-3.16***	-2.60***	-0.88***	-2.99***	-3.82***
	(0.36)	(0.96)	(0.32)	(0.18)	(0.20)	(0.23)	(0.26)	(0.43)	(0.22)	(0.26)	(0.71)	(0.30)	(0.20)	(0.23)	(0.61)	(0.45)
N	48	48	48	48	48	48	48	48	48	48	30	48	48	48	48	48
R^2	0.52	0.37	0.64	0.42	0.82	0.46	0.59	0.17	0.33	0.10	0.56	0.69	0.67	0.26	0.48	0.64

Out-of-sample Forecasts Methodology

- Estimate model parameters using a window of K quarters, where $t \in [T-P-K, T-P]$:

$$\Delta s_{j,t}^{h} = \alpha_1 + \beta_1 D_{j,\$,t} + \varepsilon_{t+h}$$

- Out-of-sample forecast exchange rate change and calculate forecast error at $t = T-P+1$:

$$\Delta s_{j,T-P+1}^{h} = \hat{\alpha}_1 + \hat{\beta}_1 D_{j,\$,t}$$

$$error_{j,T-P+1}^{h} = \Delta s_{j,T-P+1}^{h} - \Delta \hat{s}_{j,T-P+1}^{h}$$

- Repeat for P times using a rolling regression until obtain out-of-sample forecast btw $[T-P, T]$

- Performance against random walk model (RWM):
  a) Diebold and Mariano (1995) and West (1996): OOS-T statistic based on $MSE_r - MSE_u$
  b) Clark and West (2006): $MSE_r - (MSE_u - Adj.)$ to accounts for the small-sample forecast bias

Caveat

Data limitation:

- Not purely quantity → contemporaneous explanatory power may reflect the mechanical influence

- Lilley et al. (2019) explore the pure quantities of U.S. foreign bond flows using the U.S. mutual fund holdings data from Morningstar

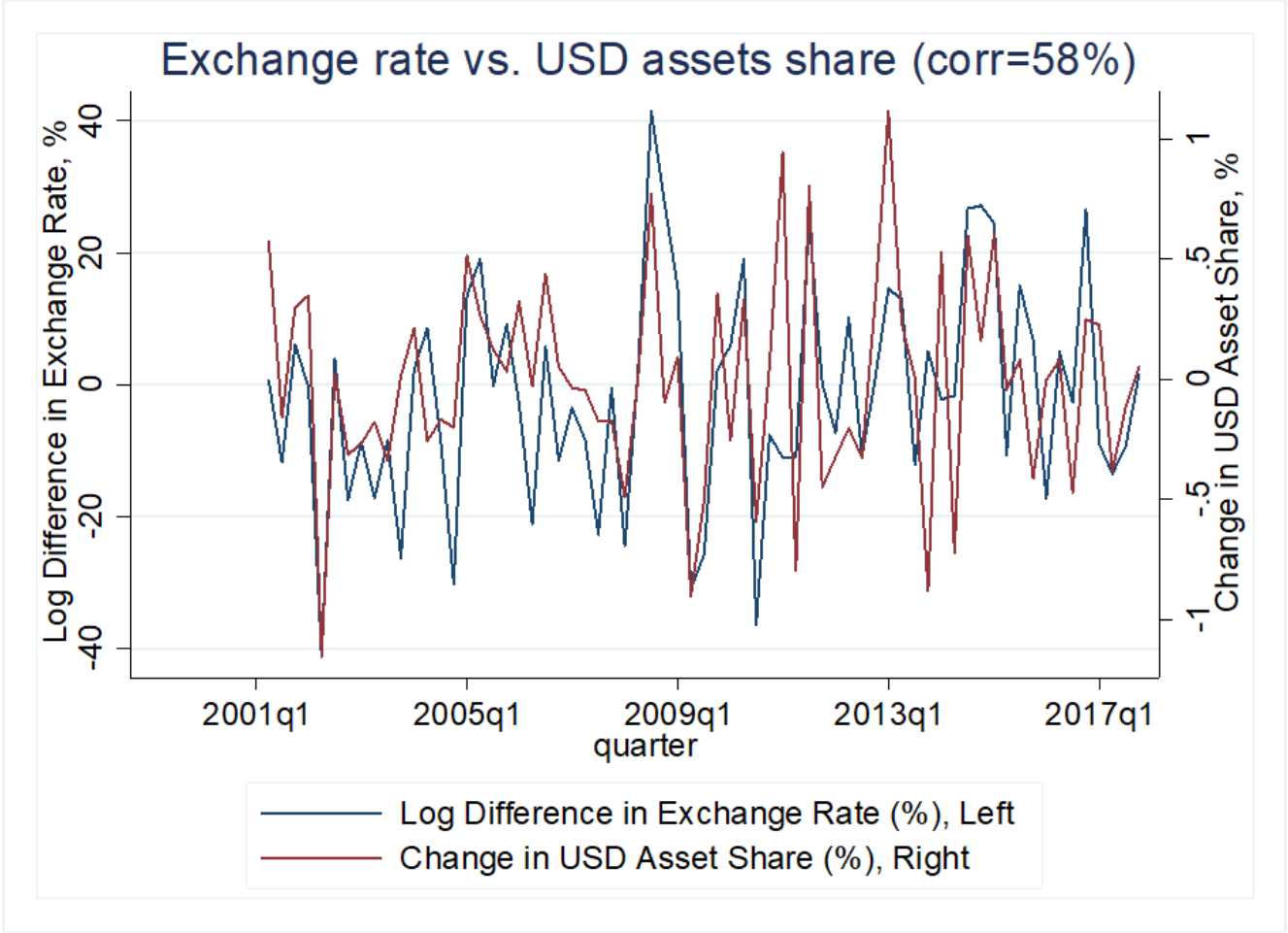
Correlation btw Exchange Rate and Determinants

Panel A: Correlation with Contemporaneous Changes				
	Δs_t	$\Delta D_{\$t}$	$\Delta \Phi_t$	$\Delta(y_t - y_{\$t})$
Δs_t	1.00***			
$\Delta D_{\$t}$	0.58***	1.00***		
$\Delta \Phi_t$	0.36***	0.31**	1.00***	
$\Delta(y_t - y_{\$t})$	-0.32***	-0.22*	-0.18	1.00***
Panel B: Correlation with Future Changes				
	Δs^{12}_t	$D_{\$t}$	Φ_t	$y_t - y_{\$t}$
Δs^{12}_t	1.00***			
$D_{\$t}$	-0.55***	1.00***		
Φ_t	-0.29**	0.33***	1.00***	
$y_t - y_{\$t}$	0.07	-0.26**	-0.19	1.00***

USD Asset Share vs. U.S. Treasury Premium

- Both of them are measures of USD asset demand (see, for example, Du, Im, and Schreger 2018; Engle and Wu 2018; Jiang, Krishnamurthy, and Lustig 2018).
- Correlation = 31% (first difference) or 33% (level)
- Differences:
  - Quantity vs. price
  - All USD-denominated assets vs. specific USD-denominated assets (U.S. Treasury at 1-year maturity)
  - Marginal investors (i.e., banks) vs. all investors

USD Asset Share and Exchange Rate in G10



Predictive Power of Key Determinants