Comments on
Goldberg and Hannaoui, "Drivers of Dollar Share in Foreign Exchange Reserves"

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Third Conference on the International Role of the Dollar

Federal Reserve Board

May 20-21, 2024

The Messages

- The decline in dollar holdings is the outcome of a few central banks with large reserves shifting

- Two Conjectures

- Differential returns can have an effect on the composition of central bank holdings ☐

- Greater geopolitical "distance" from US as proxied by mis-alignment of voting in the UN will result in lower holdings of USD ☐

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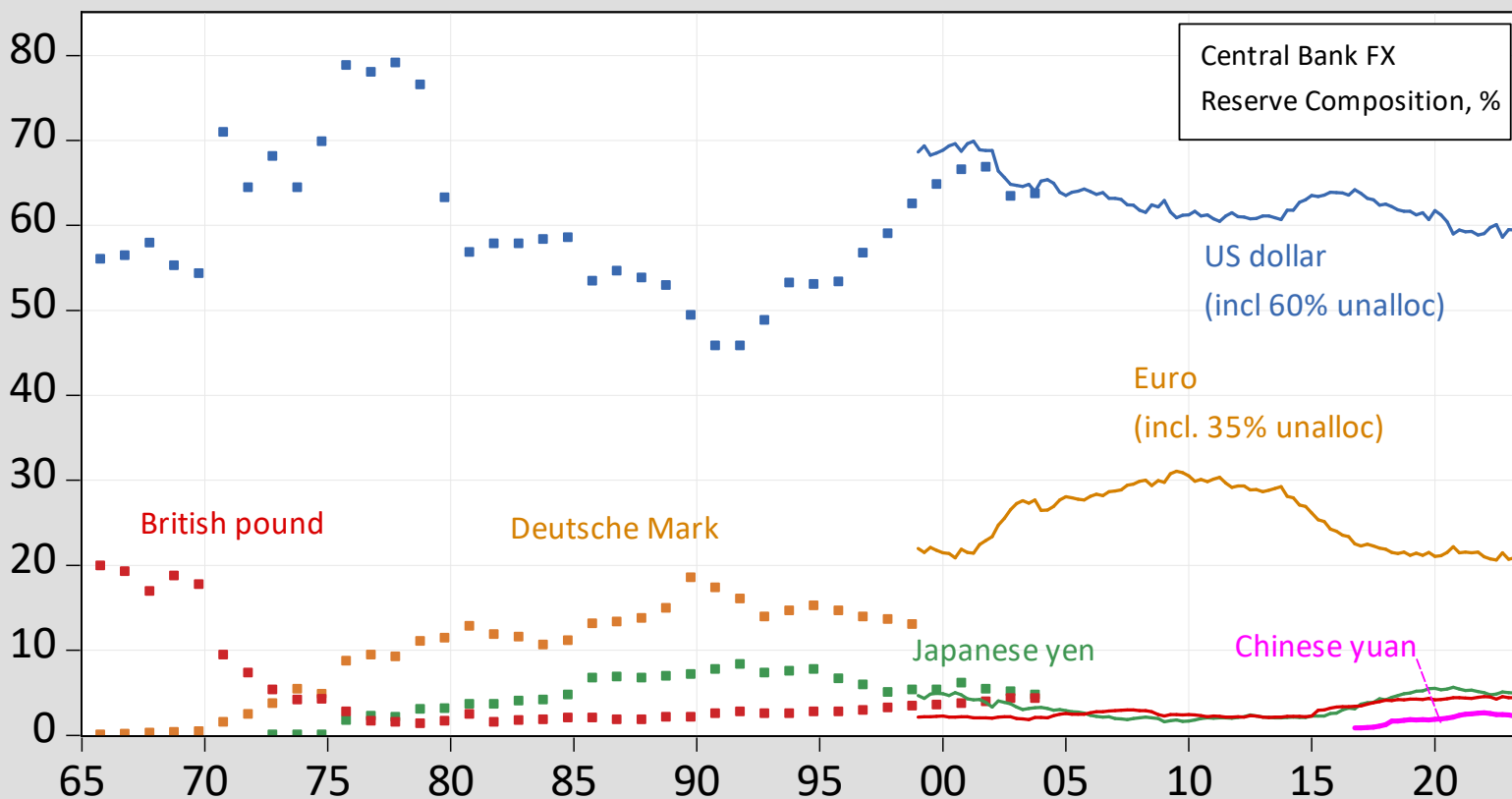
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- Greater geopolitical "distance" from US as proxied by mis-alignment of voting in the UN will result in lower holdings of USD ☒

Outline

- A shift-share decomposition for the change in USD share in COFER

- Treating investment and liquidity tranches separately

- Evaluating geopolitics quantitatively

A Shift-Share Decomposition

The 2015-21 Decline in Perspective

Central Bank FX
Reserve Composition, %

US dollar
(incl 60% unalloc)

Euro
(incl. 35% unalloc)

British pound

Deutsche Mark

Japanese yen

Chinese yuan

Source: Chinn, Frankel, Ito (2024)

Broad Decline in Dollar Holdings?

USD share out of allocated, %

7%

USD share + 0.6*unallocated out of total, %

COFER data
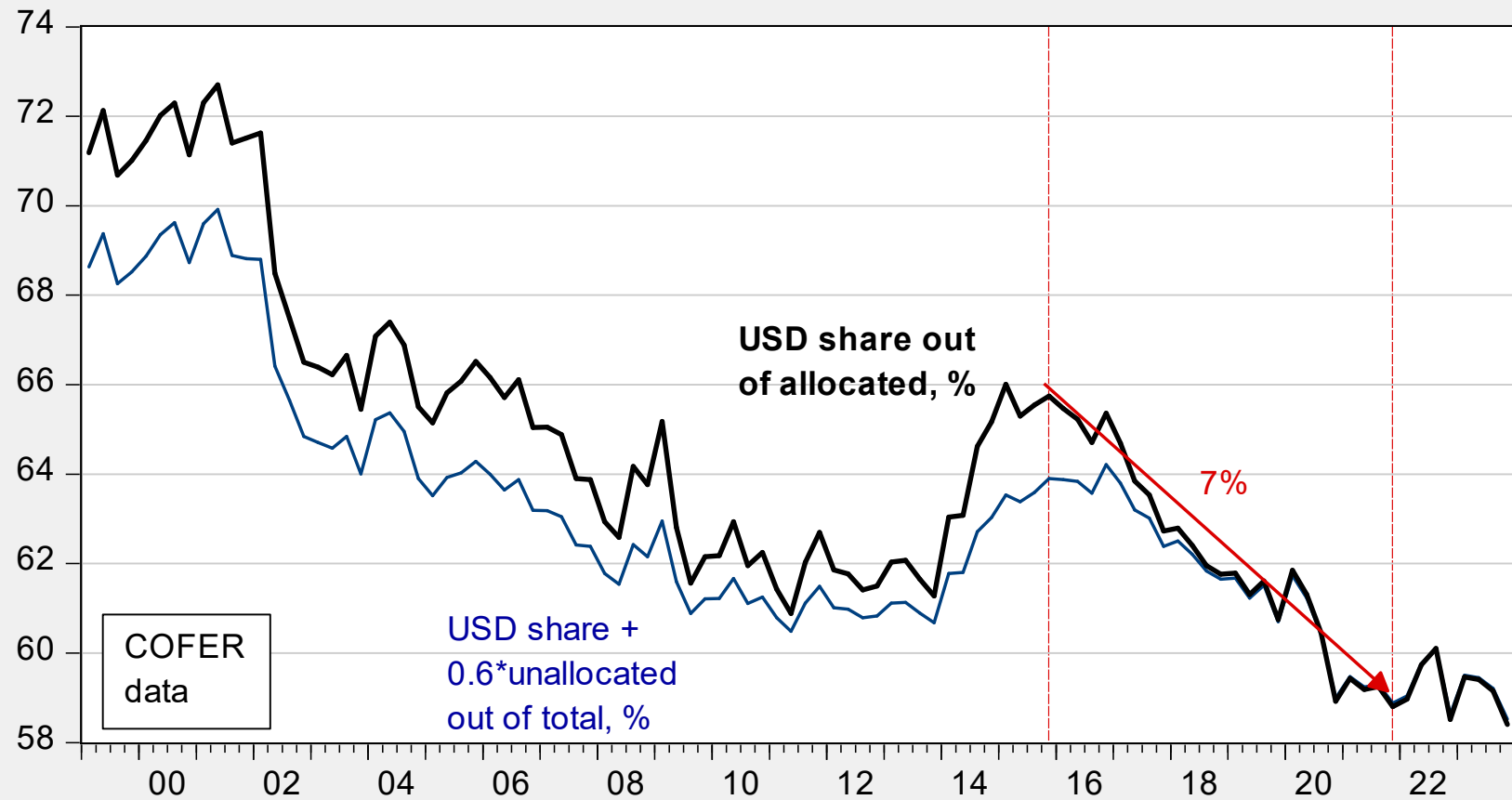
Source: IMF, COFER, accessed 5/16/2024

A Shift Share Decomposition

$$d(USRSH_t) = \frac{\sum_1^{54} d\sigma^c R^c_{2015}}{\sum_1^{72} R^c_{2015}} + \frac{\sum_{55}^{72} d\sigma^c R^c_{2015}}{\sum_1^{72} R^c_{2015}} + \frac{\sum_1^{72} (\sigma^c_{2015} - USRSH_{2015}) dR^c}{\sum_1^{72} R^c_{2015}} \qquad (4)$$

Change in share of USD holdings 2015-21

Observed shares of USD holdings times reserve holdings At end-2015

Residual: change due to change in portfolios of nonreporting central banks

Gap between USD observed shares and total shares times reserve holding change

7%

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Change in share of USD holdings 2015-21

Observed shares of USD holdings times reserve holdings At end-2015

Residual: change due to change in portfolios of nonreporting central banks

Gap between USD observed shares and total shares times reserve holding change [Switz., Russia]

7%

0.3%

2.9%

≈3.8%

BRICS De-Dollarization (?)
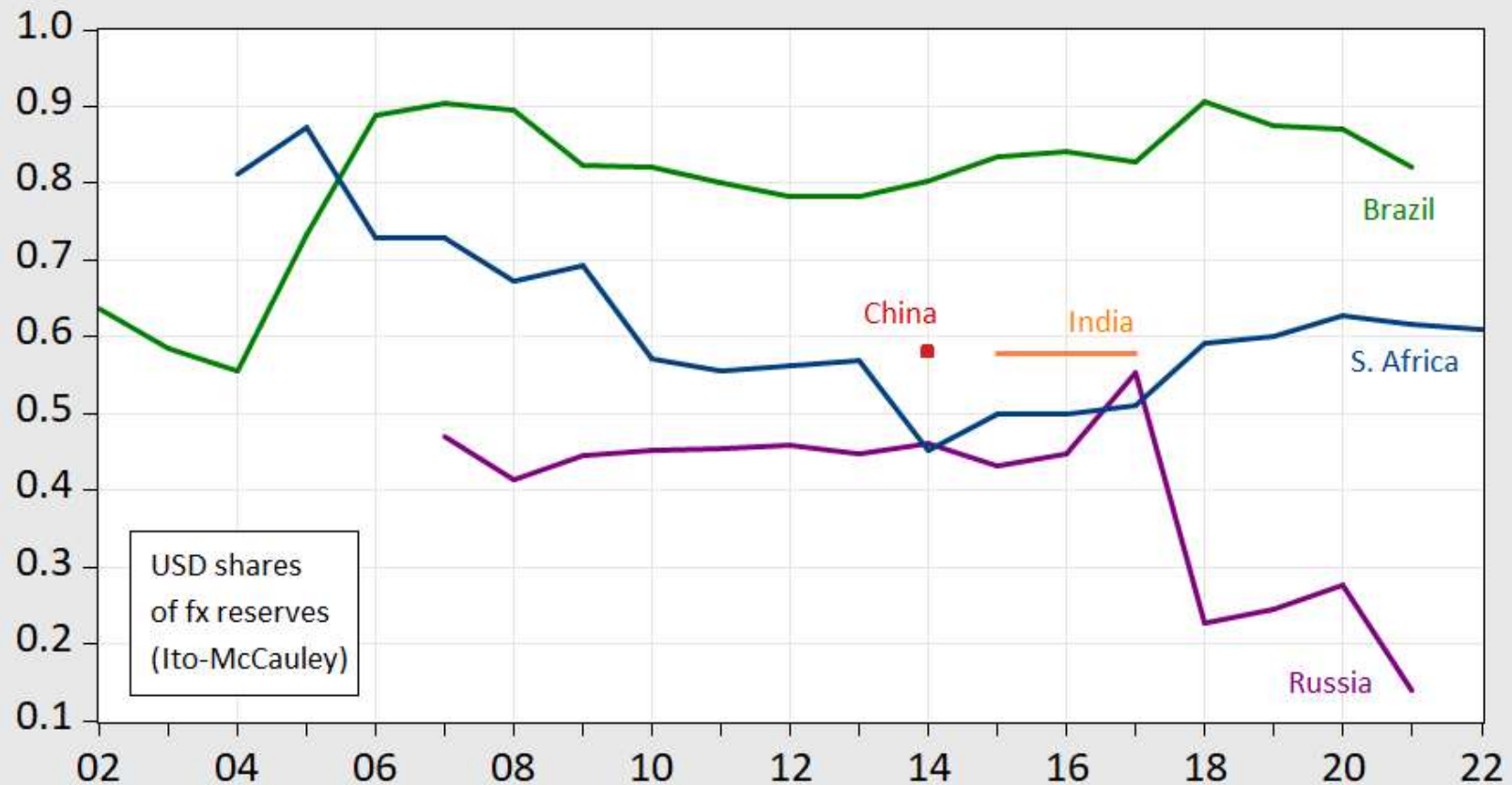
Taking Seriously Investment and Liquidity Tranches

Estimating the Investment Tranche

- Investment tranche is the holdings in excess of liquidity needs

- Which can be variously defined

- Goldberg-Hannaoui use (i) 3 months imports and (ii) short-term external debt

- This should respond to relative returns

- Relative returns: (i) shadow rate, (ii) ZLB indicator, (iii) nontraditional reserve currency (NRC) return, (iv) Sharpe ratio of NRC excess return

Table 3: Baseline specification for US dollar share of official foreign currency reserves

|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. dollar share of official reserves								
Dollar peg	0.104***	0.0856***	0.0869***	0.0853***	0.129***	0.130***	0.129***	0.118***
	(5.23)	(4.67)	(4.47)	(4.42)	(7.63)	(7.35)	(7.34)	(7.02)
Euro peg	-0.424***	-0.421***	-0.407***	-0.404***	-0.395***	-0.391***	-0.376***	-0.353***
	(-14.70)	(-15.19)	(-14.73)	(-14.83)	(-18.80)	(-18.56)	(-19.52)	(-17.89)
Other peg	-0.141***	-0.152***	-0.126***	-0.126***	-0.153***	-0.140***	-0.140***	-0.160***
	(-3.65)	(-4.27)	(-3.38)	(-3.34)	(-4.36)	(-3.74)	(-3.72)	(-4.15)
Trade with US	1.034***	0.457***	0.482***	0.484***	0.0562	0.0706	0.0735	0.0846
	(6.17)	(4.01)	(4.49)	(4.47)	(1.17)	(1.41)	(1.47)	(1.72)
Trade with Euro Area	-0.156	-0.212*	-0.253**	-0.248**	-0.282***	-0.293***	-0.289***	-0.338***
	(-1.76)	(-2.50)	(-3.02)	(-2.94)	(-4.70)	(-5.01)	(-4.95)	(-5.95)
Trade with Japan	-1.037*	0.343	0.256	0.252	-0.203	-0.251	-0.255	-0.302
	(-2.57)	(1.17)	(0.85)	(0.84)	(-0.88)	(-1.11)	(-1.13)	(-1.39)
Trade with UK	-1.283*	-0.817	-0.731	-0.709	-0.521*	-0.517*	-0.475	-0.654**
	(-2.03)	(-1.43)	(-1.30)	(-1.25)	(-2.02)	(-2.08)	(-1.94)	(-2.77)
Dollar debt share	-0.189*	0.0557	0.0819	0.0838	0.191***	0.197***	0.197***	0.197***
	(-2.46)	(0.91)	(1.33)	(1.35)	(7.31)	(7.58)	(7.78)	(7.86)
Euro debt share	-0.184*	-0.0243	0.00785	0.00457	0.0677*	0.0759*	0.0668*	0.0710*
	(-2.08)	(-0.31)	(0.10)	(0.06)	(2.16)	(2.48)	(2.25)	(2.52)
Euro Area dummy	0.256***	0.268***	0.278***	0.279***	0.313***	0.317***	0.317***	0.353***
	(6.26)	(6.76)	(7.34)	(7.32)	(13.70)	(14.16)	(14.29)	(16.82)
Constant	0.735***	0.548***	0.630***	0.628***	0.544***	0.553***	0.552***	0.573***
	(7.33)	(7.02)	(11.88)	(11.78)	(8.85)	(16.80)	(16.95)	(17.62)
N obs	696	675	675	675	1030	1030	1030	1160
N countries	62	61	61	61	75	75	75	75
Year FE	Yes	Yes	No	No	Yes	No	No	No
Estimation Method	Tobit	Tobit	Tobit	OLS	Tobit	Tobit	OLS	OLS

Baseline specification

Nontrad'l Reserve Currency Returns

Figure 3: Nontraditional Reserve Currency Interest Rate Differential
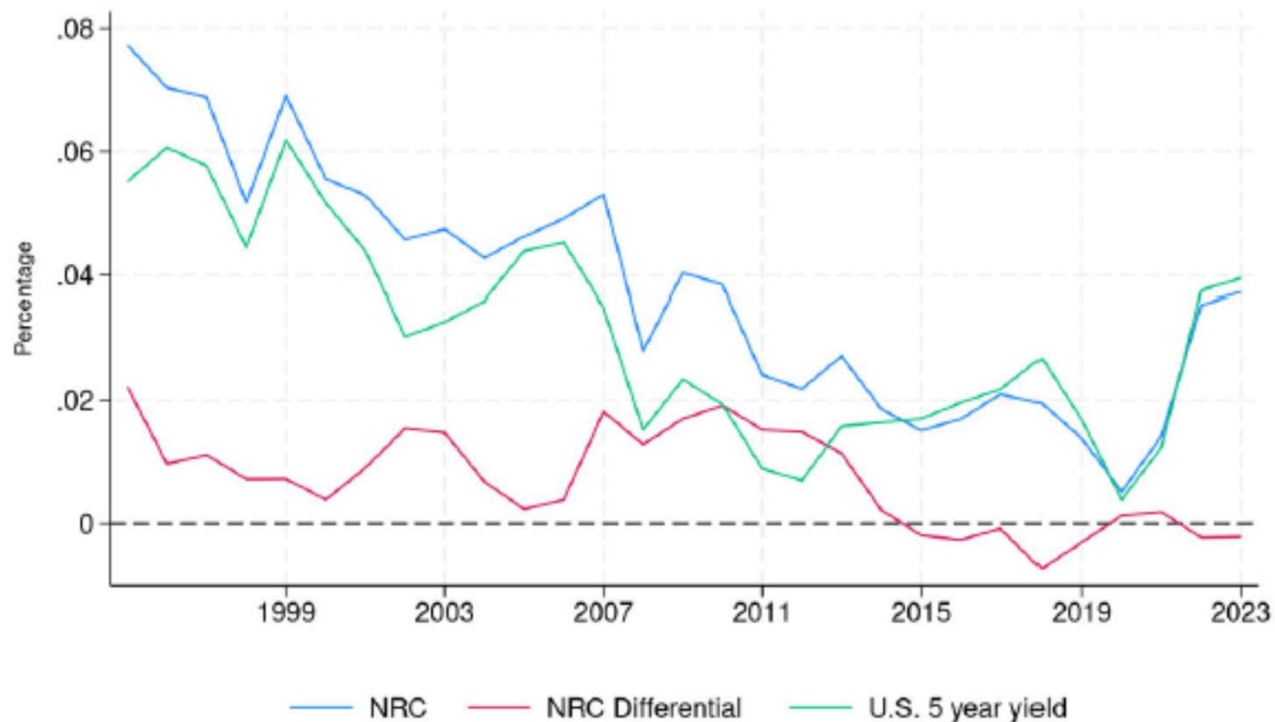
Source: Author's construction using data from the Reserve Bank of Australia, Central Bank of Canada, Bank of Korea, United States Treasury, and LJF Macro Analysis.

Table 4: Baseline for USD share of official foreign exchange reserves, with waterfall of added determinants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
U.S dollar share of official reserves									
NRC return		-0.325							
		(-0.79)							
NRC return differential			-2.519***						
			(-3.68)						
US shadow rate				1.037***					
				(3.82)					
EA shadow rate				-0.784*					
				(-2.34)					
US ZLB					-0.041***				
					(-3.66)				
EA ZLB					0.012				
					(0.99)				
InvTr						0.101***	0.044		
						(4.17)	(1.83)		
Low US UN vote agreement								0.110***	
								(6.70)	
Middle US UN vote agreement								-0.014	
								(-0.94)	
Financial sanction									0.025
									(1.51)
Constant	0.573***	0.580***	0.592***	0.573***	0.591***	0.563***	0.624***	0.494***	0.574***
	(17.62)	(17.98)	(18.51)	(17.32)	(16.78)	(17.15)	(15.97)	(14.27)	(17.72)

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	(17.62)	(17.98)	(18.51)	(17.32)	(16.78)	(17.15)	(15.97)	(14.27)	(17.72)

[Annotation: "3 mos imports" pointing to InvTr column (6) value 0.101***]

[Annotation: "ST debt" pointing to InvTr column (7) value 0.044]

Table 5: USD share of foreign exchange reserves and nontraditional reserve currency returns

	3 mos imports		ST debt			
	(1)	(2)	(3)	(4)	(5)	(6)
U.S dollar share of official reserves						
NRC return differential	-2.361***	-2.219	-1.364	0.457	-1.688*	-1.330
	(-3.46)	(-1.96)	(-1.91)	(0.38)	(-1.98)	(-1.24)
InvTr	0.098***	0.101***	0.041	0.066*		
	(4.08)	(3.49)	(1.72)	(2.48)		
InvTr x NRC return differential		-0.469		-4.642*		
		(-0.18)		(-2.26)		
US ZLB					-0.025	-0.017
					(-1.78)	(-0.84)
NRC return differential x US ZLB						-1.001
						(-0.58)
Constant	0.581***	0.580***	0.632***	0.626***	0.602***	0.602***
	(17.96)	(17.28)	(16.21)	(16.17)	(18.41)	(18.42)

Two Econometric Questions

- Might the NRC returns be endogenous? Small increases in demand might lead to increase returns, given small government bond markets of Australia, Canada, South Korea

- Would it make sense to test directly if investment tranches are affected by NRC, other returns? (Investment Tranche right now is on RHS, but arguably is measured with error)

Geopolitics

Table 7: USD share of foreign exchange reserves and geopolitical alignment

	(1)	(2)	(3)	(4)	(5)
U.S dollar share of official reserves					
Low US UN vote agreement	0.110***	0.105***	0.236***	0.240***	0.228***
	(6.20)	(4.14)	(7.73)	(7.88)	(7.33)
Middle US UN vote agreement	-0.014	-0.016	-0.010	-0.017	-0.012
	(-0.93)	(-0.82)	(-0.56)	(-0.92)	(-0.62)
InvTr		0.075	0.081*	0.105**	0.077*
		(1.61)	(2.42)	(3.05)	(2.32)
InvTr x Low US UN vote agreement		-0.013	-0.209***	-0.207***	-0.202***
		(-0.21)	(-4.20)	(-4.15)	(-4.02)
InvTr x Middle US UN vote agreement		0.014	-0.006	0.022	-0.009
		(0.24)	(-0.13)	(0.50)	(-0.20)
NRC return differential				1.612	
				(1.48)	
InvTr x NRC return differential				-6.354**	
				(-3.10)	
US shadow rate					0.072
					(0.20)
InvTr x US shadow rate					1.056
					(1.48)
Constant	0.494***	0.490***	0.546***	0.542***	0.553***
	(14.46)	(13.43)	(14.07)	(13.94)	(14.14)

Is this a large effect?

Geopolitics

- Common factor? – countries that are geopolitically distant from US have worse access to liquidity or are subject to bigger liquidity shocks

- Financial sanctions by US have similar but weaker (statistically) effects

- Comparison to results in Chinn-Frankel-Ito

USD, EUR, GBP, JPY, CNY panel

Table 3: Pooled Regression: Major Currency Share in FX reserves (simple ratios)

	Baseline (1)	Baseline (2)	Baseline (3)	Baseline (4)	Baseline (5)
Share(t-1)	0.902	0.893	0.893	0.892	0.893
	(0.018)***	(0.019)***	(0.019)***	(0.020)***	(0.019)***
	(0.035)*	(0.036)*	(0.036)*	(0.041)*	(0.038)*
NEER vol	-0.774	-0.708	-0.708	-0.665	-0.704
	(0.335)**	(0.343)**	(0.344)**	(0.350)*	(0.349)**
Inflation diff.	-0.064	-0.019	-0.016	-0.020	-0.020
	(0.221)	(0.221)	(0.216)	(0.220)	(0.220)
Share of trade w Big5	0.053	0.055	0.056	0.055	0.055
	(0.014)***	(0.014)***	(0.014)***	(0.014)***	(0.014)***
Anchor Currency	0.036	0.028	0.028	0.028	0.028
	(0.007)***	(0.007)***	(0.007)***	(0.007)***	(0.007)***
FX turnover, loc	0.056	0.045	0.045	0.039	0.044
	(0.066)	(0.067)	(0.067)	(0.065)	(0.067)
Political distance with US		0.011	0.011	0.011	0.011
		(0.005)**	(0.005)**	(0.005)**	(0.005)**
Political distance with Euro area		-0.009	-0.009	-0.009	-0.009
		(0.004)**	(0.004)**	(0.004)**	(0.004)**
Political distance with JP		-0.002	-0.002	-0.002	-0.002
		(0.002)	(0.002)	(0.002)	(0.002)
Political distance with UK		-0.001	-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)
Political distance with CH		-0.004	-0.004	-0.004	-0.004
		(0.004)	(0.004)	(0.004)	(0.004)
Sanctions by big-5			-0.000		
			(0.003)		
Trade sanctions by big-5				0.005	
				(0.010)	
Financial sanctions by big-5					0.000
					(0.004)
N	3,140	3,060	3,060	3,060	3,060
Adj. R2	0.97	0.97	0.97	0.97	0.97
# of countries	56	54	54	54	54
Years covered	1999 - 2022	1999 - 2022	1999 - 2022	1999 - 2022	1999 - 2022

USD, EUR, GBP, JPY, CNY panel

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Political distance with US		0.011	0.011	0.011	0.011
		(0.005)**	(0.005)**	(0.005)**	(0.005)**
Political distance with Euro area		-0.009	-0.009	-0.009	-0.009
		(0.004)**	(0.004)**	(0.004)**	(0.004)**
Political distance with JP		-0.002	-0.002	-0.002	-0.002
		(0.002)	(0.002)	(0.002)	(0.002)
Political distance with UK		-0.001	-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)
Political distance with CH		-0.004	-0.004	-0.004	-0.004
		(0.004)	(0.004)	(0.004)	(0.004)
Sanctions by big-5			-0.000		
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Political distance with UK		-0.001	-0.001	-0.001	-0.001
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Source: Chinn, Frankel and Ito (unpublished)

US Financial Sanctions Effect

Table 2-1: USD Share in FX reserves (simple ratios)

	Baseline (1)	Baseline (2)	Baseline (3)	Baseline (4)	Baseline (5)
Share ($t-1$)	0.890	0.879	0.879	0.878	0.878
	(0.022)***	(0.022)***	(0.022)***	(0.022)***	(0.022)***
GDP ratio	-0.097	-0.098	-0.104	-0.092	-0.111
	(0.111)	(0.115)	(0.132)	(0.104)	(0.115)
ER volatility	-3.253	-3.334	-3.378	-3.248	-3.546
	(1.259)**	(1.313)**	(1.368)**	(1.260)**	(1.329)**
Inflation diff.	-0.635	-0.523	-0.567	-0.530	-0.545
	(1.295)	(1.336)	(1.343)	(1.318)	(1.338)
Share of trade w US	0.072	0.078	0.077	0.077	0.079
	(0.019)***	(0.020)***	(0.020)***	(0.019)***	(0.020)***
USD as Anchor	0.042	0.036	0.036	0.036	0.035
	(0.010)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
FX turnover, location	0.284	0.224	0.216	0.224	0.214
	(0.390)	(0.397)	(0.411)	(0.397)	(0.393)
Political distance US		0.010	0.010	0.010	0.011
		(0.005)*	(0.005)*	(0.005)*	(0.005)**
US_sanctions			0.001		
			(0.007)		
US_trade				0.004	
				(0.019)	
US_financial					-0.006
					(0.009)
N	935	896	896	896	896
Adj. R2	0.89	0.89	0.89	0.89	0.89
# of countries	56	54	54	54	54
Years covered	1999 - 2022	1999 - 2022	1999 - 2022	1999 - 2022	1999 - 2022

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Source: Chinn, Frankel, Ito (2024)

Comments on Geopolitics

- The USD is unique in having less aligned countries holding more dollars

- In this sense, the USD is like gold (e.g., Arslanalp, Eichengreen, Simpson-Bell, *JIE* 2024)

- The poor results for financial sanctions might be because (i) the US imposes financial sanctions on countries that are sensitive/vulnerable (e.g., "smart sanctions"), or (ii) we don't have enough of a sample (2022 is not in our sample).

Conclusions

- Important stylized fact: Change in the USD share is driven by a few countries with large and/or rapidly growing reserves

- Total reserves are more sensitive to relative returns when there is a large investment tranche (defined using conventional 3 months imports standard)

- The USD share-political alignment story: It's complicated.