Capital Flow Cycles: A Long, Global View

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Roadmap

- An encompassing database on international capital flows back to 1815 (where possible, gross and net)
- Globalization and the big picture:
 - capital flows
 - commodity prices,
 - interest rates at financial centers
 - volatility and risk aversion
 - Global default waves
- The capital flow cycle-global factors nexus: 19^{th -} 21st centuries
- The COVID-19 pandemic, capital flows, and risk in historical perspective

The Global Capital Flow Database, 1815-2018

1918 - 2018: net flows using current account (CA) and reserves (gold and FX)

Construct capital account from BOP identity:

 $CA + KA + \Delta RA \equiv 0$

- Interwar: UN / League of Nations data for 34 countries
- **Post-WW2:** Constructed series for 61 capital-importing countries and 7 capital exporters (some series back to 1800s)
- Eurozone post-1999: incorporate Target2 as reserves to capture within-EZ capital flows

1815-1914: gross flows based on bond issuance

- <u>1869-1914</u>: UK capital exports to 25 countries Stone (1999)
- <u>1815-1868</u>: sovereign bond issuance in London, 38 countries, own data, multiple sources

Other data and ongoing work

- Wider coverage from 61 to 145 countries from , 1980-2018
- Non-oil primary commodity prices, 1790-2019, using Gayer Rostow and Schwartz, Boughton, IMF
- Constructed "VIX proxies" for UK and US equities 1800-2019 (also CBOE VIX 1990-2019). Thompson Reuters, Eikon (2019), Schwert (1990), Thomas and Dimsdale (2017), S&P, FTSE
- Nominal/real short-/long-term interest rates, equity returns, in financial centers
- Chronologies of select relevant regulation/debt management in financial centers
- New and existing sovereign defaults
- "Secondary" financial centers –integrating the expanding role of China's overseas lending (Horn, Reinhart, and Trebesch, 2019)
- In progress:
- Integrating gross flows (US, 1920-1930, bank loans 1970-1980 (Stallings), post-1990 data e.g. Forbes and Warnock). UN data for 1950s-1970s
- Analysis of the "central bank offset" of emerging market in the 21st century

Globalization and the big picture

Capital flows Capital market integration Cross-border co-movement Real commodity prices Real interest rates at financial centers The VIX and the new RRT VIX proxy: volatility and risk aversion Global default waves: New defaults China's overseas lending and hidden defaults

Capital flow cycles: Magnitudes, 1815-2018



Capital flow cycles: Incidence of cross border flows (How "global" is "global"? Capital mobility matters)



Co-movement of capital flows across countries

Factor Analysis and Principal Components, 1870-2018

1870 - 1	1914	1950 - 2018			
Percent		Percent			
Explained	Total	Explained	Total		
24%	24%	31%	31%		
20%	44%	15%	46%		
15%	59%	9%	55%		
	1870 - 1870 - 1870 - 1870 - 1870 - 1970 Explained 24% 20% 15%	1870 - 1914 Percent Explained Total 24% 24% 20% 44% 15% 59%	1870 - 1914 1950 - Percent Percent Explained Total Explained 24% 24% 31% 20% 44% 15% 15% 59% 9%		

 \rightarrow Not a WOW, but two factors explain almost ½ of the variation in "global" flows – now and then

Co-movement of the current account and central bank reserves across <u>countries</u>

Global factors are playing a significantly bigger role in central bank reserve fluctuations.

Factor Analysis and Principal Components, 1950-2018

Current ac	ccount	Reserves			
Percent		Percent			
Explained	Total	Explained	Total		
			•		
24%	24%	54%	54%		
16%	41%	15%	69%		
12%	53%	7%	77%		
	Current ad Percent Explained 24% 16% 12%	Current account Percent Total Explained Total 24% 24% 16% 41% 12% 53%	Current accountReservePercentPercentExplainedTotal24%24%16%41%12%53%7%		

Capital flows finance current account deficits, reserve accumulation or a combination of both (the mix shows a high variance across countries and time)

Real non-oil commodity cycles: 1790-2018 Distinguishing Cycles from super-cycles (boom-bust)



Oil and Non-oil real commodity prices: 1791-2020

1790 - 1850: Gayer, Rostow, and Schwartz 1854-1979: Boughton (IMF index composition) 1980-2019: IMF WEO



Financial center real central bank short-term interest rate, 1815-2020

(3-year moving average)



Volatility and Risk Aversion CBOE VIX and VIX proxy:1885:2-2020:5



Sources: Schwert (1990), Thomson Reuters EIKON (2019), FRED. Note: Correlation of CBOE VIX and RRT VIX proxy, 1990-2020 is 0.89. VIX proxies for UK and US were also constructed at an annual frequency for the full 1815-2018 sample.

Reinhart, Reinhart, Trebesch

Commodity and capital flow "double busts" and sovereign defaults—which brings us to the *curious case of the missing defaults post 2015*



Double and Triple Busts and the "missing" defaults

In the latest episode the "busts" have been sequential: commodity prices \downarrow 2011-2015 (another round is currently unfolding) and capital flows \downarrow 2015-2018 (ongoing)

Double and triple busts: Capital flows, real commodity prices,							
	and real sho	rt-term intere	st rates, 1815 -	2018			
Double bust	Capital flow	Commodity	Interest Rate	Share of Countries			
episodes	Bust	Bust	Spike (real)	in Default			
				(in peak year)			
	А	Il countries, 1	815-1965				
1824 - 1828	yes	yes	yes	37.5			
1889 - 1894	yes	yes	no	20.9			
1914 - 1918	yes	yes	yes	19.6			
1929 - 1933	yes	yes	yes	49.1			
	Emerging markets excluding China						
1982 - 1991	yes	yes	yes	47.1			
2015	yes	yes	no	8.7			

The unfolding 2020 bust is discussed later...

Reinhart, Reinhart, Trebesch

Chinese debt claims on the rest of the world (including asset purchases by PBOC and swap lines)



Some of the *missing defaults* were NOT missing these credit events took the form of the restructuring of official Chinese loans



Source: Horn, Reinhart, and Trebesch (2019)

The capital flow cycle-global factors nexus: 19th - 21st centuries

1820s: The first EM sudden stop and default wave

1815-1913: Debt conversions and long rates, global incidence of defaults as the main global capital flow drivers

1921-1938: Spiking volatility and a new global default wave correlate with the capital flow sudden stop

1951-1975, the perils of aggregation, part I: Advanced and emerging economies capital flow response to global factors diverge

1976-2018, perils of aggregation, part II: In the modern era, aggregating central bank flows (reserve changes) with the private sector and government (current account) obscures how differently they respond to global factors, as modern central banks *lean against the wind*.

Capital flows and global factors, 1815-2018 main takeaways

Reinhart, Reinhart, Trebesch

There is a global cycle in capital flows

Large common component, co-movement across countries—but there are important differences between AE and EM cycles and the role of global factors

The global cycle in real commodity prices also influences capital flows

But commodity cycles are **more frequent** (22 cycles), although major cycles are rarer

This relationship is stronger for EMs

Global financial factors are significant, but relationships are time-varying

Interest rates in financial centers: Importance of short versus long rates varies (long rates more important in the 19th century). In the modern era, short rates impact reserve changes in EMs (lower rates are associated with central bank reserve accumulation— an official capital outflow

VIX proxy: Negative and significant correlation post WWI with all flows but only with EM flows post WWII.

Global share of new defaults: Global default spikes correlate with all flows 1870-1938 but only with FM flows subsequently

The first modern "search for yield" and sudden stop episode: 1815-1834

The 10 countries are: Argentina, Brazil, Chile, Colombia, Greece, Mexico, Peru, Portugal, Russia, and Spain



Capital flows & long rates: 1815-1869

The secular decline in long rates and volatility in real rates in the UK drove the new wave of overseas lending in the 2nd half of the 19th century. Debt conversions in the UK helped foster the search for yield in the periphery



External factors and gross flows, 1815-1913 pairwise correlations

		G	ross capita	i flows, all o	countries	% OT UK C	JDP, 3-yr sum				
	Short-t	erm intere	est rate	Long-te	erm intere	st rate	Conversion	Conversion UK VIX Defaults			
	nominal	real	3-yr MA	nominal	real	3-yr MA	coupon path	proxy	(in %)	% ch.	
1815-1913				-0.436			-0.590	-0.055	-0.398	0.152	
1815-1869							-0.283	-0.170	-0.201	0.132	
1870-1913		-0.248	-0.357		-0.248	-0.400	-0.447	-0.193	-0.623	0.118	
			Nur	nber of sov	ereign iss	suers, 3-yr	sum				
1815-1913	-0.055			-0.651			-0.715		-0.353	0.120	
1815-1869				-0.237			-0.415		-0.335	0.107	
1870-1913			-0.444			-0.557	-0.720		-0.721	0.092	
Significan		long	hond r	atos th		non tr	aiectory	oflik	doht		
0.10%		IUIIG		ates, th	c cou	ponti	ajectory		ucut		
0.05%	i COI	nversi	ons, ar	id the s	hare o	of sove	ereigns in	defa	ult are		
0.01%	¹⁸ significantly correlated with gross flows in the expected										
	direction. These also correlate with the number of countries						tries				
	tapping global capital markets										

Crease constal flower all countries 0/ of LUK CDD 2 un anno

Net flows: 1921-1938

The great interwar capital flow sudden stop and surge in new defaults



The surge in the VIX and new defaults in this episode are of historic proportions and these are highly correlated with the draconian capital flow reversal of the early 1930s

Net capital flows, all countries % of UK GDP, 1921-1938

			Long-term i	Long-term i US VIX		RCI	
			real rate	proxy	(in %)	% ch.	
Net fl	OWS		-0.339	-0.480	-0.874	-0.067	
Net fl	ows, 3-y	r sum		-0.233	-0.848	-0.323	
	Pairwise co Significanc	orrelations e					
	0.10%			RCI=In	dex of real com	modity prices	
	0.05%						

Pairwise c	orrelations	
Significand	e	/
0.10%		l
0.05%		
0.01%		(
		1

Net capital flows, 1951-1975, the perils of aggregation:

Advanced and emerging economies capital flow response to global factors diverge. Defaults and the VIX only correlate with EM flows... Changes in central banks' reserves correlate with global factors in the direction expected for EMs but not AEs

Net capital flows, current account and reserves % of US GDP, 1951-1975 Short-term interest rate Defaults US 10-year US VIX RCI ?? % ch. nominal 3-yr ch. real (in %) real proxy Net capital flows as a % of US GDP, 3-yr sum (\uparrow inflow) -0.458 -0.551 World -0.377 -0.561 0.309 -0.418 Advanced economies -0.457 -0.594 Emerging markets -0.171-0.535 -0.353 -Current account as a% of US GDP (个capital inflows), 3-yr sum World -0.608 -0.388 -0.374 Advanced economies -0.619 -0.561 -0.298 -0.386 -0.535 -0.362 Emerging markets Change in CB reserves as a % of US GDP (\uparrow =outflows) World Advanced economies Emerging markets -0.176-0.4140.527 --

Net capital flows, 1976-2018: (1) Aggregating AEs and EMs into a global capital flow measure is problematic (2) Within EMs merging private sector and government flows (current account) with official central bank flows (i.e., reserve changes) that *lean against the wind* is also misleading.

	i capital II		5 GDP, 197	0-2010		
	Short	t-term interes	strate	US VIX	CBOE VIX	RCI
	nominal	real	રુ-yr ch.	proxy	1990-2018	% ch.
World			-0.297		-0.390	-0.158
Advanced economies (AE)	-0.583	-0.431	-0.396		0.283	0.391
Emerging markets			0.175	-0.401	-0.376	-0.396
Emerging markets (ex Chind	n)			-0.309	-0.294	-0.422

Net conital flows 0/ aftis CDD 1076 2010



Change in central bank reserves, 1976-2018

• Global factors are largely uncorrelated to changes in AE reserves changes. Changes in reserve balances in AEs likely dominated by valuation effects.

• Different story for EMs. International interest rates, commodity price changes, and the incidence of sovereign default all correlate with fluctuations in EM FOREX reserves.

	Short-term interest rate			Long-term interest rate				Defaults	RCI
	nominal	real	3-yr ch.	*default	nominal	real	*default	(in %)	% ch.
World					-0.223	-0.223	-0.254		0.411
Advanced economies (AE)		-0.100)						-0.110
Emerging markets	-0.33	8	-0.362	-0.326	-0.346	-0.268		-0.253	0.545
Emerging markets (ex Chin	a)		-0.339	-0.350		-0.313	-0.326	-0.213	0.584

Change in CB reserves as a % of US GDP (\uparrow =outflows). 1976-2018

Pairwise cor	relations
Significance	The "modern" perils of aggregation
0.10%	• The "world aggregate" behaves more in line with EM patterns & not
0.05%	representative of AE pattern
0.01%	• \downarrow international interest rates \rightarrow \uparrow central bank FOREX reserves
	(i.e., an "official" upstream capital outflow, as in CLR, 1993, Alfaro,
	Kalemli Ozcan, Volosovych 2008 and 2014)

COVID, Crises, and Capital Flows in historical perspective

Recent developments: capital flows, commodity prices, the VIX and sovereign credit ratings

Major sudden stops: The 1930s and 2020

Capital flows to selected EMs, 2005:1-2020:3: Weekly Net Non-Resident Purchases of Stocks and Bonds (\$ billion) (Excludes Turkey and Mexico)



Stark differences and disturbing parallels of two major sudden stops

- The trigger in 2020 was a pandemic not financial excesses (although the latter are not entirely absent—soaring corporate indebtedness, rising external debts in EMs, US equity prices?)
- Diametrically opposed fiscal and monetary responses in both the financial centers and elsewhere

Disturbing parallels include:

Both episodes are truly global crises (1980s-EMs and 2008-2009 AEs)

Sharp declines in global commodity prices

Rising volatility (VIX discussion)

Swift contraction in global trade (WTO 2020 est. 13-32% drop)-rising protectionism

Wave of sovereign downgrades and a pick-up in new defaults (corporate and sovereign)—with more likely to follow

We have highlighted that prior to WWII global capital flows declined as the incidence of new defaults increased and that correlation was tightest in the interwar years. In the postwar, a significant correlation persisted for EMs but not AEs. The surging odds of defaults evident in credit rating changes certainly map onto the sudden stop in capital flows to EMs



Share of downward revised sovereign outlooks by major rating agencies, 1990:1-2020:5

Number of downgraded sovereigns, 1980:1-2020:5



Thank you