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} - 21^{st} 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

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

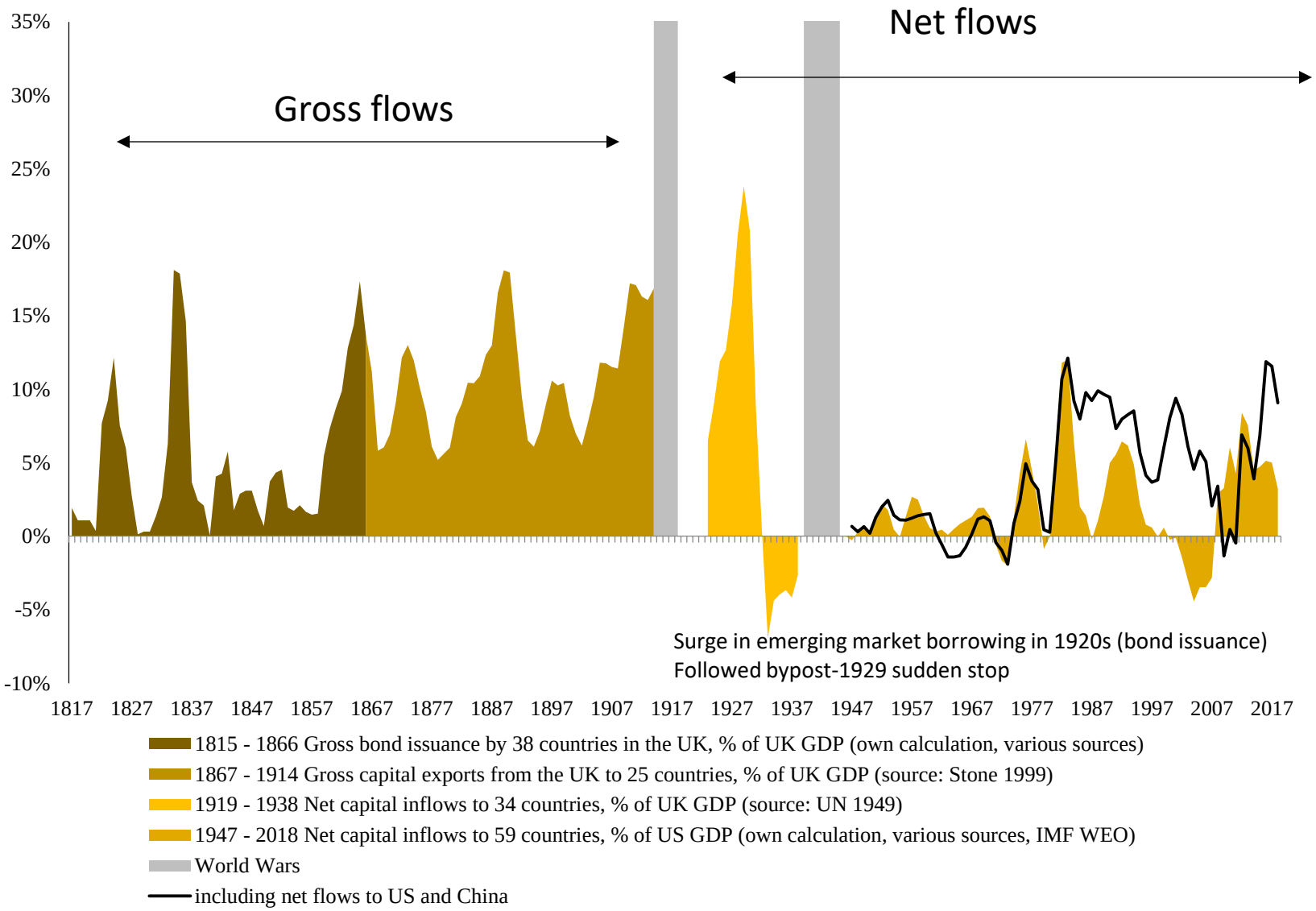
Other data and ongoing work

- 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

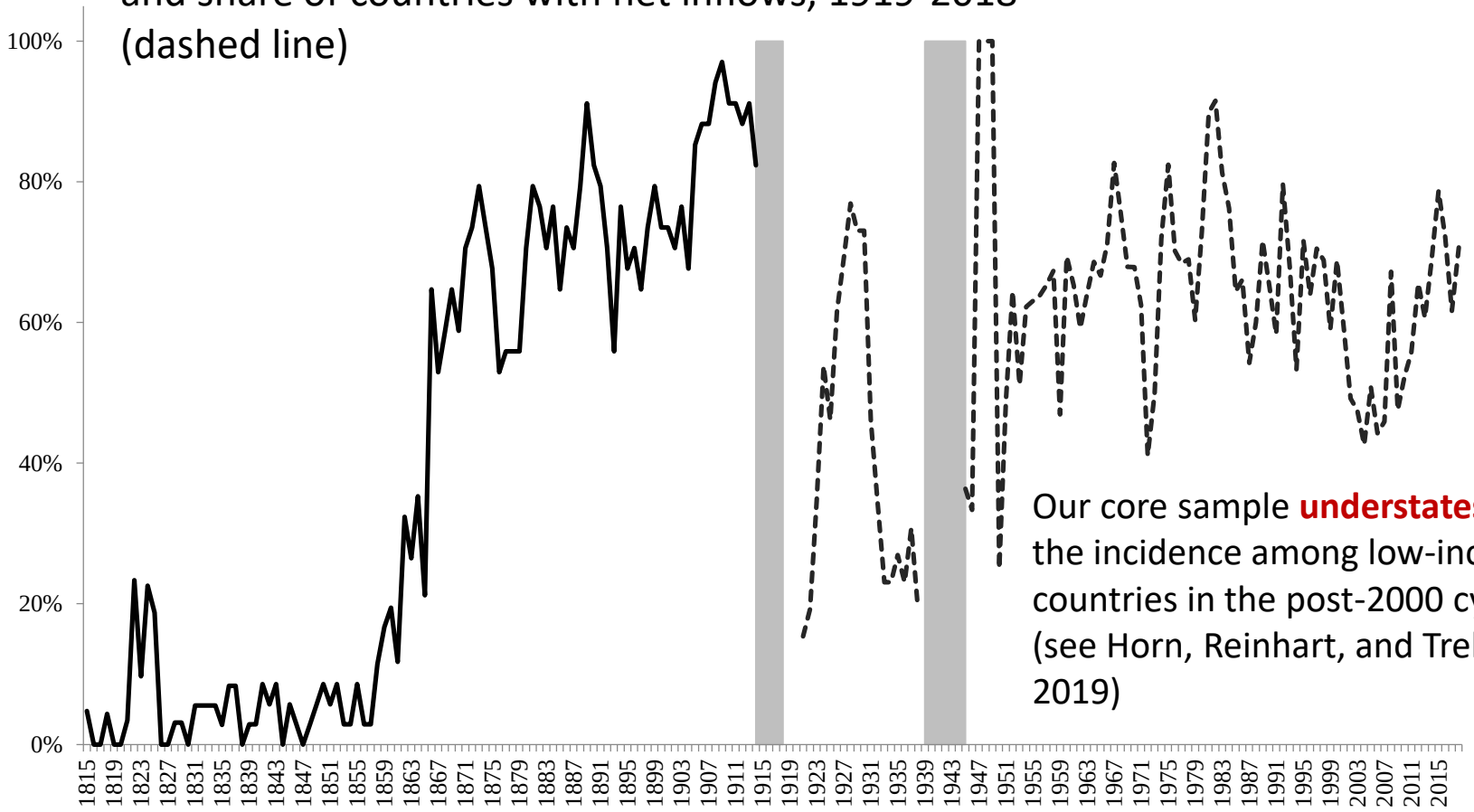
Capital flows
Capital market integration
Cross-border co-movement
Real commodity prices
Real interest rates at financial centers
The VIX and the new RRT VIX proxy: volatility and risk aversion
Global default waves: New defaults
China's overseas lending and hidden defaults

Capital flow cycles: Magnitudes, 1815-2018



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

Share of countries issuing at least one bond, 1815-1915
(solid line)
and share of countries with net inflows, 1919-2018
(dashed line)



Our core sample **understates** the incidence among low-income countries in the post-2000 cycle (see Horn, Reinhart, and Trebesch, 2019)

Co-movement of capital flows across countries

Factor Analysis and Principal Components, 1870-2018

Factor	1870 - 1914		1950 - 2018	
	Percent Explained	Total	Percent Explained	Total
First	24%	24%	31%	31%
Second	20%	44%	15%	46%
Third	15%	59%	9%	55%

→ 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 countries

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

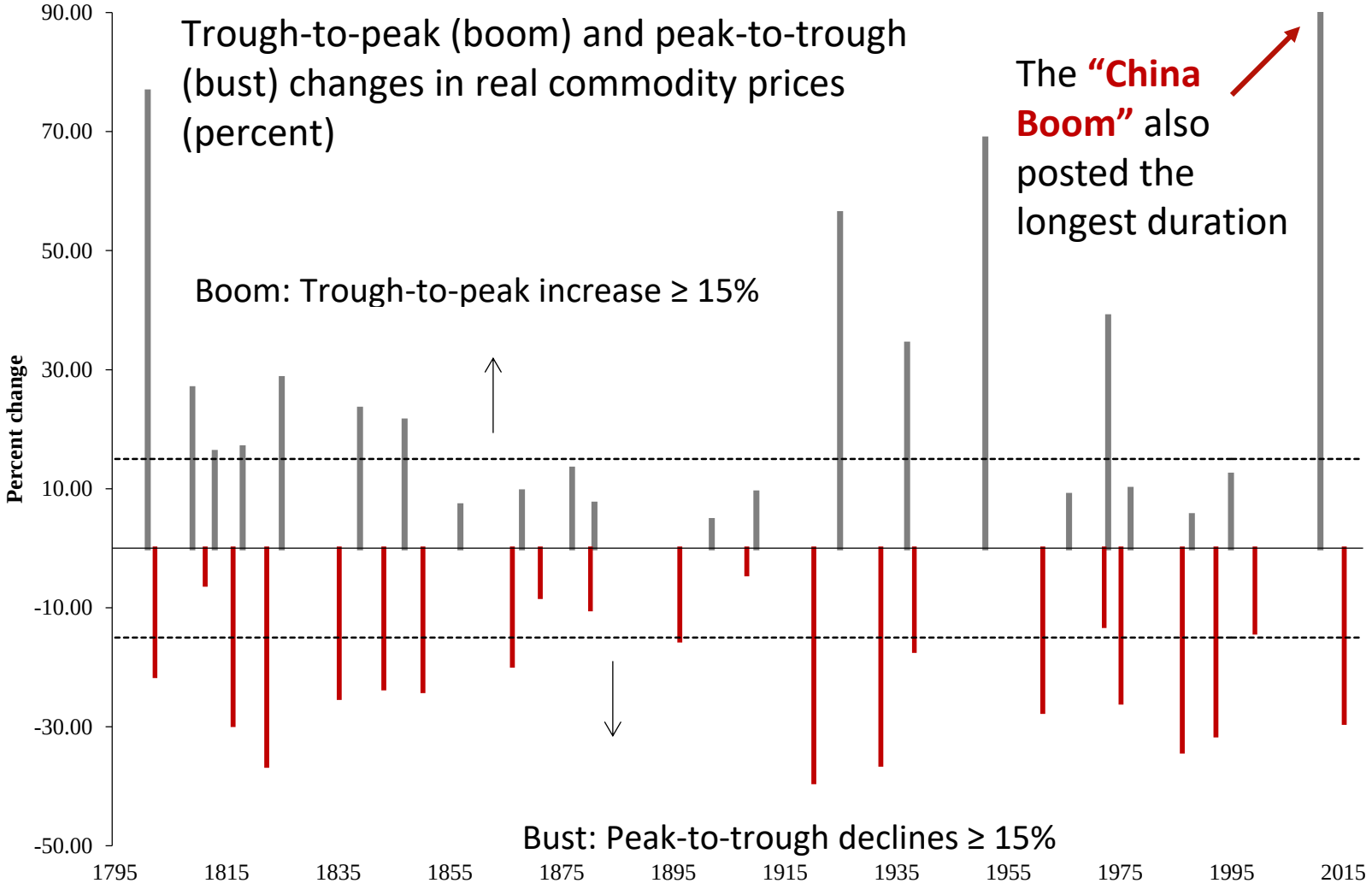
Factor Analysis and Principal Components, 1950-2018

	Current account		Reserves	
	Percent Explained	Total	Percent Explained	Total
First Factor	24%	24%	54%	54%
Second	16%	41%	15%	69%
Third	12%	53%	7%	77%

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

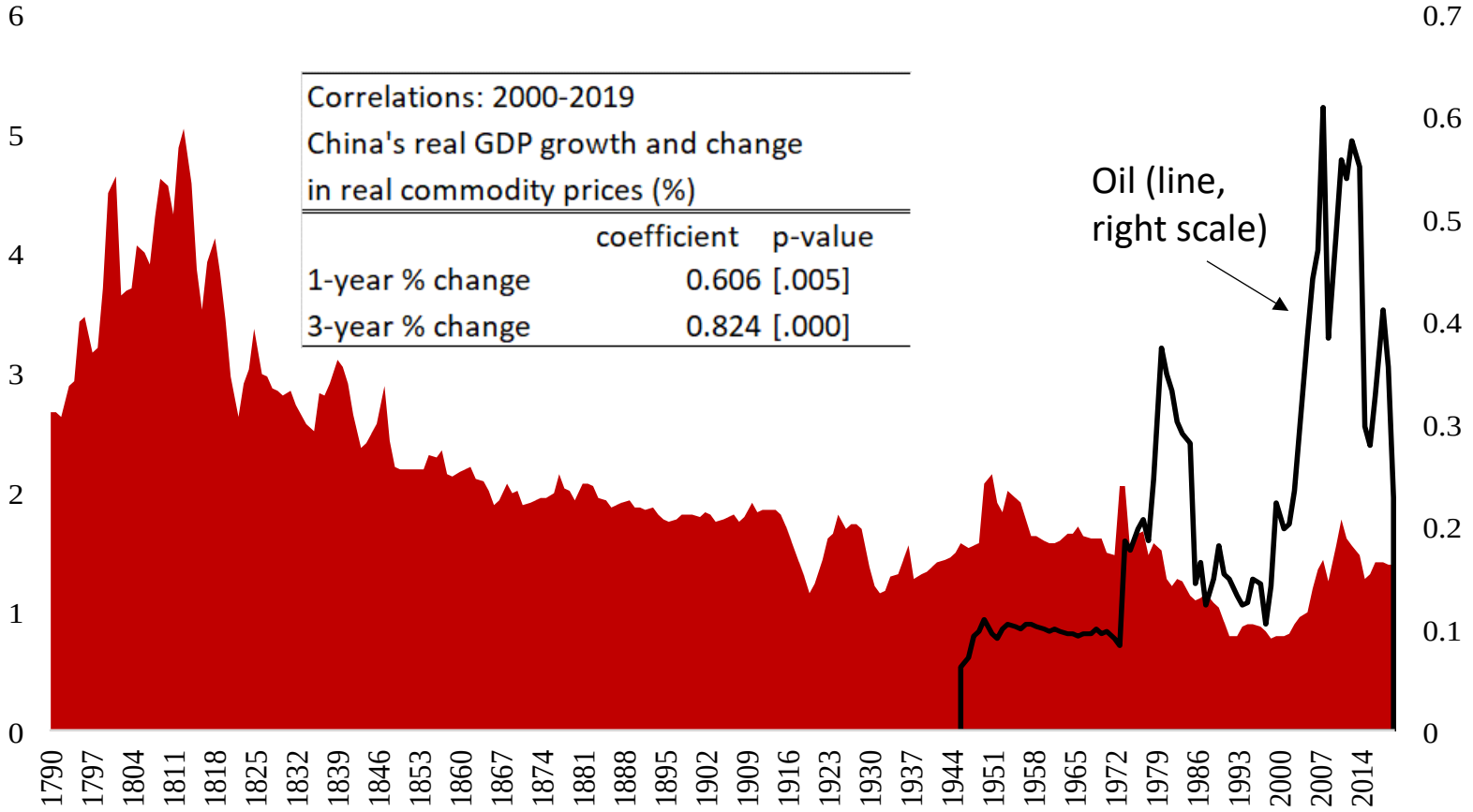
Real non-oil commodity cycles: 1790-2018

Distinguishing Cycles from super-cycles (boom-bust)



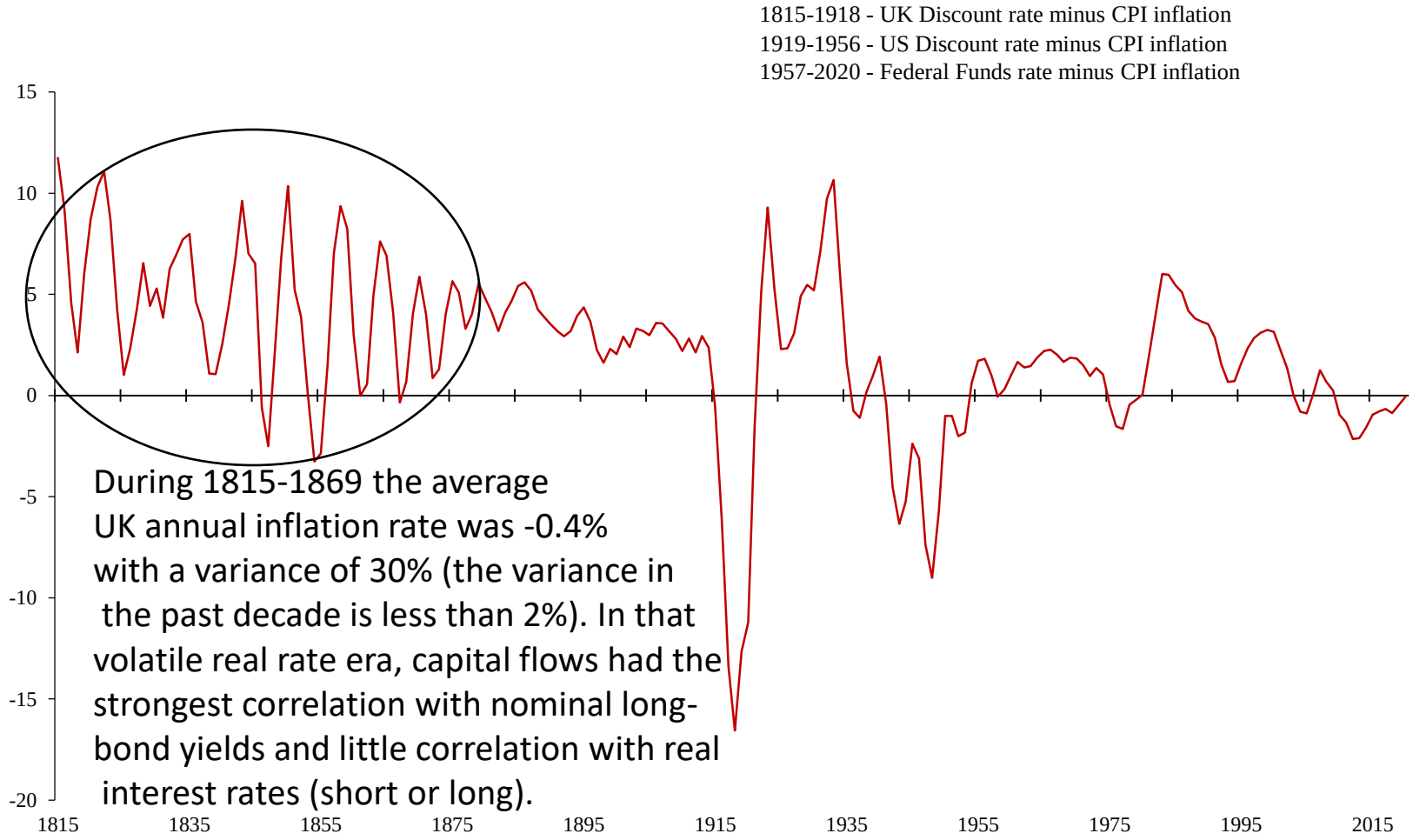
Oil and Non-oil real commodity prices: 1791-2020

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

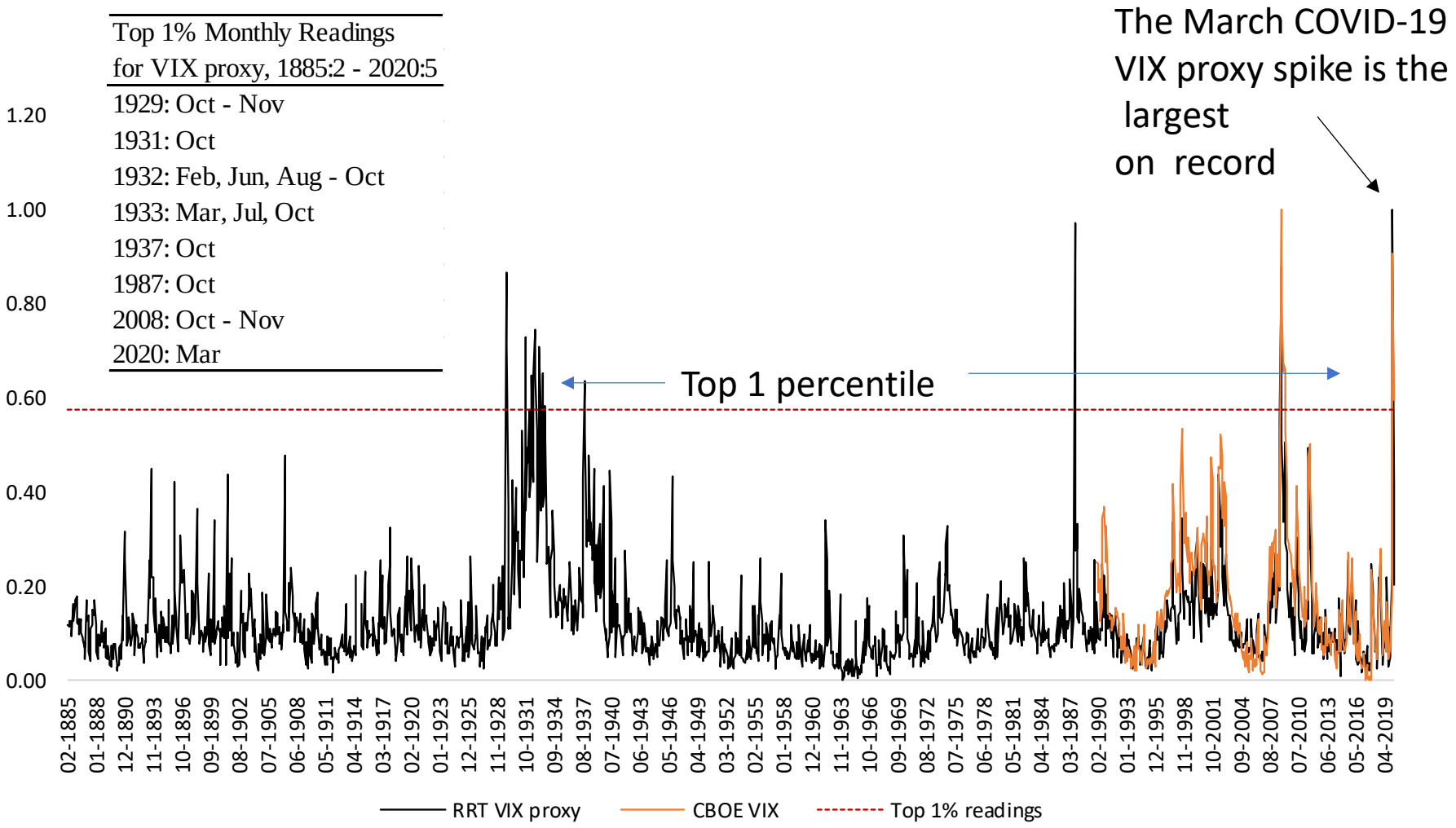


Financial center real central bank short-term interest rate, 1815-2020

(3-year moving average)

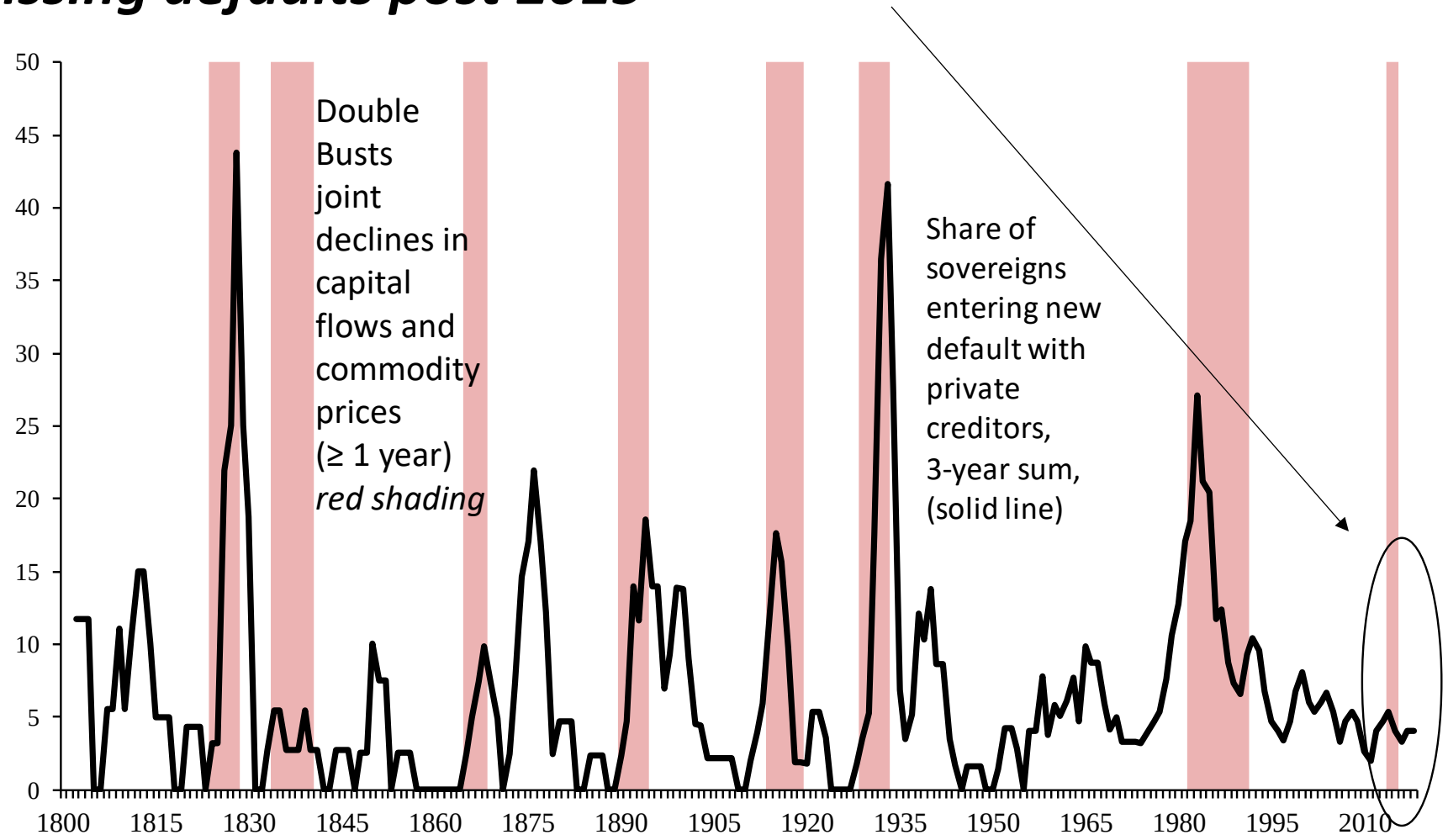


Volatility and Risk Aversion CBOE VIX and VIX proxy:1885:2-2020:5



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.

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

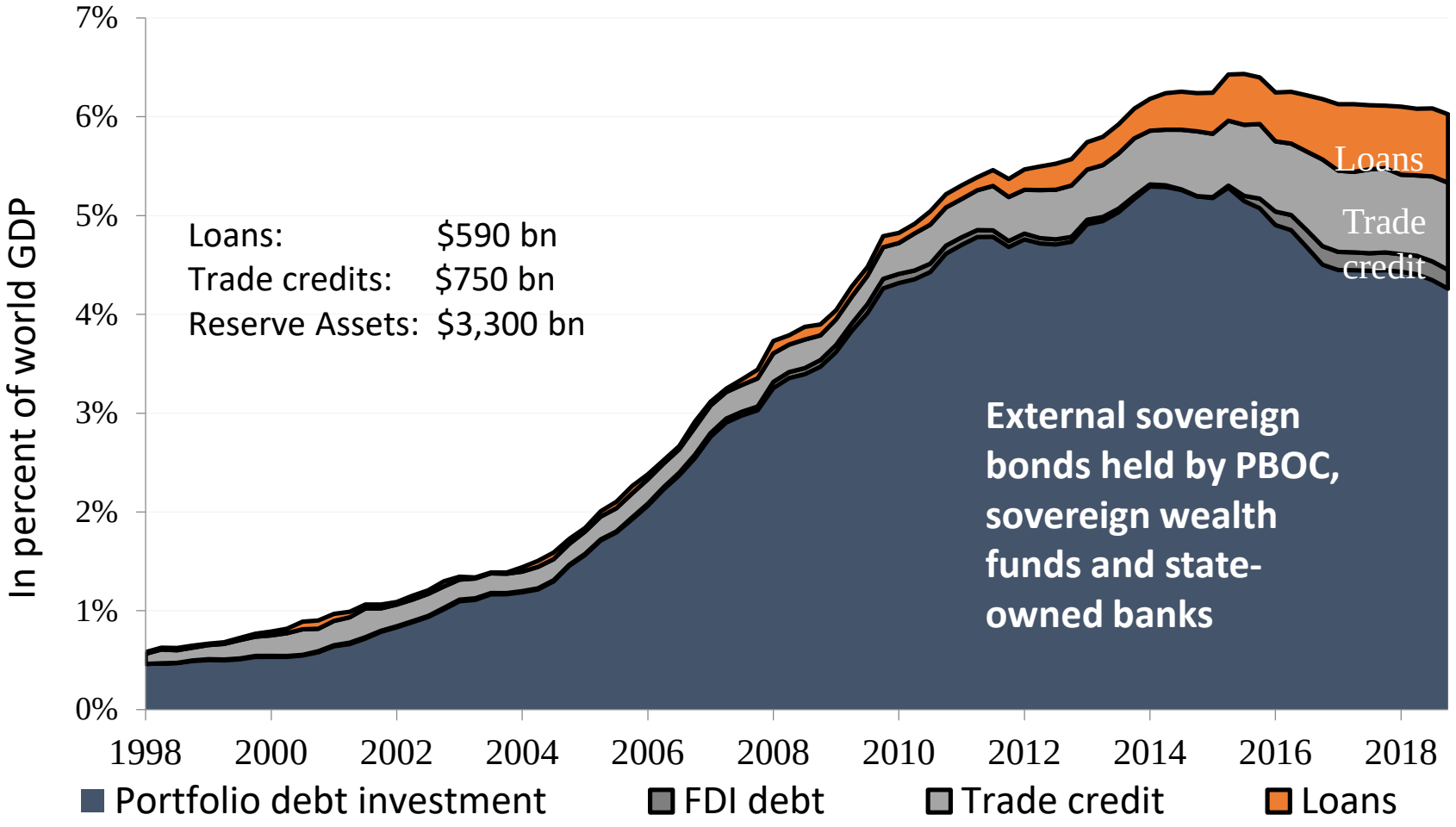
In the latest episode the "busts" have been sequential: commodity prices ↓ 2011-2015 (another round is currently unfolding) and capital flows ↓ 2015-2018 (ongoing)

Double and triple busts: Capital flows, real commodity prices, and real short-term interest rates, 1815 - 2018

Double bust episodes	Capital flow Bust	Commodity Bust	Interest Rate Spike (real)	Share of Countries in Default (in peak year)
All countries, 1815-1965				
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

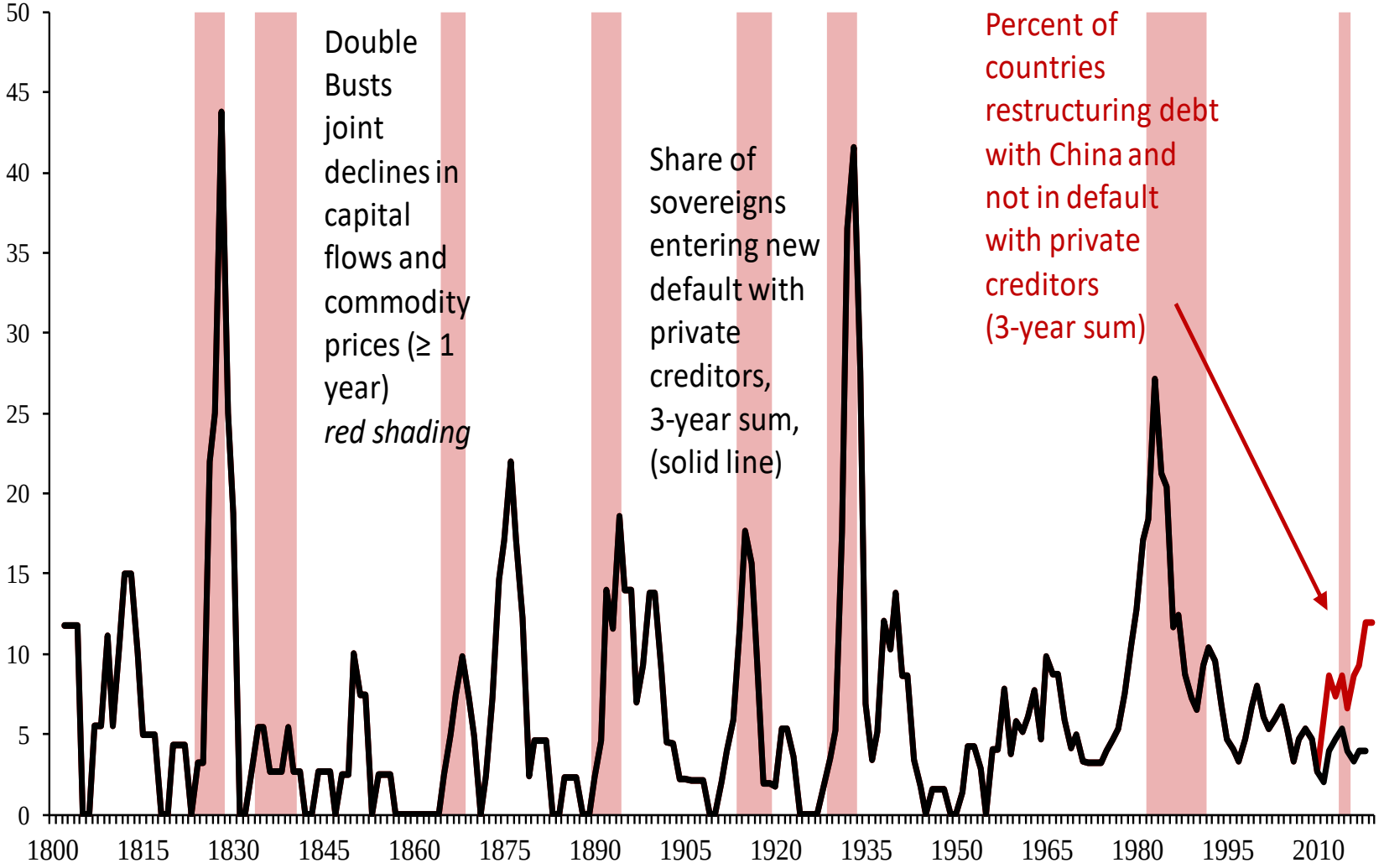
The unfolding 2020 bust is discussed later…

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



Source: Horn, Reinhart, Trebesch (2019)

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

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

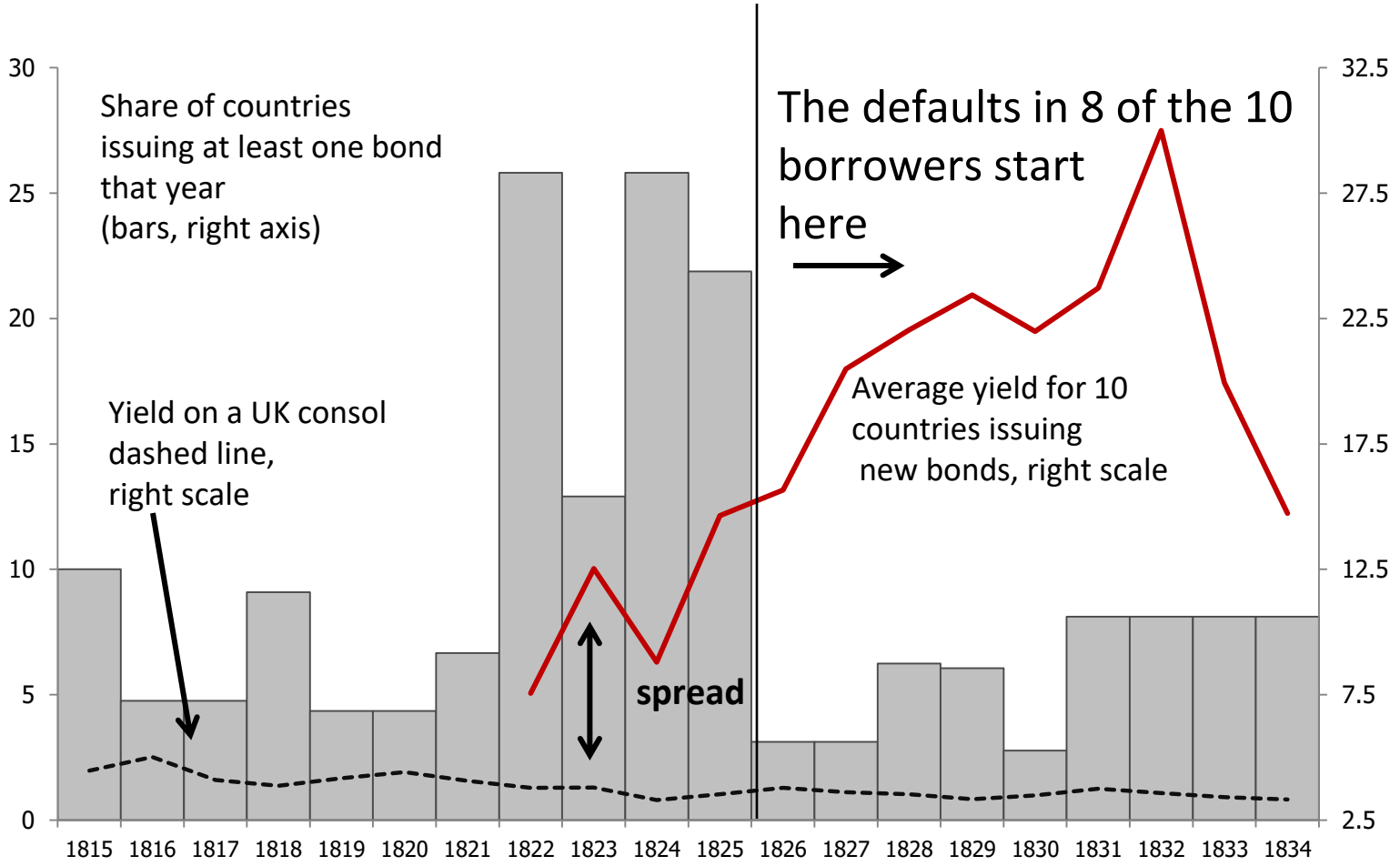
VIX proxy: Negative and significant correlation post WWI with all flows but only with EM flows post WWII.

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

Reinhart, Reinhart, Trebesch

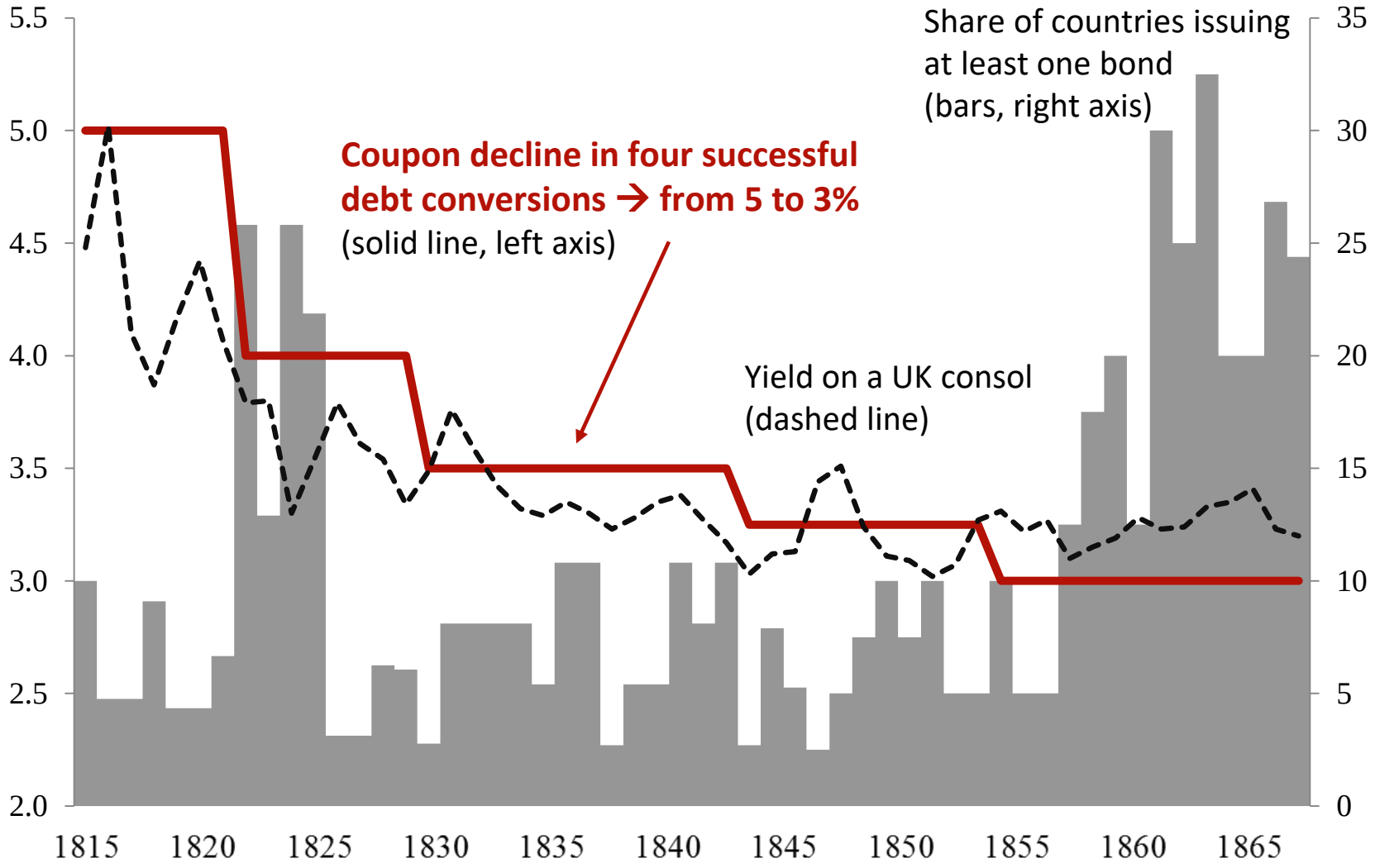
The first modern "search for yield" and sudden stop episode: 1815-1834

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

Gross capital flows, all countries % of UK GDP, 3-yr sum

	Short-term interest rate			Long-term interest rate			Conversion	UK VIX	Defaults	RCI
	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
Number of sovereign issuers, 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

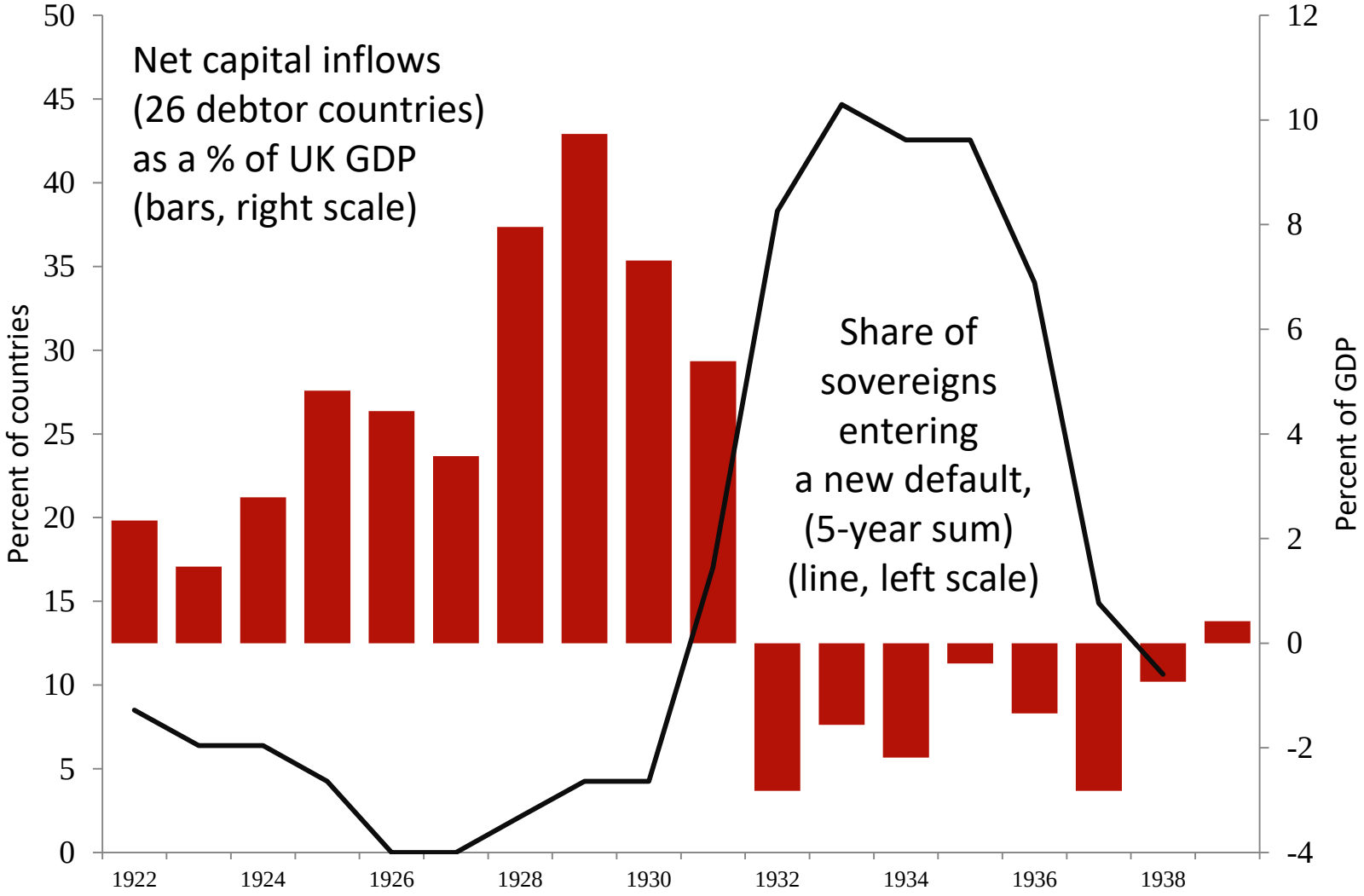
Significance

0.10%
0.05%
0.01%

UK long bond rates, the coupon trajectory of UK debt conversions, and the share of sovereigns in default are significantly correlated with gross flows in the expected direction. These also correlate with the number of countries tapping global capital markets

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 real rate	US VIX proxy	Defaults (in %)	RCI % ch.
Net flows	-0.339	-0.480	-0.874	-0.067
Net flows, 3-yr sum		-0.233	-0.848	-0.323

Pairwise correlations

Significance

0.10%

0.05%

0.01%

RCI=Index of real commodity prices

Pairwise correlations
Significance
0.10%
0.05%
0.01%

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			US 10-year	US VIX	Defaults	RCI
	nominal	real	3-yr ch.	real	proxy	(in %)	% ch.
Net capital flows as a % of US GDP, 3-yr sum (↑ inflow)							
World		-0.458	-0.377				-0.551
Advanced economies	-0.457	-0.594		-0.561	0.309		-0.418
Emerging markets	-0.171				-0.535		-0.353
-Current account as a% of US GDP (↑capital inflows), 3-yr sum							
World		-0.608	-0.388		--		-0.374
Advanced economies		-0.619		-0.561	--		-0.298
Emerging markets			-0.386		--	-0.535	-0.362
Change in CB reserves as a % of US GDP (↑=outflows)							
World					--		
Advanced economies					--		
Emerging markets				-0.176	--	-0.414	0.527

??

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.

Net capital flows % of US GDP, 1976-2018

	Short-term interest rate			US VIX	CBOE VIX	RCI
	nominal	real	3-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 China)				-0.309	-0.294	-0.422

Pairwise correlations
Significance
0.10%
0.05%
0.01%

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.

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

	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	-0.338		-0.362	-0.326	-0.346	-0.268		-0.253	0.545
Emerging markets (ex China)			-0.339	-0.350		-0.313	-0.326	-0.213	0.584

Pairwise correlations
Significance
0.10%
0.05%
0.01%

The "modern" perils of aggregation

- The "world aggregate" behaves more in line with EM patterns & not representative of AE pattern
- ↓international interest rates→ ↑ central bank FOREX reserves (i.e., an "official" upstream **capital outflow**, as in CLR, 1993, Alfaro, Kalemli Ozcan, Volosovych 2008 and 2014)

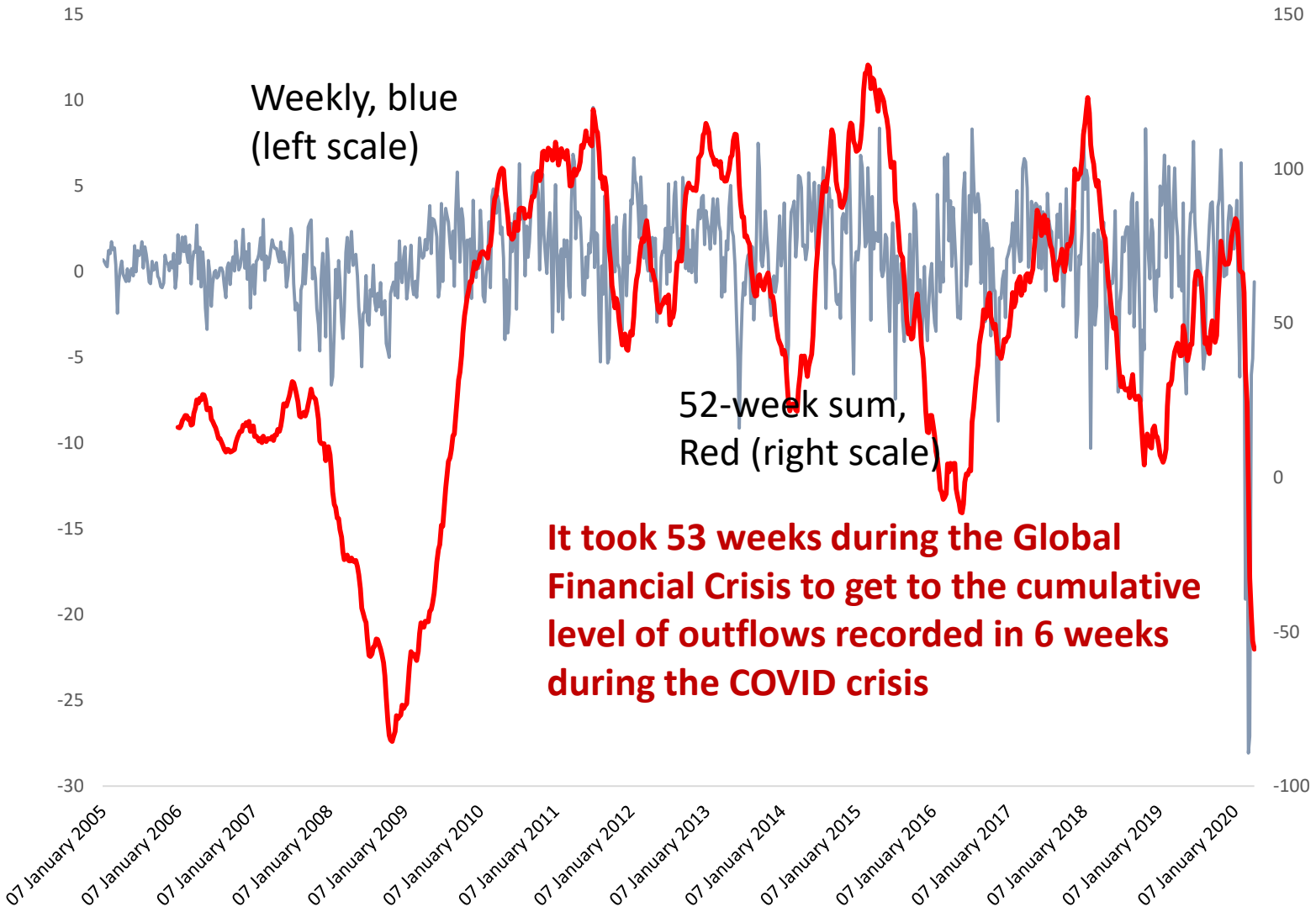
COVID, Crises, and Capital Flows in historical perspective

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)



Source: IIF.

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)

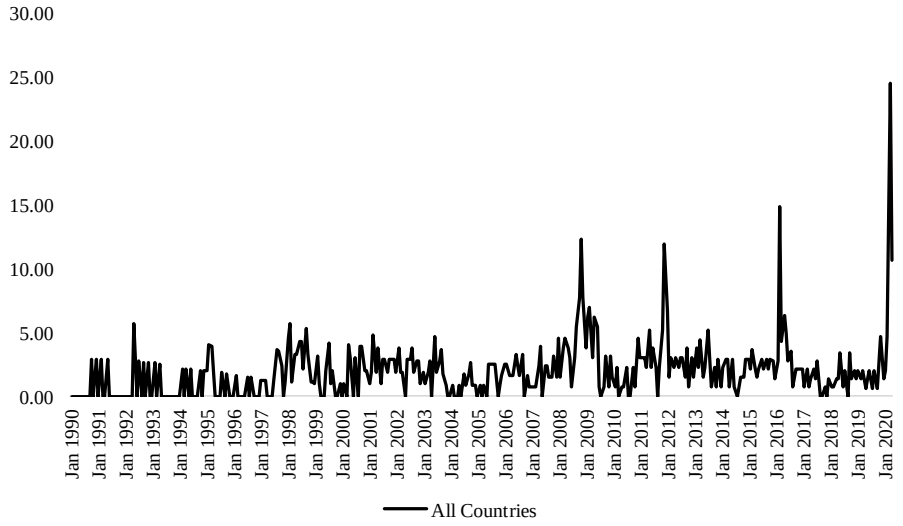
Sharp declines in global commodity prices

Rising volatility (VIX discussion)

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

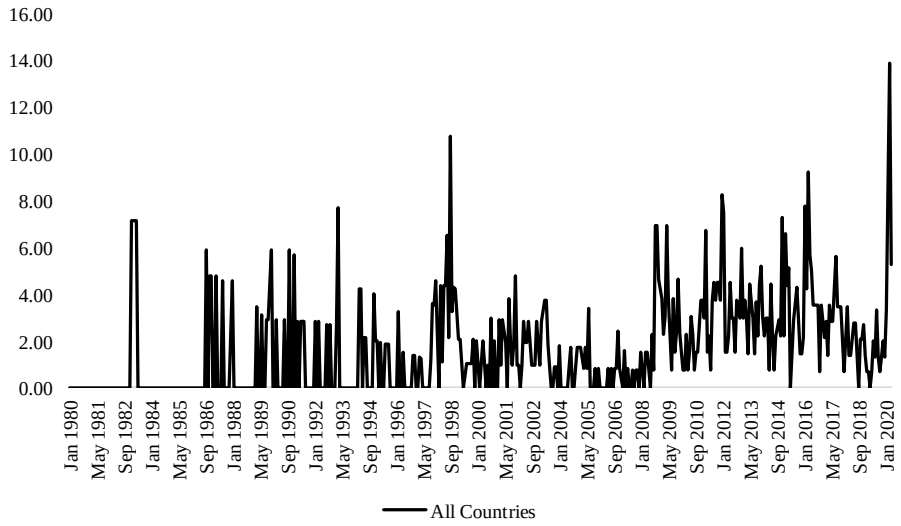
Wave of sovereign downgrades and a pick-up in new defaults (corporate and sovereign)—with more likely to follow

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 post-war, 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