The Rise and Fall of Global Currencies Over Two Centuries

Roger Vicquéry

Bank of England[1]

ESCB Cluster 2 Workshop
Bank of Greece
September 29, 2022

[1]The opinions expressed are my own and do not necessarily reflect those of the Bank of England and its committees.

A Turning Point in Monetary History?

Markets
The Big Take

Subscriber Only

How the Russia-Ukraine War Threatens the Dollar's Dominance

Credit Suisse strategist tells Bloomberg's Odd Lots podcast that the U.S. dollar has reached a critical inflection point.

Renminbi + Add to myFT

How the Ukraine war could boost China's global finance ambitions

Sanctions on Russia highlight Beijing's efforts to internationalise the renminbi

Overview

- This is a measurement paper, providing an historical perspective on current global dollar dominance and the future of the international monetary system.
- Follows a growing literature of long-run historical data contributions to international finance (Reinhart and Rogoff, NBER 2008; Jordà-Schularick-Taylor Dataset...).
- First product of a an extensive effort of foreign-exchange historical data collection at the weekly frequency since the 19th century.

Motivation

- Renewed interest in dollar dominance
  - Longstanding debate: Triffin Dilemma, exorbitant privilege.
  - New: DCP, Global Financial Cycle...
  - Newer: USD weaponisation, sanctions...
- What a transition out of dollar dominance would look like?
  - Winner takes-all vs. Multipolarity.
  - Euro, renminbi, private and/or multilateral digital currency.
- Is a multipolar IMS sustainable and/or desirable?
  - Outside the US, multipolarity seems desirable from a policy perspective.
  - Farhi and Maggiori (QJE 2018).
- Hard to get an empirical perspectives on these questions without looking at long run historical data...

Contribution

1. Largest historical dataset of FX at weekly frequency (London market since 1846).
2. A continuous measure - based on FX co-movements - of the relative dominance of global currencies, comparable over time, since 1825.
3. A systematic documentation of previous episodes of global currency competition, filling coverage gaps in the existing historical literature.
4. A quantification of the overall competition structure of the international monetary system over two centuries.

Summary of Results

- **Dollar dominance is an historical anomaly**, from a two centuries perspective.
  - Size and persistence of its lead vs. competing global currencies.
- The previous pound sterling hegemon dominance was frequently challenged by close competitors.
  - Rise of the franc in 1850s and 1930s, fall of the dollar end of 1920s...
- Interwar period is the sample global maximum of measured multi-polarity.
  - Classical gold standard competition levels are significantly lower.
- Positive correlation between levels of IMS competition and prevalence of financial crises, in line with Farhi and Maggiori (QJE, 2018).
  - This is however mostly driven by 1918-1939 and 1950-1973 sub-periods.

Outline

1. Literature Review
2. Data
3. Empirical Strategy
4. Results
   - Rise and Falls of Global Currencies
   - Overall IMS Architecture
5. Conclusion

Related Literature (1/2)

Two Views of the International Monetary System:

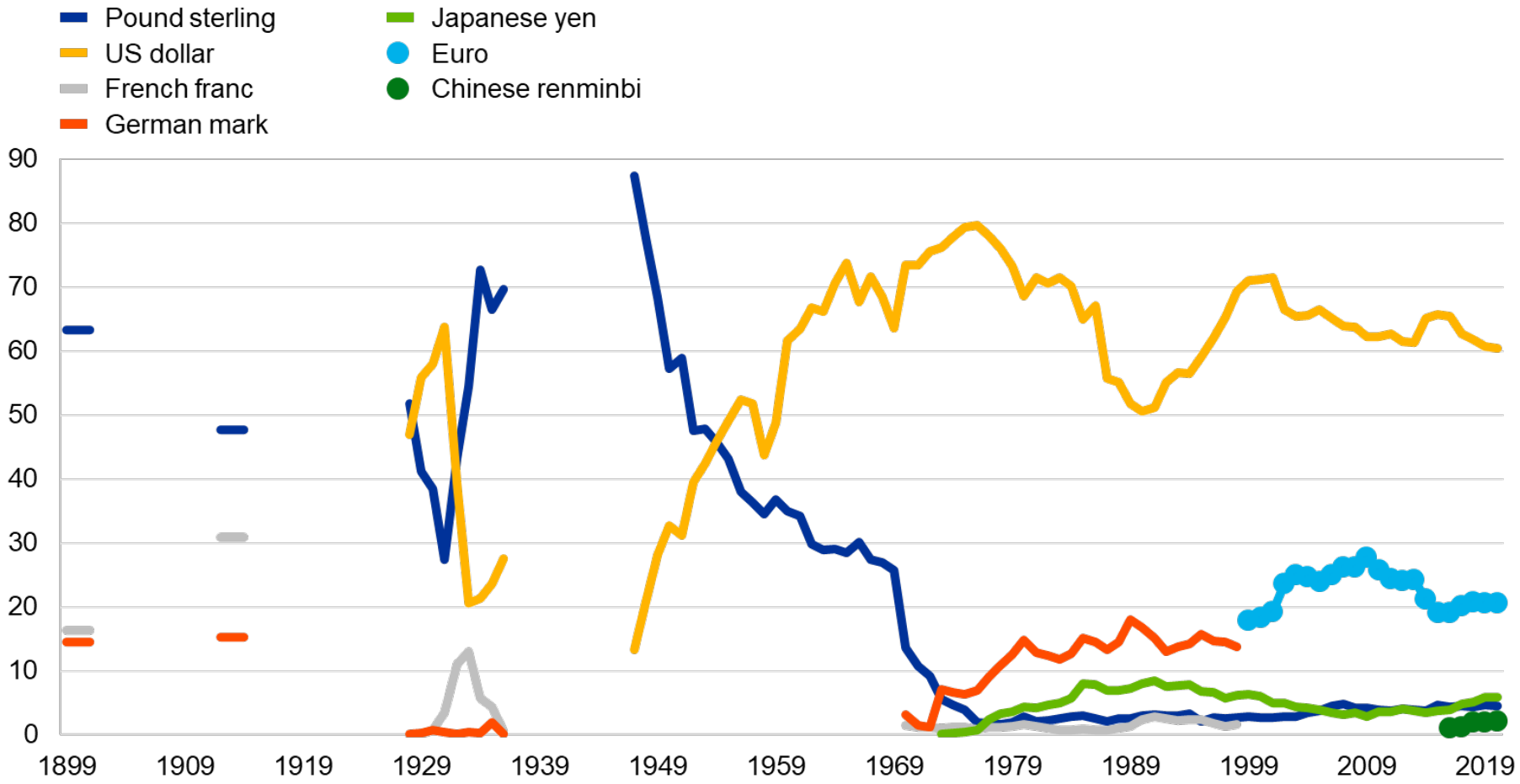
1. Farhi and Maggiori (QJE 2018), Gopinath and Stein (QJE 2021), Gopinath and Itskhoki (NBER 2021).
   - Strong IMS network externalities, winner-take all equilibrium, empirical evidence from USD hegemony.
   - IMS multipolarity unlikely to be stable, self-fullfilling run on competing safe assets.
2. Eichengreen et al. (2017), Carney (2019).
   - The IMS has historically been multipolar.
   - IMS stability conditional on policy coordination.
   - A more multipolar IMS is desirable given financial spillovers, scarcity of safe assets.

Related Literature (2/2)

1. Iltzetzki et al. (QJE 2019)
   - 1945-2020, monthly data.
   - Classification algorithm focused on correctly describing countries' exchange rate arrangements, based on narrative and quantitative data.
   - Winner takes all view of global currencies.
2. Ito and McCauley (JIMF 2020)
   - 1970-2020, monthly data.
   - Classification algorithm focused on relative influence of global currencies, based on currency co-movements.
   - Fuzzy view of global currencies (one country can be apportioned into several currency blocs).

This paper: weekly (monthly 1825-1846) data 1825-2020, algorithm based on currency co-movements, fuzzy view of global currencies.

Global Reserves Shares from Eichengreen-Mehl-Chitu



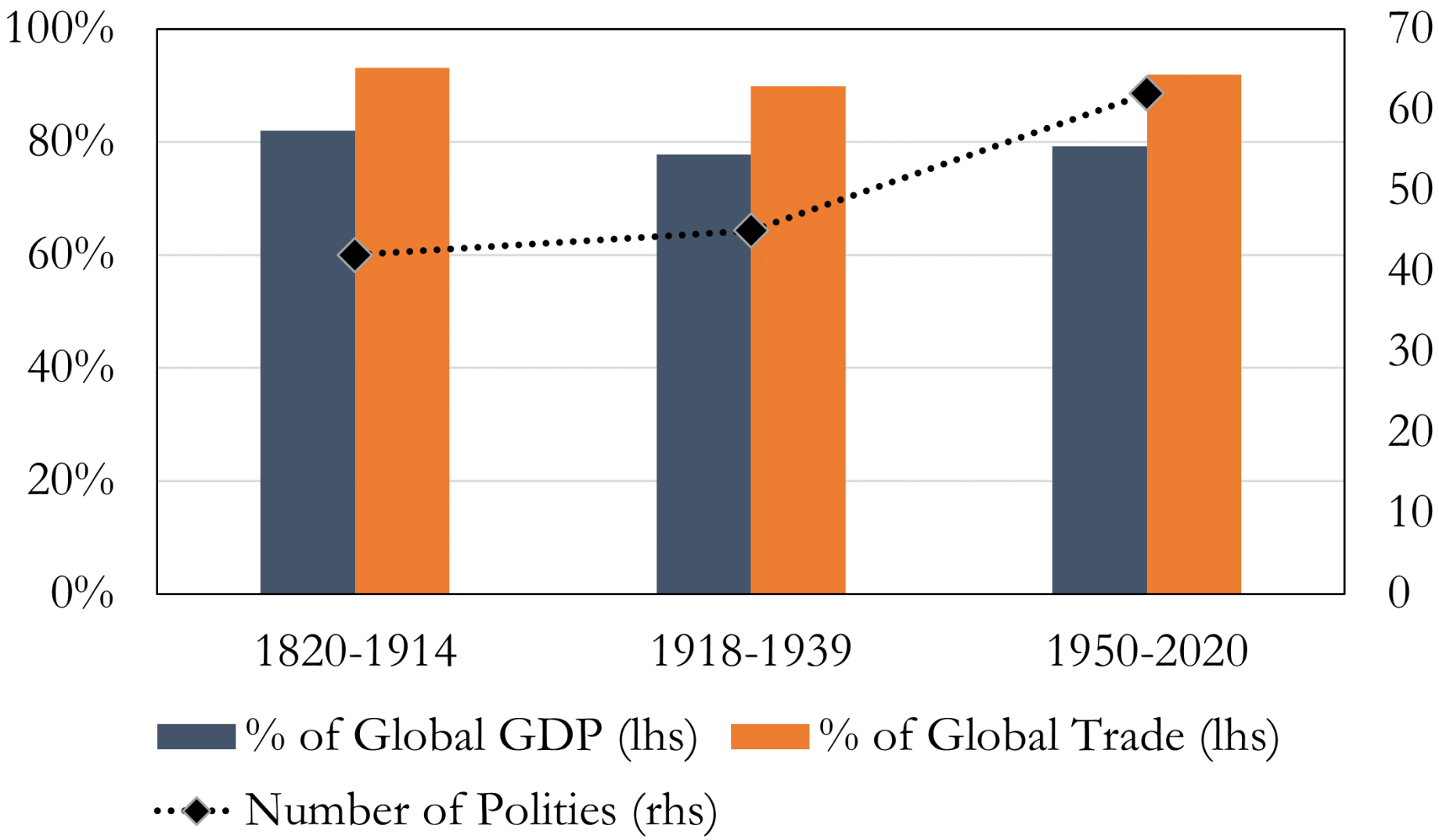
New Foreign-Exchange Data

Extensive work (hundreds of hours...) of manual digitisation of London FX market prices from original printed sources.

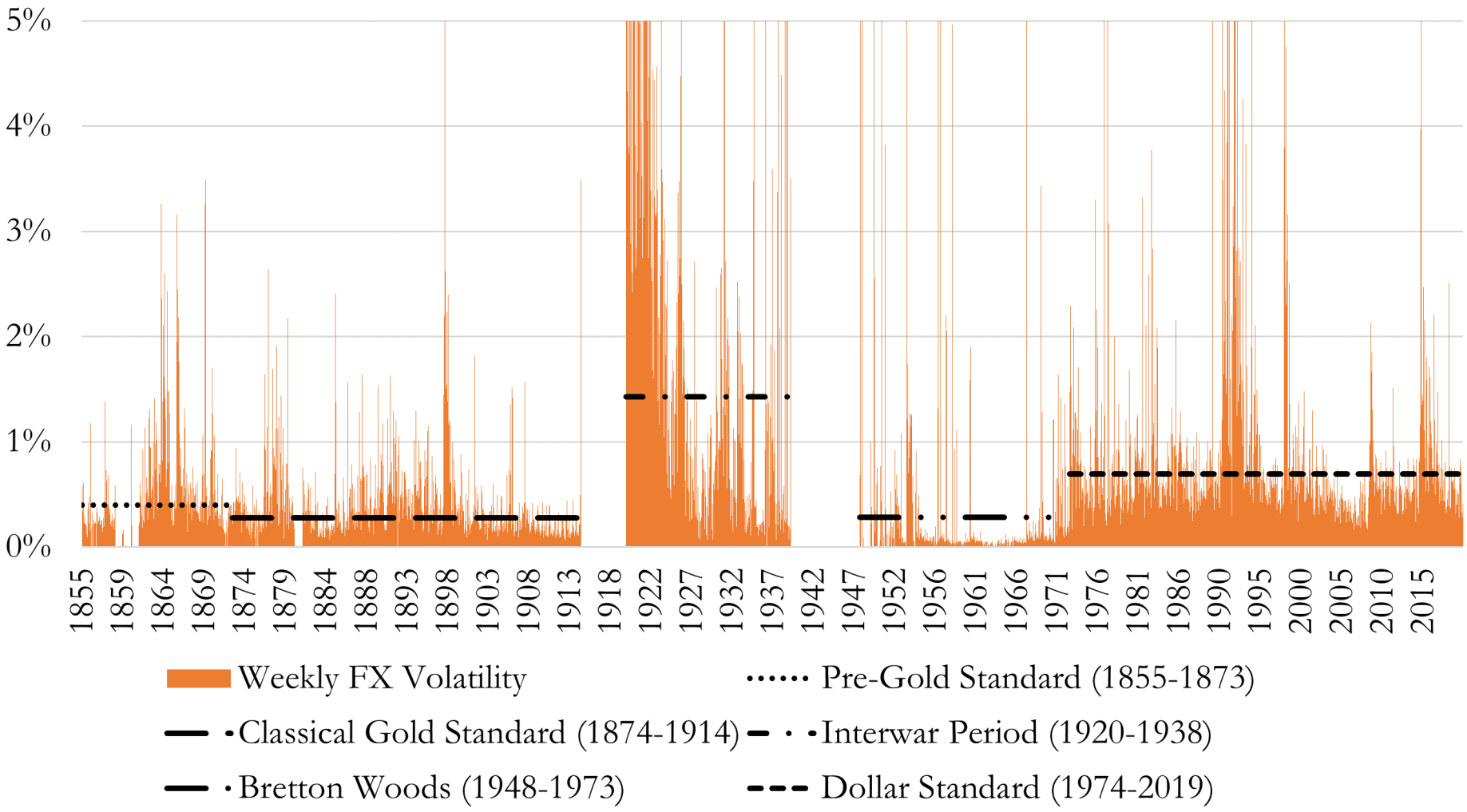
1. 1825-1914:
   - Monthly: Global Financial Data or own digitization of selected currencies, until available at weekly frequency.
   - Weekly: Own data digitised from The Economist magazine or the Bank of England Weekly Accounts. Global Financial Data otherwise.

   ▸ 19th Century Sample
2. 1918-1939
   - Own data digitised from The Economist magazine or The Bankers' Almanac. ▸ Interwar Sample
3. 1950-2020
   - Global Financial Data until series is available from BIS. ▸ Post-WW2 Sample

Sample Coverage



G10 FX Volatility Over Two Centuries



FX Factor Model

- Factor models of FX-returns introduced by Haldane and Hall (EJ 1991) and Frankel-Wei (NBER 1997).
- Recent work in the context of the global currency literature by Ito and McCauley (JIMF 2020) and Fratzscher and Mehl (EJ 2014).

$$\Delta \ ln \ \frac{X_{i,t}}{Numéraire_t} = \alpha + \sum_h \beta_h \ \Delta \ ln \ \frac{GlobalCurrency_{h,t}}{Numéraire_t} + \epsilon_t \qquad (1)$$

- Clean "horse race" between potential factors, yields intuitive monetary dominance factors that can be given a "weight" interpretation.
- I then apportionate each country to global currency zones according to a bottom-up algorithm based on estimated $\widehat{\beta_{ht}}$.

Summary

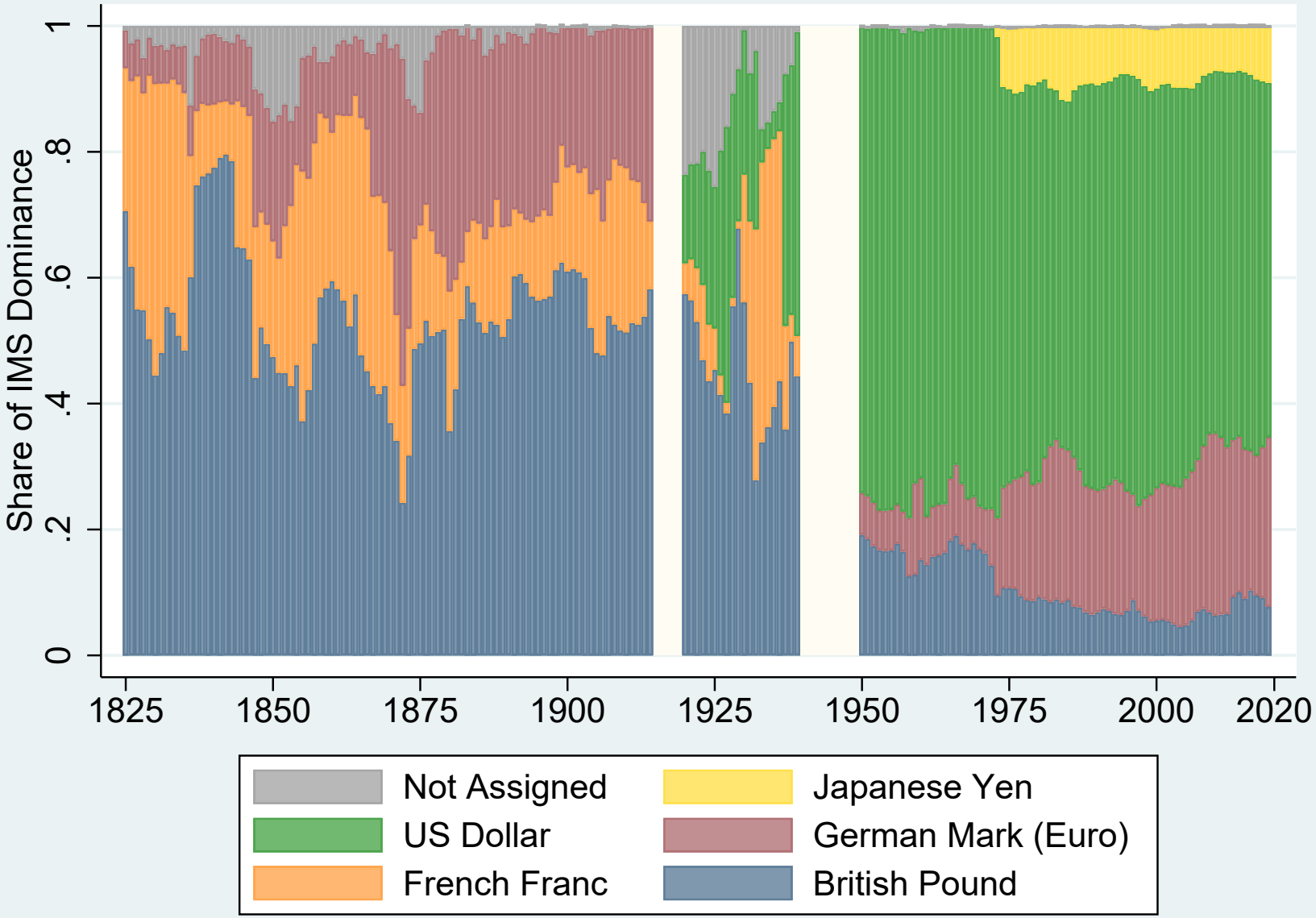
- High frequency rolling FX co-movements models:
  1. **Numéraire**
     - Baseline model: Silver Ounce quoted in London.
     - Robustness: NLG (1825-1914); HKD (1918-1939); CHF (1950-2020).
  2. **Global Currency Factors**
     - 1825-1914: GBP, FRF, DEM (Hamburg Banco before 1873).
     - 1918-1939: GBP, FRF, USD.
     - 1950-2020: GBP, DEM (EUR), USD, JPY (From 1968).
  3. **Additional factors**
     - Commodity prices, liquidity, volatility, gold.
- Bottom-up algorithm, 1) apportioning of shares of each country in the sample to global currencies, 2) compute yearly global currency scores.

Yearly Global Currency Weights Algorithm

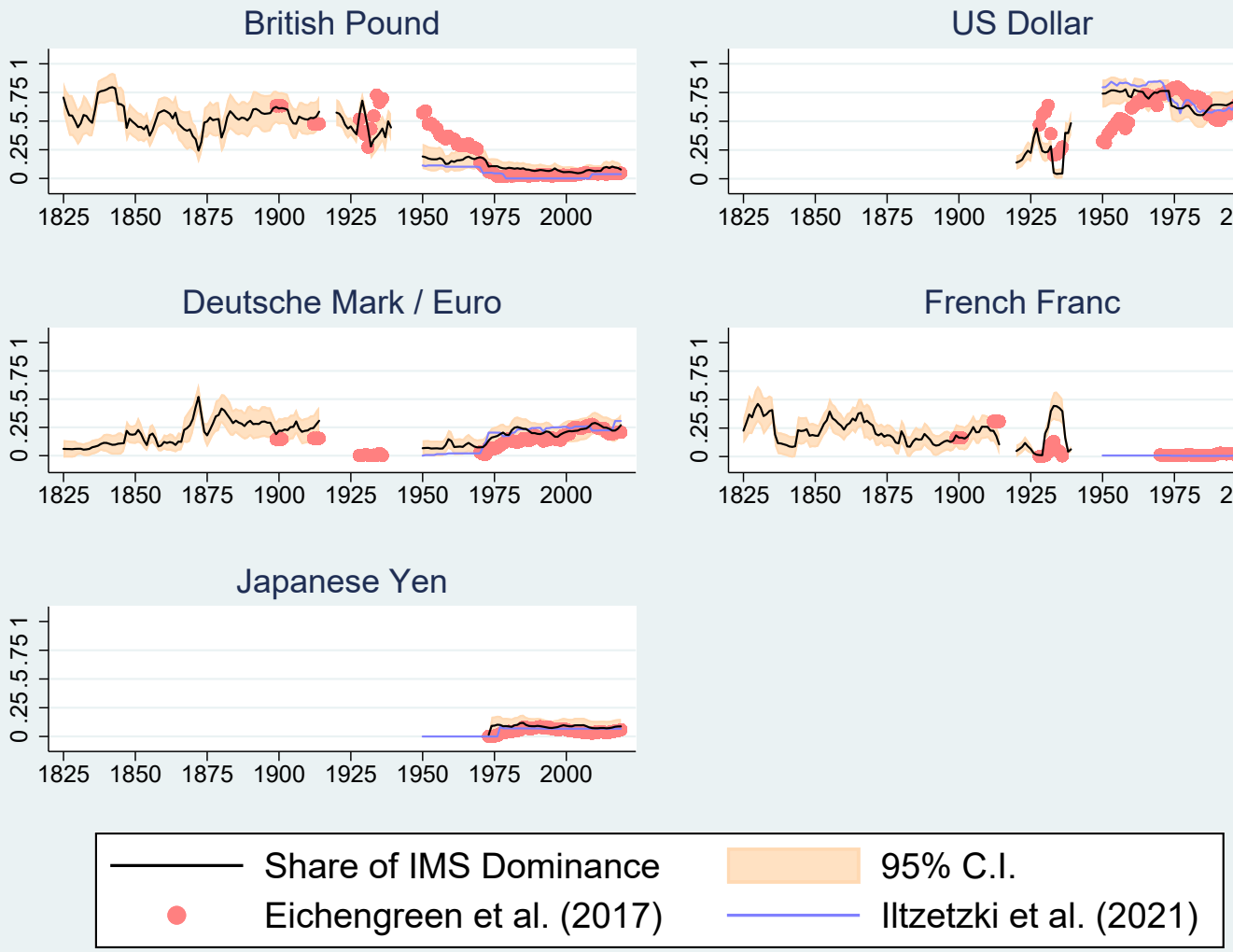
Bottom-up approach (McCauley and Ito, JIMF 2020), run the factor model for each polity and then aggregate up following three steps.

1. **Weekly coefficient**: Factor-models estimated in rolling windows for each polity at the highest frequency available: yields for each global currency factor h and each polity i a $\widehat{\beta_{it}^{h}}$ that varies at the weekly (monthly) frequency.
2. **Annual polity score**: $\widehat{\beta_{it}^{h}}$ coefficients are inverse-variance weighted over each year and polity, excluding negative values, and normalised so that $\sum_{h=1}^{H} \widehat{\beta_{iht}} \leq 1$. Splicing when change of frequency.
3. **Annual global score**: For each global currency factor, the yearly world-level average weight is computed as the average of polity-level yearly scores, weighted by the polity share of global GDP or trade.

The Rise and Fall of Global Currencies over Two Centuries

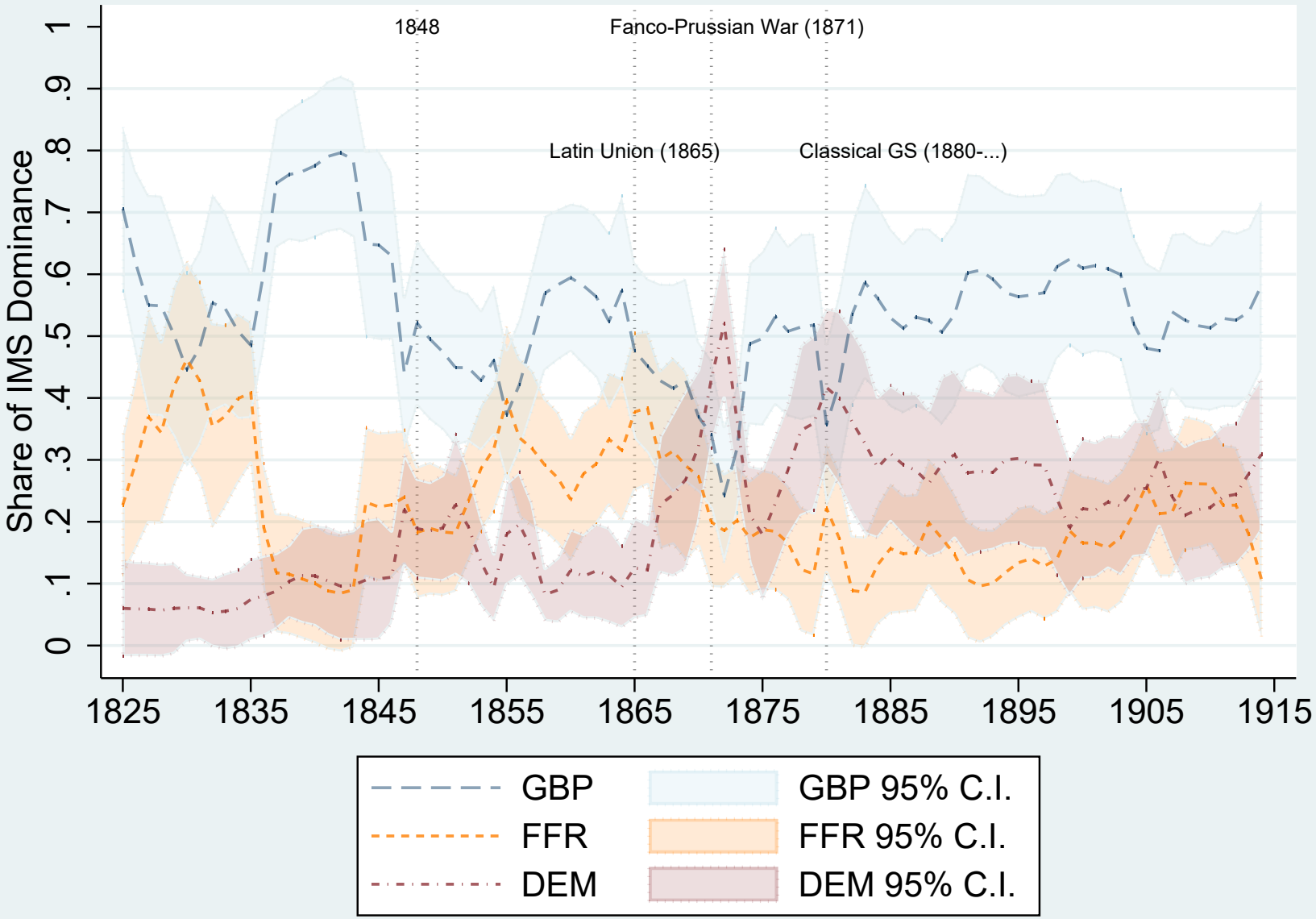


Global Currency Weights and Actual Global Reserve Share



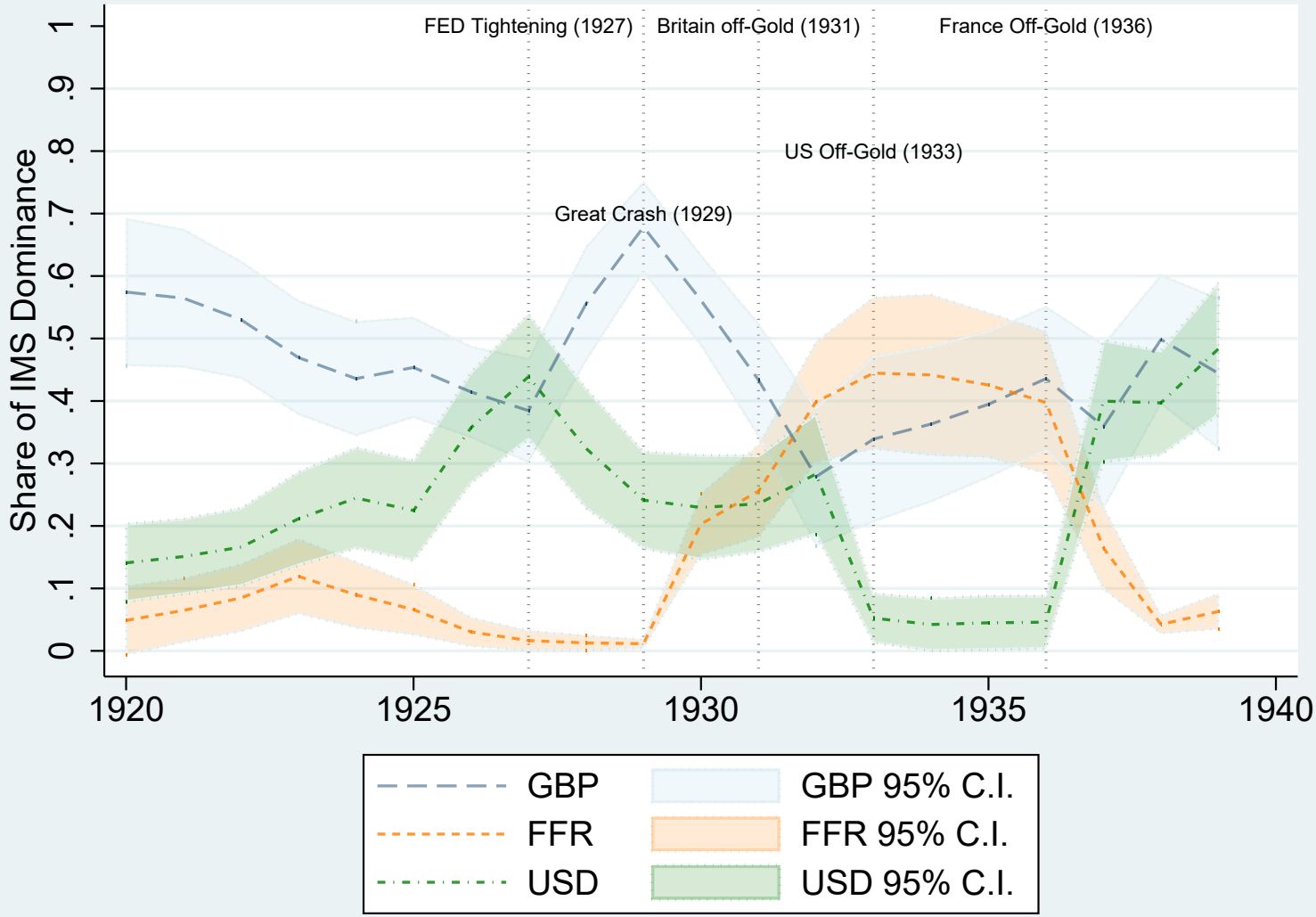
1825-1914: A Challenged British Hegemony

Maps



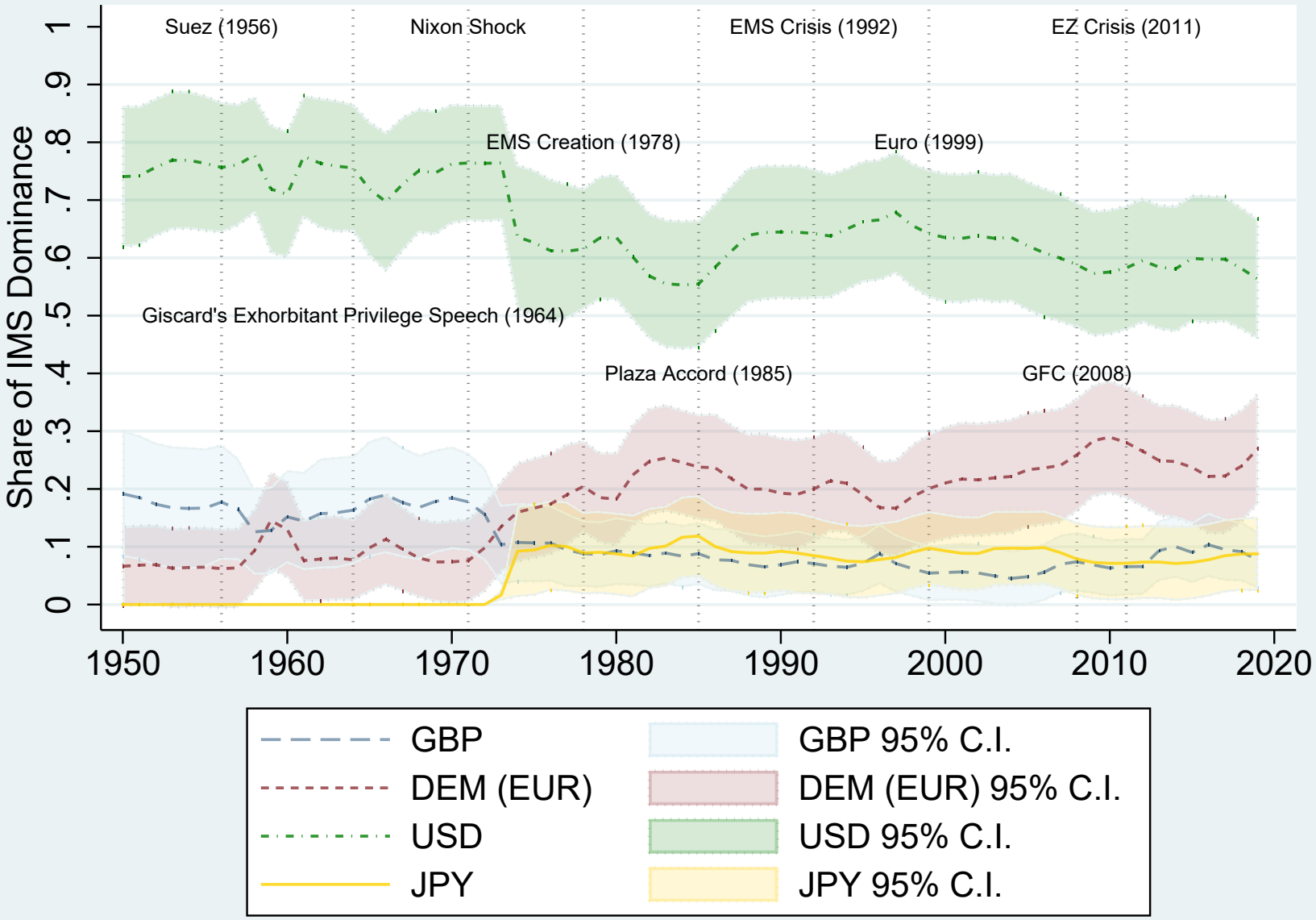
1918-1939: Global Currency Collapses and Fortune Reversals

Maps



1950-2020: Dollar Dominance

Maps



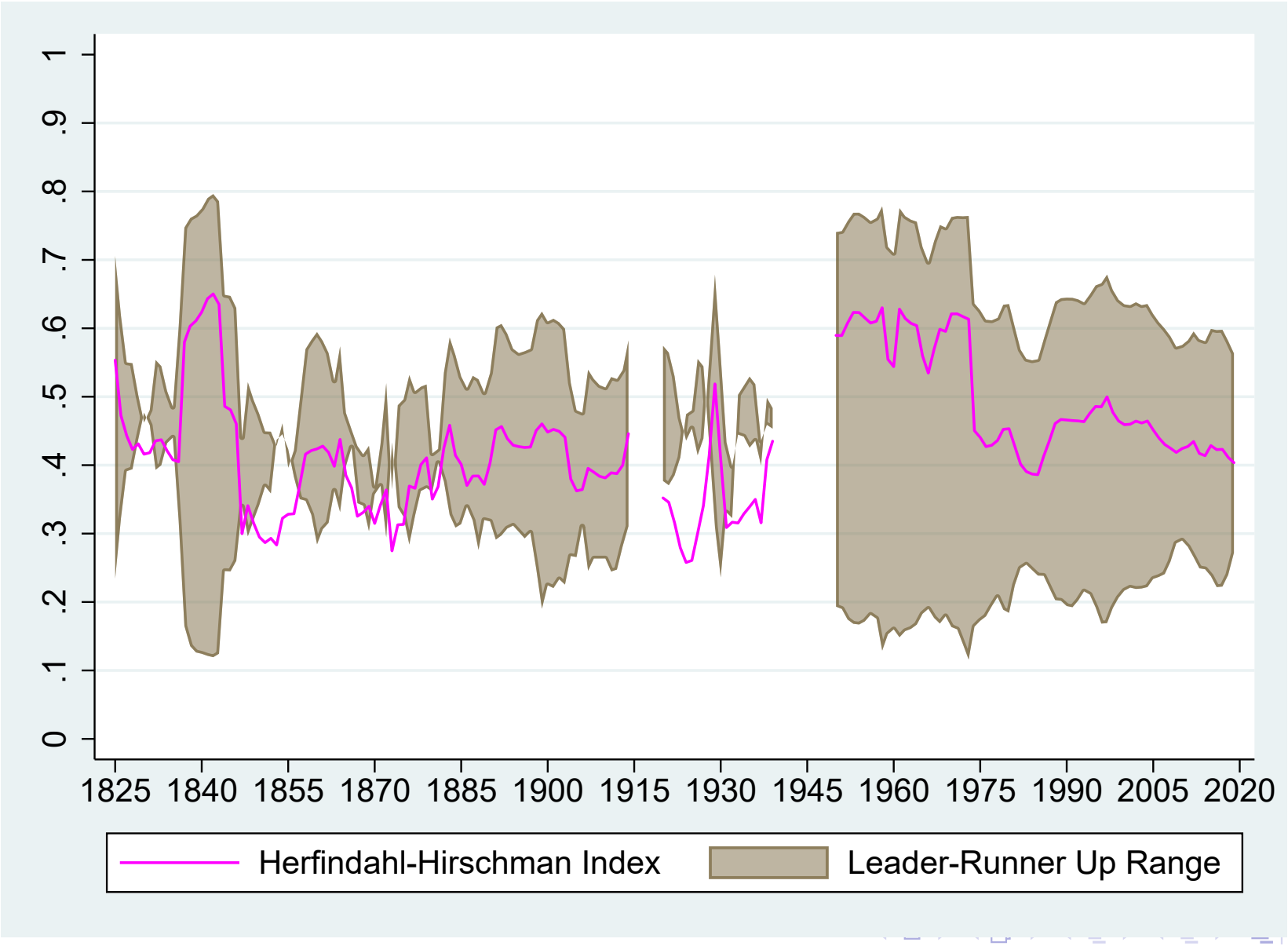
Robustness Checks and Further Results

- Regional View
- Pooled Regressions
- Alternative Numéraire and Weights
  - GBP
  - FFR
  - DEM
  - USD
  - JPY
- Individual Polity Maps
  - 1825-1914
  - 1918-1939
  - 1950-2020

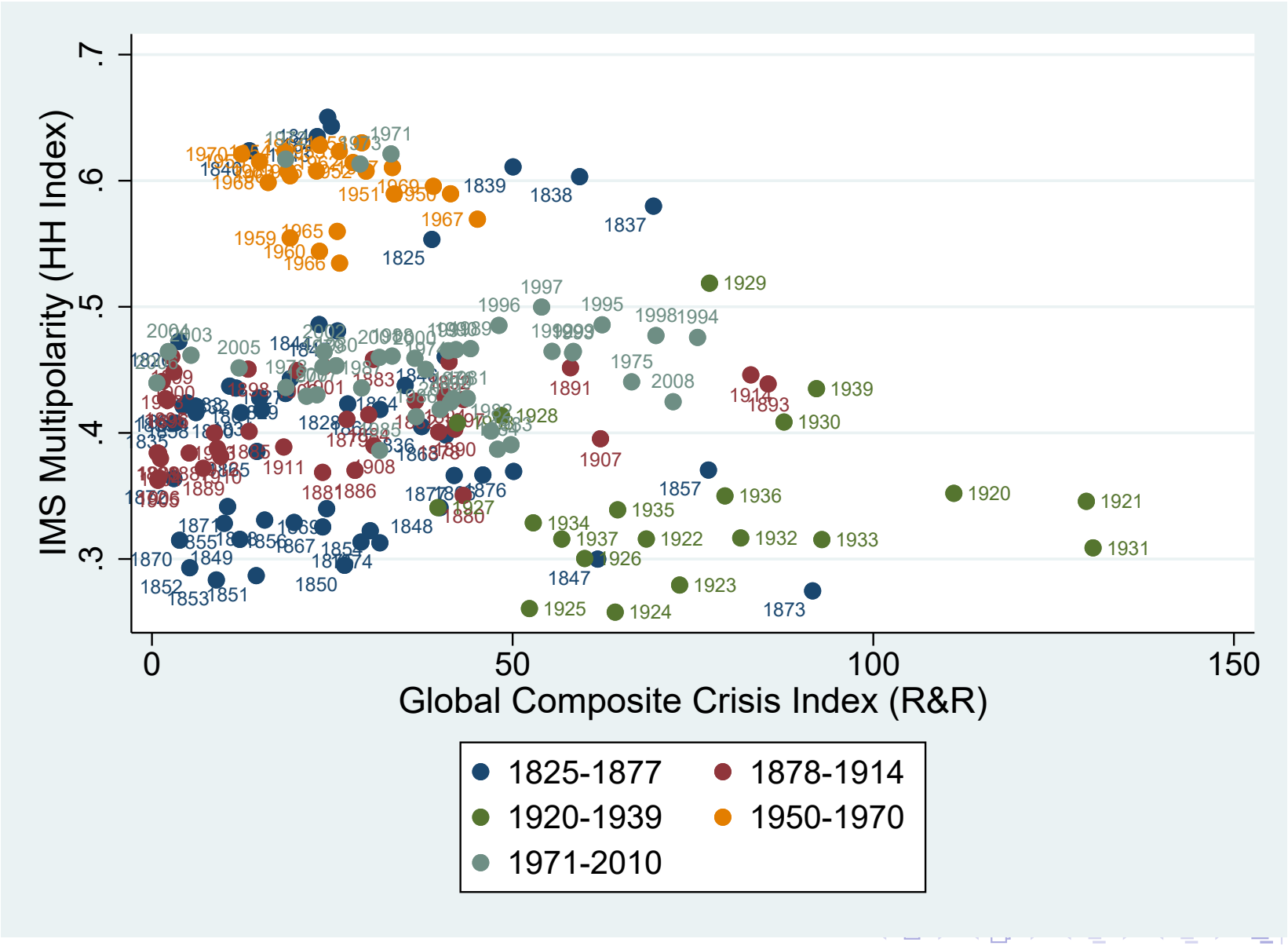
The Overall IMS Architecture over Two Centuries

- Competition Structure
  - **Herfindahl-Hirschman Index** of competition intensity computed from the yearly world GDP-weighted average weight for each global currency.
  - **Leader-"runner up" distance**, computed as the difference between the highest and the second highest global currency weight in any given year.
- Relationship between competition structure and the intensity of IMS competition relying on Reinhart and Rogoff (NBER 2008) Index of Composite Crises since 1825.

The Structure of IMS Competition Over Two Centuries



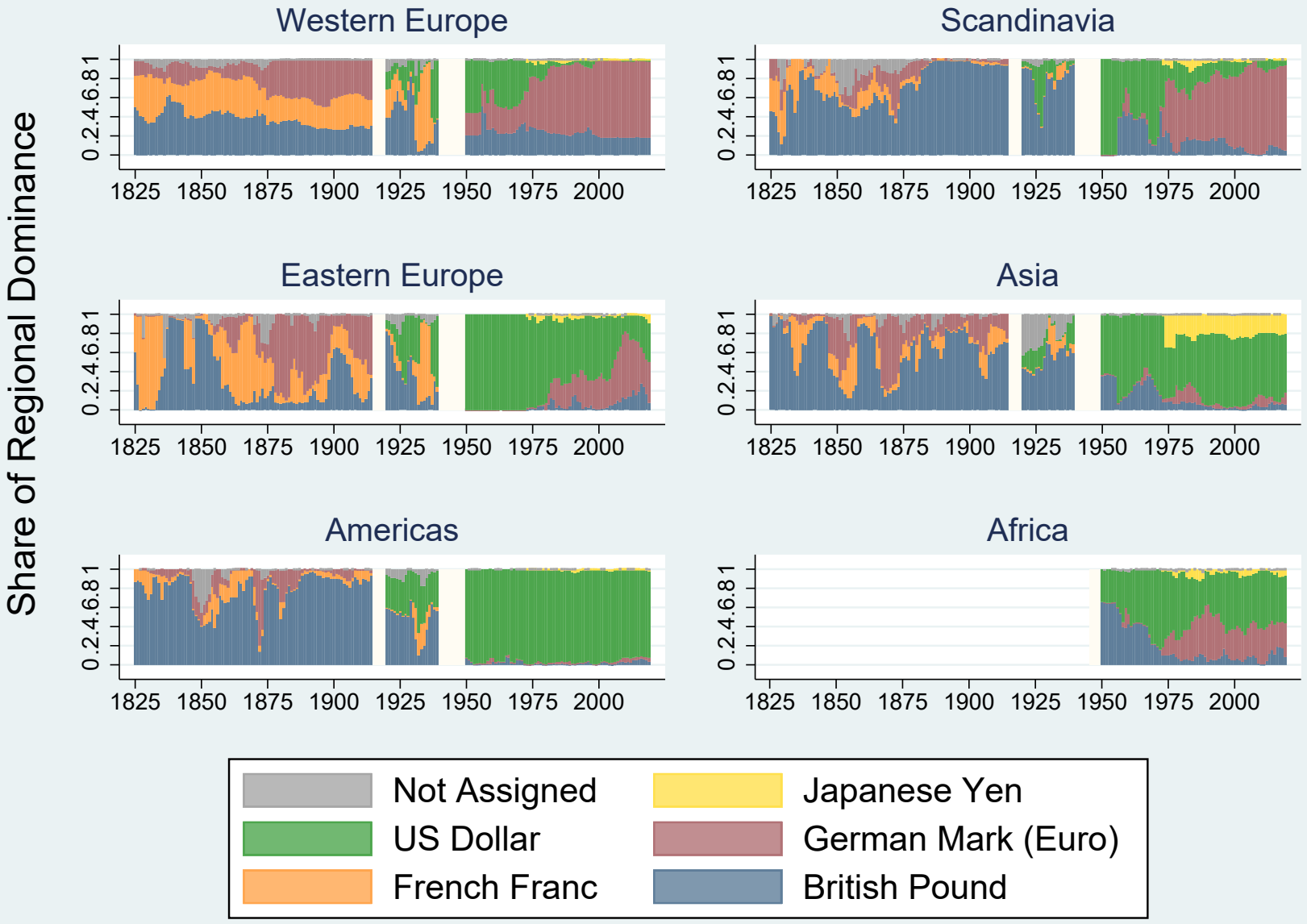
IMS Competition and Financial Stability



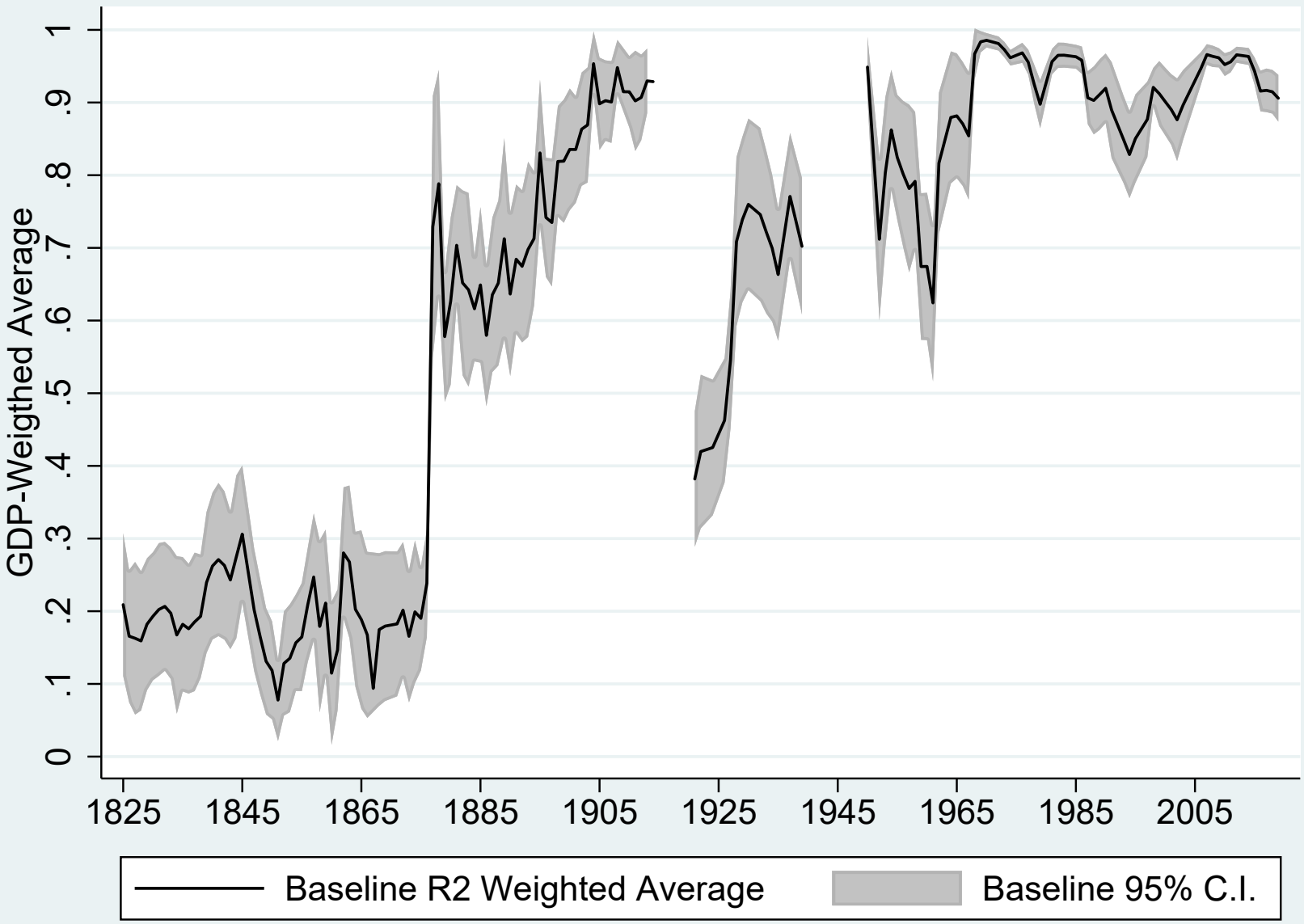
Conclusion

- Current levels of one-currency leadership are an historical anomaly, in terms of persistence and magnitude of USD lead:
  - A benign interpretation: structural shift consistent with DCP paradigm, high USD vs. EUR distance is evidence of stable outlook looking at the model by Farhi and Maggiori (QJE 2018).
  - A more pessimistic take: given unprecedented levels of hegemony, an incoming discontinuity might be even more destabilising than in the past (Farhi et al., 2011).
- Positive relationship between levels of IMS competition and financial instability.
  - Classical Gold standard stable but not particularly multi-polar.
  - The relationship is driven by interwar period instability and Bretton Woods stability.
- Next steps: 1) Correlates/determinants of global currency status 2) A closer look at discontinuity episodes.

A Regional View over Two Centuries



Global GDP-Weighted Aggregation of Explained Variance



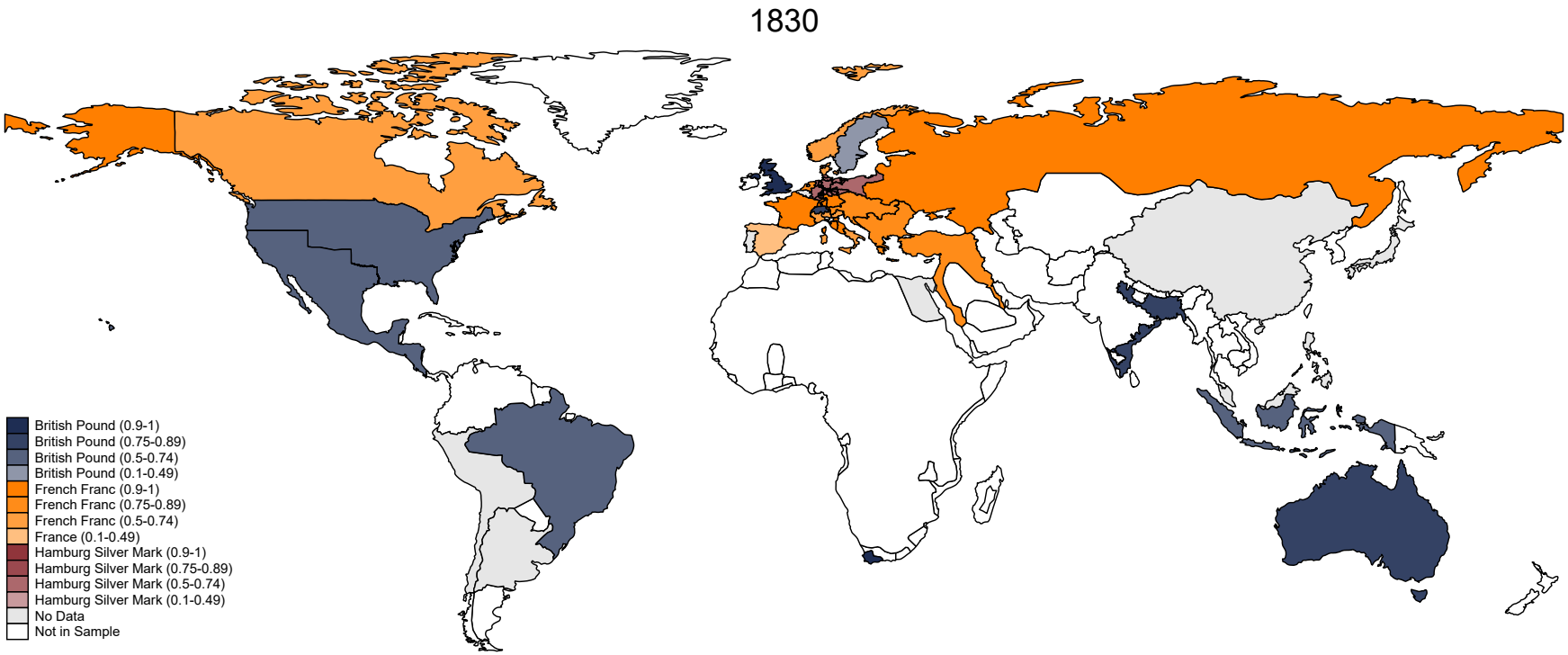
Tentative Summary of Major Discontinuities (1/2)

- Rises...
  - GBP, 1830s, banking crisis in France, BoE Effective LOR.
  - FFR, 1850s-1860s, rising external surplus, regional integration, proactive internationalisation policy.
  - DEM, 1870s, military victory against France, regional integration (unification), rising external surplus.
  - USD, 1920s, WW1, rising external surplus.
  - FFR, 1930-1936, GBP devaluation, rising external surplus, proactive internationalisation policy.
  - GBP, 1933, USD devaluation.
  - USD, 1936, 1939-1950, FFR devaluation, WW2.
  - DEM/EUR, 1970-..., USD devaluation, regional integration, stable monetary policy, rising external surplus.
  - USD, 1985, geopolitical strength, stable monetary policy.

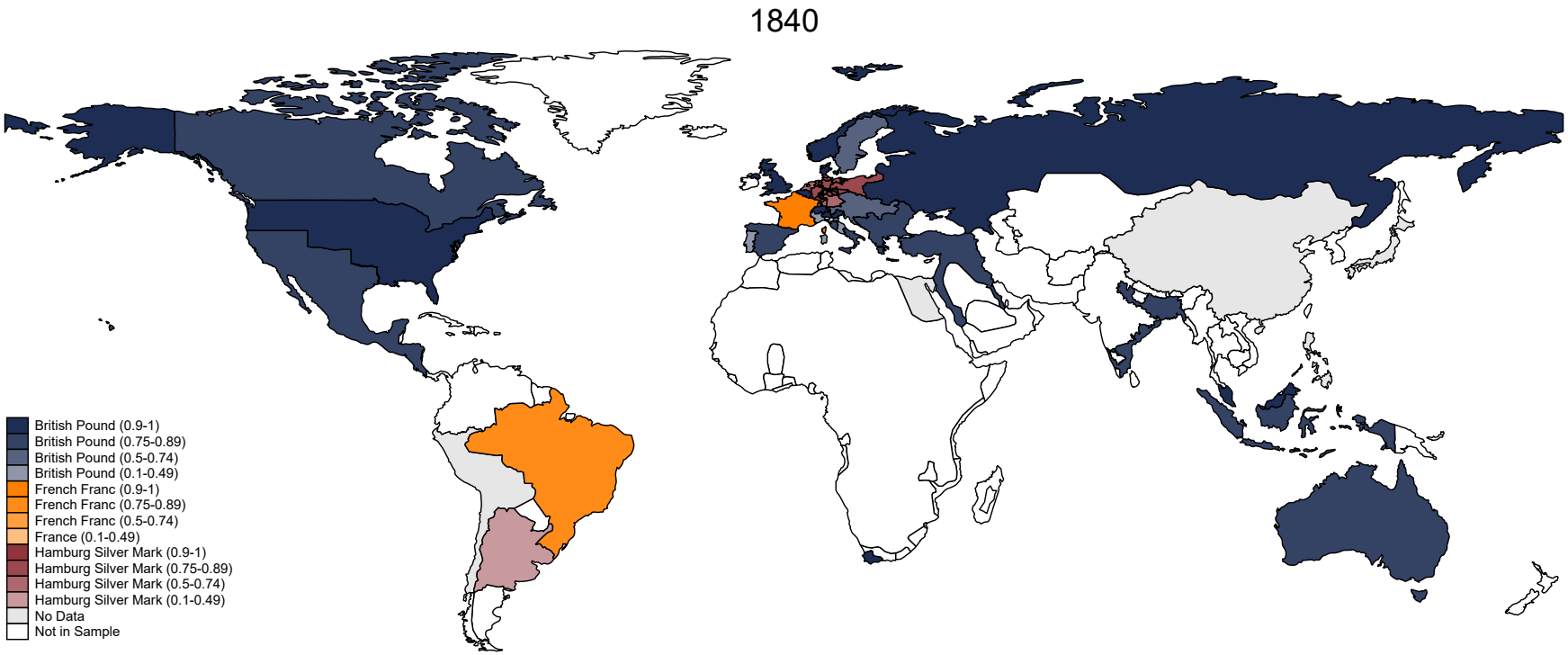
Tentative Summary of Major Discontinuities (2/2)

- ...and Falls
  - FFR, 1836, banking crisis.
  - GBP, 1866, banking crisis.
  - DEM, 1873, banking crisis.
  - USD, 1928, monetary policy tightening (?).
  - GBP, 1929-1931, BoP crisis., banking crisis, devaluation.
  - USD, 1933, banking crisis, devaluation.
  - FFR, 1936, political polarisation, devaluation.
  - GBP, 1956, geopolitical tensions, BoP crisis.
  - GBP, 1967, BoP crisis, devaluation, political polarisation.
  - USD, 1970-73, BoP crisis., devaluation.
  - EUR, 2010, political polarisation, banking crisis.

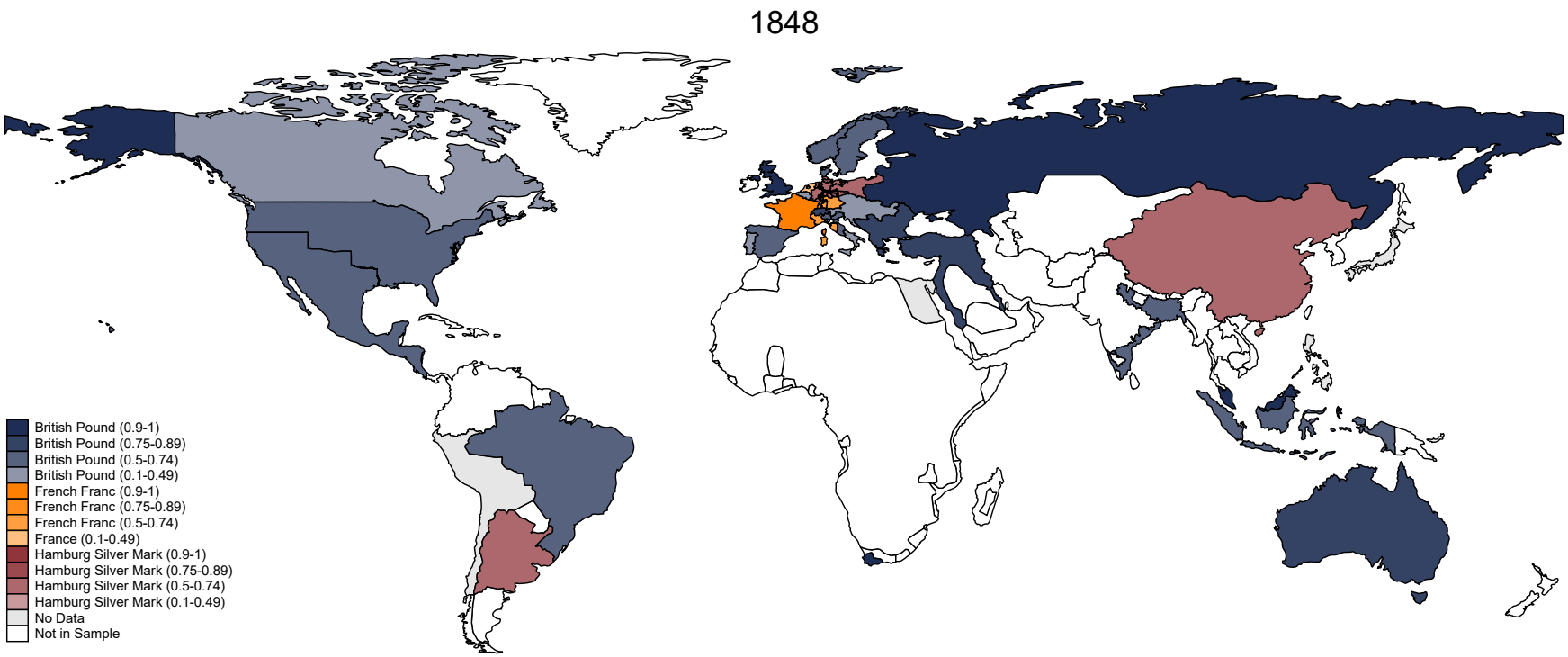
1830: A Bipolary System post-Vienna Congress



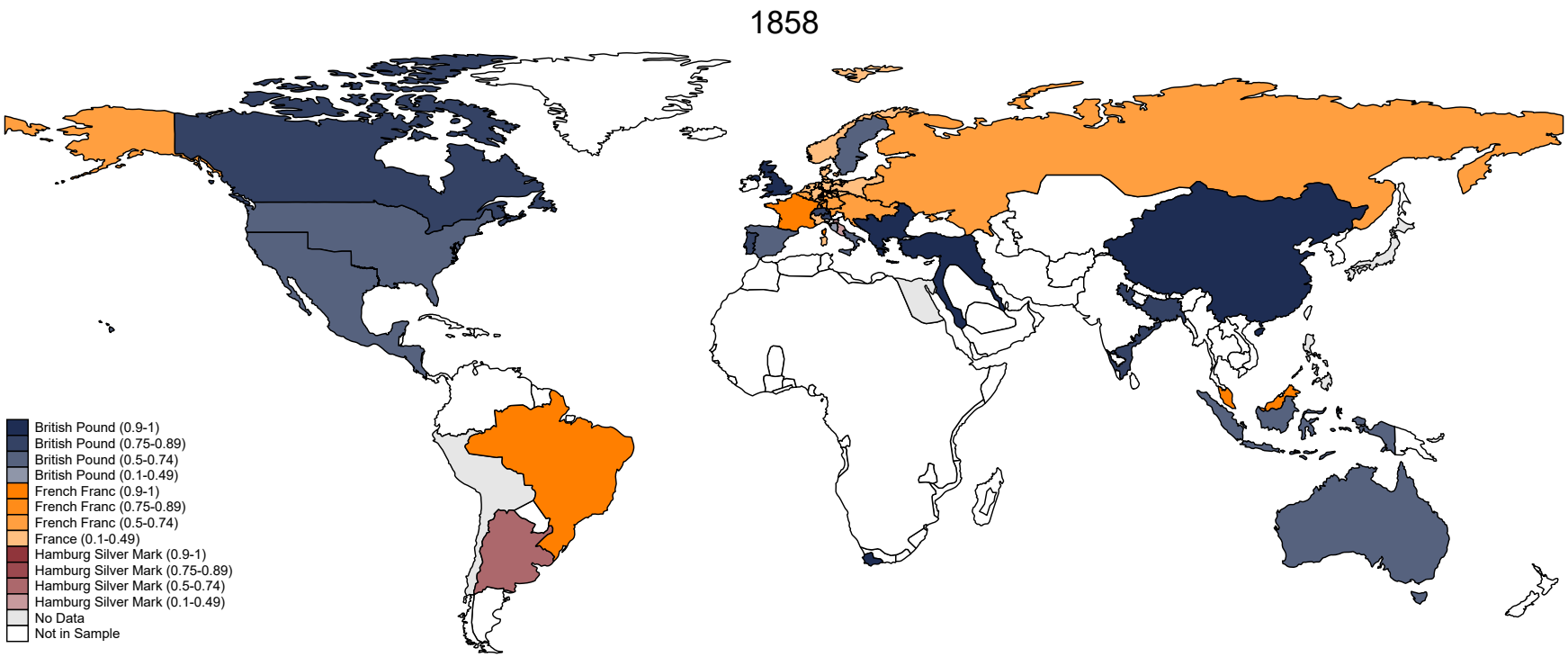
1840: Large GBP Gains in Dominance in the 1830s



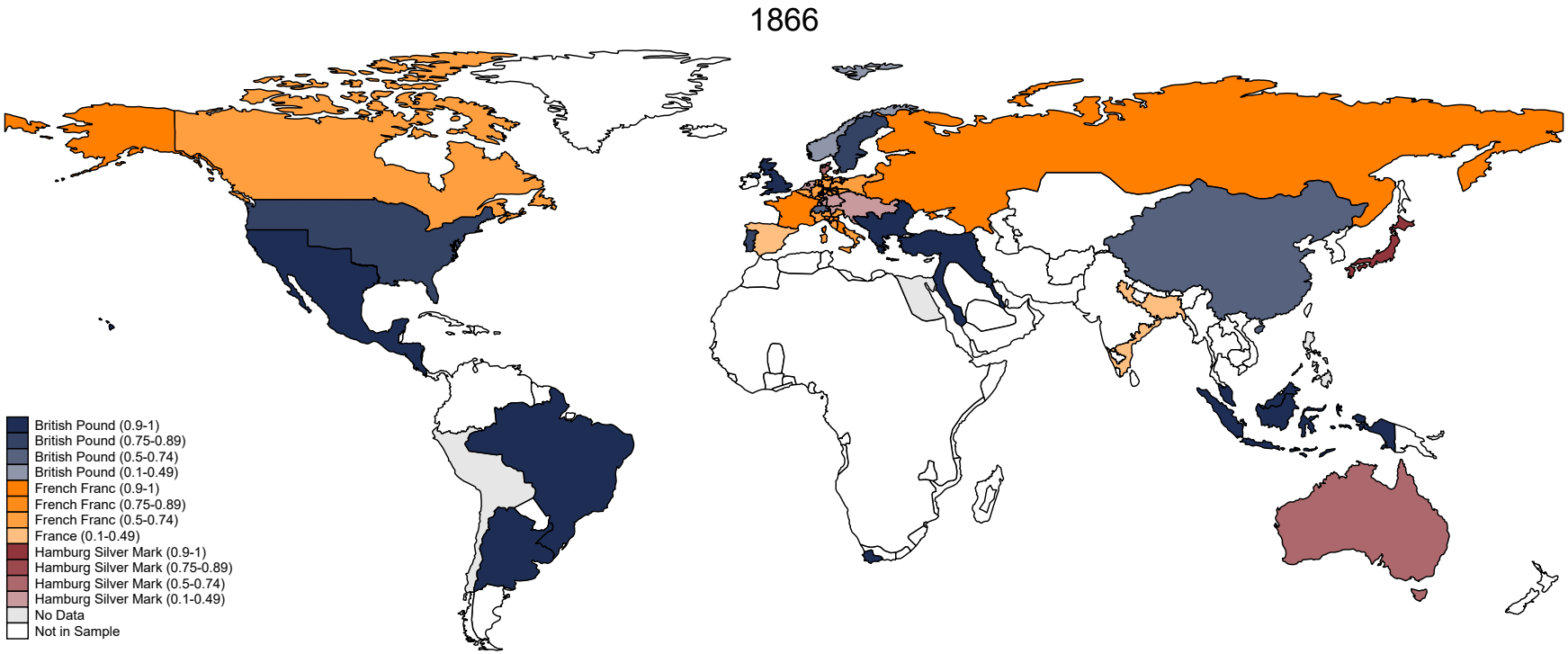
1848: GBP Dominance Unscathed by the People's Spring



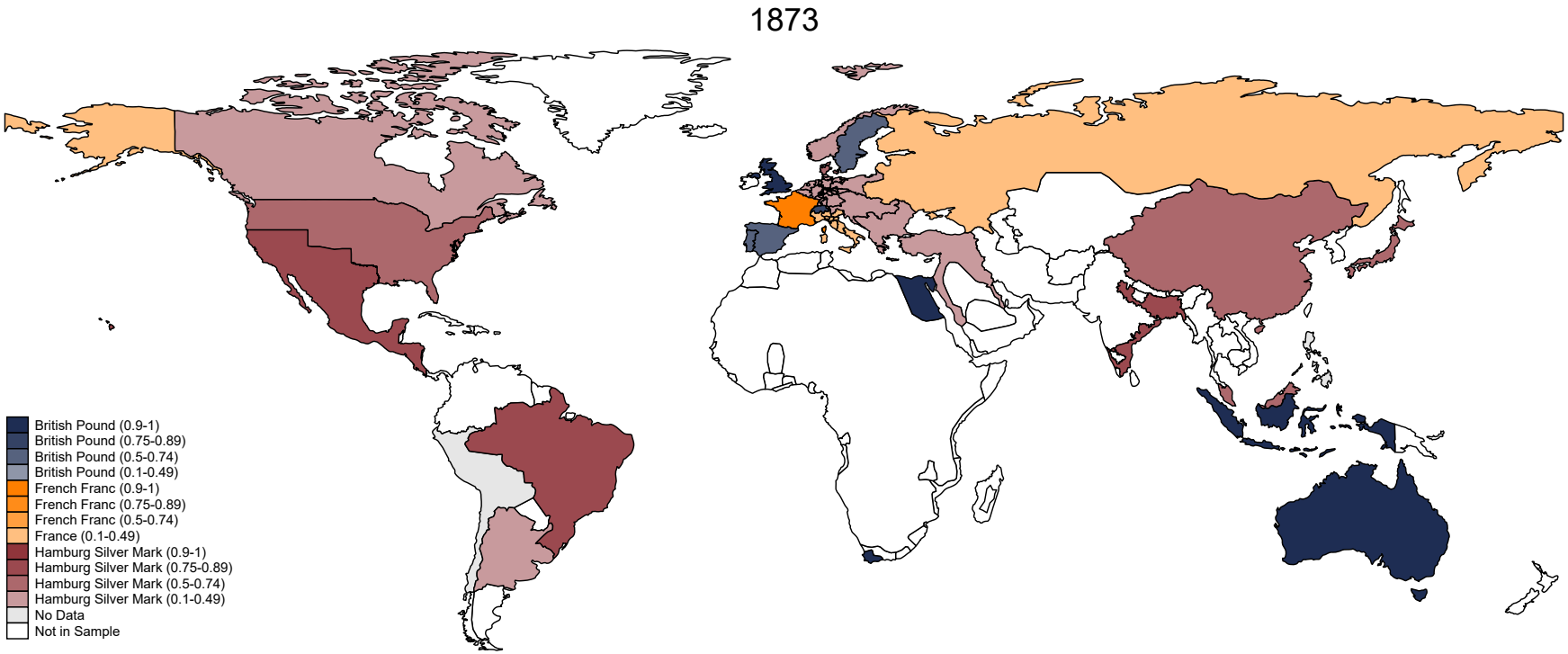
1858: Rise in FFR Dominance with the Second Empire



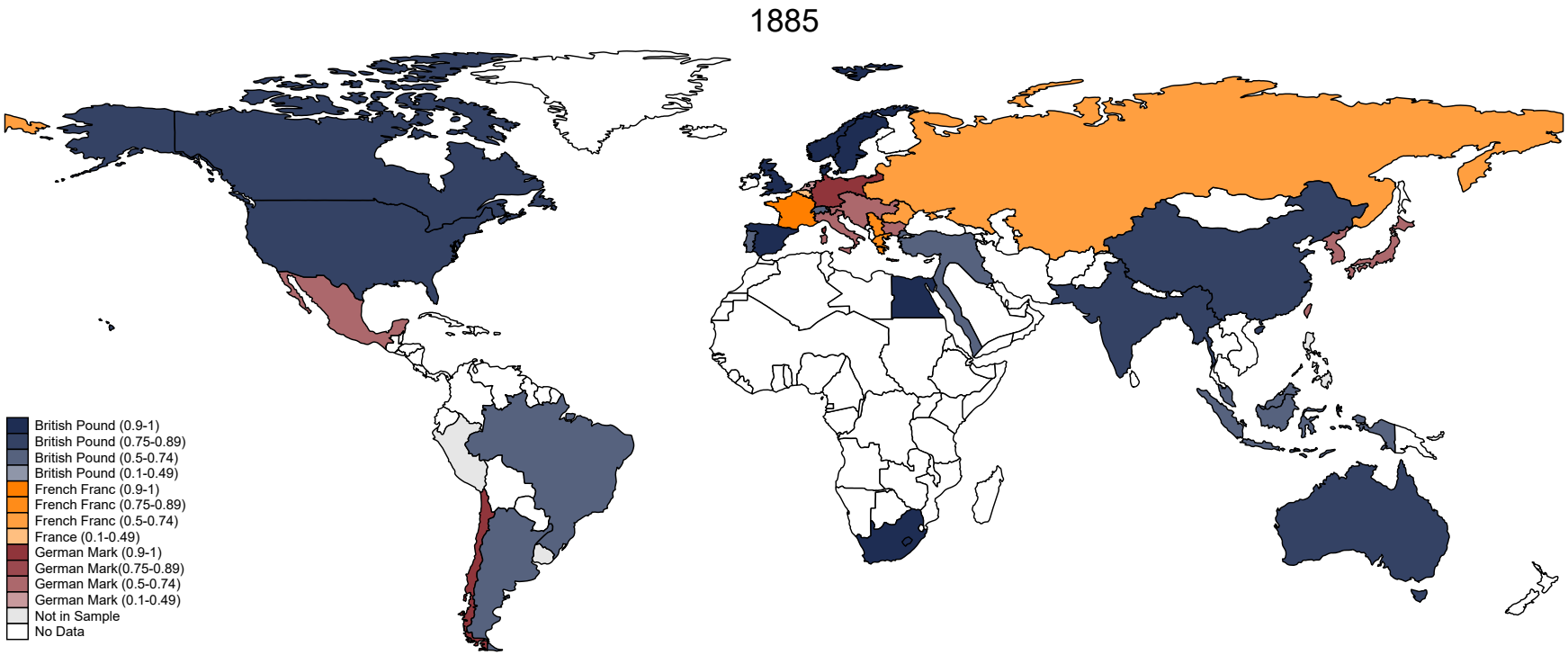
1866: Peak of FFR Dominance as Paris Hosts the 1st International Monetary Conference



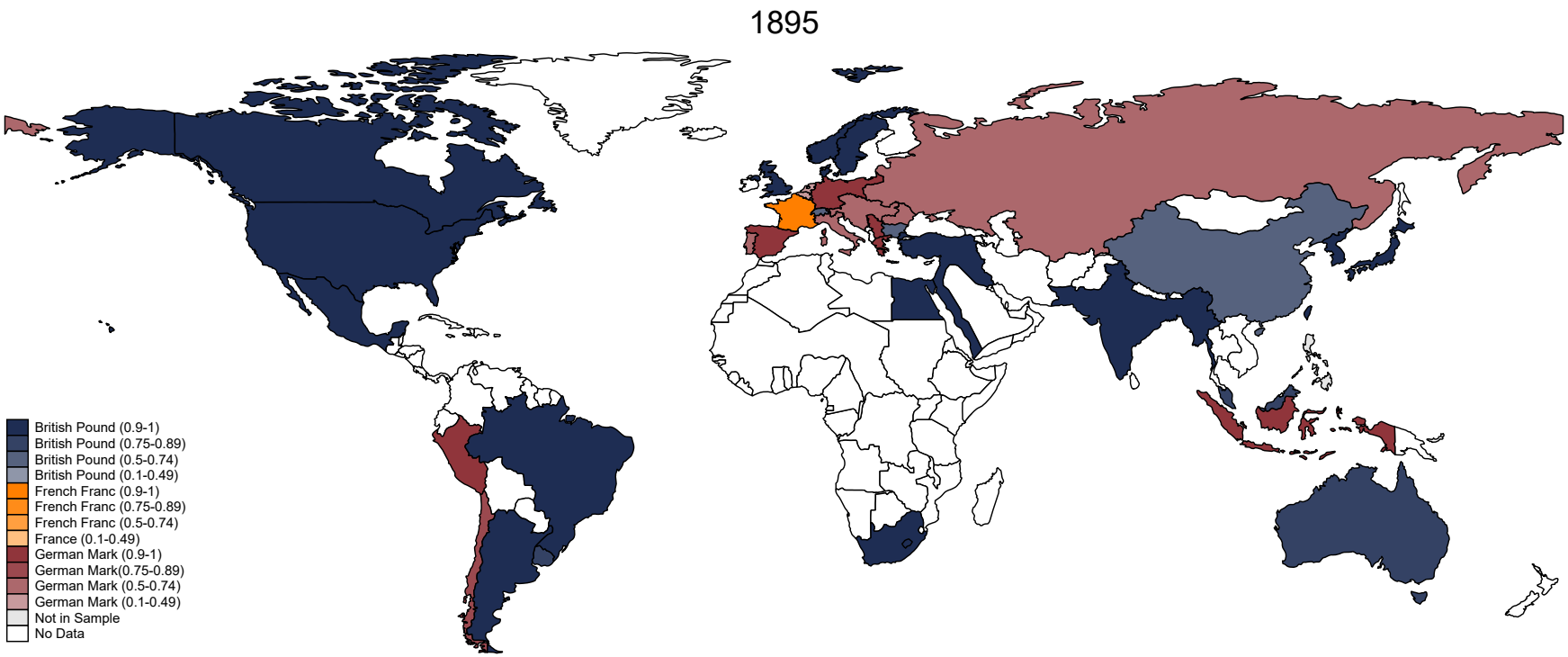
1873: Major International Monetary System Discontinuity with the German Unification



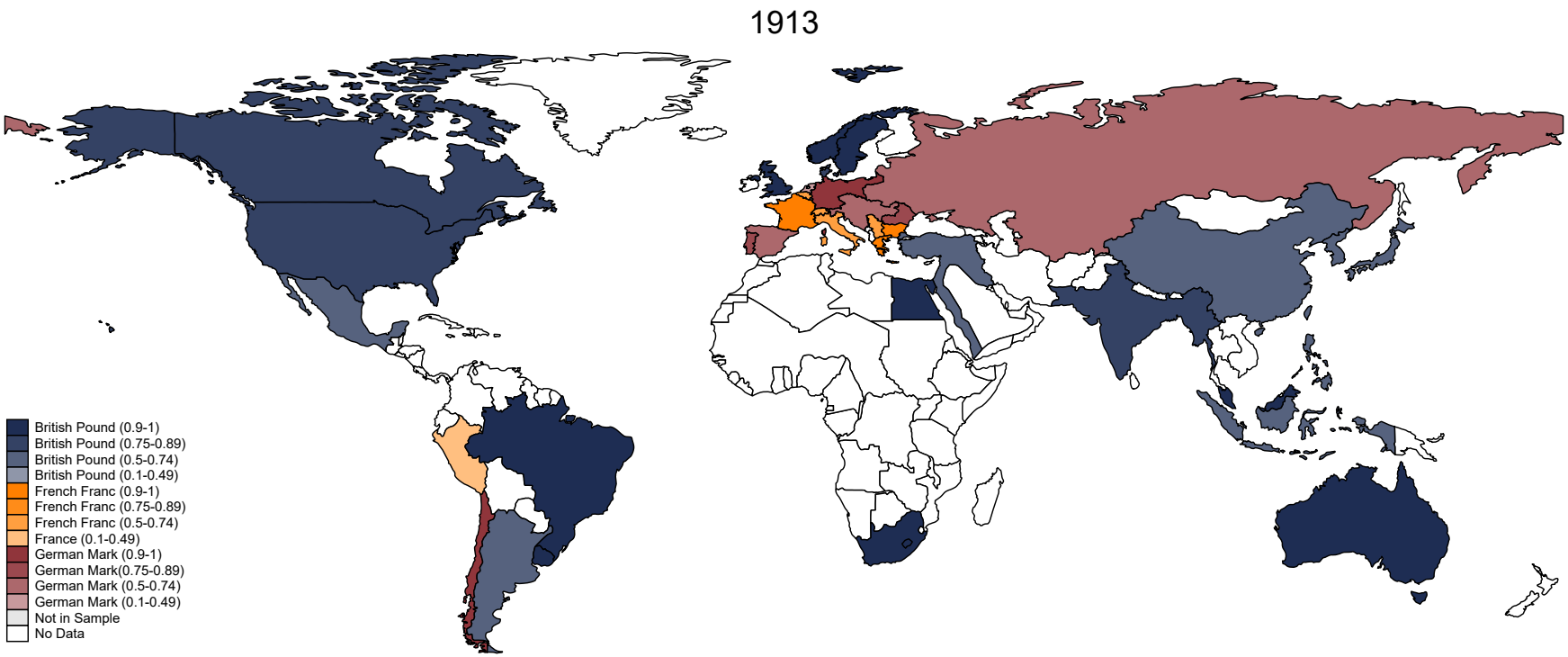
1885: A Tripolar Classical Gold Standard (I)



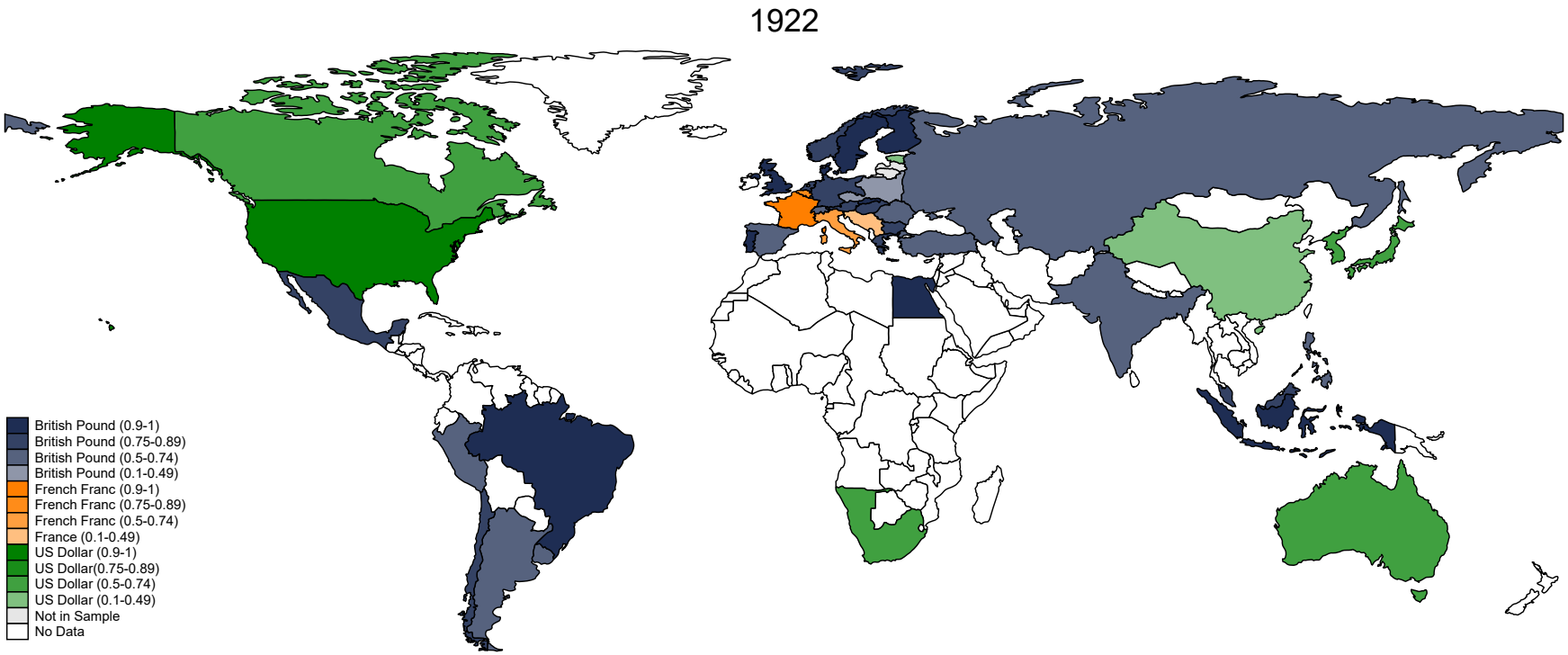
1895: A Tripolar Classical Gold Standard (II)



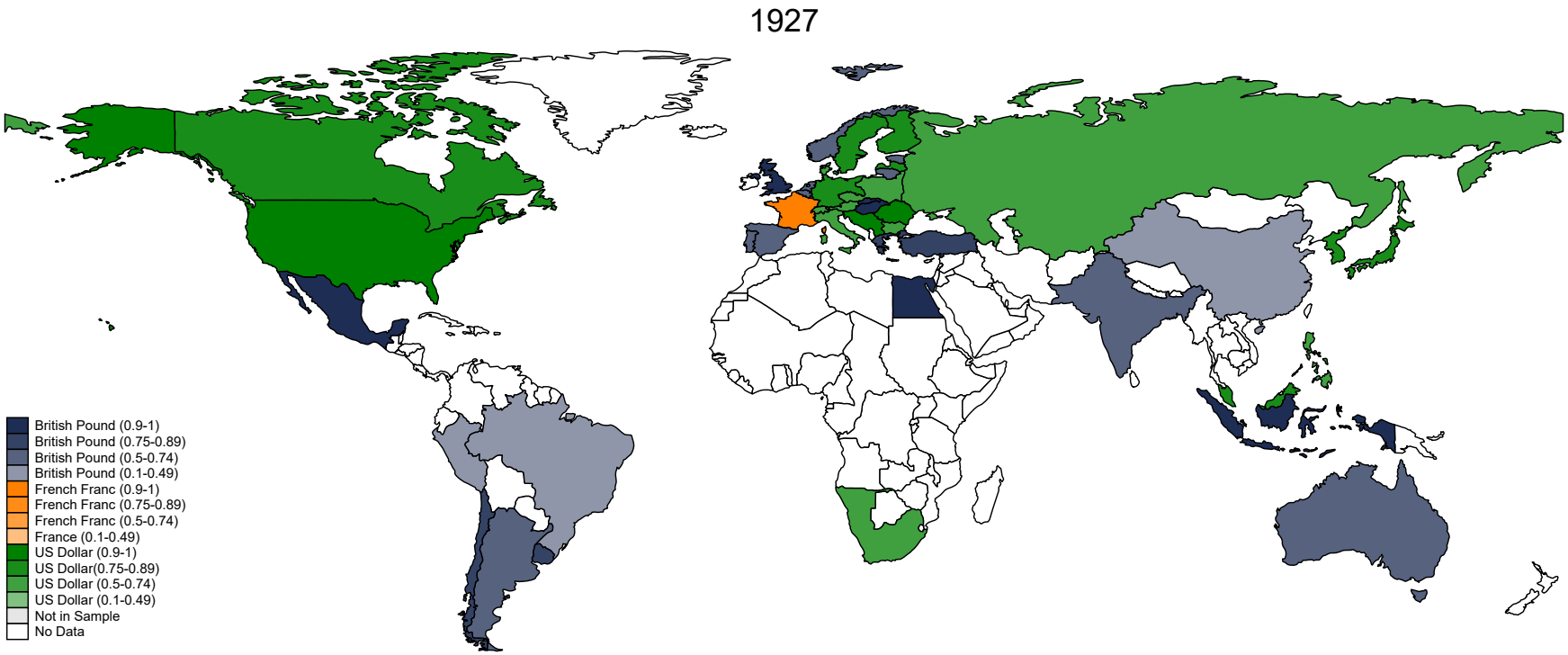
1913: A Tripolar Classical Gold Standard (III)



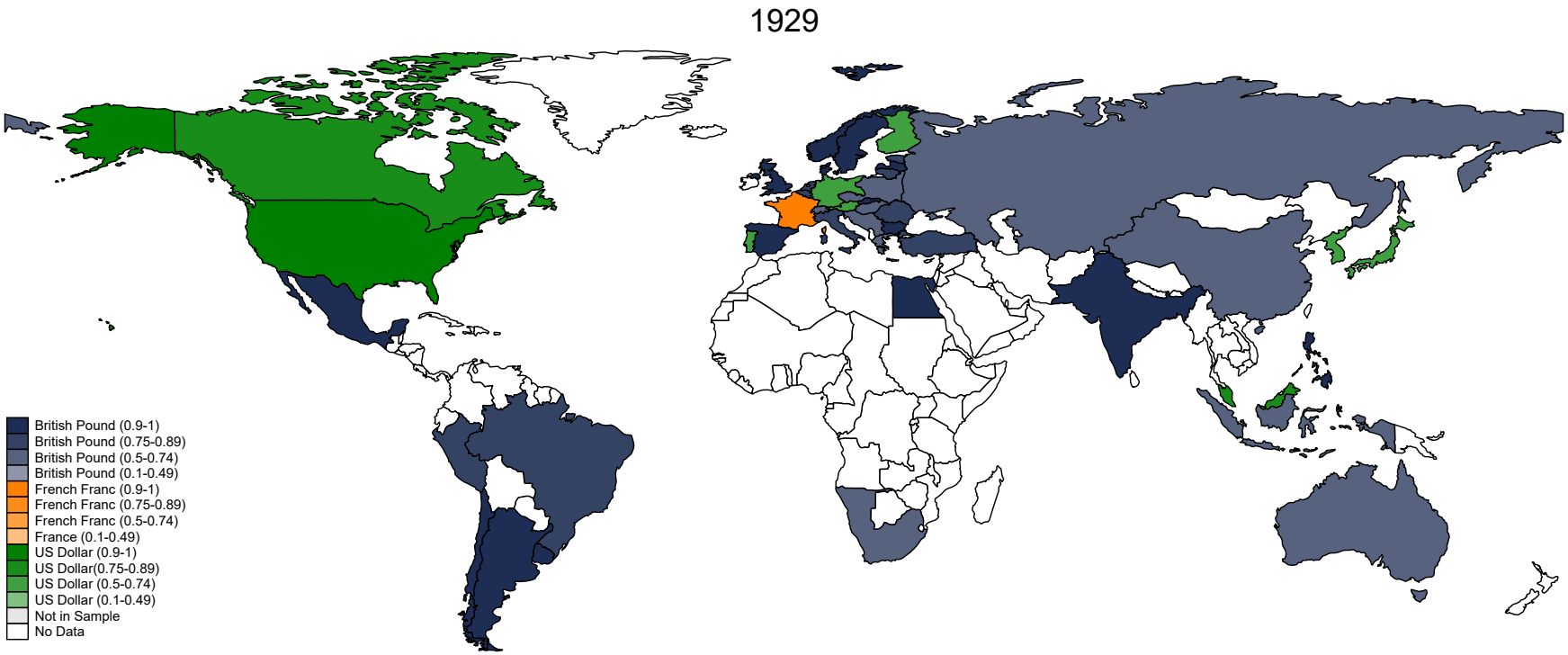
1922: Rise of the USD after WW1



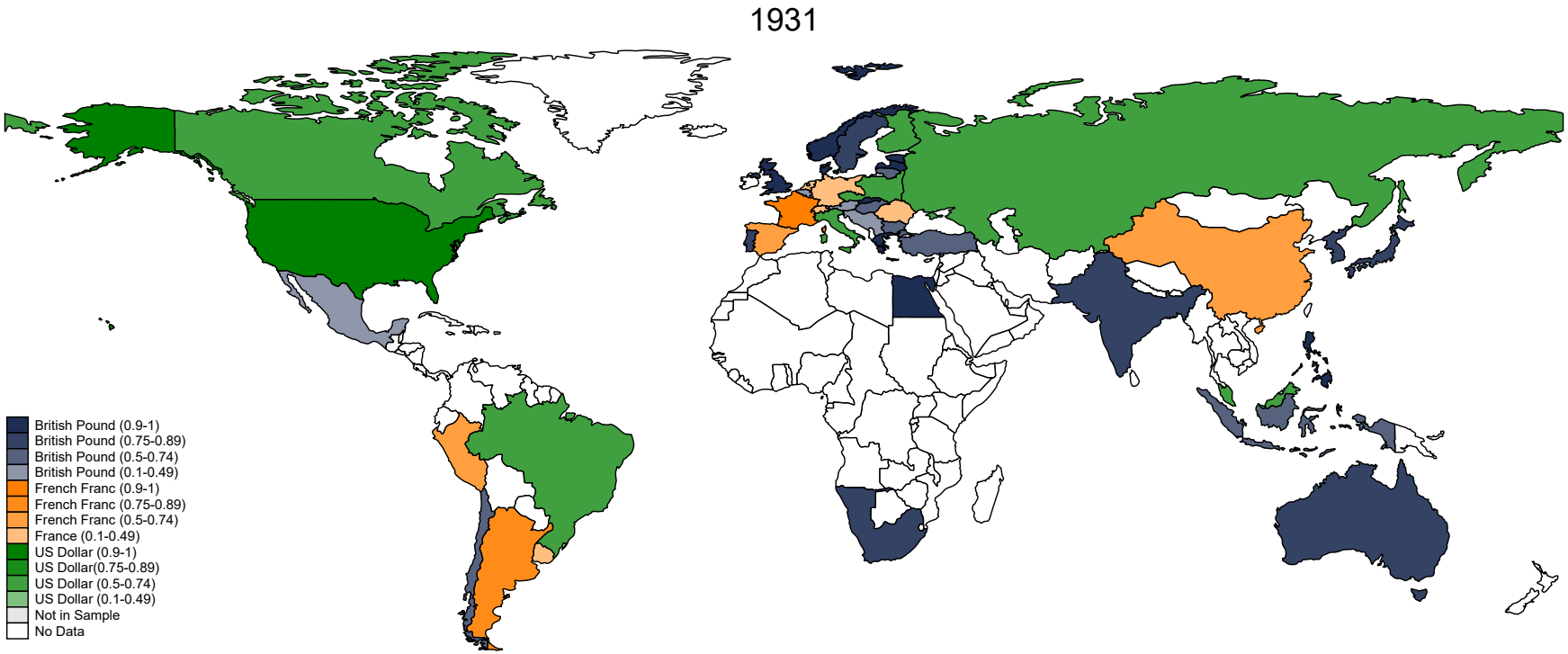
1927: Peak of USD Dominance in the Interwar



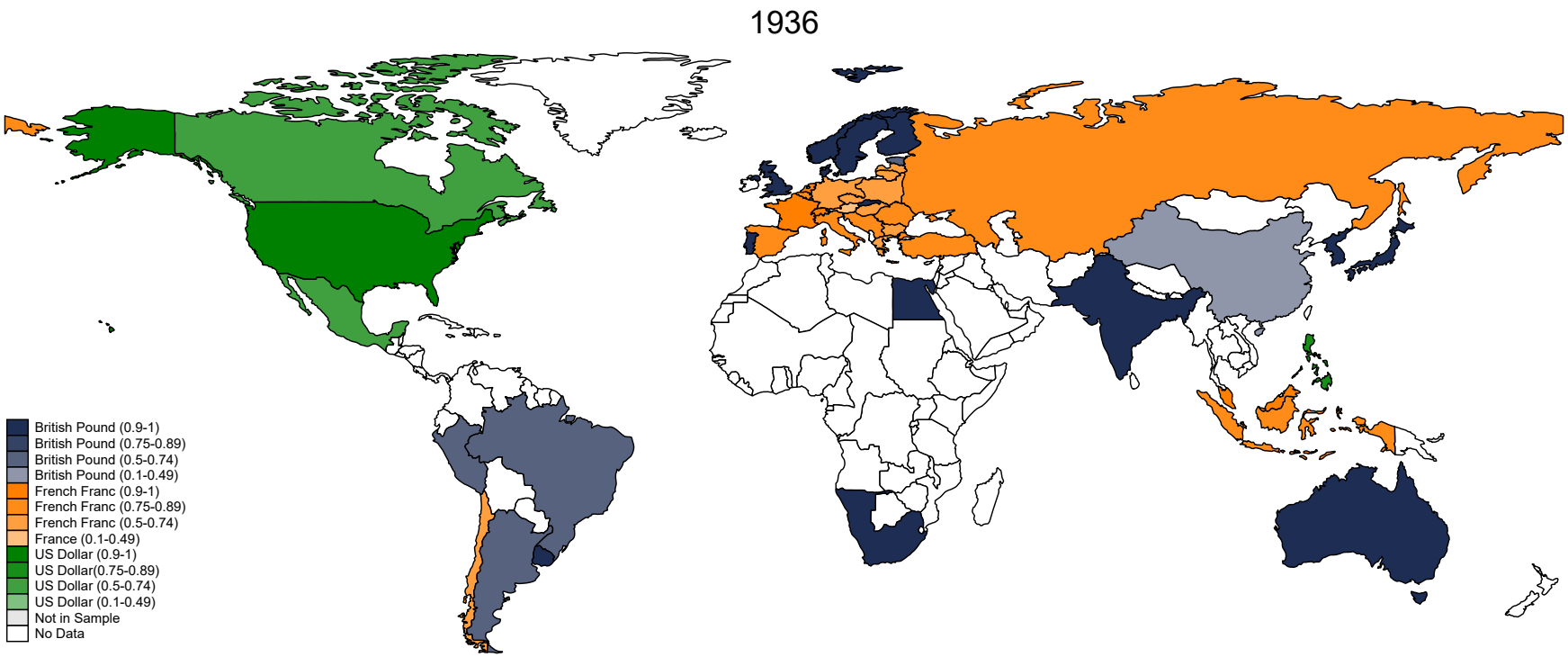
1929: A Shortlived Comeback of the GBP in 1929



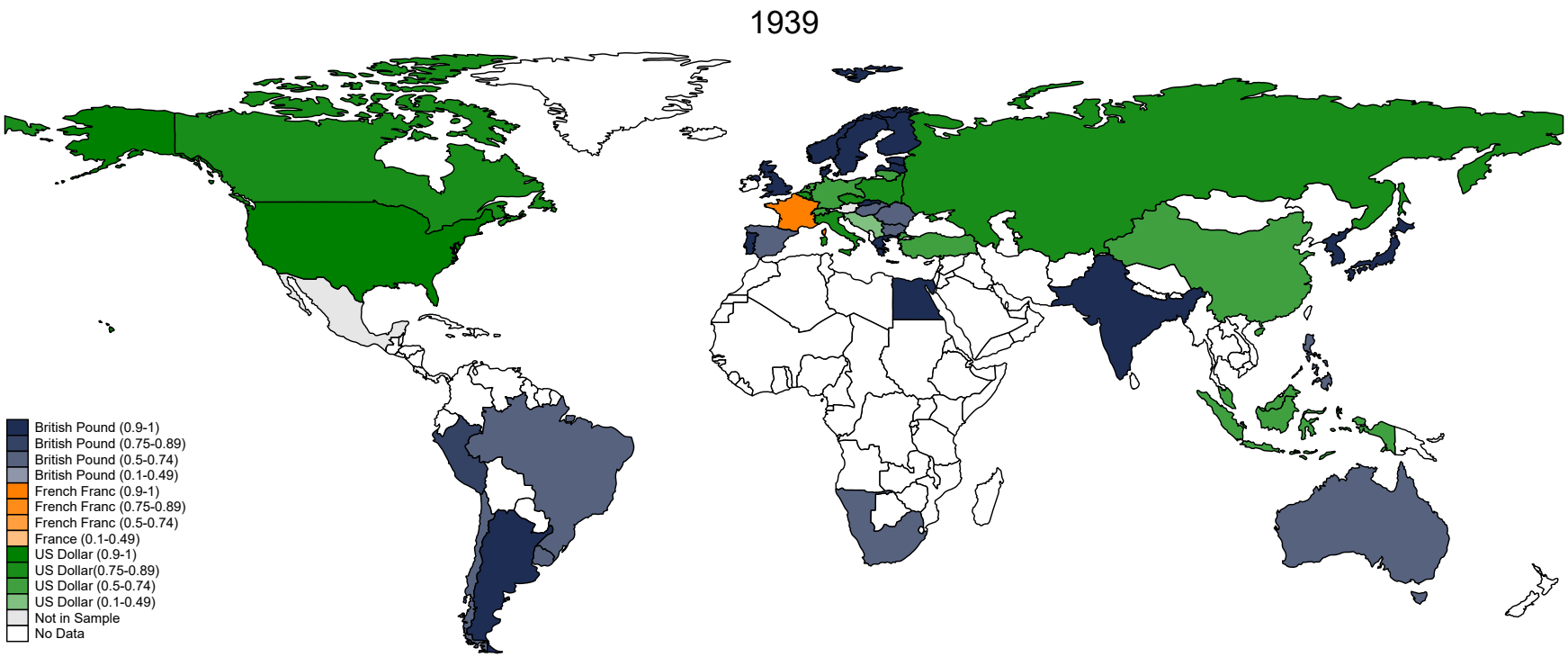
1931: The FFR Steps into the Instability of the GBP and the USD



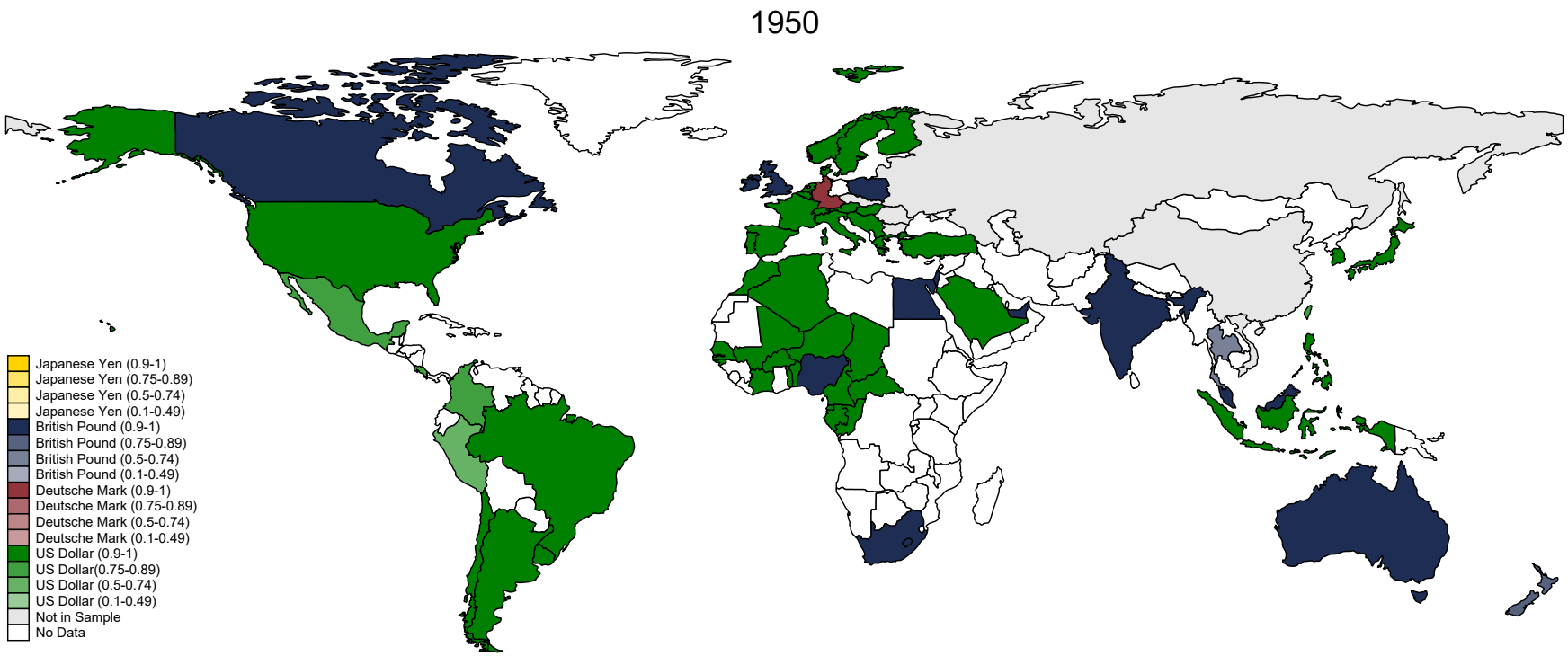
1936: FFR Dominance Before the 1936 French Election



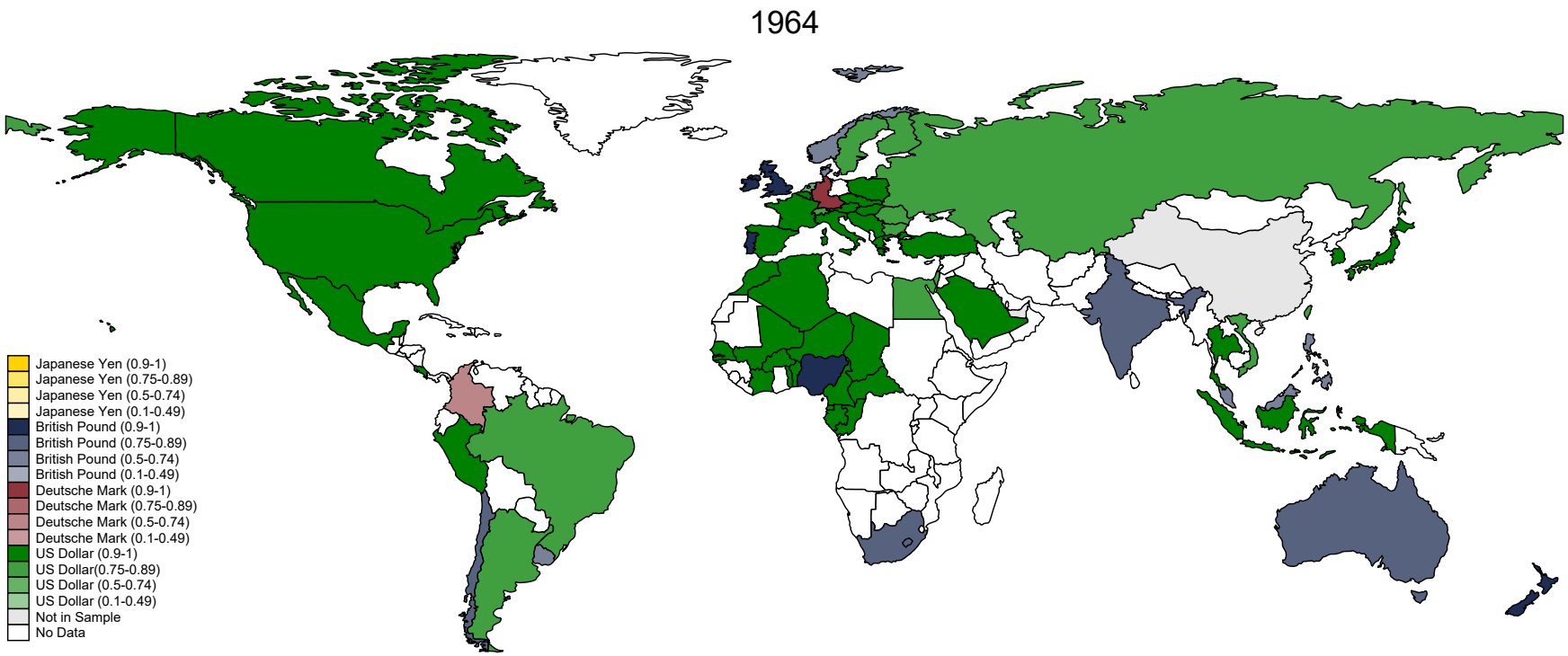
1939: GBP and USD Bipolarity at the Eve of WWII



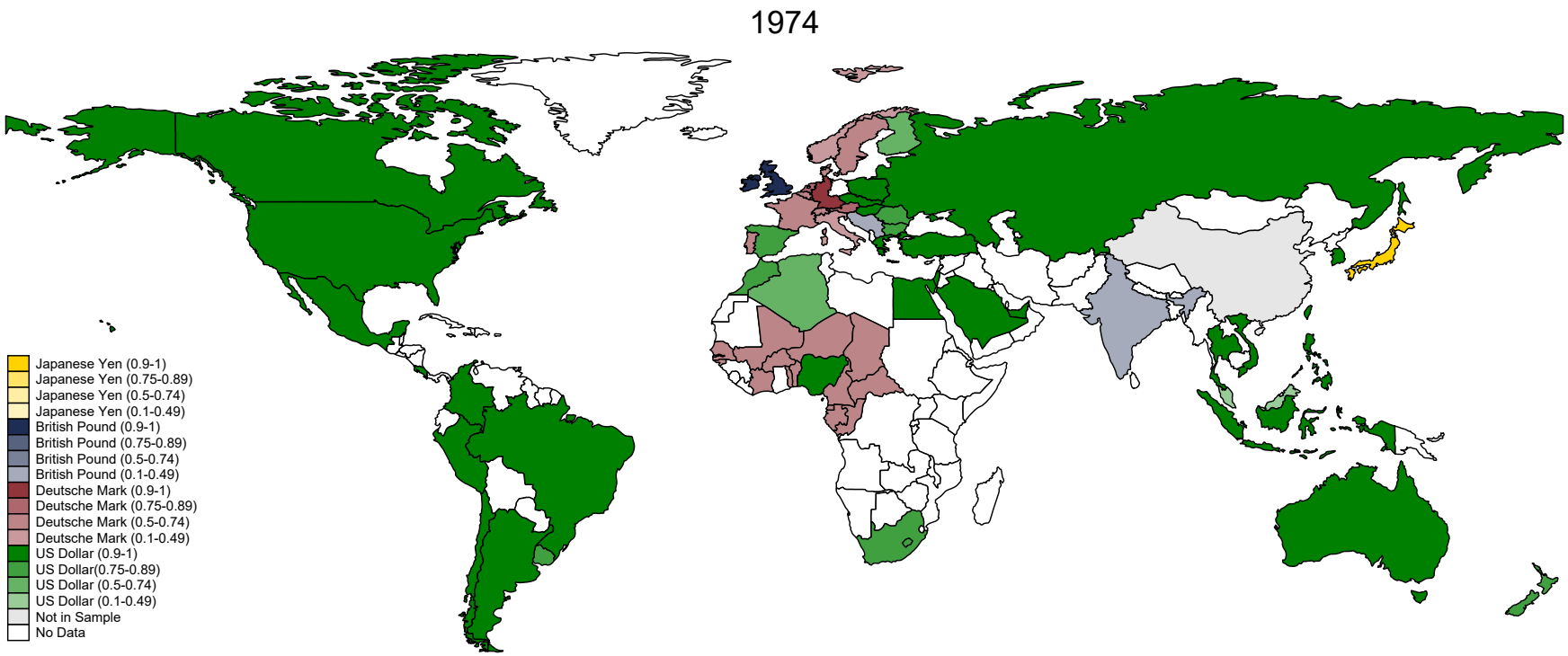
1950: USD Dominance after WWII



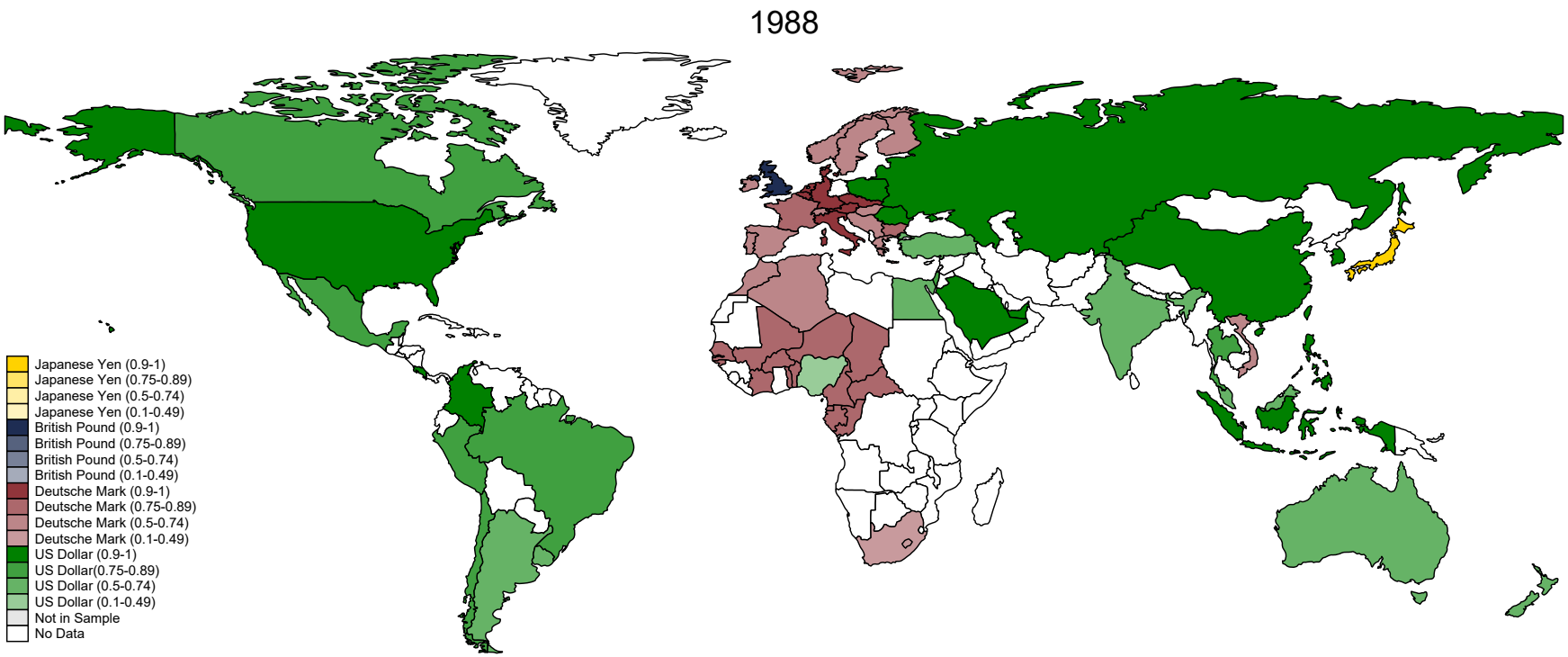
1964: "Privilège Exhorbitant"



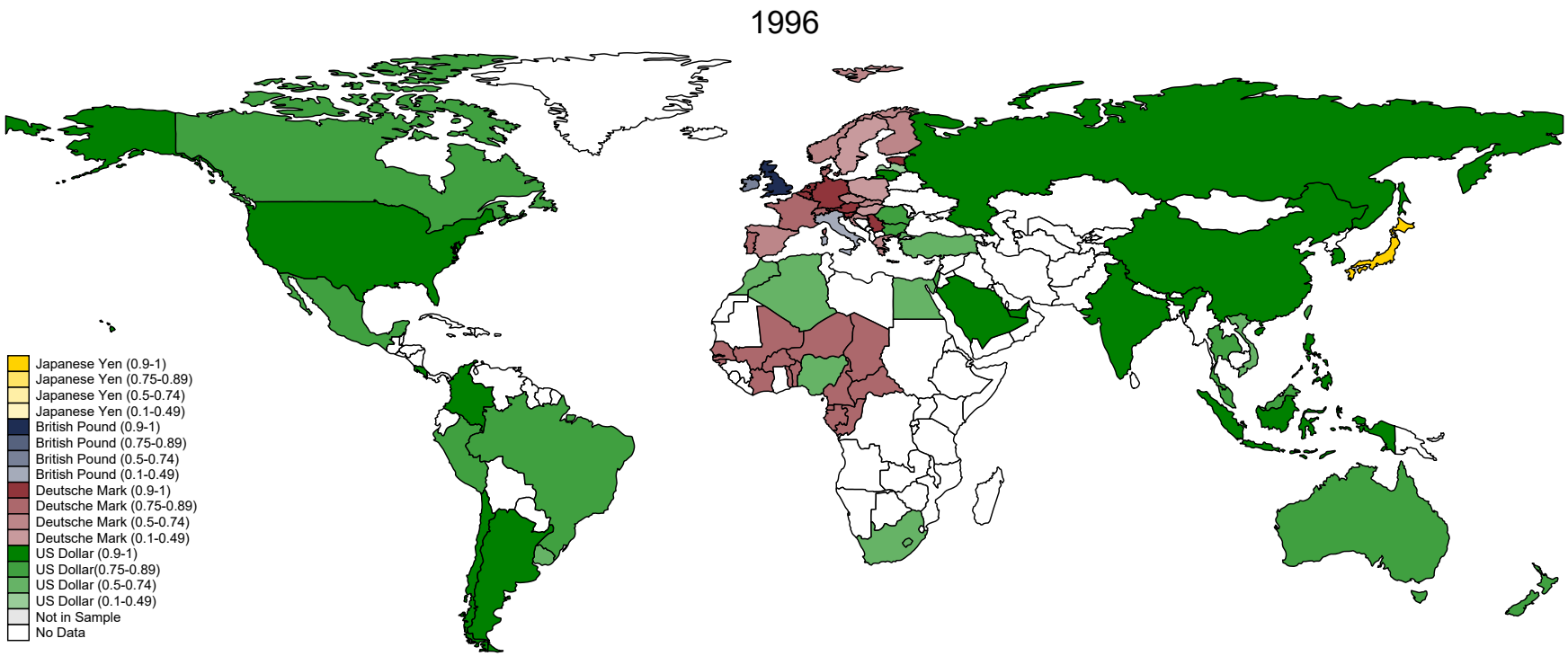
1974: The Beginnings of a DEM Zone



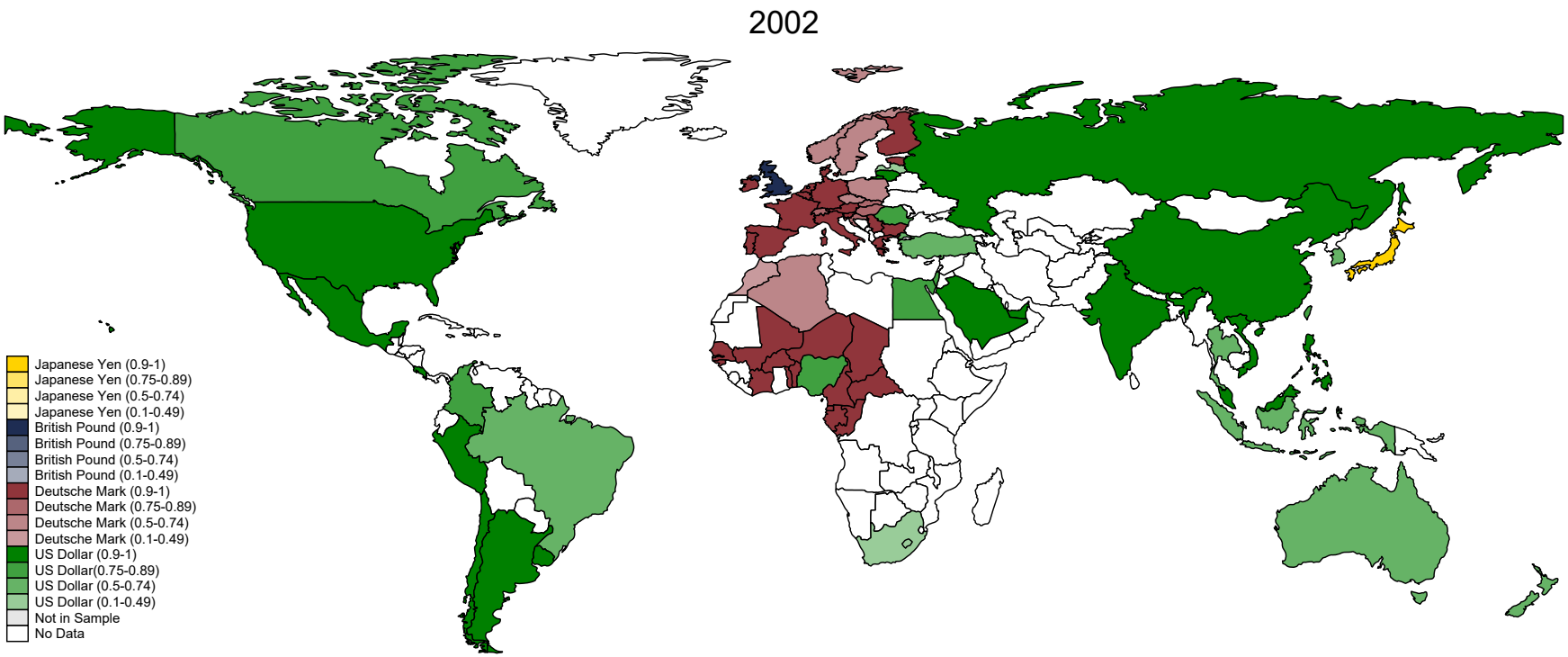
1988: "German Dominance Hypothesis"



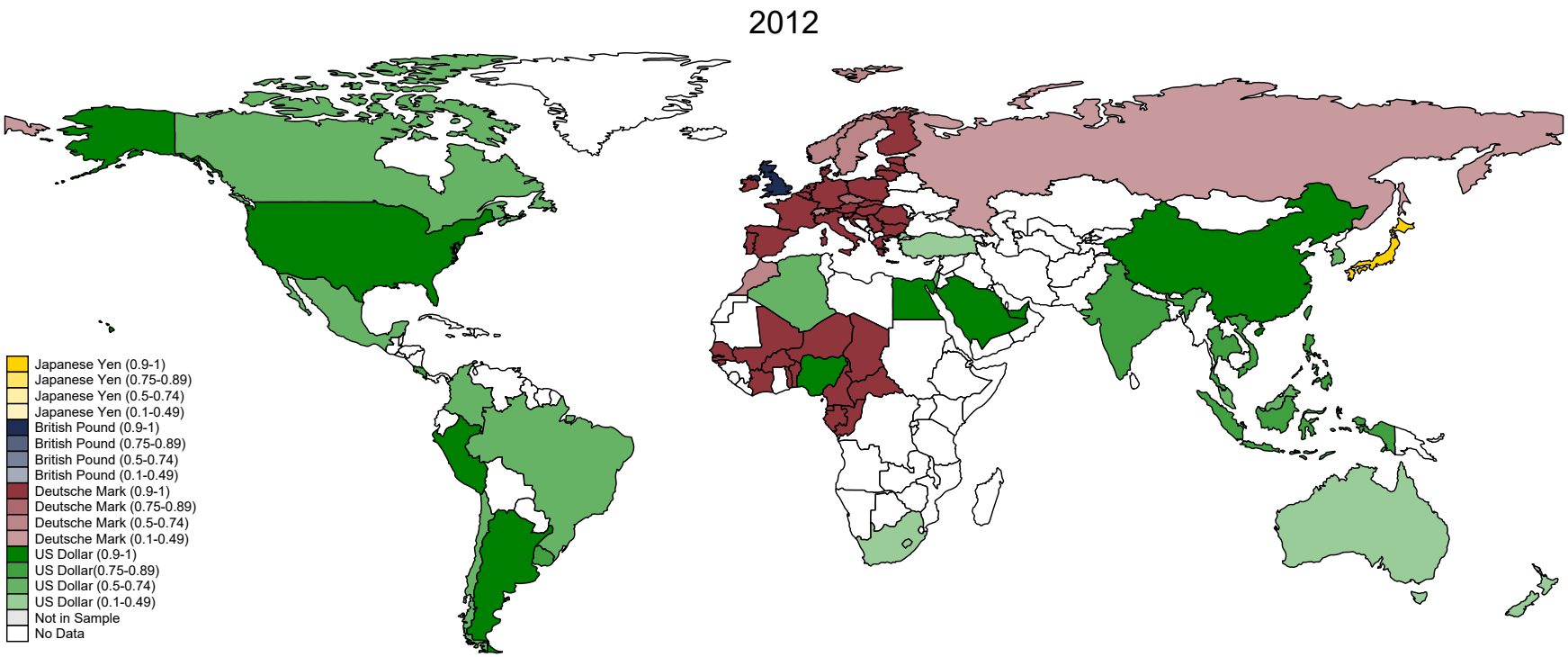
1996: Limited Fall of DEM Influence after the EMS Crisis



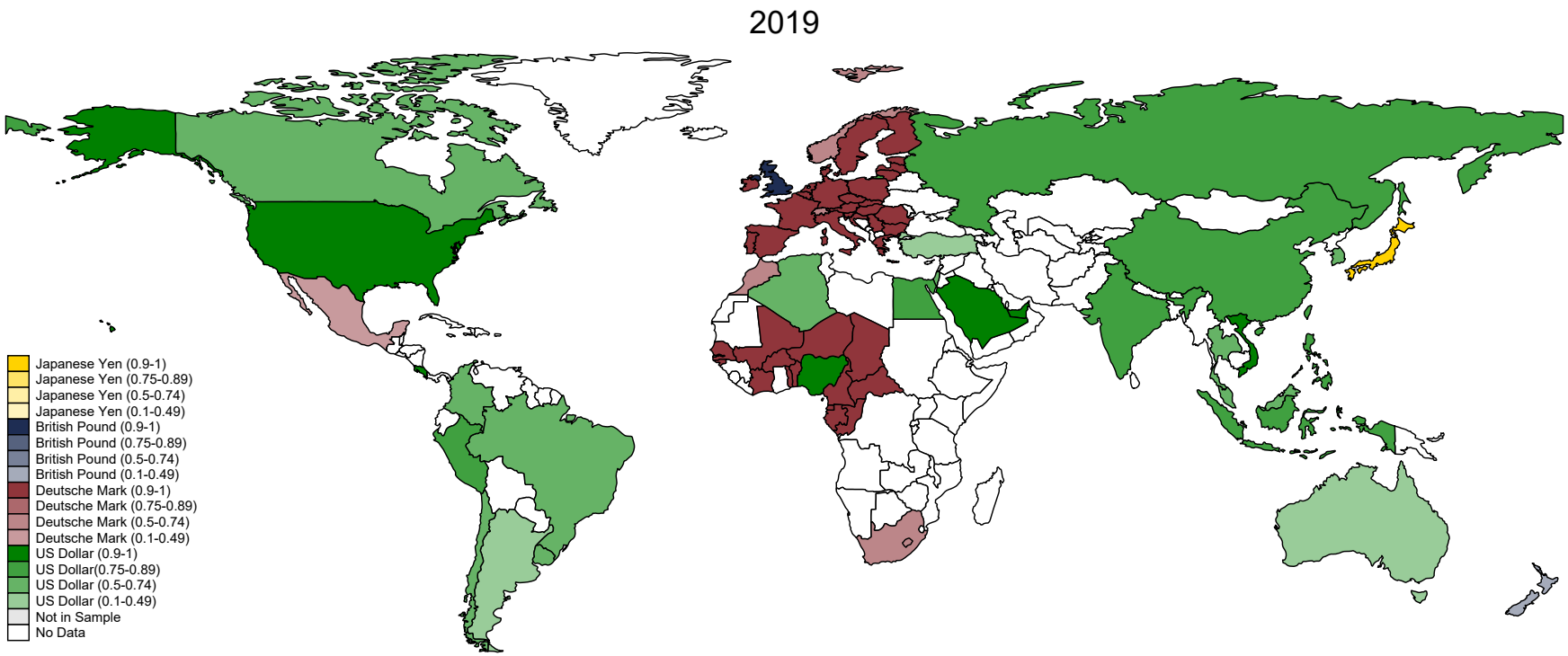
2002: The EUR Builds on the DEM Legacy



2012: EUR Influence Resists Despite the Crisis



2020: USD Dominance Persists



Pooled Regressions - 1820-1914

	(1)	(2)	(3)	(4)	(5)	(6)
GBP	0.608***	0.589***	0.738***	0.678***	0.673***	0.477***
	(0.0623)	(0.0609)	(0.0815)	(0.0382)	(0.0384)	(0.0570)
FFR	0.271***	0.304***	0.331***	0.0573**	0.0604**	0.0208
	(0.0620)	(0.0631)	(0.0884)	(0.0257)	(0.0269)	(0.0341)
DEM	-0.0197	-0.0325	-0.0199	0.213***	0.214***	0.278***
	(0.0326)	(0.0331)	(0.0661)	(0.0365)	(0.0364)	(0.0576)
Controls	NO	YES	NO	NO	YES	NO
Numéraire	XAG	XAG	NLG	XAG	XAG	NLG
Period	1820-1870	1820-1870	1820-1870	1871-1914	1871-1914	1871-1914
Obs.	13,646	13,646	14,678	36,887	36,887	39,862
R-squared	0.058	0.058	0.018	0.73	0.73	0.017

Robust standard errors reported in parenthesis. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.1 levels respectively. Controls include first-differences of proxies for liquidity and risk-premium, as well as weekly log-changes of commodity prices. Pooled regression using Silver as *numéraire* exclude the Netherlands for comparability.

Pooled Regressions - 1918-1939

	(1)	(2)	(3)	(4)	(5)	(6)
GBP	0.685***	0.685***	0.637***	0.499***	0.498***	0.479***
	(0.0275)	(0.0276)	(0.0293)	(0.0226)	(0.0226)	(0.0232)
FFR	0.0467***	0.0471***	0.0492***	0.269***	0.266***	0.320***
	(0.00752)	(0.00757)	(0.00745)	(0.0163)	(0.0164)	(0.0179)
USD	0.139***	0.142***	0.144***	0.161***	0.168***	0.114***
	(0.0263)	(0.0265)	(0.0281)	(0.0171)	(0.0173)	(0.0139)
Controls	NO	YES	NO	NO	YES	NO
Numéraire	XAG	XAG	HKD	XAG	XAG	HKD
Period	1918-1930	1918-1930	1918-1930	1931-1939	1931-1939	1931-1939
Obs.	19,712	19,712	20,695	15,624	15,624	15,390
R-squared	0.404	0.404	0.367	0.708	0.708	0.672

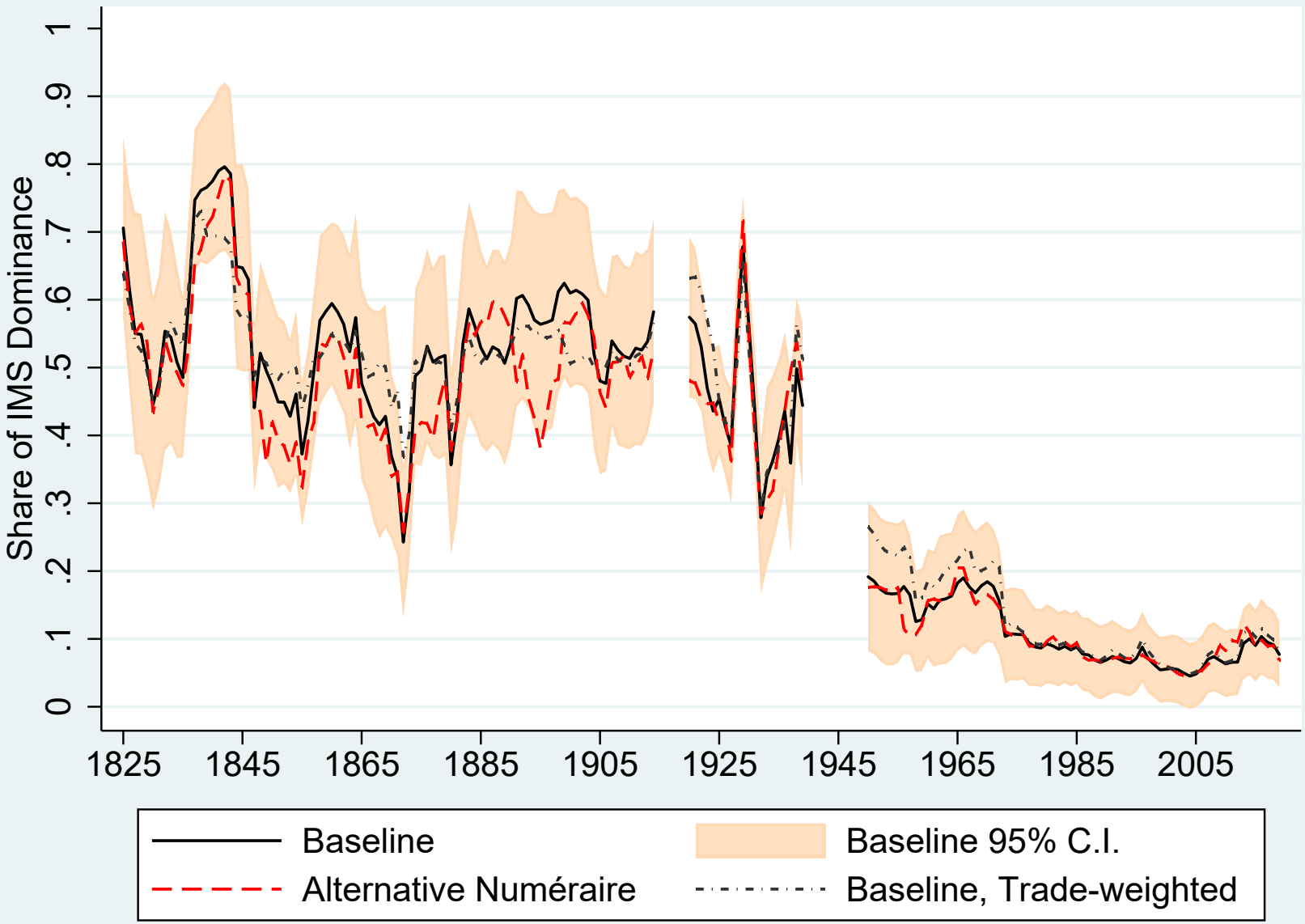
Robust standard errors reported in parenthesis. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.1 levels respectively. Controls include first-differences of proxies for liquidity and risk-premium, as well as weekly log-changes of commodity prices. Pooled regressions using Silver as *numéraire* exclude Hong Kong for comparability.

Pooled Regressions - 1950-2020

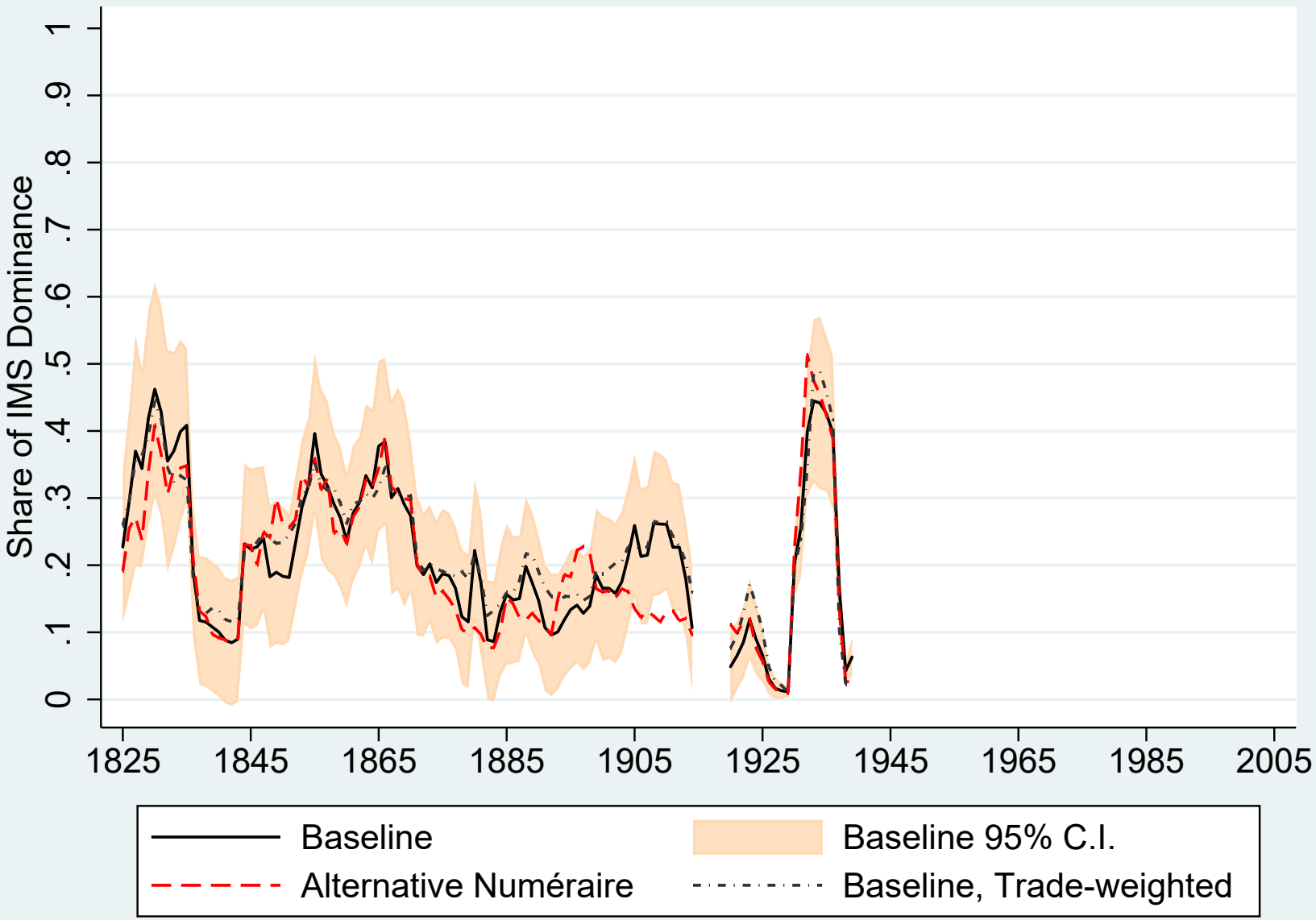
	(1)	(2)	(3)	(4)	(5)	(6)
GBP	0.327***	0.329***	0.333***	0.0556***	0.0517***	0.0684***
	(0.0150)	(0.0150)	(0.0160)	(0.00423)	(0.00424)	(0.00418)
DEM	-0.00276	-0.00304	-0.000934	0.404***	0.401***	0.411***
	(0.00690)	(0.00695)	(0.00834)	(0.00445)	(0.00444)	(0.00728)
USD	0.669***	0.668***	0.626***	0.553***	0.551***	0.497***
	(0.0165)	(0.0165)	(0.0212)	(0.00486)	(0.00485)	(0.00414)
JPY	-	-	-	-0.00647**	-0.0100***	-0.00580*
				(0.00324)	(0.00343)	(0.00341)
Controls	NO	YES	NO	NO	YES	NO
Numéraire	XAG	XAG	CHF	XAG	XAG	CHF
Period	1948-1973	1948-1973	1948-1973	1974-2020	1974-2020	1974-2020
Obs.	57,799	57,799	56,241	110,326	110,152	101,182
R-squared	0.833	0.833	0.04	0.859	0.859	0.341

Robust standard errors reported in parenthesis. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.1 levels respectively. Controls include first-differences of proxies for liquidity and risk-premium, as well as weekly log-changes of commodity prices. Pooled regressions using Silver as *numéraire* exclude Switzerland for comparability.

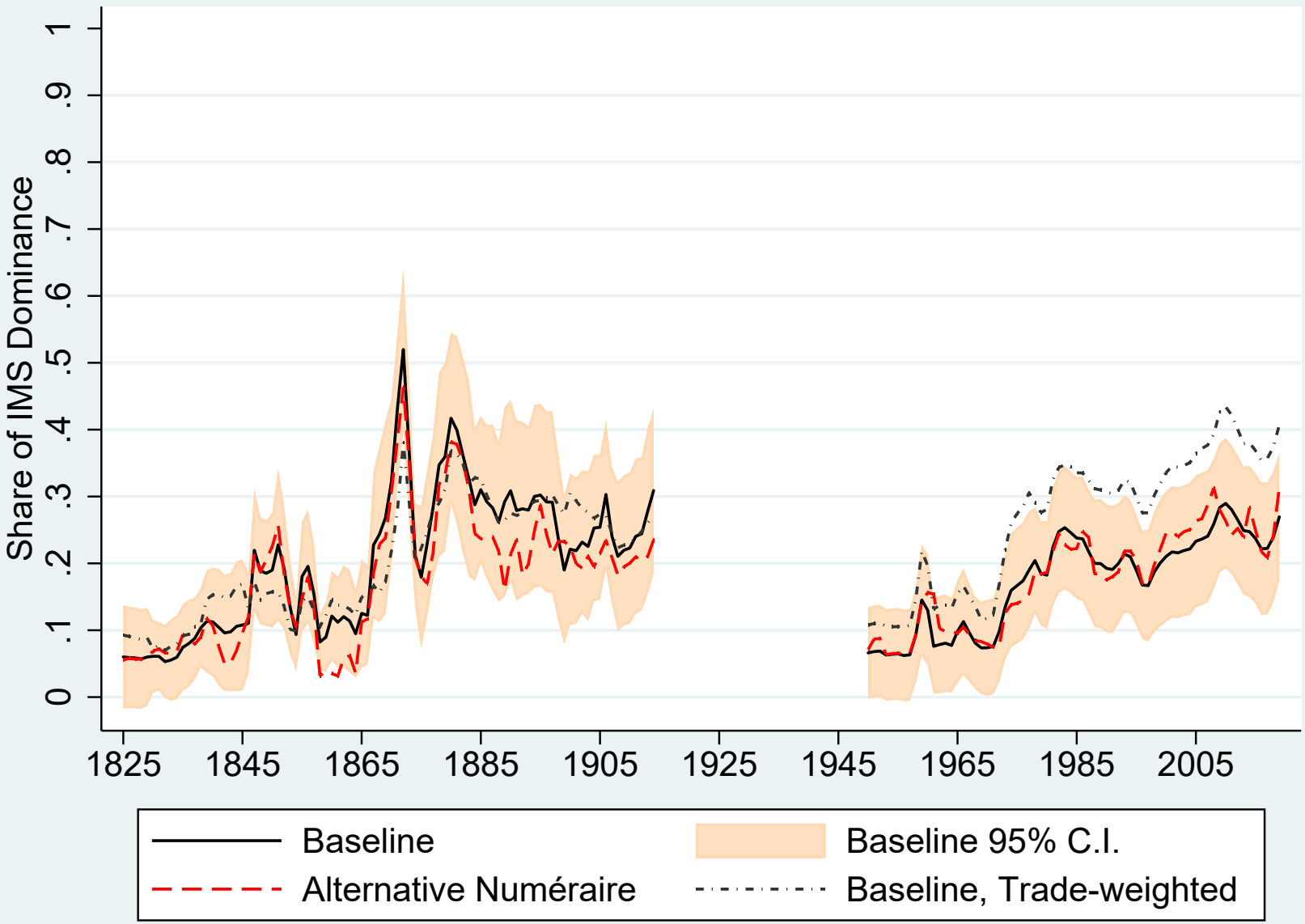
GBP - Baseline and Alternative Weights



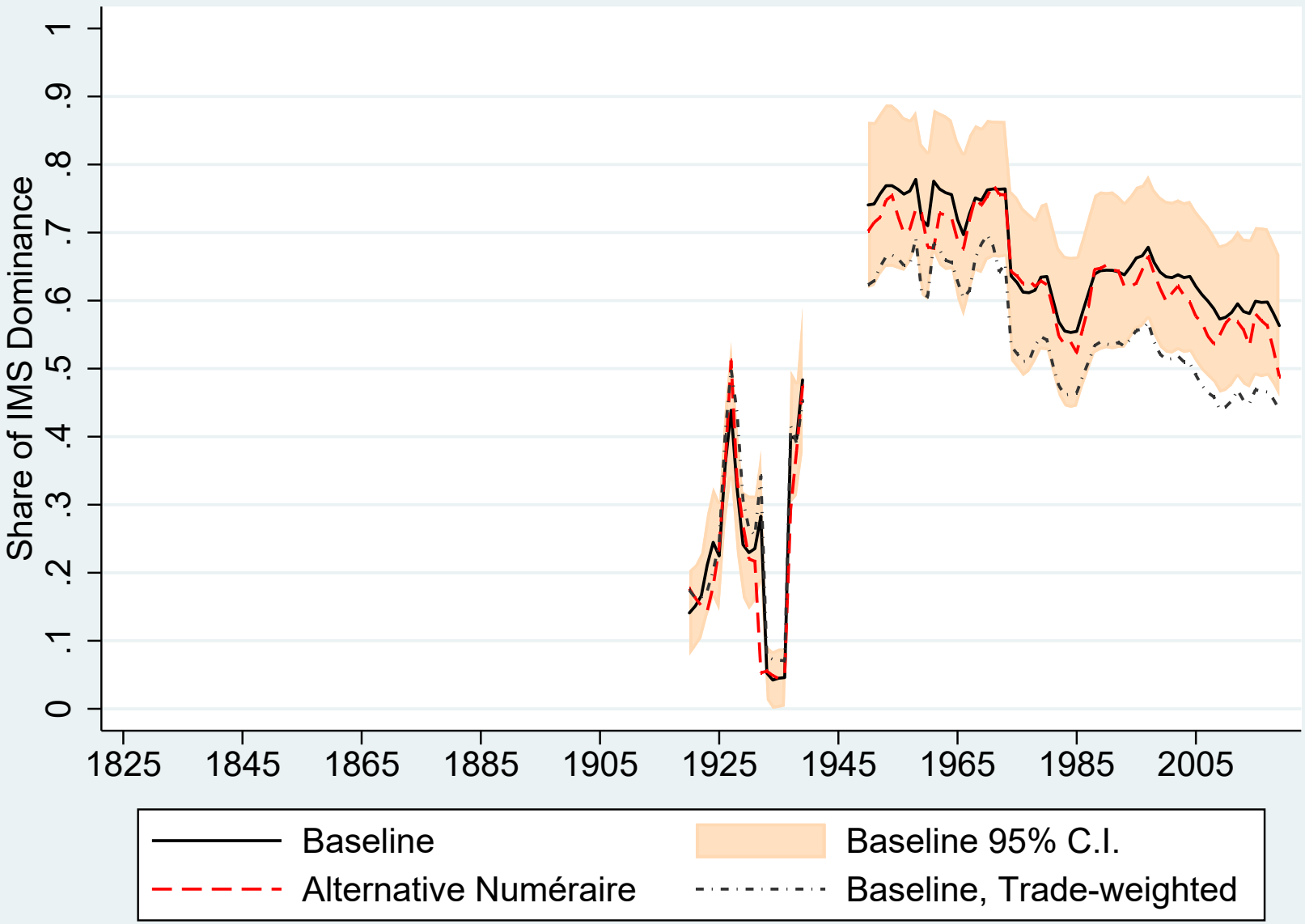
FFR - Baseline and Alternative Weights



DEM - Baseline and Alternative Weights



USD - Baseline and Alternative Weights



JPY - Baseline and Alternative Weights