The Rise and Fall of Global Currencies Over Two Centuries

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Overview

- This is a measurement paper, first product of an extensive work of original historical data collection.
- Follows a growing literature of long-run historical data contributions to international finance (Reinhart and Rogoff, NBER 2008; Jordà et al., NBER 2016).
- First draft/presentation of the paper with the full two centuries dataset, suggestions very much welcome!
- Hopefully, first step of a research agenda on the 1) determinants of global currency status, 2) relationship between the IMS architecture and financial stability and 3) long-run dynamics of FX markets.

Motivation

- Renewed interest in dollar dominance
  - Longstanding debate: Triffin Dilemma, exorbitant privilege.
  - New: IPS, DCP, Global Financial Cycle...
- What a transition out of dollar dominance would look like?
  - Winner takes-all
  - 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. A continuous measure of the relative dominance of global currencies, comparable over time, since 1825.
   - New extensive original dataset of historical weekly exchange returns.
   - I classify a global representative sample of countries in fuzzy currency blocs based on exchange-rate behavior, over two centuries.
2. A systematic documentation of previous episodes of global currency competition
   - I build on the work of Eichengreen and co-authors on the interwar period and uncover new episodes of global currency competition.
3. A quantification of the overall IMS architecture and degree of competition over two centuries.
   - I document the two centuries correlation between the level of IMS competition and the prevalence of financial crises globally.

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 and Research Agenda

Two Views of Dollar Hegemony (1/2)

- **"Harvard view"** (Eichengreen, 2019)
- Gopinath (NBER 2015), Gopinath and Stein (QJE 2021):
  - Prevalence of network externalities and feedback-loops among different functions of global currencies.
- Farhi and Maggiori (QJE, 2018), Farhi and Maggiori (AEA P&P, 2019):
  - A multipolar IMS is vulnerable to self-fulfilling crises, transition out of dollar hegemony likely to be towards a new hegemon.
- Grounded in the new literature on the channels of dollar dominance and classical work on gold-exchange standard instability by Nurkse (1944) and Triffin (1960).

Two Views of Dollar Hegemony (2/2)

- **"Berkeley view"** (Eichengreen, 2019)
- Eichengreen et al. (2017) summarizing previous work:
  - An hegemonic IMS is an exception in historical perspective.
  - Network externalities did not prevent sudden IMS shifts in the past.
  - A more multipolar IMS is sustainable, conditional on effective policy coordination.
- Grounded in a long run view of the IMS, with the classical gold standard providing an example of stable multipolar IMS.
- Multipolarity increasingly seen as desirable from a policy perspective (Carney, 2019) due to international spillovers, scarcity of safe assets.

IMS Competition in Historical Perspective (1/2)

- 1825-1870
  - **Gold** (Britain), **Bimetallic** (France) and **Silver** (Central-Eastern Europe, Asia) monetary standards.
  - French initiative towards harmonisation of the IMS around the franc in the 1860s (Latin Union).
  - 1870 Franco-Prussian war indemnities destabilise French external position (largest historical transfer of foreign assets).
- 1871-1914
  - German unification, international **shift towards British gold standard**.
  - Generally portrayed as a British dominated but multipolar IMS.
  - Quantification by Lindert (1969): sterling accounted for 50% of global reserves, the remainder being equally shared by the franc and the mark.

IMS Competition in Historical Perspective (2/2)

- 1918-1939
  - Successive collapses of global currencies, including GBP in 1931.
  - **Old view** (Triffin, 1964; Chinn and Frankel, NBER 2005): inertia, network effects meant the dollar only overtook the sterling after WW2.
  - **New view** (Eichengreen and Flandreau, EREH 2009; Eichengreen and Flandreau, OER 2012; Chitu et al., JDE 2014): the dollar overtook the sterling as soon as the end of WW1 looking at global reserves, trade finance and bond markets.
- 1945-2021
  - Dollar-exchange standard 1945-1973.
  - **Increase of dollar dominance since end of gold convertibility** (Gourinchas, 2021; Iltzetki et al., QJE 2019.).

Related Work

1. Eichengreen and Flandreau (1994), Reinhart and Rogoff (QJE, 2004).
2. 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.
3. 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.

New Data

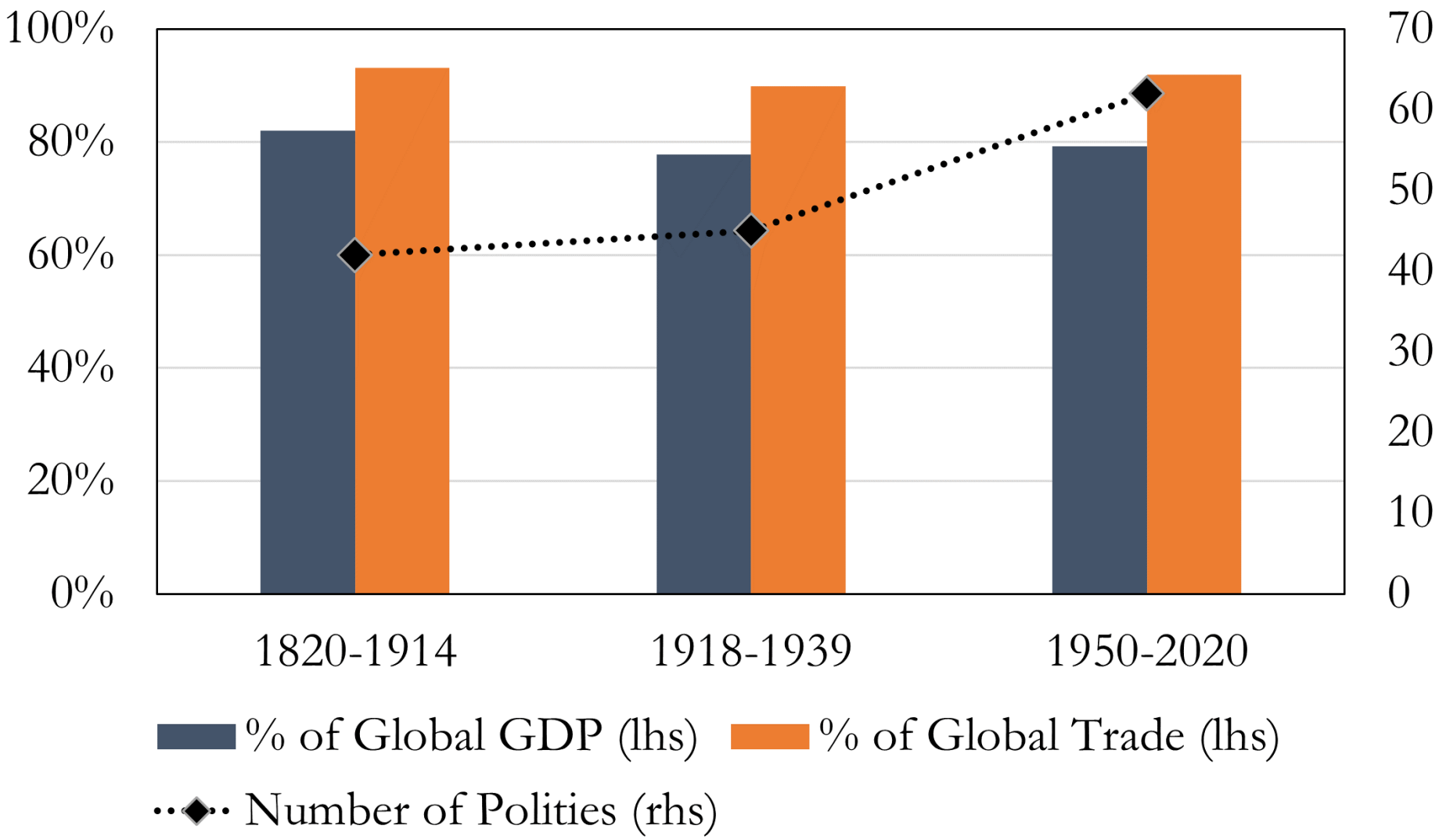
- Extensive work (hundreds of hours...) of manual digitisation of exchange-rate prices from original printed sources.
- For the first time, exchange-rate prices at weekly frequency for the entire London FX market between 1846 and 1939.
- Merged with existing commercial (Global Financial Data) and official (BIS) exchange-rate data.
- Continuous coverage, excluding WW1 and WW2, of around 80% of global GDP and 90% of global trade between 1825 and 2020.
- Monthly frequency until 1846, then weekly as soon as available.
- Sample entry is likely to be endogenous to the IMS structure, I therefore include a country in the sample as soon as data are available.

Sources

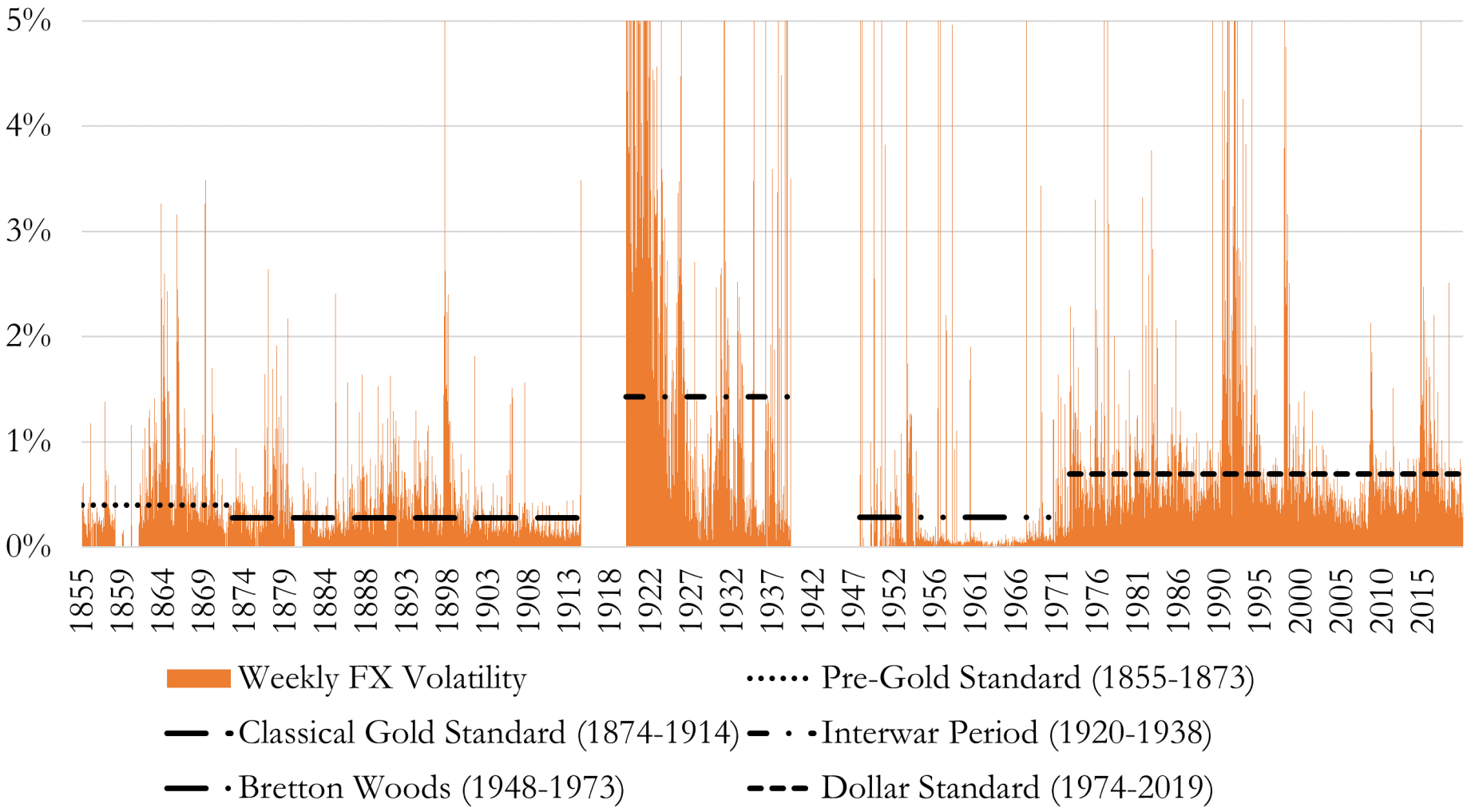
1. 1825-1914:
   - Monthly: Global Financial Data or own digitization of selected currencies, until available at weekly frequency.
   - Weekly: Own data digitised from The Economist magazine or the Bank of England Weekly Accounts. Global Financial Data otherwise.

   ▸ 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



Global Currency Competition and FX Co-Movements

- My measurement of global currencies and the IMS relies on FX co-movements.
- FX co-movements are found to positively correlate with more direct measures of functions of global currencies (McCauley and Shu, JIMF 2019).
- Channels might differ over time:
  - Positive co-movement relates to financial and trade relationships (Fratzscher and Mehl, EJ 2014).
  - As foreign balance accumulation becomes a monetary policy tool in the mid/late 19th century, policy intervention should also play a role.
- In a nutshell: I assign shares of each country to global currency zones according to FX behaviour.

Frankel-Wei 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).

$$\Delta \ ln \ \frac{X_{i,t}}{Numéraire_t} = \alpha + \sum_h \beta_h \ \Delta \ ln \ \frac{Reference_{h,t}}{Numéraire_t} + \gamma_t' \mathbf{\Pi}_t + \epsilon_t \quad (1)$$

- Clean "horse race" between potential key currencies, yields intuitive monetary dominance factors that can be given a "share" interpretation.
- Important for specification is the choice of *numéraire* and global currency factors to be included.

Choice of *Numéraire*

- The literature typically favors a freely floating small-open economy currency (NZD, CHF) or an international unit of account such as the SDR or Gold (Frankel and Xie, AEA P&P 2010).
- No currency fulfills the above criteria over the 1825-2020 sample.
- I therefore turn to precious metals, and rely on the price of Silver (XAG) in London as my preferred *numéraire* througout the sample.
- As a robustness check, I also provide results using a small-open economy currency that, over the sub-sample, is not strictly pegged to a global currency and does not experience a currency black-market.
  - 1825-1914: Dutch Guilder
  - 1918-1939: Hong Kong Dollar
  - 1950-2020: Swiss Franc

Choice of Global Currency Factors

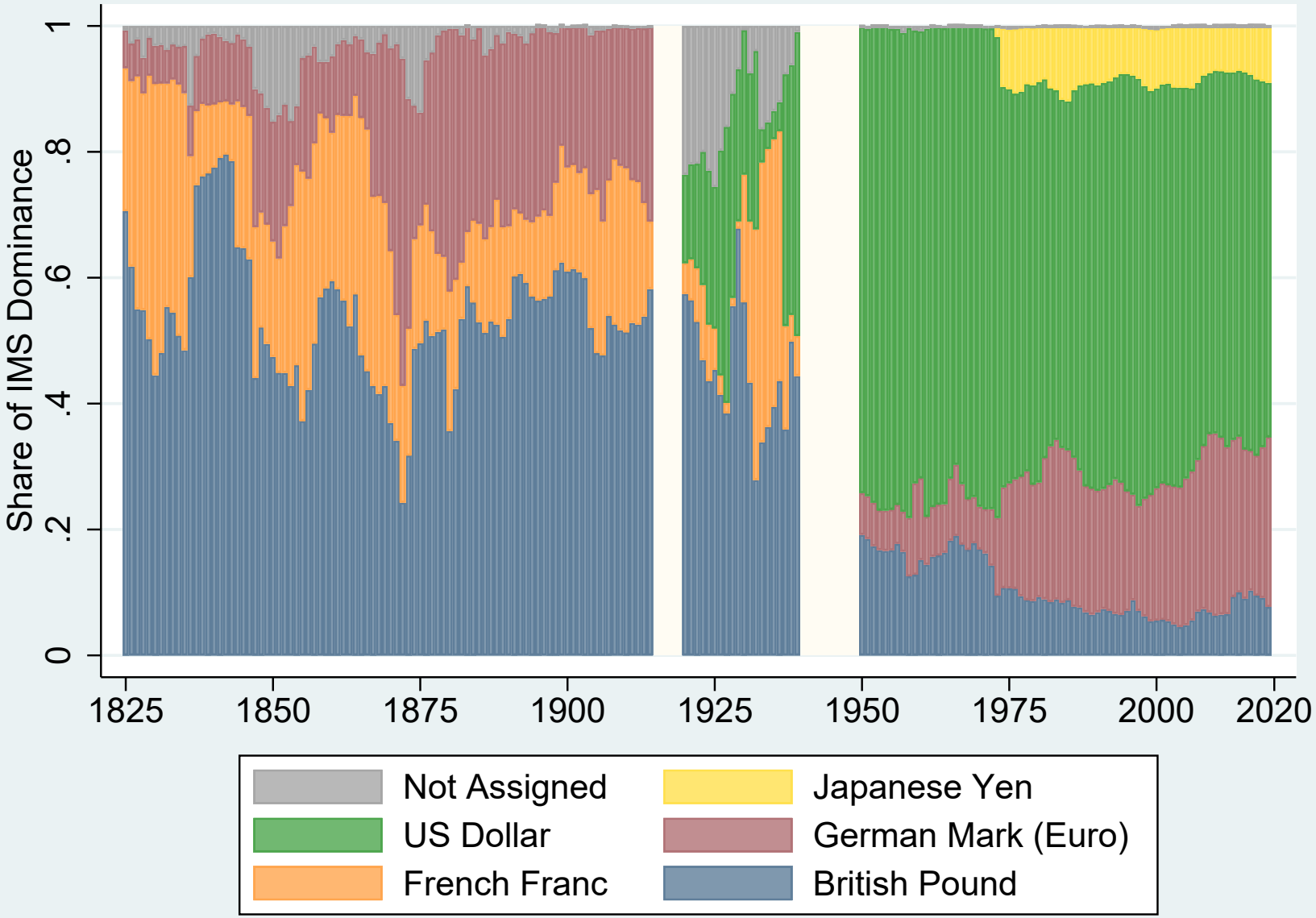
- 1825-1914
  - **Pound sterling, French franc and German mark** (Hamburg Banco Mark before 1873).
  - No rational to include USD, US are a capital importer with close to no role in foreign-balances (Lindert, 1969).
- 1918-1939
  - **Pound sterling, French franc and US dollar**.
  - German mark excluded as Germany experiences sovereign default, hyperinflation and extensive capital controls.
- 1950-2020
  - **Pound sterling, German mark (EUR), US dollar and Japanese yen.**
  - French franc excluded.
  - Yen only included from 1968.
  - Renminbi outside of the scope of the paper, given the emipirical challenge due to dollar anchor (Kawai and Pontines, JIMF 2016).

Yearly Global Currency Weights Algorithm

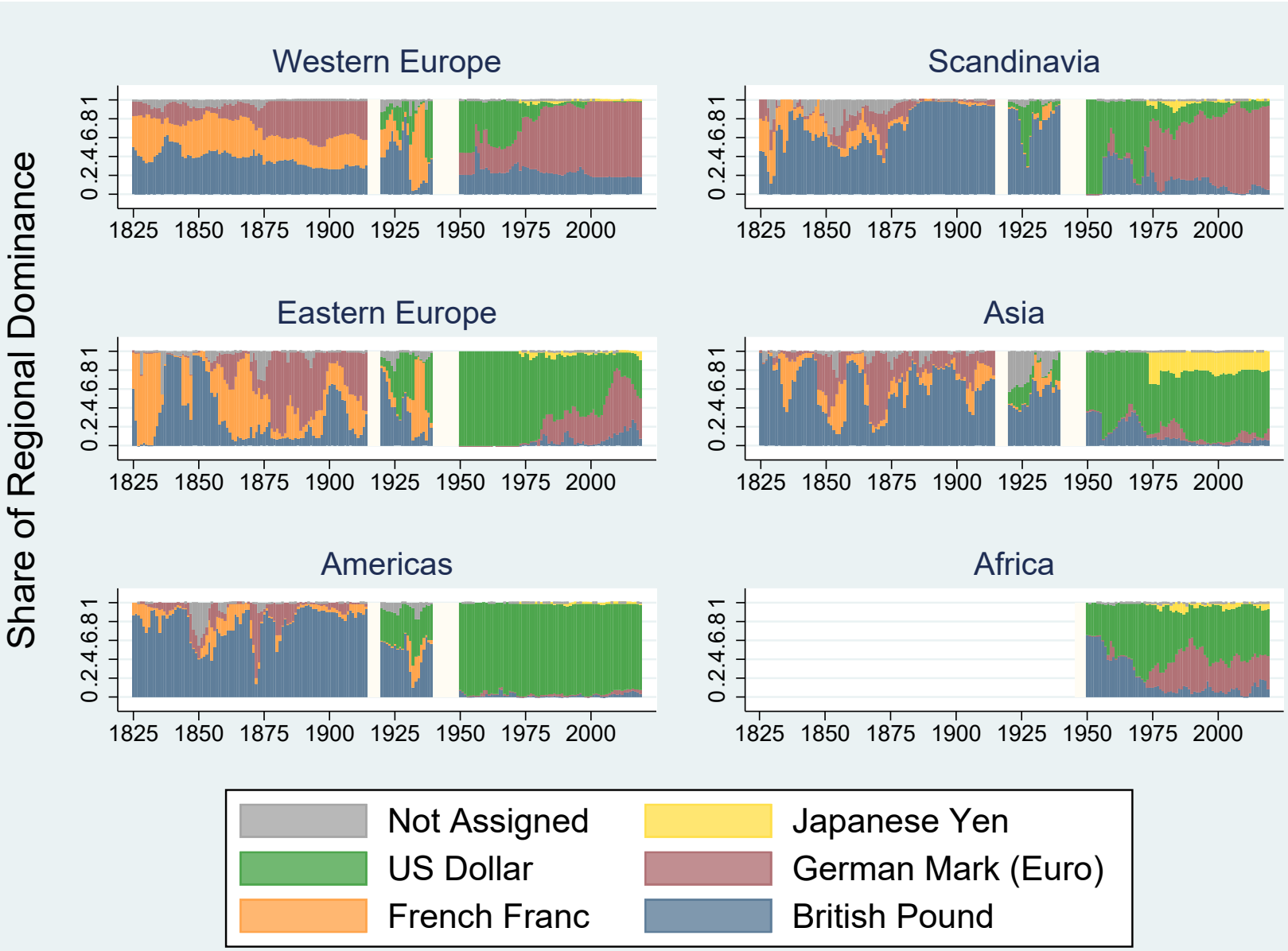
Bottom-up approach similar to Ito and McCauley (JIMF 2019), run the factor model for each polity and then aggregate up following three steps.

1. **Weekly coefficient**: Factor-models estimated, for each polity, at the highest frequency available with six-years rolling windows: 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 $\sum_{h=1}^{H} \widehat{\beta_{iht}}$ sums to 1. When data frequency transitions from monthly to weekly, the annual weight is represented by their average for the first 5 years of overlap.
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 (In 1914, 1929 or 2010 depending on the sub-period).

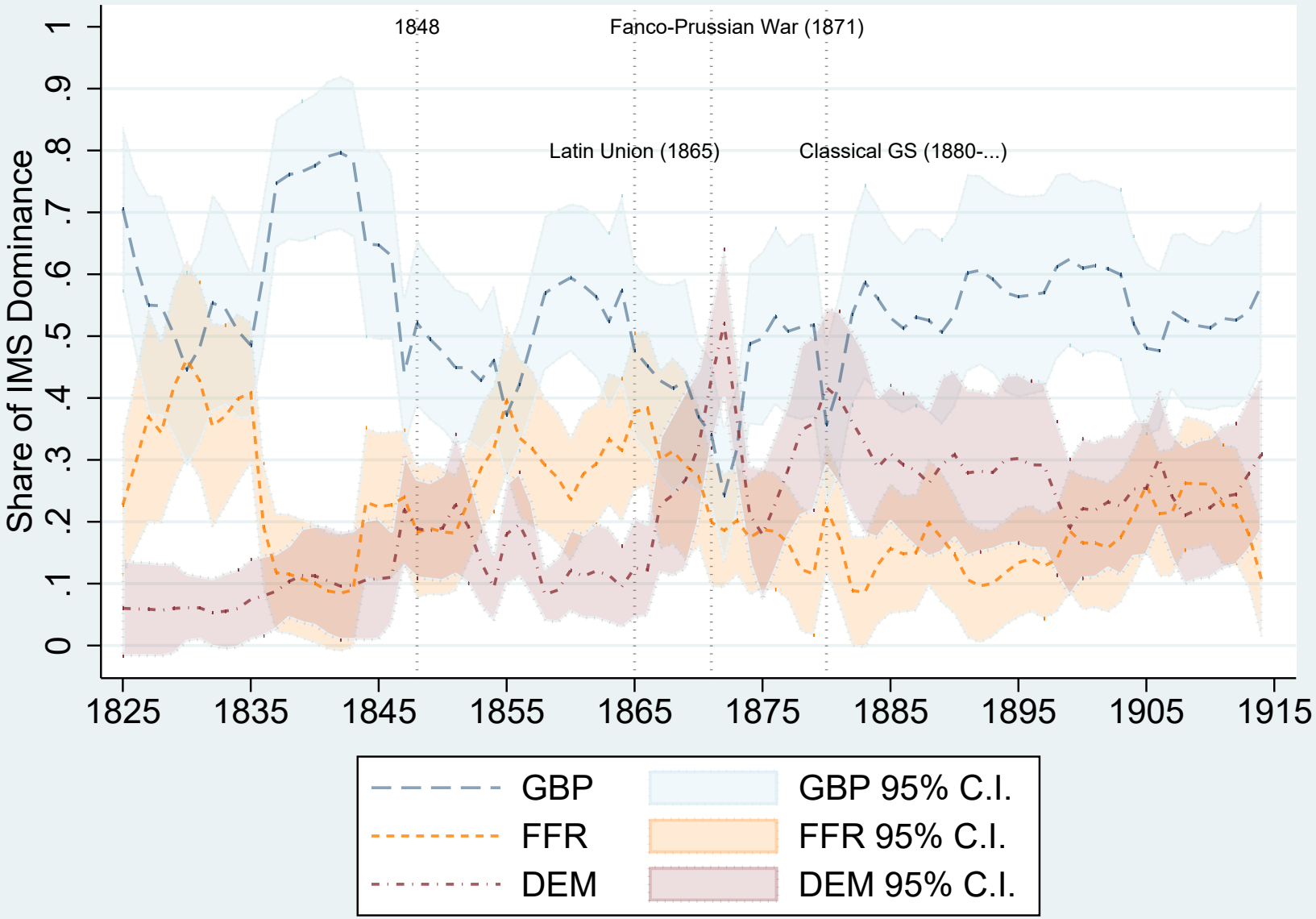
The Rise and Fall of Global Currencies over Two Centuries



A Regional View over Two Centuries



Multipolarity and a Challenged British Hegemony



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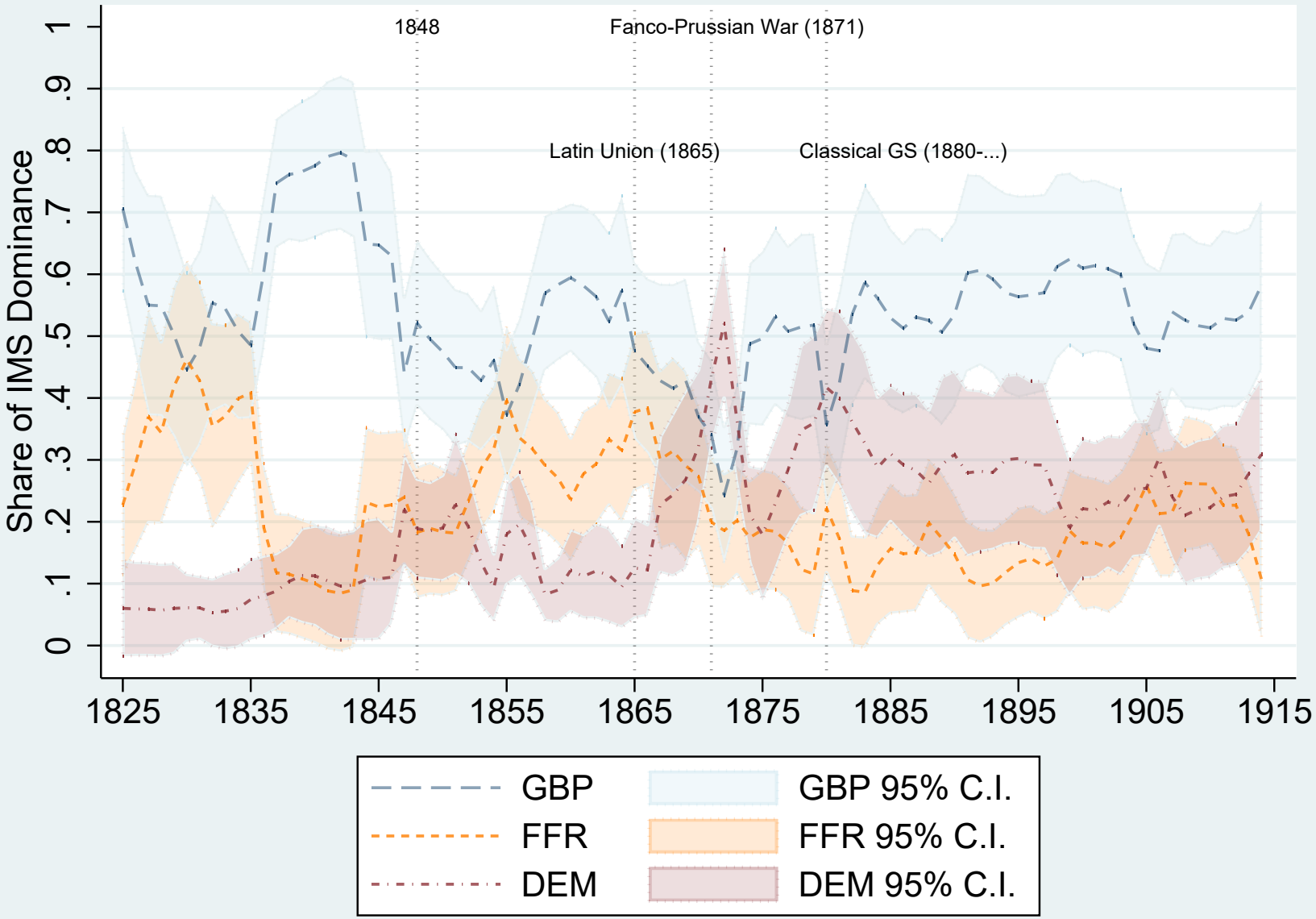
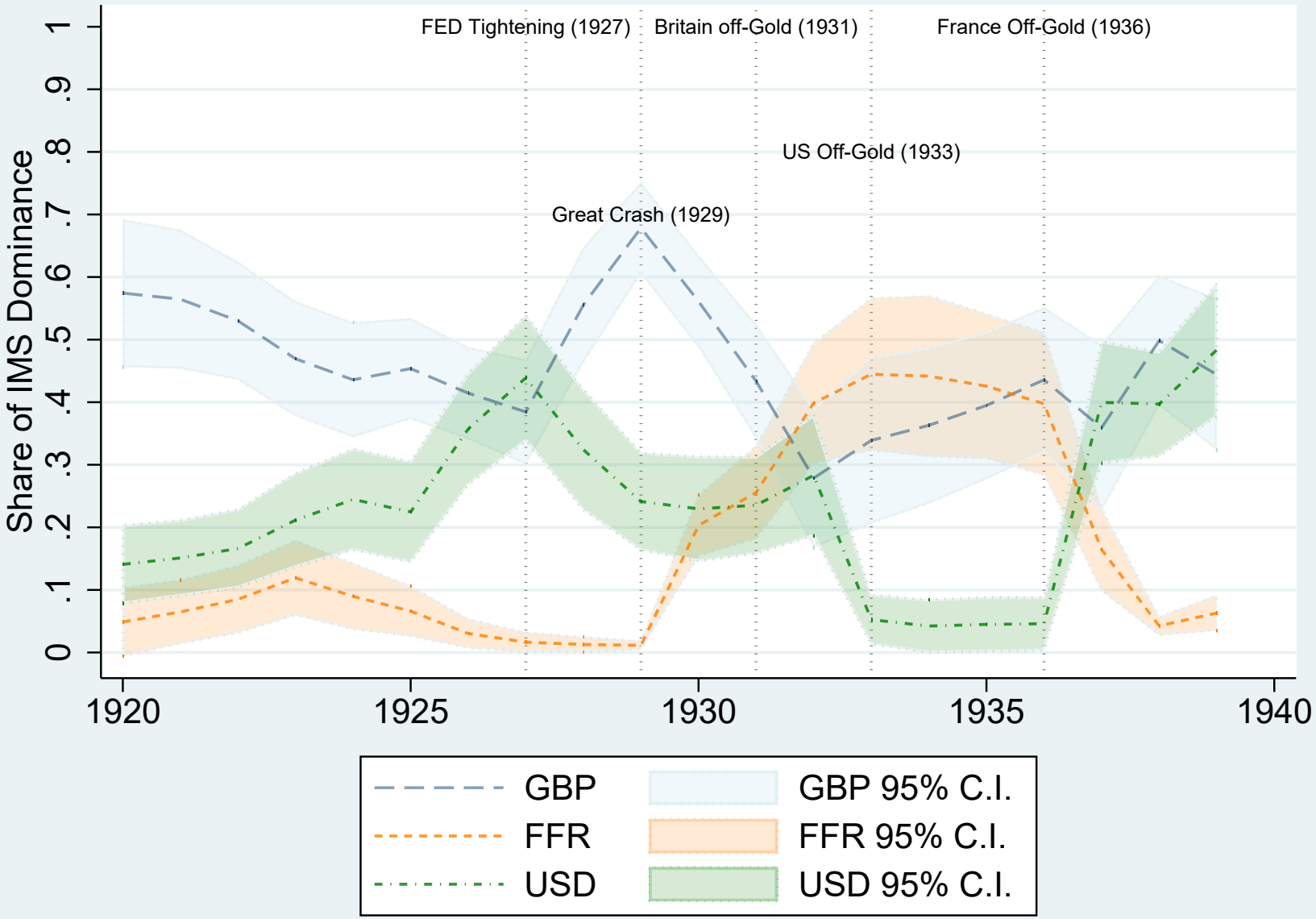
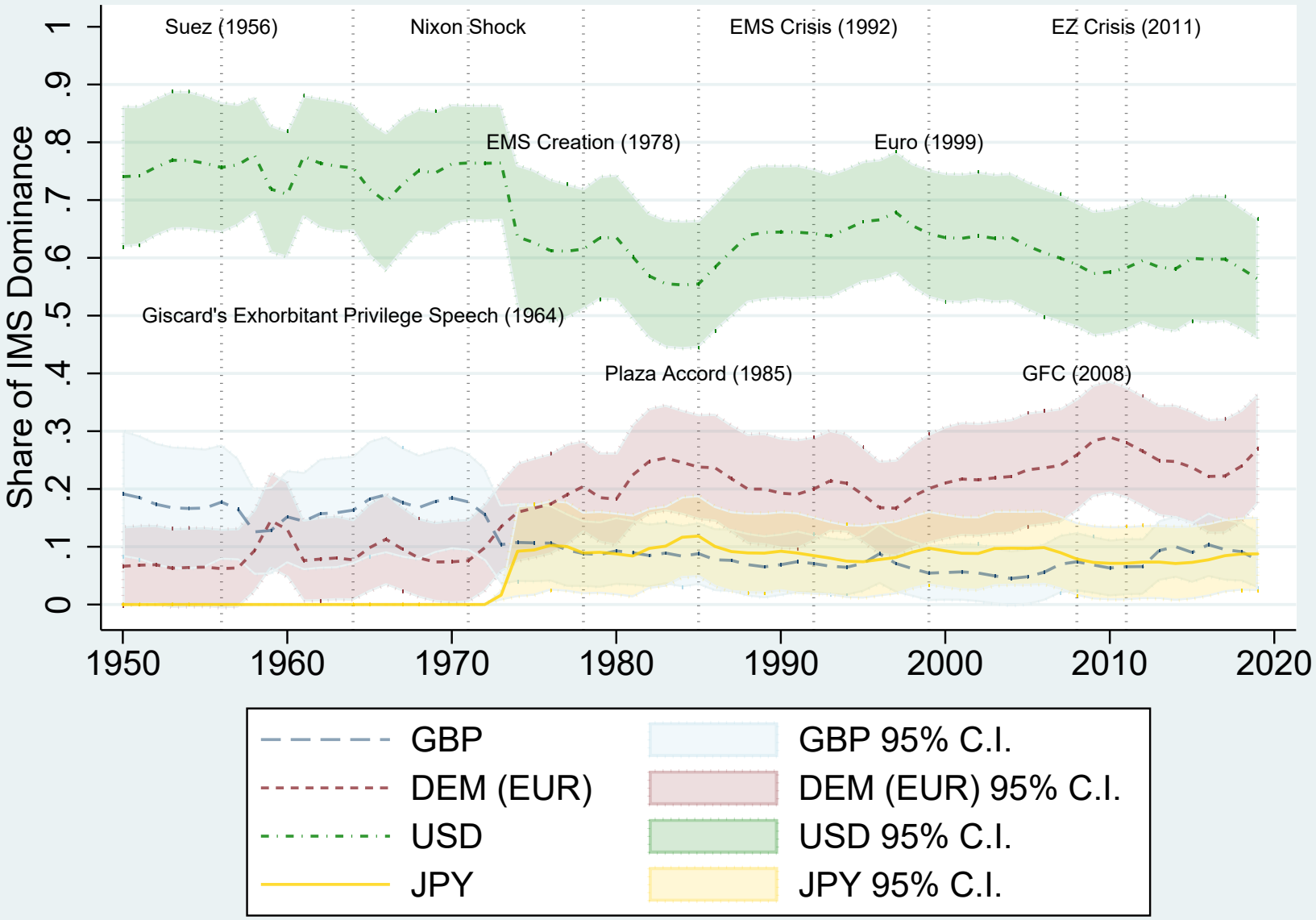


Global Currency Collapses and Fortune Reversals



Dollar Dominance



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.

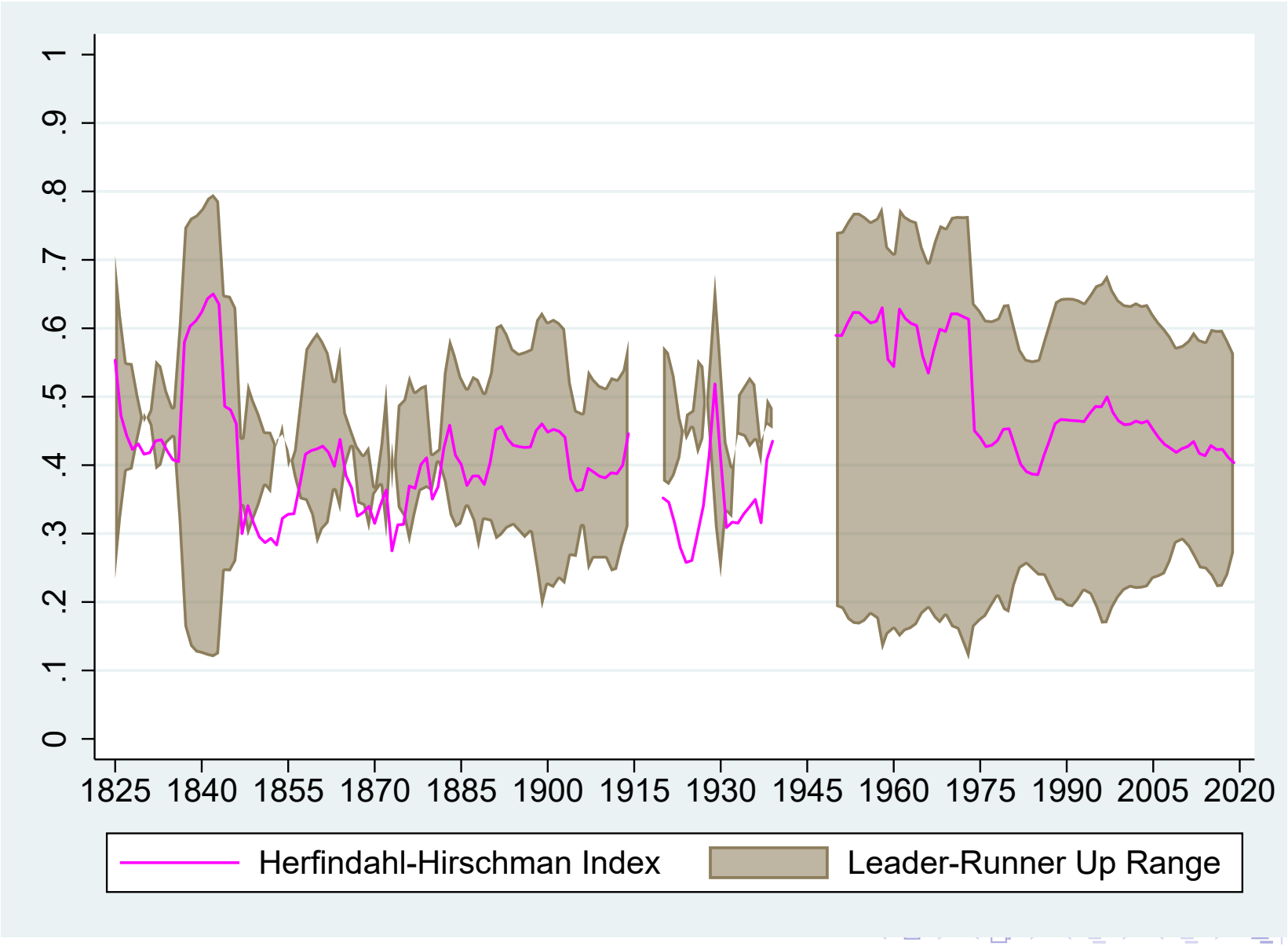
Robustness Checks and Further Results

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

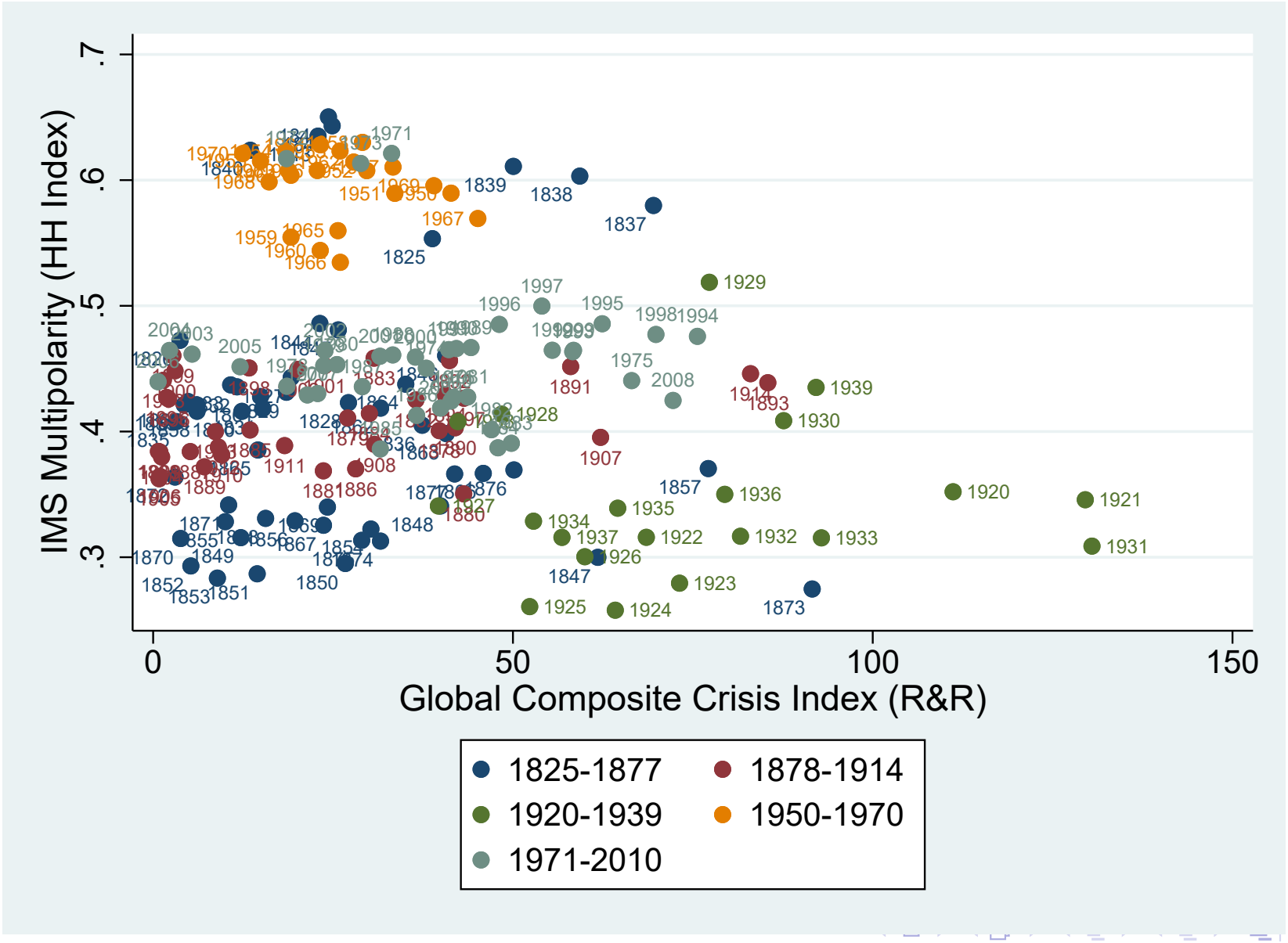
The Overall IMS Architecture over Two Centuries

- 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, given the prolonged large lead enjoyed by the dollar on other global currencies.
  - A benign interpretation: structural shift in financial technology consistent with DCP paradigm, higher 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, and the evidence I uncover regarding rapid shifts in IMS dominance, 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.
  - Driven by interwar period instability and Bretton Woods stability.
  - However, the stable Classical Gold Standard does not look particularly multi-polar in historical perspective.

Research Agenda

1. Measurement of the IMS
   - Rise and Fall of Global Currencies
   - With more data, extend back Iltzetzki et al. (QJE 2019) classification of individual countries de facto exchange-rate regime.
2. Determinants of Global Currency Status
   - Correlates of estimated global currency weights, network effects, forecast exercise.
   - Episodes of exogenous discontinuity might help identification.
3. IMS Competition and Global Financial Stability
   - Behaviour of macro and financial aggregates around major IMS discontinuities and global currency collapses.
   - Test of self-fulfilling crisis.
4. Foreign-exchange markets in the long-run
   - FX puzzles, safe heaven currencies...

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

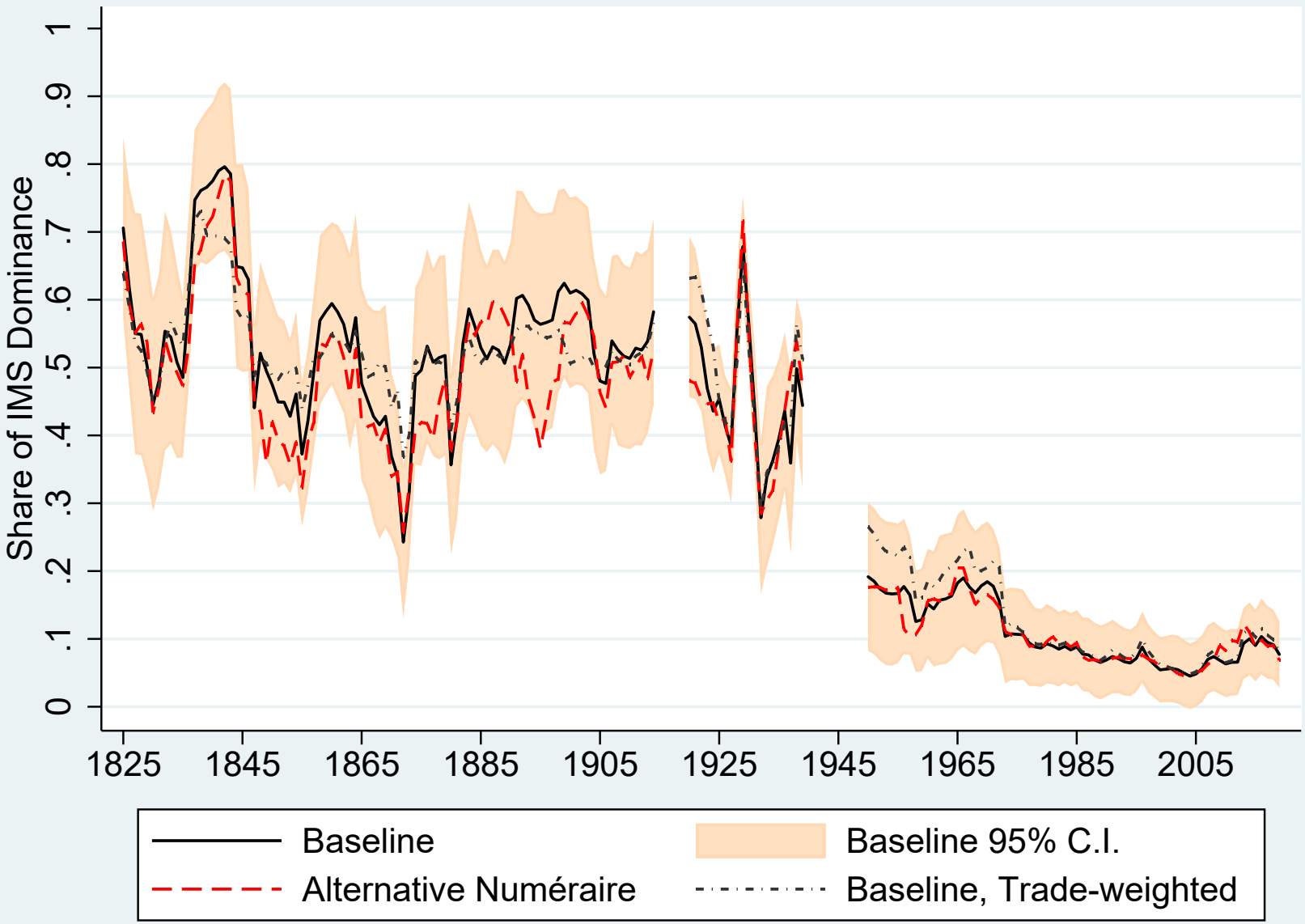
Robust standard errors reported in parenthesis. ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.1 levels respectively. Controls include first-differences of proxies for liquidity and risk-premium, as well as weekly log-changes of commodity prices. Pooled regressions using Silver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

Pooled Regressions - 1950-2020

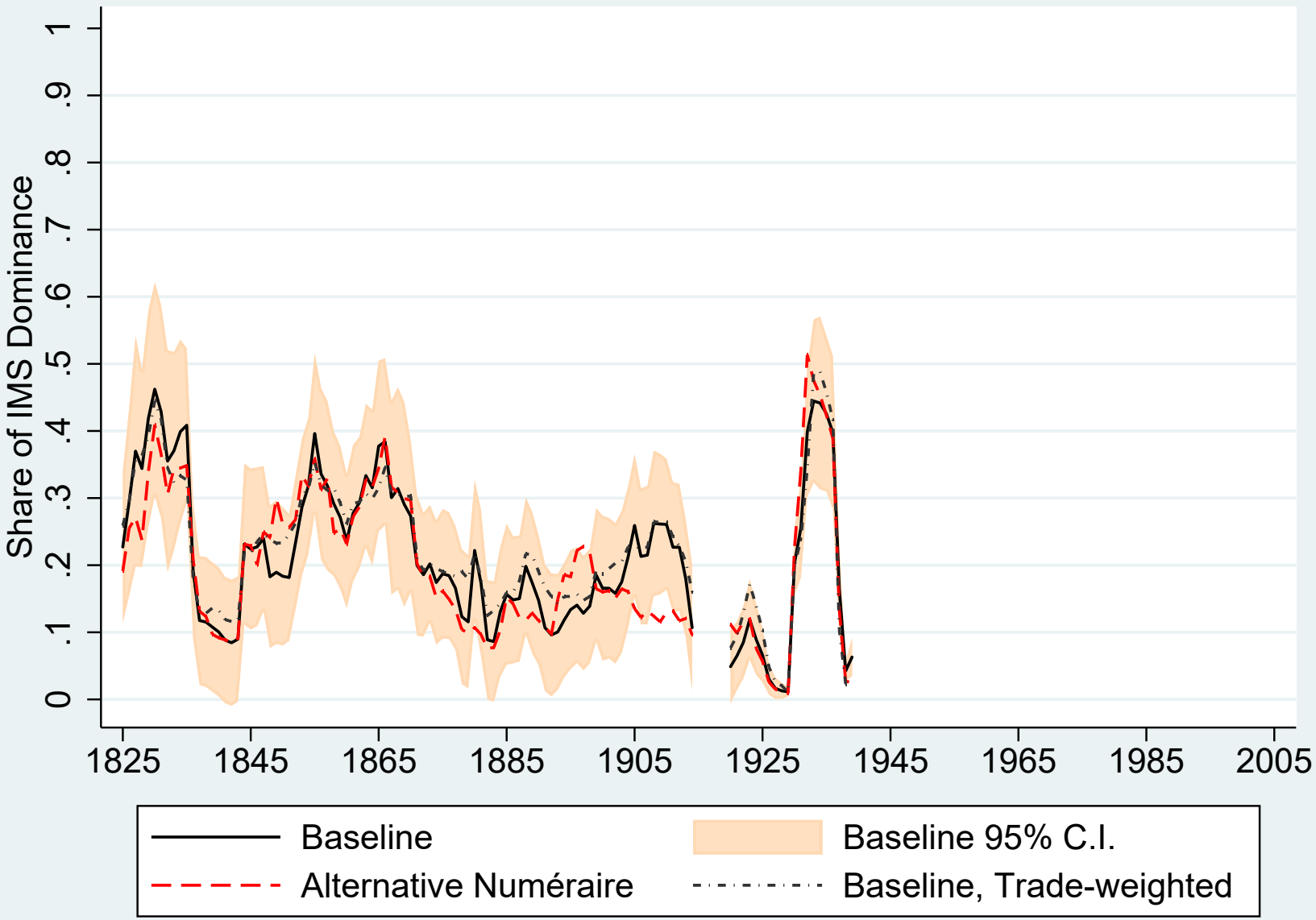
	(1)	(2)	(3)	(4)	(5)	(6)
GBP	0.327***	0.329***	0.333***	0.0556***	0.0517***	0.0684***
	(0.0150)	(0.0150)	(0.0160)	(0.00423)	(0.00424)	(0.00418)
DEM	-0.00276	-0.00304	-0.000934	0.404***	0.401***	0.411***
	(0.00690)	(0.00695)	(0.00834)	(0.00445)	(0.00444)	(0.00728)
USD	0.669***	0.668***	0.626***	0.553***	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.

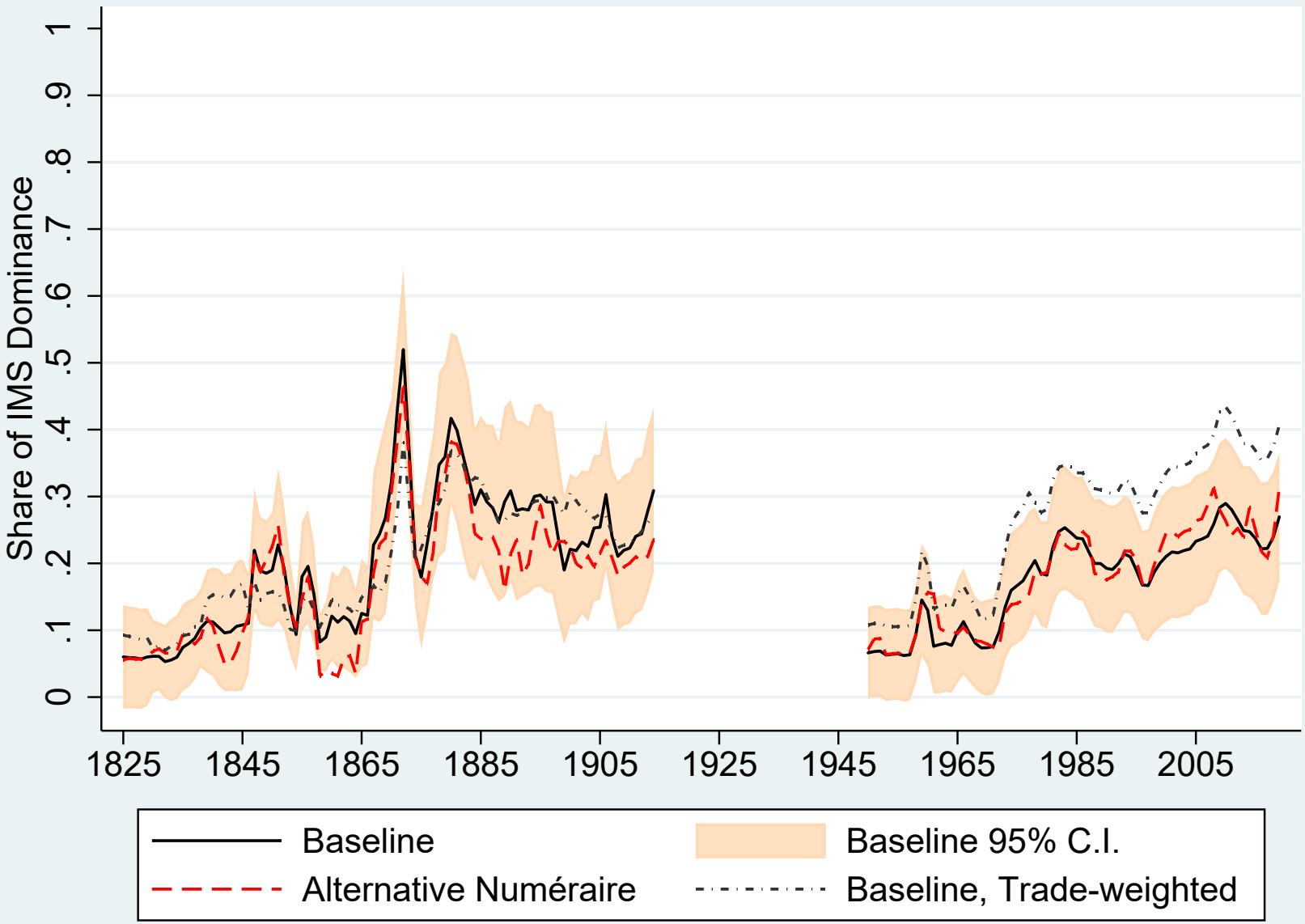
GBP - Baseline and Alternative Weights



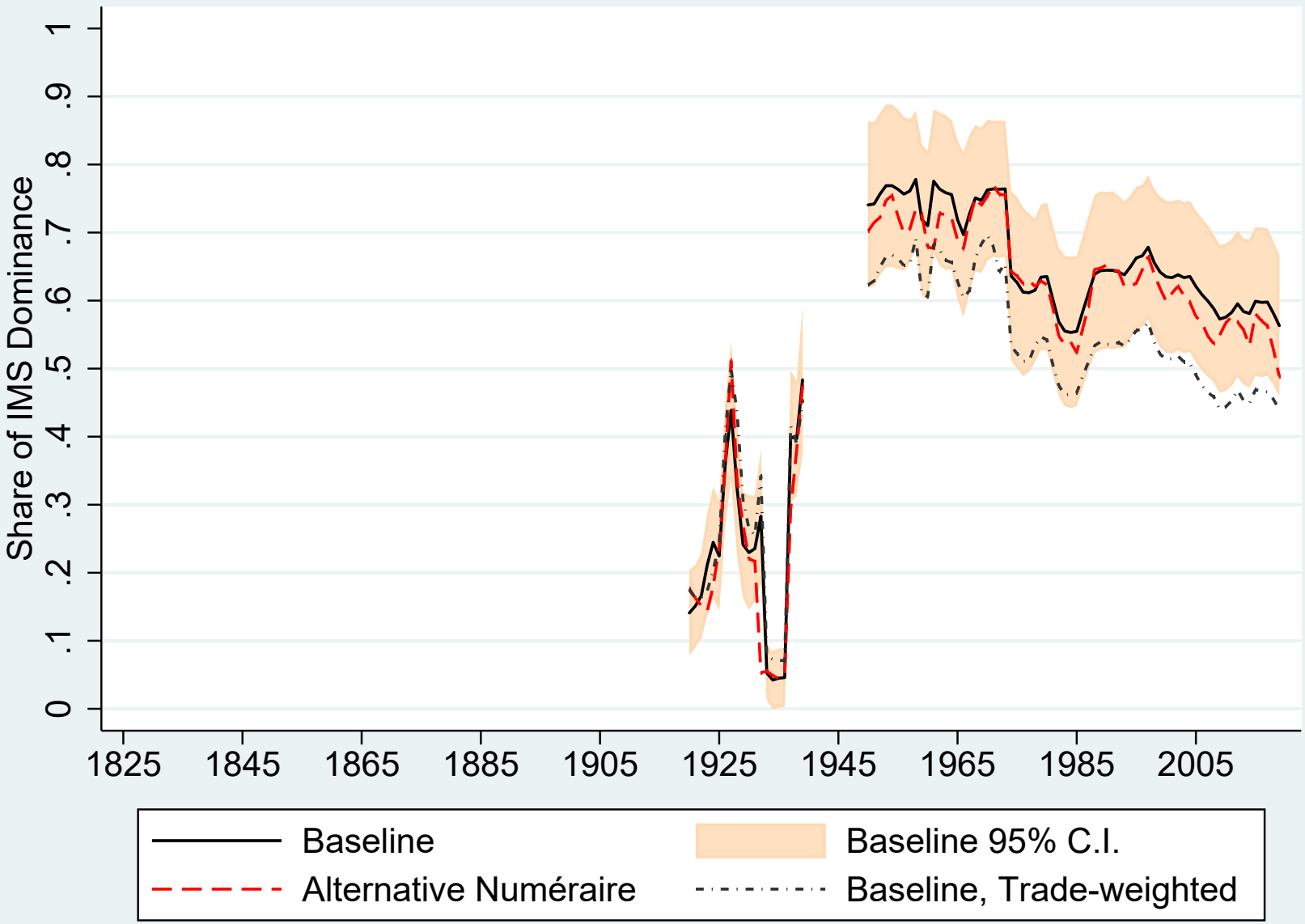
FFR - Baseline and Alternative Weights



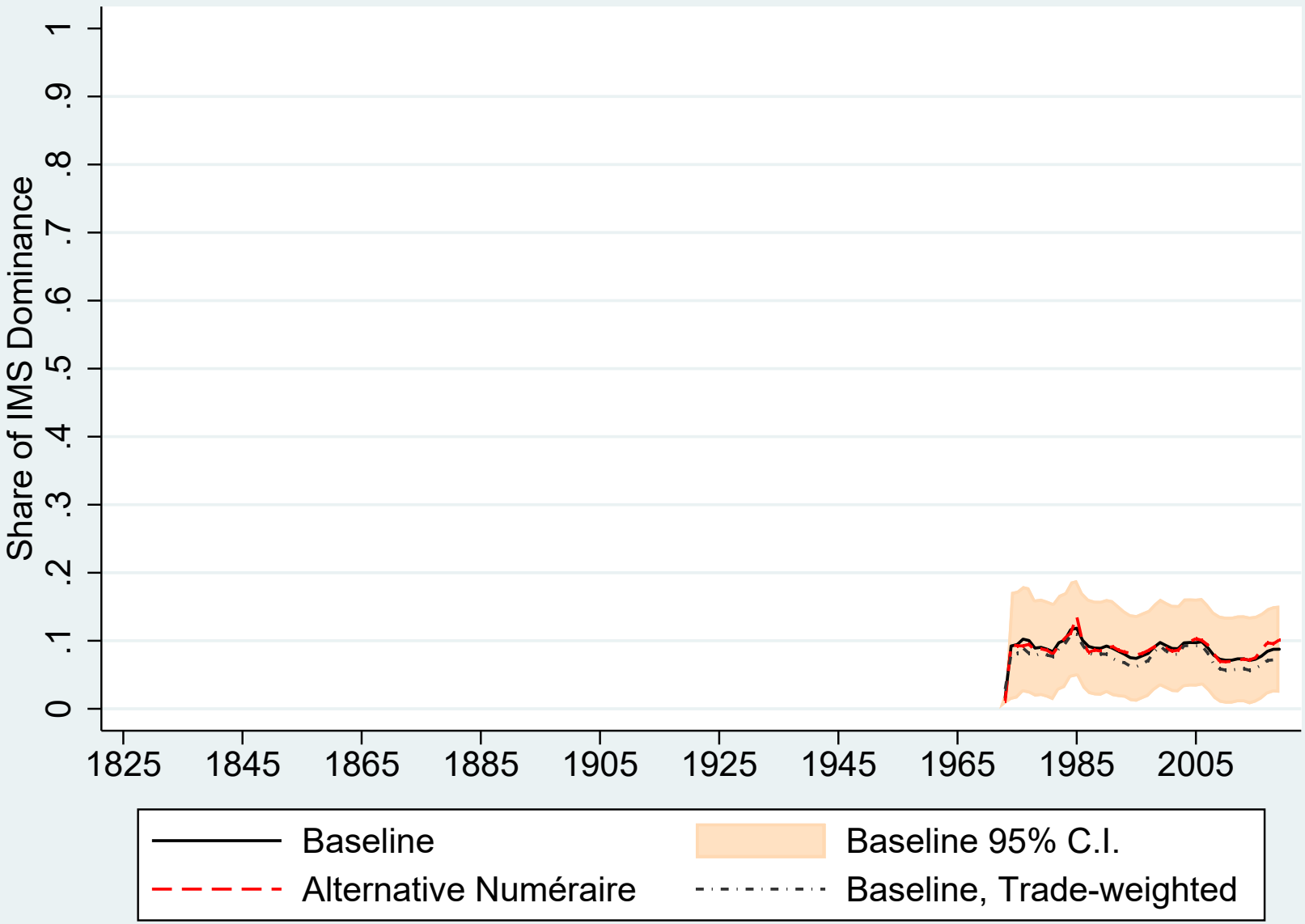
DEM - Baseline and Alternative Weights



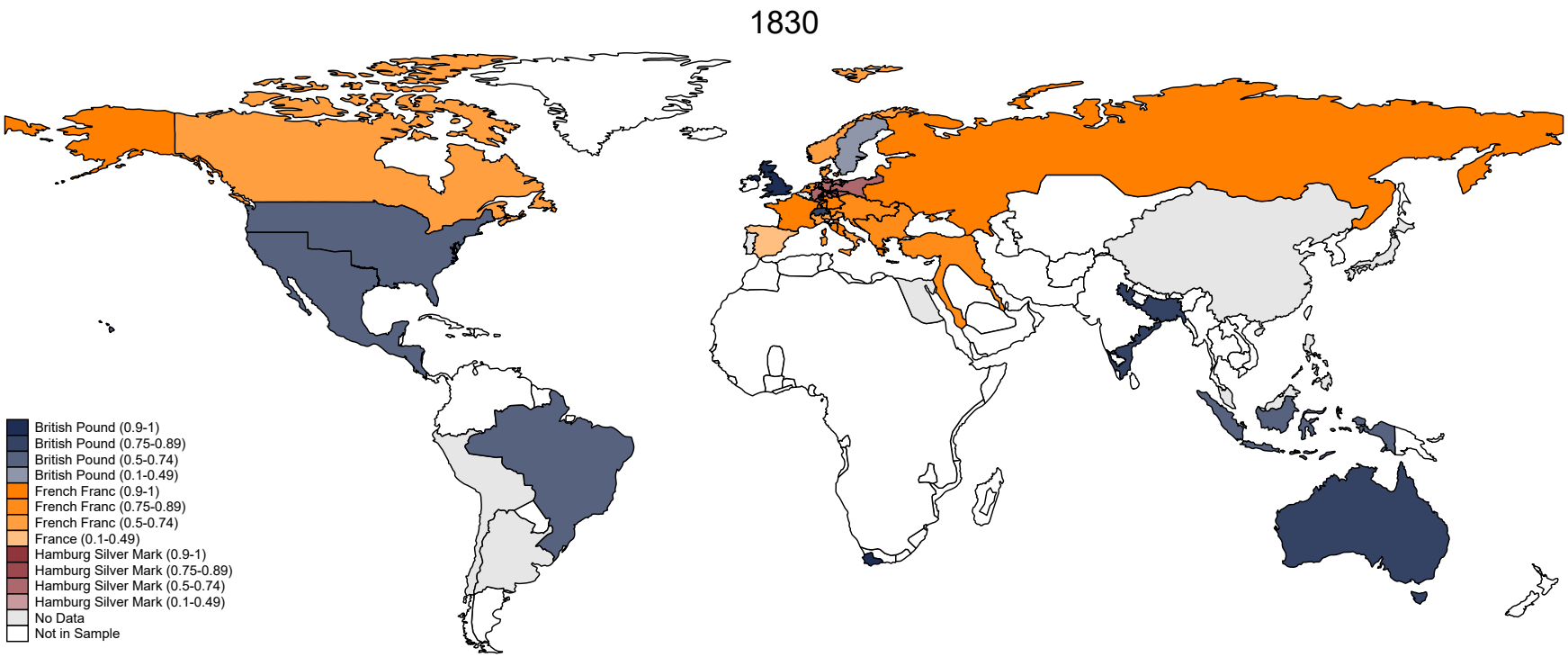
USD - Baseline and Alternative Weights



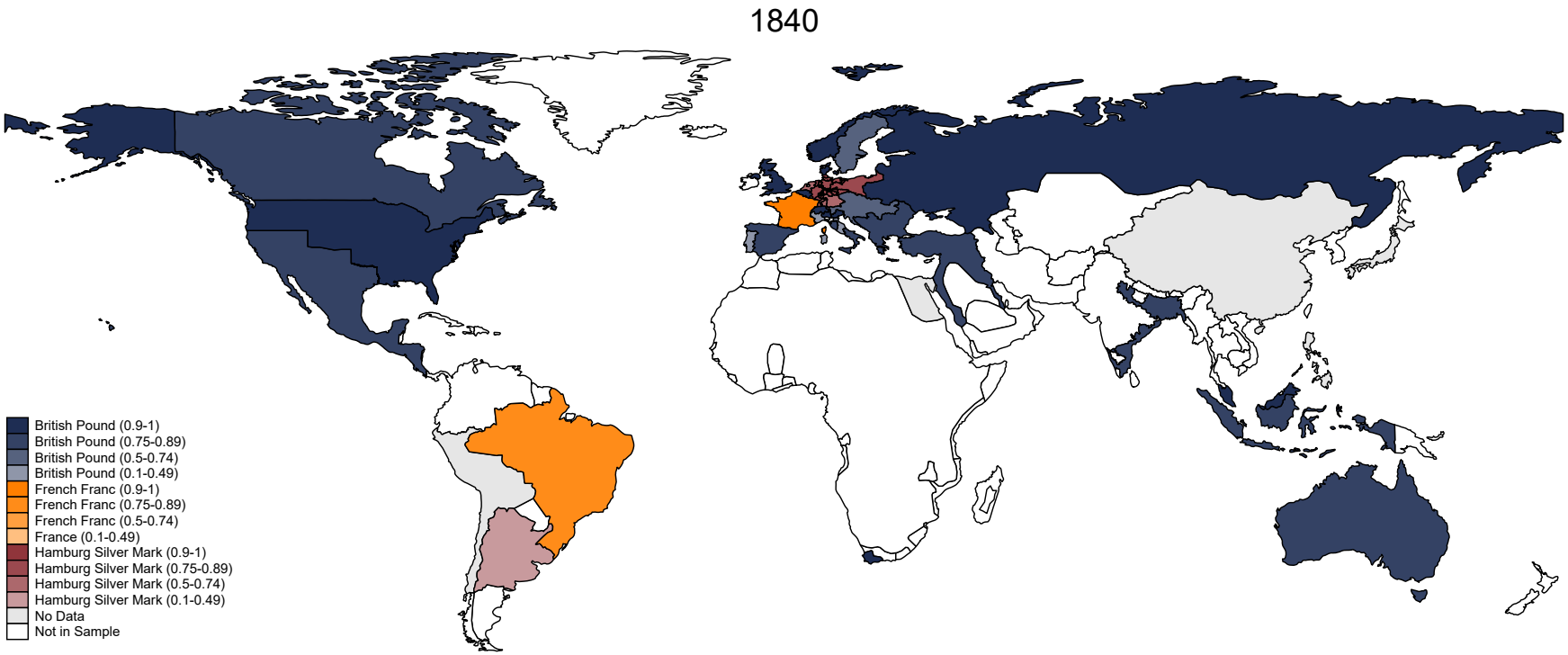
JPY - Baseline and Alternative Weights



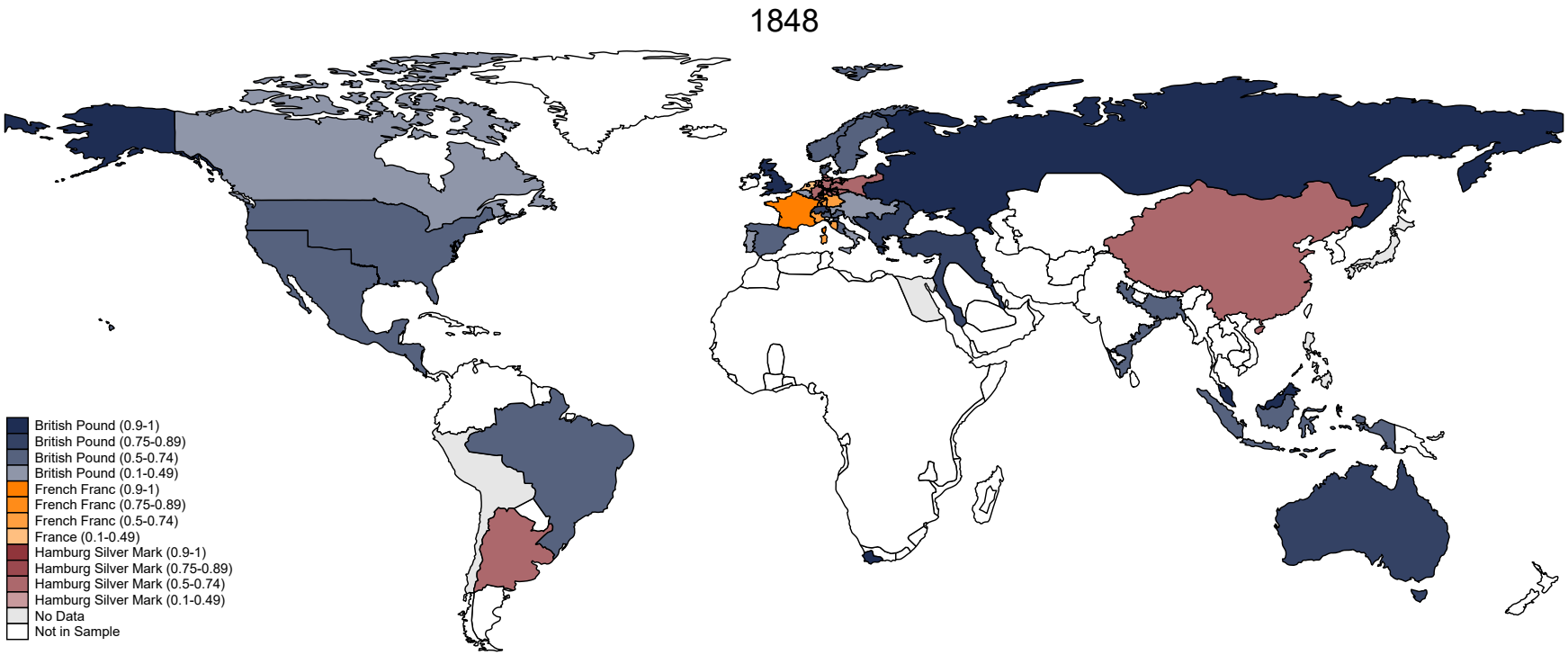
1830: A Bipolary System post-Vienna Congress



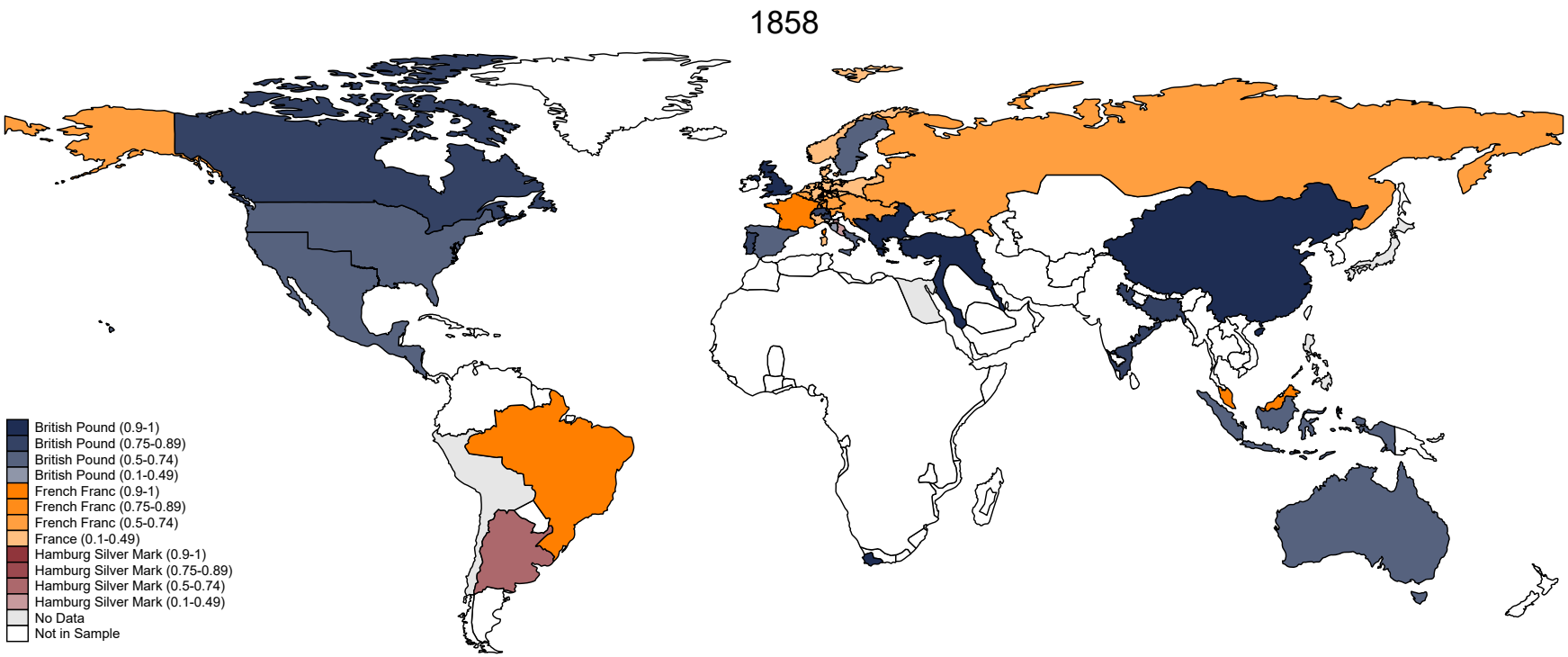
1840: Large GBP Gains in Dominance in the 1830s



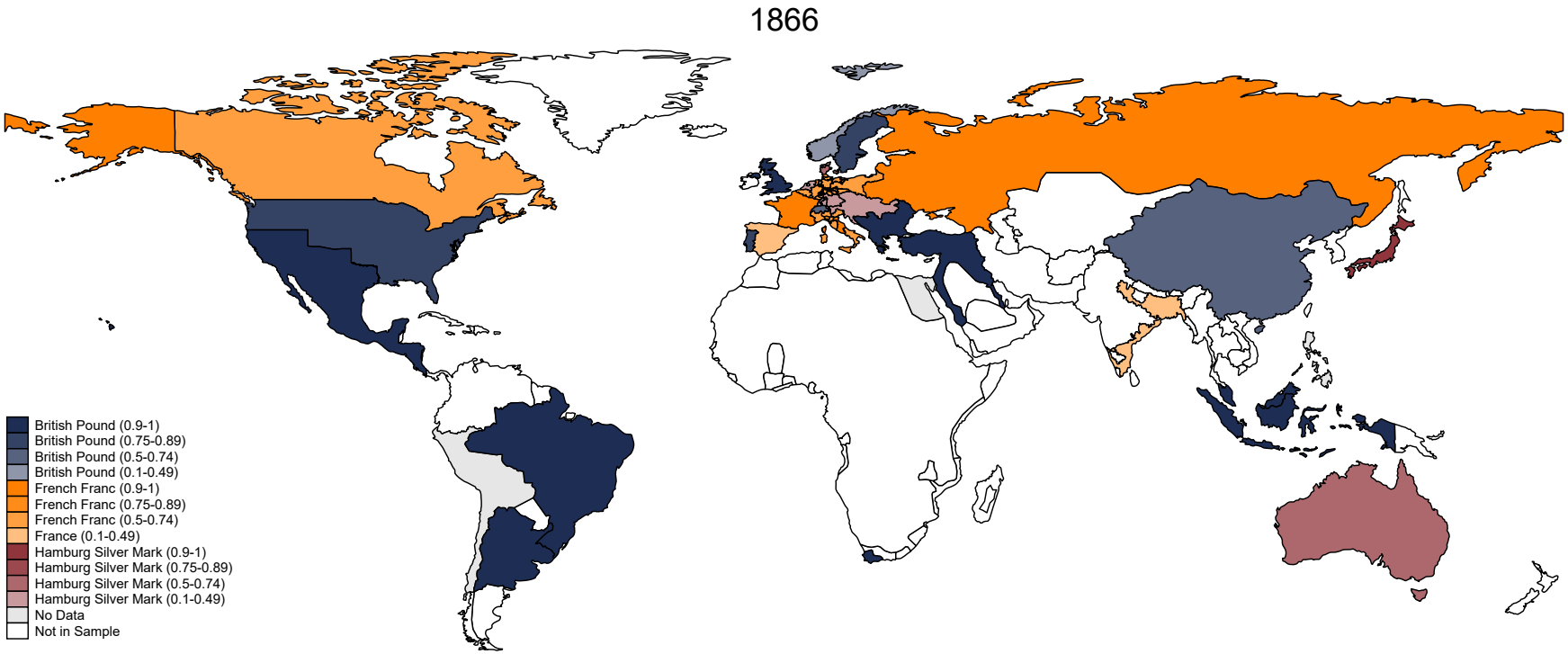
1848: GBP Dominance Unscathed by the People's Spring



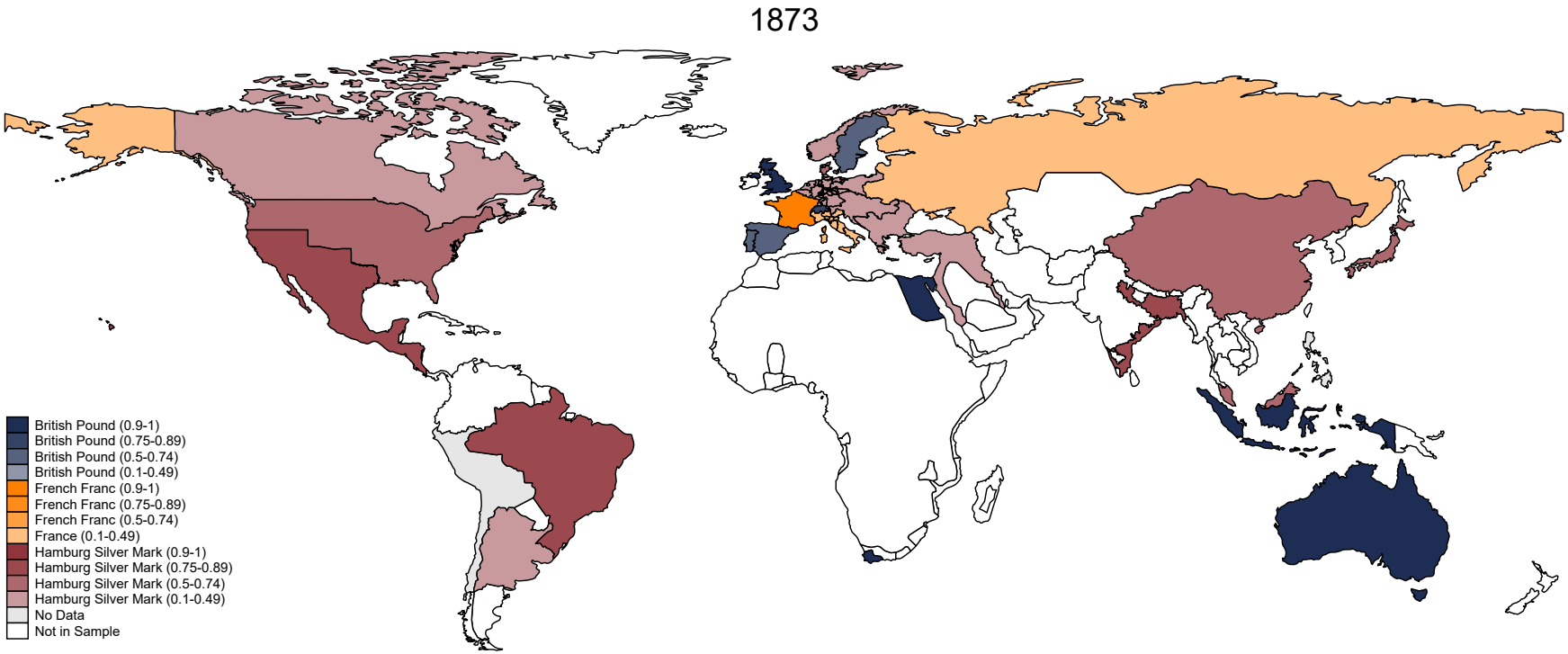
1858: Rise in FFR Dominance with the Second Empire



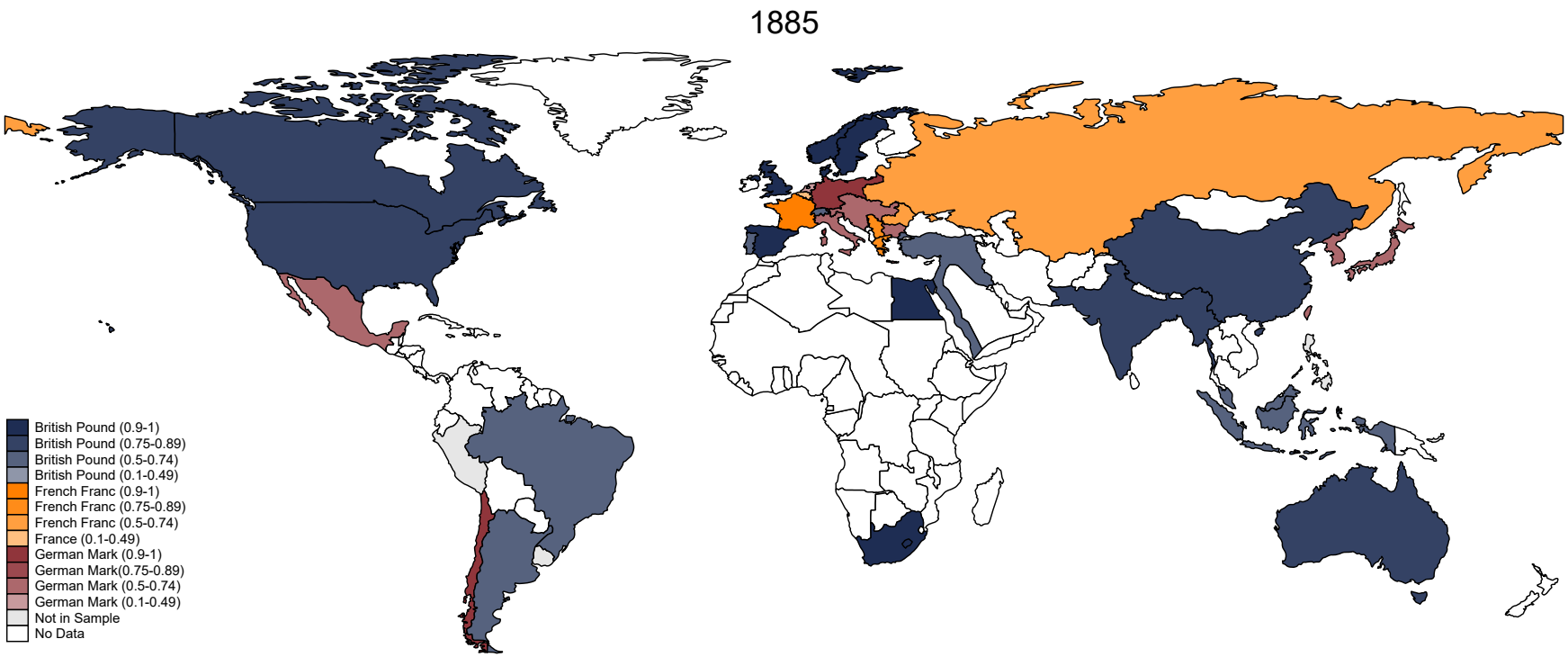
1866: Peak of FFR Dominance as Paris Hosts the1stInternational Monetary Conference



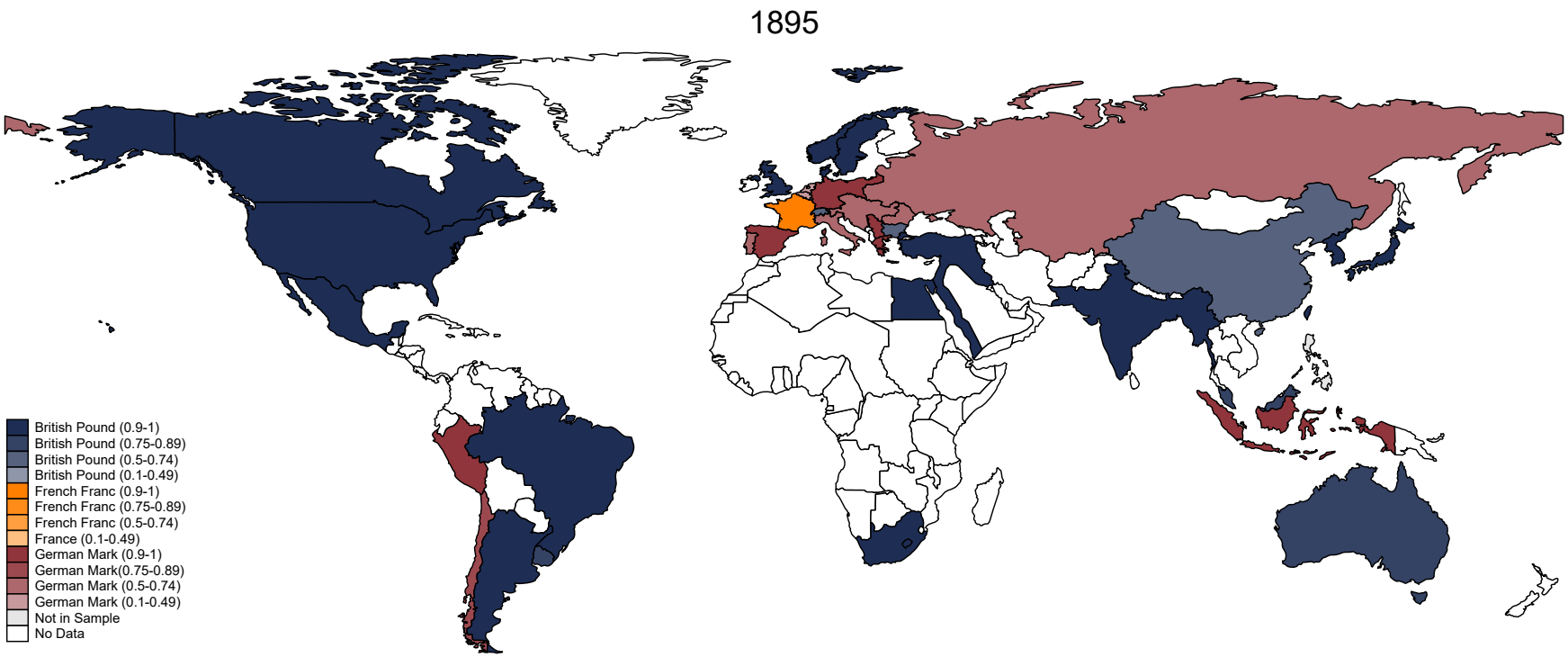
1873: Major International Monetary System Discontinuitywith the German Unification



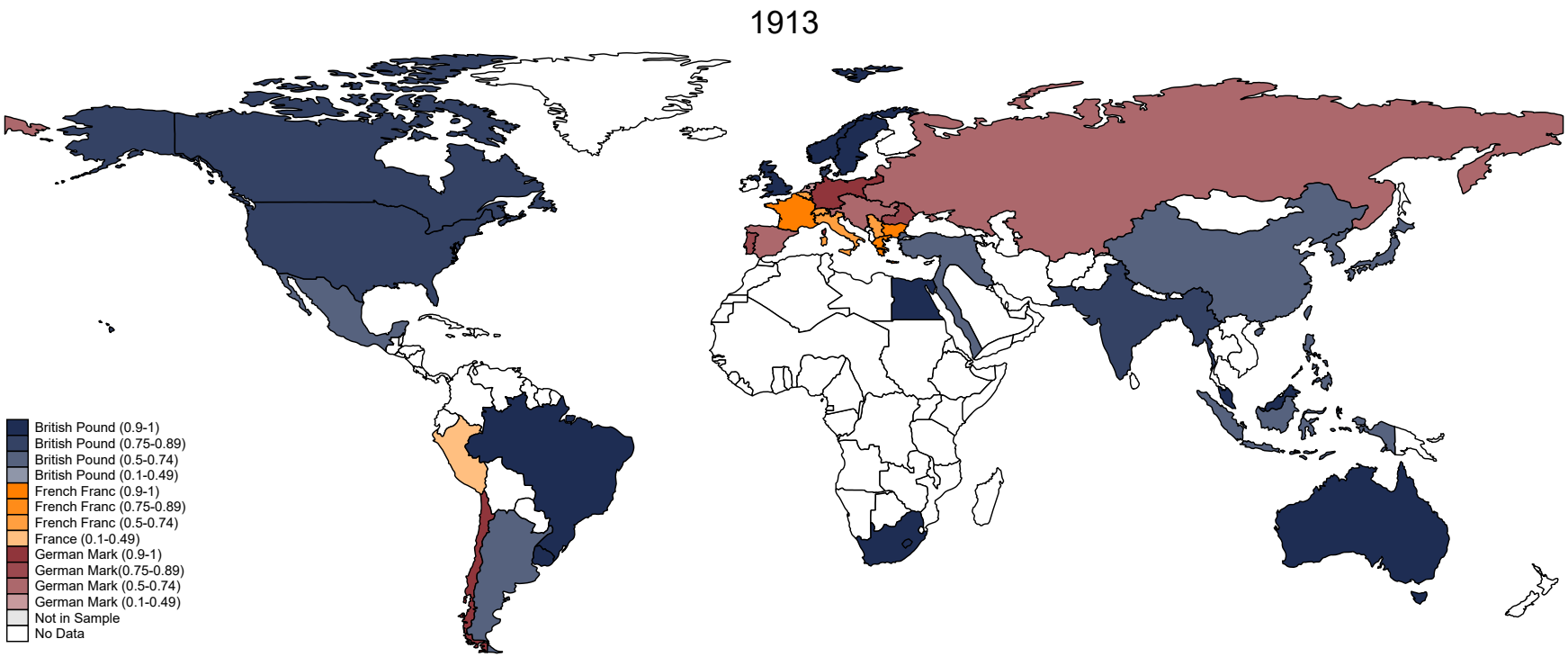
1885: A Tripolar Classical Gold Standard (I)



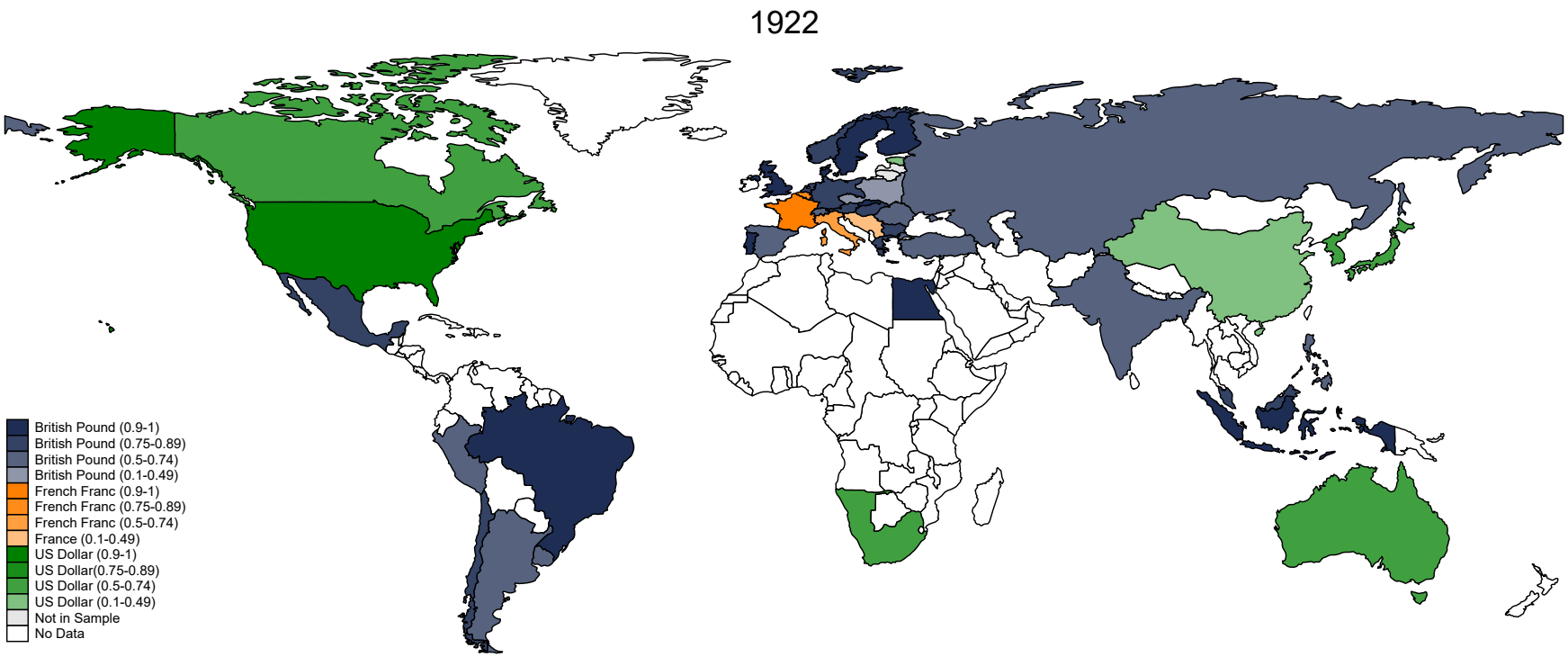
1895: A Tripolar Classical Gold Standard (II)



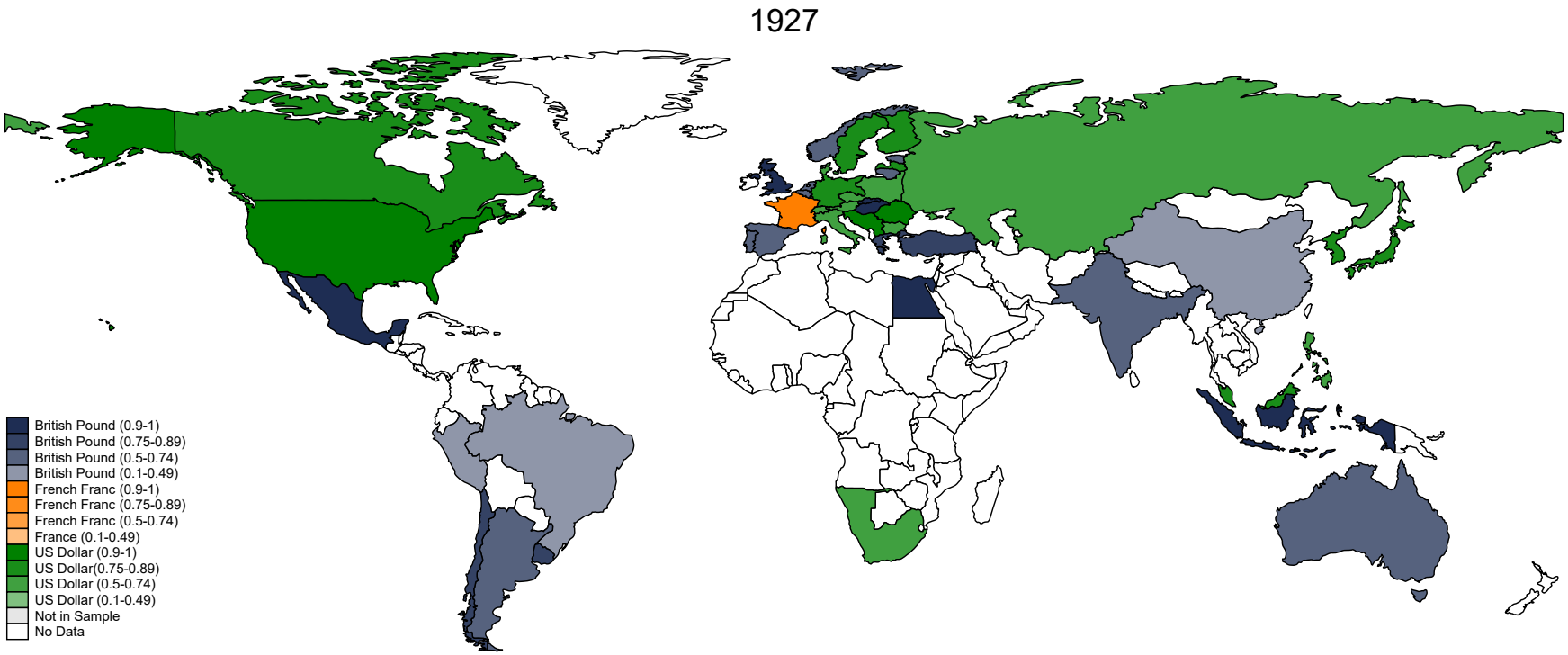
1913: A Tripolar Classical Gold Standard (III)



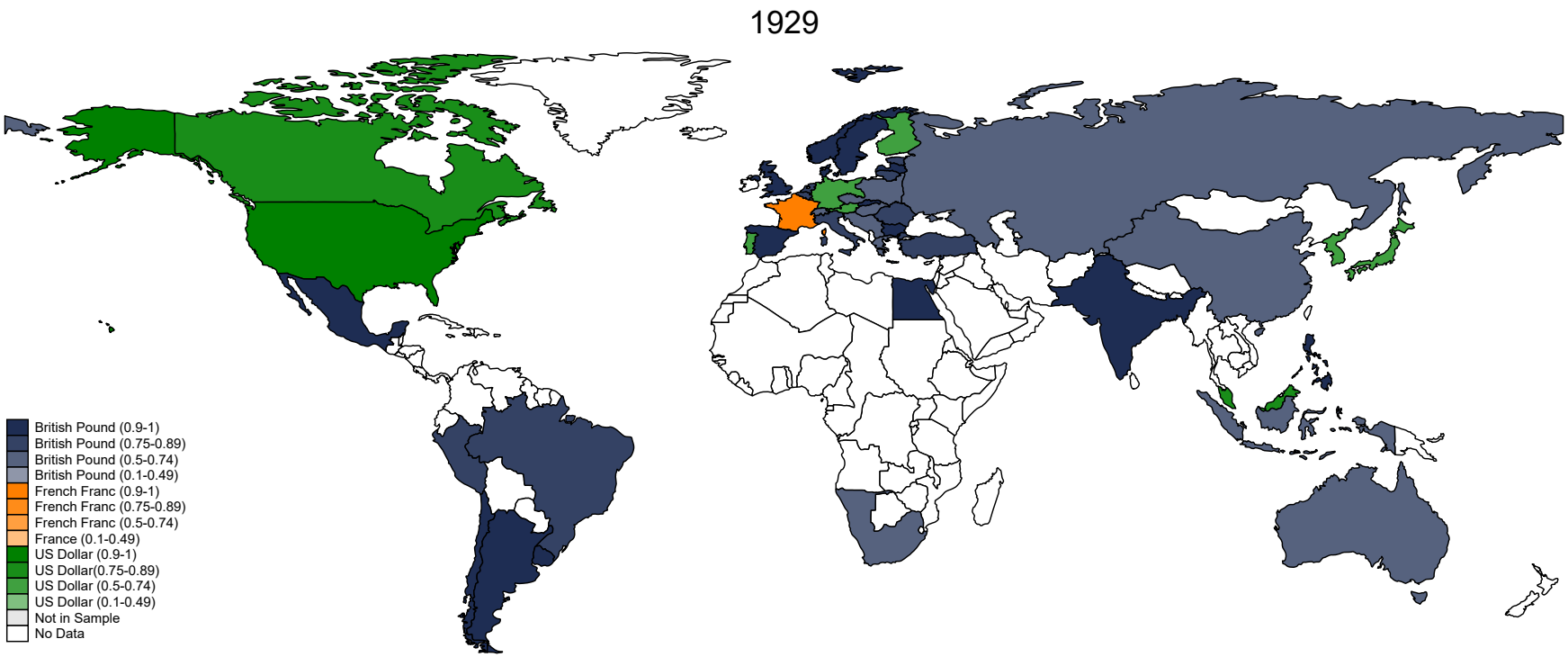
1922: Rise of the USD after WW1



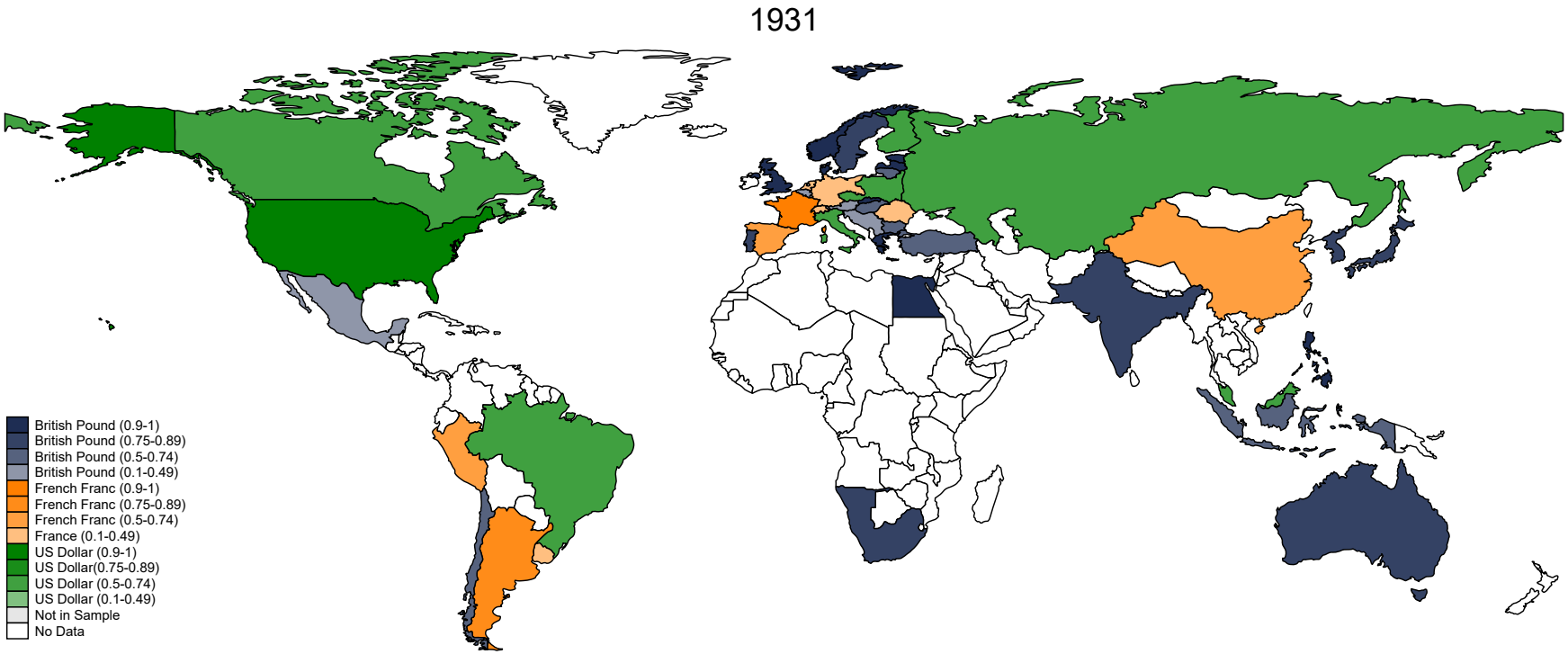
1927: Peak of USD Dominance in the Interwar



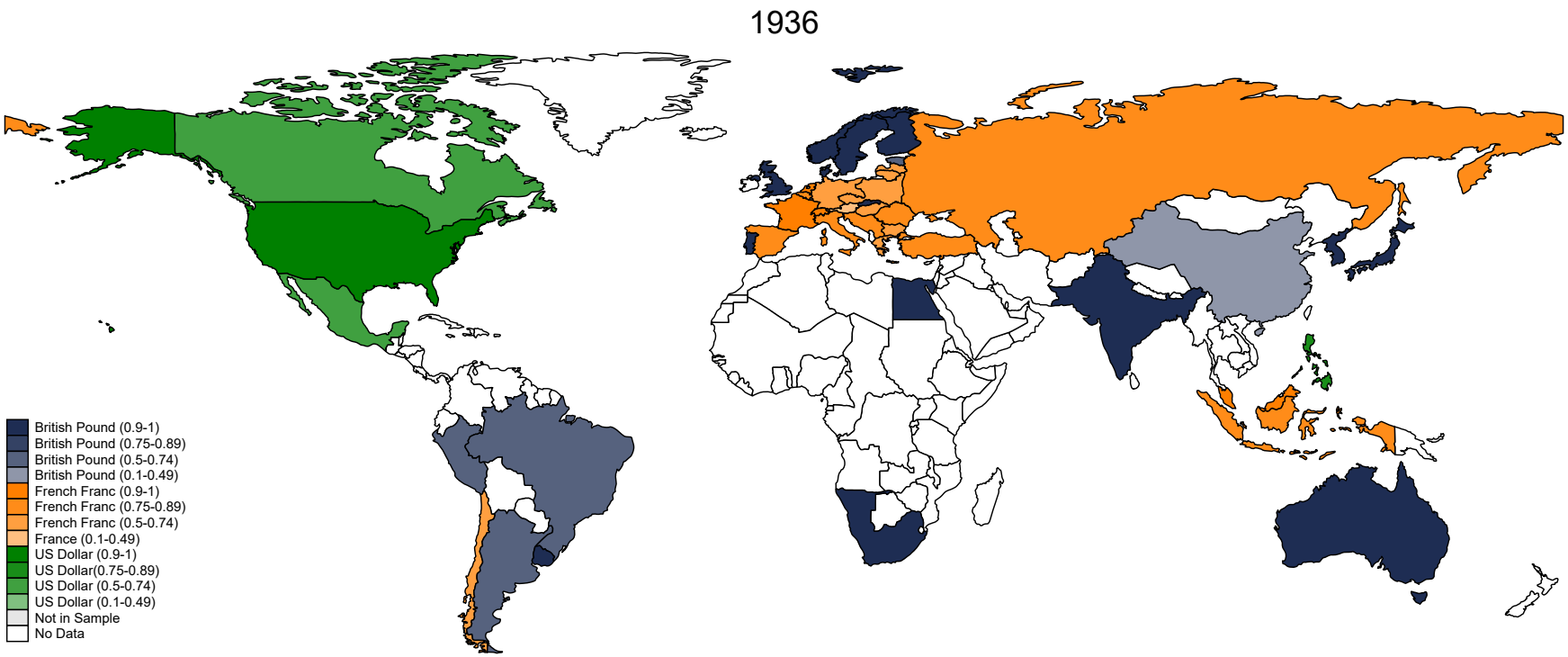
1929: A Shortlived Comeback of the GBP in 1929



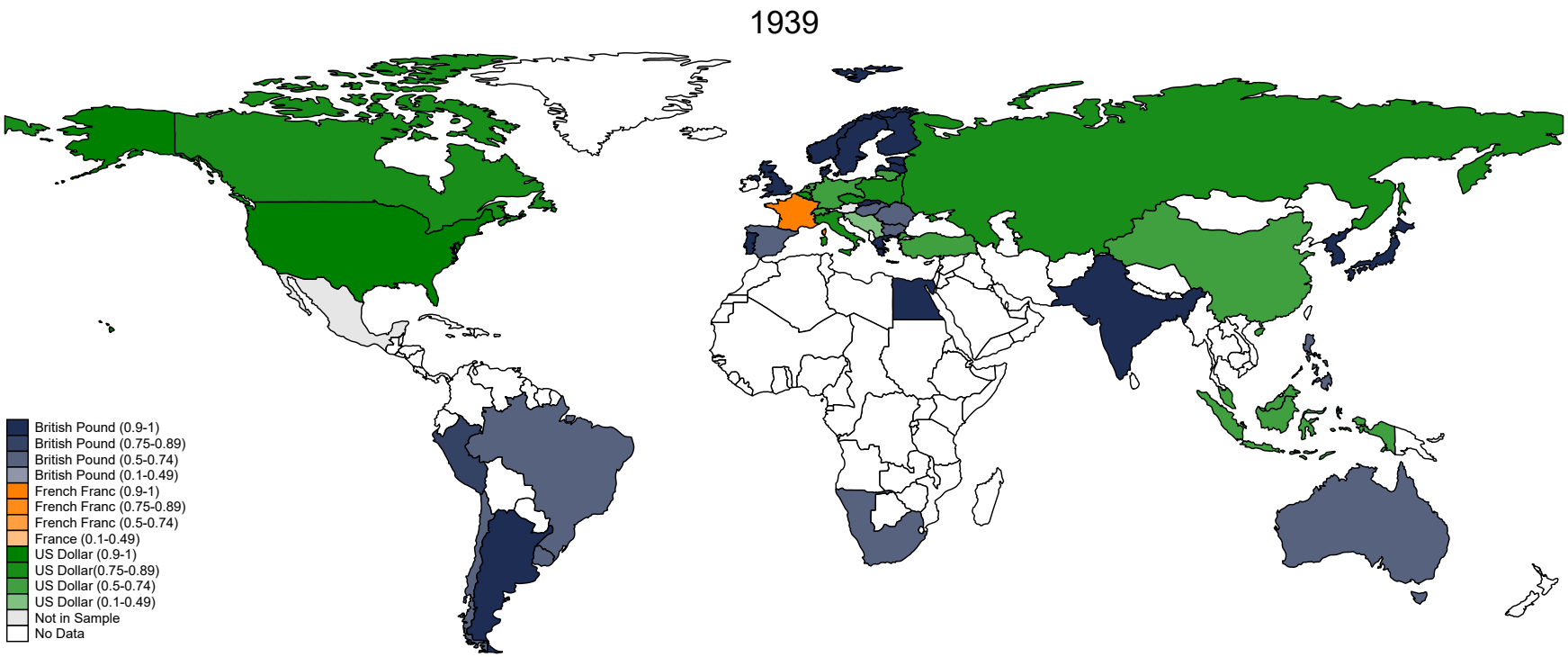
1931: The FFR Steps into the Instability of the GBP and the USD



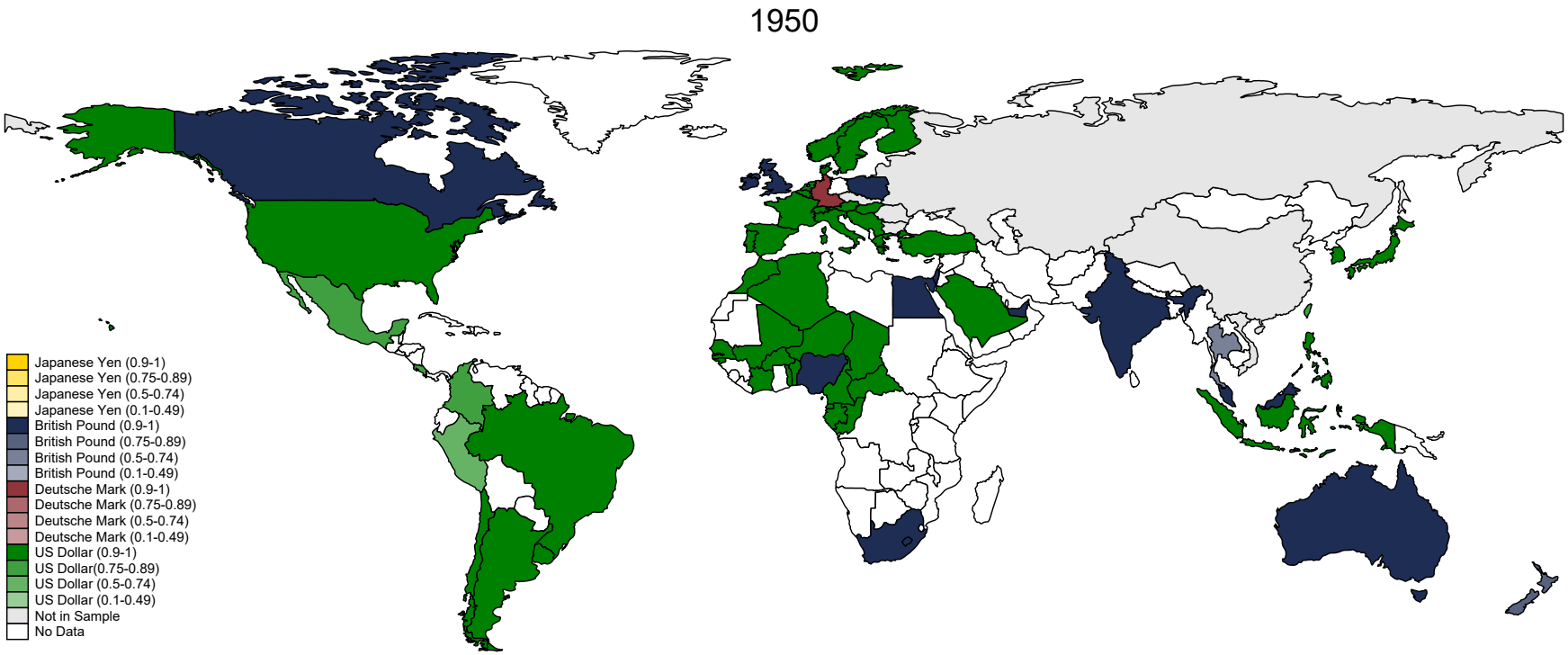
1936: FFR Dominance Before the 1936 French Election



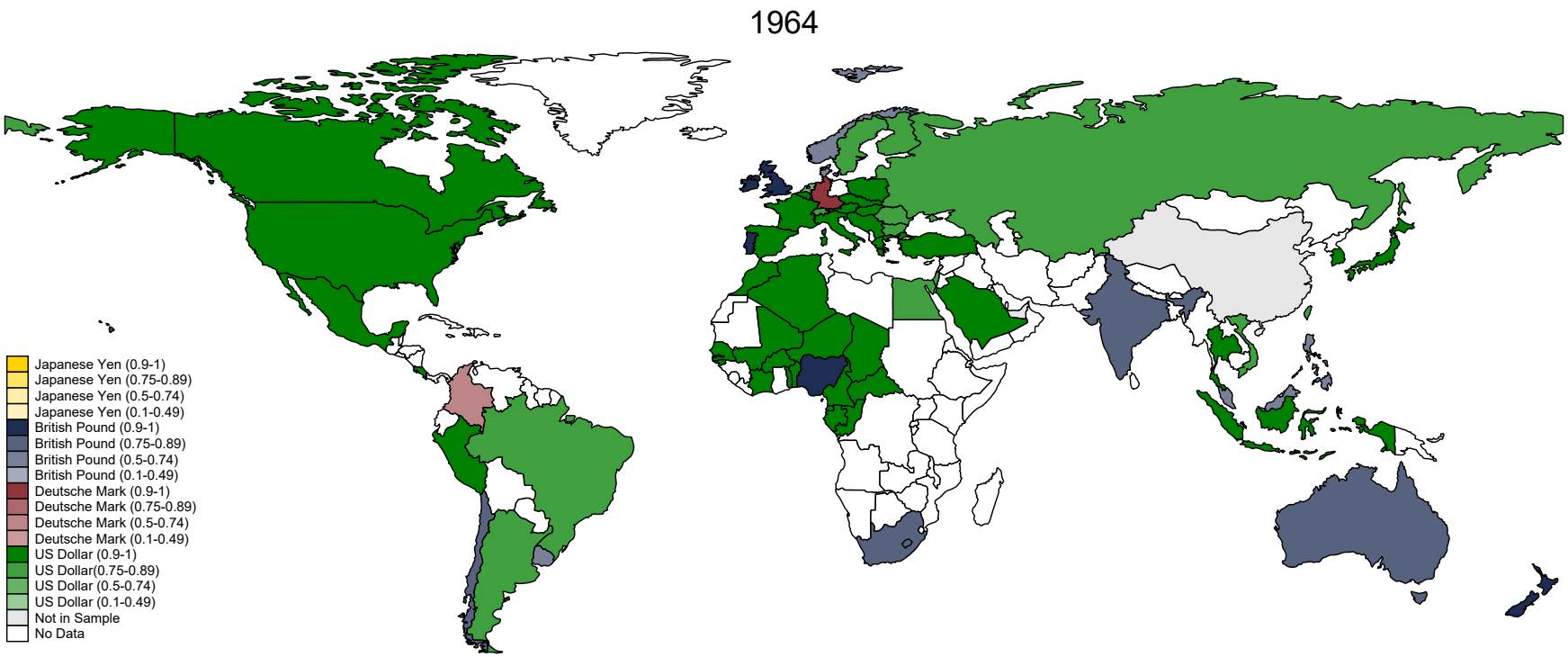
1939: GBP and USD Bipolarity at the Eve of WWII



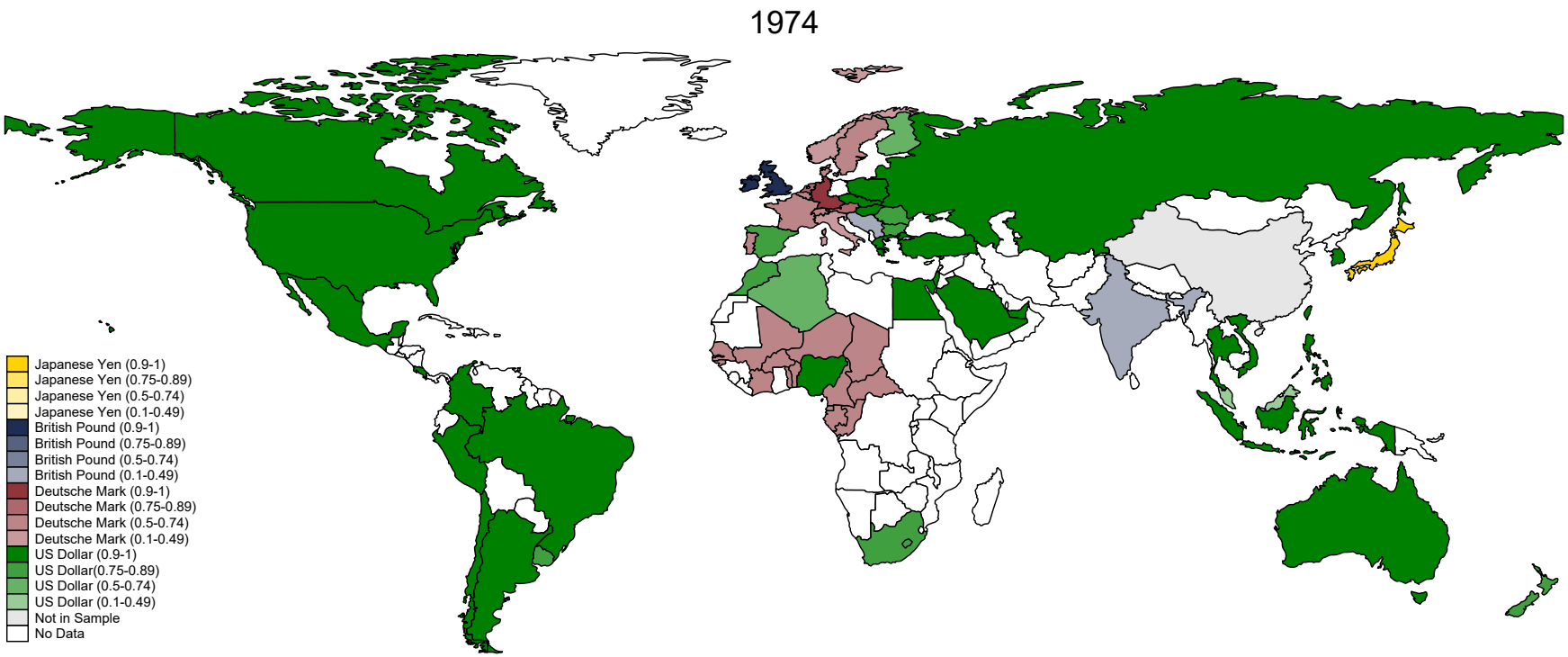
1950: USD Dominance after WWII



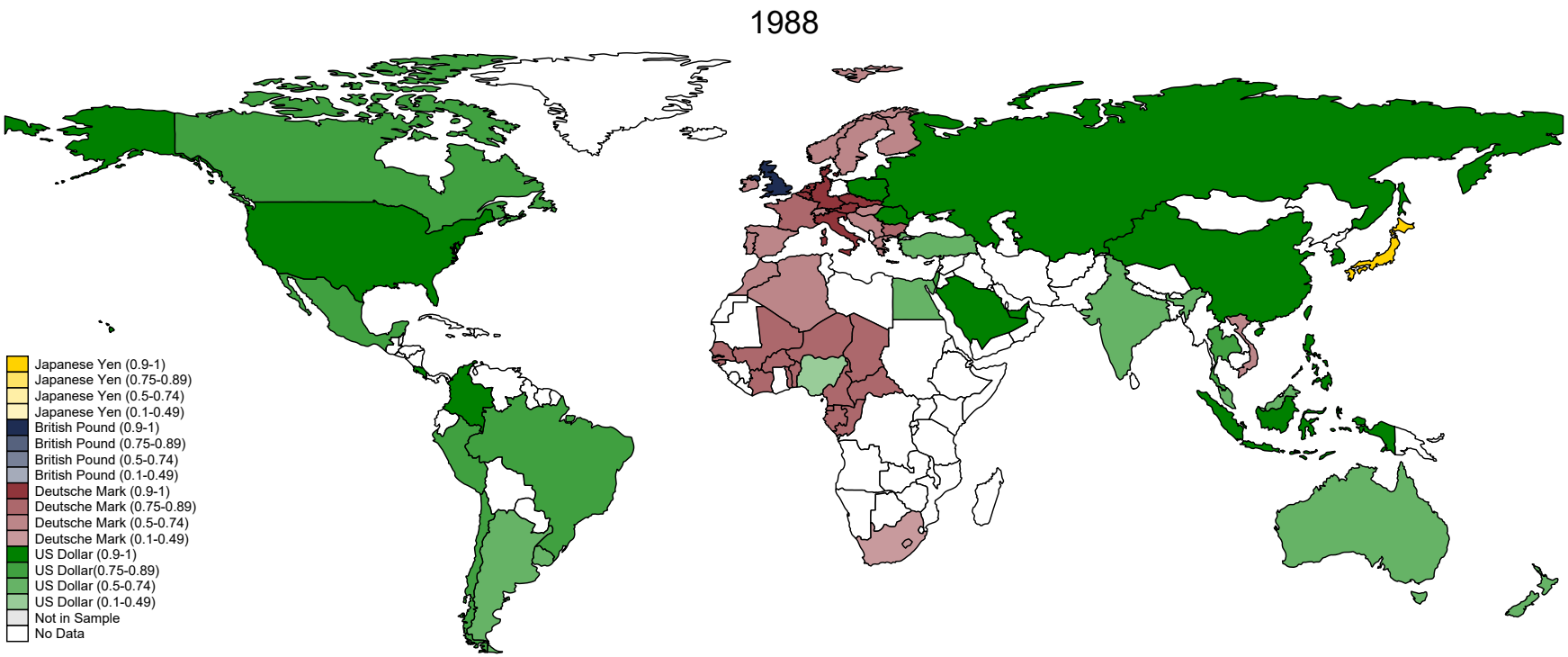
1964: "Privilège Exhorbitant"



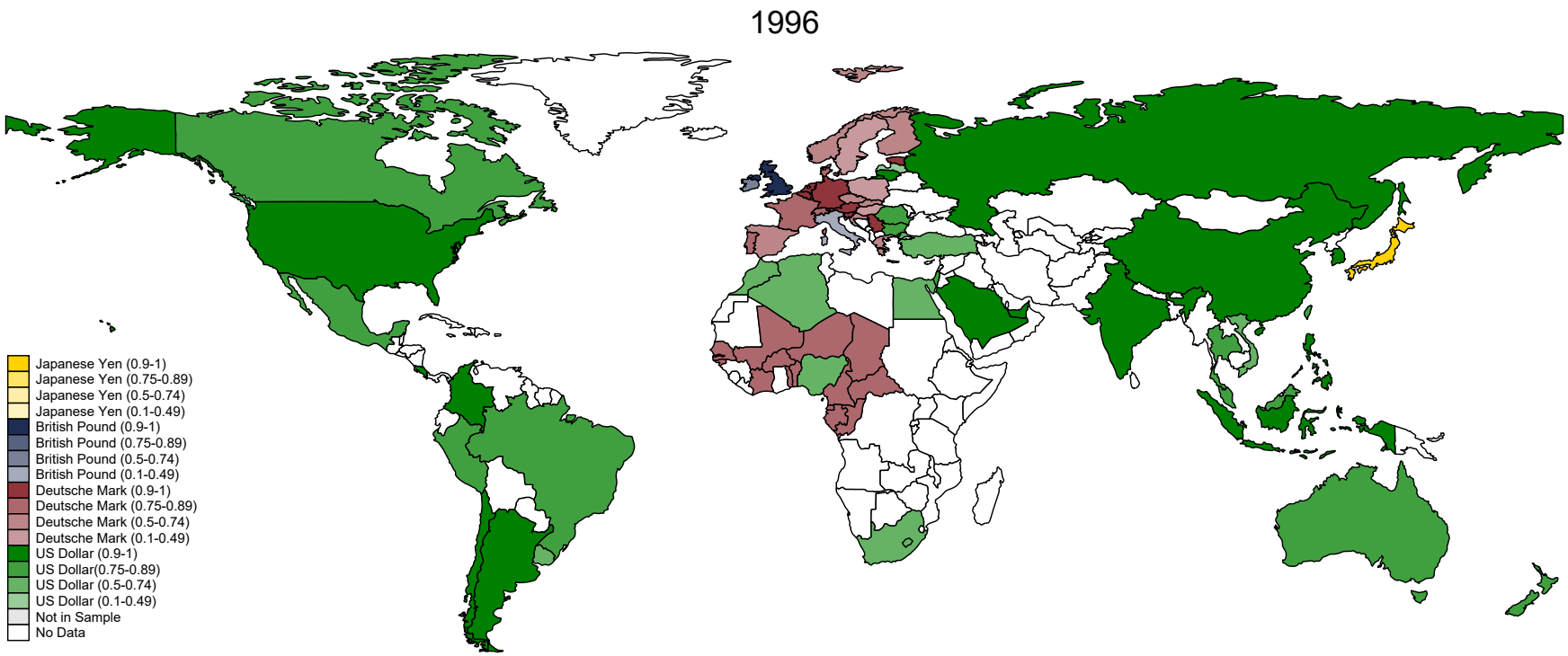
1974: The Beginnings of a DEM Zone



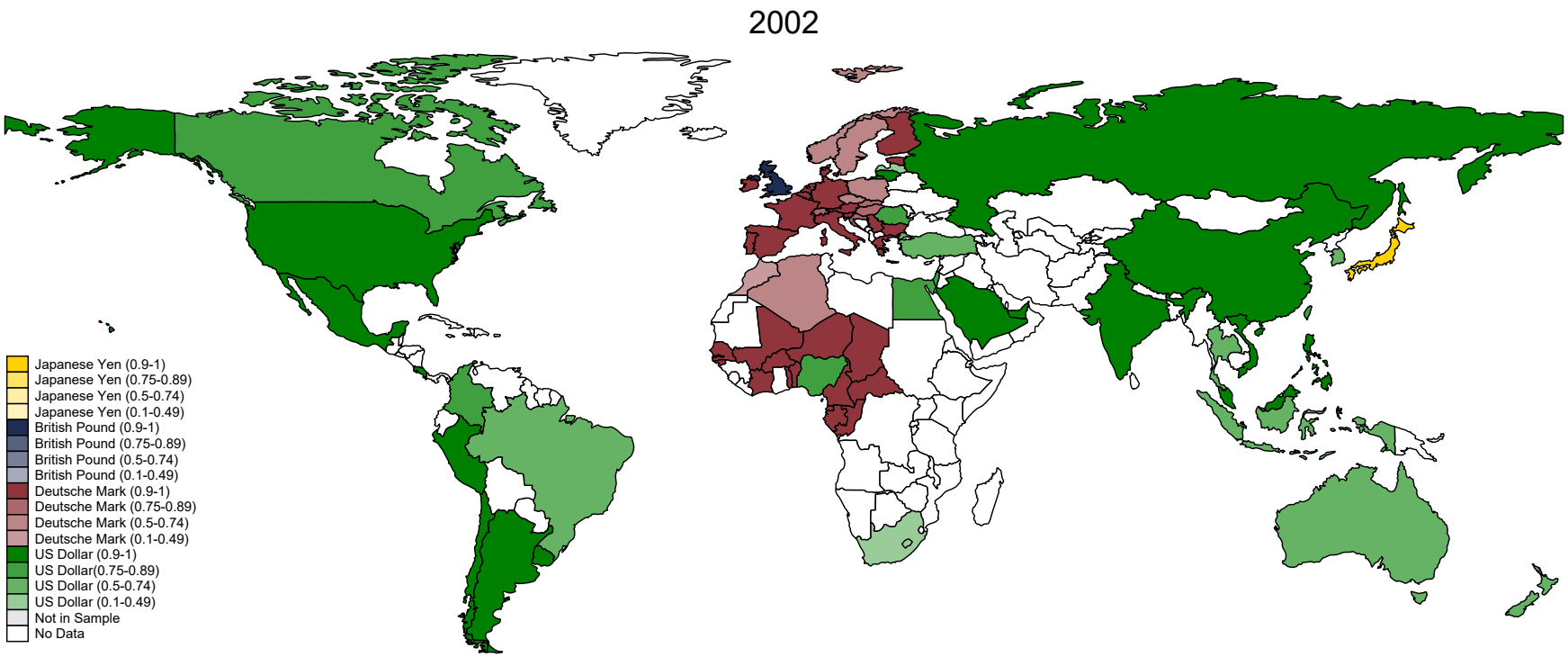
1988: "German Dominance Hypothesis"



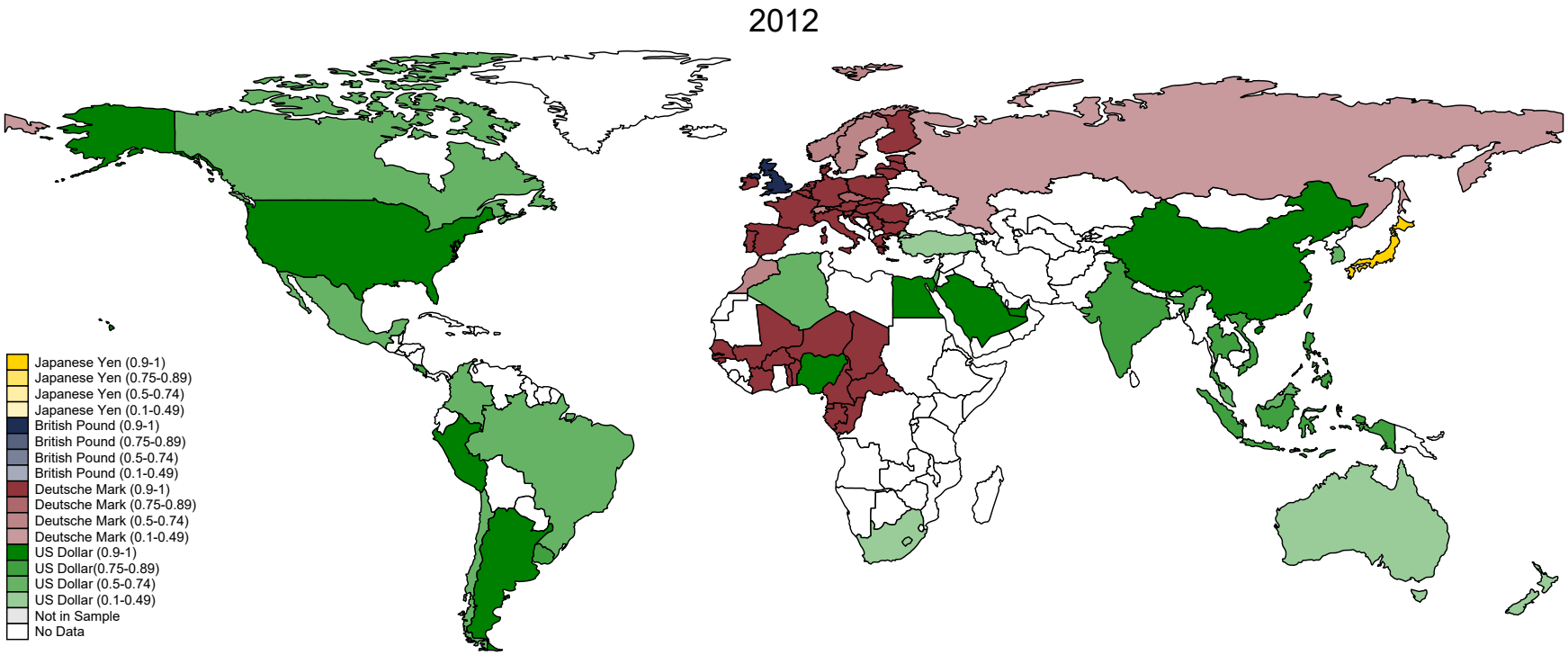
1996: Limited Fall of DEM Influence after the EMS Crisis



2002: The EUR Builds on the DEM Legacy



2012: EUR Influence Resists Despite the Crisis



2019: USD Dominance Persists