



Memory and the International Financial System

Can old habits explain the Bretton Woods Gold puzzle?

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Can history explain current policy choices?

Past experiences of individuals are strong determinants of their current economic practices and beliefs

- Managers: Bertrand and Schoar (2003, *JF*)
- Households: Alesina and Fuchs-Schuelen (2007, *AER*), Malmendier and Nagel (2011, 2015 *QJE*), Koudijs and Voth, (2016, *AER*)

This paper: Is it true for organizations (central banks)?

- Focus on central banks' attitude towards gold reserves during Bretton Woods (BW) – so-called “gold puzzle”
- Hypothesis: Survival of the gold standard mentality – *i.e.* backing currency with gold - in spite of radical institutional change

Key results

- Countries continued to back currency in circulation with gold during BW
- More “exposure” to the gold standard => More backing
 - “Institutional” memory vs. “Individual” memory
- Gold and US dollar never perfect substitutes – Precipitated the demise of BW

Contribution(s)

Determinants of Reserves (e.g. Lane & Burke 2001, Rodrik 2006, Aizenman & Lee 2008, Obstfeld et al. 2010...)

- First study of reserve determinants during Bretton Woods
- Reserve accumulation during BW not only trade-based

Effects of individual experience on expectations and decisions

- Complements evidence on Households & CEOs
- Monetary policy context (Romer & Romer 2004, Malmendier et al. 2017, Bordo & Istrefi 2018, Mishra & Reshef 2019)
⇒ Even after radical institutional change, history still shapes decisions of policymakers

Design of the international monetary system (e.g. Eichengreen et al. (2017), Farhi and Maggiori (2017), Gourinchas et al. (2019))

- Memory prevented Bretton Woods system to function as its founders expected
- Memory matters when designing!

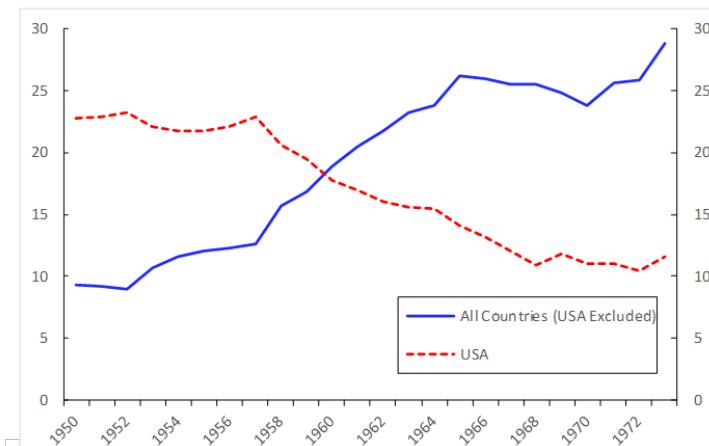
Bretton Woods & Gold

The irrelevance of Gold

- Only the US dollar is convertible into gold at \$35 per ounce
 - Gold coinage and commitment of central banks to redeem notes in gold abandoned everywhere in the world
- => Holding gold neither legally necessary (no *de jure* cover ratio), nor economically sensible (US T-bills)

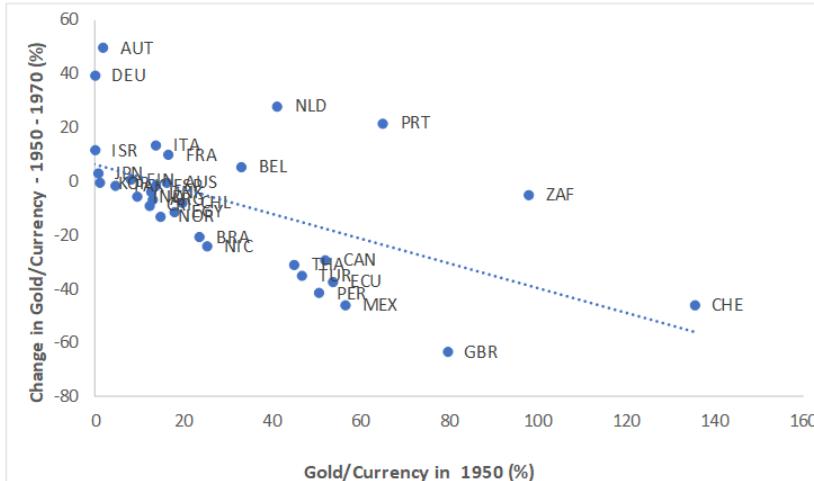
Dead in theory, alive in Practice: The “Gold Puzzle”

Figure 1: Gold and International reserves, 1950-1971 (billions of US\$)



Note: The 37 non-US countries cover 94% of gold reserves held outside of the US over Bretton Woods on average. Country names are reported in Appendix. Source: International Financial Statistics

Figure 2: Catching-up. The Evolution of cover ratios over time (1950-1970)



Note: Uruguay and Ireland are excluded because their cover ratios are not available in 1950.

Why?

Potential Avenues / Dead ends

- Macro: Loss of credibility of the US dollar over time; trade openness (Triffin 1947, 1960; Grubel 1971; Williamson 1973)
- Politics: Idiosyncratic political motives (e.g France 1965-1966)
- Irrational: the “Mrs Machlup’s Wardrobe Theory”

Paper Hypothesis: Persistence of a Gold Standard mentality & *de facto* cover ratio

- “Irrational” and “primitive” behavior (Machlup 1966, Williamson 1973)

Formal test using a new dataset on international reserves and macro statistics

- Reserves, Money, Trade, FX, GDP - assembled using IMF archives
- Proxies for exposure to Gold Standard mentality
 - Years spent in gold standards (classical & interwar)
 - Number of delegates at the BW conference
 - Age of governors heading Central Banks (from biographies, books etc..)
- 38 Countries – 1950 - 1971

Empirical Set-Up: Three Steps

(i) Establish a **robust** link between Currency and Money (*de facto* cover ratios)

$$Gold_{i,t} = \alpha + d_t + \beta T_{i,t} + \gamma M_{i,t} + \theta Z_{i,t} + \epsilon_{i,t} \quad (1)$$

(ii) Memory Hypothesis: More exposure => More backing?

$$Gold_{i,t} = \alpha + d_t + \beta T_{i,t} + \gamma M_{i,t} + \theta Z_{i,t} + \delta GS_i + \tau(GS_i * M_{i,t}) + \epsilon_{i,t} \quad (2)$$

(ii) Channel: Institutional vs. Personal memory

Result 1: Money rather than trade

VARIABLES	(1)	(2)	(3)
Trade	0.0517*** (0.00681)	-0.0151 (0.0102)	-0.00292 (0.0258)
Currency	0.506*** (0.0530)	0.426*** (0.0376)	0.271* (0.154)
Deposits		0.243*** (0.0228)	0.0101 (0.0672)
Exchange Rate Premium		-0.0918 (0.131)	-0.0620 (0.133)
Capital Account Openness		0.0353*** (0.00521)	0.0169* (0.00959)
Current Account Openness		0.0997*** (0.0268)	0.0280 (0.0380)
FX Flexibility		-0.121*** (0.0253)	-0.0571* (0.0330)
Population		-0.874*** (0.132)	-0.244 (2.437)
Country FE	No	No	Yes
Time FE	Yes	Yes	Yes
Observations	729	729	729
R-squared	0.355	0.580	0.217

- **Persistence** of *de facto* cover ratios, after controlling for “everything”
- **Magnitude** close to Gold Standard
- No robust effect of **trade** once controls are used
 - Stark contrast with FX reserves

Result 2: Gold Standard Memory

VARIABLES	(1)	(2)	(3)
Trade	-0.0277*** (0.0104)	-0.0609*** (0.0130)	-0.00118 (0.0115)
Currency	0.157*** (0.0324)	0.189** (0.0884)	0.655*** (0.0726)
Gold Standard	-2.916*** (0.486)		0.736*** (0.214)
Gold Standard x Currency	0.486*** (0.0621)		
Gold Standard (Number of Years)		-0.0134 (0.0181)	
Currency x Gold Standard (Number of Years)		0.01*** (0.00245)	
Delegates			0.406*** (0.0891)
Currency x Delegates			-0.0568*** (0.0121)
Country FE	No	No	No
Time FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	729	508	729
R-squared	0.620	0.677	0.607

- Correlation between Currency and Gold driven by **Gold Standard Countries**
 - Magnitude close to Pre-WWII gold standards
- Memory effect is also true **within** Gold Standard countries
 - More time spent => more backing
- Falsification test using the number of Bretton Woods delegates (proxy for **Bretton Woods exposure**)

Result 3: What/Who's Memory?

Channels behind this result?

- Institutional Memory
- Personal Memory
- Example: Sweden (cover ratio of 13%) vs. Belgium (cover ratio above 40%)

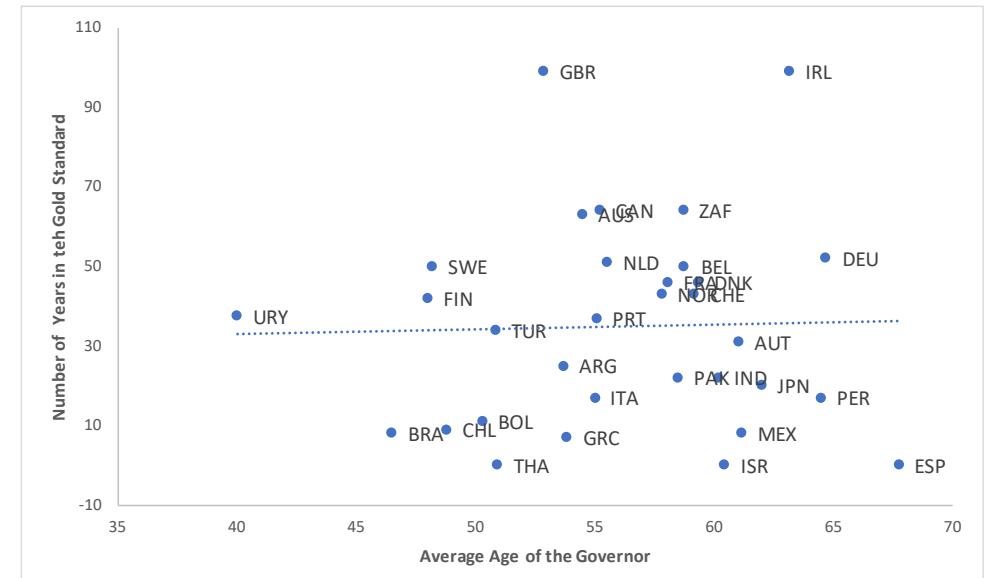


Photo taken in 1955



Photo taken in 1946

Figure 3: Number of Years in the Gold Standard vs. Average Age of Central Banks' Governors



Result 3: Institutional vs. personal Memory

Table 3: Personal Experience and Institutional Memory

VARIABLES	(1)	(2)	(3)
Trade	-0.000563 (0.00884)	-0.0112 (0.00965)	-0.0340** (0.0138)
Currency	-0.652 (0.419)	-0.652 (0.430)	-2.766*** (0.579)
Gold Standard Exposure		-3.195*** (0.610)	-0.0121 (0.02)
Currency x Gold Standard Exposure	0.433*** (0.0716)	0.00432 (0.003)	
Age of Governor	-0.329*** (0.0582)	-0.268*** (0.0581)	-0.488*** (0.0782)
Currency x Age of Governor	0.0193*** (0.00748)	0.0149** (0.00749)	0.0520*** (0.0111)
Country FE	No	No	No
Time FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	617	617	445
R-squared	0.643	0.666	0.735

- Both **matter** in the full sample
- Among Gold Standard countries, it **dominates** the institutional memory proxy

Conclusion

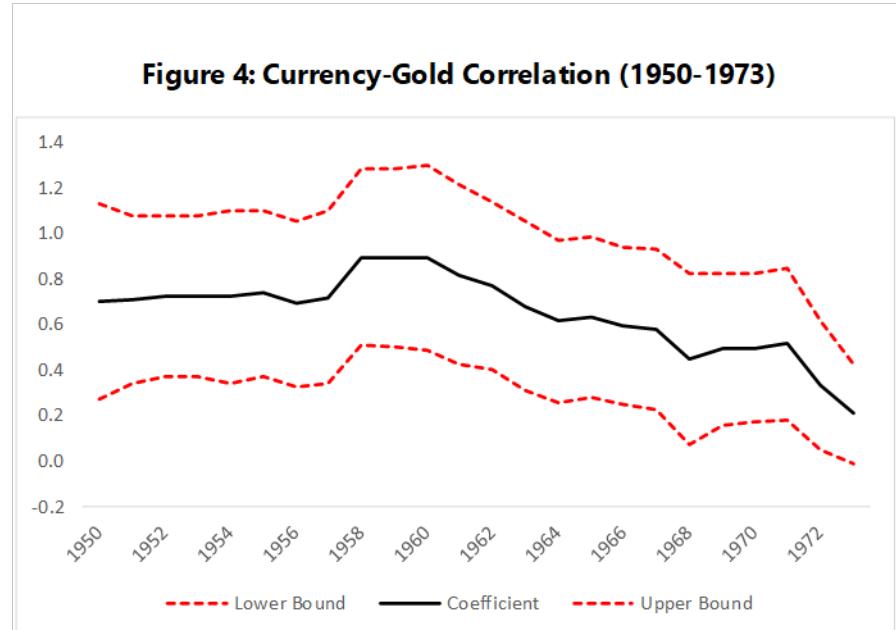
Persistence of a gold standard mentality (epitomized by the Triffin Dilemma)

- No dollar/gold substitution - ultimately prevented BW to function as intended

Results should not be interpreted in deterministic way

- Context was important (US policy credibility, Gold parity)
- This gold fetish eventually vanished

Figure 4: Currency-Gold Correlation (1950-1973)



THANKS

Extensions and Robustness

Table 4: Determinants of Non-Gold Reserves and Share of Gold in Total Reserves

	Non-Gold Reserves	Non-Gold Reserves	Gold Share	Gold Share	Non-Gold Reserves	Gold Share
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Trade	0.0334*** (0.00731)	0.0355*** (0.00733)	-0.179** (0.0742)	-0.196*** (0.0736)	0.105*** (0.0247)	0.111 (0.262)
Currency	0.0985*** (0.0268)	0.204*** (0.0458)	1.398*** (0.240)	0.508 (0.385)	-0.247** (0.112)	2.269** (0.910)
Gold Standard	-1.298*** (0.264)	0.199 (0.391)	9.438*** (1.886)	-3.243 (4.074)		
Currency x Gold Standard		-0.198*** (0.0552)		1.679*** (0.459)		
Country FE	No	No	No	No	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	729	729	728	728	729	728
R-squared	0.282	0.295	0.301	0.313	0.368	0.173

Note: P-value in parentheses. ***, **, * denote significance at the 1%, 5%, 10% levels. Control variables are the same as in Table 1. Columns (1) to (4) report results of pooled panel estimations. Country-fixed effects are used in columns (5) and (6), with standard errors clustered at the country level.