# A STUBBORN BARBAROUS RELIC.

## GOLD RESERVES UNDER THE BRETTON WOODS SYSTEM

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- The persistence of habits, practices and norms over time. Well documented by historians and economic historians (path dependency, etc.)

- Recently attracted the attention of economists (Alesina and Fuchs-Schuendeln 2007). Links with behavioral economics (Malmendier and Nagel 2011, 2016, etc.). Focus on *individual behavior*.

- What about *organizations*? Policy institutions? "corporate repairs" (Camerer & Malmendier 2007)?

- Historians of central banks have highlighted the importance of corporate culture (James 1986, Capie 2010, Monnet 2012)

- Persistence despite major institutional change? Economic effects?

Can practices in organizations persist and have economic effects despite major institutional changes?

- Arguments & results:

- Under the Bretton Woods system, central banks continued to back their notes in circulation with gold reserves, as in the gold standard.

- The longer they adhered to the gold standard before WWII, the higher their gold reserves

- The longer they adhered to the gold standard before WWII, the higher the correlation between gold reserves & notes in circulation (money supply)

- Central banks continued to tied their hands. Less autonomy than usually thought

# A stubborn barbarous relic

- What role for gold under Bretton-Woods (1944-1971)?
- No obligation to redeem notes in gold like in the gold standard.
- An anchor. Fixed-parity with the dollar.
- The US gold-window for foreign central banks
- The BWS could have functioned without gold reserves (at least outside the US).
- Yet, many countries kept or reconstructed their gold reserves (Bordo & Eichengreen 1998)

# Gold reserves under Bretton Woods: fetishism or a policy variable?

# Gold reserves under Bretton Woods: fetishism or a policy variable?

- Why?

  - Path dependency (costly to move gold)
  - Gold fetishism
  - Persistent of gold standard practices: a policy role

- Did central banks continue to back their notes issuance by gold reserves? By foreign exchange reserves?

- Some examples of gold legal requirements (Switzerland, Belgium). A general phenomenon?

- Would have been at odds with the "Bretton Woods view" on foreign reserves: link with trade (Triffin 1947, 1961, Williamson 1973, Obstfeld et al. 2010)

# Persistence of gold standard practices?

- The literature on the determinants of foreign reserves holding under Bretton Woods focused on trade, exchange rate volatility (Grubel 1971, Williamson 1973, Cohen 1975)
- Link with money supply was hardly considered:
  - "naïve, obsolete and primitive" (Machlup, 1966, p.190-191)
  - "It is of course possible that countries may actually determine their reserve holdings with reference to their money supplies even if this is an irrational act based on traditional superstitions, but there is no persuasive evidence that they do." (Williamson, 1973, p.689).
  - Few dissenting voices (mainly bankers or policymakers): Kriz (1959), Holtrop (1957)
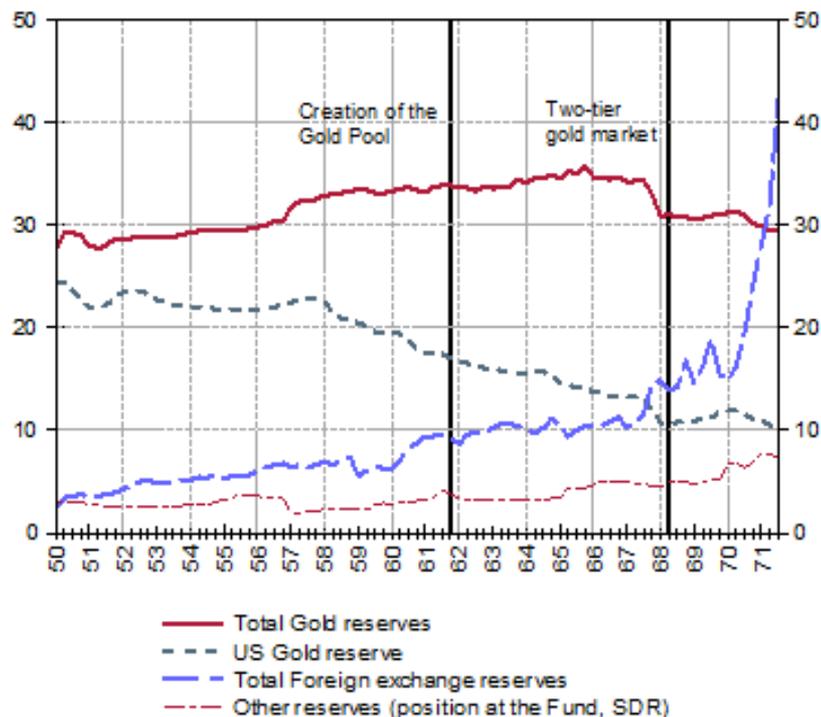
# Irrational and obsolete?

- History of economic thought (academic debates, and policymaking: IMF, BIS). What is (international) money?

- Quantitative analysis. Reserves and macro variables (IMF + other sources). Annual for 55 (43) countries.

- Estimations follow Obstfeld et al. (2010).

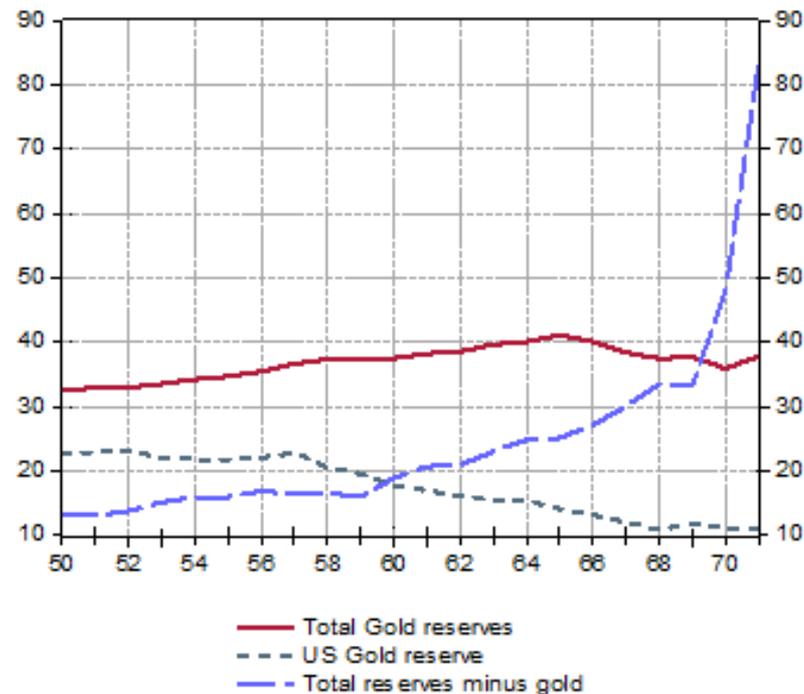- Scale reserves by GDP. Panel estimations.

*RESi/GDPi = α + β Zi + ui*

- Compare pooled panel (between) and fixed-effects (within).

- Also study the share of gold in total foreign reserves

- Exclude US from estimations

# Sources, methods and results

## International reserves of G10 countries (in billion of $), 1950 Q1 - 1971 Q3



Creation of the Gold Pool

Two-tier gold market

Total Gold reserves
US Gold reserve
Total Foreign exchange reserves
Other reserves (position at the Fund, SDR)

## International reserves (sample of 55 countries), in billion of $



Total Gold reserves
US Gold reserve
Total reserves minus gold

- Correlation between M0 (i.e currency in circulation) and gold reveals gold standard practices (or currency board if correlation with FX): notes issuance backed by foreign reserves
- Correlation with M1(or M2)-M0 reveals a double drain effect à la Obstfeld et al. 2010.
- Reverse causality issue if incomplete sterilization. Unlikely with annual data but possible. Most of all, unlikely to differ between gold and non-gold !
- Investigate the determinants of the gold's share
- A further test to investigate the role of "gold standard" influence: interact the gold standard adherence variable with M0.

Focus on the role of money

| Dep. variables | Pooled panel | | | |
|---|---|---|---|---|
| | **Total reserves** | **Gold reserves** | **Non-gold reserves** | **Gold's share** |
| **Trade/GDP** | 0.049*** (0.009) | -0.003 (0.004) | 0.039*** (0.010) | -0.259*** (0.040) |
| **M0/GDP** | 0.353*** (0.028) | 0.112*** (0.018) | 0.028 (0.022) | 1.112*** (0.237) |
| **(M1-M0)/GDP** | 0.187*** (0.012) | 0.126*** (0.012) | 0.054*** (0.006) | 0.188*** (0.060) |
| **Peg** | -0.003*** (0.001) | -0.001*** (0.000) | -0.002*** (0.000) | 0.006** (0.003) |
| **Log(Pop)** | -0.007*** (0.001) | -0.005*** (0.00) | -0.002*** (0.001) | 0.003*** (0.000) |
| **Capital open.** | -3.46 (4.39) | 15.4*** (4.67) | -24.4*** (1.97) | 13.86*** (3.46) |
| **Exch. rate vol.** | 2.04*** (7.48) | 1.22*** (0.39) | 0.071 (3.79) | 1.61 (8.53) |
| **Current acc./GDP** | 0.011 (0.025) | 0.075*** (0.012) | -0.065*** (0.022) | 0.769*** (0.130) |
| **Exch. rate prem.** | -0.004 (0.002) | -0.002 (0.002) | -0.003*** (0.001) | -0.006 (0.005) |
| **Gold Standard** | -0.0001*** (0.00001) | 0.0003*** (0.00001) | -0.0004*** (0.00001) | 0.002*** (0.000) |
| **IMF member** | -0.06*** (0.00001) | -0.062*** (0.001) | 0.005 (0.0056) | -0.162*** (0.038) |
| **M0/GDP*Gold St.** | | 0.007*** (0.001) | | 0.033*** (0.005) |
| **Constant** | 0.200*** (0.014) | 0.200*** (0.014) | 0.083*** (0.015) | 0.233*** (0.095) |
| **Adj. R-squared** | 0.57 | 0.69 | 0.29 | 0.38 |
| **Observations** | 730 | 730 | 730 | 730 |
| **Nb of years** | 19 | 19 | 19 | 19 |
| **Nb of countries** | 43 | 43 | 43 | 43 |

| Dep. variables | GOLD's SHARE in TOTAL RESERVES (All sample) | | | | | |
|---|---|---|---|---|---|---|
| | Pooled panel | | | | Fixed Effects | |
| | (1) | (2) | (3) | (3 bis) | (4) | (5) |
| Trade/GDP | -0.086** (0.042) | -0.094*** (0.007) | -0.201*** (0.037) | -0.259*** (0.040) | 0.139 (0.085) | 0.134 (0.146) |
| M0/GDP | 1.535*** (0.205) | 1.942*** (0.226) | 2.044*** (0.252) | 1.112*** (0.237) | 1.572*** (0.338) | 2.062*** (0.345) |
| (M1-M0)/GDP | 0.733*** (0.120) | 0.762*** (0.121) | 0.216*** (0.062) | 0.188*** (0.060) | -0.221 (0.223) | 0.375** (0.178) |
| Peg | | 0.005** (0.002) | 0.007** (0.003) | 0.006** (0.003) | | 0.002 (0.002) |
| Log(Pop) | | 0.008 (0.005) | 0.004 (0.007) | 0.003*** (0.000) | | -0.378 (0.105) |
| Capital open. | | 20.24*** (3.57) | 16.28*** (3.44) | 13.86*** (3.46) | | -7.20 (4.52) |
| Exch. rate vol. | | 8.32 (9.88) | 4.87 (8.11) | 1.61 (8.53) | | -0.58 (3.87) |
| Current acc./GDP | | 1.295*** (0.125) | 0.775*** (0.131) | 0.769*** (0.130) | | -0.980*** (0.225) |
| Exch. rate prem. | | | -0.002 (0.005) | -0.006 (0.005) | | 0.005 (0.010) |
| Gold Standard | | | 0.005*** (0.000) | 0.002*** (0.000) | | |
| IMF member | | | -0.177*** (0.037) | -0.162*** (0.038) | | |
| M0/GDP*Gold St. | | | | 0.033*** (0.005) | | |
| Constant | 0.199*** (0.021) | -0.083 (0.088) | 0.122 (0.093) | 0.233*** (0.095) | 0.211*** (0.223) | 6.318*** (1.763) |
| Adj. R-squared | 0.14 | 0.26 | 0.37 | 0.38 | 0.75 | 0.79 |
| Observations | 915 | 730 | 730 | 730 | 915 | 730 |
| Nb of years | 22 | 19 | 19 | 19 | 22 | 19 |
| Nb of countries | 47 | 43 | 43 | 43 | 47 | 43 |

- When fixed-effects are included, no more effects of capital account, capital openness, peg. Negative effects of M0 on non-gold (driven by the 1960s). But effects of M2 remain.

- No major difference when split into two subsamples (1950-1959 vs 1960-1971), except a greater influence of M0 on gold's share in the 1960s (not on the level).

- When restricted to G10, correlation between trade and gold reserves. Non-gold reserves are correlated with neither money nor trade.

# Further results

- Similar results if Switzerland and Belgium excluded (statutory gold res req.) And when US included

- The model does a good job to predict the path of reserves across and within countries (tested with G10 quarterly data). Differences between actual and predicted values are consistent with adjustment problems (UK deficit and German surplus) or political event (French 1965 gold conversion).

- Why did gold take such a role? Because of past practices? Corporate culture? Because of Triffin dilemma? Because of US deficit (confidence)?

- Not deterministic.

- Important point: some European countries and Japan were not involved in 1944 negotiations.

- The Bretton Woods system did not evolve as its architects thought. Even when cooperation is at the core of the system, the system is shaped by domestic practices.

- Reserves to GDP in Europe during BW was lower than reserves to GDP in emerging markets today. Globalization effect or gold?

# Interpretations and implications

# Implications

- Bretton Woods was not a dollar standard (≠ Despres, Salant, Kindleberger 1966, McKinnon 1969, Bretton Woods II literature). Maybe it could have been with different US policy (Bordo 2017).

- Monetary policy autonomy was lower than what the common wisdom on Bretton Woods states (see also Monnet 2014, 2016, Monnet & Puy 2016).

- Bretton Woods and the Great inflation of the 1970s

- Bretton Woods was more a transition period than a parenthesis.  See also Bordo, Monnet, Naef (2017) on sterling.