# The End of the Classical Gold Standard: 1907 and the Changing of the Monetary Order

ECON 618 – Economic History: Macroeconomic Aspects

Joshua A. Sack*

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**Abstract**

By the end of the $19^{th}$ century, the United States had overtaken Great Britain as the world's largest economy. By 1923, Keynes had declared the classical gold standard to be "a barbarous relic." The received wisdom claims that the first world war caused the end of the classical gold standard, however, this paper argues that the corresponding rises of the United States and financial innovation that led up to the crisis of 1907 created a system where it was no longer practical to maintain gold-convertible assets to–in the event of a crisis–be able to lend freely against good collateral, even at a penalty rate.

*American University College of Arts and Sciences Department of Economics, js6057b@american.edu

During the four decades leading up to the first world war, the global monetary system was dominated by the classical gold standard. Two general understandings of the structure of the global monetary system during this period are prominent: the price-specie flow mechanism pioneered by Hume (1752) and the "Banking School" noted by Whale (1937), which essentially represents a liquidity money market equilibrium. Both understandings assume free convertibility of currency into specie. Hume's (1752) mechanism operates on the basis that an exogenous increase in exports would result in an increase in the domestic money supply, which in turn would increase domestic prices, rendering domestic goods more expensive to produce and, therefore, less competitive to export, leading to a decline in exports. Whale (1937, 23–25) notes that during the period of interest in this paper, developed countries were managing their own monetary policies with the understanding that an increase in the money supply would result in lower interest rates.

Keynes (1919) described the countries managing their own monetary policies in line with this theory as following the "rules of the game." While both understandings would in theory lead to self-adjusting equilibrium, the inclusion of capital markets and interest rates as a tool to be adjusted to manage money flows in Whale's (1937) understanding allowed for greater adjustment speed, but gave those with the power to set interest rates the power to influence global money flows. Still, in a world where the relative size and power of different major actors remains relatively constant, this mechanism could work, however, in this paper's period of interest that was not the case.

Friedman and Schwartz (1971, 135) identify the period spanning 1897 to 1914 as the longest stretch of sustained price increases under the global monetary regime predating the first world war. With Friedman and Schwartz's (137) claim that American gold holdings increased from 14 percent of the world's total to almost a quarter during the aforementioned period, and leveraging Klein Goldwijk and Fink-Jensen's (2015) data on gold production (which, in line with Friedman and Schwartz (1971) shows a roughly 3.5 percent annual increase in the global supply of gold) results in the implication that while the gold supply in the United States expanded at a rate of around 7.3 percent. Meanwhile, the stock of gold

outside of the United States grew at an annual rate of only around 2.9 percent. Friedman and Schwartz (1971, 135, 138) note price increases in the United States over this period increased at an annual rate of between 2 and 2.5 percent per year, and British prices–taken, reasonably enough by Friedman and Schwartz as a proxy for prices in the rest of the world–increased at an annual rate of roughly 1.4 percent (135).

By the end of the $19^{th}$ century, the United States had overtaken Great Britain as the world's largest economy (Crafts 1998, 193). Despite this fact, London remained the capital of global finance, not the least because the United States' lack of a central bank prevented it from quickly adjusting domestic interest in line with the "rules of the game" (Odell and Weidenmier 2004, 1004–5). Looking at the spread between commercial paper in New York and British discount rates over the period from 1897 to 1908, the American rates were consistently higher, and did not get meaningfully closer to British rates over the period (13018A 1994). While commercial paper and discount rates are not directly comparable to central bank discount rates, the fact that even as the United States attracted massive gold flows in relation to the rest of the world, interest rates did not come down in accordance with the rules of the game could have frustrated British bankers. Additional evidence of the United States' failure to follow the "rules" comes from the observation by Newbold et al (2001, 236) that American rates followed an I(0) stationary process from 1890 - 1910.

In addition to American failures to sufficiently lower interest rates to repel gold inflows, the importance of agriculture to the American economy caused massive seasonal gold flows, with Friedman noting that every year the United States sprang from an export to an importer of gold during the crop-moving season(Friedman and Schwartz 1971, 126). This analysis is confirmed by Rich (1989, 143). As large annual fluctuations–even if they are predictable–introduce difficulties into the practice of extending credit, Leslie M. Shaw, the Secretary of the Treasury from 1902 to 1907 spent much of his exceptionally long term attempting to manage it (Andrew 1907). Among other innovations, he moved government deposits from bank to bank in attempt to engage in an early form of countercyclical policy (559). In the furtherance of this goal, he created finance bills, which helped to smooth gold flows

by attracting foreign money to the United States during the months when money was not in such high demand as to drive interest rates high enough to mechanically attract gold (Sprague 1910, 229).

The fragmented nature of American banking at the time injected further volatility into gold flows. Since it had served as the base of Alexander Hamilton's political power, New York City had been the center of American finance, weathering the storms of the experimentation of the middle of the $19^{th}$ century better than many other states (Beckhart 1922, 2–6), so that by this paper's period of interest, New York banks maintained their role as debtors of national banks (Sprague 1910, 223). Despite this paper stability, Sprague (1910) argues that the tendency of New York Banks to fully utilize their credit capacity (229), when combined with the innovation of the financial sector at the time led to financial instability.

While New York banks were able to their vaunted 25 percent reserve ratio during the fall surges in money demand from 1897 to the early part of the crop-moving season in 1907 (221), the makeup of those deposits changed significantly. While in 1897, more than two thirds of net deposits in New York banks were due to national banks, by August of 1907 state banks and trust companies had come to make up a share of net deposits almost equal to that of national banks, and those deposits were not treated any differently (225-226). Furthermore, enormous daily settlements led to wide daily fluctuations in the positions of individual banks (223), and, as can be seen in the full utilization of finance bills drawn in 1906 to a level equal to as much as twice net deposits, there was no large supply of excess liquidity despite the high ratio of reserves (229-230).

The treatment of net deposits due to trusts as equivalent to net deposits due to national banks equivalently created instability in part because unlike the banks, trust companies were not a part of the clearinghouse system that had acted as providers of liquidity in previous financial crises (Moen and Tallman 1992, 620–621). Furthermore, until 1906, trust companies did not have a reserve requirement (Hansen 2014, 546), and even after one was imposed, they were less well capitalized than banks (Moen and Tallman 1992, 621). As less well capitalized institutions, it would make sense for banks to treat deposits due to trust

companies as less reliable than those due to national banks. Instead, banks tied themselves to trust companies, taking advantage of their increased financial flexibility; this practice increased profits, but as became apparent in the crisis of 1907, put them in a position to suffer from greater losses (Sprague 1910, 299–302).

The combination of an increasing money supply driven by American gold accumulation as described earlier and new global discoveries did contribute to readily available credit conditions (Friedman and Schwartz 1971, 137). This readily available credit helped to spur sustained technological innovation the likes of which the world had never seen. In his 2022 book, *Slouching Towards Utopia: An Economic History of the* $20^{th}$ *Century*, DeLong develops an index of human technology based on the work that won Paul Romer his Nobel prize. Utilizing Romer's understanding that ideas are nonrival (Jones 2019, 860) and that a larger population depends as much on more effective exploitation of resources as it would to sustain the same population, DeLong scales his index to increase in line with real income and with half the rate of population growth (2022, 12). In the period from 1500 to 1870, what DeLong calls the "Imperial-Commercial Revolution," this index increased at an annual rate of about 0.2 percent per year, while from 1870 to 2010, this index increased at an average rate of 2.1 percent per year (12-17), a more than tenfold increase in the sustained level of economic growth.

In the years of what DeLong (2022) calls the "long $20^{th}$ century" (1870 - 2016), two of the most important innovations were in communication and the harnessing of power. In communication, the telephone and telegraph were expanding dramatically, while in power generation electrical power was rapidly advancing; both relied heavily on copper (Mary T Rodgers and Payne 2018, 25). The period from the 1890s to the start of the first world war falls in the middle of a decades-long ten-fold increase global per capita copper consumption (magnified by the rapid population growth at the time) (Schmitz 1997). Between 1901 and 1910 alone, the electrical industry grew to consume a plurality of American copper consumption (Mary T Rodgers and Payne 2018, 26).

Even as demand for copper exploded, the business of producing copper was not without its

risks. Capital intensity and long lead times led to inelastic supply in the short-run (26-27), and innovations in production such as open-pit mining could produce supply shocks that could bring prices below costs of production with older techniques (28-29). Finally, as a commodity (and especially as a commodity tied to exciting future growth), copper prices were sensitive to credit conditions (17-20).

For copper producers then, the 1906 tightening of monetary policy by the Bank of England imposed serious challenges. The tightening started in April of 1906, when the the San Francisco earthquake and fire caused damages of between 1.3 and 1.8 percent of GNP and British companies who underwrote a majority of the fire insurance policy, representing as much as $108 million in claims (Odell and Weidenmier 2004, 1003). Adding to this demand for gold inflows, over the next two months, American banks drew between $400 and $500 million in finance bills (Sprague 1910, 223). In response to these outflows, the Bank of England raised discount rates by 250 basis points (Odell and Weidenmier 2004, 1003) and threatened more increases unless the practice of issuing them was stopped (Myers 1931). Further tightening credit conditions, in March of 1907 the Bank of England discouraged London banks from offering short term credit to American banks (Mary T Rodgers and Payne 2018, 5).

As is to be expected after a major tightening of monetary conditions, the American economy promptly slowed. From March to October of 1907, production and freight-loadings slowed, however, inflation continued and the rate of commercial failures did not dramatically increase (Friedman and Schwartz 1971, 157). Without the ability to use finance bills, the standard agriculturally dominated gold-cycle continued with the country exporting gold during the summer months, further tightening financial conditions (158).

For copper producers, however, even after prices had peaked in March of 1907, production continued as the inelastic and long lead times led to a sharp fall in prices (Mary T Rodgers and Payne 2018, 27). It is reasonable to assume that the decline in the profitability of producing copper was a factor in the fall of shares in United Copper, but to the Heinze brothers, the largest holders of the stock, when combined with the discovery of a large short position, it is understandable that they would see the opportunity to profit from a short squeeze or

corner (7-10). Because the attempt failed at a time when rates were already surgind due to the strong money demand associated with the crop-moving season (Goodhart 1969, 29), the failure of attempted corner and the fact that the Heinze brothers could not pay back the loans they took out to finance the attempt induced stress in the financial institutions they controlled (Moen and Tallman 1992, 623).

As the crisis moved through the financial industry and banks restricted payment (as they had in 1893 (Friedman and Schwartz 1971, 167)), an excess demand for cash emerged (Andrew 1908). At its peak, the premium for currency over bank deposits reached 4 percent (290), and in the month of December, the treasury augmented this excess demand by requiring payments in currency (Friedman and Schwartz 1971, 163). To address this excess demand, J.P. Morgan helped arrange for at least $35 million in direct lending (and $25 million from the Treasury), as well as a rollover of the City of New York's debts and the takeover of Tennessee Coal, Iron and Railroads without stressing the market's extremely limited liquidity (Mary Tone Rodgers and Payne 2014, 439). In addition, the Regents Bank of France created facilities to bring gold payments for agriculture forward in time to supply hard currency (and liquidity to the American financial system). This was done through a facility to allow french bankers to use commercial paper to obtain previously sterilized gold reserves, allowing those bankers to let their clients use that hard currency to pay for their crop imports (420-422). The Canadian government also created a lending scheme to allow banks to finance their (similarly cyclical) movement of crops east (Rich 1989, 137–139).

Rogers and Payne (2014) find that the influx of liquidity from Morgan and the French was sufficient to stabilize the hoarding of currency, with the currency premium disappearing again by the end of December 1907. In analysing the causes of the crisis, Sprauge (1910, 318–320) points to the lack of reserve liquidity, claiming that every financial crisis from the establishment of the national banking system would have been prevented, had reserve liquidity been available. Friedman and Schwartz (1971, 167–168) disagree, pointing to the fact that the restriction of payments by banks allowed for the prevention of a chain reaction as banks were not forced to enter the market for cash during highly irrational times.

Friedman and Schwartz's (1971) view is grounded in the beginning of the Great Depression, where the Federal Reserve failed to provide additional liquidity to prevent the country (and world) from falling into a depression. Indeed, in the face of the Great Depression, Sprague discouraged policies that would have reduced the Federal Reserve's rising stock of gold in the early years of the Depression, worrying that a weakening of the gold standard would be worse for the economy than the depression (Rockoff 2022).

Ultimately, the growing economy and increase in financial innovation made obtaining and maintaining a sufficient gold reserve so as to be able to provide liquidity in the time of a major crisis untenable. While a full empirical examination of the examination of the data would be necessary before confidently drawing that conclusion, the difficulty of powerful financial actors in creating the excess liquidity needed to quickly resolve the crisis of 1907 indicates that the strictures of the gold standard were a cause of the crisis of 1907 being as bad as it was, and that the tentative moves away from the "rules of the game" in the years leading up to the first world war (such as the creation of the Federal Reserve system) signaled the end of the classical gold standard.

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