

*"Modern economics will be forever altered, and we  
and future generations will be the richer for it."*

Steve Forbes

# GOLD

the FINAL  
STANDARD

**NATHAN K. LEWIS**

Introduction by **GEORGE GILDER**

# GOLD: THE FINAL STANDARD

BY NATHAN LEWIS

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Whenever destroyers appear among men, they start by destroying money, for money is men's protection and the base of moral existence. Destroyers seize gold and leave to its owners a counterfeit pile of paper. This kills all objective standards and delivers men into the arbitrary power of an arbitrary setter of values.

Ayn Rand

Although gold and silver are not by nature money, money is by nature gold and silver.

Karl Marx



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# Introduction by George Gilder

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The anthropologist Margaret Mead used to tell of the story of “bold mariners” in Polynesian Island tribes who crafted elaborate canoes for traversing large distances at sea and catching hauls of fish, but then over the decades allowed these skills to slip away. Their descendants ended up isolated on small islands, close to starvation, and headed for extinction. She describes the men gazing fecklessly at the sea as if it were an alien realm irrelevant to their shortage of food or possibilities of travel. She asks: “If simple men on islands forgot how to build canoes, might more complex people also forget something equally essential to their lives?”

In the compelling historical and anthropological narrative of this book, Nathan Lewis tells how very complex human societies, led by sophisticated politicians and economists, lost their crucial ability to provide stable money as a tool for trade and economic growth. They thus are jeopardizing the future of capitalist economies and the world trade that sustains them. As altogether blindly as those starving Polynesian warriors gazing at the sea, the world’s monetary experts look out on the turbulent oceans of chaotic currency trading that replaced the gold standard and show no awareness that anything is awry.

According to 2016 data from the Bank of International Settlements, this sea of currency trading now churns away at a rate of \$5.1 trillion per day, as much as 73 times all trade in goods and services, 25 times all global GDP. Yet this frothy process arrives at no reliable values to guide entrepreneurs and producers of real goods and services as they make their investment decisions across borders.

With foreign exchange a hugely obese and parasitic tail wagging the dog of real economic activity, free trade becomes politically embattled around the world. Currency gyrations, such as an 87 percent drop in the Mexican peso after NAFTA or the drastic ups and downs of the Japanese yen, confound the price signals that convey real comparative advantage or purchasing power parities in international trade. Thus the bloating of currency markets has accompanied a decline in economic performance and a slump in trade.

With all prices always in play, the arbitrageurs and speculators rule the world economy and shrink its time horizons. During the height of the catastrophic financial failure of the “Great Recession,” economists indifferently contemplated the relentless financialization of the economy, with incomes in the financial sector nearly tripling as a share of all corporate income since 1971. Yet as Lewis shows, “Their old [banking]



roles had actually become even less profitable...eroded by competition and advances in information technology...[and] should have become a smaller, cheaper, and less obtrusive part of the economy."

Instead financial profits have risen to 30 percent of all corporate profits. "In the floating fiat world," banks find "new profit centers" in "in-house speculation...in derivatives, foreign exchange, and financial engineering," while as Paul Volcker puts it the only real innovation in finance in fifty years is the ATM machine. While actual world trade stagnates, economists have no idea of how or whether to restore a real monetary measuring stick to the world.

Mention gold, and nearly all professional economists declare that it is irrelevant to the economic doldrums since Richard Nixon took the US off the gold standard in 1971. They talk of "secular stagnation" or "technological exhaustion" or "deindustrialization," or "shortages of money and aggregate demand." They invent complex "trilemmas," "Midas paradoxes," "monetary enigmas," "liquidity traps," and other exotic alibis.

Ritualistically quoted is John Maynard Keynes' passing reference to gold as a "barbarous relic" or Warren Buffett's derision of gold as an absurd fetish: "We dig it out of the ground...melt it down...dig another hole...and bury it again and then pay people to stand around guarding it. Anyone watching from Mars would be scratching their head." Buffett says nothing of what his putative Martians might make of the more immense absurdity of devoting much of world capitalism to the otiose shuffling of currencies back and forth over trading desks.

Contriving hugely complex but still inadequate models and intricate statistical clouds of mythopoeic aggregates—giving each other Nobel prizes and other awards—economists laboriously try to explain what in Lewis' gripping history of the last six thousand years emerges as just another episode of monetary manipulation and debauchery. "The primary innovation of the last century," he observes, "has been to sprinkle spurious math upon these age old claims."

Why gold is the monetary element remains controversial (I develop my own theories in *The Scandal of Money*). But Lewis shows that of the 118 elements in the periodic table only five precious metals offer any monetary feasibility and of these, only two—silver and gold—combine compactness and malleability in a way that allows efficient coinage. Since silver is more reactive, more common, and tarnishes, gold remains in the chemical "sweet spot." For five thousand years, humans have repeatedly gravitated to gold as money. But the spot remains sweet only when the gold is pure and accurately measured and thus stable in value.

As Lewis shows, contrary to many analyses, a monetary element should not be useful or valuable beyond its monetary role. Thus all the proposals for commodity baskets and other alternatives to gold fail in the most vital criterion for a metric of value. Commodities are useful and marketable and

part of the economy which money has to measure. A measuring stick should not be part of what it measures.

The use of gold as jewelry does not violate this principle. Many advocates of gold think that people chose it as money because it is beautiful and shiny as a bauble, and has some very limited uses in electronics—because “it conducts electricity and love.” But as Richard Vigilante has put it, “Money is not valuable because it is really jewelry; jewelry is valuable because it is really money.”

All such theoretical observations, as interesting as they are, give way in Lewis’s narrative to a long sweep of history in which the gold standard accompanies humanity’s greatest industrial and economic accomplishments. The climax is the worldwide spread of gold as a measure of value that fostered the 18<sup>th</sup> and 19<sup>th</sup> century triumphs of the industrial revolution and the British empire. Enabled were 200 years of unprecedented growth and progress and centuries of perpetual government bonds and “consols” in many nations bearing interest rates under 4 percent.

In the eyes of the conventional wisdom, though, all the thousands of years of gold serving as a felicitous measuring stick for commerce are countervailed by the notion that the gold standard caused the Great Depression. As Lewis shows, the arguments are all incoherent. The Keynesian-monetarists believe the Great Depression was caused by a collapse of the money supply—deflation—while the Austrians and “austerians” contend that the crash was an inevitable effect of runaway money creation—inflation.

Scores of books have been written to expound both arguments, their fuges, fusions, and variations. On all sides, the accounts are so complex and enigmatic and the retrospective policy advice so intricate that it makes monetary policy essentially impossible to follow in the midst of economic crises. In the view of the academic analysts, monetary policy in practice turns out always to be wrong or inadequate or mistimed despite its conduct by the leading monetary experts.

The canonical monetarist Milton Friedman epitomized the baffling contradictions and elusive signals in 1998, when he wrote that “low interest rates are generally a sign that money has been tight, as in Japan; high interest rates, that money has been easy...After inflation and rising interest rates in the 1970s, and disinflation and falling rates in the 1980s, I thought the fallacy...was dead. Apparently old fallacies never die.” But low interest rates can also signal easy money and high rates tight money. If it takes a genius to fathom all the paradoxical or even tautological truths in real time, perhaps monetarism is too enigmatic to be followed. The price of gold remains a more readable and reliable guide because it is not a part of the economy it measures.

By contrast, in his historical narrative, Lewis enlists in what might be called the information theory of economics, which focuses less on the direct

impact of monetary policy actions than on their informational content. "Only money that is stable in value can prevent the distortion of prices, interest rates, profit margins and returns on capital, and all the other myriad effects...of money that either rises or falls in value." The gold standard through history has validated the price signals of the economy. Thus it has conveyed accurate information that entrepreneurs can use as guidance for their investments.

The mistake of gold standard critics who see it as a cause of the Great Depression is to treat vast historical events and tragedies (the rise of a new world war following the horrors of World War I) as episodes in the volatility of aggregate demand and shifts in the gold reserve ratio. World War II and its preparations were not simply maneuvers toward a "liquidity trap." The hoarding of gold was not merely an effect of irrational panic. All that hoarding of gold (after all, many Jews, and French, would soon wish they had hoarded more!) was a portent of an ongoing breakdown of civilization and global turn against free markets.

Even at the time, gold provided a better guide for entrepreneurs than econo-mystic politicians who believed that capitalism could thrive under price controls, confiscatory taxes, tariff gouges, communist and fascist labor movements, and abrupt currency manipulations. Gold also outperformed financial experts who seemed to believe that some expansion of the money supply or gold reserve ratio or interest rate manipulation would bring Hitler to the table with trumpets, and induce recumbent lions and lambs to gather amiably in Alsace.

In retrospect, even during the Great Depression, the gold signal was right. The critics, as Lewis shows, merely want to shoot the messenger.

George Gilder  
Tyringham, Massachusetts  
27 April 2017

# Preface

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This is a wonky book. People new to the topic of money and monetary history would be better served by my two previous books, *Gold: The Once and Future Money* (2007), and *Gold: The Monetary Polaris* (2013). In the future, I would like to do a book that is shorter and more accessible to the newcomer than those. But: first things first.

Many people noticed that the theory and narrative of those first two books did not coincide with today's conventional wisdom. Indeed they did not; there would hardly have been a reason to write them if they did. This book aims to provide a clean narrative of monetary history, from ancient times to the present day. Along the way, a great many counterclaims are examined, in a manner that is necessarily brief, but, I hope, adequate to address the issues in an effective way.

I assume that the reader has already read those previous books and absorbed their contents. Topics discussed in depth in those books will get light treatment here, probably too light to serve as anything but a vague hint to those who are not already familiar with the subject. This book has some overlap with the others, particularly in the use of graphs also found in *Gold: The Monetary Polaris*. Readers of that book should also find much new material, for each of the periods represented.

It is often claimed that people have been using gold and silver as money "for five thousand years." This is true; but few people know anything about that long heritage. Typically, it is summarized by a few brief anecdotes about Greeks and Romans, followed by a leap to the sixteenth or seventeenth centuries. Yet, on closer investigation, the amazing thing is how common and widespread gold and silver were throughout the world, among any civilizations complex enough to mine metals and engage in monetary exchange. Gold and silver, in bullion form, were the premier high-quality money for two thousand years before the first coins were minted in the seventh century B.C. After the fall of western Rome, the history of money in the West was dominated by the success of the Byzantine *solidus*, a gold coin that retained its original standard for over seven centuries. It spawned many imitators, including the Arab *dinar*, the Italian *florin* and *ducat*, and second-generation copies including Spanish *escudos* and Dutch *gulden*. In the East, the Chinese began a four-century experience with paper currency.

The Bank of England's history of currency reliability during the eighteenth and nineteenth centuries eventually served as the role model for all currency-issuing banks, and later central banks. New data from the Bank

of England shows the evolution of the Bank's balance sheet over the entirety of its history. This should help dispel the erroneous legend and lore that has accumulated regarding the times before 1914. The United States rejected the monopoly central bank model, exemplified by the Bank of England, three times before it was finally introduced via the Federal Reserve in 1913. Even then, the Federal Reserve did not have an effective monopoly until the end of the 1930s. The United States' experience with "free banking" can also serve as a model for the future.

The Classical Gold Standard era of the latter nineteenth century is often referred to, in admiring or sometimes critical terms, but little is known about it. Although many books have been written on the topic, readers of these books are often left even more confused than when they began, this confusion worsened by a mistaken confidence. In fact it was a simple system, and easy to understand, although this simplicity was clouded by the complex variety of operating techniques common to central banks of the time. If the Classical Gold Standard era is to be a model for future imitation, or perhaps a cautionary example in some particulars, we had better know something about it.

The Interwar Period, 1914-1944, has inspired a cacophony of wildly contradictory "interpretations." I sort through the major claims, and evaluate their merits. None of the major interpretations are satisfactory in themselves, but they point the way to a conclusion that is straightforward, the most common view of those living at the time, and also a dominant view since then.

The Bretton Woods era, 1944-1971, presents a strange combination of stellar success – it was the most prosperous period since 1914 – and also puzzling failure. The reasons for this failure are actually well known and recognized, but economists today are still hesitant to admit just how confused their profession had become in those days. They would rather repeat the old nonsense for decade after decade than admit the inadequacies of their predecessors.

Our floating fiat currency environment today emerged from the collapse of Bretton Woods. It was wholly undesired and unintentional. The record of our time has been one of stagnation and erosion, punctuated by episodes of real crisis. The less-developed world has often had it even worse, with many cases of currency crisis or outright hyperinflation. Technological development has continued nevertheless. But, unlike past eras, this has not been accompanied by soaring prosperity in general.

Academics today swear up and down that today's floating fiat environment is somehow the best of all possible worlds. And yet, if that were true, there should have been some evidence of it over the past forty-five years, and there is not. Central banks do not create any useful goods or services. The floating currencies that arise from central bank foolishness merely create difficulties for those that do.

At some point, the time may come to construct a new monetary order. Many governments, including those of China and Russia, have been actively preparing. This effort will need to be informed by correct understanding, if we are to avoid the kind of failures built into Bretton Woods in 1944. Without the confidence that comes from clear vision, people may be too insecure even to begin.

Nathan Lewis  
March 2017



# Chapter 1:

## The Study of Currency History

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History is complicated. Many people did a great many things. There is this factor and that factor, and differing interpretations. Any historian has to distill down this great mass of happenings into some representation of what was important, and what was not.

Histories involving money and finance tend to be even more complicated. The first complication is the inclusion of “finance”; this includes equity and debt finance. Debt finance means, basically, borrowing and lending. We will make our first simplification by deliberately omitting discussion of finance.

The world of debt finance not only includes thousands of loan-making banks, in over 150 countries, plus the usual bonds, but also all manner of further complications including such things as money-market funds, structured investment vehicles, and securitized debt instruments including mortgage-backed securities, collateralized loan obligations, collateralized debt obligations, and other such acronymic confections which are continuously invented by financial technicians whenever it seems advantageous to do so. On top of this is a further layer of derivatives obligations. It would take a rather large book just to describe, in a taxonomic sort of way, the various financial instruments in regular use today and their basic characteristics, without even taking up the question of their history.

And yet we can see that, in the United States to take one example, all of this financial complication takes place with one uniform currency, the dollar. In Europe, it takes place with the euro. The currency itself stands apart from the entire process of finance. Central banks, which are now the sole issuers of this currency, today are mostly not involved in commercial bank activity at all. There were times of boom and bust, in the U.S. during the 1834 to 1914 period, or Britain from 1700 to 1914, and a great many thrilling tales could be told of the details of those times. But, the monetary story is much simpler: the U.S. dollar, or British pound, was linked to gold, with a few well-documented lapses. In the U.S. case, the parity ratio was \$20.67 per ounce of gold. In Britain, it was £3.89 per ounce. The history of the dollar or pound could be summarized simply as: it was linked to gold. All of the expansions and revulsions of finance, or more broadly, business and the economy, can be safely segregated into a separate topic.



What is “money”? It is the thing generally accepted in payment. Today, this is known as “base money,” which consists of paper banknotes and token coins, and also “bank reserve” deposit balances recorded at the currency issuer, which today is a central bank. All monetary transactions are performed using one of these two forms of payment. They are the only “legal tender,” which is to say: that which is legally recognized as constituting a payment. Every sort of money-like thing, such as bank deposits, checks, credit or debit cards, wire transfers, and other various electronic means of payment, ultimately result in one bank paying another with its “bank reserves” at the central bank.<sup>A</sup> Bank deposits, money-market funds and so forth are actually debt instruments, and can be segregated into the world of “finance,” with no particular ill effects.

A currency is a simple thing. It has virtually one single characteristic: its value. A modern “paper” currency hardly has any physicality or meaning at all except as some generic counter of value. Even talking about a “paper” currency is becoming somewhat old-fashioned. Most monetary transactions of any size today take place via the transfer of bank reserve balances at the central bank, which is wholly nonphysical.

A currency has a supply and a demand. The intersection of these produces its value. In this way, a currency is no different than any other thing that one might buy or sell. The demand for a currency, among all the peoples of the world, is variable and unpredictable. Today, the supply of currency (the base money supply) is also somewhat variable and unpredictable, according to the daily operations of central banks. Not surprisingly, the resulting value of today’s floating fiat currencies is also variable and unpredictable.

However, for most of the past 500 years, until 1971, the values of currencies were not variable and unpredictable. Rather, they were linked to gold (or silver, which had long served as an adjunct to gold), at some stable ratio. When the system was managed correctly, this was ultimately achieved by some sort of adjustment in supply to accommodate daily changes in demand, to produce the desired value. You could call this a “fixed-value” system. The policy goal is to maintain the value of the currency at a definite “parity” with some benchmark. If the benchmark, or “standard of value,” is gold, then the fixed-value system is called a “gold standard” system. The technique by which the policy goal was accomplished was some sort of system that adjusted the quantity of base money, with the intent of thus managing value.

Fixed-value systems are in fact very common today, and, when managed correctly, they operate in almost the same manner as a gold standard system. Many currencies are linked to the dollar or euro. Presently, twenty-seven countries use currencies linked to the euro, most effectively via some sort of currency-board arrangement. A “gold standard”

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<sup>A</sup> See *Gold: The Monetary Polaris*, Chapter 2, for an extended discussion of this topic.

system is, at a fundamental level, very much like today's "euro standard" systems, except for the choice of the standard. Ideally, a gold standard system would be operated much like today's euro-linked currency boards, and in practice, before 1914, they usually were.

In a fixed-value system, the supply of currency (the base money supply) is a residual. The correct supply is the supply that produces the desired outcome, of a stable value relationship (a fixed exchange rate) with the standard of value. If the supply is insufficient, causing the currency to rise in value above its benchmark, the supply is increased. If the supply is in excess, causing a decline in currency value compared to the benchmark, supply is reduced. Although currency managers with a fixed-value policy have quite a few tools to achieve their goals, and typically do not express their operating mechanisms in these terms, nevertheless that is the ultimate result.<sup>B</sup>

The demand for a currency might increase by some large amount, for some reason. Often, this coincides with economic growth, and perceived currency reliability. To maintain the fixed-value system, the supply of the currency must also expand by the equivalent amount. In 1775, the total base money supply in the American Colonies has been estimated at \$12 million, consisting primarily of gold and silver coins of foreign manufacture. In 1900, the base money supply was \$1,954 million, mostly in the form of paper banknotes, an increase of 163 times. During this period (ignoring a minor adjustment in 1834), the value of the dollar was the same: \$20.67/ounce of gold.

The fact that base money in the U.S. expanded by 163 times during this 125-year period is not, in itself, terribly relevant. The quantitative expansion was a residual outcome of the fixed-value system. If the figure was, instead, 12 times or 52 times or 275 times, our conclusion would be the same: that such a figure was the appropriate increase in supply to meet the increasing demand for money, thus producing the stable parity value. We know it was not "too much" or "too little" because the dollar did indeed maintain its gold parity value. Thus, it was "just right." During the same 1775-1900 period, the Bank of England's base money supply increased by 7.5 times, a figure that was, for Britain, also "just right."

The dismal record of central bank failure to maintain fixed parity values, especially since 1944, shows that even monetary specialists with responsibility for these matters do not have an adequate understanding of the proper operating mechanisms of an automatic fixed-value system. The simplest version is a currency board; in terms of gold, it would be a "100% reserve" or "warehouse receipt" system. Let's assume that Country A's central bank (or other independent currency issuer) maintains the value of a currency at A\$1 per euro. We will assume for now that the central bank

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<sup>B</sup> See *Gold: The Monetary Polaris*, for a discussion of the daily operations of fixed-value systems, including gold standard systems.

has no capital, and that it does not actually hold any euro base money, in the form of euro banknotes and coins, or a deposit with the ECB. Rather, its assets consist of euro deposits in foreign commercial banks (such as a large German bank), and foreign euro-denominated government bonds. Initially, its balance sheet looks like this:

<b>Assets (millions)</b>		<b>Liabilities (millions)</b>	
bank deposits	€1.0	banknotes and coins	A\$5.0
government bonds	€9.0	deposits	A\$5.0
<i>total assets</i>	<i>€10.0</i>	<i>total liabilities</i>	<i>A\$10.0</i>

For purposes of demonstration, we will assume that the central bank has a small trading band around its A\$1:€1 parity. Thus, it will buy euros (sell A\$) at A\$0.99/euro, and sell euros (buy A\$) at A\$1.01/euro. Let's say that the market value of the A\$ is rising, such that it only takes A\$0.99 to buy a euro. The central bank will then buy euros/sell A\$ in unlimited size at A\$0.99/euro. This increases the monetary base, and increases the euro-denominated assets at the central banks. The central bank makes no decision on when to sell A\$, or in what amount. It simply offers to sell in unlimited quantity at that price. The transaction is entirely determined by independent market participants willing to transact with the central bank at that price. These independent market participants decide to purchase A\$1.0 million from the central bank, giving euros in trade. Thus, A\$ base money (banknotes and deposits) increases by A\$1.0 million (actually A\$0.99 million, but we will round up for simplicity), and euro-denominated assets also increase by €1.0 million. It looks something like this:

<b>Assets (millions)</b>		<b>Liabilities (millions)</b>	
bank deposits	€2.0	Banknotes and coins	A\$5.0
government bonds	€9.0	Deposits	A\$6.0
<i>total assets</i>	<i>€11.0</i>	<i>total liabilities</i>	<i>A\$11.0</i>

The opposite occurs if the value of the A\$ is sagging versus the euro, such that the market value is around A\$1.01 per euro. The central bank offers to buy A\$/sell euros in unlimited size. Again, the central bank takes no discretionary action. The size and timing of transactions is entirely determined by independent market participants willing to transact with the central bank. Because the value of the A\$ is sagging vs. the euro, independent market participants sell A\$1.0 million to the central bank, and take €1.0 million in return. Total base money falls from A\$11.0 million back to A\$10.0 million:

<b>Assets (millions)</b>		<b>Liabilities (millions)</b>	
bank deposits	€2.0	Banknotes and coins	A\$5.0
government bonds	€8.0	Deposits	A\$5.0
<i>total assets</i>	<i>€10.0</i>	<i>total liabilities</i>	<i>A\$10.0</i>

In the extreme case, independent market participants, as a whole, decide that they do not want to hold any A\$ whatsoever. They take all the A\$ in existence, and trade them with the central bank for euros. The result is this:

<b>Assets (millions)</b>		<b>Liabilities (millions)</b>	
bank deposits	none	Banknotes and coins	none
government bonds	none	Deposits	none
<i>total assets</i>	<i>none</i>	<i>total liabilities</i>	<i>none</i>

Nevertheless, the central bank was able, even to the very end, to exchange euros and A\$ at the 1:1 parity.

Although a “100% reserve” or “warehouse receipt” gold standard system has been rather rare in history, the basic principles are essentially identical. Let’s assume a parity value of A\$100 per ounce of gold. The bank’s balance sheet looks like this:

<b>Assets</b>		<b>Liabilities</b>	
gold bullion	1,000,000 oz.	Banknotes and coins	A\$50m
government bonds	none	Deposits	A\$50m
<i>total assets</i>	<i>A\$100m</i>	<i>total liabilities</i>	<i>A\$100m</i>

The basic operation is the same. Any private market participant may take A\$100 to the central bank and get an ounce of gold in return; or take an ounce of gold to the central bank and get A\$100 in return. In practice, when the value of the A\$ is sagging vs. its gold parity such that the market price is A\$101 per oz., then the central bank becomes the cheapest seller of gold (at A\$100/oz.) and gold outflows ensue. When the value of the A\$ is rising vs. its gold parity such that the market price is A\$99/oz., the central bank becomes the highest bidder for gold (at A\$100/oz.), and gold inflows ensue. An inflow of 1 oz. of gold results in an increase in the monetary base by A\$100, necessary to finance the purchase. An outflow of 1 oz. of gold results in the receipt of A\$100 in payment, and a reduction in the monetary base by that amount.

Just as is the case with the euro-based currency board, the central bank takes no discretionary action. The system is entirely “automatic”: its activity (changes in assets and liabilities) is determined by the actions of independent market participants and the market value of the A\$ compared to its euro or gold parity. The monetary base is entirely a residual of this process, and thus is also generated “automatically.”

In the example of the euro currency board, the central bank does not actually hold any euro base money (banknotes or deposits at the ECB) as assets. Government bonds can be easily sold for euros, and commercial bank deposits serve as an alternative to direct deposits at the ECB. Much the same is commonly true of gold standard systems, where a large portion of assets might be held in the form of interest-bearing government bonds, which can be sold for bullion if the need arose. (In this example, the A\$-denominated bonds are linked to gold, because the A\$ itself is linked to gold.)

<b>Assets</b>		<b>Liabilities</b>	
gold bullion	500,000 oz.	Banknotes and coins	A\$50m
government bonds	A\$50m	Deposits	A\$50m
<i>total assets</i>	<i>A\$100m</i>	<i>total liabilities</i>	<i>A\$100m</i>

In practice, the actual operations of central banks can be considerably more complicated than this. However, the basic principles are the same: the monetary base expands when the currency is rising above its value parity (gold or another currency), and contracts when the currency is sagging beneath its value parity. Thus, the overall effect is much the same as a simple currency board or “100% reserve” gold standard system. Central banks take no discretionary actions, apart from some of the particulars of this process. The system is “automatic,” and the quantity of base money is a residual of the process.

At its most complicated, a central bank operating a gold standard system could have a variety of asset types, and a variety of operating procedures. These could include: gold bullion, discounting and lending (itself related to the bank’s “discount rate”), open-market operations in domestic bonds, and foreign exchange operations with other gold-linked currencies, which in turn produce assets denominated in foreign currencies (“foreign reserves”). A central bank could be active in all of these assets simultaneously. However, the overall effect would be the same: the monetary base would expand when the currency’s value is above its parity (expressed as a “low price of gold”), and contract when it was below (a “high price of gold”), in an automatic fashion similar to a simple currency board. The provision of gold convertibility, in the end, ensured that this would happen.<sup>1</sup>

Giulio Gallarotti, in *The Anatomy of an International Monetary Regime: The Classical Gold Standard, 1880-1914* (1995), explained:

The practice of gold monometallism is partly what has been known in monetary economics as a rule for regulating domestic money supplies. ... Under a gold standard, authorities maintain a stable value of the currency ... by defending the value of gold vis-à-vis the currency itself. When gold goes to a premium vis-à-vis notes (rises

above the par value), it means the money supply is too large ... and therefore must be held in check. When the value of gold drops below par, it means that the money supply needs to be increased.<sup>2</sup>

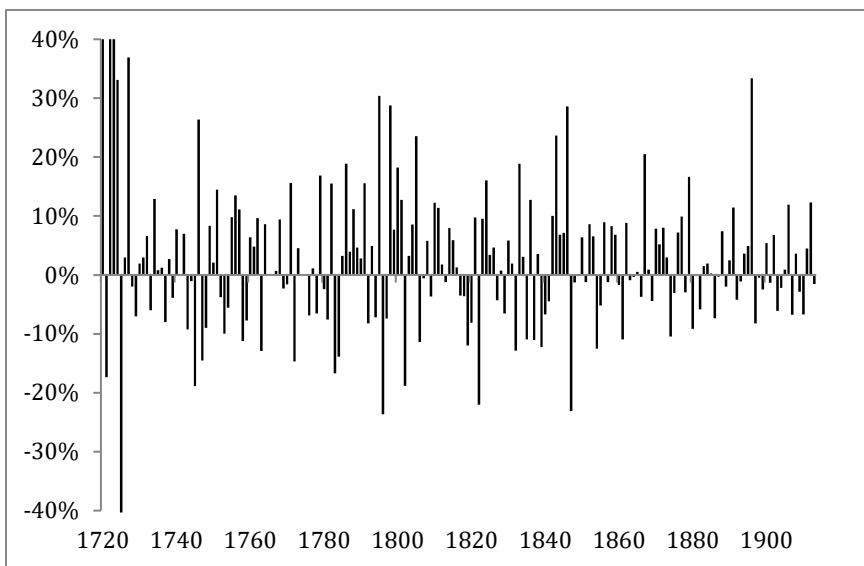
Thus, a “gold standard” system is a subset of fixed-value systems, which can include fixed-value systems linked to major international floating fiat currencies (such as the euro or dollar), currency baskets, or potentially some other thing. The primary difference is the use of gold as the “standard of value,” instead of a floating euro, dollar, or some other standard. From this, we can see that a great many factors commonly associated with gold standard systems – mining production, a “price-specie flow mechanism,” the “balance of payments,” imports or exports of gold bullion, price differentials, interest rate differentials, gold reserve ratios, or dozens of other factors that economists like to confuse themselves with – actually do not matter, just as they do not matter for euro-linked and dollar-linked currency boards today. The only thing that does matter is the value of the currency in relation to its standard of value. All else flows from this, in the automatic fashion described.

It is all too common to ascribe all manner of consequences to changes in money supply figures (the monetary base is the only one of importance), with the vague implication that such changes were responsible for this or that economic outcome. However, when such changes in money supply figures comes about as a result of the normal automatic operations of a fixed-value system, then these changes in supply have essentially no important economic consequences at all. The only thing of real importance was: that the currency maintained its parity with its standard of value. The 163-times increase in U.S. dollar base money supply in 1775-1900 did not cause any change in monetary conditions. The value of the dollar was essentially unchanged, compared to its gold parity. Likewise, contractions in base money – for example, the 17% contraction in base money at the Bank of England between 1853 and 1855, or the 28% contraction between 1836 and 1841 – also have no effect, if they are the result of the mechanisms that maintain the value of the currency at its gold parity. The British pound was soundly linked to gold during both of these periods.

Economic effects are felt when there is a change in currency value. Between February 1931 and February 1932, the Bank of England's monetary base increased only 1.0%. However, the value of the pound departed from its gold standard parity and fell by 29% during that time period, following the devaluation of September 1931, and remained a floating currency until World War II. Despite the near-inaction of the monetary base, the monetary consequences were dramatic. (In this case, it was the inaction itself – the refusal to support the value of the pound with a monetary base contraction, which would have happened automatically with a proper fixed-value operating mechanism – that caused the devaluation.)

Once again, the story of currencies, and their economic effects, are described by changes in value, not changes in supply.

Many times, especially after 1950, countries might have had a fixed-value policy, but the management and operation of the system was incorrect in some way. This is typically easy to identify. We know that a system was being managed correctly because it worked. It was successful in maintaining the market value of the currency at the policy benchmark, precisely, quietly, without difficulties, and without reliance on trade and capital controls. Currency boards today have this characteristic. We know that a system was not managed correctly because it fails: there was a “currency crisis” in which the value of the currency deviates, often suddenly and by a large amount, from its standard of value.



**Britain: Bank of England, Change in Base Money From Previous Year, 1720-1913<sup>3</sup>**

At times – especially in the 1950s and 1960s, and also among “dollar-pegged” emerging market currencies in the 1980s and 1990s – a currency is not being managed correctly. The operating mechanism is not an automatic system like a currency board, with no discretionary input. Rather, a fixed-value policy is combined with some form of discretionary “domestic” currency management, typically within the framework of an “interest rate target” or perhaps some kind of quantitative target. Thus, the base money supply is no longer an automatic residual of the fixed-value mechanism, but becomes independent. With no mechanism (base money adjustment) to maintain the value of the currency at its value parity, the currency thus

becomes intrinsically floating, but through various forms of coercion, the fixed-value benchmark is maintained. This coercion can take many forms, but is typically in some form of “foreign exchange intervention” by official bodies, capital controls, or some kind of market management and collusion, as was the case with the London Gold Pool in the 1960s, by which nominally free markets come under heavy official influence.

These capital controls, foreign exchange interventions, and other such efforts at coercion are normally quite obvious. Also, these efforts normally coincide with a heated discussion about the basic problem of a currency that threatens to deviate from its fixed-value parity. Typically, this discussion centers around the “balance of payments,” which actually has nothing to do with currency management. As we will see, this endless talk about the “balance of payments” is itself evidence that people do not understand how to manage a currency correctly; and it is this ignorance of basic operating procedures that is behind their failure to do so. Maintaining the parity becomes labored, difficult, problematic. It is not too hard to tell when a currency is not being managed properly to maintain a fixed-value parity, as such problems will be blossoming everywhere, even if, as a result of these coercive efforts, the value of the currency has not yet deviated from the parity standard.

In practice, even when a currency is not being managed correctly, threatens to deviate from a fixed-value parity, and capital controls are applied, the broader economic conditions will mostly reflect currency stability until there is an actual change in currency value. For example, although the management of the U.S. dollar was problematic throughout the 1950s and 1960s, and various forms of capital controls were common, nevertheless the broader picture of that time period reflected the dollar’s stability vs. gold at \$35/oz., not so much differently than if the dollar had been correctly managed. It was not until the effective break of that gold parity, in August 1971, that the accumulated errors of the previous two decades exploded into a whirlwind of consequences. The same has been true of other, similar situations such as the Mexican peso in 1995 or the Thai baht in 1997. Mistakes in monetary operations don’t translate into dramatic broader effects until the currency experiences a change in value.

During the last two hundred years, the eras of capital controls were during wartime, the 1930s (after British devaluation of 1931) leading into World War II, and during the Bretton Woods era from the end of World War II to 1971. Outside of these periods, trade, capital and finance were relatively free. From this alone, we can conclude that fixed-value gold standard currencies during these free-trade eras were being managed correctly.

These conclusions are expressed in a concept commonly accepted among academic economists today, known as the “currency trilemma.” This “trilemma” is expressed as the idea that a currency can only have three basic states:



**Currency Option One:** A fixed-value policy, free trade and no capital controls, and an automatic currency-board-like system with no discretionary domestic monetary policy.

**Currency Option Two:** A floating fiat currency, free trade and no capital controls, and a discretionary domestic monetary policy.

**Currency Option Three:** A fixed-value policy, trade and capital controls, and a discretionary domestic monetary policy. This is sometimes called a “pegged” currency.

In practice, Currency Option Three, though unfortunately popular in history, is inherently unstable. Discretionary domestic monetary policy cannot vary too much from that implied by the fixed-value policy, lest the inherent contradictions overwhelm even the capital controls in place. This frustrates everyone: the domestic currency managers want more leeway to “manage the economy,” the fixed-value advocates complain that the system is always on the brink of self-destruction, and businessmen and investors everywhere complain about trade and capital controls. Before too long, one or another consideration takes priority, and the system resolves into one of the first two options.

In a 2001 interview, economists Milton Friedman and Robert Mundell, both Nobel Prize winners with a monetary specialty, described the differences between Currency Option One and Currency Option Three:

**Friedman:** Discussion of this issue requires replacing the dichotomy fixed or flexible by a trichotomy:

1. hard fixed (e.g., members of Euro, Panama, Argentine currency board);
2. pegged by a national central bank (e.g., Bretton Woods, China currently);
3. flexible (e.g., US, Canada, Britain, Japan, Euro currency union).

By now, there is widespread agreement that a global move to pegged rate regimes would be a bad idea. Every currency crisis has been connected with pegged rates. That was true most recently for the Mexican and East Asian crisis, before that for the 1992 and 1993 common market crises. By contrast, no country with a flexible rate has ever experienced a foreign exchange crisis, though there may well be an internal crisis as in Japan. The reasons why a pegged exchange rate is a ticking bomb are well known. A central bank controlling a currency that comes under downward pressure does not have to alter domestic monetary policy. ...

**Mundell:** The distinction between fixed and pegged rates that I find useful refers to the adjustment mechanism. Under a fixed rate system, the adjustment mechanism is allowed to work and is perceived by the market to be allowed to work. Whereas under “pegged” rates or “adjustable peg” arrangements, the central bank pegs the exchange rate but does not give any priority to maintaining equilibrium in the balance of payments.<sup>c</sup> There is no real commitment of policy to maintaining the parity and it makes the currency a sitting duck for speculators.

Some countries that have pegged rates engage in sterilization operations. The Bank of England, for example, automatically buys government bonds whenever it sells foreign exchange to prevent the latter transaction from reducing the reserves of the banking system, and, conversely, it sells government bonds when it buys foreign exchange. This practice might have made sense when it began in 1931, after Britain went off gold and set up its exchange equalization fund to manage its new floating arrangements, but the Bank of England kept the system even after Britain had returned to a fixed—or more correctly, pegged—system. As a consequence, Britain faced periodic balance-of-payments crises over most of the post-war period. I do not count “pegged but adjustable” rates among the category of fixed rates. But when economists attack fixed rates they nearly always focus their attention on “pegged rates.” I have never nor ever would advocate a general system of “pegged” rates. Pegged rate systems always break down.<sup>4</sup>

The term “trilemma” suggests an insoluble problem. Economists want to have their cake and eat it too: they want to have all the advantages of fixed and stable exchange rates, freedom of trade and capital, and also all the perceived advantages of domestic monetary manipulation. But, there is no actual problem. Rather, there is a choice between options. Although Currency Option Three has been unfortunately quite common since 1944, its continued failure resolves the practical choice down to two: Fixed or Floating, which in turn implies: Automatic or Discretionary.

In practice, floating fiat currencies have only become common with the advent of paper money, which did not become dominant worldwide until after 1850. Coinage has been endlessly debased (the metal content of the coinage reduced) by governments throughout history. In practice, this resulted in a decline in the market value of the coinage to reflect its lower metal content. However, the value of the coinage didn’t float up and down

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<sup>c</sup> “Maintaining equilibrium in the balance of payments” means, in this case, managing the monetary base to keep the currency at its parity.

unpredictably: it still reflected its metal content afterwards, even if perhaps at a lower level.

The “Classical gold standard” period of the latter half of the nineteenth century, roughly 1870-1914, was a type of Currency Option One system, in which currency issuers (private banks at first, and then, increasingly, central banks) maintained the gold parity values of their currencies in a simple, automatic fashion similar to currency boards. The outbreak of World War I in 1914 resulted in a burst of floating currencies worldwide (Currency Option Two). This was quickly remedied after the war, and during the 1920s, the world gold standard was reconstructed in a fashion similar to the pre-1914 arrangement (Currency Option One). The difficulties of the Great Depression caused governments everywhere to grasp at currency devaluation as a remedy, which resulted in another burst of floating fiat currencies worldwide (Currency Option Two), especially after the British devaluation of 1931.

Once again, the world gold standard was reconstructed after World War II, in the form of the Bretton Woods system. However, this time, many central banks and governments wished to continue “macroeconomic management” of their economies via currency distortion. This implied a discretionary domestic “monetary policy,” which, combined with an official gold or dollar parity value, created the inherently unstable Currency Option Three. This collapsed in 1971 in the midst of peace and prosperity. The accidental and unplanned outcome of that failure was the floating fiat system (Currency Option Two) that has continued to the present day.

The history of money thus becomes even simpler: for roughly 5000 years, 3000 B.C. to 1971, the high-quality money and unit of account in the centers of civilization was gold and silver. After 1971, for the first time in history, currencies around the world floated for an extended period of time. The floating fiat era has been characterized by endless monetary chaos, and a great many crises, including widespread hyperinflation. At its best, in the developed countries, it has produced periods of mediocre growth interspersed with stagnation and decline. At some point, humanity may find a way to escape the predicament that they have created; but, probably not until they understand what it is, and how to fix it.

## Chapter 2:

# The Ancient World, 3500 B.C.–400 A.D.

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“Money” emerges naturally, when one item becomes accepted in trade not because of its inherent utility to the receiver, but because it has become a commonly accepted medium of exchange. It can be reliably traded again, for something useful. In the fourth century B.C., the Greek philosopher Aristotle recognized that uniformity, durability, divisibility, and a high value are desirable characteristics in a medium of exchange. The precious metals were popular from the earliest expressions of money. Over time, agricultural products were eventually abandoned. Even among agricultural products, the most durable, divisible and uniform, such as wheat, are a better form of money than lettuce or tomatoes.

To maximize uniformity, people naturally gravitate towards using one item, and one item only, as their medium of exchange and standard of value. However, this goal comes into immediate conflict with the desire to have various denominations of money, from very small values for small personal purchases, up to very large values for things such as annual payment of tribute from a vassal state to the capital of the empire. Part of the problem of denomination is the problem of transport: it is very difficult to transport large payments in the form of small denomination money, particularly in the days of oxcarts and dirt paths. Another problem of denomination is that it simply takes a colossal quantity of small-denomination coinage to make any large payment. If we think about how many copper pennies<sup>A</sup> it would take to purchase a house, and how many pennies must then be minted and how much copper mined, we can understand some of the problems that the Chinese had for centuries with their copper-coin-based systems. An item of very high value is also much easier to store.

A look at the periodic table of elements suggests why gold and silver became the basis of money from earliest times. After eliminating gases, radioactive elements, and elements that are so reactive that they ignite when exposed to air, the 118 elements reduce to only 30. Further eliminating elements of a value too low to be useful, five precious metals remain: rhodium, palladium, silver, platinum, and gold. Rhodium and

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<sup>A</sup> Or nickels; in 2015, the U.S. nickel was 75% copper, while the penny was 97.5% zinc. At a price of \$3.00/lb., it would take fifty tons of copper to purchase a \$300,000 house. At a price of \$1,300/oz. of gold, it would take 230 ounces of gold (about seven kilograms, in a volume of about 0.362 liters) to purchase the same house.

palladium were not discovered until the eighteenth century. Platinum's melting point, over 3,000 degrees Fahrenheit, makes it unworkable without advanced technology. This leaves silver and gold. Silver, however, tarnishes and corrodes – this reactivity also makes silver useful for a variety of industrial purposes – while gold does not. Sanat Kumar, a chemical engineer at Columbia University, concluded: "For the earth, with every parameter we have, gold is the sweet spot ... It would come out no other way."<sup>1</sup>

The most important characteristic of money, however, is its stability of value. To be useful as a unit of account, the measuring-rod by which the value of other things are compared and expressed, to perform as a store of value and basis of long-term contracts, the item used as money must be as stable in value as possible. In any contract or exchange, fluctuations in the value of money naturally produce a winner and a loser. Since each party wants to avoid being the loser, they will naturally tend to conduct their business in the most reliable, definite, unchanging and stable terms possible. John Stuart Mill, in *Principles of Political Economy* (1848), explained:

[G]old and silver have been generally preferred by nations which were able to obtain them, either by industry, commerce, or conquest. To the qualities which originally recommended them, another came to be added, the importance of which only unfolded itself by degrees. Of all commodities they are among the least influenced by any of the causes which produce fluctuations of value. ... [N]o commodities are so little exposed to causes of variation. They fluctuate less than almost any other things in their cost of production. And from their durability, the total quantity in existence is at all times so great in proportion to the annual supply, that the effect on value even of a change in the cost of production is not sudden: a very long time being required to diminish materially the quantity in existence, and even to increase it very greatly not being a rapid process. Gold and silver, therefore, are more fit than any other commodity to be the subject of engagements for receiving or paying a given quantity at some distant period.<sup>2</sup>

The concept of "money" is a human invention, devised to facilitate trade between other humans. Gold and silver become "money" because they most closely fit what humans desire "money" to be. Stability of value is inherent in this concept of "money"; without it, "money" doesn't work.

Somewhat non-intuitively perhaps, this also requires that the item used as money have little utility value. An item whose utility value was high would naturally face competition from practical uses, and consumption (and thus disappearance) due to those practical uses. At various times in China's history, the copper coinage was melted down to make tools. In

2015, 66% of silver mine production was used in industrial applications.<sup>3</sup> For any useful item, such as a foodstuff or a base metal, consumption for food or industry could cause a shortage, and thus a soaring market value. The best money is “useless” – modern banknotes are a perfect expression of the principle. Gold and silver could be made into jewelry or housewares, but they were rarely consumed or destroyed. The result was that the total supply of aboveground gold and silver steadily grew, such that any vagaries in mining production had little effect on the total aboveground supply available. This too contributed to their stability of value.

Historical monetary systems often used a variety of commodities. Gold was typically the high-denomination money, perhaps rarely seen among the common folk, thus making it appear to have a marginal role except in rare large transactions. Silver coinage was the basis for many daily transactions. However, even silver is of too high a value for many small transactions. A coin containing 2.25 grams of silver, such as the U.S. silver dime before 1960, was equivalent in value (using the 16:1 silver to gold ratio used in the U.S. before 1900) to 0.141 grams of gold. At the \$1,200/oz. gold prices common in 2015, this would be worth about \$5.25 in 2015 dollars – still quite a high value for the smallest silver coin in circulation. This was especially true in the preindustrial era, when the value of labor was low compared to silver. Thus, smaller forms of money were put into use, including copper, bronze (88% copper, 12% tin) and nickel coins, plus a variety of other small-value commodities such as standardized rings of shell among the Sumerians, cocoa beans among the Mesoamericans, and small candies in 1970s Italy. Cigarettes have long been popular among prisoners, along with canned fish. Even today in the United States, Tide laundry detergent is a popular medium of exchange among some groups.

Because we are not accustomed to this sort of commodity-money menagerie today, there is a tendency to see it as a primitive profusion of bizarre and exotic curiosities, rather than as a functional monetary system that was as unified as could be practically achieved during that era. The Sumerians used shell rings as money, but they also used silver, in much the same way as Americans used silver coins in 1840, along with coins made of gold, nickel and copper.

### **Mesopotamia**

The use of gold, silver and other monetary metals, potentially as money, predates the use of writing; thus, it is hard to say when their use as money began. The first known examples of writing date from the thirty-fifth to thirty-second centuries B.C. in Sumer, the first known civilization in Mesopotamia. The population of the Sumerian city of Uruk, in 3400 B.C., has been estimated at 20,000. These early forms of writing are sometimes termed “proto-literate,” and consist of lists and accounting. Sumerian writing proper – a symbolic representation of the spoken language – began

in the thirty-first century B.C. Copper smelting dates from about 5500 B.C. Since gold is often found mixed with copper, it is not surprising that the first gold artifacts, at Nahal Kana in today's Israel, come from the early fifth millennium B.C.<sup>4</sup> Gold artifacts at Varna in today's Bulgaria have been dated to 4600-4200 B.C. Silver is somewhat more difficult to extract than gold and copper. The earliest known evidence of silver extraction dates from the late fourth millennium B.C., in Turkey.

In ancient Sumerian times, barley, lead, copper or bronze, tin, silver and gold – in ascending order of value – served as money.<sup>5</sup> Of this list, only barley is not a metallic element, and served as the smallest small change. The *mina* was an early unit of weight. When standardized in 2150 B.C. during the Akkadian Empire under the reign of Naram-Sin, the mina was about 504 grams – similar to the modern pound of 454 grams. The *shekel* was one-sixtieth of a mina, around 8.40 grams.

Sumerians had a currency of standardized shell rings beginning from around 3500 B.C. By the late fourth and early third millennium B.C., this had evolved to a well-organized system of exchange based primarily on copper. The actual transaction was often in the form of barter, but the values of the bartered goods were expressed in terms of a common benchmark of value. Thus, lumber worth one mina of copper could be traded for hides worth one mina of copper. Later in the third millennium B.C., silver and barley became the main media of exchange.<sup>6</sup> At its height around 2900 B.C., the city of Uruk had an estimated 50,000-80,000 residents, the largest in the world. For some time during the twenty-seventh century B.C., the city was ruled by the legendary king Gilgamesh.

Between 2800 B.C. and 2500 B.C., silver began to be cast into rings or coils of standard weights between 1 and 60 shekels, used primarily for large-scale purchases. The “rings” were essentially short coils; neither could be worn, but could be easily cut and subdivided, if desired. Small ingots likely served as a larger form of money. Most texts indicate that the silver was weighed, but some texts indicate the use of rings with a uniform weight.<sup>7</sup>

Beginning about 2700 B.C., Sumerian cuneiform clay tablets show deeds of sale, including sales of fields, houses and slaves. Texts recording loan agreements begin from around 2400 B.C.<sup>8</sup> More detailed descriptions of monetary and commercial transactions are found in documents dating from the Third Dynasty of Ur (Ur III), circa 2112 B.C. to 2004 B.C. Ur was likely the largest city in the world at that time, with a population estimated at 65,000.

The historian J. N. Postgate described early Sumerian accounting:

One of the most striking features of the Ur III balance sheets is their use of silver as a unit of accounting. All the incoming goods are assigned a value in silver, thus enabling the total value of a merchant's expenditure to be deducted in a single sum from his capital, and the

remaining balance, negative or positive, to be expressed in silver, which is then ready to be carried forward to the next accounting period.<sup>9</sup>

Other monetary items, such as copper or gold, could be accepted in payment, but most likely at the going market rate, rather than at a fixed official rate, as was common in later bimetallic coinage systems.

During this era, the Temple at Ur operated as a lending bank, both taking “deposits” of gold and silver, and making loans. However, the majority of recorded loans of this time were between private citizens. The standard interest rate on a loan of barley was 33% per annum, and on a loan of silver 20%.<sup>10</sup> By the end of the third millennium B.C., banking services included deposit banking, giro, “foreign exchange,” and secured and unsecured lending both internal and external.<sup>11</sup>

Some observers concluded that certificates of deposit, in the form of cuneiform clay tablets, also likely traded among third parties as a form of representative money. Bills of exchange and loan agreements may have also have traded among third parties. The use of cylinder seals, invented around 3500 B.C., was ubiquitous in commercial transactions in Mesopotamia, Iran, India and Crete, as a form of signature indicating claims on or titles to goods, or as an indication of payment.<sup>12</sup>

The invention of a commodities forward contract actually predates writing. The Sumerians used an elaborate system of clay cubes baked inside a vessel, indicating an agreement to deliver indicated commodities at a certain time. After the invention of writing, these agreements were recorded in clay tablets.

One advantage of representative monies, payable on demand to the issuer, is that they can trade at their face value, without having to be weighed. They are also very easy to transport. Representative monies thus have several advantages to coinage, which is why banknotes largely replaced coinage in payment during the nineteenth century. A society with a strong system of representative money would thus find little need for coinage. The difficulty is that the issuers of representative monies must be perceived to be reliable, and easy to access, limiting their effective use to the local region of the issuer. Representative monies appear to date from nearly the beginnings of banking, and at least 1,500 years before coinage.<sup>13</sup> They also appear more than three thousand years before the first widely-used “paper money” systems of China, in the eleventh century A.D. Ultimately, the use of paper for representative money, rather than clay tablets, wood tally sticks, leather or other, earlier solutions, was largely a matter of new materials being used for ancient purposes. Whatever they were made of, they represented, from the earliest days, quantities of gold or silver.

A list of prices of the time is found in the Laws of Eshnunna (circa 1930 B.C.):<sup>14</sup>



1 gur [300 liters] of barley	1 shekel of silver
3 liters best oil	1 shekel of silver
1.2 liters vegetable oil	1 shekel of silver
1.5 liters pig's fat	1 shekel of silver
40 liters bitumen	1 shekel of silver
2 gur salt	1 shekel of silver
1 gur potash	1 shekel of silver
3 minas copper	1 shekel of silver
2 minas worked copper	1 shekel of silver

During the Ur III period, it was recorded that one shekel of gold cost ten shekels of silver.<sup>15</sup> Beginning in the early second millennium B.C., gold was mentioned sporadically, in large-scale transactions such as capital for business ventures.<sup>16</sup>

Besides inventing writing, the Sumerians also introduced the first known examples of bicameral legislature, schools (they taught writing), the library, and the wheel.

The founding of Babylon, about 250 kilometers upstream of Ur on the Euphrates river, dates from roughly the twenty-third century B.C. Sumer, as an independent state, was absorbed by Babylon around 1700 B.C. Babylon was in turn dominated by nearby Assyria beginning in 911 B.C. These were independent states with a shared Mesopotamian culture. After a brief spell of independence beginning in 604 B.C. (the Chaldean Dynasty), Babylon was conquered and absorbed by Persia in 539 B.C.

From 1770 to 1670 B.C., the city of Babylon was likely the largest in the world, with a population estimated around 65,000. Silver and gold continued to serve as money, by measured weight in transactions and as a standard of account. Banking, in particular, became more sophisticated as it evolved from its Sumerian foundations. Temples and royal houses became major centers for banking, taking deposits in grain and precious metals, making payment via deposits, and making loans. The Code of Hammurabi (1754 B.C.) contained an extensive body of law concerning lending and debt.<sup>17</sup>

Private banking houses established themselves, gradually gaining a greater share of business from the temples. The names of these early banking houses are not known, but by the seventh century B.C. the 'Grandsons of Egibi' gained prominence in the Babylonian banking industry. The 'Sons of Marashcu,' operating out of Nippur, not only engaged in banking operations and lending, but also involved themselves in renting and leasing, tax-farming and the management of large estates, constructed irrigation canals and charged fees for their use, and had a partial monopoly on beer.<sup>18</sup>

By the fourteenth century B.C., gold commonly served not only in transactions, but also as the unit of account, primary to silver rather than

subsidiary. This may have reflected trade with nearby Egypt, which mined large amounts of gold but had few silver resources.<sup>19</sup>

### **Egypt and the Indus Valley Civilization**

Money, of any sort, was somewhat uncommon in Egypt. This reflected the nature of the Egyptian economy, which, as was also the case in China for many centuries, and also the Andean civilizations, consisted largely of an agricultural peasantry under central command, and a nobility, with little in the way of market exchange or mercantile ventures. However, Egypt did have a standardized gold ring money, which bore a stamp indicating its weight, dating from around 2700 B.C. During the Eighteenth Dynasty (1543-1292 B.C.), a “flat, round piece of metal ... possibly with an inscription to indicate weight or name of the issuing authority” was apparently in common use as a unit of account and denominator of prices.<sup>20</sup>

Egypt was the ancient world’s biggest gold producer. Egypt’s great gold fields were in the lands of Nubia, between the Nile and the Red Sea. Archaeologists have found 130 ancient mining sites in Nubia, some as old as 3100 B.C.<sup>21</sup> A symbol of the pharaoh Djet (circa 2980 B.C.) was carved in a rock near the gold mines off the Wadi Barramiyed, suggesting a claim to ownership. *Nub* was the Egyptian word for gold; thus Nubia means “the land of gold.” From the beginning, these gold mines formed a basis of Egyptian state control. Paul Johnson, in *The Civilization of Ancient Egypt* (1999), suggested that the gold mines of the south were an important resource that allowed the southern kings to overcome those of the north and unify Egypt around 3100 B.C.<sup>22</sup> The pharaoh that unified Egypt, Menes, left a series of standardized 14-gram gold bars stamped with his name.<sup>23</sup>

The gold mining industry in Egypt was owned and controlled by the pharaohs. They provided the resources for exploration and mining, and claimed all of the production. Archaeologists are somewhat surprised that little of this seemed to be used “as money,” within the Egyptians’ command economy. As early as the Old Kingdom (2686-2181 B.C.), an accounting unit was used known as the *shat*. It was equivalent to 7.5 grams of gold. In the Sumerian manner, payment could be made in a variety of commodities, their value indicated in terms of *shat*.<sup>24</sup> Later texts focused on the *deben*, worth twelve *shat*. But much of the gold was used in trade with the states on Egypt’s borders. Egypt was engaged in vigorous external trade, and in the early third millennium B.C., gold bars were used in some of the earliest known commercial transactions. By 2500 B.C., extensive trade using gold and silver bars was undertaken at Ebla in modern Syria. Standardized gold and silver ingots, for use in trade and bearing a state guarantee of weight and purity, were created in Cappadocia (eastern Turkey) as early as 2250-2150 B.C.

The pharaohs needed gold not only for peaceful external trade, but also to fund their various military efforts, make allies, and where they failed to

achieve victory, to pay off neighboring hostile kingdoms. Despite some very impressive burial artifacts, the pharaohs were constantly in need of gold to maintain state control. The gold of Egypt did not remain in their hands. The famous gold coffin of Tutankhamen (1332-1323 B.C.) contains an awesome 110 kilograms of gold, the largest single gold artifact found in Egypt. But the mines of Egypt are thought to have produced at least 1,000 kilograms per year at their peak around 1450 B.C., and perhaps multiples of that.<sup>25</sup> Historian Paul Johnson described:

The Egyptians were at no stage a colonizing or conquering people. Their empire was based not on satrapies but on buffer-states and client-princes, trade and gold. ... Egypt was the greatest gold-mining and gold-exporting power: in fact it was gold rather than military success which sustained her 'empire' and which made her the principal world power throughout the third quarter of the second millennium B.C. ...

The failure of the southern gold mines was one potent factor in the decline of Egypt as a great power.

So long as the mines were productive, however, it was possible for Egypt to pursue an expansionist policy in Asia.<sup>26</sup>

As the mines ran out, or were lost to foreign control, the New Kingdom fell in the twelfth century B.C.<sup>27</sup>

With gold production monopolized by the pharaohs to pay for their external campaigns, internal trade in Egypt was conducted largely upon the basis of grain. The problem of denomination (it is difficult to make large payments in physical grain) was solved by the extensive use of grain-based banking. Farmers deposited their harvest in large grain banks. These deposits were then used in payment of taxes, and also in many forms of private payments. Just as with banks today, "the payments were effected by the transfer from one account to another without money passing," according to historian Michael Rostovtzeff.<sup>28</sup> These grain banking and deposit payment systems grew into systems that extended nationwide, achieving a level of efficiency and sophistication "as to be almost beyond the credence of modern man, who too readily assumes that the use of grain as money must necessarily imply a primitive economic system."<sup>29</sup> One reason for the popularity of banking transactions was that a record was kept of payment, which could be useful in legal disputes.

Egyptian grain banking continued even after the widespread use of silver coinage after 600 B.C. among Egypt's trading partners, and even after Egypt fell under Greek rule beginning in 332 B.C., with the Greek-speaking Ptolemaic pharaohs established at the new capital of Alexandria. Although the new Greek kings introduced the Greek silver coinage system, they also developed Egyptian grain banking still further by bringing all state banks into a network controlled by what amounted to a central bank stationed in

Alexandria. Banks that previously operated on a local basis were tied together, allowing bank payments throughout the realm. Historians have compared the sophistication and extent of this Egyptian banking system, and its integration into economic life, to the English banks of the nineteenth century.<sup>30</sup>

Civilization in the Indus Valley (now Pakistan) dates from around 3300 B.C. Early writing dates from 3500 B.C., but unfortunately the Indus script has not been deciphered. At its peak, around 1900 B.C., the civilization may have included as many as five million people, in large and complex cities (Mohenjo Daro and Harappa) with extensive engineering accomplishments including flush toilets linked to common sewers, public baths, large hydraulic and irrigation networks with reservoirs, and docks and canals for seaborne trade. The economy relied on extensive trade networks over both land and sea, with links to Sumerian civilization perhaps as early as 2600 B.C.,<sup>31</sup> and possible links to Egypt and Crete. Sargon of Akkad (2340-2284 B.C.) boasted that the “ships of Meluhha” [Indus Valley] docked at the Sumerian capital.<sup>32</sup> Seals were often used to indicate ownership or contractual agreements, similar to the Sumerian cylinder seals though of a different design. The extensive and precise system of Indus weights and measures continues to be used today in some parts of Pakistan. Gold is available from the sands of the upper Indus river, and continues to be mined there today. An Indus colony on the banks of the Oxus river at Shortughai served as an additional source of gold, which was often formed into simple gold bangles or flat headbands. Archaeologists hesitate to identify an Indus monetary system, although they admit that the trade-based economy must have had considerable market exchange. It is hard to believe that any mercantile culture, in regular contact with Mesopotamia, with sophisticated weights and measures, and likely extensive use of contracts demanding “signatures” in the form of seals, would have failed to develop some common unit of account. The existence of this unit of account is revealed by Egyptian and Sumerian writing, rather than archaeological remains. Unfortunately, even if the Indus script was deciphered, the civilization did not leave much writing capable of lasting millennia, in the form of inscribed stone or clay tablets.

### **Coinage in Lydia, Greece and Persia**

For over two thousand years before the widespread use of coinage, monetary exchange and sophisticated banking systems had existed in the earliest known civilizations. Even from the earliest days, silver, gold and, in a subsidiary role, copper and its alloys, were the preferred form of money, along with certain grains. This limited range of monetary commodities resolved down still further. Although payment could be made in a number of forms, the unit of account was either silver or gold, in essence no different than Europe of the nineteenth century and, extended still further,

the Bretton Woods period of the mid-twentieth century. Even the exception – Egypt – proved the rule. Egypt used grain internally not because gold and silver were not considered money, but because they were necessary payment in foreign trade.

Despite numerous intriguing precedents, in Mesopotamia and the ancient Mediterranean region, China and India, historians today generally recognize the first use of coinage to have occurred in Lydia, now western Turkey, in the seventh century B.C. Before then, in the same region for over two thousand years, gold, silver and other metals, in any form, had been used as money based on commodity weight.

In Mesopotamia, for centuries, a shekel of silver was a measure of actual weight. It was never “devalued.” Arguably, it could not be. The purpose of the first coins was not to produce standardized weights of metals, but rather, to attempt to pass a lesser amount of gold or silver as if it contained the represented weight, by stamping it with the name of the represented weight, and adding a government decree that it should be treated as such. The first Lydian coins were stamped with a symbol that showed that they were to trade “at face value,” or *ad talum* rather than by weight of contained metals. The earliest Lydian coins do not contain the metals indicated by their face value.<sup>33</sup> The first coin was also the first example of coinage debasement. The Lydian coinage also began the pattern of government monopolization of coin production, which included government oversight of mining, all elements needed to cause coins to trade *ad talum* rather than by weight.

Even in later years (after 500 B.C.) when coinage became popular in the Mediterranean region, records in Mesopotamia indicate that foreign-origin coins were often used in payment, but only according to their actual weight of contained metal. When one is making payment by metal weight, the form of the metal is not important. A gold necklace, ring or armband could serve as easily as an ingot or coin. Even at the level of the state, larger quantities of gold and silver could be formed into public monuments and decoration, a sort of grand public jewelry. If necessary, these also could be used as money. The *Athena Parthenos* was a statue of the Greek goddess Athena, created around 447 B.C. The statue contained 44 talents of gold, equivalent to about 1,100 kilograms. The gold was removed in 296 B.C. to pay for the defense of Athens against invasion by Macedon.

Although gold and silver jewelry commonly sells for much more than its contained metal value in U.S. jewelry stores today – it has a high jewelry fabrication premium – that is more of an exception than the rule. Throughout India, Thailand and elsewhere in Asia, the cost of gold jewelry is today only about 2% higher than the value of contained precious metals. This was likely the pattern also throughout preindustrial human history. A 2% jewelry fabrication premium is actually not much different than the retail fabrication costs of standardized one-ounce gold coins, such as the popular Krugerrands or American Eagles. Plus, unlike a coin, it makes good

jewelry. When monetary metals trade by weight, jewelry does not have to be melted into ingots or stamped into coins to make payment, but can be used in payment in its present state.

Nevertheless, coinage had an advantage, in that it did not need to be constantly weighed, at least for domestic trade. Each coin could be treated as equivalent to all the others. The government demanded that one do so – the first “legal tender” laws. As long as the value of the coin did not deviate too much from its indicated value – either because the contained metal was close to the value indicated, or because the supply was controlled such that the coins traded above their metal weight at the indicated value, much as gold-linked paper currencies would in later centuries – it was an effective advance.

A real king Midas ruled Lydia in the late eighth century B.C. The natural deposits of electrum (a mixture of gold and silver) found in the Patroclus river near Sardis were said to be due to his golden touch. The first Lydian coins were made of electrum, and date from perhaps 640-620 B.C. They were made from an artificial electrum with a higher silver content than the natural electrum of the Patroclus. Given the potential for abuse inherent in electrum coins, it is no surprise that, soon after, Lydian coinage was separated into pure gold and silver coins, during the reign of Croesus (560-547 B.C.). The implied gold:silver ratio was 1:13.5.<sup>34</sup>

The Lydian coinage was imitated throughout the Hellenic realm. Coinage had already been in common use long enough to undergo a coinage reform by Solon of Athens, beginning around 594 B.C.<sup>35</sup> The *drachma*'s value was lowered from 70 per mina (about 6.1 grams) to 100 (4.3 grams). It was apparently intended as a means to reduce the rate of interest on loans, and to reduce burdens on a broad swath of poor debtors. With the beginning of coinage came the beginning of coinage debasement; and the beginnings of the idea of using this debasement not only as a means of state funding, but as a device for “economic management” on many levels.

Solon also forgave debts, and eliminated debtor enslavement. He insisted that the coinage would thereafter remain of unchanging value and metal content. This began a long period in which the Greek silver coinage became one of the most reliable in the region. Copper coins, known as *chalkoi*, also circulated. In the Athenian system, eight *chalkoi* were equivalent to one *obol*, a small silver coin, and six *obol* were equivalent to a silver *drachma*, which contained about 4.3 grams of silver. Larger two, four and ten *drachma* coins were also minted. Gold was not minted into coins at first, but traded in bullion form as a grander sort of money. The Greek affinity for silver coinage reflected the abundance of silver mines under Athenian control. When access to these mines was cut off in 407 B.C. by Sparta, Athens minted a series of 84,000 gold coins, with the gold coming from a statue of the goddess Nike adorning the Acropolis. In the midst of those long years of war, in 406 B.C., the Athenian government attempted to

pass a series of copper coins with a thin plating of silver, with predictable consequences. Aristophanes, in *The Frogs* (405 B.C.), said:<sup>36</sup>

You know what I often think:  
 We treat our best men  
 The way we treat our mint  
 The silver and the golden  
 We were proud to invent  
 These unalloyed  
 Genuine coins, no less,  
 Ringing true and tested  
 Both abroad and [in] Greece  
 And now they're not employed  
 As if we were disgusted  
 And want to use instead  
 These shoddy coppers minted  
 Only yesterday  
 Or the day before  
 (as if that matters).

To Athens' credit, these base metal coins were "demonetized" in 393 B.C. – no longer recognized at face value. The Athenian silver "owl" coins, in sizes of one, two and (most commonly) four drachma, and occasionally in eight, ten and twelve-drachma sizes, became a common coinage throughout the Mediterranean world until the exhaustion of Greek silver mines after 25 B.C. These "owls" remained of high quality, and roughly unchanged silver content, throughout that time.

Despite this success, creative minds were already turning over the idea of a fiat currency that could be controlled by the government. The philosopher Plato (427-347 B.C.), in *The Laws*, stated:

Further, the law enjoins that no private man shall be allowed to possess gold and silver, but only coin for daily use ... a coin passing current among themselves, but not accepted among the rest of mankind; ... If a private person is ever obliged to go abroad, let him have the consent of the magistrates and go; and if when he returns he has any foreign money remaining, let him give the surplus back to the treasury, and receive a corresponding sum in the local currency.<sup>37</sup>

As early as 600 B.C., Lycurgus banned gold and silver from Sparta, and – as this was more than seven centuries before the invention of paper in China – replaced it with a coinage made of iron.

From their beginnings in Lydia, throughout the ancient world, governments monopolized the minting of coins, in a vertically-integrated

process that included government-owned precious metals mines in the area, plus whatever could be obtained in conquest or trade. Governments used these coins to pay their bills. This was normally a profitable process, as the output of mines and minting was greater than the coinage paid to the miners and minters. Bullion obtained in conquest was formed into coins to pay the conquering armies, a sort of “mining” by a different process. From time to time, a government would get the idea of putting less silver into the standardized silver coin. By reducing the silver content from (for example) eight grams to four, a greater profit could be made from each coin. Conceivably, a government could have issued token coins, as we have today, whose controlled and limited supply allows them to trade well above the value of their metal content. But, in practice, a government that halved the metal content of a coin would issue as many as they could, ensuring that the coins’ value would drop to their commodity value.

The Persian realm had fallen under the domination of the Assyrian Empire from the tenth to seventh centuries B.C., and commercial transactions in Persia were thus influenced by the Mesopotamian example. After the collapse of the Assyrian Empire in 605 B.C., a unified Median state was formed, which was one of the four major powers of the ancient Near East along with Babylon, Lydia and Egypt. Cyrus the Great (550-530 B.C.), overthrew the Median Empire in 550 B.C. and established the Achaemenid Empire, also known as the First Persian Empire. Around 547 B.C., Cyrus conquered Lydia and, in 539 B.C., Babylon. Inspired by the Lydian example, sometime after 546 B.C. the first Persian coins were produced by Cyrus. Darius I (521-486 B.C.) introduced a large gold coin of 8.4 grams (one shekel weight), the *daric*. This was combined with a silver coin, the *siglos*, of 5.4-5.6 grams. Gold darics were commonly used in Greece as well, supplementing the local silver coinage.

Banking in the world of ancient Greece built upon two thousand years of prior development in Mesopotamia and Egypt. Although this was the dawn of what we would call coinage, banks had already been around for a length of time similar to that which separates us from the ancient Greeks today. Pythius, a Lydian, operated throughout Asia Minor. In the *Histories* (440 B.C.),<sup>38</sup> Herodotus reported that Xerxes I of Persia encountered Pythius on his way to invade Greece in 480 B.C. (Later on this campaign, Xerxes met King Leonidas of Sparta at the Battle of Thermopylae.) Pythius offered to finance Xerxes’ war. Xerxes declined, but offered Pythius 7,000 gold darics so that Pythius’ fortune would come to an even 4,000,000 darics – equivalent to 32,256 kilograms of pure gold, and worth about \$1.2 billion in 2015.

Greece’s first banker of note was Philostephanus, who was in business in the first half of the fifth century B.C. Themistocles, an Athenian politician and general (he defeated Xerxes’ navy at Artemisium and Salamis in 480 B.C.), himself deposited 70 talents of silver (equivalent to 151.7 kilograms of gold) in Philostephanus’ bank. But the most famous of the Greek bankers



was Pasion, who began as a slave to the bankers Antisthenes and Archestratus. Mastering the business, he was granted freedom in 394 B.C. and went on to become one of the wealthiest men in Greece at his retirement in 371 B.C.

The profusion of coinage, from many different issuers, and whose contained metal weight may differ from face value either intentionally by governments, via intentional “clipping” by private parties, or due to normal coin wear, plus various bimetallic standards with an official ratio of gold and silver which inevitably varied from market ratios, gave rise to the business of “foreign exchange” or “money-changing,” a major focus for Greek bankers. The Persians soon settled on an official gold:silver ratio of 13 1/3:1 (or 40:3), while in Greece, a 12:1 market ratio was more common. Philip II of Macedon (360-336 B.C.), located between Greece and Asia, issued gold and silver coins in a 10:1 ratio.

### **Alexander and India**

The *Vedas* of India (2000-1440 B.C.) mention the concept of usury, suggesting the practice of lending in India as early as the eighteenth century B.C. – no surprise, given the interaction between the Indus Valley civilization and Sumer. The *Jakatas* (600-400 B.C.) condemn usury, and also mention the existence of loan deeds. India adopted silver coinage around the same time as Greece, between 700 B.C. and 500 B.C. Some have debated whether this Indian coinage emerged independently, or whether it was due to the influence of nearby Persia.<sup>39</sup>

By the time of Philip’s son Alexander III (“Alexander the Great,” 336-323 B.C.), gold and silver coinage was already in use from Greece to India. Alexander conquered Persia in 330 B.C., and then today’s Afghanistan, Pakistan and parts of Northern India in 327 B.C., in the process unifying the coinage throughout on a standard Greek basis. This was helped by the flood of newly-minted Greek silver drachma coins with which Alexander paid his armies. Metal for these coins was gained by the looting of the treasuries of conquered states. The varied bimetallic systems of conquered states, and the variety of coinage, were resolved into a unified bimetallic coinage system at a 10:1 ratio. Gold and silver bullion traded freely within Alexander’s realm, thus equalizing their values everywhere. China, however, still remained largely independent of monetary developments in the west.

Alexander’s unified rule disintegrated immediately after his death in 323 B.C., as his generals fought for dominance. However, the Greek legacy that Alexander introduced lasted centuries. The Greco-Bactrian kingdom stretched over the north of present-day Afghanistan. Early in the second century B.C., the Greco-Bactrian kings pushed over the Himalayas to enter the Indus valley, establishing the Indo-Greek kingdom that ruled until 10 A.D. The Indo-Greeks’ religion consisted of a mixture of Greek deities and

indigenous Buddhism and Hinduism. They continued to make silver coins based on the drachma throughout the period, inscribed in Greek on one side and Pali (a local language) on the back. Both the Greco-Bactrian and Indo-Greek Kingdoms had regular contact with Chinese. In 180-170 B.C., they issued cupro-nickel coins with metal likely sourced from China, the only source of cupro-nickel at this time. During the first century B.C., this Greek-inspired coinage began to be imitated by other states throughout India. The Kushan Empire (30-375 A.D.) originated among nomadic tribes in the Tarim Basin (now the western Chinese province of Xinjiang), and later spread into Bactria and throughout northern India. Greek and Bactrian were the official languages of the Kushan Empire, which maintained diplomatic contacts with Rome, Persia, and Han China. The Kushan Empire issued India's first high-quality gold coins, in the model of the Roman *denarius auri*. These were combined with base metal coins, but silver coins were rarely used.

Egypt's silver coinage was heavily devalued around 53 B.C. In 30 B.C., the Roman emperor Octavian deposed the final pharaoh of the Ptolemaic dynasty, Cleopatra, and made Egypt part of the Roman Empire. This opened the Red Sea to Roman sea trade with India. During the first century A.D., extensive maritime trade between Rome and India developed, with up to 120 ships each year leaving for India via the Red Sea port of Myos Hormos. Roman gold coins were used in trade for luxuries from India and China, resulting in extensive use of Roman-made gold coins in southern India. Pliny the Elder (23-79) complained that one hundred million *sesterces* per year were being paid to India, China and the Arabian peninsula for trade in perfumes and other luxury goods.<sup>40</sup> Roman traders reached Siam (Thailand) in the second century. Chinese records indicate a visit from representatives of Roman emperor Marcus Aurelius in 161.

## Rome

Rome was founded, according to legend and tradition, in 753 B.C. It began as a relatively minor entity on the fringes of Greek or Persian dominance. Silver and gold deposits were scarce in the early Roman region. Before coinage, unstandardized pieces of bronze served as money by measured weight. Large uniform ingots of bronze were used in payment from 450 B.C. The introduction of bronze coinage is traditionally ascribed to payment for the army during the siege of Veii in 406 B.C. (Government currency production and military finance have apparently been linked from the earliest days.) The Gauls mounted an attack on Rome in 390 B.C. The cackling of geese prevented a surprise attack, saving them from defeat. A temple to Moneta, the goddess of warning, was built. Early Roman bronze coinage was thereafter made at the temple, and thus Moneta also formed the base of the word "money." Soldiers were paid in this bronze coinage until the mid-second century B.C.

The first bronze *as* coins weighed one Roman pound, or *libra*, which also gives us the cursive £ later used to identify the British pound. (The Roman *libra* was about 325 grams, and the Tower pound upon which the British currency was based was about 350 grams.) The *libra* was divided into twelve *unciae* (ounces) – similar to the troy ounces used for precious metals today, twelve of which make a troy pound of 373 grams. Early *as* coins weighed 12 *unciae*, as indicated by their face value, but their contained metal was later reduced to 10 *unciae* around 270 B.C., to 5 *unciae* at the start of the Second Punic War in 218 B.C., and then to 1.5-1.0 *unciae* around 211 B.C. Silver coinage began to be produced in Rome around 269 B.C. During the Second Punic War, its silver content was reduced to as little as 30%.

The *denarius*, which became the main silver coin of Rome for more than four centuries, was introduced in 211 B.C. A small number of gold coins were also introduced. The *denarius* was slowly debased; its 211 B.C. weight of 4.5 grams of silver fell to 3.7 grams by 170 B.C. It is possible that minting standards of new coins were adjusted to match the contained metal of older coins as they wore down. This became an issue in British history, as we will see, at the end of the seventeenth century.

Although the coinage of the Roman Republic was generally of bronze and silver, gold served as a high-level form of money, especially for the government. At the beginning of the Second Punic War in 218 B.C., the historian Livy (64 B.C.–17 A.D.) noted that the Roman state treasury contained about 41,800 troy oz. of gold. The war proved a huge success for the Treasury, producing a net gain of 105,000 ounces. Livy estimated that another 396,000 ounces of gold were obtained by 157 B.C., mostly from wars in Spain and Macedonia. In that year, the Treasury held 181,326 ounces of gold and 363,000 ounces of silver, clearly showing a favoring of gold in terms of total value. Sulla removed 93,750 oz. of gold in 88 B.C. to finance expeditions against Mithradates, and returned with 156,250 oz. of gold booty, plus another 1.2 million ounces of silver. Caesar took roughly 31,000 oz. of gold from the Treasury to finance his campaigns in Gaul, and another 43,000 oz. (in the form of ingots) after 49 B.C. to seize control of Rome. All of this happened before Rome had any significant gold coinage.

Caesar struck the first large-scale issuance of gold coinage in Rome's history. These followed the model of the *aureus*, a gold coin of about 8.1 grams based on the Persian daric. After a major coinage reform around 23 B.C. by Octavian (27 B.C.–14 A.D.), the Roman coinage was officially bimetallic. The value of the eight-gram *aureus* was indicated as equivalent to 25 silver *denarii* of 3.86 grams, implying a silver:gold ratio of 12:1. The tradition of bronze coinage continued with the *sestertius*, worth one quarter of a *denarius*. The coin, with a weight of 25-28 grams (about one *unciae*) of brass, had a nominal value of four *as*.

Banking is generally thought to have been less important to the Roman economy than in the Babylonian and Egyptian examples. Payment in

coinage took precedence over payment in bank deposit transfers. Nevertheless, the large fortunes of Rome made use of banks on a daily basis. Some of the wealthiest men of Rome were reportedly worth on the order of 400 million sesterces,<sup>41</sup> equivalent to 4 million aurei of about 8 grams each, or about 32,000 kilograms of gold. (This was worth about \$1.2 billion in 2015.)

Nero (54-68) was the first to devalue the coinage from the standards introduced by Octavian, reducing the silver content of the denarius to 90%. By 250, the denarius had been reduced to about 40% silver – a pace of decline, over two centuries, that was irrelevant for most purposes. But by 270, only twenty years later, the silver content of the denarius was down to 4%, a 10:1 devaluation in only twenty years. Aurelian (270-275) attempted a coinage reform, but the primary outcome was to put higher face values on coins, thus overcoming the difficulty of reducing their silver content still further. The door to endless further devaluation was opened. He was murdered a year later. This innovation was imitated by succeeding emperors for over a century afterwards. The result of galloping devaluation from 250 was the collapse of the monetary economy throughout Rome, and a breakdown of the Roman state itself. In forty years between 244 and 284, Rome had fifty-seven emperors.

Diocletian (284-305) stabilized the Empire, ruling for twenty-one years and retiring peacefully afterwards. He also attempted a reform of the coinage, with his main efforts taking place in 295. He struck five new coins: a full-weight, pure gold *solidus* (“solid gold”), a pure silver *argenteus* at 96 to the Roman pound – the same value as the denarius under Nero, and almost the same as Augustus (84 to the pound) – and three minor copper coins. Diocletian’s *solidus* weighed 5.5 grams. However, the new coins were given a face value far less than the market value of their metal content, and quickly disappeared from use.

After Diocletian’s failure in 295, he issued his infamous Edict of Prices in 301 to attempt to contain the raging inflation. This was accompanied by the establishment of what amounted to a centrally-planned statist economy to attempt to maintain military strength and public order. Diocletian abdicated in 305. Under Octavian, a pound of gold was worth 1,050 denarii. In the Edict, Diocletian declared that a pound of gold would be worth 50,000 denarii. By 307, a pound of gold was worth 100,000 denarii, and by 324 it was worth 300,000. By the mid-fourth century, Egyptian records indicate that a pound of gold was worth 2.120 billion denarii.<sup>42</sup>

In the midst of the monetary chaos of the denarius, gold was most commonly used by measured weight. Heavy gold bracelets became popular among the wealthy. They were used in transactions according to weight, and valued equally with coinage on that basis.

Constantine (306-337) observed Diocletian’s error, and again attempted a currency reform. His gold *solidus* began to be issued in 312 A.D. at a weight of 72 to the pound (about 4.5 grams) of pure gold. It had no

official denomination or relation to the various junk coinage then in use collectively known as *pecunia*, the tattered remnants of the denarius. The floating exchange rate between *pecunia* and the gold *solidus* was quoted daily by bankers, thus removing the problem of denomination that undermined Diocletian's efforts. When it was first issued, the market value of the *solidus* was around 275,000 denarii. The *solidus* was maintained at a full weight, it became the unit of account though not necessarily a medium of exchange for smaller transactions, and the government demanded its use in payment of taxes. Thus, it became widely used in circulation. Commoners initially had to make do with existing junk coinage. Nevertheless, the presence of a high-quality coinage, used as a unit of account, allowed greater monetary exchange and the relaxation of much of Diocletian's statist framework.

Diocletian had partitioned the Empire into Eastern and Western halves in 285, with independent administration. In 324, Constantine moved the capital of the Eastern Empire from Rome to the Greek city of Byzantium, renamed Constantinople. High quality gold coinage continued to be issued from Byzantium, while coinage in Western Rome was devalued into uselessness. The end of the Western Roman Empire was initially marked by the sack of Rome by the Visigoths in 410. The German barbarians knew what kind of money they preferred: in 422, Rome had to pay them 3,633 oz. of gold per annum as tribute. The amount later rose to 5,208 ounces per year.<sup>43</sup> In 476, the barbarian Odoacer deposed the final Roman emperor, Romulus.

However, the Eastern Roman empire, marked by the establishment of Constantinople and now known as the Byzantine Empire (although it was called the Roman Empire by its inhabitants), continued another thousand years to 1453. Its gold *solidus* coin was maintained, unchanged, until the eleventh century. Constantine demanded that gold coin received in tax payment be melted down and restruck into new coins, thus maintaining the coins' high quality. The *solidus* was the basis of the monetary system. In the fifth century, the Byzantine monetary system consisted of full-weight gold coins and masses of low-quality bronze coins called *nummi*, typically with a weight of about 0.56 grams, and which continued to be used according to their daily exchange rate with the *solidus*. The copper coinage was reformed by Anastasius I in 498, who introduced a large, high quality bronze coin, the *folles*, with a value of 40 *nummi*. Despite a few experiments, there was little interest in silver coins.

Constantine also ended persecution of Christianity in Rome, beginning with the Edict of Milan in 313. Around this time he declared himself a Christian. As ruler, he supported the Christian church financially, and built a large number of basilicas. In 325, Constantine formed the Council of Nicaea, which organized the Christian church and reached consensus on official doctrine on many matters, thus preparing the church to be used as an official state church and, consequently, a tool of state control. Constantine at

first allowed religious tolerance, but by the end of his reign he suppressed other religions, and tore down the Roman temples.

The Council of Nicaea forbade lending at interest (“usury”) among the clergy. By the fifth century, this was spread to the laity. During the Middle Ages, usury became more broadly suppressed, reaching a peak perhaps in 1311 when Pope Clement V made the ban on usury absolute and declared all secular legislation in its favor null and void. The monetary violence of the latter years of Rome made banking near-impossible, and the imposition of usury laws largely prevented its return in Europe on a widespread basis. Lending still existed in Europe, practiced mostly by Jews not subject to Christian dictates. However, large public institutions such as banks were not allowed.

### China

Evidence of proto-writing in China dates from as early as 7000 B.C., leading to speculation that writing in China is very old. Unfortunately, the scarce evidence has not provided confirmation of these notions. Historians generally date writing in China to around 1200 B.C. Cowrie shells served as small-denomination money in China, possibly as early as the eighteenth century B.C. Bronze casting in China dates from about 1900 B.C., and bronze ingots apparently in the shape of cowrie shells, likely a form of money, appeared around 900 B.C. Early gold was used mostly in the form of foil coverings of decorative objects. Royalty preferred jewelry of jade. By the sixteenth century B.C., small gold jewelry was being made. A little evidence exists of gold being used as money in these early times. One inscription from the early Zhou Dynasty, the tenth or eleventh century B.C., indicated that a king presented a prince with “one hundred *lieh* of gold.”

The development of coinage in China was, for the most part, independent of the West. For smaller denominations, practical bronze tools were typically stylized into a form no longer useful for utilitarian purposes, and used as a sort of standardized unit that served the function of coinage despite its odd shape. The oldest types of “spade money” might date from as early as 1200 B.C. “Knife money” circulated from around 600 to 200 B.C. Silver “spade” coins have been found dating from before 500 B.C. In the fifth or sixth centuries B.C., a gold coinage emerged, in the form of standardized gold sheets or blocks of 3-5mm thick. By the third century B.C., large standardized gold and silver ingots known as *sycees* (or “catties”) were used in trade, by contained metal weight and market value, and were used continuously in much the same way into the twentieth century. The silver *sycee* was officially demonetized in 1933.

The *Guanzi*, a book of economic doctrines that attained a status comparable to the writings of Plato or Aristotle in the West, is thought to have been written around the fourth or third centuries B.C. “The five grains are the Sovereigns of Destiny to the people. Gold and knife-shaped specie

serve as their common currency," it said. "Gold is the standard of expenditures. The prince who discerns the fundamental laws of gold will understand the dangers of parsimony and prodigality. Knowing this, he will exercise moderation in his expenditures."<sup>44</sup>

The first Chinese cast bronze coins, in the flat, round shape with the characteristic square hole that typified Chinese bronze coinage until the twentieth century, arose around 350 B.C. The "banliang" was the first unified coinage of China, following political unification by emperor Qin Shi Huang around 210 B.C. and the establishment of the Qin Dynasty. It too was cast bronze with a square hole. These round, square-hole, copper-based Chinese coins are collectively known as "cash" in English, a crude rendering of *qian*, the common Chinese word for the coins. These coins traded beside silver and gold ingots for larger transactions, based on metallic weights.

The Chinese invention of paper is traditionally ascribed to Han dynasty court official Cai Lun, in 105 A.D. The first mention of a representative money made from paper (a "paper currency") dates from 140 A.D. However, the idea of representative money in China emerged centuries before the widespread adoption of paper. Chinese contracts indicating payment of coins to the bearer on demand, written on sheets of leather, existed from at least as early as 118 B.C. and are sometimes considered to be an early "banknote."

In the Celtic lands of Britain and France, then the barbarian frontiers beyond the borders of Rome, gold "ring money" dates from at least 1200 B.C. Later, coinage was locally produced based on the Roman model. The earliest coins were a gold *stater*, imitating the *stater* of Philip II of Macedon, and date from about 125 B.C. However, as late as 58 B.C., Julius Caesar, upon conquering Gaul (with an invasion of Britain in 55 and 54 B.C.), remarked on the primitive bronze "sword monies" in use there. The Chinese pattern of early gold coins or ingots, combined with a bronze tool money, was independently replicated in Britain and France before being replaced by the Roman coinage after conquest.

Although Chinese coins were typically of copper alloys, gold and silver traded by weight, and were generally not made into coins. Given that Chinese people used silver as money, by weight, into the twentieth century, we might postulate that, for large transactions, the additional labor of weighing was a minor inconvenience considering the large sums involved; while the standardized bronze coinage relieved the need for weighing in minor transactions. Although only feudal lords, military chiefs and nobility regularly used gold in transactions, during the Han Dynasty (206 B.C.-220 A.D.), "it does seem clear that money of the Han period was on a gold standard, the gold unit [weight] remaining constant," concluded one historian.<sup>45</sup> This mirrored the Byzantine system, with a menagerie of bronze coins of varying quality used in small-scale commerce, anchored by a highly reliable gold *solidus* rarely used by commoners. The Han emperor enjoyed an annual "gift" (in practice, a tax) from each of the nobles of four

*taels* of gold for every one thousand fiefs of a noble's domains.<sup>46</sup> Gold was then paid out by the emperor to nobles in return for military engagements and other duties on behalf of the emperor. In 124-123 B.C., the general Wei Ch'ing was paid 1.6 million oz. of gold as a prize for a successful attack on Hsiung-nu in northern China.<sup>47</sup> Gold also served as a unit of account during the Han era. Salaries of senior government ministers were often designated in gold, although they could be paid in copper coins or grain.

In 10 A.D., the Han emperor Wang Mang undertook a rather bewildering currency reform which included tortoise shell, cowries, gold and silver (both by weight, with no coins issued; the implied gold:silver ratio was 1:5), six different copper coins, and spade money in ten denominations. Wang Mang's innovations included a bronze knife money inlaid with gold lettering, which said "one knife worth five thousand," and another that said "inscribed knife five hundred," apparently introducing the idea of high-value token currencies. The experiment was not repeated, perhaps because it was too easy to counterfeit. Although coinage in China continued to focus on small-denomination copper/bronze coins, Wang Mang's treasury held roughly five million ounces (155 metric tons) of gold bullion, a high point for the Chinese state that was not matched until modern times, and the largest single gold concentration in the world at the time.<sup>48</sup> The industrious Wang also introduced China's first income tax, at a rate of 10% of profits. After only four years, the overly-complicated bronze coinage system was simplified to two basic coins, a round coin with a denomination of one, and a large spade (by this time a sort of vaguely spade-shaped ingot) with a denomination of 25. This arrangement continued without major changes until the end of the Han Dynasty in 220.

In 220-280, apparent large-denomination bronze coins appear again, marked with values of one hundred to five thousand. Given the constant warfare of this period between three large kingdoms, perhaps these were a form of military finance via currency devaluation, much as Aurelian and his successors were conducting at the same time in Rome, by marking coins with higher and higher denominations. After the reunification of China in 280, multiple denominations disappeared, and the bronze coins (their shape and weight still largely unchanged) returned to an implicit value of one.

### **Money in the Ancient World**

Throughout the world, money and writing developed roughly simultaneously. Indeed, they are related, since the increasing economic trade and sophistication that naturally inspired a standardized commodity of exchange, which we now call "money," also prompted record-keeping of the sort that produced the original forms of writing. In any case, it is hard to tell, without a written record, whether such things as gold or silver adornments found by archaeologists may have traded readily in a monetary



fashion based on the weight of contained metals, as we know they often did later, and still do so today.

We also know, from written records, that effective barter was often carried out within the framework of a monetary standard of value, such as silver. A cow worth fifty silver shekels would trade for fifty shekels of figs. Tax payment of twenty shekels would be paid in hides. This seems a bit alien to us today, but it was always a common part of agrarian human life, whether in Sumer in the fourth millennium B.C., or for an American farmer in 1850. Did this also happen commonly before it began to be recorded in writing? Obviously, we do not know, but there is no particular reason why not.

What we do know is that, throughout the world, people used the monetary metals – gold, silver and copper alloys – if they were at all available. For a state of any meaningful size and sophistication, trade or possibly conquest by a foreign power eventually made them available. The commonality of use did not necessarily indicate which metals were most preferred. Most transactions in the early Byzantine Empire would have been carried out with low-quality bronze coins, but gold was the basis of their system, just as gold was the basis of the monetary system in the United States in 1960, although paper banknotes were the means of transactions and the use of gold coins was actually outlawed for U.S. citizens. Even after token silver coins were removed from circulation, it still remained, for a few years longer, a gold standard system.

In a narrowly restricted locale, silver mines may be productive but gold nearly nonexistent, or vice versa; and this could be reflected in the monetary arrangements of that place. But to the extent that trade barriers – caused by the practical difficulties of transport, or human-imposed trade restrictions – could be overcome, gold and silver would tend to equalize and thus be the same value everywhere, and of equal availability everywhere. This was even more the case since gold and silver were generally the things that everyone would accept in trade, and therefore commonly traded in large quantity, the universal money from Britain to India, and ultimately to China and beyond. Soldiers were paid regularly in gold and silver coins, often newly-minted from bullion captured from the royal treasuries of conquered lands. Armies thus naturally became conduits of supply of newly-minted coinage, spreading the indigenous monetary systems of the conquering states, before all other institutions. The greater portability of gold made it easier to transport over long distances than silver, which would naturally make gold a favorite means of payment for the longest trading expeditions, and would also tend to more fully equalize the value of gold everywhere no matter what the productivity of local mines happened to be. This is perhaps one reason why gold was ultimately viewed as a more universal and more stable standard of value than silver, even if most domestic commerce happened to be conducted in silver or bronze coins due to their usefulness in smaller-denomination transactions.

Money – and more specifically the use of gold, silver and copper alloys as money – predated coinage by thousands of years. This fact is easily overlooked. Numismatists, or coinage enthusiasts, tend to assume that money did not exist before coinage. At least, a coin is clearly a form of money, and used for no other purpose, while the various gold, silver or bronze objects, in the form of outright jewelry or standardized proto-jewelry, are not so obviously a form of money, although they were used as such. Even the standardized ingots of the ancient world, including the oxide-shaped bronze ingots that traded among the eastern Mediterranean kingdoms during the 1600-1100 B.C. period, or the Chinese *sycees* of gold and silver, do not seem to be fully regarded as money today, although they were certainly used for that purpose and no other. Representative monies have been made of clay tablets, leather, and later wood tally sticks, or even token coins, but people have had a tendency to ignore these often widely-used innovations because they were not made of familiar paper.

Coinage was not, in all ways, an improvement upon money. The Mesopotamian practice of using actual metal weights was uncorrupted for roughly three thousand years. The Chinese shared the same affinity for precious metals traded by weight, limiting their coinage only to the smallest-denomination bronze coins even into the twentieth century. Coinage, from its introduction in Lydia, began as a means by which metals could be traded at “face value” rather than their weights. This relieved the need for constant weighing, but introduced endless examples of currency corruption. After many such experiments, governments found that their coins worked best when their metals contents were unchanged, and very close to their face value, except perhaps for a small minting premium.

If we see beyond the variety of local custom, we find that gold or silver became the basis of money nearly everywhere. Sometimes the focus was on gold, as in ancient Persia. Sometimes it was on silver, as in ancient Greece. Macedonia and Lydia adopted a formal bimetallism. Historians tend to emphasize the differences rather than the similarities, in part because it gives them something to talk about. In practice, gold and silver were effectively much the same thing. They tended to trade in a close ratio, reliable and unchanging enough from year-to-year that formal bimetallism could be adopted. The foreshortening effect of history tends to emphasize the changes, between the 10:1 silver:gold ratio of Alexander and the 12:1 ratio of Augustus – but 325 years separated them. In practical terms, for the purposes of real business (typically with a timeframe of less than twenty years, and often much less than that), the silver:gold ratio – either their floating market values or an official bimetallic arrangement – would have been predictably stable, and in practice probably resembled the market silver:gold ratio of 1650-1870, for which we have detailed records. Thus, silver and gold were, for practical purposes, two versions of the same thing, like a one-dollar bill and a ten-dollar bill. Indeed, the original U.S. one-dollar coins were made of silver, and the ten-dollar coins were made of gold. This

official bimetallic arrangement, which reflected real market values, was not much different than the system of Philip II of Macedon, in the fourth century B.C.

Thus, in practical terms, a “silver-based” system, a “gold-based” system, or a “bimetallic” system were virtually the same thing – a gold/silver complex which functioned much the same way no matter what the specific local preferences for one metal or the other may have been. Recognizing this, we find a continuity in human monetary affairs, back to the very beginnings of history, and around the world, up to the end of gold-based money in 1971. Despite all the uncountable episodes of currency debauchery over millennia, and endless fascinating local particulars that entertain numismatists, humans have used gold, silver and copper as money, in some kind of unified system, and with copper typically in a subordinate role. Eventually, without really changing its basic character, this became, toward the end of the nineteenth century, a focus on gold alone. Even this nineteenth century monometallic gold consensus was not something new, and not particularly different than the gold-centric policy of ancient Persia or the Byzantine Empire. It was just more widely accepted, reflecting the greater ease of trade over long distances, the greater interconnectedness of economic activity, and thus the desire to further homogenize monetary affairs.

The gold/silver complex – rhetorically abbreviated as “gold” because it did finally become a global gold-centric system – has always been the basis of money, the ultimate measure of value. “Ultimate,” meaning the best; and also, the final. If there were something better, we would have found it by now. If there were a burning need to find something better, we would have looked. No doubt the entire academic profession today would argue that our floating paper fiat currencies are superior.<sup>B</sup> The notion of overissuing and thus devaluing a currency (often obscured as “lowering interest rates” or “increasing the money supply”) as a remedy for some sort of economic difficulty must be nearly as old as devaluation itself, which is as old as coinage itself. No demonstrable track record of success has ever been achieved. No empire ever rose above its neighbors and expanded its realm through the mastery of currency devaluation, or some sort of artful floating fiat currency management, or any other form of currency manipulation.

History is all the other way: the states that maintained the highest currency quality, whose coins contained the same quantities of gold or silver over generations and centuries, were the most successful. Governments that debased their coinage soon found that their borders

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<sup>B</sup> In a 2012 survey of economic experts made by the University of Chicago’s business school, 43 percent of those surveyed “disagreed” with the gold standard, and 57 percent “strongly disagreed.” Shea, Christopher. “Survey: No Support for Gold Standard Among Top Economists.” WSJ Blog (Jan. 23, 2012)

were retreating under the pressure of foreign invaders, while the domestic economy languished and civil unrest grew more strident. To meet these challenges, they debased the currency still further, and got the same results with greater intensity. As is the case for any official government policy that seems to be working, a chorus of courtiers can be found to sing its praises, and no doubt such a chorus existed then too. Monetary decline tends to coincide with the decline of governments and dynasties. Those who claim “this time is different” simply have no idea how much it is the same.

## Chapter 3:

# The Medieval Era, 400-1500

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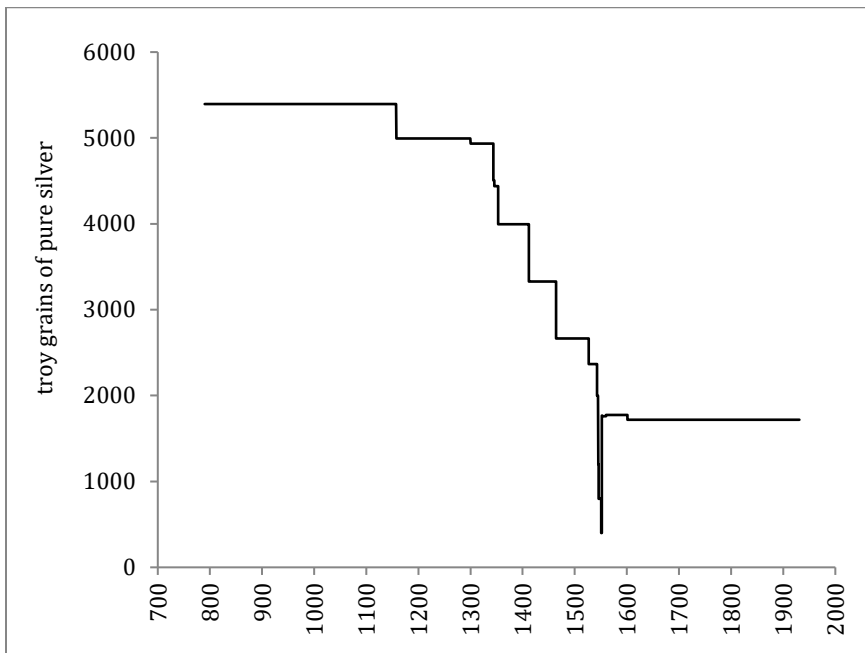
Rome left Britain to its fate in 410. By 435, Britain abandoned coinage, and did not use it again for two hundred years. It is perhaps more accurate to say that coinage had abandoned Britain: the Roman coins by then were hardly coinage at all, but rather bits of junk metal, devalued continuously for 180 years, and which could not serve any meaningful purpose as a standardized monetary system. By then, the economic system in Britain and throughout western Europe did not require very much monetary commerce in any case, having adapted, over a long period, to monetary degradation and political instability by focusing on local self-sufficiency. Manorial serfdom formed the basis of the economy. Small states proliferated, and trade and travel became difficult beyond the immediate locality.

Britain's abandonment of coinage was among the more extreme examples within post-Roman Western Europe. Coinage continued to be used on the continent, loosely based on the Byzantine model, although there too economic arrangements had become drastically simplified. In 600-630, the British began to adopt coinage from Merovingian France (the *tremissis*, one-third of a gold *solidus*) and Byzantium for local use. Around 630, a new gold coin of high quality began to be produced in Britain. Beginning around 675, this coin was repeatedly debased by the inclusion of increasing amounts of silver, a pattern that was also happening in France at the same time. The outcome of this was that British coinage, around the beginning of the eighth century, had become a silver coinage, which also had the advantage of being of a small denomination more useful for many forms of commerce. These silver coins were also debased for a century afterwards with the inclusion of base metals, among many of the minor kings of disunited Britain.

In France, the Merovingian dynasty declined along with the gold content of its coinage. In 751, the Merovingians were replaced by the Carolingian dynasty, which, like Britain, adopted a silver basis for its coinage. Around 755, a new coinage system was introduced by Pepin the Short. His son Charlemagne (800-814) later united large parts of Europe and became the first Holy Roman Emperor, in the process also unifying the coinage of his realm. In the new system, the *livre* was established as a pound of silver (inspired by the Roman *libra*), subdivided into 20 *sous* each of 12 *deniers* (inspired by the Roman *denarius*). Only *deniers* were originally minted; the rest were units of account. Besides being copied in Britain, the

system was also used in Italy and Portugal through the end of the Middle Ages. Gold coinage continued to be used, primarily of Byzantine origin, and was preferred by many merchants. France began producing gold coins again in 1266, and continued to issue both gold and silver coins into the twentieth century.

Around 765, a new level of political unification was achieved in Britain. This led to monetary reform, with the introduction of the silver penny by King Offa of Mercia (757-796) in the early 790s. In Offa's imitation of the Carolingian system, 240 silver pennies, each containing 22.5 troy grains of silver (32 Tower grains or about 1.5 grams), made up a Tower pound of about 350 grams. The Roman/Frankish origins today remain reflected in the use of £ and "lb." (from the Roman *libra*) for pound, and "d." (Roman *denarius* and French *deniers*) for penny. Offa's penny was made of fine silver, 99.9% pure. It was produced in high quality and large quantities, and was often more popular in Europe than locally-produced coins. It remained the only minted English coin for five centuries, until gold coins and other denominations were introduced in the thirteenth century.



**Britain: Value of British Pound in Silver, 790-1931<sup>1</sup>**

The English silver penny was one of the better-quality coinages of the region, and became a model imitated elsewhere in Europe. Bolesław I Chrobry (992-1025) was crowned the first king of Poland, and also

introduced a new coinage. He imitated the English penny so devotedly that his coins showed the head of Aethelred I, the king of England. Local versions of the English penny were also produced in Denmark, Sweden, Norway, the Low Countries and lower Germany.

In 1158, a new coinage introduced by Henry II was minted of 92.5% silver alloyed with copper, which increased hardness and durability. This 92.5% alloy became known as “sterling silver” and remained the standard fineness for British silver coinage thereafter. It was, nevertheless, a debasement. Edward III reduced the weight to 20 grains in 1346, and 18 grains in 1353. During the reign of Henry IV (1399-1413), the penny was reduced in weight to 15 grains (0.97 grams) of silver, and reduced again to 12 grains in 1464 under Edward IV. Thus the pound became a “British pound,” divorced from its history as a simple measure of weight.

A series of debasements took place during the reigns of Henry VIII (1509-1547) and Edward VI (1547-1553). In 1546, the coinage was only 33.3% silver. In 1552, coins were again produced in sterling silver, but with a weight of eight grains. Another small debasement followed in 1601, to 7 23/31 grains, or about 0.50 grams. As the penny coin became impractically small (the 90% silver U.S. Roosevelt dime, minted until 1964, weighed 2.5 grams), the silver shilling coin, worth twelve pence (6.0 grams), grew in prominence as the fundamental silver coinage of Britain. It was almost identical to the original Greek drachma of the seventh century B.C., a silver coin also of roughly six grams. The shilling’s standard after 1601 was 62 per troy pound, an official value which, later translated into its gold equivalent, it maintained until 1931. After a thousand years, the value of the “penny” and the “pound” had been reduced to about a third of their original value under King Offa – not bad, all considered.

### **The Decline of Byzantium, the *Solidus*, and the *Hyperpyron***

In Byzantium, the gold solidus remained largely unchanged from Constantine’s original design (and contained metal weight) until the reign of Michael IV (1034-41) – over 700 years of stable currency value. In 1025, at the death of Basil II, the Byzantine Empire was at a high point, with control of Anatolia, Greece, the Balkans, and southern Italy. Basil did not leave an heir, resulting in a confusion of succession and a series of weak leaders. Conflict with the Catholic Church in Rome erupted into a schism in 1054, while Norman invaders began to occupy portions of Byzantine Italy. A stronghold at Apulia was taken in 1071. But a larger disaster took place in Armenia, where the Seljuk Turks made their first incursions into Byzantine lands in 1065. Military failure in 1071 led to the loss of much of the Anatolian plateau, until, in 1081, the Seljuk capital at Nicaea was just 90 kilometers from Constantinople.

Constantine VIII, who succeeded Basil II, originally married his daughter Zoe to Otto III, the Holy Roman Emperor. As Zoe (then 23) was

traveling to Italy to her wedding, Otto died. In 1028, she was married (at age 50) to Romanos Argyros, a scion of an aristocratic family who had made a career as a judge and was the urban prefect (mayor) of Constantinople. Three days after the wedding, Constantine VIII died, and Romanos became emperor Romanos III. Unable to conceive an heir with Zoe, Romanos later refused to share a bed with her. Zoe openly took Michael, an uneducated courtier from a family of commoners, as one of her several lovers. After Romanos was found dead in his bath, Zoe married Michael the next day, thus putting Michael on the throne of the empire. Michael IV was a money-changer by profession; some suspected him of forging false coins. He immediately reduced the solidus' gold content from 100% pure to 90%. Successive emperors reduced the gold content still further, until, by the accession of Alexius I Comnenus (1081-1118), it was 10.6% gold. Another decade of debasement followed, and the gold content dropped toward zero.

Alexius reformed the coinage in 1092, producing a new, high-quality gold coin, the *hyperpyron* ("super-refined") of 20.5 carats, or about 85% purity, and 4.45 grams – the same weight as the solidus, but somewhat lower purity. The coin was also known as the *nomisma* ("unit"). It remained unchanged for over a century, but was then subject to gradual debasement. Constantinople was sacked by Christian crusaders (in alliance with Venetian merchants) in 1204, resulting in a division of the empire into three successor states. During the Empire of Nicaea (1204-1261), the hyperpyron fell to 18 karats; under Michael VIII Palaiologos (1259-1282) to 15 karats; and under Andronikos II Palaiologos (1282-1328) to 12 karats, or 50% purity. The last gold hyperpyron were made around 1350, but the name remained as a unit of account thereafter. From 1367, the largest coin produced was the silver *stavraton* of 8.5 grams, which was soon lowered to 7.4 grams. The coin remained of relatively good quality until the conquest of Constantinople by the Ottoman Turks in 1453.

### **Italian Gold Coinage and the Rise of Italian Banks**

As the Byzantine state weakened, and the hyperpyron began to be debased after 1204, a variety of Italian replacement coinages appeared in the Byzantine model. New gold coins were issued at Messina and Brindisi in 1232, Florence in 1252, and Genoa in 1253. The Florentine issue was known as the *florin*, and in turn provided a model for gold coin issuance throughout Europe. At 3.5 grams of pure gold, its gold content was equivalent to the hyperpyron of the same time. The coin was manufactured in Florence, unchanged, until 1533. Despite the Christian prohibitions on usury, and proximity to Rome, more public forms of banking re-emerged in Italy in the twelfth century. In 1327, the city of Avignon, in southeastern France, had 43 branches of Italian banking houses.

Florence, in the early fourteenth century, was the banking capital of Europe, taking that title from neighboring Siena after the bankruptcy of a



leading banking family there in 1298. Branches of Florentine banks spread across the continent, in turn spreading the use of the gold florin. But Florence's major banking families went bankrupt in 1340, due to a downturn in the economy of Europe in general, and the default of England's Edward III in particular. The spread of the Black Death, beginning in 1347, also hit Florence hard. In the 1380s, the political situation settled down and another era of prosperity began, which formed the foundation of the Italian Renaissance. The most famous of the Florentine banks, the Medici Bank, was founded in 1397. It grew to become Europe's largest bank. The same year, the Medicis encouraged Jewish moneylenders to settle in Florence. The Medici family effectively ruled Florence from 1434, a period which was the height of the Renaissance in Florence.

The Republic of Genoa began its expansion in the late eleventh century. Destruction of the Arab fleet gave Genoa control of the western Mediterranean in 1087. Participation in the First Crusade, 1096-1099, resulted in the establishment of many trade colonies throughout the eastern Mediterranean. By the end of the thirteenth century, Genoa's trade routes stretched as far as the Black Sea, and Genoa held the southern coast of the Crimean peninsula. Other trade outposts stretched to Egypt, across the coast of North Africa, to Barcelona, Seville, and even to Bruges, on the North Atlantic coast of Flanders. A long series of wars with Venice, 1256-1381, over control of trade in the eastern Mediterranean culminated in a naval defeat in 1380 that began Genoa's decline as a maritime power. However, it enjoyed another prosperous era as one of Europe's major banking centers, in the fifteenth through seventeenth centuries. The Bank of St. George in Genoa was founded in 1407, and later became a major lender to the Spanish rulers Ferdinand and Isabella (1474-1504). Charles V (1500-1558) was heavily in debt to the bank. His son Philip II of Spain defaulted in 1557, 1560, 1575 and 1596, now considered the first modern "sovereign defaults." Genoese banks provided about two-thirds of the lending.<sup>2</sup>

Beginning around 1000, the traders of Venice established control over seaways and trade routes of the eastern Mediterranean. At first expanding down the coasts of the Adriatic, they later forged a trade monopoly with Byzantium and also the Christian-held Holy Lands. Like other maritime trading empires, including the Dutch and British empires that came later, and also the Genoese with whom they competed, the *Stato da Mar* consisted of a series of small holdings with strategic control of trade and shipping lanes. The small Venetian empire included, at times, parts of Greece and coastal states along the eastern shore of the Adriatic Sea, the islands of Crete and Cyprus, and Adrianopolis (now Ederne), just west of Constantinople. By this means, the Venetians controlled trade between East and West, including the commerce of the Silk Road, particularly after they emerged victorious from their competition with Genoa. The Bank of Venice, established in 1157, was the first national bank in Europe since the Roman era.

The Venetians used the Byzantine *solidus* and its successor, the *hyperpyron*, as the basis of trade and accounting. By the mid-thirteenth century, with the debasement of the *hyperpyron*, and also the weakening of the Arab empire and its gold *dinar*, the Venetians found that they were without a reliable monetary standard. Thus, in 1285, they created the *ducat*, of 3.56 grams of gold at 0.995 fineness, as a copy of the *florin*. It became a major international coinage and basis of trade throughout the region, and continued to be used – without debasement – until 1797, when the Republic of Venice fell to the armies of Napoleon Bonaparte. A burst of gold coinage production emerged throughout Europe in the early fourteenth century, causing gold coinage to eclipse silver not only in Italy but also France, Germany, and Flanders.<sup>3</sup> Gold “ducats” were also produced in the Netherlands, Germany, Scandinavia, and elsewhere.

In 1257, England’s Henry III introduced a “gold penny,” the first gold coin produced in England since the eighth century. It was valued at an implied 1:10 gold:silver ratio, well below market values at that time, and was thus unpopular. (The market value of the contained gold was well above the face value of twenty silver pence.) Edward III issued a new gold coin, called the “florin,” in 1343. Again, the face value was not well calibrated to the market values of gold and silver, so a gold “noble” coin was issued in Britain in 1346, whose face value accurately reflected market values, and which gained broader acceptance.

### **Representative Money in the Medieval Era**

The split tally stick was a liquid credit device that took on some of the characteristics of representative money in medieval Europe, although it did not quite attain the status of a currency. They represented either debt or a deposit (also a form of debt), and traded regularly among third parties. They were near-impossible to counterfeit, and were used well after the advent of paper currencies and more advanced banking services. Tally sticks were accepted as legal proof in the Napoleonic Code (1804), were used in England until 1826, and were used into the twentieth century in some parts of rural Switzerland and Germany.

King Henry I formalized the use of the split tally stick in England around 1100, and brought it to perhaps its most sophisticated expression as a credit and monetary instrument, beyond its origins as an accounting receipt. Tax assessments owed to the king were recorded in a tally stick. These tallies were then used by the king in payment to others. The receiver of the tally could receive payment in coinage from the original tax debtor, trade it again, or return it to the king as a later tax payment. Soon, the king began to pay suppliers with tallies (*tallia dividenda*) that did not arise from tax debts, but were created for the purpose and essentially represented a government debt. These *tallia dividenda* were redeemable at the Exchequer for coinage. Complicated markets in tallies arose, in which their market

prices were determined by such factors as the perceived collectability of debts, travel distances, and timing of government tax receipts allowing redemption of government tallies at the Exchequer. This discounting process often contained an implied payment of interest, which was officially outlawed under usury laws and considered a sin by the Christian church. Some see these medieval markets in discounted tally sticks as a precursor to the later “money market” in London, which was also a market in discounted bills and short-term debts. The increasing use of tallies by the English government to make payments, which amounted to a primitive sort of government debt, led to the elimination of usury laws and a more formal market in government debt in later centuries.

The Knights Templar, a religious order, established a system of “letters of credit” throughout Christian Europe beginning in 1150. It was primarily a payment device, originally intended to allow pilgrims to finance a long journey without carrying large quantities of coinage, which would make them a target of thieves. A deposit could be made in one Templar office, and retrieved at another far distant. The device soon became used for all manner of business dealings, and as a storehouse for wealth, greatly simplifying long-distance commerce in Europe during that era. The Templars’ wealth became a target for King Philip IV of France, who was deeply in debt to the Templars from his war with the English. With threats of military action, he pushed Pope Clement to order the arrest of the Templars in 1307. This followed the expulsion and asset seizure of Jews and Lombard bankers in 1306, to which he also owed large sums.

The basic idea of the “letter of credit” – little different from the grain banking of ancient Egypt – was picked up in particular by Italian bankers in the thirteenth century, and developed further in the fourteenth.<sup>4</sup> At first they were personally registered, but they later became payable to the bearer and easily traded – a precursor to the modern banknote.

### **Paper Money in China**

After the collapse of the Han Dynasty in 220, a long period of political disunification and instability followed in China, mirrored in various debasements and issuances of low-quality coins. Despite the Han government’s giant gold holdings and abundant use of gold in payment, gold was little seen after the Han era. Some have hypothesized that the large gold holdings of that time were hidden and often buried during the chaos of the collapse of the Han Dynasty. Gold continued to be used among the nobility of the Six Dynasties era (265-589), for payments among themselves or as a store of value, but bolts of silk were a more common medium for large transactions. This reflected the economy of the time, based largely on peasantry tied to the land with little monetary exchange, and a land-owning nobility. A large trading and mercantile class, which might have a need for large monetary payments, did not exist then as it did

in the Mediterranean region. Also, during the Six Dynasties era, the influence of Buddhism spread from Tibet and caused a surge in the creation of gold statues in the Buddha's image, among other religious ornaments in gold and silver. In 490, the emperor issued edicts curbing the use of gold and silver for religious artifacts.

The establishment of the Tang Dynasty (618-907) brought a period of greater political unification and stability. A new, high-quality bronze coin – regulations specified 83% copper, 15% lead and 2% tin – began to be minted, and production continued for nearly 300 years. Gold and silver, in the form of ingots, again rose to prominence as a high-value money, trading by weight. Production of silver during the Tang era was low, which seems to have limited its widespread use in commerce. Large numbers of foreign silver coins dating from the Tang era have been found, mostly from Persia and Arabia. The most common coins were silver drachmas from the Sassanid Empire (224-651) of Persia.

The Tang era also saw the emergence of an early form of paper money, the "flying cash," in the seventh century. These enabled merchants to make payments over long distances, by depositing coinage in one bank office and receiving payment in another, upon the presentation of a voucher of deposit. This system was particularly popular with tea merchants, who wished to move revenue from the sales of tea in the north to the tea-producing regions in the south. The vouchers did not generally circulate among third parties, however.

An early, and short-lived, experiment in floating fiat paper money was undertaken during the reign of Hien Tsung (a.k.a. Xianzong, 806-821), who made payments in sheets of paper rather than bronze coins. Hien Tsung proved to be the last great Tang emperor; after a period of increasing instability, the dynasty ended in rebellion in 907, followed by a period of turmoil known as the "Five Dynasties and Ten Kingdoms Period." Another experimental government issue took place in 910, and then more commonly after 960 during the wars in which the Song Dynasty (960-1279) reunified China. By 1020, the notes were collapsing in a spiral of overissuance.<sup>5</sup>

A private paper currency was introduced in the Sichuan region under the Song Dynasty at the beginning of the eleventh century. Coins were deposited in banks, deposit receipts were received in turn, and these receipts circulated widely among third parties. The government recognized sixteen merchants and granted them a monopoly on the issuance of deposit promissory notes. The merchants did not always honor their depository receipts with prompt payment in coinage, however, which resulted in protests and many legal cases. In 1032, the government established a monopoly on paper monies. The reserve coverage of these notes, in the form of coinage, was twenty-nine percent.<sup>6</sup> At first, the note issue was maintained at a fixed level. However, in 1072, the issue was doubled, and this practice was repeated in later years such that, by 1107, the note issue

had increased by 21 times its original amount and the notes' market value declined substantially. By the end of the Northern Song Dynasty (960-1127), issuance had roughly tripled again. In 1127, the Song lost control of the northern part of China to the Jin Dynasty, ruled by the Jurchen peoples of Manchuria.

The Song retreated to the south, marking the beginning of the Southern Song Dynasty (1127-1279). In 1128, a currency reform took place and new issue of paper money was undertaken by the Song government in the Sichuan region. The system began with a limitation on issuance, but by the early thirteenth century, issuance had expanded by about twenty-six times, again with a substantial decline in the notes' market value.<sup>7</sup>

In the mid-twelfth century, private money-issuers began to issue paper monies in the Hangzhou area. In 1160, the government monopolized money issuance in Hangzhou, with a limitation on total circulation. Beginning around 1176, governments again relied on paper money issuance as a means of military finance. By 1195, the total circulation had expanded by three times. By 1232, the circulation had expanded to thirty-three times its original amount. The market value of the notes was stable until about 1208, but then began to decline rapidly. By the end of the Song Dynasty in 1279, the notes had been devalued to worthlessness.

The Song's conquerors in the north, the Jin Dynasty (1115-1234), issued their own paper currencies in the Song model beginning in 1153, immediately after moving their capital to Beijing. The currency was well maintained until the end of the twelfth century, when it began to depreciate in value. The government undertook a series of reforms in 1206-1207, including a reduction in circulation of large-denomination notes. Small-denomination notes were made convertible to coin, but only in very small amounts. However, in 1210, to pay military expenses just before a major defeat by the Mongols, eighty-four cartloads of bills were distributed among Jin troops. The bills' value declined to worthlessness, and in 1214, a new issue of notes was undertaken by the Jin government. Circulation of copper coins was prohibited. Price controls were attempted, but failed after only two months. In 1216, the new notes' market value had depreciated to less than a hundredth of their issue value only two years earlier. Yet another new note was issued in 1217, with a value of one thousand of the notes issued in 1214. By 1221, these notes' value had depreciated by a factor of 200:1. Another new note was issued in 1222, with each worth 400 of the notes issued in 1217. By this time, silver bullion had become the predominant currency. The Jin government attempted to limit transactions in silver, but this was soon abandoned as merchants refused to open their shops.<sup>8</sup> The Jin Dynasty ended in 1234, after twenty-three years of war with the Mongols at first led by Genghis Khan, in which many Jin officials and military units defected to the Mongol side.

Around 1227, a Mongol military commander issued a paper currency based on silk in the Shantung region, a major silk-producing district. Prior

to 1260, a number of local Mongol authorities issued paper notes for their immediate jurisdiction, mostly based on silver. In 1236 and 1253, the central government made some small issuances of silver-based paper money based on the Jin model. With the ascension of Kublai Khan, grandson of Genghis Khan, to the throne of Great Khan in 1260, a new note was issued that would eventually unify the currency system of the empire. The reserve consisted of gold and silver. Kublai Khan declared the beginning of the Yuan Dynasty in China in 1271. With the defeat of the Southern Song in 1279, all of China was again unified, this time under Mongol rule. Chinese paper money reached its zenith during the Yuan Dynasty, modeled after the Jin and Song examples. By 1280, the note had become the universal paper currency not only of China but of the Mongol Empire, which, in the single year of 1274, conducted invasions of both Bulgaria and Japan. The Empire reached the peak of its extent around 1280-1300, with invasions of Egypt and Japan in 1281, Vietnam in 1284, Poland and Burma in 1287, Java (Indonesia) in 1293, and Egypt again in 1299. Kublai Khan died in 1294. Mongol records list 20,166 public schools established during his reign.

Already by 1262, the Mongol government forbade the use of gold and silver as a medium of exchange, and required the use of paper currency. Nevertheless, discipline over the currency's issuance remained tight until the late 1270s, when issuance stepped up considerably. Writing in 1286, the historian Liu Xian recalled:

Before 1277-1278, there was little fluctuation in the value of the notes. Afterwards, when Ahmad<sup>A</sup> dominated the government, he issued notes in excessive quantities ... heedless of the consequences for state or society. In addition, the gold and silver reserves in the circuit exchange bureaus were all appropriated and dispatched to Dadu [Beijing] ... The paper money in circulation lacked any backing, causing prices to rise sharply, reaching a level ten times greater than in the past.<sup>9</sup>

Copper coinage was abolished in 1280, leading to a monetary system that, in principle, was based on paper notes alone. Notes still remained convertible into gold or silver to be manufactured into utensils or ornaments, but regulations on the use of precious metals in trade remained. From that time until 1350, the value of the Mongol paper currency steadily declined, but did not have a period of dramatic collapse. Gold and silver

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<sup>A</sup> Ahmad Fanākati, a Persian Muslim who was finance minister of the Yuan government beginning in 1262. After early success in tax administration, he later became known for corruption, and was assassinated in 1282. After hearing testimonies of Ahmad's corruption, Kublai Khan ordered his body to be taken from its tomb and eaten by dogs, and then chariot wheels used to smash the bones to pieces.

were intermittently banned in private trade, but later allowed again. In 1287, a new paper currency was issued, and an exchange rate of 1:5 established between the new notes and the old.<sup>10</sup> After 1311, the ban on trading in gold and silver was permanently lifted. In 1350, another new note was issued, at an effective 1:10 ratio to the notes of 1287, and copper coinage was again permitted. After 1350, the Mongol paper currency entered a period of collapse. Rebellions spread over the empire, and only metal coins and bullion were accepted in commerce. By 1356, the Mongol paper currency was worthless.

In 1352, in the midst of currency collapse and economic implosion, the peasant and Buddhist monk Zhu Yuanzhang joined a rebel group, the Red Turbans. In 1356, Zhu led his rebel force to capture Nanjing. In 1363, Zhu defeated his primary rival among the rebel groups at the Battle of Lake Poyang, perhaps the largest naval battle in history with over 800,000 combatants. In 1368, Zhu attacked the Mongol capital at Beijing, overthrew the Mongol rule, and declared the start of the Ming Dynasty.

Zhu, thereafter known as the Hongwu Emperor (1368-1398), at first issued a reformed series of copper coins, but the demand for enormous quantities of the low-value coins (which commonly traded on "strings" of 1000 in transactions of any meaningful size) soon proved problematic, as it had throughout Chinese history. During the centuries of paper money, large quantities of silver and copper had been exported for trade goods, and little remained within China. Despite its initial disfavor of paper currencies, the Ming government, searching for a solution, revived paper money beginning in 1375. Trading in gold and silver was again forbidden, although copper coins continued to circulate. Observers of the time such as Ye Ziqi blamed the failure of the Yuan paper currency on inadequate bullion reserves and inconvertibility of the notes; the new Ming note was never convertible.<sup>11</sup> The notes' exchange value dropped quickly, and in 1393 the government briefly forbade the use of copper coins. Although some attempts at reform were undertaken, by the end of the fourteenth century the notes' value compared to silver fell by a factor of 35:1 from their original value. In the first quarter of the fifteenth century, their value had fallen to 80:1, and by the mid-fifteenth century to 1000:1.<sup>12</sup> By then, silver bullion had become the major medium of exchange. In 1436, the Ming government, conceding to economic reality, began to pay military officers in silver.

China had used paper money for four hundred years. During most of that time, the bills were marginally redeemable for coinage or bullion, or not redeemable at all. Gold, silver and even copper coins were intermittently banned. The bills' value floated, and often had years or even decades of relative stability or modest depreciation. They also repeatedly crashed into oblivion, and then governments would try again with a new issue. But no more. For the next six hundred years, effectively into the twentieth century, Chinese did their business in silver bars, imported silver coins, and domestic copper coins. This naturally required enormous

amounts of silver and copper, which China would eventually acquire from Japan and the New World.

Despite extensive use of paper currency in China, banking and credit never attained the state of development that it did in Mesopotamia, Greece or Rome. Pawnshops date from the Six Dynasties period (222-589), and constituted the primary form of credit institution in China until the nineteenth century. Quantities were small, rates were high, and the primary purpose was for small-scale individual use. Informal mutual financing associations also provided funds for weddings, funerals, or productive purposes. Direct lending in China existed from ancient times, before the fourth century B.C. The Han government (206 B.C.-220 A.D.) set a limit on interest rates around 100 per cent per year. Wang Mang (9-23 A.D.) introduced government loans to needy people at a rate of 3 per cent per month, apparently charitable by the standards of the time. By the early Tang era (618-907), the ceiling rate was 6 per cent per month for private loans and 7 per cent per month for loans from the government. During the Yuan, Ming and Qing eras (1271-1912), the official maximum rate was three per cent per month.<sup>13</sup>

### **The Arab *Dinar***

The prophet Muhammad was born around 570 A.D. in the Arabian city of Mecca. Islamic tradition holds that in 610, the angel Gabriel appeared to him and began to recite verses that were later included in the *Quran*. Muhammad died in 632, soon after politically unifying Arabia. Immediately after his death, a small army of Muslims burst forth from Arabia and, within a couple decades, conquered the eastern Byzantine empire including Egypt and Syria, and the Sassanid dynasty in Persia and Mesopotamia. By 661, the Rashidun Caliphs controlled an area stretching from modern Tunisia to the banks of the southern Indus, in Pakistan. By 700 the Umayyad Caliphate had expanded across North Africa, and further east to control most of the Indus valley. In 711, the Umayyad armies crossed the Strait of Gibraltar and invaded the Iberian peninsula. Muslim caliphates eventually controlled about 90% of Iberia's land area at their peak around 1000, declining afterwards until finally driven from Spain in 1492.

At first, the existing Byzantine and Persian gold coinage was used in the new Arab empire. In 696-697, the gold *dinar* was created, at 4.25 grams and 0.970 fineness. The name derives from the Byzantine *denarius auri*, and it was basically a copy of the solidus, with similar weight and fineness. A silver *dirham* coin of 2.8-2.9 grams was added two years later, its name derived from the Greek drachma. From their position the Arab caliphates commanded the gold mines of Africa, and received tribute from states along their borders. In 1046, Byzantine emperor Constantine IX sent 216,000 solidus and 300,000 dinars (2,250 kg total) of gold to Baghdad to mark the signing of a peace treaty. The Tulunids and Fatimids of Egypt sent annual



tribute of around 300,000 dinars (1,275 kg). Muslim governments spread the gold dinar standard throughout Spain and Portugal. Even Britain's King Offa minted a few gold dinars in the 770s, copying the coins of the Abbasid Caliphate. The dinar gained additional prestige as the Byzantine solidus was debased in the eleventh century. Islam generally prohibited usury (in practice, lending at interest), as did Christianity during the same period. After a period of decline, the capital at Baghdad was taken by the Mongols in 1258. Although a series of low-quality coins was struck after 1160 by the Baghdad-based Abbasid Caliphate, the dinar generally maintained a high standard of unchanging quality, including issues by the Egypt-based Fatimid and Spain-based Umayyad Caliphates.

### India

The Gupta Empire commanded most of the subcontinent of India from 320 A.D. to 480 A.D. The Gupta kings produced a variety of high-quality coins, beginning with a series of gold coins and later adding coins of copper and silver. In the following centuries, gold, silver and copper coinage of high quality was produced by dozens of Indian states, with many of the gold coins inspired by the Byzantine *denarius auri* (solidus) or Muslim dinar into the twelfth century.<sup>14</sup> The Hindu and Buddhist kingdoms of northern and western India came under repeated attack from Muslim armies beginning around 962. From the Delhi Sultanate (1206-1526), much of India was ruled by Muslim governments. In 1526, Babur, a descendant of Genghis Khan from the Fergana Valley (today's Uzbekistan), crossed the Khyber Pass and established the Mughal Empire (1526-1857), which unified hundreds of small states in India at that time. During the Mughal reign, Indian gold, silver and copper coinage achieved its finest expression. The history of the *rupee* dates back to the original silver coins of ancient India in the sixth century B.C. However, its more modern history dates from the early Mughal ruler Sher Shah Suri (1540-1545), who produced a new silver coin called the *rupiya*. The *rupiya* became the standard coin of the Mughal Empire, supplemented by gold and copper coins.

The British were given permission to trade with India in 1617. In 1764, as the Mughal empire's power waned, the British East India Company was given permission to administer the region of Bengal, and from this base expanded its influence in India. From the mid-eighteenth century, the Company took over responsibility for minting rupee coins in India. The last Mughal emperor, Bahadur Shah Zafar, was deposed by the British East India Company in 1858, completing British rule of India. The first paper rupee banknotes were issued by the Bank of Hindustan in 1770, but their refusal by the East India Company limited their usefulness. Widespread rupee banknote issuance had to wait until 1868, with the printing of the note done by the Bank of England.

### East Asia Outside of China

Bronze knife currencies, in the Chinese style, were produced in Korea as early as the third century B.C. However, most monetary exchange was done with rice and, following the Chinese example, silk cloth. Numerous experiments in Chinese-inspired coinage emerged, beginning with a series of iron and bronze coins in 996 A.D., but they saw little adoption and tended to die out. Another series of coins was introduced in 1097-1107, which included a rather novel "coin" that consisted of a silver vase in the shape of the Korean peninsula, and which contained about 600 grams of silver. They were popular as large-denomination money among aristocrats. In 1331, a silver/copper alloy coin in the shape of a bottle was issued, and a few decades later, another attempt at introducing a standardized silver coin. A paper currency was introduced in 1401. However, most commerce in Korea continued to be done on the basis of commodity monies, particularly rice and cloth. Bronze coinage was not widely adopted until a large issuance beginning in 1633, in the model of Chinese bronze coins. Coinage of this type continued to be used until the late nineteenth century.

Vietnam became a province of China in 225 B.C., and shared its copper coinage system. In 940, a rebellion established independence for Vietnam, but it remained largely a vassal state afterwards. Copper coins were minted domestically, in the Chinese style, from the Dinh dynasty (968-981). The Vietnamese kings were able to fight off the Mongol invasions, but the Mongol paper money entered use in Vietnam nevertheless. In 1397, General Ho Qui-Li introduced a domestic paper currency, and forbade the use of copper coins. However, their value soon collapsed, and General Ho then ordered that casting of copper coins be resumed. Silver and gold, in the form of bars and coins, were also used in Vietnam.<sup>15</sup>

Roman copper coins were found in the region of today's Thailand from as early as 270 B.C. Locally-produced coinage in Thailand began, some historians postulate, when Rome cut off exports of precious metals to India in the first century A.D. In search of silver and gold, Indian states began to build trade and exploration settlements in today's southern Indochina, including the Mekong delta region. These settlements grew into the first kingdoms of the Funan era, which also issued the region's first silver coins, following the Indian model. The realm of Funan is thought by some to be the same as the land known as Suvarnabhumi in ancient Indian texts, in Sanskrit literally "the Land of Gold."<sup>16</sup> The *Yi Yuan*, a mid-fifth-century Chinese text, noted that: "In Funan, they always use gold in their transactions."<sup>17</sup> Funan had the only maritime links with India in the region, via its port at Oc Eo on the Mekong Delta. The Srivijaya Kingdom of the eighth through thirteenth centuries used silver and gold coinage. Various forms of primarily silver coinage continued to be used in Thailand and Cambodia into the twentieth century.

Bali (in eastern Indonesia) was influenced by the Hindu culture of Java (western Indonesia). The earliest writing in Bali dates from 882 A.D., in Sanskrit. Already by this time, gold was the preferred standard of payment in Bali. Silver coins and stamped gold ingots were produced in Java from the late eighth century, and their use spread to Bali by the late ninth century.<sup>18</sup> Silver and gold also served as the unit of account.

Before the introduction of coinage in Japan, arrowheads, rice, and gold powder traded as money. In 708 A.D., the Empress Gemmei ordered the creation of the first coinage system, based on the Chinese model. At first it consisted of high quality copper and silver coins, in the familiar Chinese style with a square hole, but they were quickly debased and devalued. In 760, a currency reform was undertaken in which new copper, silver and gold coins were introduced.

By the middle of the ninth century, these coins too had been heavily debased and devalued, with their market value compared to rice falling to 1/150<sup>th</sup> of their original issue value. The last issue of coinage took place in 958, of very low quality coins. By the end of the tenth century, coinage had been abandoned, and the basis of monetary commerce returned to rice and precious metals, trading by weight.

In the twelfth century, Chinese coins began to be imported for use as money. This was enabled by the Chinese use of paper money, extending even to intermittent bans on the use of coinage, which reduced the domestic demand for coinage and thus freed it for use in export trade. Chinese coinage continued to be used in Japan up to the early seventeenth century, supplemented with some issuance of locally-produced coinage generally of mediocre quality, reflecting the centuries of warring minor states before the political reunification of Japan in 1600.

### **Gold and Silver Money in the Pre-Columbian Americas**

Agriculture began in Mesoamerica as early as 7000 B.C., with the domestication of maize, beans, squash, chili, the turkey and the dog. Metallurgy began around 600 A.D., in copper, silver and gold. Some have suggested that metallurgical techniques in the Mesoamerican region were introduced via traders from the Andean regions of Peru and Ecuador.<sup>19</sup>

The Mesoamerican civilization of central Mexico, then under Aztec rule, upon its discovery by Spanish explorers in 1519 had an extensive system of markets, the largest of which was at the capital city of Tenochtitlan. Spanish accounts described up to sixty thousand people transacting at this market every day. Smaller towns had weekly markets. Barter was a typical mode of exchange, often via a common unit of monetary account. The basic small-scale unit was the cacao bean, used for chocolate. (Spanish writers noted with wonder that, in the Aztec lands, money really did grow on trees.) Chocolate was prepared by Mesoamerican peoples from around 1750 B.C., and possibly as early as 1900 B.C. For larger transactions, standardized

lengths of cotton cloth, turkey quills filled with gold dust, and standardized gold figurines were used in payment.

Gold and silver had long been used in the Andean realm. Gold artifacts in the Andean region have been dated to 2155-1936 B.C. The Chavin culture, from 800-200 B.C., began a long history of gold artifacts of exemplary craftsmanship. Writing never developed in the Andean region before the conquest by the Spanish, so we cannot tell the extent to which these objects had a monetary function, whether gold and silver in bullion form was used as money, or whether gold, silver or some other object may have been used as a unit of account in transactions. However, some of the states that were eventually absorbed into the Inca Empire in the fifteenth century did have what amounted to simple monetary systems. One common currency was a standardized "axe-head" money made of copper, a simple flat ingot with a vaguely axe-like shape, found among coastal cultures from Peru to western Mexico that were engaged in maritime trade.

The Inca Dynasty of the Andes established their capital at Cuzco, Peru in 1438. It was, at first, a small city-state. From there it conquered the various states of the Andes, assembling them into an amalgamated empire with multiple languages, peoples and cultures that was largely complete by the death of its greatest expansionist, Huayna Capac, in 1527. At its peak, the Inca empire was likely the largest in the world at that time. Spanish conquistadores first arrived in Inca territory briefly in 1526, and returned in 1532. Outbreaks of smallpox and other European diseases had already decimated the Inca Empire's population, and its political system, before any battles with the Spanish soldiers themselves. Some have estimated that the population had already fallen by 60% or more before Spanish contact, accompanied by breakdowns in all existing social order and government authority.<sup>20</sup> Civil war ravaged the empire from 1529 to 1532. The Inca Empire fell to the Spanish in 1533, not even a hundred years after its founding.

Like the Egypt under the Pharaohs, the empire of the Inca had a high degree of central planning, and virtually no market-based exchange. "Axe-head" currencies had a role in trade in some areas, but gold, silver and copper were not used in the monetary fashion that had been common throughout Europe and Asia for centuries, or as they were used in the Mesoamerican regions to the north. However, ritualized exchange, bestowing favors upon elites and lower-level managers, took on a money-like quality. In addition to adornments of gold and silver, cloth became a standardized commodity of quasi-payment, as had also taken place in Asia.

Gold and silver were also popular with the Chimor lords and their traders, obtained by trading prestige goods with the highland regions (the Incas).<sup>21</sup> The Chimor lords aimed to monopolize the production and circulation of gold and silver, used to create artisanal works that in turn served as trade goods and prestige items among elites. "[For the elites,] the rewards included superb ceramics, lavish libation vessels, woodwork,

lapidary arts, and splendid metalwork. Thus fine arts critical to wealth finance [compensating elite service to the Inca state] were the end returns of an elite investment strategy that used mit'a labor to gain agricultural lands," wrote historian Michael Mosley. The Chimor state presented the last major challenge to Inca power, and was defeated with great struggle. Mosley described: "[W]hen Tahuantinsuyu [the Inca Empire] subjugated Chimor, tens of thousands of craftsmen at Chan Chan [the Chimor capital] were moved to the environs of Cuzco to serve the new rulers. To the degree that fine arts constituted the coin of the realm, Chan Chan was thus stripped of the mint it needed to finance revolt."<sup>22</sup>

The Inca emperors – like the Egyptian pharaohs – directed the mining of enormous amounts of gold and silver, devoting huge resources of labor to the task. This gold and silver was concentrated at Cuzco, the capital city. Cieza de León, in his *Chronicles of Peru* (1553), described the House of the Sun at Cuzco as being more than 400 paces in circumference. "Round the wall, halfway up, there was a band of gold, two palms wide and four dedos [fingers] in thickness. The doorways and doors were covered with plates of the same metal ... within were four houses ... with walls ... covered with plates of gold, within and without. In one of these houses, which was the richest, there was a figure of the sun, very large and made of gold, very ingeniously worked."<sup>23</sup>

It is hard to believe that the gigantic amount of labor required to mine the gold contained in a band of the size described (approximately three inches by seven inches by 1200 feet) would be undertaken simply as a sort of adornment – or that, once acquiring this colossal quantity of bullion at enormous expense of labor and force of arms, the Inca emperors, drawing on over three thousand years of sophisticated jewelry design in the Andean region, could think of no better adornment than to make it into what amounted to a very large ingot. Rather, the gold was, in effect, something like money – not coinage for everyday use, but a standardized trading unit potentially used between kings, lords and generals, to buy allegiances with neighboring states, trade with foreigners, grant rewards for service, or pay tribute; as a fundamental tool of statecraft. In a command economy, it is not necessary to motivate people by payment of money – for example, by paying soldiers in coinage. One simply issues commands. However, those with some free agency, such as generals and leaders of foreign states, cannot be motivated by simple command. They have to be compensated somehow. This is how the Egyptian pharaohs used gold, even as they banned commoners from owning any. So too did the Chinese emperors of the Han era who, in 7 A.D., when their royal treasuries held perhaps the largest accumulation of gold in the world of the time, outlawed the ownership of gold by commoners.

The history of the expansion of the Inca Empire, as it has been reconstructed, indicates many instances where gold, silver and other precious items, were taken as booty from conquered states.<sup>24</sup> Diplomacy

was the first avenue of state expansion, with allegiance purchased with gifts.<sup>25</sup> The fifth Inca ruler Topa Inca Yupanqui reportedly secured vows of allegiance from the Chíncha state with gifts of fine cloth and gold beads.<sup>26</sup> Another Inca military expedition to today's Bolivia resulted in the payment of great quantities of gold in tribute from the citizens of Chuquiabo (La Paz).<sup>27</sup> After a successful expedition, rewards were given to officers and also common soldiers who had served with exceptional valor, consisting of elaborate textiles and decorative plates of gold and silver worn as battle decorations. Nobles received larger distributions of cloth, gold, silver, and other precious items.<sup>28</sup> These patterns are much the same as one might find in Egyptian or Roman history.

The United States also outlawed gold ownership in 1933, even as the U.S. Federal government itself became the world's largest gold owner, at one point during the 1940s holding over 40% of all the estimated aboveground gold in the world. Although gold coins no longer circulated in the United States, gold was still used as a unit of account and a high-level form of payment between governments in the 1950s and 1960s, mostly between central banks. The government of the Soviet Union, whose command economy was similar to that of the Incas or Egyptians, outlawed the ownership of gold among citizens. Nevertheless, the Soviet government devoted large amounts of manpower and resources to gold mining. Between the end of World War II and the end of the Soviet era in 1991, the Soviet Union was the world's second largest gold producer. The Western industrialized countries did not have much interest in Soviet manufactured goods, so sales of gold (and energy commodities) were a major avenue by which the Soviet government obtained Western currencies, which were then used to buy goods from the West. During the 1980s, the Soviet Union became a major importer of Western foodstuffs and capital goods. Aid in the form of Western currencies was also used to cement the alliance of other communist states such as Cuba, Mongolia and Vietnam.

The Inca gold and silver was ultimately used as payment of tribute between kings, generals, and foreign powers; specifically, to pay ransom to the Spanish conquistadores for the return of the captured Inca emperor Atahualpa. How convenient that the lords and generals of the Andean realm, and those of Spain, paid and accepted tribute in the same medium of exchange.

## Chapter 4:

# The Bimetallic Era, 1500-1850

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As the Christian Byzantine Empire weakened, and finally fell to the Ottoman Turks in 1453, European overland trade with Asia was blocked by unfriendly Muslim states. Spanish and Portuguese explorers, taking advantage of their position on the Atlantic, began to search for new routes to Asia by sea. Exploration of the African coast by Portuguese navigators, enabled by improved ships, began in 1418. (Around the same time, in 1405-1421, far larger Chinese fleets explored the eastern shores of Africa.) In 1488, the Indian Ocean was reached for the first time by Portuguese sailors rounding the southern tip of Africa. Christopher Columbus<sup>1</sup> attempted to sail west to Asia in 1492, and accidentally discovered the Americas. In 1511, Portuguese sailors reached the “spice islands” of Molucca (Indonesia), and reached China a year later. The Isthmus of Panama was first crossed in 1513. A circumnavigation of the world was accomplished in 1522. The Aztec Empire of Mexico was conquered by Spanish adventurers in 1521. The Inca Empire fell in 1533. A Portuguese expedition had already touched the edge of the Inca Empire from the eastern side in 1524-25, after traveling overland through southern Brazil, Paraguay and Bolivia. Portuguese sailors accidentally reached Japan in 1543, and trade soon began. In 1557, the Chinese government allowed a Portuguese trading colony at Macau. The capital of the Spanish East Indies was established at Manila, Philippines, in 1571. In 1580, after a crisis of succession, Portugal was unified with Spain, also welding together a globe-spanning empire of maritime trade and conquest.

### **The Thaler and the Spanish Silver Dollar**

The conquest of the Americas by Spanish adventurers brought with it the European monetary system. Around the same time, coinage was being standardized in Europe. In the mid-fifteenth century, the quality of Europe’s coinage was rather poor due to a series of debasements related to the continuous warfare of that time. Beginning around 1472, governments began to replace their low-quality coinage with higher-quality issues, using a number of different weights and standards. In 1518, the first silver “thaler” coins were minted in Bohemia, at a standard weight of 451 troy grains of pure silver (29.2 grams). The coin was known as the Joachimsthaler, named for Joachimsthal, or the “Joachim Valley” in German.

Similar coins from different valleys, with different names all bearing the “-thaler” suffix, soon became popular. These local efforts were standardized when, in 1566, the Reichsthaler set the unit of account for the Holy Roman Empire at 401 grains of contained silver. This particular coin was popular, and was soon imitated in Burgundy and France. The Netherlands, in revolt against Spain, began minting its own version of the thaler, the silver “daler,” beginning in 1575; it was specifically to facilitate export trade. Spreading from the Dutch colonies along the Hudson River including Albany and New Amsterdam (later New York; both founded 1614), it began to be used in the English colonies in North America as well. Swedes, Danes and Norwegians later followed with their own identical “daler” coins. Much of Europe was thus on a “thaler standard,” using a number of “thaler” coins from different producers but all of similar size and weight, alongside a variety of gold coins originally derived from the Byzantine *hyperpyron* and its later Italian replacements.

After the initial looting of Inca and Aztec gold and silver, around 1520-1560, the Spanish turned to mining in the Americas. Silver mines in the Zacatecas region in Mexico and the awesome Potosí in Bolivia began operations, causing the silver output of the Spanish colonies to triple during the 1560s. Between 1500 and 1600, world silver production is estimated to have increased by nine times, while gold production increased by only 50%.<sup>2</sup> This flood of new silver caused the gold:silver ratio in Europe to decline from around 1:10.7 in 1500 to 1:12 by the 1570s. In 1700, the gold:silver ratio was 1:16 in Spain, 1:14.7 in London, 1:14.2 in India, and 1:9 in China. In 1800, the gold:silver ratio was 1:16 in London.

In 1573, the first Spanish galleon, carrying Spanish silver, departed from Acapulco, on the Pacific side of Mexico, and landed at Manila in the Philippines, to trade with the merchants of Ming China. The Chinese had been using silver bullion and copper coins exclusively, after abandoning paper money in the 1430s. At first, the Chinese obtained this silver from mines in Japan, which enjoyed an enormous silver mining boom beginning around 1530. This commerce between Japan and China was facilitated in part by Portuguese stationed at Macau, and established the principle of obtaining silver via maritime trade. More silver was obtained from Europe via the overland trade route, but this was difficult. By this point, the gold and silver of Europe was coming from Spain’s American conquests. The trade link over the Pacific brought gold and silver directly from Spain’s mines in the Americas to China. Chinese demand for Spanish silver was immense; as was Spanish demand for Chinese luxury items, especially silks. It has been estimated that between 30 percent and 50 percent of all the mining output of Spain in the Americas went directly to China over the Pacific.<sup>3</sup> More ended up in China after traveling through Europe and then east, via India or the Silk Road.<sup>4</sup>

Spain enacted a monetary reform in 1497 that led to the first eight-*real* coin, similar in size to *thaler* coins that came soon after. In 1536, the first



eight-*real* coins, also known as *pesos* (“weight”), were minted in the New World at Mexico City. These “pieces of eight” were soon the target of Caribbean pirates preying on the Spanish treasure galleons. The gold *doubloon* began to be minted in 1537. Its value of two *escudos* was also equivalent to two ducats. In 1598, Spain adopted the continental *thaler* standard for the eight-*real* coin. Since Spanish mines in the Americas were the world’s primary producers of silver, most of the silver coins of the time were minted by Spain. These coins were eventually used throughout the American colonies, including in the English, Dutch and French colonies of North America, and also throughout Asia via the trade with China. Produced for export trade, they were among the most reliable and best quality coins of the sixteenth through the nineteenth centuries, even as domestic coinages used within Spain itself (*vellon* coins diluted with copper) began to undergo debasements beginning in 1599.

Chinese at first treated the Spanish coins as something like ingots, to be weighed, assayed, possibly melted and recast, and exchanged based on their actual silver content – just as the Chinese had been doing with their own domestic silver since the collapse of paper money in the 1430s. Before long, they confirmed that the coins were reliably standardized. The Spanish silver dollar thus became the regular silver coinage of China, complementing the locally-produced copper coinage and also silver bullion in the form of the *sycee* ingot, and remained so into the twentieth century. It wasn’t until 1890 that a Chinese government first produced a silver coin; it was an imitation of the Spanish silver dollar.

During the Qing dynasty (1644-1912) the Spanish silver dollar was identified with the Chinese character 圓 (*yuan*, “round object”) alongside the domestic copper coinage which had long been indicated with the character 文 (*wen*). The 文 (*wen*) character was also used for Chinese-inspired copper coinage in Japan (*mon*), Korea (*mun*) and Vietnam (*van*). As the Spanish silver dollar became commonly used throughout East Asia following the Chinese example, so too did the Chinese character representing it. The traditional 圓 (*yuan*) character was later simplified to 元 in China. In Japan, the same character was simplified to 円 and pronounced *yen*. In Korean, the original Chinese character was retained, and pronounced *won*. The Spanish silver dollar also became the eventual basis of the Philippine peso, the Mexican peso and other peso coins used throughout Central and South America, the Singapore and Hong Kong dollars, and the U.S. dollar.

In the Coinage Act of 1792, the U.S. silver dollar coin was defined with a weight of 371.25 grains of pure contained silver, the average weight of worn Spanish silver dollars then in circulation in the American colonies. (The weight of a newly-minted Spanish silver dollar was about 377 grains at that time.) Spanish silver dollars/Mexican pesos remained legal tender in the U.S. until 1857. The U.S. dollar of 1792 was thus 92.6% of the weight of the Reichsthaler of 1566, over two centuries earlier – an excellent record of

reliability for this particular coinage standard. The U.S. dollar's value (later translated into its gold equivalent) remained stable until its first permanent devaluation in 1933.

### **The Netherlands**

The rise of the Netherlands, the premier empire of trade and finance of the seventeenth century, began with revolt against its Spanish rulers in 1568. The northern Netherlands declared independence in 1581. Inspired by John Calvin (1509-1564), by the 1560s Calvinist Protestants already formed a significant minority in the Netherlands. Calvinism also allowed lending at interest, breaking from Catholic tradition on that topic. The independent Dutch provinces, centered on Amsterdam, were thus Protestant, which had been forbidden under Spanish rule. The Dutch also sought escape from the oppressive taxes and currency debasements of the troubled Spanish Empire, whose overseas successes were matched with domestic difficulties. The new state drew the attention of Jews as a potential new refuge, particularly the Jews of Spain and Portugal who had been driven out by the Spanish Inquisition in 1492, or went underground as apparent converted Christians. The Dutch revolution was led by William I, of the House of Orange. Although he was assassinated in 1584, the House of Orange remained a protector and supporter of Jewish migration to Amsterdam. Many of the first wave of Spanish and Portuguese Jews, arriving in Amsterdam beginning around 1593, had considerable experience in trade throughout the Spanish Empire. Jews had already been the primary lenders and, when permitted, bankers in Europe since the imposition of Christian usury laws in the fourth century. In 1688, William III of Orange became King of England.

At first, a menagerie of foreign coins was used in the newly independent Dutch provinces, alongside domestically-minted coins. One sixteenth-century record listed 48 different kinds of gold coins in common circulation in Europe. Early Dutch gold coins, first minted in 1586, were called ducats, and imitated the ducat standard of Spain during the rule of Ferdinand and Isabella. Other coins imitated the ducat standard of Hungary. Around 1680, the Dutch guilder was introduced as a new standard for gold and silver coinage.

The Dutch Empire gradually took over much of the trade of the declining Spanish Empire. The Dutch East India Company was founded in 1602, to trade throughout Asia. It has been considered the first multinational corporation, and the first to issue stock; trading in the stock formed the first modern stock exchange. Between 1602 and 1796, the Dutch East India Company alone accounted for roughly half of all European trade with Asia. By 1669, the Company was the richest private company in the world, with a fleet of 150 merchant ships, 40 warships, 50,000 employees, and a private army of 10,000 soldiers. The Dutch West India

Company was founded in 1621 to trade across the Atlantic, between Africa and the Americas, with ports stretching from Brazil to the Dutch settlement at New Amsterdam, now New York. New financial innovations flourished, including an insurance industry, foreign exchange trading, and sophisticated commodity markets that included futures and option contracts. The stock exchange eventually embraced buying of stock on margin, and nascent stock-index investing. An active market in public debt emerged; during the second half of the seventeenth century, yields on long-term government bonds were reliably in the 3.0%-4.0% range. Holland also enjoyed a dominant role in trade within Europe. Domestic industries including shipbuilding and textiles expanded dramatically. Holland became the wealthiest country in the world, and ran the world's biggest empire. Although the beginning of the Industrial Revolution was still a century away, Holland of the seventeenth century is considered by some to be the first modern capitalist economy.

The Bank of Amsterdam was founded in 1609 as a private entity. It was initially conceived as a "100% reserve" deposit bank, which did not engage in any lending, and which held coins and bullion equivalent to all deposit liabilities. Although it did not issue banknotes on a large scale, the Bank is considered a precursor to, or possibly the first example of, the modern central bank.

The Bank received foreign and local coins at their actual weight and fineness, or gold and silver bullion, and credited the depositor according to mint standards. Depositors could then make payments to each other via deposit transfers, common especially for larger transactions. Thus, Bank deposits were inherently standardized, and also free from wear, clipping or counterfeiting; fire, robbery or other accidents; and, in payment, did not have to be weighed, counted or transported. Deposit receipts were not payable on demand, but had a six-month maturity. They were freely traded but did not attain the nature of a paper currency. They were instead more like short-term bills, for which a ready market was available. As it was not conceived at first as a lending bank, the Bank sustained itself by charging various fees for deposit and transfer.

In actual fact, the Bank's "100% reserve" era was very short. By the end of its first decade of existence, the Bank had begun to make loans to the government-sponsored Dutch East India Company. The Bank also made loans to the City of Amsterdam, the Amsterdam Lending Bank, and certain individuals such as mint-masters. At the end of its second decade, the Bank had outstanding loans of 2.1 million guilders, and bullion reserves of 1.6 million guilders.<sup>5</sup> This was done in secret; officially, the Bank operated as originally conceived, as a 100% reserve bank of deposit. However, this initial experimentation with lending was soon reversed. After 1640, the Bank's loans outstanding, though they remained as part of its balance sheet throughout its history, became minor. Aggressive lending did not return until the Anglo-Dutch War (1780-1784), as the government pressured the

bank to lend out most of its bullion holdings to the Dutch East India Company, then struggling against British blockade. This was not made public until 1790, when the Bank declared itself insolvent. However, the currency was never devalued, nor the coinage debased. The Bank was taken over by the City of Amsterdam in 1791, and enjoyed a brief resurgence of popularity as a refuge during the French Revolution. The Netherlands were invaded by France in 1795, and became largely a puppet state until the French retreated in 1813. An independent Kingdom of the Netherlands was established in 1815. The Bank of the Netherlands was established in 1814, superseding the Bank of Amsterdam, which closed in 1819.

Another representative of the "100% reserve" model was the Bank of Hamburg, founded in 1619. Unlike the Bank of Amsterdam, the Bank of Hamburg apparently did keep coinage and bullion in reserve against all claims. When Napoleon took possession of the bank in 1813, he found bullion and coinage slightly in excess of all liabilities.<sup>6</sup> The Bank of Hamburg also institutionalized the use of the *mark*, an accounting unit of weight used by the bank to standardize the values of the multitudes of coinage that then passed through Europe. The mark as a unit of weight dates at least as far back as the mid-ninth century. One-mark coins were struck in the sixteenth century, although thalers and gulden (Dutch/German versions of the florin/ducat gold coins of Italy) remained predominant. The modern mark did not appear until after the reunification of Germany in 1871.

### **Japan During the Tokugawa Era**

Partial reunification of Japan by Toyotomi Hideyoshi led to issuance of high-quality gold and silver coins beginning in 1588, the first after a long era of civil war and low-quality coinage. In 1600, Tokugawa Ieyasu fully unified Japan, and immediately reunified its coinage system. A new series of high-quality gold, silver and copper coins were issued. Although they had official denominations, in practice the coins traded based on their market value, and exchange rates were quoted daily. Also beginning in 1600, a medley of paper currencies began to be issued for widespread use within feudal domains. These paper currencies were mostly redeemable for silver, but gold, copper and rice-based notes were also issued.

The Dojima Rice Exchange was founded in Osaka in 1697, formalizing a network of existing rice brokers and moneychangers. By 1710, trading in rice futures (standardized contracts for delivery of forthcoming rice harvests) was well established. Paper contracts for future delivery of rice also served as a sort of paper money.

The Tokugawa currency system was based on the *koban*, a gold coin containing one *ryo* of gold. The *ryo* was originally based on the Chinese *tael*, and came into use during the Kamakura period (1185-1333). The first *koban* issued after the monetary reform of 1601 contained approximately 17.9 grams of gold at 84%-87% fineness. In 1695, the coin was debased to

57% fineness. In 1706, a new coin returned to the original fineness, but at a reduced size, lowering its gold content still further. In 1736, the coin was again debased, as part of an attempt by emperor Tokugawa Yoshimune to stimulate the economy and raise prices. The gold coinage was slightly debased again in 1818 and 1832.

After 1772, silver coins were given a denomination relative to the gold coins, and had significantly less silver than their face value. In effect, they became token coins, and the coinage moved to a gold monometallic standard, much as was the case in Britain after 1816. Token coins, by their nature, are managed using techniques similar to those of paper banknotes. Japan's use of banknotes during that time probably aided the innovation of token coinage, just as was the case in Britain.

After various abuses, the Tokugawa government banned the use of paper currencies in 1707. In 1730, they were allowed again, with a time limit for redemption of typically 15 or 25 years. By one count, there were 1,694 paper currencies in circulation in Japan in the 1850s. The reopening of trade with the West in 1854 effectively undermined the existing currency system, as the gold:silver ratio was at that time 1:5 in Japan and 1:16 in the United States, producing enormous arbitrage opportunities. Foreign silver flushed into Japan, and gold flushed out. For a time beginning in 1859, Mexican silver dollars were declared official currency, as they already were in China. Between 1859 and 1869, local governments issued various types of their own currency, leading to many episodes of rampant devaluation that reflected Japan's own political unrest leading to the overthrow of the medieval Tokugawa regime in the Meiji Restoration of 1868.

In 1871, the modern Meiji government introduced a new, uniform currency, the *yen*, originally worth 24.26 grams of pure silver, in line with the Spanish, Mexican and U.S. silver dollar coins then in use.

### **The British Pound**

After centuries of primarily silver coinage in Britain, a new gold coin was introduced in 1663, a *guinea* with a nominal value of twenty shillings or £1.00. In practice it traded at a variable market value compared with silver coinage, which remained the unit of account. It was one of the first machine-struck coins, of much higher quality than the hand-hammered coins of the past, and included milled edges to prevent clipping. Its standard weight of  $1/44.5^{\text{th}}$  of a troy pound (8.4 grams) was, coincidentally perhaps, equivalent to one shekel weight and the same as the original Persian daric. The name referred to the Guinea region of West Africa, from where much of the gold for early coins was sourced.

The excellent historical record (conveniently in English) regarding the British experience with silver and gold coinage illustrates several problems arising from the use of coins, and which tend to appear wherever coins are used.

The advantage of coinage, instead of using raw bullion by weight and fineness, is its standardization. This allows coins to be used “at face value,” which in the first instance amounts to an assumed weight and fineness, without constant weighing and assaying. All coins of the same face value are treated the same. Most of the problems of coinage are related to the divergence of “face value” from the reality of weight and fineness.

The simplest example of this is coin debasement, practiced endlessly by governments throughout history. The new coins contain less metal than the old, which thus allows a government to make more of them from the same amount of gold or silver. Tax payment of 100 coins can be reminted into 200 coins of half the contained metal. If exchange was based on contained metals alone, this would be irrelevant, as payment of “100 grams of gold,” for example, would be expected no matter what form this may take, in terms of coins, ingots, jewelry, or other artifacts made of bullion. The common practice of using coins at “face value” allowed governments to discharge their obligations using debased coins. Governments would demand that the debased coins be treated the same as the older, heavier coins, commonly incentivizing their acceptance by allowing them to be used in payment of taxes. The coins become “legal tender,” which means: that which is legally recognized as payment of debts or other contractual obligations.

During the 1690s, the exceedingly poor quality of the British silver coinage sparked a debate regarding its reform – a debate that illustrates another basic problem with using bullion coinage. Coins undergo a natural “debasement” in the form of coin wear. After some years, a coin might contain 3%, 5%, or even 20% less metal than when it was originally minted. Coins of various states of wear circulate side-by-side. Intentional “clipping” of coins produces much the same result. Should the lightweight coin then trade at face value, or should it be accepted in trade at its actual contained metal weight, and thus at a discount to full-weight coins? The second means going back to weights and fineness, with the result that every coin becomes different and the advantages of standardization are lost.

However, the first option also has problems: before long, people want to discharge their obligations such as taxes, debts or rents with the lowest value, most-worn coins they can get away with. Higher-quality coins, such as newly-minted coins, disappear from circulation and are hoarded. Prices reflect trade in heavily-worn coins, and become excessive when paid in full-weight coins. Minting of new coins can come to a halt, as the minter thus faces a loss from producing full-weight coins that trade at the same face value as worn, underweight coins. The cost of the silver exceeds the value of the coins produced. When heavier-weight coins are hoarded (and used as payments for imports, thus removing them from the country altogether) and minting comes to a halt, while worn coins become even more worn as they become the sole basis for commerce, a society can experience a shortage of coinage even when bullion is plentiful.

One solution to this is to lower the coinage standard, with a new issue of coins containing the average contained metal as the older, worn coins. This means a debasement from the previous coinage standard, with the effect that, over time, official mint policy follows the natural debasement of coin wear. This was the case for the U.S. dollar, initially based on the average weights of worn Spanish dollars actually in circulation in the Colonies, rather than the weights of newly-minted Spanish dollars. Another solution is the constant reminting of coins, such as those received in tax payments, before coin wear reaches the point at which people would be motivated to treat worn coins and newly-minted coins differently. Besides the cost of reminting itself, the government takes 100 worn coins in tax payment and produces perhaps 90 new coins from them, in effect paying the price of ten coins. The Byzantine government used this method during the long era of unchanging value for the solidus, but governments can easily lose the discipline to continue such a policy.

In the 1690s, British silver coinage in common circulation (the most-worn, lightest-weight coins) were dramatically lighter than the standard for newly-minted coins. The value of the bullion contained in new coins was thus substantially higher than worn coins with the same face value. Consequently, although roughly £3 million of silver coins were minted after the introduction of high-quality, machine-pressed, milled-edge coins in 1663 (replacing the old hand-hammered coins), virtually none of these remained in Britain, but were exported mainly to France. Gold coins, however, tended to have little wear and were already preferred by bankers as the standard for banknotes. A lively debate ensued on whether to lower the official contained silver standard of new coinage to match the worn existing coinage (in effect, a substantial official debasement). The proposal of William Lowndes, Secretary of the Treasury, was to lower the standard by twenty percent. The alternative was to keep the existing coinage standard. Both sides had merit. In the end, the argument was won by the philosopher John Locke, who insisted that the official coinage standard of the British pound should not be reduced, but rather the coinage improved to the official standard. This decision had a significance beyond the practical matter at hand: it established the principle of long-term currency stability over the exigencies of current conditions, and formed a basis of British monetary thinking thereafter. In the first six months of the recoinage effort, the Exchequer collected silver coins with a face value of £4.7 million. They were found to have a total weight of £2.5 million in new coins.

The Mercantilist obsession with the “balance of trade” and a “shortage of money” was perhaps related to the worn nature of English coins, as early as 1600. Higher-quality coins were exported, and the mints fell silent. Debates of the early seventeenth century focused on the below-par value of British coinage on foreign exchange markets. In parliamentary proceedings in 1621, King James I made an opening speech which said:

For the scarcite of coine, it is strange that my Mint for silver hath not gone this nyne or ten years. Yes, so long it hath stood out of use that I and my council cannot think to see silver coined there againe in our time. How this may be redressed it concerneth you to consider now in Parliament and let your King have your best advice about it.<sup>7</sup>

The recoinage of 1696-1700 was overseen by Sir Isaac Newton, who became Warden of the Mint in 1696, and Master of the Mint, subordinate to the Warden but with greater involvement in practical affairs, in 1699. He retained the post until his death in 1727. (During the debate on recoinage, Newton sided with Lowndes.) In 1717, Newton imposed an official bimetallic system in which the gold guinea coin was valued at 21 silver shillings (£1.05), approximating the market gold:silver ratios of the time. The market value of the gold guinea was somewhat less than this, which made gold the cheapest to deliver within the bimetallic system. In common terminology, it was “overvalued.” The outcome was that a “pound” in gold terms was defined as 20/21 of a gold guinea; this was later represented as three pounds, seventeen shillings and ten-and-a-half pence (£3 17s 10.5d) per troy ounce of the 91.6% gold of which the guinea was minted, corresponding to a ratio of £4 4s 11.5d (£4.278) per ounce of fine gold. (The concurrent silver shilling standard, of 1/62<sup>nd</sup> of a troy pound, was also, by coincidence, expressed as 3 ounces, 17 pennyweight, and 10 grains per pound.) The implied exchange rate with the U.S. dollar, at \$20.67/oz., was \$4.866/£1. Although this gold standard for the pound took on totemic significance in the two centuries that followed, in 1717 British still thought of silver coinage as the basis of the pound.

The result of Newton’s decree was that gold coins became preferred, while silver coinage became unpopular. During the entirety of the eighteenth century, £1,254,000 of silver was coined, and £17,000,000 of gold. In 1730, John Conduit, Master of the Mint, said that “nine parts in ten, or more, of all payments in England, are now made in gold.”<sup>8</sup> During the second half of the century, no silver coins were minted for twenty-five years. At the same time, imports were often paid for with silver (especially imports from China and elsewhere in Asia), while exporters demanded payment in gold. The East India Company alone exported £5.7 million of silver between 1700 and 1717. The increasing use of banknotes, and the preference of bankers to base these notes upon gold rather than silver and to hold gold coins as the reserve, resulted in a greater focus upon gold coinage rather than silver, and the adoption of gold as the effective unit of account. The result was the dominance of gold coinage in Britain, and the effective introduction of a gold-centric monetary system instead of the silver-centric one that prevailed before 1717, although the system remained officially bimetallic.

The 1717 reforms thus illustrate a third common problem with metal coinage. In a silver-centric system such as Britain’s, gold coins (or gold in



bullion form) are often used in payment, especially for larger transactions where silver's lower value presents problems of transport and also the sheer number of coins that must be minted. However, the value of these gold coins, or bullion, vary on a daily basis when their market prices are expressed in silver. The deviation was not particularly large, as it is today – historical market prices show that deviation in gold:silver ratios remained within a few percentage points for decades. Nevertheless, it introduced a constant element of variability, thus undermining all of the advantages that come from standardization and uniformity.

Thus, in an effort to standardize the entire monetary system, a formal bimetallic system is imposed, where gold and silver are expected to trade at an official, fixed ratio. Over time, this system comes into conflict due to the natural variation in market gold:silver values. In a more primitive economy, where prices are imprecise, where debt agreements and other long-term contracts more scarce, and where foreign trade is difficult or restricted, small differences (on the order of 3%, the difference between a gold:silver ratio of 1:15.5 and 1:16) between the official values and market values of gold and silver can perhaps be ignored. However, with increasing financial sophistication, easier communication, and greater ease of domestic transport and foreign trade, as was taking place in the seventeenth, eighteenth and nineteenth centuries, these small anomalies could be more easily identified and exploited. People would thus rush to trade exclusively in either gold or silver, according to which had a small momentary advantage (cheaper to deliver) within the bimetallic framework. Coinage and bullion could even be exported and leave the country, according to some small variance in official bimetallic bullion values and values on foreign markets. This could lead to the disappearance of small-denomination silver coinage, and other similar outcomes, even when there was no practical shortage of silver bullion or lack of minting capacity. By the late eighteenth century, private producers were introducing token coins in small denominations, to relieve the shortage of silver coinage in Britain.<sup>9</sup>

The recoinage of 1696-1700, and then the introduction of informal token coinage in the late eighteenth century, finally resolved the "shortage of money" issues in Britain. This time period also coincided with the rise of the Classical economic conception over the Mercantilist, including a focus on free trade.

Isaac Newton's new bimetallic ratio pushed Britain – originally under silver-centric bimetallicism via Roman influence, then gold-centric in the Byzantine model, then again silver-centric since the eighth century – back toward a gold basis, not only in terms of coinage but perhaps more importantly, as a unit of account and basis for paper banknotes. In practice, states throughout the world had drifted to-and-fro within the context of the gold/silver complex, from one pole (the silver-centric arrangement of China at that time) to the other (the gold/copper system of Byzantium or the Han Dynasty), and all the various intermediate stages in between. The

importance of this particular event, among many similar events throughout history, is that it led to Britain's eventual embrace of a gold monometallic standard, combined with Britain's rising leadership in banking and banknote issuance, to provide the model to emulate worldwide during the nineteenth century.

In 1816, Britain officially adopted a monometallic, gold-only basis for the British pound. A recoinage in 1817 provided a new, modern gold coin, the £1 gold *sovereign*, as its physical representation, replacing the guinea worth £1.05. Silver shilling coins were still minted and used widely, although their contained silver was intentionally reduced slightly from their face value, thus rendering them an effective token coin. The ability to use token coins was in turn enabled by the prior development of machine-pressed coins with milled edges, which could not be easily counterfeited.

### **British Paper Money and the Bank of England**

Prior to 1640, it was common for wealthy merchants to deposit their bullion at the King's Mint at the Tower of London. However, in 1638, needing funds, Charles I confiscated the huge sum of £200,000 of gold stored at the mint, declaring it a "loan" from depositors. English goldsmiths, as was necessary for their trade, had protected facilities for storing bullion. The outbreak of the English Civil War in 1642 drove many people to place their coinage and bullion in the protection of goldsmiths. At the same time, the demand for artisanal wares in gold and silver practically disappeared. Goldsmiths were thus thrust into the storage business. During the Civil War, Charles I was beheaded (in 1649), and Britain was ruled by Oliver Cromwell in an effective military dictatorship. Cromwell wanted to attract the Jews of Amsterdam to England, bringing with them their trade interests with Spanish-held regions surrounding the Caribbean. In 1656, Jews were readmitted into Britain after being banned in 1290 under Edward I. Cromwell died in 1658, and the monarchy restored under Charles II in 1660.

Before too long, the goldsmiths began to make loans, and, after 1660, to pay interest on time deposits. Goldsmiths' deposit receipts became tradeable banknotes, and checks could be written in payment against deposits. Discounting of merchants' bills of exchange became a logical next step. London goldsmiths gradually took some of this business away from Antwerp and Amsterdam, where money markets in bills had thousands of members. The earliest existing goldsmiths' deposit receipt is from 1633, although it was not at first used for payment between third parties. The earliest record of a payment being made with the use of a banknote is from 1668. The earliest known check from an English goldsmith is dated 1659. During the 1660s, goldsmiths began to make loans against their gold reserves in the form of banknotes. These banknotes were a new development for Britain, but represented a long evolution of similar

practices from the Italian banks since the late twelfth century. Despite their rising popularity, the use of banknotes in payment fell into a sort of legal limbo, which was not officially resolved until the Promissory Notes Act of 1704.

The mid-seventeenth century was the peak of the era of tally sticks in Britain. They were often issued by the government in anticipation of future revenue, and were payable upon an assigned maturity. Thus, they were a form of short-term government debt. They became quite money-like, although they had a specific maturity and paid interest. In 1665, parliament granted Charles II the revenue of a tax expected to raise £1.5 million in revenue. Tallies were immediately issued against this expected future revenue, and the revenue was directly allocated to the holders of the tallies. In addition, paper contracts called Exchequer Orders to Pay were issued, functionally much like the tallies but in the form of paper. The tallies and paper orders could be traded among third parties. Between 1667 and 1671, paper orders began to be issued not against specific revenue streams, but against the revenue in general. Consequently, there was no implied limit on orders issued. The system began to take the shape of a government-issued paper currency. When a default on the payment of tallies and orders was made in 1672 (the “Stop of the Exchequer”), 97.5% of the £1,314,940 in tallies outstanding were held by goldsmith-bankers.<sup>10</sup> The six largest holders of the tallies all failed. The nascent system of liquid government bills and goldsmith-issued paper currency collapsed.

Although banknotes and bills in paper or ledger form displaced tallies during the eighteenth century, tallies were not fully abolished until the late date of 1826. The tallies were later stored in rooms in the Parliament building. In 1834, it was decided that, to free up the space and also provide heat, the tallies would be burned. The blaze of tally sticks got out of hand, and burned the Parliament building to the ground.

A separate introduction of paper money in the West was made by Johan Palmstruch, through a new institution, the private Bank of Stockholm, in 1661. The bank quickly overissued banknotes. When, in 1663, they returned *en masse* to the bank to be exchanged for coinage, the bank defaulted and ceased operations. Nevertheless, the experiment set a precedent for Sweden. In 1668, the *Riksens Ständers Bank* was founded by the Swedish government. Later renamed the *Sveriges Riksbank*, it remains the central bank of Sweden to the present. It did not issue banknotes until 1701, when permission was granted to issue “credit notes.” These became widely used by the 1740s, but ceased their convertibility in 1745 after the Bank printed them to finance Sweden’s wars with Russia. Several cycles of currency reform and re-establishment of convertibility continued through the eighteenth century.

The Dutch prince William III of Orange was the son of a Dutch nobleman, William II, and his wife Mary, the daughter of England’s King Charles I. William III married his first cousin Mary, daughter of King James

II of England. In June of 1688, James II's second wife bore a son, who displaced his daughter Mary as heir to the throne. James II's conversion to Catholicism, his increasing ties with Catholic France then ruled by the aggressively expansionist Louis XIV, and the new prospect of a lineage of Catholic kings in England fond of French-style absolute monarchy and obeisant to Rome, caused great concern within Parliament. Both England and France had been at war with Holland, during the latter Anglo-Dutch Wars and the Nine Years' War. A coalition in Britain's parliament invited William and Mary to usurp James II, and claim the throne of England. At first, they asked that Mary alone be queen, but she refused. The result was joint rule, and a new alliance between England and Holland against France.

At the time, Amsterdam was the world's financial center. Its active market in government bonds allowed the government to fund itself at yields between three and four percent. William needed money – a lot of it – to finance his wars against France. At the time, the English government had used only the system of tallies and orders as an informal sort of short-term credit, plus direct loans from the goldsmith bankers. All were in disarray after the Stop of the Exchequer in 1672, which also rendered unreliable the goldsmith-bankers paper banknote issuance. William's first attempts to borrow money were done in small size and rates in excess of 20%. In 1692-93, £1.0 million was raised through the issuance of government bonds, at an effective rate of 14 percent. Another £300,000 was raised in 1694.

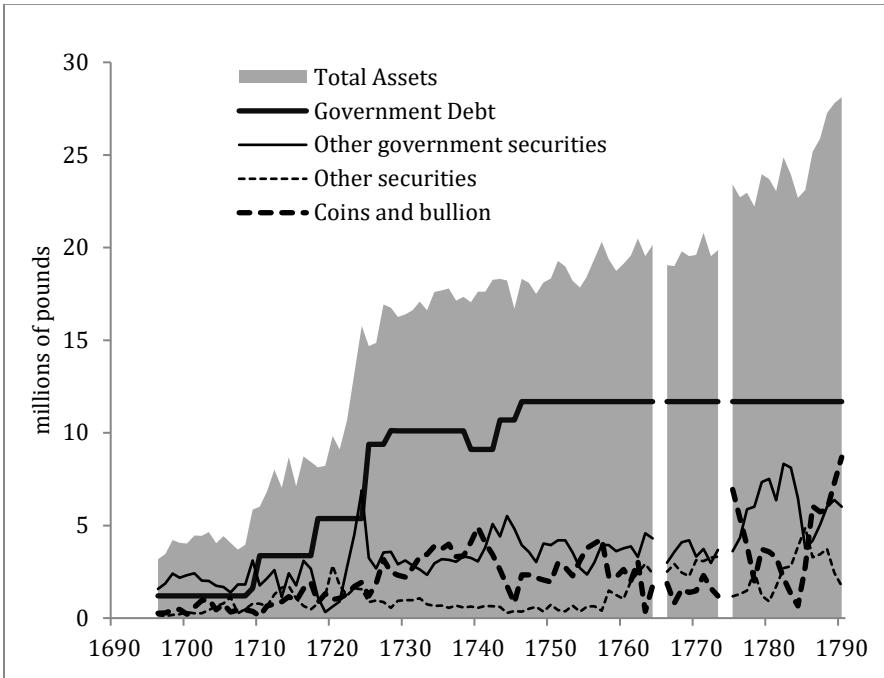
The Bank of England was conceived, foremost, as a coalition of private lenders to provide government finance, specifically a loan of £1.2 million at a rate of eight percent. In addition, the Bank aggregated the existing lenders and bondholders to the government, whose contributed capital consisted of a transfer of their loans and bonds to the Bank. The Bank, established in 1694, was also permitted to issue banknotes. The Bank's original location was atop the ruins of a Roman temple to Mithras, the God of Contracts.

In 1696, the Bank's balance sheet looked like this:<sup>11</sup>

<b>Assets</b>		<b>Liabilities and Capital</b>	
Government debt	1,200,000	Notes in circulation	2,011,032
Other gov. securities	1,566,262	Deposits	409,873
Other securities	157,358		
Coins and bullion	258,358	Shareholder's equity	761,073
<b>Total</b>	<b>£3,181,978</b>	<b>Total</b>	<b>£3,181,978</b>

Thus began the extraordinarily profitable business of large-scale banknote issuance in the West, and the model of the monopoly "central bank" that was eventually installed everywhere. A total of £2,420,905 of banknotes and deposits had been set forth into the world, more than covering the entirety of the £1,200,000 loan that inspired the Bank's creation; against this was coins and bullion of £258,358, a bullion coverage ratio of 10.7%. The £2.421 million was essentially seignorage profit; assets acquired via the creation of banknotes and deposits. In 1698, coinage in

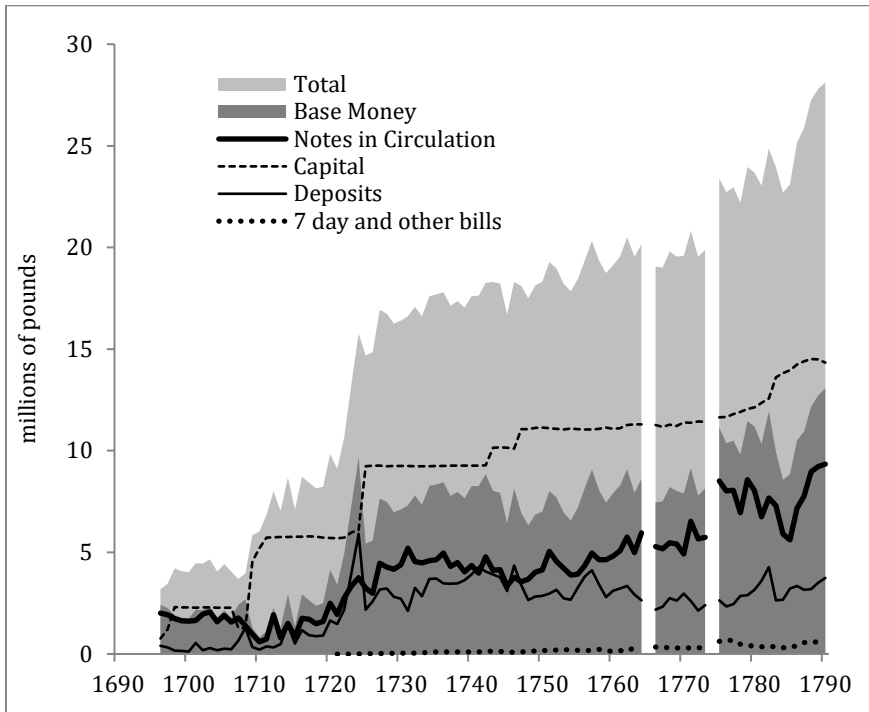
circulation included silver coin of an estimated £5.6 million and gold coin £6.0 million.<sup>12</sup> At a rate of 8%, an additional £193,600 of profit was generated annually, a rather smart 25.4% return on equity. Also, by holding such a large portion of the government's debt, and since the government was also reliant upon the Bank for further financing, the Bank could exercise considerable influence upon the government, if it wished. Of the initial capital subscription of £720,000, only 25% was immediately payable; some investors borrowed even this sum.<sup>13</sup>



#### **U.K.: Bank of England Balance Sheet, Assets, 1696-1790<sup>14</sup>**

Was the British government swindled? From the perspective of the government, the outcome was not much different than if banknotes did not exist, and all transactions were done in coinage. The government raised funds via the issuance of debt; the debt had to be repaid. The advantage was all on the side of the private bankers, who acquired a valuable asset (government debt) in trade for costless banknotes and deposits. Could the British government have simply set up an institution to issue the banknotes directly, with all the seignorage profit of banknote issuance thus enjoyed by the government? Certainly this was possible. This was the model in the American Colonies, in France, and also in China, but in all cases, quick overissuance and devaluation was the chronic result. Certainly the gold

confiscation of 1638, and the Stop of the Exchequer in 1672, made everyone in Britain wary of government promises, particularly during wartime.

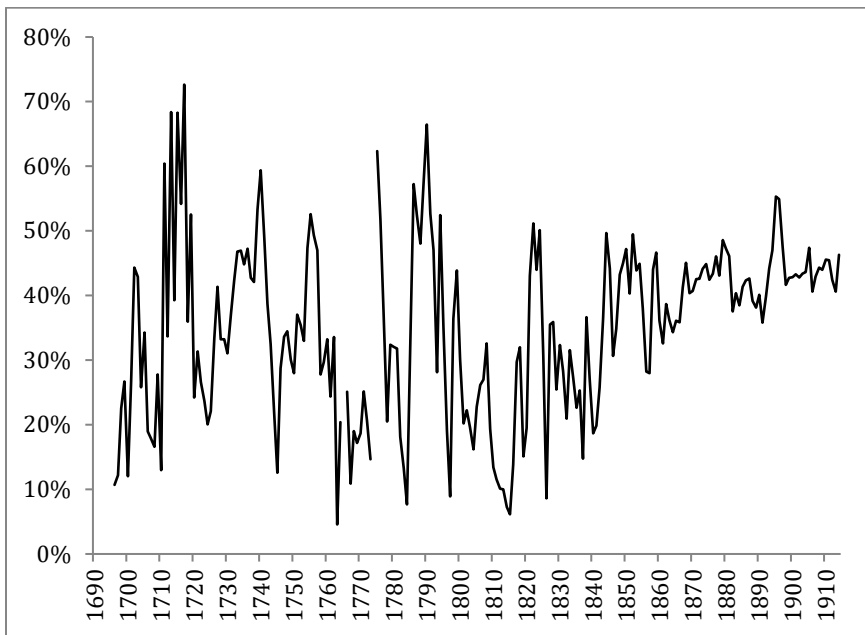


### Britain: Bank of England Balance Sheet, Liabilities, 1696-1790<sup>15</sup>

In 1697, the Bank was allowed to increase its capital, which could be paid up to 80% in the form of tallies, and the remainder in banknotes. The result was that tallies were further concentrated at the Bank, which made their administration and eventual replacement far simpler. The Bank was also allowed to issue more banknotes. The Act of 1697 also forbade the establishment of any other company “in the nature of a bank” while the Bank of England existed. In practice, this referred to the issuance of banknotes, rendering an effective near-monopoly that was reinforced by Acts of Parliament in 1708 and 1709 that prohibited companies of more than six people to set up banks and issue banknotes. Nevertheless, in 1844 there were 280 private banks issuing banknotes in Britain, with a banknote issuance of £8.6 million out of a total of £31 million.<sup>16</sup> In that year a formal monopoly on banknotes was granted to the Bank of England.

Scotland took a somewhat different path than Britain, despite becoming part of the United Kingdom in 1707. The Bank of Scotland was set up along the model of the Bank of England in 1695. However, while England tended

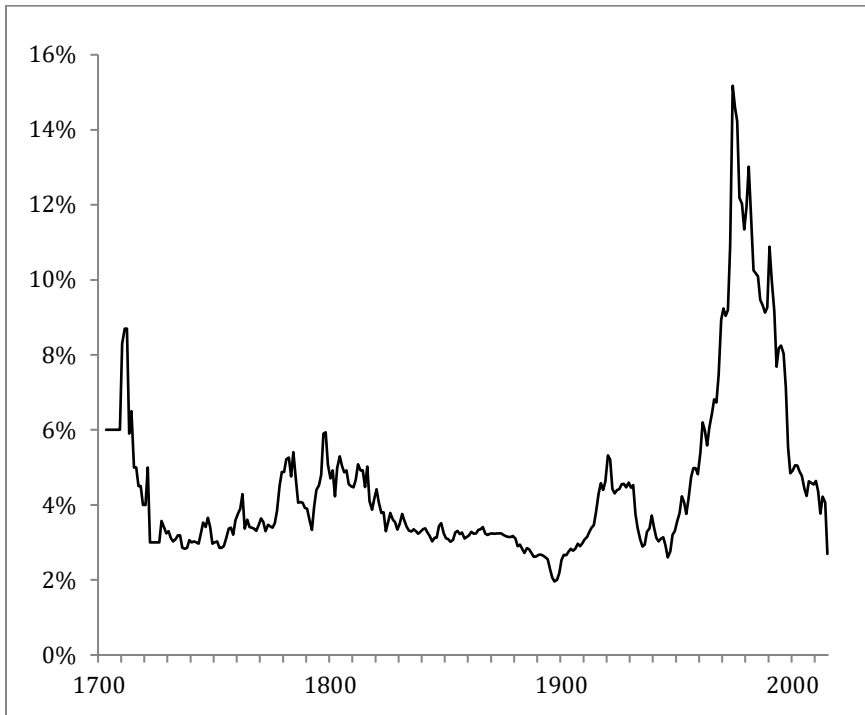
toward a monopoly on banknote issuance held by the Bank of England, Scotland tended toward a formal system of “free banking” in which a multitude of banks would be allowed to issue banknotes. This was formalized in the Banking Act of 1756, which allowed all banks to issue banknotes. This libertarian environment for banking was suppressed after 1845, but even today, Scotland has three private banks – Bank of Scotland, Clydesdale Bank and the Royal Bank of Scotland – issuing their own banknotes, linked to the British pound. A similar system exists today in the former British territory of Hong Kong, where U.S. dollar-linked notes are issued by the private Hongkong and Shanghai Banking Corporation, the Bank of China (Hong Kong) Limited, and the Standard Chartered Bank.



**Britain: Bank of England, Ratio of Gold Bullion Reserves to Banknote and Deposit Liabilities, 1694-1914**

The problems of war finance that resulted in the formation of the Bank of England also led to the emergence of a formal market in government bonds in England, as had been the case earlier in Holland. Between 1685 and 1700, the expenses of wartime, and the new tools of finance, pushed the British government’s total net debt from £0.8 million to £13.8 million.<sup>17</sup> Much of this debt was then freely traded, thus establishing the London government bond market and money market. This in turn formed a foundation for a wide variety of financial activities in London.

Over the next two decades, the effective yield on the British government's debt fell to levels typical of high-quality government debt denominated in a reliable gold-linked currency. By 1727, the yield on British government perpetual debt had fallen to 4%. In addition, the British government had been successful in reducing its total debt outstanding, which, in 1739, had fallen to a low of £4 million before the outbreak of war that year. In 1751, all of the government's outstanding debt was consolidated into a single issue of perpetual Consol bonds, yielding 3.0%. Such was the perceived reliability of the British government, both in terms of creditworthiness and the quality of its gold-based currency, that these bonds traded above par for several years thereafter.



**Britain: Average Annual Yield on Consol Bond, 1703-2015<sup>18</sup>**

The Bank of England thus formed the nucleus of the later popularity of gold-linked banknotes in commerce, alongside and eventually in preference to coinage. Banknotes grew to be the dominant form of money in Britain in the nineteenth century, eclipsing coinage in the total amount outstanding. For the first time in Western history, money was being made primarily by private banking institutions rather than a government mint.



### **The American Colonies and the United States**

The British experience with paper money reliably linked to gold was extraordinary in the eighteenth century. Other countries experimented with the widespread use of banknotes in the seventeenth and eighteenth centuries – notably Sweden, France, Japan, and Britain’s colonies in America – but they shared a history of unreliability, overissuance and collapse.

Despite Britain’s gold-centric (though still officially bimetallic) pattern after 1717, the British colonies in North America retained a silver-centric basis, due to the common use of the Spanish silver dollar (among many foreign coins) throughout the colonies, many of them obtained in defiance of restrictions on trade with unfriendly foreign powers. The use of foreign coins came about in part from the requirement that taxes and debts be paid only in British coins. Combined with various Mercantilist restrictions including an outright ban on local minting of coins, and also various bans on privately-issued paper monies, British coins were thus constantly in shortage in the Colonies and often sent to Britain to pay taxes and debts. Britain also tried to limit the use of foreign coins in its colonies, including restrictions on the external trade that served as the source of the coinage. This pushed the colonists to devise still more alternatives, such that, in 1775, seventeen commodities were recognized as legal tender in North Carolina, some of which, notably tobacco, sprouted subsidiary warehouse receipt currencies of their own. Even at the time, this was regarded as a crude and primitive stopgap, by the mostly British colonists accustomed to centuries of silver coinage, especially when the mines of nearby Mexico were churning out silver then shipped to Europe and China. However, this multitude of recognized means of payment was unified by a single unit of account, the British pounds, shillings and pence.

When reading historical accounts, it must be remembered that practically any conceivable problem of business, economics or statecraft can be described as “a shortage of money.” However, it appears that various restrictions on trade and coinage did produce problems of payment in the Colonies. Free trade in silver (including with foreigners), and free coinage of that silver into British coins (or acceptance of silver in any form in payment), would have resolved any such issues. These “shortages” of coinage in the Colonies could have only come about via various human-imposed restrictions. The population of Europe was 203 million in 1800, while the population of the United States was 5.3 million in 1800 and only 1.6 million in 1760. There was certainly enough silver in existence to fulfill the monetary needs of the Colonists.

In part pushed by these artificial scarcities of coinage, the American colonies became a great experiment in the direct issue of paper currencies by colonial governments during the eighteenth century. The Massachusetts Bay colony made the first such issuance in 1690, to pay soldiers. The notes (known then as “bills of credit”) were accepted as legal tender in payment

of taxes. This worked well enough, so further issuances were made. By 1712, the notes traded at a discount of 30% to coin. In 1726, they traded at a 4.35:1 ratio against silver coin. By 1750, the notes' value had fallen to 11:1 versus silver coinage. A similar pattern was followed throughout the colonies, with depreciation of 9:1 in Connecticut and 10:1 in the Carolinas. The most egregious depreciation was in Rhode Island, where paper notes had fallen to 23:1 versus their face value in 1750, before descending to worthlessness by 1770. Britain banned the issuance of these "bills of credit" in the New England colonies in 1752, extending the ban to all of the colonies in 1764.

However, this respite from paper banknote debauchery turned out to be short-lived. The American Revolution in 1776, only twelve years later, was financed in the manner that had by then become common among state governments for much of the preceding century: the issuance of what amounted to fiat banknotes, the Continental dollar. The Continental Congress eventually issued \$241 million of these notes, compared to a total coinage estimated at \$12 million throughout the Colonies in 1775. State governments issued another \$210 million. The value of the Continental dollar fell to a hundredth of its face value by 1781, and then declined further to worthlessness.

This harrowing experience of hyperinflation in the Colonies, adding to many similar experiences in the century previous, led the founders of the United States to declare in Article I, Section 10 of the Constitution of 1789 that "No State shall ... coin money; emit bills of credit; make any thing but gold and silver coin a tender in payment of debts ..."

The Coinage Act of 1792 established the standards for domestic minting of coins. The implicit gold:silver ratio in the Coinage Act of 1792 was 1:15, while market rates were closer to 1:15.5. France and other European countries used an official 1:15.5 ratio, and Britain went to a gold monometallic standard in 1816. The result was that silver was the cheapest to deliver ("overvalued") within the bimetallic system. After 1792, very little gold was presented at the U.S. Mint for coinage; new coinage was almost exclusively in silver. In 1834, the gold value of the U.S. dollar was reduced from 24.75 grains of pure gold (\$19.37 per troy oz.) to 23.2 grains, which was thereafter more commonly represented as \$20.67 per troy oz. The standard for the silver dollar was left unchanged at 371.25 grains, resulting in an effective bimetallic ratio of 1:16. Much as was the case for Britain after 1717, gold thus became the focus of the officially bimetallic arrangement. The \$20.67/oz. gold standard for the dollar remained until 1933, when a devaluation reduced the dollar to 1/35<sup>th</sup> of a troy oz. (\$35/oz.) The \$35/oz. standard continued until 1971.

By its wording, the Constitution appears to forbid all banknotes, implying a return to a wholly coinage-based system. This solution was not particularly severe for its day, but more in the spirit of prudence. Coinage remained dominant throughout Europe, and paper money had been banned

in the Colonies by the British government itself in 1764. (The French experience with the *assignats* was then just beginning.) However, after a century of experience with paper banknotes in the Anglophone world, in Britain, Scotland and in the American Colonies, the paper money genie would not be put back in the bottle so easily. In the 1780s the Industrial Revolution was just getting underway, bringing with it also a degree of financialization that made the nineteenth century so unlike the eighteenth, and all the centuries previous.

Attempts to set up a note-issuing “central bank” in the model of the Bank of England predated even the Constitution, led by the industrious Alexander Hamilton. On October 19, 1781, the British commander Cornwallis surrendered at Yorktown, Virginia, effectively bringing the Revolutionary War to an end in North America. As finance via issuance of Continental dollars had exhausted its potential, the Continental Congress had issued public debt. A total of \$600 million of loan certificates had been issued by the end of the war. By 1779, their market value had already declined by 24:1 versus specie.<sup>19</sup> They could have depreciated into oblivion, along with the Continental dollar. However, wealthy speculators had bought up large quantities of the debt, at depressed prices. In 1781, at Hamilton’s urging, the Congress of the Confederation (1781-1789) allowed the establishment of the Bank of North America, to consolidate government debt and finances and also serve as a monopoly issuer of banknotes, along the lines of the Bank of England, as a private joint-stock entity. The Congress of the Confederation’s first Superintendent of Finance and Marine (in effect, Treasury Secretary) was Robert Morris. Three days after becoming Superintendent, Morris proposed to establish the National Bank. In a bit of financial derring-do, Morris, acting as Superintendent of Finance, appropriated some specie loaned to the United States by France, and deposited it in the Bank of North America, thus providing most of the legally required specie capital for the inception of the new bank. Morris and the Bank’s influence soon waned, however. The U.S. government’s debt to the bank never exceeded \$170,000 on a net basis.<sup>20</sup> By the end of 1783, all of the government’s debt to the Bank had been repaid, and all of its stock in the bank, amounting to 5/8<sup>ths</sup> of its capital, had been remitted.<sup>21</sup>

The Bank of North America was rechartered in 1787 under more restrictive terms, limiting its operations as a central bank, and rechartered again in 1793, when it was renamed the Bank of Pennsylvania. After a long series of mergers, the bank ultimately became part of Wells Fargo, which, in 2012, operated a branch office at the Bank of North America’s original Philadelphia location.<sup>22</sup>

After the Constitution of 1789, the first president of the new United States, George Washington, wanted to appoint Morris to the office of Secretary of the Treasury. Morris declined and suggested Alexander Hamilton, who accepted. Via Hamilton, the idea of a central bank, along the lines of the Bank of England, was introduced again with his proposal for the

First Bank of the United States. It would be privately owned, with the government at first holding a 20% share. Seventy-five percent of the privately-held shares would be purchased with government debt, thus consolidating the debt within the bank.

Washington assembled his cabinet to discuss the issue. Attorney General Edmund Randolph felt the bill was unconstitutional. Thomas Jefferson, then Secretary of State, decided the proposal was against both the spirit and letter of the Constitution. James Madison (the primary author of the Constitution) believed that Congress had not received the power, under the Constitution, to incorporate a bank. Nevertheless, Hamilton, as Treasury Secretary, was able to convince Washington of its merits and legality. It was chartered in 1791, with a twenty-year charter. It was the only Federally-chartered bank, which allowed it to operate throughout the United States. (State-chartered banks were only allowed to operate intrastate.) The Bank's banknotes could be used in tax payment, and were legally redeemable for specie on demand. At first, the bank was capitalized at \$10 million, with 25% of this payable in specie. However, when it began operations, it had only \$675,000 in coin and bullion.<sup>23</sup> The first president of the Bank was Thomas Willing, partner of Robert Morris, and who previously served as the president of the Bank of North America. The U.S. government's stake in the bank was later sold, and the Bank of the United States thus became a wholly private bank.<sup>24</sup> In January, 1798, foreigners owned an estimated 13,000 of the 25,000 shares. By March, 1809, foreigners' estimated holdings had increased to 18,000 shares.<sup>25</sup>

By the end of 1795, the U.S. government had borrowed \$6.2 million from the Bank, but these debts were later paid off. During the 1803-6 period, the government's average deposits at the Bank amounted to \$4.0-\$5.5 million.<sup>26</sup> At the end of the Bank's charter in 1811, total banknote issuance in circulation by the Bank amounted to \$5,037,125.<sup>27</sup> The Bank's banknotes were highly reliable, and maintained their face value versus specie.<sup>28</sup>

A debate ensued whether to recharter the Bank after its original charter expired in 1811. "A private central bank issuing the public currency is a greater menace to the liberties of the people than a standing army," argued Thomas Jefferson, recently retired after two terms as President.<sup>29</sup> The recharter bill failed to pass Congress by one vote in the House, and one vote in the Senate, when Vice President George Clinton voted to break a tie. The United States' second central bank thus passed away.

The First Bank's demise was followed, almost immediately, by the outbreak of hostilities with the British, in the War of 1812. Washington D.C. was invaded by British forces in 1814, and the White House burned. The Federal government itself got back into the money-printing business with the issuance of Treasury Notes beginning in 1812. Treasury Note issuance continued intermittently up until 1861, when it was superseded by issuance

of the Federal government's United States Note (known as "greenbacks") to fund the Civil War.

In 1816, in part to return the currency system to reliability after the effective suspension of gold conversion and consequent inflation during wartime, the Second Bank of the United States was given a twenty-year charter. In the pattern of the Bank of England and also the First Bank of the United States, the institution was founded in part to amalgamate the wartime debts of the government. The Bank also acted as the agent for all government receipts and expenditures, and provided a uniform national currency, as opposed to the state-chartered banks which operated in a localized area. Figures for 1834 give a measure of the Bank's dominance of the monetary system. In that year, 506 banks (including both state banks and the Second Bank) had total deposits of \$102 million and banknotes in circulation of \$95 million. The Second Bank alone had deposits of \$11 million (down from \$23 million in 1832) and banknotes in circulation of \$19.2 million.<sup>30</sup> Thus, at its peak, the Second Bank accounted for about 20% of total banknote circulation. In 1832, 20% of the Bank's outstanding equity was owned by the U.S. government, 24% by foreigners, and the remaining 56% by U.S. entities.<sup>31</sup> It had \$6.80 million of specie against \$59.17 million of banknotes and deposits.<sup>32</sup>

The dominance of the Second Bank in monetary and financial affairs, and the degree of foreign ownership and influence in the Bank, invited the enmity of president Andrew Jackson. In 1832, Jackson vetoed a bill to extend the Bank's charter after its expiration in 1836. In his veto message, Jackson made clear that he thought that effective foreign influence in the Bank far exceeded the ratio of nominally foreign-owned shares.

Of the course which would be pursued by a bank almost wholly owned by the subjects of a foreign power, and managed by those whose interests, if not affections, would run in the same direction there can be no doubt ... Controlling our currency, receiving our public monies, and holding thousands of our citizens in dependence, it would be more formidable and dangerous than a naval and military power of the enemy.<sup>33</sup>

Four more years of political battles ensued, and Jackson won in the end. The Bank's charter expired in 1836, ending the third attempt to set up a privately-owned "central bank" and dominant currency issuer, in the model of the Bank of England, within the United States. In its wake, small issuers of currency continued to proliferate, in the most libertarian era of the "free banking" model in U.S. history. In 1860, on the eve of the Civil War, 1,562 banks were in operation and issuing their own banknotes, linked to gold at the dollar parity of 23.2 troy grains per dollar.<sup>34</sup> These banks had issued a total of \$207 million of banknotes, which circulated alongside \$207 million of gold coin and \$21 million of silver coin.<sup>35</sup>

### France, Germany and Russia

The French *livre tournois* descended from the *livre* (“pound”) of Charlemagne. The original *livre* of 780 had roughly 430 grams of silver. After Philip II of France seized the Touraine region, and its capital Tours, in 1203, the *tournois* standards of weights and measures superseded the *livre parisien*. (The *livre tournois* was 20% lighter.) A monetary reform by Louis IX in 1266 established the *livre tournois* equivalent to 80 grams of pure silver. Between 1360 and 1641, gold coins worth one *livre tournois* were minted, known as *francs*. However, the primary use of the *livre tournois*, from its early days, was as an accounting standard. Payment could be made in any of the multitude coins circulating in continental Europe at the time, including: the French *écu*, *Louis*, *teston d'argent*, and *denier*; the Spanish *doubloon*, *pistole*, *real*; the Italian *florin* and *ducat*; the German *thaler*, Dutch *gulden*, and many others. By 1507, the value of the *livre tournois* in silver had been reduced to 20 grams.<sup>36</sup> After 1725, the *livre tournois* was worth about 4.5 grams of silver, roughly one-hundredth of the original value of the *livre* under Charlemagne.

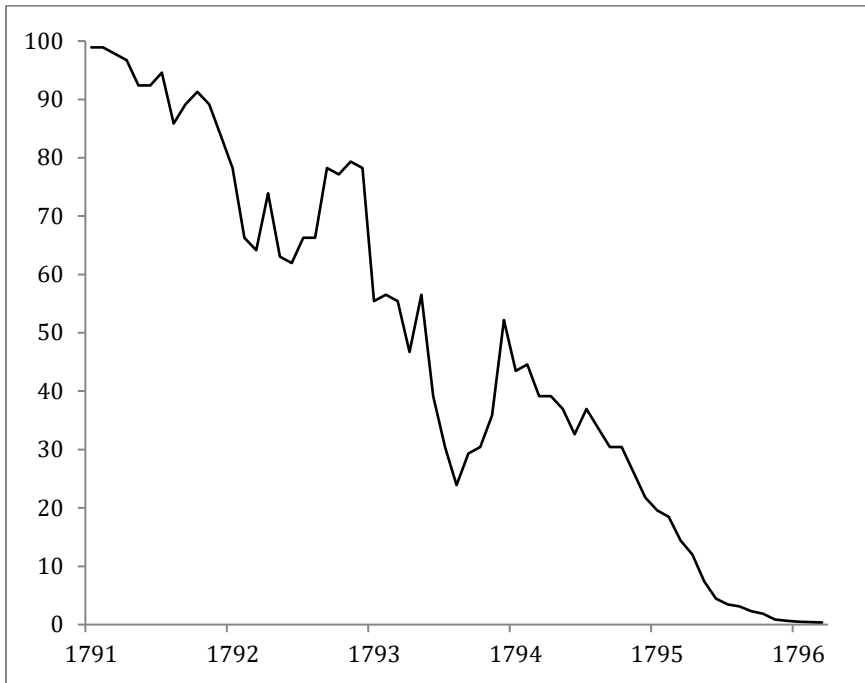
The first experiment with paper banknotes in France was undertaken by a Scotsman, John Law. His private note-issuing bank began operations in 1716. The bank was such a success that the government absorbed it into a newly-chartered bank, the Banque Royal, in 1718. In a short time, the industrious Law had swirled this bank into another undertaking to tap the wealth of the French colonies in North America. In 1719 it was also given a monopoly of trade with the East Indies and China, merging with the French East India Company founded in 1664. The temptation to overissue notes was irresistible, and in 1720 the entire operation collapsed in what has become known as the Mississippi Bubble.

France thus returned to coinage. In 1726 a new, formalized bimetallic system was put in place, with values of various common gold and silver coins expressed in *livre tournois*. However, still no one-*livre* coin existed. A government bank was again established in 1776, the *Caisse d'Escompte*, which issued short-term bills that traded in a liquid market. In 1789, the National Assembly introduced the *assignats*, a paper currency that was overissued and lapsed into hyperinflation before abandonment in 1796, in the chaos of the French Revolution.

In July 1796, the National Assembly decreed that people could conduct business using whatever money they chose, and that existing government paper money would be accepted at its market value. This began a brief but successful episode in “free banking,” in which multiple small banks issued gold-linked paper currencies.<sup>37</sup>

In 1799, Napoleon Bonaparte, a general in the French army, returned to France from a military expedition in Egypt and staged a *coup d'etat*, replacing the ineffective, bankrupt and unpopular Republic. Backed by

foreign bankers,<sup>38</sup> in 1800 he allowed the establishment of the Bank of France, and with it a standard for the franc as equivalent to 290.32 milligrams of fine gold (107.14 per troy ounce), or 4.5 grams of silver, an official bimetallic system with a gold:silver ratio of 1:15.5. At first, the Bank of France had to compete against existing note-issuing banks. In 1803, the Bank of France was given a monopoly on banknote issuance in Paris, which effectively brought to an end the “free banking” episode in France.<sup>39</sup> The monopoly spread to all of France by 1848. The franc’s official value in terms of gold remained unchanged until World War I, although there were suspensions of gold convertibility, including a period during the Franco-Prussian War (1870-1871).



**France: Value of 100 Assignats in Gold Livres, 1791-1796<sup>40</sup>**

The Royal Prussian Seehandlung was one of the first Germanic banks to issue banknotes, beginning in the 1770s. The Leyhaus Bank of Brunswick, founded in 1765, also issued banknotes. In 1846 it became known as the Bank of Prussia, and in 1875 as the Reichsbank. In 1800, greater Germany was still a patchwork of 314 minor states, riven by around 1,800 customs barriers, including 67 local tariffs within Prussia alone.<sup>41</sup> The banking and monetary systems showed similar decentralization, with competing regional coinages, currencies, and units of account. The post-Napoleonic

settlement of 1815 reduced the number of states to 39. A customs union was reached in 1834, and a coinage union in 1857. Further developments awaited political unification in 1871.

Catherine II ("Catherine the Great") of Russia oversaw the creation of the Assignation Bank in 1769, which issued banknotes known as Assignation rubles. During the 1830s, the value of the Assignation ruble fell considerably. In 1839, a silver ruble coin was introduced, at a value of 3.5 Assignation rubles. In 1843, the Assignation Bank was replaced by the State Bank, and new banknotes were issued based on the silver ruble. These too proved unreliable, and were reformed again in 1860.

The first mention of the use of the *manilla* currency in West Africa is from the Nigerian coastal kingdom of Calabar, in 1505. In that year, a slave could be bought in Calabar for 8-10 manillas. The manilla was a standardized artifact typically of copper or bronze (occasionally gold), thought to be a stylized bracelet. The name possibly derives from the Spanish *manella*, or bracelet. Previously, Portuguese traders in the 1490s found that, in West Africa, women commonly wore copper bracelets and legbands to display their husband's wealth, and these were exchanged as a nonstandardized form of copper money. During the early sixteenth century, manillas were manufactured by Portuguese, and later Dutch, British, and French, and traded for slaves in Africa. During the nineteenth century, Birmingham, England became a major site for manilla manufacturing. Nigeria outlawed manillas in 1902, in part because they were considered an artifact of the slave trade, but they continued to be used into the 1940s.

### Classical and Mercantilist Thought

The first known work devoted to monetary affairs was the Chinese *Chhuan Chih* or *Treatise on Coinage*, written by Hung Tsun in 1149. In the West, the first work was the *De Moneta* ("The Mint") of Nicholas Oresme, an advisor to Charles V of France. It was written around 1365. By this time, governments had been debasing coinage for roughly two thousand years. In the first words of this first book on money, Oresme neatly delineated the two sides of a discussion that continues to the present day – those who would keep money as unchanged as possible, a stable measure of value and constant of commerce, and those who would manipulate it as a means to resolve various problems of economic health and public finance.

Citing the debasement of the Roman denarius during the decline of the Roman Empire, Oresme concluded that governments should keep their money as stable as possible. To allow alterations of the coinage, Oresme argued, would change the kingdom to a tyranny, and consequently expose the kingdom to ruin and foreign takeover.

Nicholas Copernicus, in the *Treatise on Money* (1526), agreed with Oresme that money should remain stable and unchanging. Copernicus'



arguments were influential in a Prussian coinage reform that came after a long period of chronic coinage debasement.

Oresme focused primarily upon coinage debasement as a means of government funding. But alert observers had always noted that devaluation and debasement have many consequences, some of which can even seem beneficial—that coinage manipulation was not only a means of finance, but also a method to alter and direct the course of the economy as a whole. Copernicus described the counterarguments of his time:

Hence [arises] that widespread and incessant complaint: gold, silver, food, household wages, workmen's labor, and whatever is customary in human consumption soar in price. But, being inattentive, we do not realize that the dearness of everything is produced by the debasement of the coinage. ...

But maybe someone will argue that cheap money is more convenient for human needs, forsooth, by alleviating the poverty of the people, lowering the price of food, and facilitating the supply of all the other necessities of life, whereas sound money makes everything dearer, while burdening tenants and payers of an annual rental more heavily than usual. This point of view will be applauded by those who were heretofore granted the right to coin money and would be deprived of the hope of gain. Nor will it perhaps be rejected by merchants and artisans, who lose nothing on that account since they sell their goods and products in terms of gold, and the cheaper the money is, the greater the number of coins they receive in exchange.

But if they will have regard for the common good, they will surely be unable to deny that sound money benefits not only the state but also themselves and every class of people, whereas debased coinage is harmful. Although this is quite clear for many reasons, we learn that it is so also through experience, the teacher of objective truth. For we see that those countries flourish the most which have sound money, whereas those which use inferior coinage decline and fall.<sup>42</sup>

“Alleviating the poverty of the people,” “facilitating the supply of all the necessities of life,” and increasing the profits of merchants and artisans (“trade competitiveness” via devaluation), remain familiar arguments today, “applauded by those who were heretofore granted the right to coin money,” which today are central banks.

Mercantilism, the pattern of British economic thought common in 1600-1750, was a reflection of the royal absolutism of the time. Murray Rothbard described: “As the economic aspect of state absolutism, mercantilism was of necessity a system of state-building, of Big Government, of heavy royal expenditure, of high taxes, of (especially after the late seventeenth century) inflation and deficit finance, of war,

imperialism, and the aggrandizing of the nation-state."<sup>43</sup> Economic policy centered on cartelism, protectionism and trade restrictions, and government spending as a means of promoting domestic economic activity and consumption, with high taxes to pay for it.

In this intellectual climate, it is no surprise that the idea of managing the economy via manipulation of the money and interest rates also became popular among the Mercantilist thinkers. This did not have much practical effect on the coinage itself, which remained relatively unmolested in both England and France. It did lead, however, to a variety of restrictions on export of coinage and bullion, and on import trade in general, with the idea that "more money" kept at home would make money plentiful, and lead to lower interest rates, greater economic activity and increased employment. The wealthiest and most prosperous country of the seventeenth century, Holland, focused on free trade and unchanging currency value; as a result, Amsterdam always had plenty of money, and also the lowest interest rates in Europe.

The English Mercantilists correctly concluded that Holland's low interest rates, derived wholly from market forces, were a cornerstone of its success. They initially tried to lower interest rates in England by legalistic means. Sir Thomas Culpepper, in the *Tract Against The High Rate of Usury* (1621), cited Holland's example in arguments that eventually led Parliament to lower the maximum rate of interest to 8% from 10%, and then later to 6%. Culpepper's son, also Sir Thomas Culpepper, continued in 1668 with *A Discourse showing the many Advantages which will accrue to this Kingdom by the Abatement of Usury together with the Absolute Necessity of Reducing Interest of Money to the lowest Rate it bears in other Countreys*. Josiah Child, a member of the king's council of trade, added his *Brief Observations Concerning Trade, and Interest of Money* in 1668, as part of an effort to lower the maximum legal rate to 4%. Due in part to the arguments of John Locke, the consequent bill was killed by the House of Lords in 1669.

The idea of lowering interest rates – and managing the economy as a whole – via money creation dates at least as far back as William Potter's *The Key to Wealth* (1650). Potter's paper money scheme ("backed by land," a useful fiction to justify continuous fiat emission) would also supposedly allow credit expansion, reduce unemployment, increase economic activity in general, and produce greater tax revenue. The rise of the Bank of England, and its widespread banknote issuance, probably emboldened John Law, who wrote *Money and Trade Considered, with a Proposal for Supplying the Nation with Money* (1705). By expanding and managing the paper money supply, Law would reduce the rate of interest, increase employment, create additional production and economic activity, and also achieve "stability of value," by which he meant not the exchange rate of his fiat paper with gold or silver, but something like the stabilization of the business cycle and its effects on wages and commodity prices.

Richard Cantillon was Law's business partner during the Mississippi Bubble in France. Correctly predicting how it would end, he sold all of his shares in the enterprise at enormous profit, and moved to Italy to await the collapse. Around 1730, he wrote what is considered the first work in the modern Classical tradition of economics, the *Essay on the Nature of Commerce in General*. By this time, Cantillon shared none of Law's previous enthusiasm for managing the economy by manipulating its money. Rather, like Oresme, he favored an unchanging unit of account.

Many Emperors subsequently debased or increased the nominal value of their coins. The kings of France at different times have done likewise. This is why the livre tournois, which was once worth one pound of silver, has sunk to so little value. These proceedings have never failed to cause disorder in states.<sup>44</sup>

The collapse of Law's paper money scheme in France, and also the decline of British long-term government bond yields to around the 3.0% range by 1725 – accomplishing by free-market means what decades of legalistic restrictions had failed to do – cemented the victory of Britain's hard-money intellectuals, most notably Locke. The Dutch strategy, of a reliable and unchanging money, free of government manipulation, proved ascendant. The Mercantilists continued to refine their money-manipulation schemes, however. Bishop George Berkeley revived many of Law's arguments in *The Querist* (1735-37), where he advocated a central bank that would lower interest rates and expand employment and economic activity via an expansion of money and credit.

Mercantilist thought regarding money reached a pinnacle of sophistication with James Denham Steuart. In *An Inquiry into the Principles of Political Economy* (1767), he advocated a "statesman" who would artfully manage money, interest and credit, and thus the economy as a whole, in a manner almost indistinguishable from today's fiat-currency central banker. Steuart's paper money scheme, like William Potter's, would be based on mortgages on land – a premise put into action with the French *assignats* two decades later, with the result that they depreciated into hyperinflationary oblivion.

[The statesman] ought at all times to maintain a just proportion between the produce of industry, and the quantity of circulating equivalent, in the hands of his subjects, for the purchase of it; that, by a steady and judicious administration, he may have it in his power at all times, either to check prodigality and hurtful luxury, or to extend industry and domestic consumption, according as the circumstances of his people shall require the one or the other corrective ...

For this purpose, he must examine the situation of his country, relatively to three objects, viz. the propensity of the rich to consume;

the disposition of the poor to be industrious; and the proportion of circulating money, with respect to the one and the other.

If the quantity of money in circulation is below the proportion of the two first, industry will never be able to exert itself; because the equivalent in the hands of the consumers, is then below the proportion of their desires to consume, and of those of the industrious to produce.<sup>45</sup>

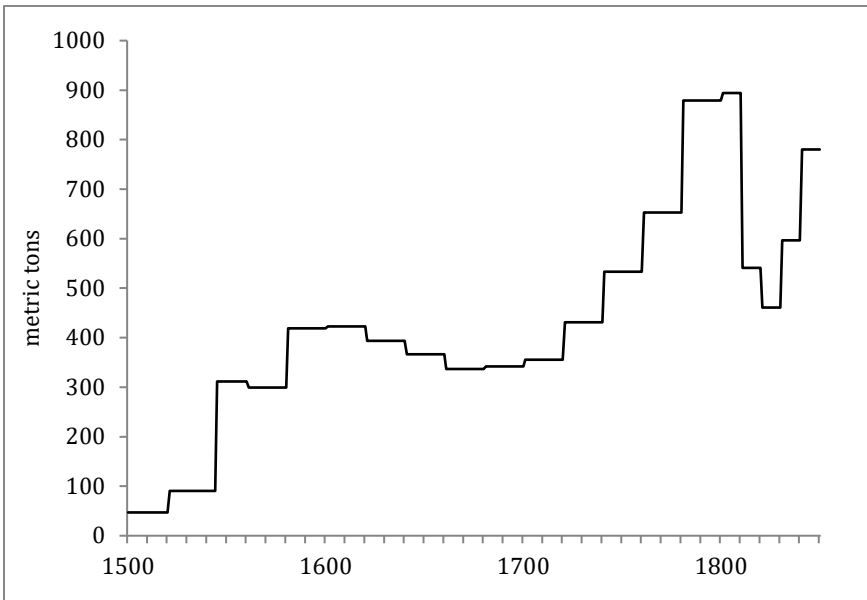
With the publication of Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776, Mercantilist thought was largely swept away in favor of the Classical conception of free trade, open competition, unobtrusive government, low taxes and unchanging money. Nevertheless, when British pound convertibility was suspended in 1797 at the onset of the Napoleonic Wars, rendering the pound a floating currency, some argued that this wartime expedient could be made into a permanent fixture, a new tool of macroeconomic management. The most fervent claims came soon after the end of the war at Waterloo in 1815. With wartime expenditures ceasing and calls for a return to the gold standard gaining support in Parliament, some concluded that a new program of government spending, directly funded by the printing press, was necessary to maintain economic activity. Spurred by the arguments of Thomas and Matthias Attwood, the British government did exactly that in 1817. The pound again sank vs. gold and foreign currencies.

Aided by the hard-money arguments of David Ricardo, a retired bond speculator who became a Minister of Parliament in 1818, Britain returned the pound to gold in 1821. Much of the work of building political consensus for a resumption of gold convertibility was done by the young parliamentarian Robert Peel, who exemplified the post-Adam Smith classical liberalism that characterized the nineteenth century. Peel thus rejected the Mercantilist-tinged High Tory statism of his father, Sir Robert Peel, also a parliamentarian, who opposed the resumption of bullion convertibility (in effect, maintaining a floating fiat pound), and was the author (in 1780) of a pamphlet called *National Debt Productive of National Prosperity*. The elder Peel had purchased his son's seat in Parliament when the youth was twenty-one.<sup>46</sup>

As taxes came down – the wartime income tax was eliminated completely in 1816 – and the British pound was reliably linked to gold, Britain enjoyed an extraordinary century of success in which it would become the birthplace of the Industrial Revolution, the world's center of finance, the core of a global empire, and the model to emulate everywhere. Mercantilist thought, and with it the idea of economic management via currency and interest-rate manipulation, nevertheless re-emerged in the late nineteenth century, before blooming in the twentieth to become again dominant worldwide.

### The Silver Mining Boom of the Sixteenth Century

Did the influx of Spanish silver and gold from the New World, during the sixteenth and seventeenth centuries, produce a major change in the values of gold and silver in Europe? Some have claimed a “price revolution” from 1500 to 1650, in which “prices” rose as much as six times. But, “prices” can mean a lot of things, including the price of land or wages, which would be expected to rise due to any increase in real incomes. A sixfold increase over 150 years averages 1.20% per year. A rise in real incomes, due to increasing productivity, could easily account for such a rate of increase, with no need to resort to monetary factors for explanation. A more accurate picture is provided by commodity prices.

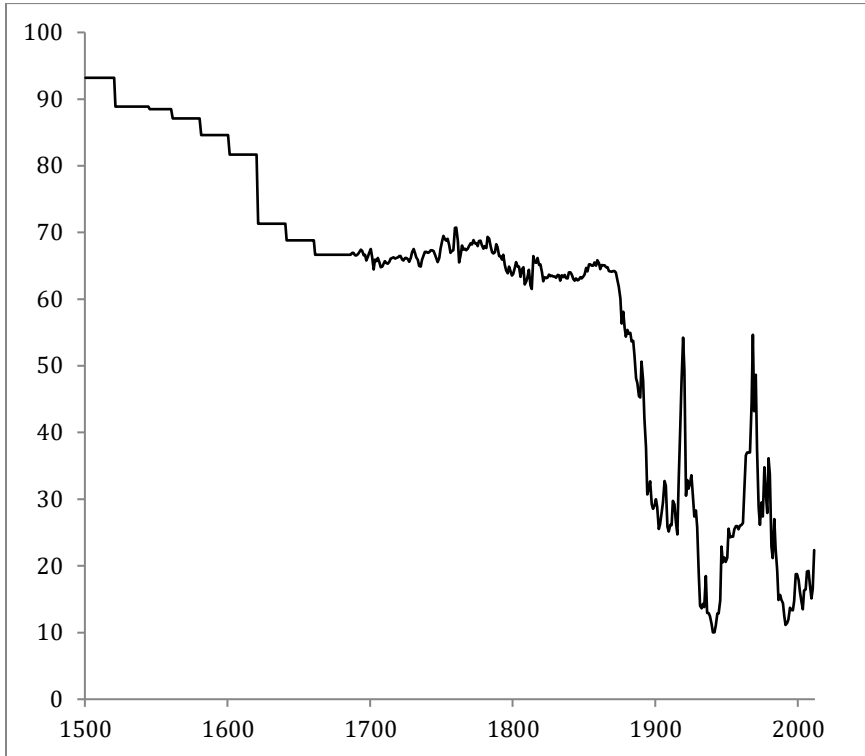


**Estimated World Mining Production of Silver, 1500-1850<sup>47</sup>**

Spanish looting of the Aztec and Inca realms created an influx of gold and silver to Europe around 1520-1550.<sup>48</sup> After this initial burst, further inflows came from mining production. Silver mines in Bolivia and Mexico led to an estimated nine-fold increase in total world silver production during this period, from 47 tons annually in 1493-1520 to 420 tons in 1580-1615. However, there was no such increase for gold, whose estimated production increased by only about 50% (5.8 tons to 8.8 tons) over the same time period.<sup>49</sup>

The value of silver, compared to gold, certainly declined, but it did not decline very much. From 1:10.7 in 1500, the gold:silver ratio declined to

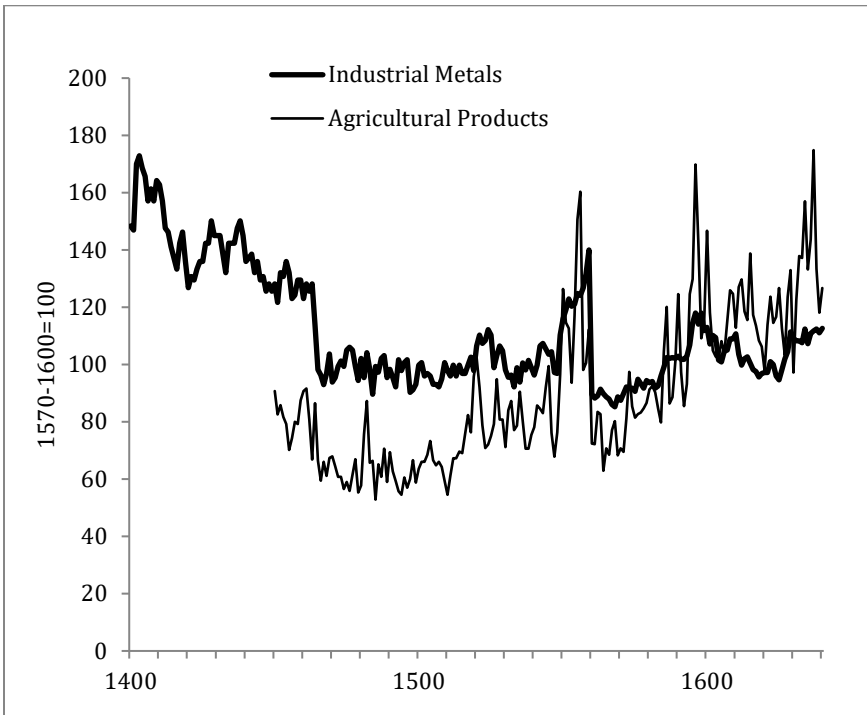
around 1:12 in 1600 and 1:15 (depending on location) in 1700. This is not a very large move over such a long period of time, similar to today's dollar/euro rate progressing smoothly from \$1.07/euro to \$1.50/euro over the course of two centuries. Such a history would be a better record of stability than any two currencies over the past two hundred years.



**Value of 1000 oz. of silver in gold oz., 1500-2011<sup>50</sup>**

English commodity prices in terms of gold showed little variance during this time period, particularly in metals. During the initial burst of Spanish looting during 1520-1550, commodity prices in terms of gold did not move at all. In 1550-1560 there was an isolated rise – whether it was related to Spanish inflows is debatable<sup>51</sup> – but prices then fell back again. In 1580, despite a six-fold increase in silver mining production since 1500 by that time, prices had returned to where they were before the Spanish gold and silver flows began. Commodity prices in terms of silver would of course reflect the decline in the value of silver vs. gold; but even this would be a modest adjustment. There was a long-term rise in agricultural prices between about 1500 and 1640, approximately doubling during that time, but this could be related to any number of factors ranging from

demographics to climate, governance, and changes in agricultural technique.



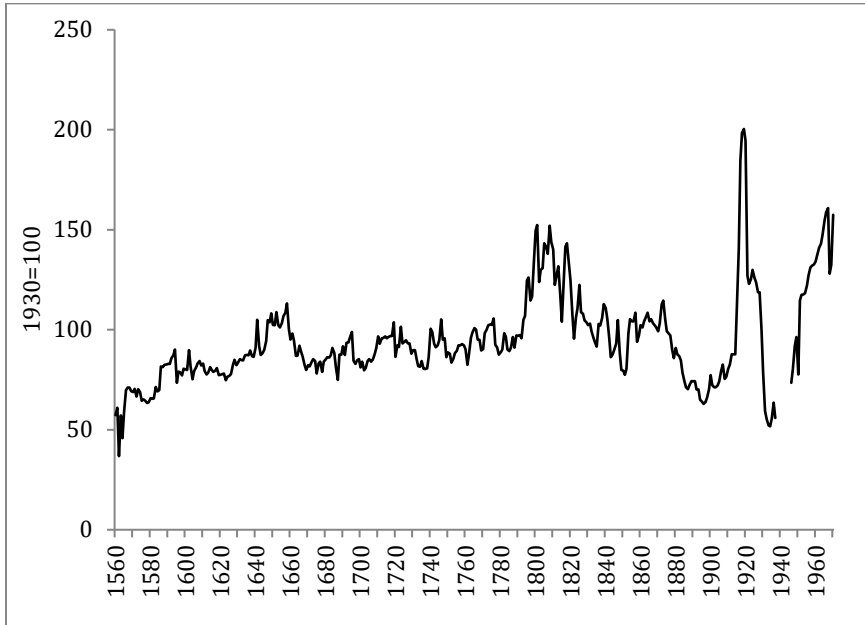
**Britain: Commodity Prices in Gold oz., 1400-1640<sup>52</sup>**

The fact that prices for base metals had no such increase suggests that the rise was nonmonetary in nature. If anything, the record is impressively stable, and certainly not reflective of a decline in the real values of gold or silver by a factor of six. This notion is related to the debasement of the British coinage during the reign of Henry VIII beginning in 1527, which coincided with the period of initial looting of the Spanish in the Americas. After four debasements, the English penny in 1546 had only a third of the silver it contained in 1525. The record of British commodity prices over this period does not present much evidence of any meaningful change in gold's value. If there was some drift, it was gradual enough to be visible only with the hindsight of decades.

### **Gold and Silver Money at the Middle of the Nineteenth Century**

Even such a simple system as bullion coinage has been subject to gross misrepresentation, continuing to the present day in college textbooks and

academic literature. This typically includes a description of a “price-specie flow mechanism,” a fallacious notion which in turn set off centuries of confusion about the “balance of payments” which continues, largely unreformed, to the present day.<sup>53</sup> Gold and silver, and coinage made from them, were the same value everywhere, in effect a common currency with some minor local particulars.



**Britain: Commodity Prices in Gold Oz., 1560-1970<sup>54</sup>**

By no means should it be assumed that the “money supply” (coinage and bullion used as money) was determined by the amount of gold or silver in a country. By one estimate, in 1850 only about 8% of all the aboveground gold worldwide was in the form of coinage.<sup>55</sup> Much of the silver in Europe and elsewhere was in the form of spoons, cups, jewelry, and other artisanal forms. Thus, even if Britain were somehow disconnected from the rest of the world, such that no bullion could enter or exit the country, the amount of coinage (“money supply”) might rise or fall depending on what portion of domestic silver people preferred to hold in the form of coins and what portion to hold in the form of candlesticks and coffee service. This would be determined by individual preference: whether individuals cared to bring their forks and spoons to the mint to be coined; or whether they brought their coins to the silversmith to be made into home furnishings.

In 1850, Britain, France, the U.S., Sweden and Japan had widespread use of paper banknotes. Outside of these areas, however, coinage still



remained the basis of commerce, just as it had been for centuries and indeed millennia, alongside a few small-scale and localized issuers of banknotes. The monetary system of the 1840s was not much different than that of the Rome under Octavian. Barter still played a major role in commoners' practical affairs. Even in the 1840s, an American farmer might barter a horse for some lumber, or some wheat for wool, with others in the local community. However, just as was the case in Sumer, this barter typically took place within the context of a standard unit of account based on gold/silver, in this case U.S. dollars. Ten dollars of apples for ten dollars of beer. A great many other commodities also served a monetary role through the centuries, but gold and silver were always dominant in the world's centers of civilization even as payment sometimes took place in cacao beans, cowrie shells or cattle.

Although coinage went through various cycles of debasement, along with all manner of regulations and restrictions regarding its use, valuation, and export, in general coins' effective market value was equivalent to the value of their contained metals. Thus, silver coins, in all their variety, were essentially variants on the fundamental "currency" of silver bullion; as gold coins were variants on the fundamental currency of gold bullion. The practical exchange rate between coins mostly reflected how much silver or gold they contained. Coinage was regularly imported and exported, and often melted and reminted into local denominations.

Silver and gold formed a unified gold/silver complex, just as had been the case for millennia previous. Their practical market values were stable enough that they amounted to much the same thing, as a standard of value or a unit of account. The migration of the gold:silver ratio in Europe from 1:14.5 in 1700 to 1:15.5 in 1800 was a change of about 7%, spread over a century, with annual variation below 2%. In the sometimes bewildering accounts of what were in effect minor differences between states or eras, it can be easy to lose the broader picture that gold and silver served as the common currency everywhere.

## Chapter 5:

# The Classical Gold Standard, 1850-1914

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The second half of the nineteenth century was the age of coal and steel, electricity and petroleum, European empire, and world trade empowered by railroad and steamship. With it came the spread of a different sort of monetary system. The monopoly banknote-issuing central bank, modeled upon the Bank of England, was replicated throughout Europe. Via European empire, and the legal, administrative, and financial systems that accompanied it, Europe's monetary and banking systems were spread around the world. Although paper money had become common in Europe by 1850, it was often issued by a myriad of small banks for local use, and remained, in most places, secondary to the metallic coinage that had served as the primary money since antiquity. By 1913, paper banknotes were dominant, and bank deposit balances had ballooned.

Political unification and reorganization, notably in Germany, Italy and Spain, led also to monetary unification and standardization. As transport and communication became easier, various bimetallic standards (with different official gold:silver ratios) could not coexist, and were themselves standardized before, due to an unprecedented collapse in the market value of silver vs. gold in the mid-1870s, gold alone became the sole effective standard. This was made possible in part by the widespread use of banknotes, and also the use of token coins (on the principles of banknotes), which, though made of silver, did not require that silver hold a reliable value versus gold, as in bimetallic systems. Banks became more common, reliable and interconnected, so that bank payments via deposit accounts were a preferred means of larger-scale payment, even on an international basis.

For millennia, people had used some combination of silver and gold, the "gold/silver complex." The final triumph of gold, as the near-universal standard of monetary value after 1875, was not a great change compared to all of the bimetallic or even pure silver standards that preceded it. The values of currencies in bimetallic systems, including the U.S. dollar and the franc-based Latin Monetary Union, did not change after the effective transition to gold monometallism in the 1870s. In practical terms, the switch was somewhat irrelevant. Gold monometallism was not a new standard or system, but more of a refinement, homogenization and simplification of the existing gold/silver complex, which had served as the monetary standard for centuries previous. The greater triumph was that of

central banks, acting as monopolies or near-monopolies, and the increasing embrace of their banknotes over coinage. This produced a uniformity, reliability and ease of exchange that had not been seen previously, and aided a gigantic expansion of international trade and finance.

Monopoly currency issuance also created the conditions for its own demise, with the outbreak of war in 1914. Floating currencies appeared everywhere. Currency monopoly allowed no alternative to the paper currencies that floated after 1914, severed from their metallic anchors. The urge to finance wars with the printing press affected nearly all governments. The U.S. and Britain did not let their currencies float very far, and were able, with some effort, to return to the prewar gold parities after the war ended. Most of the other countries of the world, however, experienced something more like a replay of the Chinese experience with paper money, or that of France during the Revolution. Coinage debasement and even hyperinflation had been around for as long as coinage existed, and were often prompted by the needs of wartime. Paper money made this so much easier. Many currencies ended World War I worth far less than they began.

### **Operational Mechanisms of the Classical Gold Standard Period**

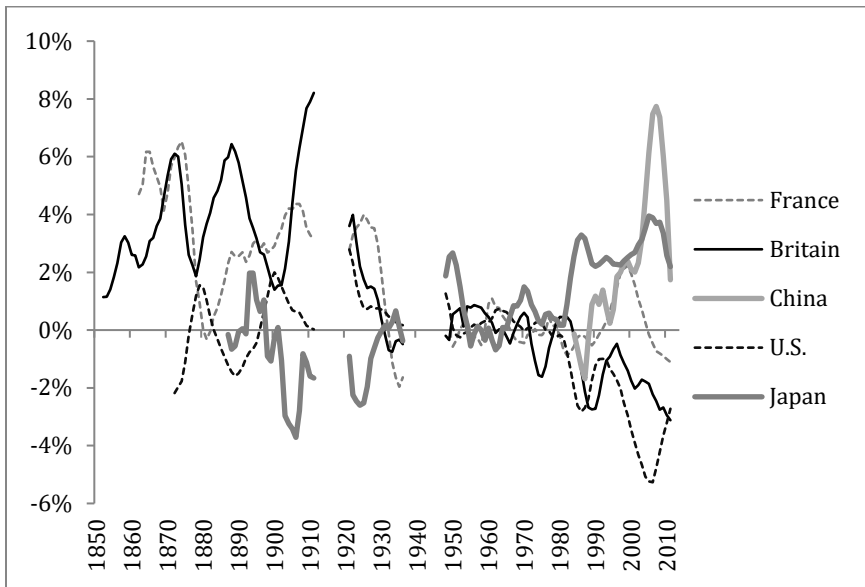
The Classical gold standard of 1850-1914 was simply a system whereby various currency issuers (such as central banks, and also smaller private banks) issued banknotes whose value was linked to gold. Thus, gold was the “standard of value.” Gold was effectively the same value everywhere, and traded freely, so it did not particularly matter if gold bullion was moved here or there, or if one currency issuer had a relatively large amount of it, and another less.

The Classical gold standard was thus, in effect, a unified world currency, issued by multiple independent entities, whether central banks or commercial banks. Gold and silver had always been an effective world currency, but in practice, issues related to small bimetallic discrepancies, Mercantilist restrictions on trade and finance, and the fractured arrangement of small banknote-issuing banks whose notes were not accepted far from the issuer, introduced minor but irritating impediments to commerce. Over time, these issues were resolved and minimized.

The emergence of a new, integrated world of money, finance, communication and trade was captured in Jules Verne’s novel *Around the World in Eighty Days* (1873). In it, the hero Phileas Fogg, inspired by an article in London’s *Daily Telegraph* (first transatlantic cable opened 1858), embarked on a circumnavigation of the world via the Suez Canal (opened 1869), the railways crossing the Indian subcontinent (1870), and the U.S. transcontinental railroad (1869), before hurrying back to London by steamship, which eclipsed sail for commercial transport in the 1870s. He financed his trip with a carrying-case of Bank of England banknotes, these

bits of colored paper universally accepted in payment from India to Indiana. The first circumnavigation of the world, led by Ferdinand Magellan in 1522, took three years. Magellan himself was killed in the Philippines, in hand-to-hand combat with spear-wielding natives. (The Mactan chief Datu Lapu-Lapu did not want to be converted to Christianity.)

The “balance of payments,” trade considerations, relative price levels (“purchasing power parity”), relative interest rates and so forth, were not a part of this process except perhaps indirectly, as such factors influenced the demand for money and thus the market value of the currency. There was no “price-specie flow mechanism,”<sup>1</sup> a still-popular notion that Bank of Italy researcher Filippo Cesarano called, in 2006, a “myth that in no way reflects how the gold standard actually worked.”<sup>2</sup> Just as is the case with currency boards today, or any other Currency Option One arrangement, the only criterion of importance was the value of the currency vs. its gold parity.



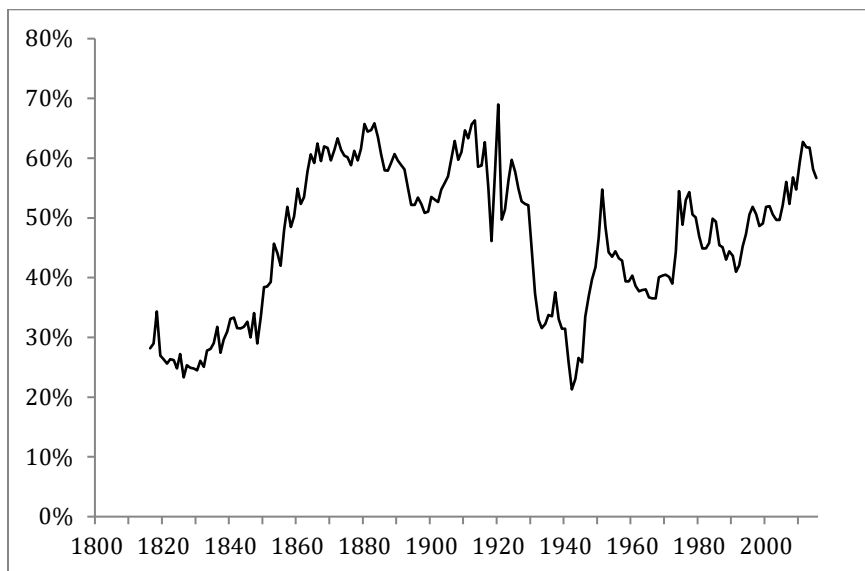
**Current Account Balances As A Percentage of GDP, 1850-2013<sup>3</sup>**  
*five year moving average*

The monopoly central banks that issued gold-linked banknotes after 1850 were operationally little different than the 1500+ banks issuing gold-linked banknotes in the United States prior to 1860, or the many thousands of other note-issuing banks in the European experience going back at least to the goldsmith-bankers of mid-seventeenth century England, if not beyond to the Italian banks of the fourteenth century.<sup>4</sup> No particular cooperation was needed between central banks, just as no cooperation was

needed among the U.S.'s many minor note-issuing banks. Each was able to maintain the value of its banknotes independent of the actions of all the others, and adjust its assets and liabilities independently to attain this goal. The status of most central banks as monopoly- or near-monopoly issuers did not markedly change their natures. Monopoly did not give them dictatorial powers, but simply greater market share.

The Bank of England led by example, not by hegemony and coercion. The only "rule of the game"<sup>5</sup> was to, by one of the various operating techniques available, adjust the base money supply appropriately to maintain currency values at their gold parities.<sup>6</sup>

Monetary and financial arrangements nevertheless took on a much more international and integrated character after 1870. International movements of capital (represented as a current account surplus or deficit) reached a level not again seen until the 1990s. Railways and steamships enabled the production of international trade commodities, and their transport worldwide, to an unprecedented degree. Global merchandise trade, as a percentage of GDP, reached a level in 1913 that was not significantly exceeded until 1995. (On a value-added basis, it has not exceeded the 1913 level to this day.) London began to be used as a clearinghouse for all manner of international payments, thus relieving any need to transact with long-distance shipments of coinage or bullion.



**Britain: Foreign Trade as a Percentage of GDP, 1816-2015<sup>7</sup>**  
*imports and exports combined*

The fundamental mechanism by which currency parities were maintained was similar to currency boards today, which accomplish the same task reliably and without incident, although typically with a different “standard of value” such as the euro or dollar. If a currency issuer failed to adjust its supply of base money properly, resulting in the same outcome as would have been obtained with a simple currency board, then various problems would emerge that would quickly lead to either capital controls or a failure of the system (as discussed in Chapter 1). In practice, unlike the relatively transparent and simple mechanism of a currency board, the major central banks of the Classical Gold Standard era used a wide array of techniques, and had considerable discretion as to which tool they would choose on any given day. This has made their operations rather difficult to decipher. Nevertheless, currency management was placid and without difficulty.

Just as with currency boards today, the basic mechanism was to reduce the base money supply when the currency’s value was a little below the intended gold parity, and to increase supply when the value was a little higher.<sup>8</sup> The base money supply was the outcome of this process. It was thus a “residual”: the base money supply was whatever was necessary to maintain the value of the currency at its gold parity. Central banks, or other independent note-issuing banks, had four basic methods to accomplish this:

**1) Gold convertibility:** Anyone could bring gold to the central bank, and receive base money (banknotes or central bank deposits) in return, at or near the parity price. Alternately, anyone could bring base money (banknotes or deposits) to the central bank, and get gold bullion in return. Total base money outstanding would expand or contract by the amount tendered. The timing and size of the transaction would be determined by the private market.

If a currency’s value was a little low compared to its gold parity, it would take more of the currency to buy gold. In other words, the “market price of gold” would be a little higher than the parity—perhaps \$21.00/oz. vs. the official parity at \$20.67/oz. The central bank would be the cheapest seller in the world gold market, and the central bank would experience gold conversion outflows. The monetary base would contract by the amount of the outflow, thus raising the currency value until it returned to its parity value and outflows ceased. If the currency’s value was a little higher than its gold parity, then it would take less currency to buy gold, and the “market price of gold” would be a little lower than the parity (perhaps \$20.20/oz. vs. \$20.67). The central bank would be the highest bidder for gold in the world gold market, and the central bank would experience gold conversion inflows. The monetary base would expand by the amount of the inflow, depressing the

value of the currency until it returned to its parity and inflows ceased.

**2) Open market operations:** The central bank could buy or sell assets on the open market. Assets would be purchased with newly-created base money, thus expanding base money by the amount of the purchase. Sales of assets would contract base money. The most common asset was domestic government bonds, although a central bank could buy and sell gold bullion, or another asset, via the same mechanism. The timing and size of the transaction would be determined by the central bank management.

**3) Foreign exchange transactions.** The central bank could purchase or sell foreign currency on the foreign exchange market, which would typically be exchanged for the debt of a foreign government, or held as foreign bank balances. This would end up as “foreign reserves.” Base money would increase or decrease accordingly, in a manner much like the process of gold conversion. The timing and size could be discretionary, or could be automatic (a permanent offer to buy or sell at the parity price) as in gold conversion or an orthodox currency board. In either case, the foreign currency would be bought (domestic currency sold) when the domestic currency’s market value was high vs. the parity value, and the converse when the domestic currency’s value was low. Foreign currency parity values would be determined as the product of their parity values vs. gold. Because the foreign exchange market was extremely liquid, and transactions had very low cost without any of the difficulties of shipping and storing bullion, variation in currency values vs. parity values would often become apparent in foreign exchange markets before gold conversion would occur. Thus, transactions in foreign exchange became the primary mechanism of base money adjustment for many central banks or other currency issuers.

**4) Discounting and lending:** Central banks engaged in “discounting,” which was to purchase the bills of a third party, typically of one to three months’ duration, at a discount to face value reflecting a short-term interest rate. This was typically done in competition with commercial banks offering the same services. The central bank could also make direct loans to entities, most likely other financial institutions, in the process also changing the monetary base. This involved the cooperation of both the central bank and the borrower, in terms of timing and size.<sup>9</sup>

In addition to these processes, a central bank could also manage the asset composition of its balance sheet at will. Any central bank (or independent issuing bank) has the choice of holding a greater or lesser amount of gold bullion, and other assets typically consisting of interest-bearing debt securities and direct lending. More bullion would serve as a reserve against possible gold conversion demands. However, the profitability of these largely-private institutions would be increased by holding a greater amount of debt securities. Also, some inventory of debt, lending, and foreign exchange would further enable open-market operations, foreign exchange operations, and lending and discounting. Thus, the mixture of each of these asset types on the balance sheet could change as was deemed appropriate, with no particular monetary consequences. (Swapping one asset for another, while leaving the total assets unchanged, does not change the base money supply.)

Bank managements would often act in a fashion complementary to bullion flows – reducing balances of securities, discounting and lending when there were substantial gold outflows, and raising them when there were inflows. In this way, a variety of tools could be used to produce the reduction in base money supply that the bullion outflow indicated. In the shorter term and smaller scale, however, changes in discounts, securities and bullion could often move in opposite directions, as part of the day-to-day management of the banking portfolio.

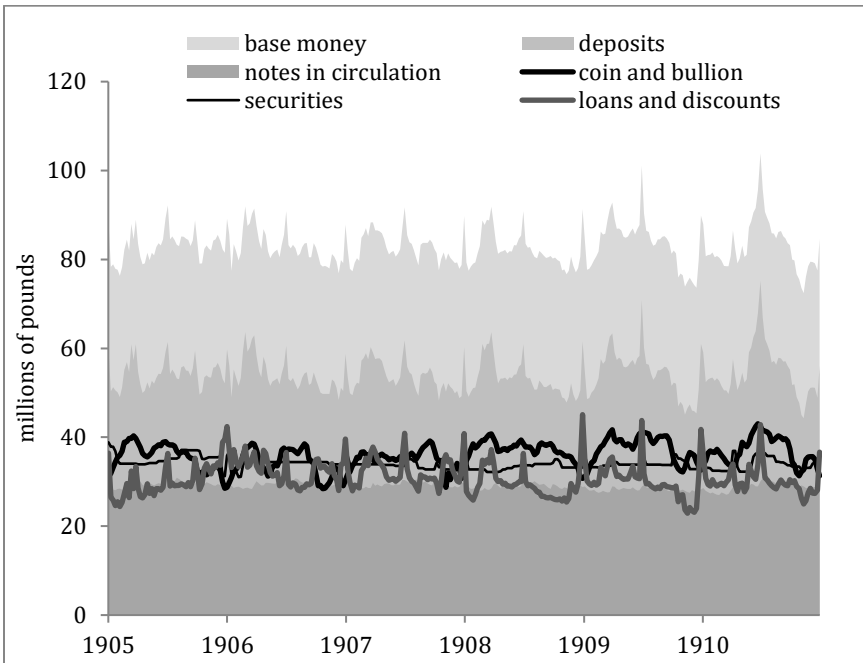
These four elements could interact with each other. Open-market purchases of bonds could lead to gold outflows, and also a decline in short-term interest rates, thus leading to a reduction in the volume of lending and discounting. Open-market sales of bonds could produce the opposite effect. An expansion of lending and discounting could lead to a sagging currency value vs. other gold-linked currencies, and outflows of foreign exchange reserves. Nevertheless, gold convertibility (and foreign exchange convertibility, to the extent that it operated in a similar automatic fashion) insured that the value of the currency would remain at its gold parity, and that base money supply was adjusted to produce this outcome. The means by which this total base money supply was achieved – the mix of reserve asset types, and the various transactions in reserve asset types – could come about by a variegated process subject to considerable day-to-day managerial discretion.

The Bank of England maintained a substantial portion of its assets in the form of discounting and direct lending at all times. The typical maturity of discounted notes was forty to fifty days. Loans were commonly for seven days to three months.<sup>10</sup> The rate at which the Bank of England made these loans was the Bank's discount rate. The Bank of England was thus in competition with a great many other financial houses, who were willing to make similar loans or discounts, at a market rate of interest. If the Bank of England's discount rate was higher than the market rate, borrowers would naturally pay back the loans or discount (sell) their bills at a more



competitive rate, and the Bank of England's total amount of lending would shrink. A discount rate at or slightly below the market rate could allow (on the discretion of both borrower and lender) an increase in lending.

The discount rate acted as a means to adjust the total volume of lending and discounting on the central bank's balance sheet, and thus a means to affect total base money supply. The Bank of England, and all other central banks operating in the same model, would have to keep their discount rate near the market rate, if they were to maintain a stable volume of lending. As market rates changed, so too must the Bank's discount rate. Thus, discount rate changes are not necessarily representative of anything in themselves, and may merely reflect natural market movements.



### **Britain: Bank of England, Assets and Liabilities, 1905-1910<sup>11</sup>**

Unfortunately, the historical discount rate tends to gain excessive attention today, within the Keynesian model of interest rate manipulation as a means of macroeconomic management. It was just one tool, among many, to adjust base money supply and balance sheet composition, with the goal of maintaining currency value at gold parities.

In practice, a raise in the discount rate might lead to an inflow of gold bullion at the Bank of England. How would this come about? Neither the purchase of a short-term bill, nor its eventual repayment, involved any transactions in gold. A rise in the discount rate would render the Bank

relatively uncompetitive against other lenders. The Bank's loan book would shrink, along with the base money supply. This base money contraction would tend to lead to a rise in currency value. If the currency's value rose above its gold parity then gold bullion would be offered to the Bank in trade for base money. The Bank would be the highest bidder in the gold bullion market.

Today, many interpretations of the pre-1914 era have an excessive focus on "confidence" in central banks, and "cooperation" between central banks. The basic reason for this is because the mechanisms by which gold parities were maintained are not understood.<sup>12</sup> Without this understanding, some reason must be invented by which currencies nevertheless maintained unchanging gold parities for decade after decade, an experience very different from many recent central banks whose ill-managed "currency pegs" blow up over and over – the inherent instability of Currency Option Three. Yet, today's currency boards are extremely reliable, and have no need for "confidence" or "cooperation." These systems, like the gold standard systems of the pre-1914 era, are automatic Currency Option One systems.

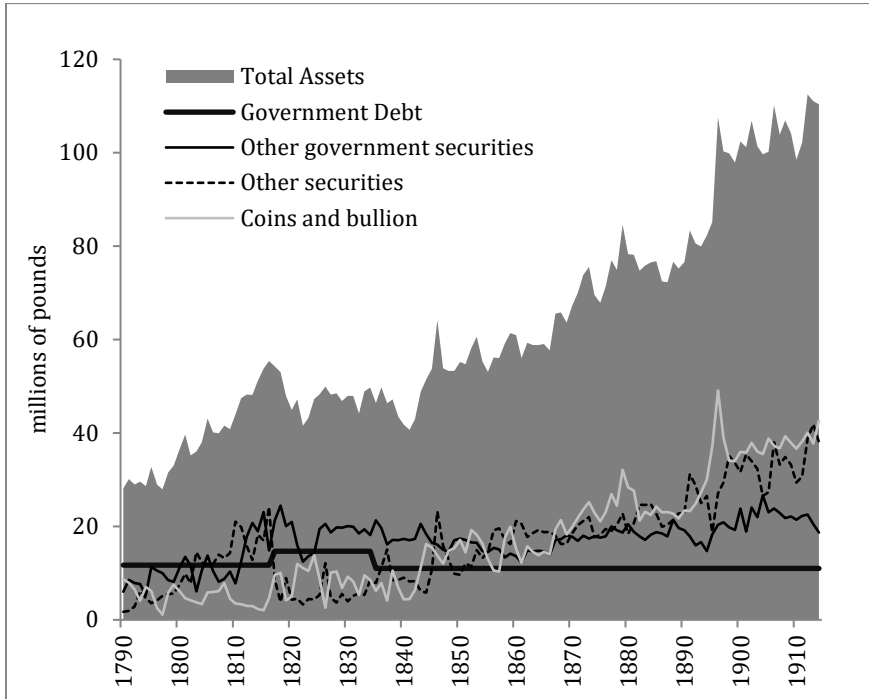
### **The Composition of Major Currencies**

The Bank of England served as the model for monopoly central banks worldwide, and also illustrated typical behavior for smaller note-issuing banks in those countries where currency monopoly had not yet been instituted. A look at the Bank's long-term and also short-term operation gives a flavor of the practical application of the worldwide gold standard during the period.

On a weekly basis, the Bank of England's assets and liabilities showed considerable variation. The Bank was active in bullion (gold conversion), open-market operations in bonds, and discounting and lending on a continuous basis. Overall base money varied considerably in the short-term, reflecting seasonality and also a high degree of variability in public deposits, the government's bank account at the Bank.

Variation in gold bullion represents gold conversion. When the pound's value was a little below its gold parity, base money would be converted to gold and gold outflows would ensue. This outflow would coincide with a corresponding reduction in base money. When the pound's value was a little higher than its gold parity, gold inflows would occur, and base money would expand in proportion. Continuous activity in gold shows that this occurred on a weekly and even daily basis. Thus, any oversupply or undersupply of base money from discounts or open-market operations of bonds would be naturally corrected by corresponding changes in the monetary base from gold conversion. The overall level of base money was thus an amount appropriate to keep the value of the pound at its gold parity. The three elements would thus often work in opposite directions: an

expansion of debt holdings (bonds and discounts) might correspond with an outflow of gold; and a contraction of debt holdings might correspond with an inflow of gold. This, as some observers have noted, is somewhat contrary to expectations that bullion reserves and debt holdings would expand or contract in tandem.

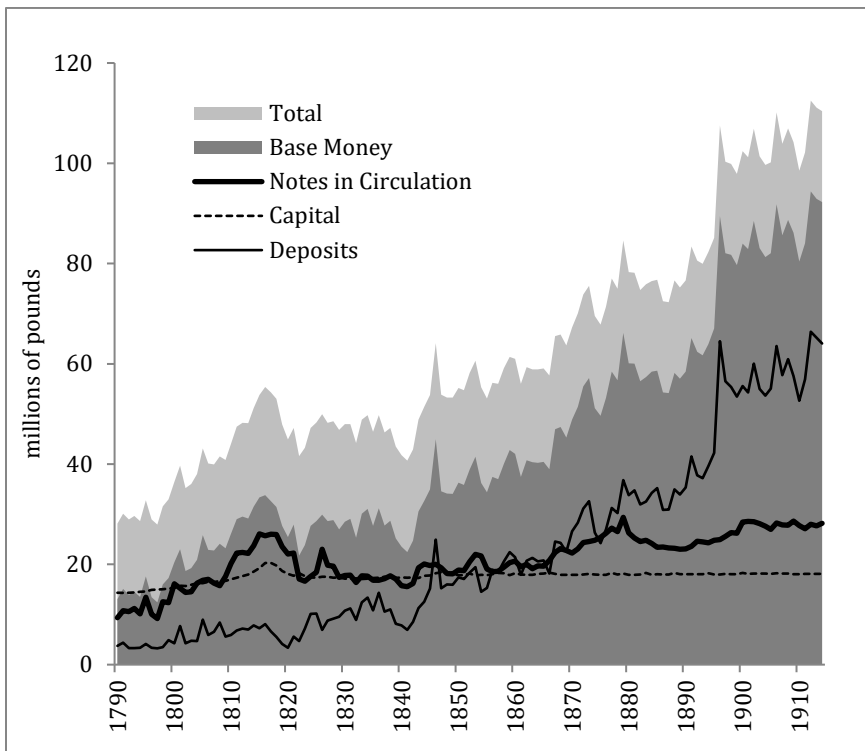


**Britain: Bank of England, Aggregate Assets, 1790-1914<sup>13</sup>**

However, on the larger scale and longer term, the Bank maintained its gold bullion reserve in a stable ratio with base money. It did not allow bullion reserves to decline continuously, or to expand continuously. If bullion had an extended outflow, debt holdings could be contracted (perhaps via a rise in the discount rate, making the Bank relatively uncompetitive vs. other lenders), which would support the value of the pound and thus turn outflow to inflow. Continuous bullion inflows would indicate that debt holdings could expand, thus increasing interest-bearing assets and the profits of the Bank. In this larger scale, debt holdings and bullion reserves would indeed expand or contract in tandem.

Central banks that also had substantial transactions in foreign exchange (in practice, nearly all of them except for the U.S., Britain and France) added yet another component of complexity to the already-complex model of the Bank of England. However, behind this complexity lay an essential

simplicity: when the currency's value rose against the reserve currency, the reserve currency would be bought and the domestic currency sold on the foreign exchange market. This would increase the monetary base and thus depress the value of the domestic currency. The opposite would occur when the domestic currency was weak vs. the reserve currency. The operating mechanism was thus identical to direct bullion conversion, and identical to currency boards today. Although the simultaneous operation of bullion conversion, foreign exchange activity, open-market operations in bonds, and direct lending and discounting, can seem dauntingly difficult, the basic operation was simple: when the currency's value was high, base money would expand; and when the currency's value was low, base money would contract.



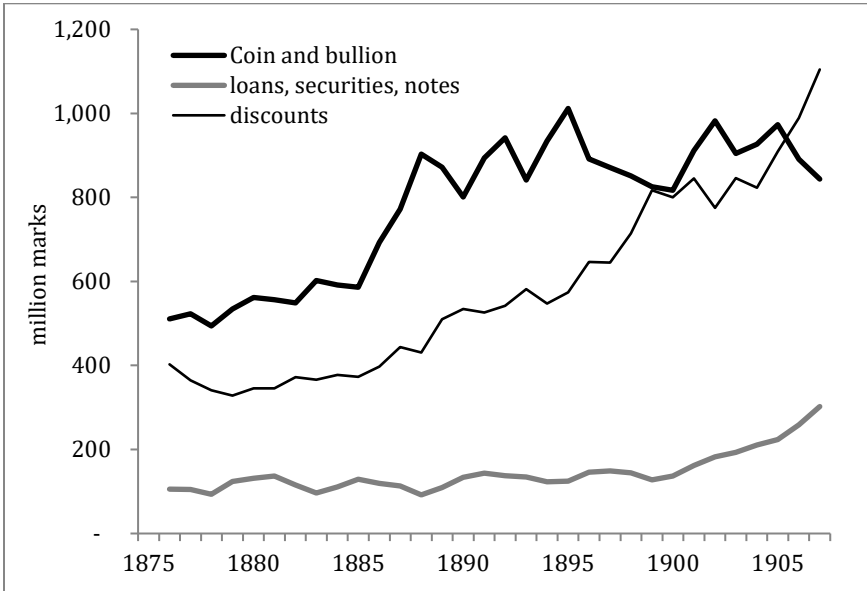
**Britain: Bank of England, Aggregate Liabilities, 1790-1914<sup>14</sup>**

The monetary stability and long-term reliability of the gold standard produced very low and stable interest rates throughout Europe. Britain's everlasting Consol bonds – government bonds of infinite maturity – were eventually replicated elsewhere. In practice, yields on government debt worldwide traded at a spread to Consols, reflecting their lower perceived

reliability. Nevertheless, the low and stable gold standard interest rates that Amsterdam had enjoyed in the seventeenth century, and Britain in the eighteenth, spread to government and corporate borrowers throughout the world by the end of the nineteenth.

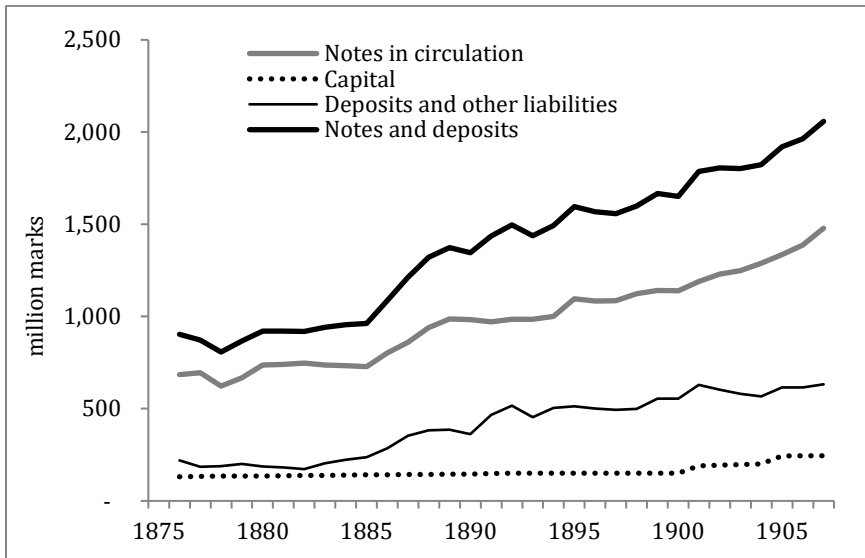
**Political Unification and the Spread of Central Banks**

In 1850, Britain had a privately-owned note-issuing monopoly central bank, with a history of success stretching back to 1694. This model would later be imitated throughout the world; but, at that time, it had been imitated primarily in France. The United States had overtly rejected the monopoly model three times, in favor of a free-banking or multiple-issuer system. Sweden, another early paper-currency adopter, had experienced a long series of difficulties and stretches of unreliability, the krona’s value vs. gold finally settling down in the 1840s. The Netherlands also had a new monopoly central bank after 1814. The rest of Europe still used mostly coinage, with a scattering of small local banks of issue. This situation was not particularly chaotic, as the myriad coinages and banks of issue were unified by the use of gold and silver as the basis of money everywhere. The stability of the market gold:silver ratio since 1650 allowed governments to adopt formal bimetallic systems, in the United States and in Europe.



**Germany: Reichsbank, Assets, 1876-1907<sup>15</sup>**

This picture of small-scale diversity mirrored a somewhat unstable and diverse political situation, with the Napoleonic Wars unsettling governments across the continent early in the nineteenth century. Brief rule by France brought with it the Napoleonic Code, and also experience with the uniform French franc. Another round of political turmoil in the 1860s and 1870s resulted in substantially new government arrangements, often accompanied by new monetary arrangements, typically in the direction of central bank currency monopoly and greater use of banknotes.

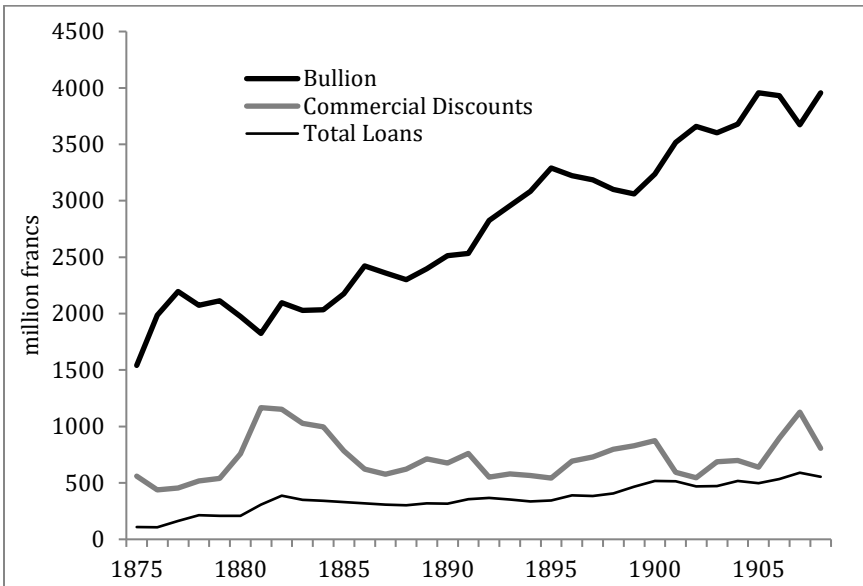


**Germany: Reichsbank, Liabilities, 1876-1907<sup>16</sup>**

In Switzerland before 1798, about 75 entities made coinage, resulting in about 860 different coins in circulation. France invaded in 1798, turning Switzerland into an ally known as the Helvetic Republic. Swiss independence was re-established in 1815. A brief civil war ensued in 1847, leading to a new federal constitution in 1848 that established the government that continues to the present day. The new constitution specified that the federal government would be the only entity allowed to make coinage in Switzerland. In 1850, the Swiss franc was introduced, equivalent to the French franc at 4.5 grams of silver or 290.322 milligrams of gold. The Swiss National Bank was formed in 1907 as a monopoly issuer of banknotes. Despite its name, shares in the bank trade on the Swiss stock exchange today.

Italy was invaded by France in 1796. By 1799, France had conquered most of Italy. In 1809, the French army occupied Rome. After France's reign in Italy ended in 1814, Italy entered a long process of unification of the

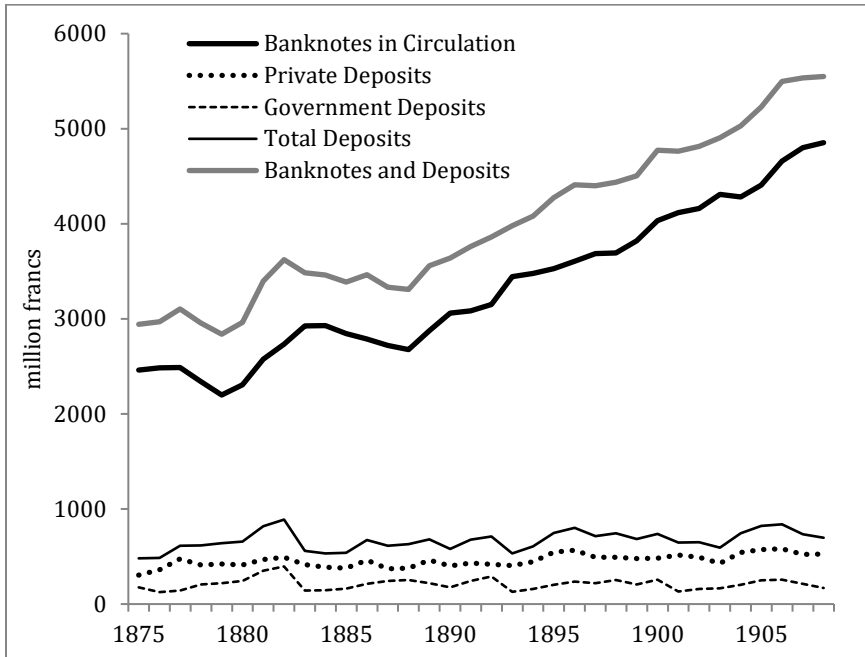
various small states that occupied the peninsula. In 1861, the Kingdom of Italy was established, and the Italian *lira* was introduced that same year. It had a value again equivalent to the French franc at 4.5 grams of silver or 290.322 milligrams of gold. Small independent banknote-issuing banks had been active since the first half of the nineteenth century, although banknote use was still sparse. After the introduction of the lira standard, existing banks retained their right to issue banknotes. In 1874, six competing banks were authorized to issue currency in Italy. A financial crisis and scandal resulted in the Bank Act of 1893, which created the Bank of Italy from the merger of three banknote-issuing banks; three others remained. In 1926, the Bank of Italy gained a monopoly on banknote issuance.



**France: Bank of France, Assets, 1875-1908<sup>17</sup>**

The Dutch Republic had been a loose confederation of largely independent provinces. The Dutch guilder was a popular coin, among many that circulated from throughout Europe, but the seven Dutch provinces took a libertarian approach and did not have an official currency standard. After invasion in 1806, Napoleon put his brother Louis Bonaparte on the throne of the Kingdom of Holland, a French vassal state. After France's departure, William I established the independent United Kingdom of the Netherlands in 1815. Even before this official recognition, however, William established *De Nederlandsche Bank* (DNB) in 1814, which remains the central bank of the Netherlands today. The Dutch guilder standard was introduced at the same time, with its parity of 605.61 milligrams of fine gold unchanged

(except for a tiny adjustment in 1875) until 1914. From its inception, the DNB was the sole issuer of banknotes in the Netherlands, and also served as the government's bank, receiving and making all government payments. Shares in the bank were owned by private investors. The new monopoly central bank was initially greeted with mistrust, however, and coins were generally preferred to banknotes.<sup>18</sup> From 1863, the bank was required to hold bullion equivalent to 40% of circulating banknotes.



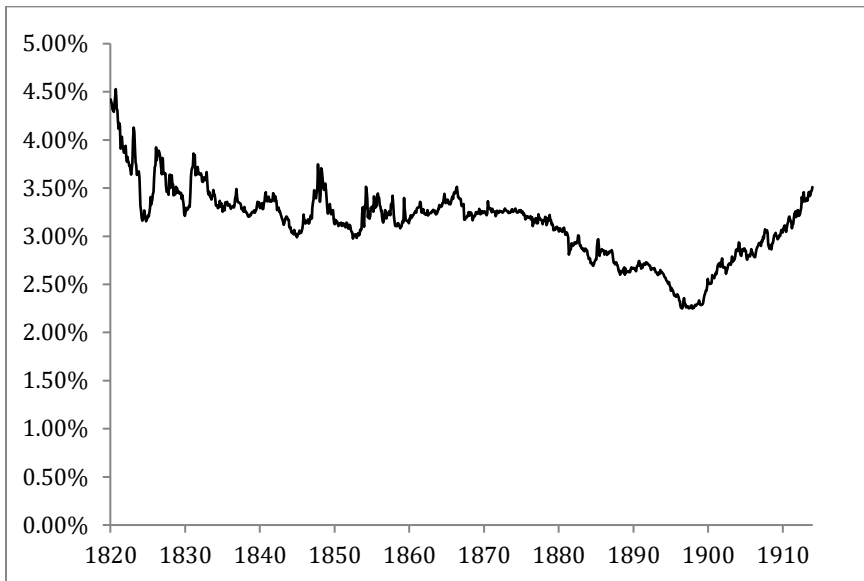
### France: Bank of France, Liabilities, 1875-1908<sup>19</sup>

Belgium gained independence from the Kingdom of the Netherlands in the Belgian Revolution (1830-1831). In 1831, Leopold I became the new King of Belgium. In 1832, the Belgian franc was introduced, also equivalent to the French franc. In 1850, the National Bank of Belgium was created, with 100% private capital. Today, 50% of NBB stock is freely traded on the Belgian stock exchange, with the other 50% of shares reportedly owned by the Belgian government.

The Latin Monetary Union was established in 1865, among France, Belgium, Italy and Switzerland. The treaty established an official bimetallic ratio of 15.5:1 among all participants, and standardized coinage that would be freely exchangeable. Greece joined in 1867. Spain and Romania considered joining, and took steps to conform their currencies to the LMU standard. The French colonies Algeria and Tunisia became unofficial



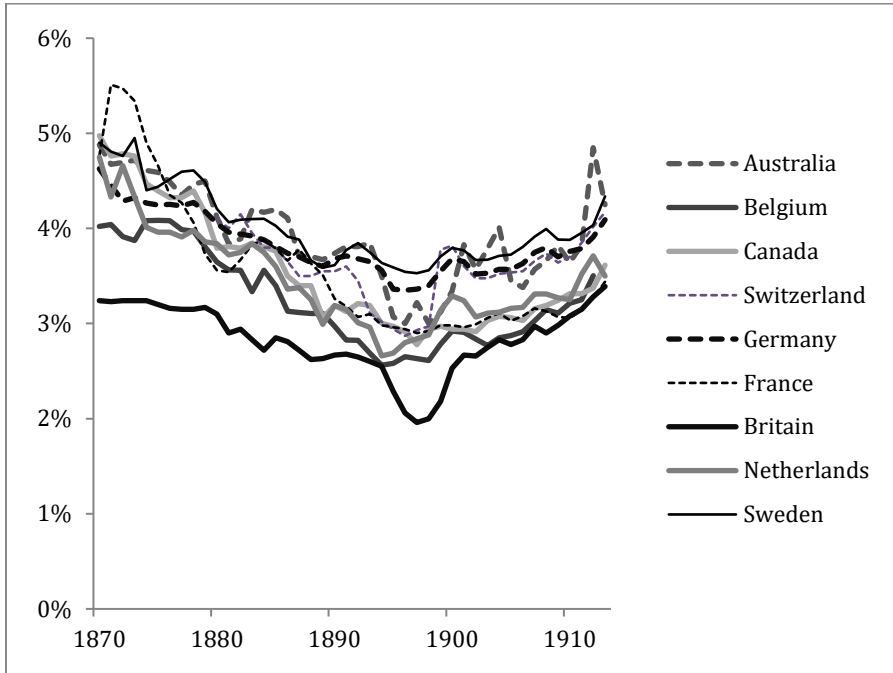
participants in 1865; Peru adopted the franc system in 1863; Colombia and Venezuela joined in 1871; Finland joined in 1877; Serbia in 1878; Bulgaria in 1880; the Dutch West Indies in 1904; and Albania in 1912. Due to the drop of silver vs. gold in the 1870s, bimetallism was provisionally suspended in 1873, and this made permanent in 1878. The LMU bimetallic system had migrated to gold monometallism.



**Britain: Yield on Consol Bond, 1820-1913<sup>20</sup>**

After the French departed Spain in 1814, a long period of political unrest followed. In 1868, a revolt led by the military deposed queen Isabella II. The Spanish *peseta* was introduced in 1869. After a period of further turmoil, Isabella's son Alfonso became King of Spain in 1874, with the establishment of a constitutional monarchy that lasted until 1931. The peseta used the French franc standard of 4.5 grams of silver or 290.322 milligrams of gold, with gold monometallism prevailing after 1873. The Bank of Spain was founded in 1782 as a privately-owned entity to provide financing for the government. It did not issue banknotes until 1829, when it gained a monopoly on note issuance in Madrid. In 1874, the Bank of Spain became the monopoly issuer of banknotes in all of Spain.

Portugal's first paper money was issued by the government in 1797. By the 1820s, several private banks issued banknotes. The Bank of Portugal was established in 1846, as a privately-owned banknote-issuing bank. In 1891, the Bank of Portugal became the monopoly issuer of banknotes in Portugal.



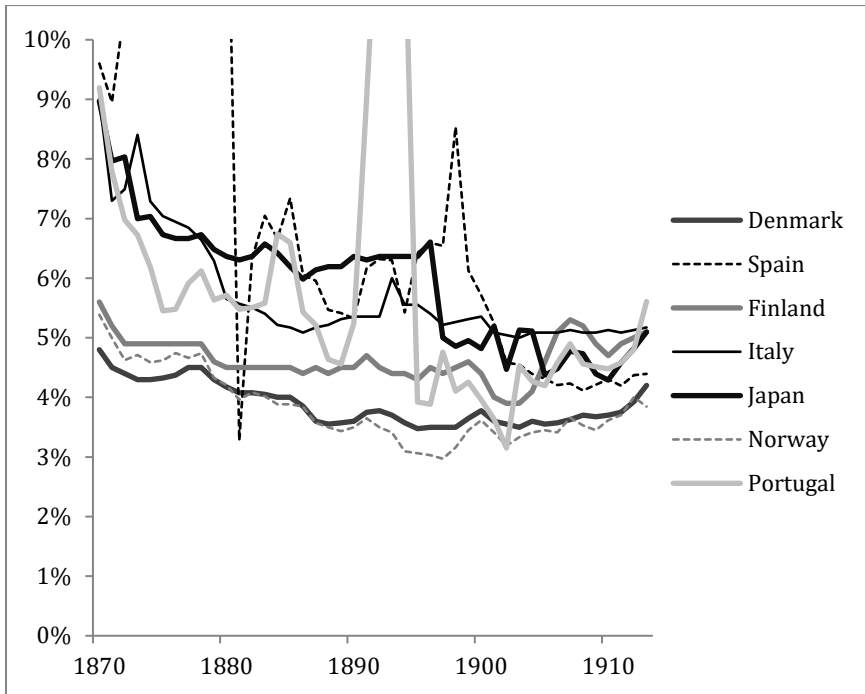
**Government Bond Yields, 1870-1914<sup>21</sup>**

The Franco-Prussian War of 1870-1871 accelerated the process of German unification, leading to the creation of a unified German state in 1871. Previously, Germany had 31 central banks, and each independent state issued their own money. In 1870, a law was passed that banned the formation of any more central banks. The German *mark* was introduced in 1873. In 1876, the privately-owned Reichsbank became the primary issuer of currency in Germany, replacing most existing note-issuing banks although four remained until 1914.

The Franco-Prussian War was a disaster for France. Napoleon III himself surrendered to the Prussians in battle, effectively ending the Second Empire (1852-1870). The Third Republic (1870-1940) emerged as a result. The modern franc, established with the Bank of France in 1800, maintained its value until 1914. The French franc did not suffer much during the war, but conversion into bullion had been suspended. Resumption of gold convertibility after peace resolved lingering doubts as to the reliability of the franc.

For Russia, the biggest political event in the nineteenth century was the freeing of the serfs in 1861, which led to a major adjustment in internal politics. Among the reforms of that era was the establishment of the State Bank of Russia in 1860. The bank was given the task of consolidating and cleaning up the messes of a number of predecessor state banks, including

their unreliable banknotes. This was not fully accomplished until a reform in 1898 established a monometallic gold standard system, with the State Bank the sole issuer of high quality, redeemable banknotes. Unlike the privately-owned Bank of England model, the State Bank of Russia was under the direct control of the Ministry of Finance.<sup>22</sup>

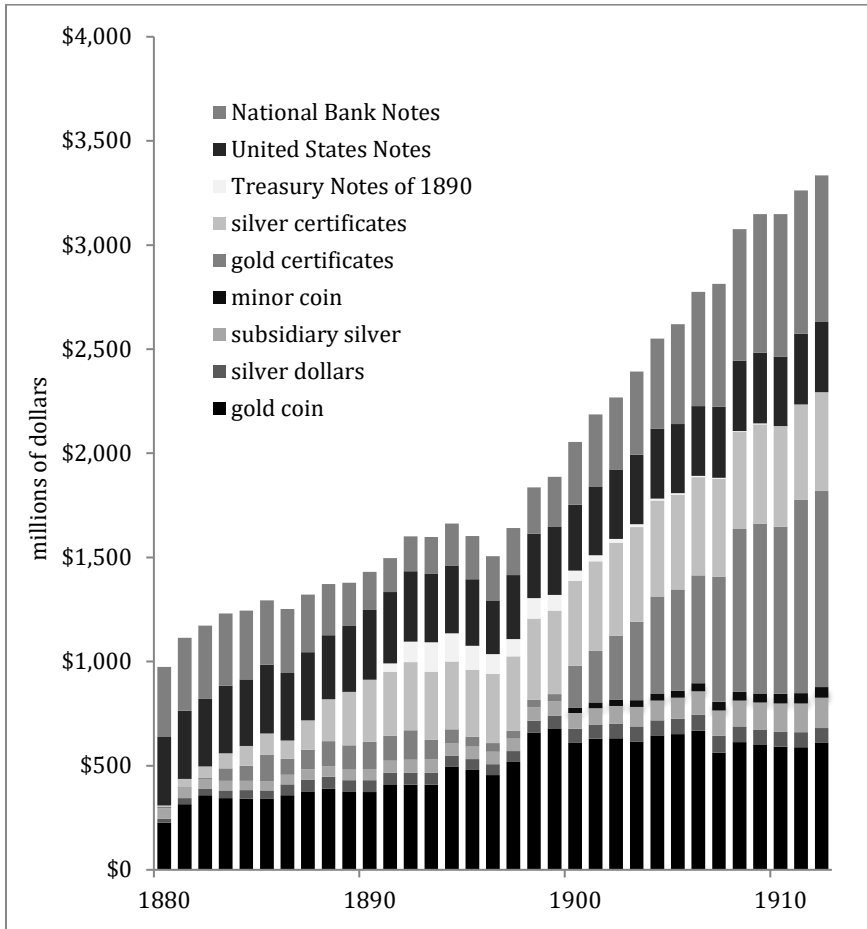


### Government Bond Yields, 1870-1914<sup>23</sup>

The United States continued with a multi-issuer “free banking” model until the creation of the Federal Reserve in 1913. Nearly seven thousand U.S. banks issued banknotes in 1910. Even after the Federal Reserve’s creation, smaller banks issued their own banknotes until the end of the 1930s. In 1930, Federal Reserve Notes still accounted for less than half of the currency in circulation in the United States.

However, the libertarian “free banking” model that prevailed before 1860 was substantially modified by the introduction of the National Bank system in 1863 – a somewhat strange development considering that the United States was embroiled in Civil War at the time, and also issuing government currency (the “greenbacks”) to finance it. The National Bank system homogenized the many independent currency issuers, by requiring that all member banks take each others’ banknotes at face value. Independent banks’ gold bullion reserves were centralized at the U.S.

Treasury. Treasury-issued silver certificates and gold certificates themselves became the most common form of banknote, eclipsing the combined circulation of all the National Banks by 1900.



**U.S.: Composition of Currency in Circulation, 1880-1912<sup>24</sup>**

The Civil War, and the issuance of United States Notes (“greenbacks”) to finance it, led to the effective devaluation and floating of the dollar. A long process of restoration returned the dollar to its prewar gold parity in 1879. During this time, in 1873, production of silver coinage was halted, which effectively put the dollar on a monometallic gold basis as was occurring in Europe at the time. Thus, the United States, although it did not have a monopoly central bank in the model of the Bank of England,

nevertheless moved considerably along the path toward a homogenized and centralized currency system.

The Meiji Restoration of 1868 propelled Japan from medieval isolationism into nineteenth century industrial capitalism. A confusing stew of archaic coinage, foreign coinage, and a menagerie of unreliable banknotes was replaced by a new unified currency, the *yen*, in 1871. It was conceived on a bimetallic basis, worth 24.26 grams of pure silver (roughly equivalent to the Spanish silver dollar coins then in use worldwide) or 1.5 grams of gold. However, the decline in the value of silver immediately afterwards effectively put the yen on a silver basis. Prefectural governments (the former medieval domains) still retained the right of currency issuance, via "National Banks." In part to finance military expenditures related to the consolidation of the new state, in 1868-1878 paper currencies from both the National Banks and the central government were overissued and depreciated against both silver and gold. A return to a silver basis took place in 1879-81. The Bank of Japan was founded in 1882, after the Belgian model, and was given a monopoly on controlling the money supply in 1884. The Bank of Japan's first banknotes were issued in 1885. The declining and unstable value of silver vs. gold led the Japanese government to adopt gold monometallism in 1897, with the yen then worth \$0.50 U.S. dollars. The notes of the National Banks were phased out in 1899. Shares in the Bank of Japan trade today on the Tokyo stock market.

The Bank of Korea was founded in 1909, with the *won* equivalent to one Japanese *yen*.

Chinese yuan coins, of silver, were not minted domestically until 1897. Until then, Chinese were happy to let Spain, and then Mexico, make their silver coinage. Banknotes reappeared in the second half of the nineteenth century, issued by independent foreign-owned banks in China. After the Xinhai Revolution in 1911, which ended the rule of the Qing Dynasty and established the Republic of China, the number of domestic banks issuing banknotes multiplied. In 1935, the number of currency issuers was reduced to four banks, while ownership of silver yuan coins, or silver bullion, was banned. The currency was soon overissued in response to wartime finance needs. Inflation and eventually hyperinflation resulted, during World War II and the civil war that followed. One of the first acts of the communist government was to establish the People's Bank of China in 1948, which issued a gold-based yuan, in banknote form only. All other banks in communist China were organized as divisions of the central bank.

### **Gold Monometallism and the Decline of Silver**

In 1870, only two countries – Britain and Portugal – had monometallic gold standard systems. Other countries used some form of bimetallicism or a silver-centric arrangement. An international conference in 1867 sought to resolve the problems of bimetallicism, potentially by adopting a

monometallic gold standard. Also, national coinage standards would be changed to simplify their ratios with other national coinages. However, no agreements were formed, and nothing was done.<sup>25</sup> In 1870, the value of silver compared to gold was 16:1, its historical lower bound, but it then headed downward. The proximate cause of the decline may have been related to the adoption of gold monometallism by Germany in 1871, which was followed by the coinage of about 1,015 million marks (363 tons) of gold in 1872-73<sup>26</sup> – a little more than the 352 tons of gold production in those years, and about 1.61% of aboveground gold at the time. By itself it was a minor matter, hardly significant over the previous five millennium in which the values of gold and silver were linked. But, apparently the time had come. As the value of silver dropped during the 1870s, beyond the lowest values seen in centuries (perhaps ever), bimetallism became impossible and governments quickly converted to effective monometallic gold standard systems. This was largely a reaction to market prices.

The Latin Monetary Union effectively instituted gold monometallism (with silver as a token coinage) by suspending free coinage of silver in 1873. This was a temporary expedient, and expectations at the time were for a quick return to normalcy. After several years of waiting for a recovery in silver's value vs. gold, gold monometallism was made official in 1878. Norway, Denmark and Sweden had a similar history, with nearly identical dates. The United States also suspended silver coinage in 1873, as a temporary expedient, but did not formally embrace monometallism until 1900. The unprecedented decline in silver's value thus cannot be ascribed to government policy, although governments' scramble to adjust to the new monetary realities probably helped cement the transition. Silver coins continued in circulation, although they became token coins. Banknotes at the time were typically in larger denominations, not the small denominations that could easily displace silver coinage. Silver coinage in the U.S., for example, more than tripled between 1880 and 1913. Some of the world's largest users of monetary silver, notably China and India along with a broad swath of other less-developed countries in Asia and Latin America, continued their use of silver coinage.

Another international conference was held in 1892. Unlike the 1867 conference, in which gold monometallism was proposed as an alternative to the bimetallic policies then common, the 1892 conference was dominated by bimetallists, as an alternative to gold monometallism that had by then become the norm. The bimetallists were supported by those (especially agrarian interests) who desired what amounted to a large devaluation of currencies, due to the decline in silver's value vs. gold. This conference also resulted in general disagreement, and nothing was done.<sup>27</sup>

The breakdown of silver's market value in the 1870s, and its failure to return to its reliable old relationship vs. gold in the decades that followed, thus remains something of a mystery. At some fundamental level, it seems, humanity as a whole decided that gold alone would serve as a monetary

basis of value from that point hence. Silver, which had been a mirror image of gold for centuries, became unusable as a practical standard of value.

### **Central Banks as “Lenders of Last Resort”**

During the first half of the nineteenth century, Britain experienced a series of chronic “liquidity shortage crises,” typically around the harvest season in the autumn. The need to make payments related to the harvest, or other year-end demands of businesses, led to a rise in demand for base money in response. Banks found that they all needed to borrow short-term funds for this purpose, which nobody was able to lend – a system-wide shortage of base money. The result was a rise in short-term interest rates to anomalously high levels, and a lack of funds available to borrow at any price even for the most creditworthy borrowers, with potentially dire consequences. A solution was found by the Bank of England lending freely, at a high rate of interest, to banks of high solvency or against good collateral. This was somewhat counter-intuitive: while other banks were eager to borrow and refused to lend, the Bank would take the opposite action. This would increase the base money supply, relieving the systemic shortage. When the short-term seasonal demand had passed, banks would pay off their high-interest loans, and the base money supply would naturally contract. The Bank thus acted as what was known as a “lender of last resort.” The Bank would not, in any way, support insolvent and failing banks. A final crisis of this sort took place in 1866, with the insolvency of Overend and Gurney, London’s largest discounting house. In the ensuing turmoil, the Bank lent freely at ten percent; Overend was permitted to fail. The principles of this “lender of last resort” function (using the Overend and Gurney crisis as an example) were later expressed in Walter Bagehot’s *Lombard Street* (1873). The “lender of last resort” function of central banks was in no way contrary to the principle of the gold standard; the Bank of England exemplified both for the remainder of the century. Britain never suffered another liquidity-shortage crisis again.

Talk of an “elastic” currency, able to accommodate seasonal or crisis-induced changes in the need for base money, did not imply any change in the value of money, any attempt at manipulating the broader economy via some change in the money, or any attempt to support otherwise insolvent banks. The Bank of England’s action to “reduce interest rates” – by lending freely at a high penalty rate when, absent any action by the Bank, market interest rates may have soared to higher levels – did not imply any attempt to manage the broader economy with interest rate manipulation, in the fashion suggested by the British Mercantilists a century earlier. Yet only banking specialists understood the exact meanings of these terms. To the broader public, or a politician, it seemed that central banks “solved the crisis by printing money” and “reducing interest rates.” Virtually any financial, fiscal or economic difficulty can be expressed as a “shortage of

money;" and for all of these problems, one simple solution presented itself. The Mercantilists' vision of managing the economy by manipulating the currency began to dance again in their dreams.

A liquidity-shortage crisis in the U.S. in 1907, exacerbated by reserve requirements that prevented banks from using the resources they had, provided the political impetus for the introduction of the Federal Reserve in 1913. The Federal Reserve was not supposed to be a "central bank" in the model of the Bank of England. It would not have a currency monopoly or be a dominant issuer of banknotes. To allay fears of centralization, the Federal Reserve system was conceived as a combination of twelve regional banks. Nor was the Federal Reserve supposed to act as a regular commercial discount bank, as the Bank of England did. Rather, it was supposed to stand idly by, awaiting a crisis such as that of 1907. It might have to wait years, even decades. In a crisis, it would make short-term loans at a penalty interest rate; a few weeks later, these loans would be paid back, and the Federal Reserve would return to idleness. In the meantime, it would act as a payments clearinghouse between banks, replacing existing institutions in that role. The 1907 crisis was the last liquidity-shortage crisis in the U.S.

The outbreak of war in 1914, and the U.S. entry into that war in 1917 just as the Federal Reserve system was becoming operational, radically changed the Federal Reserve's activities. During the 1920s, the Federal Reserve was acting in much the manner of the Bank of England, active in the discounting market on a continuous basis and experimenting with open-market operations in government bonds. Federal Reserve banknotes constituted roughly half of all banknotes in circulation. By the end of World War II, the Federal Reserve had become an effective monopoly central bank.

### **Reserve-Currency Systems Before 1914**

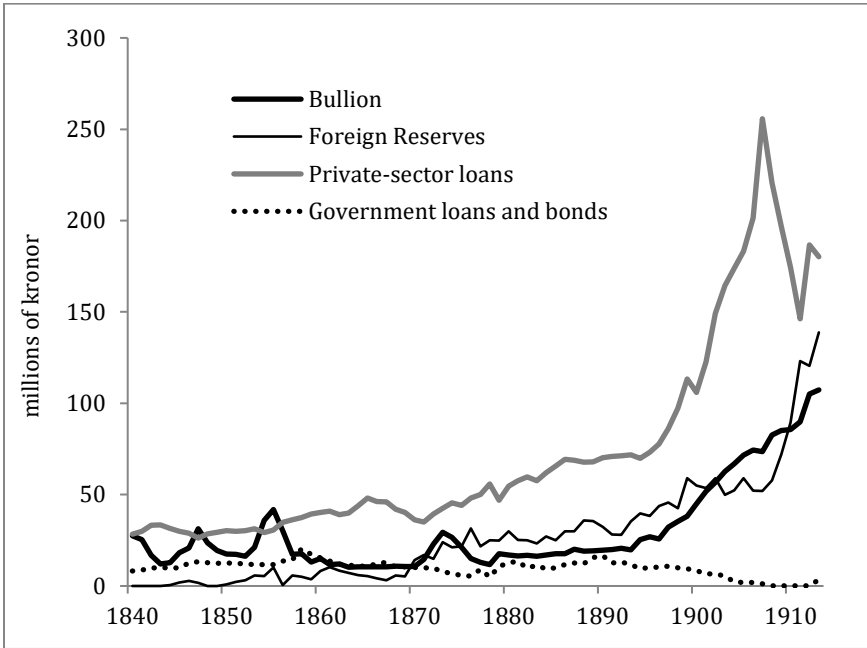
A "gold exchange standard" was, essentially, a currency board-like link to an international gold standard currency, most likely the British pound. The primary method of operation was foreign-exchange transactions with the reserve currency.

Austria-Hungary, Russia, Japan, the Netherlands, most Scandinavian countries, Canada, South Africa, Australia, New Zealand, India and the Philippines were important examples of "gold-exchange standards" in the pre-1914 period. "Gold exchange standards" were also used by a variety of minor currencies, in Asia and Latin America.<sup>28</sup> "It may fairly be said ... " John Maynard Keynes wrote in 1914, "that in the last ten years the Gold-exchange Standard has become the prevailing monetary system of Asia."<sup>29</sup>

The idea of the extreme form of the "gold exchange standard" – in which there is no convertibility, gold coins do not circulate, and the central bank's assets are held entirely in government bonds of the reserve currency – is attributed to A.M. Lindsay, deputy secretary and treasurer of the Bank of Bengal, in 1876.<sup>30</sup> India's silver coinage-centric system had been



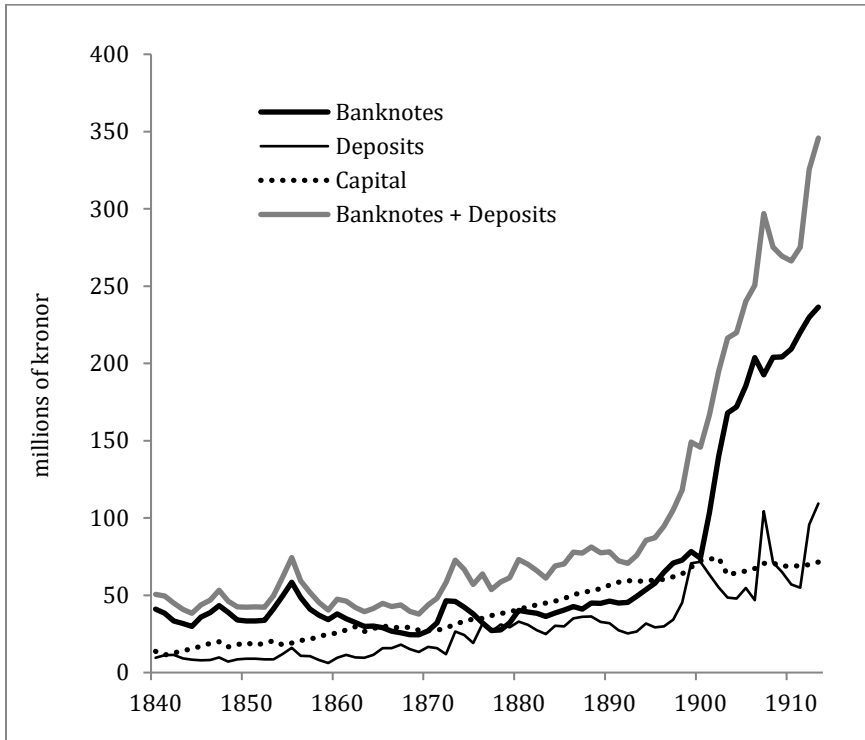
problematic since the 1870s, particularly as it was under British rule. In 1898, India adopted a "gold exchange standard" based on the British pound, a model imitated in other countries in Asia. Numerous governments in Latin America also had systems based on silver coinage, but which had lapsed into floating fiat paper currencies. Some of them, including Peru, Argentina, Uruguay and Mexico, migrated to a gold basis using reserve-currency systems.<sup>31</sup>



**Sweden: Sveriges Riksbank, Assets, 1840-1913<sup>32</sup>**

In 1903, the governments of Mexico and China asked for the services of American economists to discuss monetary options. President Theodore Roosevelt requested the organization of a group known as the "Commission of the Gold Exchange Standard." The group soon focused on the Philippines, which had become a U.S. colonial interest after being taken from Spain in the Spanish-American War of 1898, and after the U.S. military defeated a local independence movement in the Philippine-American War of 1899-1902. The Philippines had a tradition of silver coinage, along with China, which had become problematic due to the decline in the value of silver since the 1870s. The chief architect of the Philippine gold exchange standard was Edwin Walter Kemmerer, who later designed several gold exchange standards for Latin American countries in the 1920s.<sup>33</sup>

The pre-1914 pattern was largely replicated after 1920, with core European countries on an independent gold standard system and peripheral countries on some form of gold-exchange standard. The increasing use of banknotes instead of bullion coins in peripheral countries after 1920, and the further establishment of monopoly central banks throughout the world outside of Europe, increased the general dependence upon gold-exchange standard arrangements as decades passed.

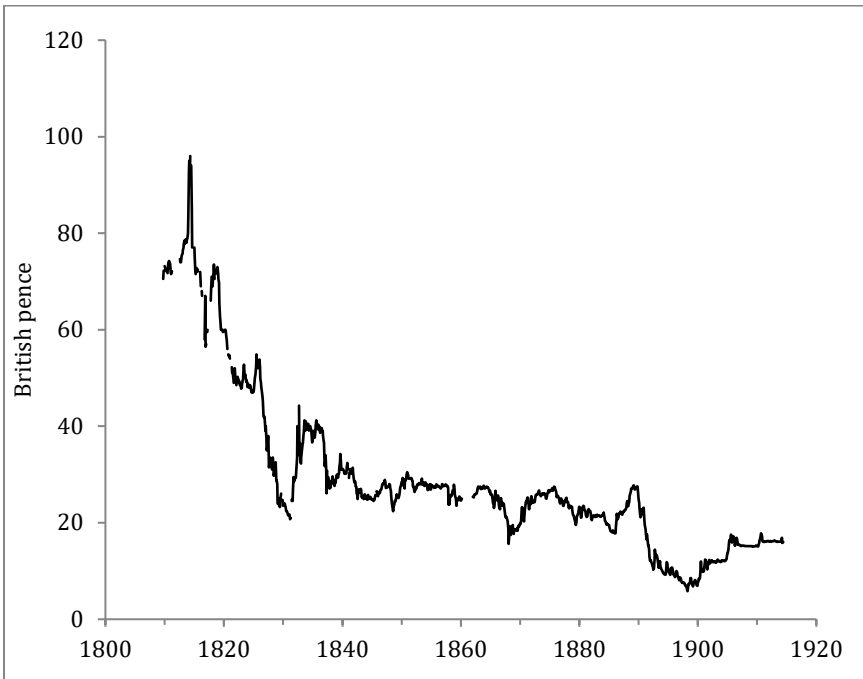


### Sweden: Sveriges Riksbank, Liabilities and Capital, 1840-1913<sup>34</sup>

In practice, most central banks held “foreign reserves” (foreign government bonds or foreign bank balances) and engaged in open-market operations in the foreign exchange market, resulting in changes in foreign reserve holdings – the essential elements of a currency board or “gold exchange standard.” For example, if the Swedish krona’s value was dipping against the British pound on the foreign exchange market, the Sveriges Riksbank could buy krona and sell pounds, from their foreign exchange reserves, thus reducing the krona monetary base and supporting the krona’s value. This could be undertaken before the decline in the krona’s value reached a point (the “bullion point”) at which krona would be

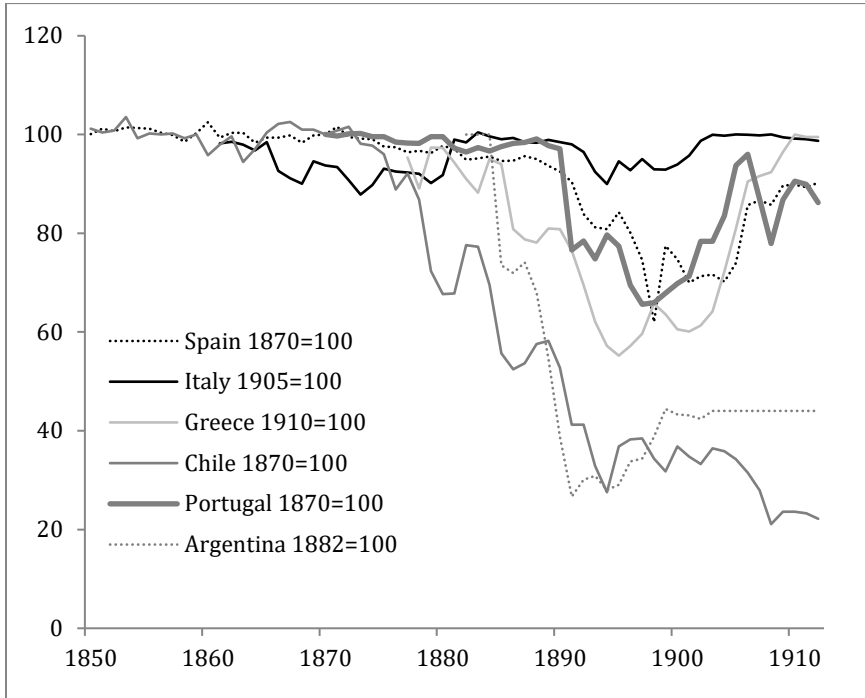
exchanged for gold with the central bank. In this way, the central bank could avoid transactions in gold. Thus, there was an effective continuum, from currency managers that did not use such mechanisms at all, to those who used them 100% of the time, thus mimicking a modern currency board completely in operations, although even in that case they might still hold some gold bullion as a reserve asset.

In 1913, the Sveriges Riksbank had foreign currency reserve assets (bonds, bills and bank deposits) of 122.1 million kronor, compared to gold reserves of 102.1 million kronor. Although the central bank maintained direct gold convertibility, over 99% of its transaction volume in “international assets” (gold and foreign exchange) that year was via foreign exchange, in five different currencies – Norwegian and Danish kroner, British pounds, German marks, and French francs.<sup>35</sup> In this way, it was acting much like a currency board, with five different reserve currencies reflecting the underlying single currency of gold. The Riksbank was also highly active in domestic lending and discounting, with holdings of 180.1 million kronor of private loans, and 3.4 million kronor of domestic securities.



**Brazil: Value of Brazilian Reals in British Pence, 1808-1913<sup>36</sup>**

Holdings of foreign exchange reserves increased worldwide during 1900-1913, corresponding to an increase in foreign exchange transactions as a means of base money adjustment. Foreign exchange holdings of eighteen official institutions increased from \$246.6 million in 1899 to \$1,124.7 million in 1913, a rise of 356%.<sup>37</sup>



### Spain, Italy, Greece, Chile, Portugal and Argentina: Normalized Foreign Exchange Rate With British Pounds, 1850-1913<sup>38</sup>

Among the three main reserve currencies – Britain, Germany and France – foreign exchange holdings were minor, and concentrated almost entirely in Germany. Outside of the major currencies, foreign reserve holdings were much higher, equivalent to 29.5% of “international assets” and suggesting that foreign currency transactions were often a primary means of currency management, as was the case in Sweden.<sup>39</sup> Of this total, 47% was held in British pounds, 30% in French francs, 17% in German marks, and 6% in other currencies. The ratio of foreign currency reserves to gold reserves was higher in 1924-1925 but not markedly different, suggesting that there was not as much difference between the conditions of 1913 and the supposed “gold exchange standard” arrangements of the 1920s, as is often portrayed.<sup>40</sup>

	(1) gold	(2) silver	(3) foreign exchange	total (1+2+3)	foreign exchange ratio (3)/(1+3)
<i>millions of U.S. dollars at \$20.67/oz.</i>					
<i>Four major currencies</i>	2412.9	712.7	52.8	3,178.4	2.1%
U.K.	164.9	NA	-	164.9	-
U.S.	1,290.4	523.3	-	1,813.7	-
France	678.9	123.5	3.2	805.6	0.5
Germany	278.7	65.9	49.6	394.2	15.1
<i>Other Europe</i>	1,667.4	279.7	543.3	2,490.4	24.6%
Austria-Hungary	251.4	50.7	17.1	319.2	6.4
Belgium	48.1	10.8	32.2	91.1	40.1
Bulgaria	10.6	4.5	2.7	17.8	20.3
Denmark	19.6	1.3	6.2	27.1	24.0
Finland	7.0	0.4	20.9	28.3	74.9
Greece	4.8	0.3	43.9	49.0	90.1
Iceland	0.1	-	NA	NA	NA
Italy, three banks of issue	265.4	21.3	38.1	324.8	12.6
Netherlands	61.1	3.9	6.2	71.2	9.2
Norway	11.9	0.4	10.8	23.1	47.6
Portugal	8.1	9.6	NA	NA	NA
Romania	29.2	0.3	15.9	45.4	35.3
Russia	786.2	31.2	305.6	1,123.0	28.0
Serbia	11.2	0.7	0.8	12.7	6.7
Spain	92.4	138.8	NA	NA	NA
Sweden	27.4	1.3	34.3	63.0	55.6
Switzerland	32.9	4.2	8.6	45.7	20.7
<i>Other ex-Europe</i>	674.0	106.7	426.8	1207.5	38.8%
Argentina	256.1	NA	5.0	261.1	1.9
Bolivia	2.6	NA	NA	2.6	NA
Brazil	89.6	NA	NA	89.6	NA
Canada	115.4	0.2	13.2	128.8	10.2
Chile	NA	NA	46.6	46.6	NA
Uruguay	10.8	1.7	NA	12.5	NA
Algeria	8.2	NA	NA	8.2	NA
Australia	22.0	NA	2.3	24.3	9.5
Ceylon	1.0	3.8	3.1	7.9	75.6
Egypt	10.5	0.7	8.0	19.2	43.2
India	83.0	88.4	136.3	307.7	62.2
Japan, Bank of Japan	63.8	0.2	78.3	142.3	55.1
Yokohama Specie Bank	0.6	NA	115.7	116.3	99.5
Netherlands East Indies	10.4	11.7	6.9	29.0	39.9
Philippines	NA	NA	11.4	11.4	NA

### Bullion and Foreign Exchange Reserves, 1913

source: Lindert (1969)

The major European powers maintained their currencies' par values with gold with good discipline, but many others did not. Along with greater centralization of banknote issuance came the ability to float and devalue the currency. War with Austria in 1866 ended gold convertibility in Italy, effectively until 1914. However, the lira did not sink more than about 10% versus its gold parity during those years, and for much of the time was very close to its gold parity – an example of an effective gold standard without gold convertibility. Portugal suspended convertibility and floated from 1891-1914. Spain floated 1884-1914. In both cases, the currencies did not decline much, reaching the outbreak of World War I without losing more than 20% of their original gold parity values. Brazil, Argentina and Chile did not fare as well, with periods of floating and substantial devaluation punctuated by intermittent attempts to return to gold standard discipline.<sup>41</sup> By the late nineteenth century, the increasing use of banknotes instead of coin, and increasing monopolization of banknote issuance, were already leading to repeated instances of banknote overissuance (often in response to wartime financing needs), depreciation, and extended episodes of floating paper fiat currencies.

### **Increasing Use of Banknotes and Deposits**

Britain had £20.25 million of banknotes in circulation in 1844. In 1909, it had £29.21 million, a surprisingly modest increase over a period of more than sixty years.<sup>42</sup> Deposits of joint-stock banks expanded from £235 million in 1878 to £712 million in 1909. Banking was already widely adopted in Britain by 1880, and did not have a dramatic expansion from a low base. However, after 1880, London expanded its role as a clearinghouse for payments worldwide. Deposits of colonial and foreign banks (with London offices) increased from £110 million in 1878 to £614 million in 1909.<sup>43</sup> A bank in Germany could settle a payment with a bank in Argentina, via their branches or subsidiaries in London – and with the help of the telegraph, in a few minutes' time.

Although the Bank of England maintained an effective monopoly on banknote issuance, as late as 1909 there remained twenty-three smaller banks allowed to issue banknotes in Britain, grandfathered by the Banking Act of 1844. Their issue was limited to £1,204,490, about 5% of banknotes at the time; actual issuance in 1909 was £312,886.<sup>44</sup>

In 1871, deposits of all banks in Sweden were equivalent to 1.6x of banknotes in circulation. In 1913, bank deposits were 9.1x of banknotes in circulation, illustrating the expansion of banking (and interbank payments) as an alternative to notes and coins during that period.<sup>45</sup> As early as 1885, gold coins in circulation were estimated at only 8% of banknotes, reflecting Sweden's over two centuries of experience with paper currency by that time, including banknotes in small denominations.<sup>46</sup>

In Italy, banks were so little used in 1861 that bank deposits totaled only 13% of currency in circulation – not surprising considering the political turmoil leading to the establishment of the Kingdom of Italy that year. By 1885, bank deposits exceeded currency in circulation, and in 1913, deposits were 266% of currency.<sup>47</sup>

The unification of Germany, and the unification of its currency with the introduction of the mark and a Reichsbank monopoly, was followed by a giant expansion of banking. In 1880, commercial banks had 529 million marks of deposits, compared to 945 million of banknotes in circulation and 1,275 million of gold coin.<sup>48</sup> In 1907, deposits had risen to 7,067 million marks,<sup>49</sup> an increase of thirteen times. Acceptance credit among Berlin's nine largest banks grew from 8.2 million marks in 1860 to 80.3 million in 1880 and 1,392 million in 1913.<sup>50</sup> In 1907, the Reichsbank had 1,478 million marks of banknotes in circulation. Other note-issuing banks had a total of 142 million marks.<sup>51</sup> The banknote/deposit ratio was 1:4.4 that year.

In 1871, deposits of savings banks in France were 537 million francs. In 1908, this had expanded to 5,226 million.<sup>52</sup> However, this was still relatively low compared to 2,307 million of gold coinage in circulation, and 4,310 million of banknotes, in 1903.<sup>53</sup>

In 1880, the U.S. had currency in circulation of \$973 million, consisting of \$226 million of gold coin, \$69 million of silver coin, and \$678 million of banknotes.<sup>54</sup> Bank deposits totaled \$2,082 million. The currency/deposit ratio was 1:2.1. In 1913, currency totaled \$3,419 million including \$608 million of gold coin, \$226 million of silver coin, and \$2,530 million of banknotes. Bank deposits totaled \$17,735 million, a currency/deposit ratio of 1:5.2.<sup>55</sup>

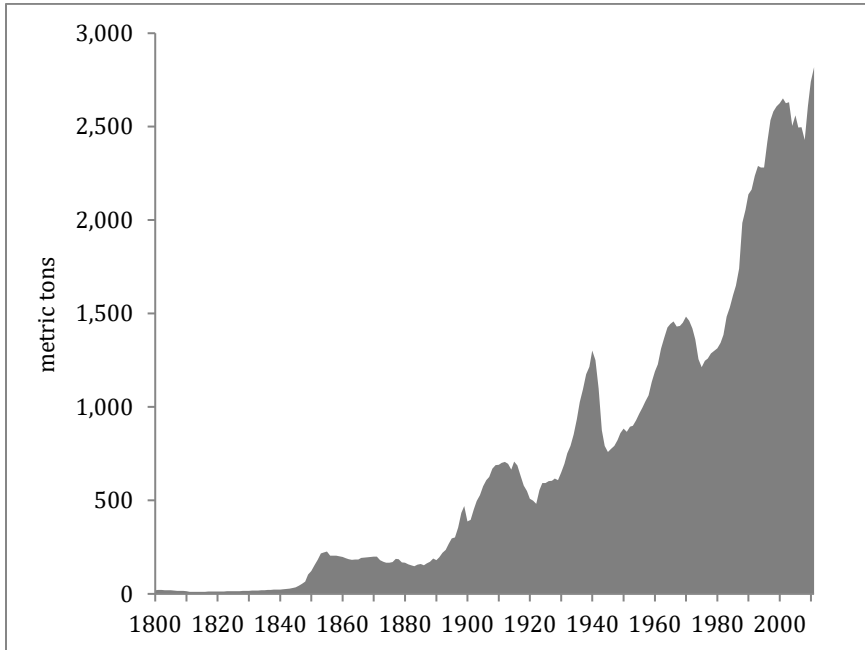
### **Gold Mining Expansion**

Two mining booms took place in the 1840-1914 period, which have often been accused of causing changes in the value of gold during that time. The first began in the 1840s.

By 1847, the production of gold mines had already expanded considerably, with Russia alone contributing about 25 metric tons out of a total of 54 metric tons that year. This was more than triple the 17 metric tons that had been mined in 1830. However, that rise was soon overshadowed when gold was discovered in California in January 1848. World production reached a peak of 227 tons in 1855, over thirteen times the 1830 level. The quantities were unimaginable: in 1848, two men with hand tools were said to have extracted \$17,000 (about 822 ounces) of gold in seven days' work.<sup>56</sup> A mania ensued. Additional discoveries in Australia in 1851 raised global production still further.

But did this unprecedented expansion in mine output undermine gold's role as a stable measure of value? Did gold's value change? Gold is generally

not consumed, but instead accumulates gradually over time, in the form of bullion and jewelry. In 1855, an estimated 18,461 metric tons of aboveground gold existed in the world, the product of over 4,500 years of gold mining throughout human history.<sup>A</sup> The 227 tons mined in 1855 was only 1.3% of this figure. For most commodities, annual production and “supply” are nearly synonymous. However, in this case, the “supply” of gold hardly changed. Thus, it would not be surprising to find that the value of gold also hardly changed.



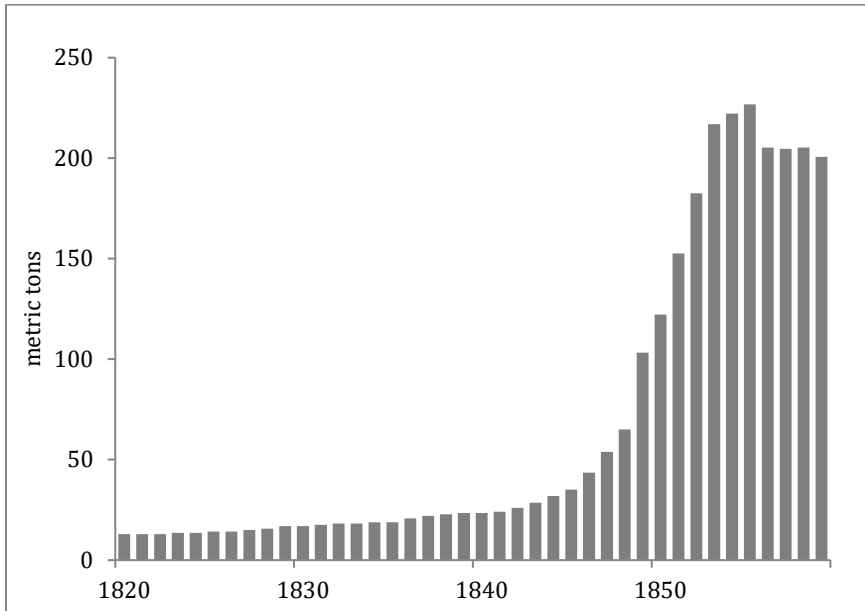
**Annual World Gold Mining Production, 1800-2012<sup>57</sup>**

Unfortunately, there is no ultimate measure of value against which gold can be compared. However, commodity prices have long served as useful

<sup>A</sup> This estimate comes from Gold Fields Minerals Services, an analytical advisory now part of Thompson/Reuters. Aboveground gold statistics are subject to substantial debate. Production statistics after 1492 are generally agreed-upon, but estimates of accumulated production before 1492 are wildly divergent. GFMS's implied estimate of 12,780 tons in 1492 is on the high end of debated figures. It is apparently based on a study by Govett and Govett (1982). Others, including Turk (2012), have argued for figures that are half or less than this. Cutting the pre-1492 figure in half, for example, would reduce the 1848 aboveground gold figure by 6,390 tons, or 37%. By 1920, the difference loses relevance as the GFMS aboveground gold estimate is 40,113 tons. In 2011, it was 171,300 tons.



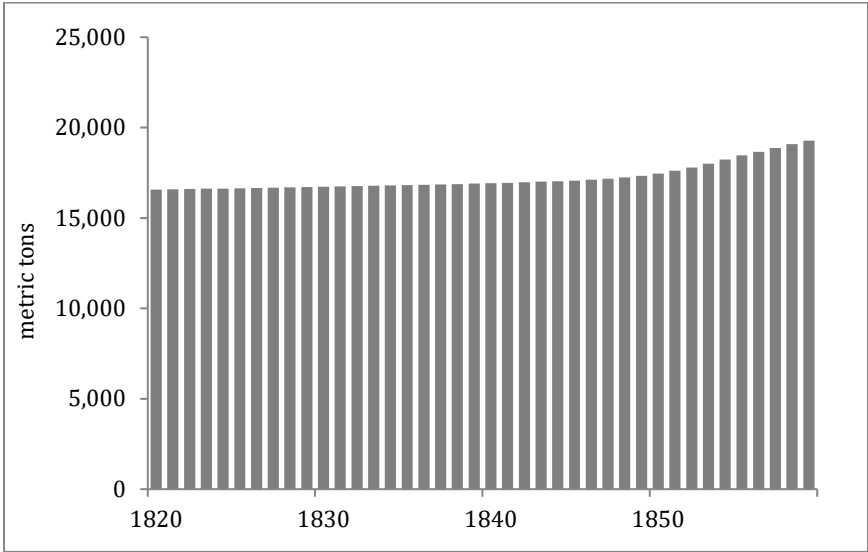
circumstantial evidence of changes in monetary value. Commodity prices vary due to their own, nonmonetary supply and demand factors, but any major change in monetary value should be evident in commodity prices.



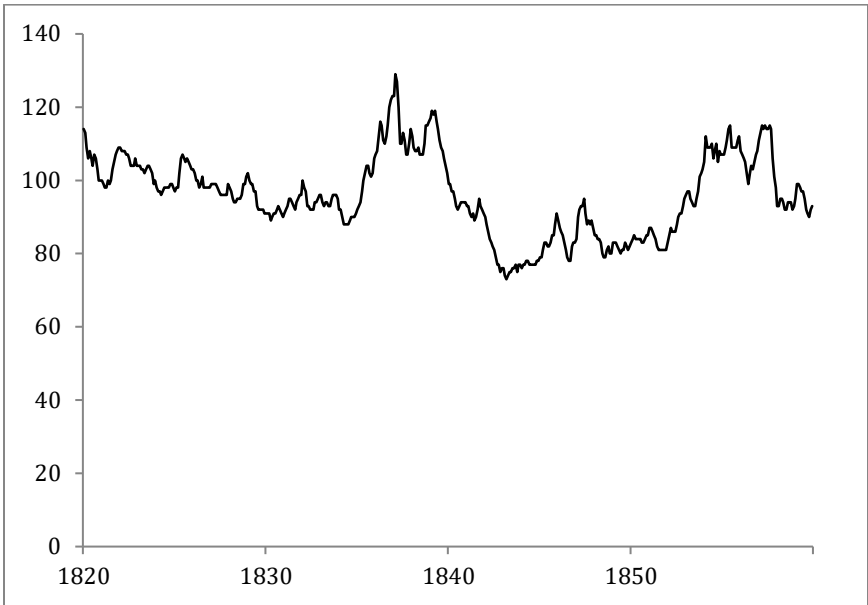
**World Gold Production, 1820-1860<sup>58</sup>**

In the United States, the Warren Pearson index of commodity prices generally declined from 1830 to 1843, and remained mildly depressed during the 1840s. This was contrary to the tripling of gold production that occurred during that time. A shorter-term rise and decline of commodity prices in the late 1830s was not correlated with gold production at all, and probably represents changes in the nonmonetary supply/demand characteristics of commodities. Commodity prices did not begin to move higher until 1851, over three years after the discovery of gold in California, and peaked in 1855. This peak did not even exceed the peak of 1837, and this price index ended 1859 almost exactly at the level of 1830. In the end, it is hard to find substantial evidence of any change in gold's monetary value at all during this period.

A final clue is given by gold:silver ratios. The value of gold vs. silver did decline a little after 1845, from roughly a 1:16 ratio to 1:15.5, a change of about 3%. World silver production rose from an estimated 596 tons per year average during the decade of the 1830s, to 905 tons in the 1856-1860 period, a rise of 52%, while gold production rose roughly ten times.



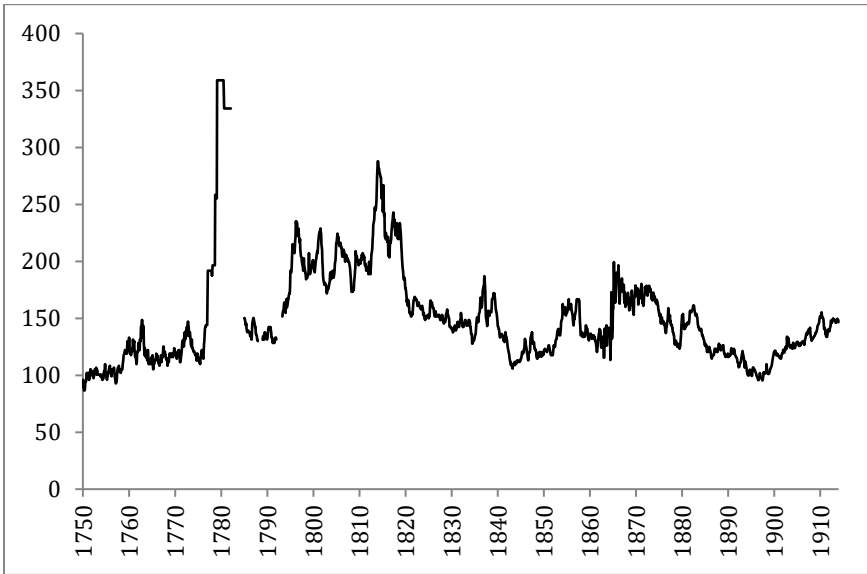
**Estimated World Aboveground Gold Supply, 1820-1860<sup>59</sup>**



**U.S.: Warren-Pearson Commodities Price Index, 1820-1860<sup>60</sup>**

After 1860, the Civil War makes interpretation of U.S. commodity prices difficult. However, annual data of commodity prices in Britain indicate that no great rise in commodity prices followed 1850. Instead, after a slightly anomalous dip in the 1840s, prices were quite stable around a plateau that was unchanged since roughly 1600. Thus, it appears that the extraordinary increase in gold production in the 1850s caused no meaningful change in gold's value.

During the 1880s and 1890s, world commodity prices fell to unusual lows, creating distress among a broad swath of commodity producers including family farms. Did this "deflation" represent a monetary effect caused by a rise in gold's value, or was it again a matter of the supply/demand conditions for commodities – a lower market value for commodities, as measured in money of stable value?

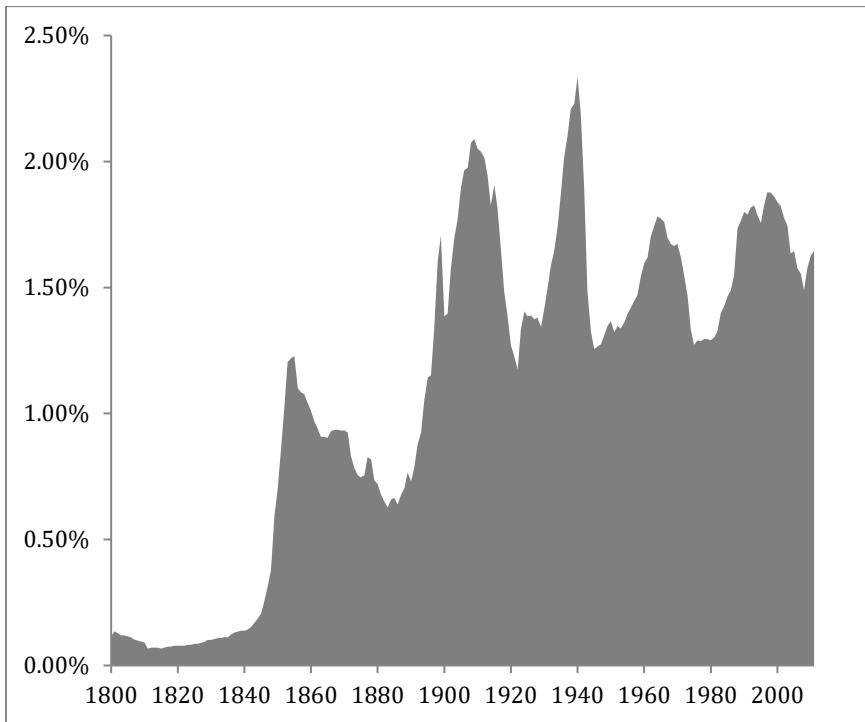


**Warren-Pearson Index in Gold oz., 1750-1913<sup>61</sup>**

Mining supply of gold tapered gently down during this period, as the discoveries of California and Australia were depleted. However, the levels of production were still many multiples of anything in the pre-1840 era, averaging about 170 tons per year, or ten times the figure for 1830. Centuries of low mining production prior to 1840 had never caused a meaningful rise in gold's value.

In 1887, mining production began to rise again, due to the mammoth Witwatersrand discovery in South Africa in 1886. In 1895, global production hit 297 tons, a 93% increase from 1886, and an all-time high up to that point. It later rose to 707 tons in 1912, about four times its earlier

level. South Africa provided around 280 tons, or 40% of this total. In 1893, another discovery in Kalgoorlie, Australia led to a peak production of 119 tons in 1903, although that fell off quickly afterwards. A discovery in the Klondike, Alaska, in 1896 spurred a dramatic migration of adventurers, but actual production was small compared to either South Africa or Australia, averaging only about 25 tons per year over the three years of its peak.<sup>62</sup> The increase in global production was impressive, but still modest in terms of total aboveground gold supplies, representing 2.09% of that figure at the peak in 1909.<sup>63</sup>

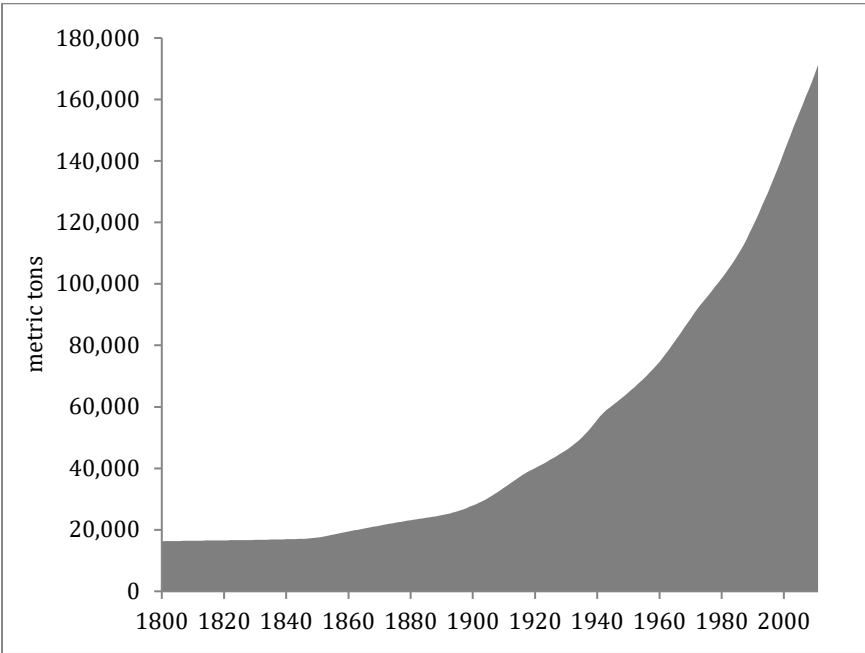


**Annual Mining Production as a Percentage of World Aboveground Gold Supply, 1800-2011<sup>64</sup>**

Gold production was not particularly low prior to 1890, nor did it change in a fashion suggestive of a rise in gold's value without precedent in the previous three centuries. When commodity prices made a low in 1896, gold production had been rising for a decade, and had nearly doubled to the highest levels ever seen up to that point.

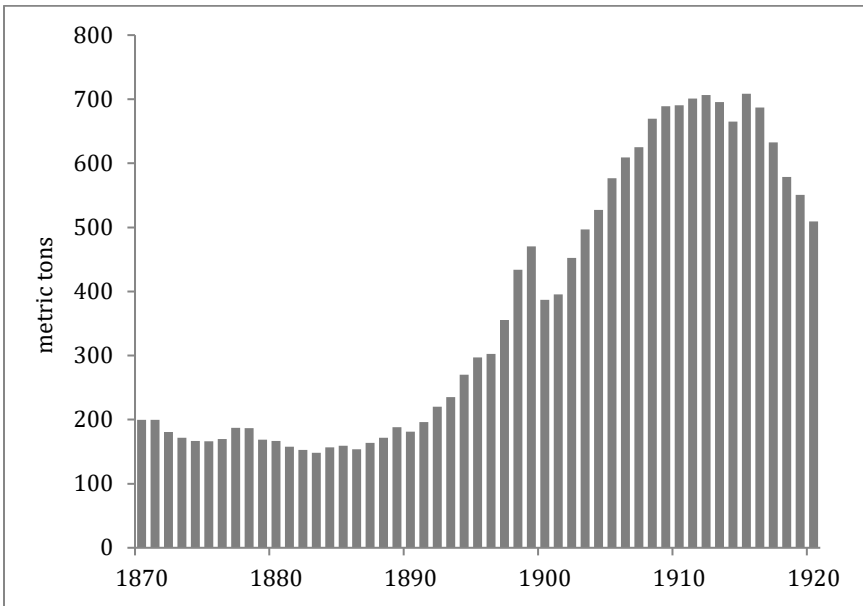
Arguments for a rise in gold's monetary value in the 1880-1895 period thus turn toward demand; in particular, demand from the world's new central banks for bullion reserves in the midst of dramatic economic

expansion during that time, and also demand related to the switch to gold monometallism after 1870.



**Estimated World Aboveground Gold Supply, 1800-2011**<sup>65</sup>

“Monetary gold,” consisting of central bank reserve holdings and coinage, indeed rose between 1850 and 1895, in absolute terms and as a percentage of estimated aboveground gold. This trend continued until shortly after World War II. If anything, the period 1880-1895 represented a slight moderation in the trend; a slackening of demand for monetary gold worldwide. In 1895, central banks held an estimated 11% of all aboveground gold. Accumulation of central bank reserves was offset somewhat by a gradual turn away from gold coinage after 1900. In effect, people deposited their coins for banknotes. Accumulation of monetary gold continued apace into 1930, and yet, commodity prices reached relatively high levels vs. gold during the 1920s. Again after World War II, when monetary gold holdings (as a percentage of aboveground supply) were at their historical peak, more than double the levels of 1895, commodity prices were relatively high. The total accumulation of monetary gold during 1845-1900 represented about 54% of mining production during that period. The 1870-1895 period shows little evidence of any sort of historically aberrant demand for monetary gold, or any trend that reversed around 1895.



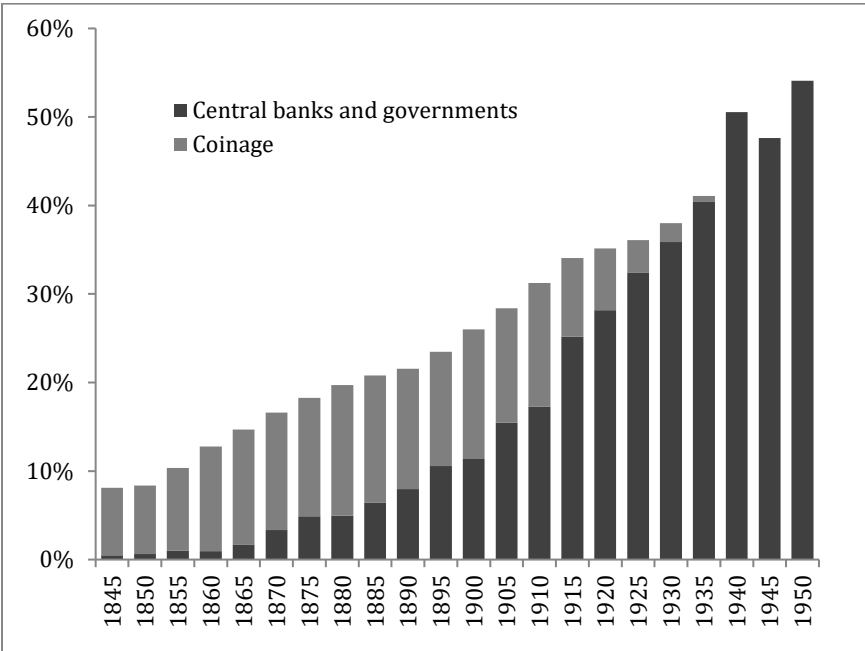
**World Gold Production, 1870-1920<sup>66</sup>**

A look at commodity supply and demand immediately gives a more convincing reason for low commodity prices. Before 1870, agricultural production throughout the world was largely for local subsistence. Bulky and perishable foodstuffs could not be transported easily via oxcarts, dirt roads, and sail. Commodity production for sale on distant or international markets depended on proximity to ports and navigable waterways. After 1870, the expansion of railway networks, and also steamships capable of vastly greater tonnage, for the first time enabled huge swaths of land to be planted with cash crops for long-distance trade. European empires expanded to tie together whole continents into an international market, with standardized government, financial, and legal systems. Argentina, Brazil, Australia, southern Africa, India, China, eastern Europe, the United States, Canada and Mexico were opened to agriculture and mine production for international markets via railways and steamships.

Singapore became a major port for rice exports from throughout Asia. In 1868, 20,374 metric tons of rice was exported via Singapore. In 1897, this reached 337,054 metric tons, an increase of sixteen times. Then, exports leveled off. In 1912, rice exports were 344,298 tons, essentially unchanged from 1897.<sup>67</sup>

An index of production of twelve major crops in the U.S. had a growth rate of 3.33% per year between 1870 and 1896, rising a total of 134% during that period. Land under cultivation expanded alongside, more than

doubling in a single human generation. Between 1896 and 1913 the growth rate of production fell to 0.82% annually, or a 16% total increase during that interval. In 1930, the index was only 4% higher than in 1913.<sup>68</sup> Exports of U.S. wheat were 37 million bushels in 1870, the highest in U.S. history up to that point. In 1892, wheat exports made a peak of 157 million bushels, more than four times greater. This was the highest level reached until the outbreak of World War I.<sup>69</sup>

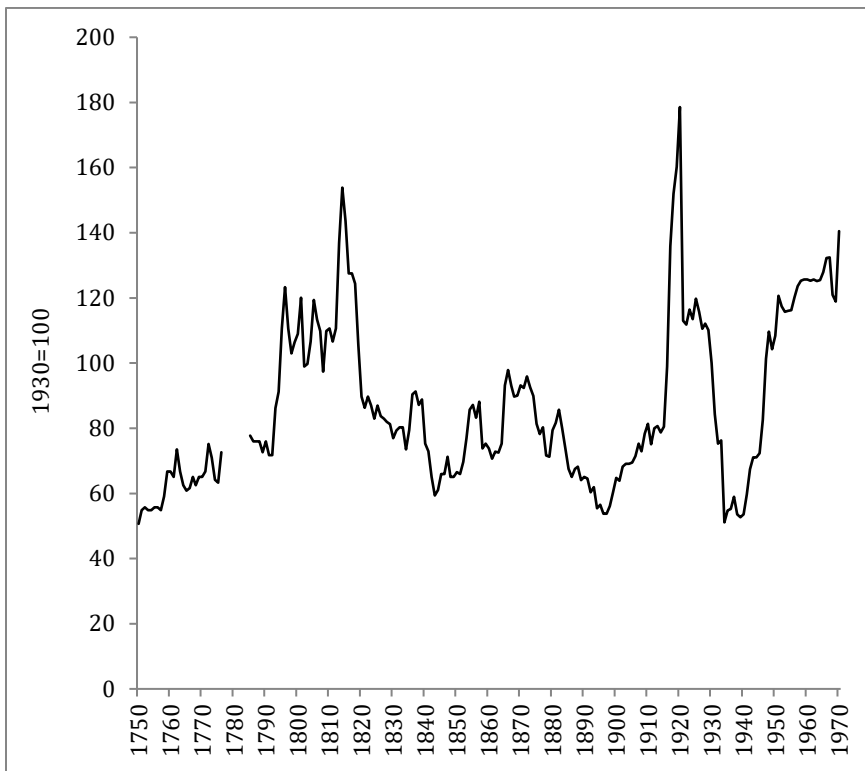


### **Monetary Gold as a Percentage of Aboveground Gold, 1845-1950<sup>70</sup>**

Was the decline in commodity prices representative of a decline in the value of commodities, compared to an unchanging measure of value, or a change in the value of money, while commodity values were unchanged? It is generally attributed to both factors.<sup>71</sup> The rough coincidence of rising commodity prices after 1896, and increasing gold production, does suggest such a relationship, although the gold mining boom of the 1850s produced no such effect. The rise in commodity prices could be as well attributed to reduced investment in commodity production. The possibility that there was no meaningful change in gold's value – as was apparently the case in the 1850s – should not be dismissed.

Whatever the case may be, the economic outcome of this period was splendid. The difficulties suffered by commodity producers, including family farms, did not seem to be shared by economies as a whole,

suggesting that falling prices primarily reflected commodity supply rather than monetary effects. In the U.S., it was called a “Gilded Age”; in France, a *belle époque*. Between 1879 and 1913, industrial production in the United States expanded by 454% – more than a five-times increase, and an annualized growth rate of a whopping 5.17%. Between 1879 and 1896, the supposed “deflationary” years, industrial production increased by 130%, or 5.03% annualized.<sup>72</sup> Industrial production in Germany increased by 307% in 1880-1913, with an 89% increase during the 1880-1896 period.<sup>73</sup> For comparison, from 1970-2012, a forty-two year period, U.S. industrial production increased by a total of 159%, or 2.30% per year. Bizarrely, some even compare the 1890s period to the Great Depression of the 1930s, a time when U.S. industrial production fell by over 50%.

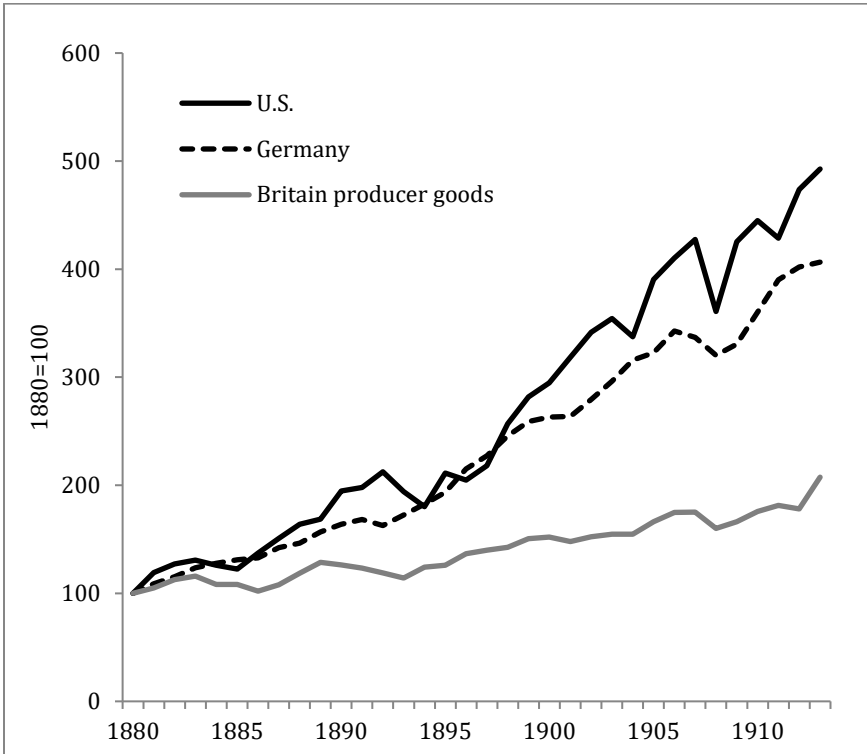


**U.S.: Price of Commodities in Gold Oz., 1750-1970<sup>74</sup>**

Nevertheless, the strain upon commodity producers led to considerable political pressure to devalue currencies worldwide. In the United States, this argument took the form of “free coinage of silver,” which would allow anyone to take silver to the Mint and receive coinage in return. This had been the norm before 1873. Because the market value of silver had fallen by



roughly 50% vs. gold by the mid-1890s (32:1 vs. 16:1), “free coinage” would have effectively allowed anyone to take silver with a market value of \$0.50 and make a \$1 coin from it. The result would have been an effective 50% devaluation of the dollar and a consequent silver standard, which would have floated in value against the monometallic gold systems common throughout Europe. From a monetary standpoint, the United States would abandon Britain, France and Germany, and join China.



**U.S., Britain and Germany: Industrial Production, 1880-1913<sup>75</sup>**

In 1890, “free coinage” advocates managed to arrange the issue of a new series of banknotes by the U.S. Treasury, convertible into silver at the old 16:1 ratio. The Republican administration of Benjamin Harrison supported it. Fortunately, their issuance was limited enough that they had little overall effect. In the 1892 elections, riding a “free coinage of silver” platform, the U.S. Democratic party won the presidency and a majority in both the House and Senate. A devaluation of the dollar seemed certain. A financial crisis ensued, the Panic of 1893, in which international trade and finance were severely disrupted. However, Democratic president Grover Cleveland turned out to be a staunch gold-standard advocate, rejecting the

urging of his own party and indeed going farther in his pro-gold support than many Republicans. In the 1896 election, the Democratic Party rejected the incumbent Cleveland, and instead put forth the starkly pro-silver William Jennings Bryan as their candidate. This led to another round of financial turmoil, known as the Panic of 1896. The victory of pro-gold Republican William McKinley effectively settled the “free coinage” debate. With the threat of devaluation resolved, business boomed. The Gold Standard Act of 1900 officially put the United States on a monometallic gold basis.<sup>76</sup>

Similar things were happening worldwide, expressed by the large numbers of bimetallicists (in effect, “free coinage” advocates from other countries) at an international monetary conference in 1892. Other financial troubles, such as the near-collapse of Britain’s Barings Bank in 1890, marred the early part of the decade. Barings had been involved in making loans and underwriting debt to the government of Argentina, a major commodity producer, which threatened to default. The government also began printing currency to meet its fiscal needs, leading to a substantial drop in the value of banknotes. Barings was one of London’s largest banks at the time, and the prospect of its failure threatened much of the British financial system. The Crisis of 1890 enveloped a broad swath of financial institutions worldwide, and emerging markets in general. It has been called “the first-ever emerging-markets crisis of the modern era.”<sup>77</sup>

Reviewing gold’s performance as a standard of stable monetary value during the nineteenth century, we find that the apparent worst-case scenario (the 1880-1895 period) was actually a time of considerable economic expansion and wealth-creation. Nobody expects gold to be a perfect representation of the ideal of Stable Money. However, the deviation of gold from that perfect ideal, whatever it may have been, was small enough not to matter very much.

### **Intellectual Trends Toward Monetary Manipulation Before 1914**

Although governments remained committed to gold monometallism, and the principle of stable and unchanging currency value of which the gold standard was the best achievable approximation, the idea of currency manipulation and devaluation as a response to economic conditions began to take hold. The idea of a gold standard whose parity value could be “adjusted” according to commodity prices began to emerge, at least as far back as the 1870s.

Governments had for millennia debased coinage, and later printed paper currency, in response to fiscal needs, particularly during wartime. The idea of a peacetime devaluation, in response to economic conditions in an otherwise highly prosperous era and without any great fiscal need, was a somewhat new development, one that nevertheless became popular enough to nearly ensnare the United States.

William Stanley Jevons wrote *A Serious Fall in the Value of Gold Ascertained, and Its Social Effects Set Forth* in 1863, focused on the effects of the increase in gold mining production since 1840 – a problem that was largely imaginary. In *Money and the Mechanism of Exchange* (1875), he proposed a “tabular standard of value” which was, in essence, a commodity basket. Jevons cited various predecessors including Joseph Lowe, who included a similar idea in “The Present State of England in regard to Agriculture, Trade and Finance” in 1822. Jevons did not promote his “tabular standard” heavily, concluding that the present gold standard was adequate, but he did suggest that the scheme could have some advantages.

In 1891, Irving Fischer earned the first PhD in economics ever granted by Yale University. In 1911, then a professor at Yale, he produced *The Purchasing Power of Money, Its Determination and Relation to Credit, Interest and Crises*. The book contained a proposal in which currencies’ gold parities would be adjusted according to changes in commodity prices.

Both Fischer and Jevons tended toward the fallacy that “purchasing power” (commodity prices) and “value” were the same. Yet, as David Ricardo warned in 1816, price changes could come about from either changes in the value of commodities, or the value of money.

It has indeed been said that we might judge of [a currency’s] value by its relation, not to one, but to the mass of commodities. ...

To suppose that such a test would be of use in practice, arises from a misconception of the difference between price and value. ...

Nothing is so easy to ascertain as a variation of price, nothing so difficult as a variation of value; indeed, without an invariable measure of value, and none such exists, it is impossible to ascertain it with any certainty or precision. ...

Commodities generally, then, can never become a standard to regulate the quantity and value of money; and although some inconveniences attend the standard which we have adopted, namely, gold and silver, from the variations to which they are subject as commodities, these are trivial, indeed, compared to those which we should have to bear, if we adopted the plan recommended.<sup>78</sup>

In the *Theory of Money and Credit* (1912), Ludwig Von Mises, as if giving a warning to the Fischers and Jevonses of his day, made much the same point:

In investigations into the nature of changes in the value of money it is usual to distinguish between two sorts of determinants of the exchange ratio that connects money and other economic goods; those that exercise their effect on the money side of the ratio and those that exercise their effect on the commodity side. This distinction is

extremely useful; without it, in fact, all attempts at a solution would have to be dismissed beforehand as hopeless.<sup>79</sup>

In practice, these “commodity basket” arguments tended to be rhetorical devices used to promote a devaluation of the currency to serve commodity-producing interests, or as a broader mechanism of economic support during recessions. Though couched in claims of “stability,” in practical terms they tended toward one-way streets: in boom times, and times of rising commodity prices, nobody would want to raise the value of the currency. Only three years after Fischer’s book was released, World War I began, and with it a flood of commodity demand from Europe that caused U.S. commodity prices to soar. Did Fischer then demand that the gold value of the dollar be raised, to render nominal prices stable? He did not. Similar arguments (notably by George Warren and Frank Pearson of Cornell University) served to justify the 1933 devaluation of the U.S. dollar to \$35/oz., from \$20.67; but when commodity prices were again high after World War II, the notion of returning the dollar to \$20.67/oz. was nowhere to be heard. After the devaluation of 1933, Irving Fischer himself gloated: “I am now one of the happiest men in the world. ... I feel that this week marks the culmination of my life’s work.”<sup>80</sup>

In 1892, discussions took place in Austria whether to put the Austrian schilling, at the time a floating currency that remained roughly stable versus the British pound, on a rigorous gold standard system. Among the opponents was Josef Neupauer, who argued that “a slow and steady increase in the means of circulation will without doubt encourage the spirit of enterprise, and all the more remain without influence on the price of the Austrian money as indeed the population grows and the whole economy develops.” He proposed a steady rate of increase of four percent per year, an idea indistinguishable from the proposals of Milton Friedman in the 1960s.<sup>81</sup> Ignoring Neupauer and his kind, Austria returned to the gold standard in 1896.

The more creative side of soft-money thinking, in the pre-1914 period, was represented by Silvio Gesell. Beginning with writings such as *The Reformation of the Monetary System as a Bridge to the Socialist State* (1891), Gesell promoted a currency that would be “spending power stable” – a commodity basket or CPI target, much like Fischer or Jevons – and would have a holding cost. Known as a “demurrage currency,” stamps would have to be periodically purchased for the money to keep its value. In effect, it would create a negative interest rate on banknotes, intended to prevent “hoarding.” By putting an effective negative interest rate on “cash,” Gesell argued, long-term interest rates could be lowered to near zero. In 1919, Gesell was appointed the Minister of Finance of the short-lived Bavarian Soviet Republic. He served for seven days; brief enough that, after a rousing speech given in his own defense, Gesell was acquitted of charges of treason.

Gesell was considered a marginal crank in his day, but his proposals were remarkably similar to the policies of major central banks in 2016.

### **The Triumph of the Classical Gold Standard**

On the eve of World War I, the world gold standard was considered a near-unanimous success. Those who had lived with it, who had directly enjoyed all the advantages it offered and suffered any consequences, looked back on their work with a mood of self-congratulation. Major exchange rates were fixed worldwide. Governments whose currencies floated were chided for their irresponsibility; mostly, these views were shared by those governments themselves. Bond yields around the world converged on the low and stable rates that the Britain had enjoyed for nearly two centuries. In the midst of the troubling decline of commodity prices during the 1880s and 1890s, and “free coinage” arguments that amounted to currency devaluations, governments had decided to remain fixed to gold. Two splendid decades followed. In the end, the biggest problems were caused by the “free coinage” debates themselves – the turmoil caused by their risk of passage clouded the early 1890s with a series of financial crises. Technical issues regarding short-term demand for base money had been largely resolved by the Bank of England’s “lender of last resort” function. In the U.S., restrictions related to the National Bank System prevented individual banks from accommodating these short-term changes, causing a crisis in 1907 that led, eventually, to the creation of the Federal Reserve in 1913.

Triumphs of technology were quickly followed by triumphs of capitalism, as huge sums were invested in the implementation of the new breakthroughs. The electric light bulb was invented in 1879. In 1895, a hydroelectric dam was built at Niagara Falls, New York, to power the new electric utility grid. The first modern oil well, at Titusville, Pennsylvania in 1859, led to the creation of Standard Oil by John D. Rockefeller in 1870, and its eventual breakup in 1911, when it had become so immense that the U.S. Supreme Court declared it an illegal monopoly. Kerosene from petroleum soon displaced whale oil for lighting, its price falling from 26 cents a gallon in 1870 to 9.2 cents in 1911. The American whaling fleet reached its peak of 199 ships in 1858. Gasoline powered the first internal-combustion engines. The pioneering assembly-line techniques that allowed the Ford Model T to be introduced in 1908 at the radically low price of \$850 were imitated in many other industries. By 1925, the car’s price had fallen to \$260. Between 1870 and 1890, world steel production increased by twenty times, as the Bessemer Process reduced production costs by a factor of six. Cheap steel poured into railways, ships, bridges, and new steel-framed buildings. In the peak year of 1887, the United States added 12,876 miles of new rail. New York’s Brooklyn Bridge of 1883 was followed, in 1902, by New York’s first “skyscraper,” the 22-story Flatiron Building. The Wright Brothers’ initial

success with heavier-than-air flight at Kitty Hawk in 1903 led, only a decade later, to the aerial dogfights of World War I.

It was one of the finest eras of wealth-creation and general prosperity since the first glimmerings of the Industrial Revolution around 1780. Titanic fortunes were made; but the middle and working classes also enjoyed steadily rising wages and new opportunities. Throughout Asia, Africa and Latin America, a vast influx of European capital and expertise helped lift the poorest out of poverty, even as it came with European political supremacy. For the multitudes of Asian poor, the new European despots were usually no worse than the homegrown despots and barbarian invaders they had suffered under for centuries. New railroads and telegraphs crisscrossed India, China and southern Africa.

At the time, money based on gold was simply conventional wisdom; wisdom mostly unchanged for five thousand years. Perhaps only after the catastrophes of World War I could the achievements of that era be fully appreciated. Benjamin Anderson was Chase National Bank's chief economist from 1920 to 1939. He recalled:

Those who have an adult's recollection and an adult's understanding of the world which preceded the first World War look back upon it with a great nostalgia. There was a sense of security then which has never since existed. Progress was generally taken for granted. ... We had had a prolonged period in which decade after decade had seen increasing political freedom, the progressive spread of democratic institutions, the steady lifting of the standard of life for the masses of men. ...

In financial matters the good faith of governments was taken for granted. ... No country took pride in debasing its currency as a clever financial expedient.<sup>82</sup>

John Maynard Keynes described his memory of the time:

What an extraordinary episode in the economic progress of man that age was which came to an end in August, 1914! ... [A]ny man of capacity or character at all exceeding the average [could escape from the working class] into the middle and upper classes, for whom life offered, at a low cost and with the least trouble, conveniences, comforts and amenities beyond the compass of the richest and most powerful monarchs of other ages. The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world,

and share, without exertion or even trouble, in their prospective fruits and advantages. ... He could secure forthwith ... cheap and comfortable means of transit to any country or climate without passport or other formality, could despatch his servant to the neighboring office of a bank for such supply of the precious metals as might seem convenient, and could then proceed abroad to foreign quarters, without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference. But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable.<sup>83</sup>

The English financial journalist Hartley Withers summed up the working of London's monetary and financial system before 1914 in a single word. The word was: "perfect."<sup>84</sup>

Today, the Classical gold standard era of 1870-1914 is sometimes described as a brief interlude made possible only by peace and the widespread embrace of the broader principles of classical liberalism. Government taxing and spending averaged about 10% of GDP among major countries, a low figure compared to the twentieth century, and also compared to the oppressive monarchical regimes of the eighteenth and earlier centuries. Persistent government deficits outside of wartime were rare. The idea of managing economies via currency manipulation had been around at least since the British Mercantilist writers of the seventeenth century, but this was universally rejected.

From our perspective today, and compared to the history that followed, the particular conditions of that time can seem unattainable. But, money had been based on gold and silver since antiquity. Gold was the basis of money under the small, libertarian governments of the late nineteenth century; but it was also money during previous times of war, and during many centuries of heavy taxation, feudal serfdom and absolute monarchy before 1800. Silver was money in Athens; but also in Sparta. Gold was later the basis of money in the Soviet Union and communist China, and indeed all the world after World War II. There had never been a time, since prehistory, when gold and silver had not been the basis of money. By 1880, silver's long history as a standard of value, alongside gold, was over. The "gold/silver complex" became less complex. Gold had become the final standard of value. Even today, nothing has appeared that could credibly replace gold in this role. The post-1971 floating fiat-currency arrangement was, essentially, the refusal to restrict discretionary action with any standard of value.

The world was united with a coherent monetary system based on gold. It did not require any other form of political unification; participants in the world gold standard system sometimes went to war with each other. Global

trade and investment blossomed, without the difficulties of unstable exchange rates. Low and stable interest rates worldwide expressed a degree of monetary and macroeconomic stability that hasn't been seen since 1914.



## Chapter 6:

# The Interwar Period, 1914-1944

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Governments had often debased their coinage in response to the financial needs of wartime. The widespread use of paper banknotes after 1870, and the creation of monopoly central banks that could be imposed upon by governments, made this process far more easy and direct. The paper money finance that China discovered in the eleventh century came, for the first time, to the Western world as a whole.

With the outbreak of World War I, the Bank of England suspended the convertibility of its banknotes into bullion, just as it had in 1797. This example was mirrored by many other central banks. Currencies became floating fiat currencies, although they did not immediately decline in value. At first, the value of the British pound actually rose above its prior gold parity. However, now relieved of the obligation of bullion conversion, central banks could be easily pressured into assisting the government with its financing needs.

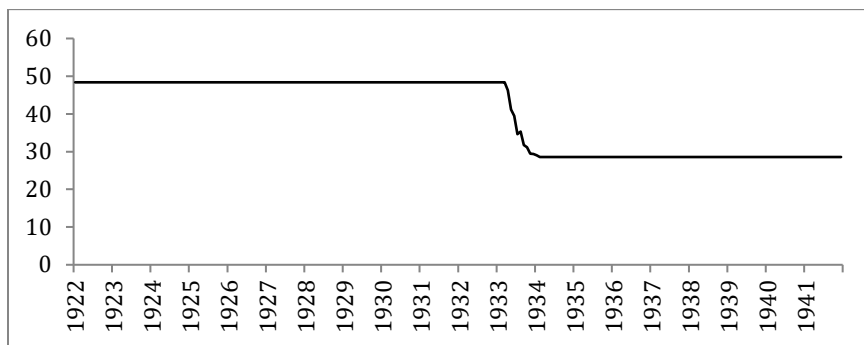
How does fiat money emerge? In principle, hardly anyone would want to do business with an intrinsically worthless paper chit of uncertain future. The currency begins as a currency convertible into gold or silver.<sup>1</sup> Gold conversion is then suspended. By this time, the currency, especially if it is issued by a monopoly central bank, has become “legal tender” in all manner of contracts. If the fiat currency falls in value, it becomes the cheapest way to discharge debts, and thus, following the principle of Gresham’s Law, becomes favored over all bullion alternatives.

In the aftermath of the war, three basic outcomes appeared:

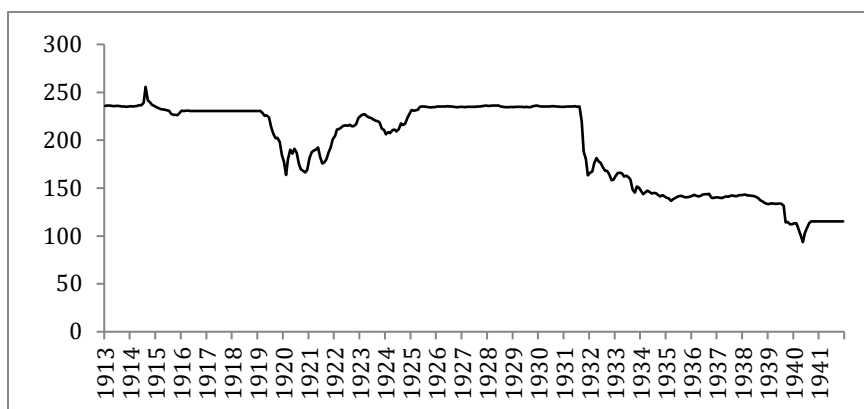
- 1)** Currencies were raised in value and repegged to gold at their prewar parities. This was done most prominently by Britain and the United States, joined by Canada, Norway, the Netherlands, Denmark, Sweden, Switzerland, and, belatedly, Japan.
- 2)** Currencies were repegged to gold at a devalued rate. This was the case for France, Belgium, Italy, Greece, Spain, Portugal and much of Latin America.
- 3)** Currencies experienced hyperinflation after the war, and were eventually replaced by new currencies linked to gold. This was the case for much of Eastern Europe including Germany, Austria,

Hungary, Poland, the Baltic states and Russia, which had by then become the Soviet Union.

By 1930, the world's governments had largely recreated the Classical gold standard of the pre-1914 era. Major currencies were linked to gold, and thus had stable exchange rates with each other. Currencies were convertible to gold bullion (although not always gold coinage), and gold coins circulated alongside banknotes. Capital controls were rare, and capital flowed freely worldwide.

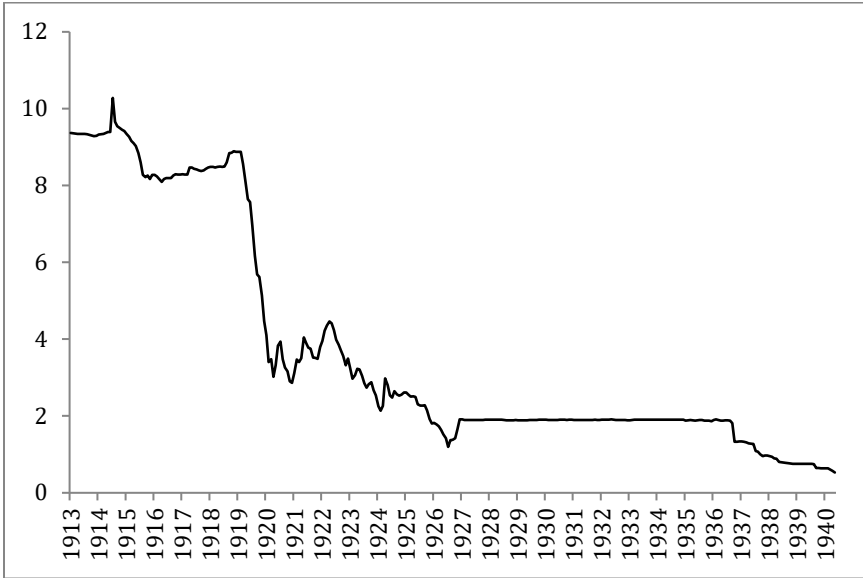


**U.S.: Value of \$1000 in Gold Oz., 1922-1941<sup>2</sup>**

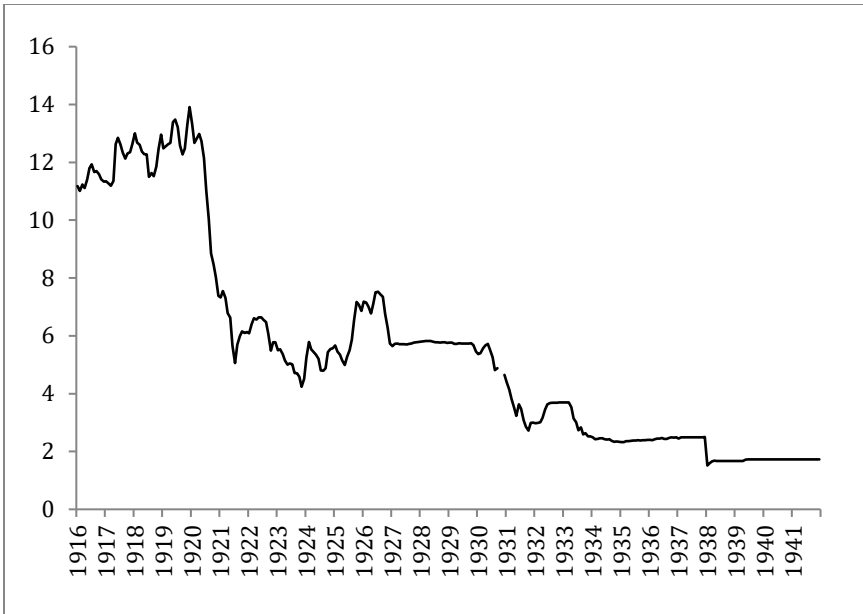


**Britain: Value of £1000 in Gold Oz.,<sup>A</sup> 1913-1941<sup>3</sup>**

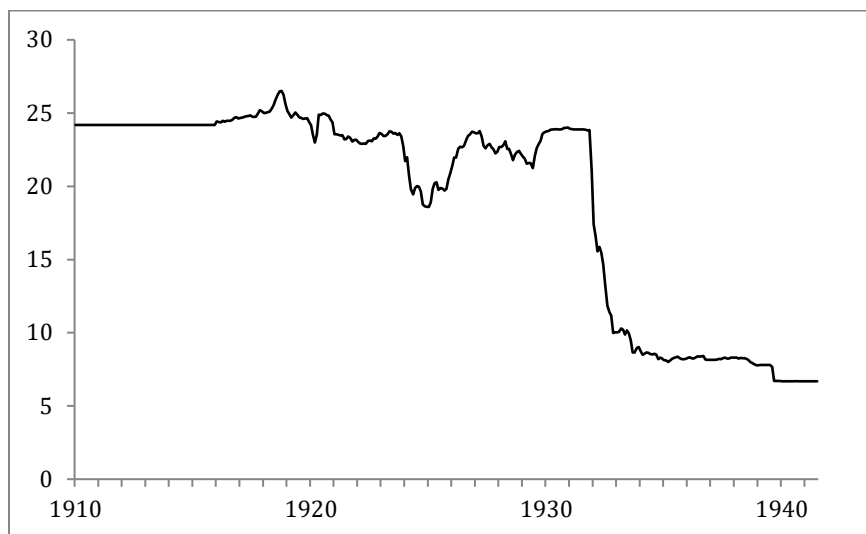
<sup>A</sup> Note: Values of currencies vs. gold reflect official exchange rates with the U.S. dollar, which were under capital controls during wartime. The official value of the U.S. dollar during wartime was unchanged at \$20.67/oz. The U.S. dollar's true value vs. gold sank during the war, due to pressure on the Federal Reserve to finance war deficits, but this deviation was masked by the wartime gold embargo. Beginning in 1919, and certainly by the end of 1922, these issues were resolved.



France: Value of 1000 Francs in Gold Oz., 1913-1940<sup>4</sup>



Brazil: Value of 1000 Milreis in Gold Oz., 1916-1941<sup>5</sup>



**Japan: Value of 1000 Yen In Gold Oz., 1910-1941<sup>6</sup>**

The Great Depression began with a decline in U.S. stock prices at the end of 1929. Although some minor Latin American currencies depreciated immediately after the initial stock market distress, the world gold standard nevertheless was maintained mostly intact until Britain devalued in September 1931. This explosive event, of what was then the world's premier international currency, was followed by a chain of devaluations worldwide, and effectively pitched the world into an environment of currency chaos. Some countries, notably the United States, devalued but remained on a gold standard system at a devalued rate. This embrace of gold standard discipline, even after the 1933 devaluation, was a major reason why the U.S. dollar became the world's dominant international currency afterwards. A few countries did not devalue, including Germany, Poland, Bulgaria and Turkey, but especially in the case of Germany, this involved substantial capital controls that obscured true conditions. In most cases including Britain and France, devaluations were followed by floating currencies, in a worldwide stew of currency turmoil combined with extensive capital controls, a collapse of international trade, and, eventually, increasing military activity.

### **The Great Depression**

In the end, the reconstructed world gold standard system existed for only about six years, between the resumption of British pound gold convertibility at the prewar parity in 1925, and Britain's devaluation and floating of the pound in 1931. Despite its brevity, or perhaps because of it,

this period has inspired an enormous amount of conjecture. Much of it amounts to the claim that the monetary systems of the time were flawed in some significant way.

There are really only two conceivable flaws:

**First:** The failure of central banks to adhere to the proper operating mechanisms of the gold standard system. The result of this would be a deviation of currency value from gold parities. Central banks could deviate in a more minor fashion, with the help of capital controls, as was the case during the Bretton Woods years. However, even in this case, the effects of this deviation are not particularly great until there is an actual change in currency value.

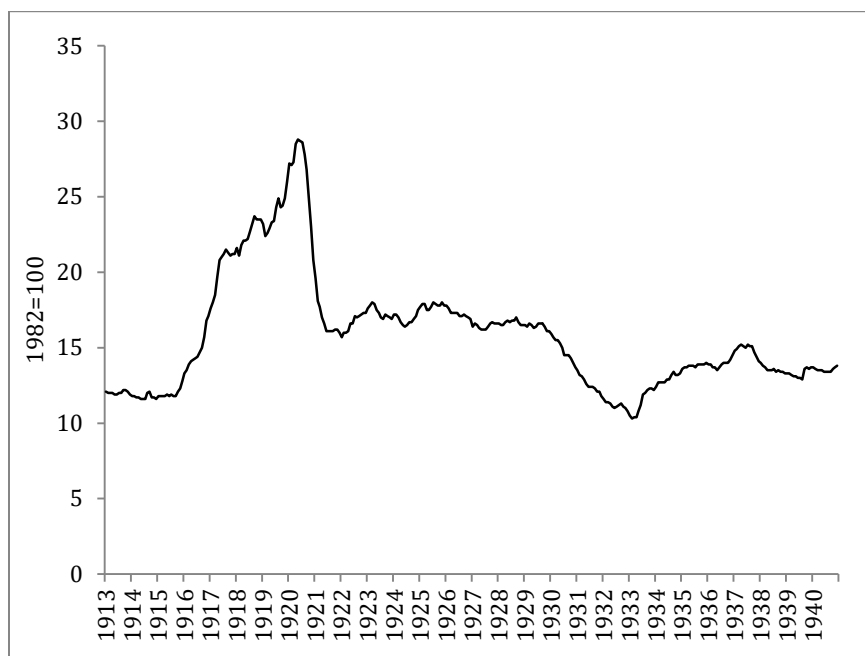
Currencies demonstrably did not vary from their gold parities. Gold convertibility was common, gold coins circulated alongside banknotes in major countries, capital controls were rare before 1931, and foreign exchange rates reflected official gold parities.

**Second:** A major change in the value of gold, leading to a change in the value of all currencies whose value was linked to gold. The general decline in prices in the early 1930s is suggestive of a rise in gold's value. However, if that was the case, why did this happen? It had never happened in the past, in centuries of experience. A change in prices by itself is not proof of anything. Prices would be expected to change, in an economic downturn of the scale of the Great Depression, with a currency of unchanging value. Commodity prices during the Great Depression returned to levels of the 1890s, the glut caused not by extraordinary supply, as in the 1890s, but depressed demand.

The gold standard system seemed to receive blame for all manner of ills, but this was based on the idea that governments should have responded to the worsening recession with some sort of monetary action – in essence, a devaluation. Although this idea grew in stature in the following decades, none of the major “interpretations” of the Interwar Period – the mainstream Keynesian, the Monetarist, the Austrian, and other minor variants – claimed that gold, in its role as a standard of value, underwent some violent and historically-unprecedented change in value, of world-economy-destroying magnitude. Except for some minor particulars, the natural evolution of institutions that had always been in constant evolution, there was little substantial difference between the gold standard era of 1925-1931, and the 1900-1914 period.

The resumption of the world gold standard during the 1920s was accompanied by excellent economic results, at least in those countries that also reduced high wartime tax rates. In the United States, where tax rates fell throughout the decade, the “Roaring Twenties” enjoyed the widespread

expansion of electricity and electronics, including the introduction of radio and soundtracks in movie theaters. Automobiles and tractors replaced horses everywhere. U.S. production of electric refrigerators rose from 5000 per year in 1921 to one million in 1930, while electric lighting swept away kerosene and gas lanterns. France's government also reduced taxes and enjoyed a booming economy. Britain's government went the other way, keeping high wartime tax rates and adding additional new taxes to fund new socialist programs. Japan also lagged during the 1920s, again related to rising taxes during that decade and a floating yen. Countries that returned to their prewar gold parities – notably Britain – experienced some difficulties, but this was understood and expected, and by the end of the decade the effects were passing. Before 1929, there was little evidence of any problem with the world gold standard system.



### **U.S.: Producer Price Index, All Commodities, 1913-1940**

If there was no inherent monetary problem, then a search for initial causes of the Great Depression must focus on nonmonetary problems – a search that immediately uncovers a barrage of destructive policy actions by governments worldwide. The first was the Smoot-Hawley Tariff in the United States. Over one thousand economists signed a petition in the United States in opposition to the Tariff, arguing that it would cause recession and international conflict. The Tariff was countered with similar retaliatory

tariffs by governments worldwide, in a global trade war. Facing retaliatory tariffs, General Motors' European director sent a telegram to president Herbert Hoover that read: "Passage Bill Would Spell Economic Isolation United States And Most Severe Depression Ever Experienced."<sup>7</sup> It was surely an exaggeration; and yet, the looming risk to global prosperity was clear.

Although the Tariff did not pass into law until June 1930, the initial downturn of the U.S. stock market in 1929 can be traced nearly to the day that a majority in the U.S. Senate was formed in favor of the Tariff, making its passage likely.<sup>8</sup> This political feat was accomplished by dramatically expanding the Tariff to include articles that favored Senators' home constituencies.<sup>9</sup> By September 1929, twenty-three governments had warned Hoover that they would impose retaliatory tariffs in response. Some governments, including Canada, had already imposed retaliatory tariffs, with the understanding that they would be removed with U.S. cooperation. As the threat of a global trade war loomed, investors' expectations of further good times evaporated. The aggressive use of stock margin lending at the time led to forced selling and a sudden crash in stock prices.

The stock market decline itself created a mood of caution. The interventionist Hoover responded immediately, ramping up public spending beginning in November 1929. In April 1930, public works spending was at its highest in five years. Hoover also insisted that big businesses keep wages unchanged, and avoid layoffs. Many corporations complied; the result was an exaggerated shrinkage of profit margins, which in turn had consequences for the stock market, investment and employment. Already by February 1930, public demonstrations organized by U.S. communist parties swelled with the addition of new unemployed. News filtered out from the Soviet Union of unimagined new atrocities at the hands of Stalin and his cohort. Europe was at greater risk of communist agitation than the U.S. Yet before the Tariff was signed into law, and it appeared that president Hoover might veto it, U.S. stock prices had returned to the level at which they had begun 1929, and the economy was still relatively healthy. The big declines came afterwards.

Roughly sixty governments retaliated with their own tariffs.<sup>10</sup> The value of total international trade declined by 19% in 1930, compared to 1929. By 1932, it had declined by 61% from its levels in 1929, and remained at this depressed level until the onset of World War II.<sup>11</sup> U.S. auto sales in Spain fell from 7,415 units in 1929 to 841 in 1931.<sup>12</sup>

As government tax receipts dwindled in the resulting recession, and spending increased for newly-formed welfare programs, public works or other counter-recessionary measures, deficits swelled. Governments worldwide reached for domestic tax increases to fund their deficits. In the U.S. in 1929, the Federal government had tax receipts of \$3,862 million and expenditures of \$3,127 million. In 1932, receipts were \$1,924 million and

expenditures were \$4,659 million. This yawning gap inspired Hoover to impose a gigantic increase in domestic taxes in 1932, including a battery of excise taxes that amounted to a new Federal sales tax, an increase in all income tax rates with the top rate rising from 25% to 63%, elimination of a broad swath of exemptions for both individuals and corporations, a rise in the estate tax from 20% to 45%, and an increase in the corporate tax rate. A similar dynamic was happening at the state level, and many U.S. states introduced sales taxes and income taxes for the first time during the 1930s.<sup>13</sup> Intrusive and anti-business regulations of all sorts were imposed, documented in books such as Amity Shlaes' *The Forgotten Man: A New History of the Great Depression* (2007). Economic conventional wisdom was much the same worldwide, and governments everywhere tended to follow a similar path, with dramatic domestic tax increases notably in Britain and Germany. Discussion careened between "austerity," which meant higher taxes and less spending, and "stimulus," which meant higher taxes and more spending.

The crumbling economy naturally led to an increase in commercial bankruptcies, leading in turn to bank failures, an element of systemic breakdown. This was accompanied by a wave of sovereign debt defaults. The government of Ecuador defaulted in 1929, and Argentina in 1930, followed by defaults by Hungary, Bolivia, Brazil, Chile, the Dominican Republic, Peru and Turkey in 1931. In 1932, the governments of Germany, Greece, Hungary, Costa Rica, Nicaragua, Panama, Paraguay and El Salvador defaulted.<sup>14</sup> This tally does not count short-term payments arrears by other governments that were later remedied. A widespread default on sovereign debts related to World War I took place in 1934.<sup>15</sup> Socialist and communist parties, rising in popularity, threatened to pull down the entire system of capitalism. A communist uprising in Spain in 1936 was defeated by the military. More moderate governments took an anti-business tone, and imposed a raft of new regulations. The engines of war began to move again: the Japanese army invaded Chinese-held portions of Manchuria in 1931, leading eventually to the capture of the Chinese capital at Nanking in 1937. A comprehensive account of these nonmonetary factors, on a global scale, remains to be written.<sup>16</sup>

The British devaluation in September 1931, and the many countries which followed before the end of that year, introduced a new element of monetary breakdown into an already catastrophic stew. By the end of 1931, twenty-three of the fifty-five leading countries had left the gold standard. Only twenty-two remained.<sup>17</sup> Thirty countries imposed capital controls.<sup>18</sup> Domestically, the move had some advantages; that is one reason devaluation has remained popular throughout the centuries. The debt liabilities of corporations and banks were effectively reduced, which eased the pressure of bankruptcy and bank failure. Workers' wages were effectively slashed, and greater employment followed. British industry enjoyed an artificial trade advantage. Yet outside of Britain, the effects were



negative. Corporations in France experienced an artificial trade disadvantage. Exporters were undercut, while domestic industries suffered a new wave of cheap imports. Another round of tariffs emerged worldwide in response. Foreign holders of British pound-denominated liabilities, including the British government bonds widely held worldwide, suffered alarming losses, possibly leading to their own insolvency. Owners of domestic debt worried that their governments would devalue soon after. Markets were in turmoil as investors scrambled for safety.

It was known as “beggar thy neighbor devaluation.” This “beggaring” happened domestically too: the advantages enjoyed by debtors came at the expense of creditors; the increase in employment followed an effective reduction in the wages of the employed. Although many economists were thrilled by the effectiveness of this monetary response to problems they did not understand, governments sensed that the process was destructive and impoverishing. Toward the end of the decade, they largely abandoned the practice, and moved back toward a system of stable currency value linked to gold, formalized in the Bretton Woods Agreement of 1944.

### **The Failure of the Prices-Interest-Money Model**

During the Great Depression itself, and also the decades that followed, economists were largely blind to these nonmonetary factors. Although the higher tariffs were broadly blamed for the downturn in international trade that followed, many others considered high tariffs to be an effective counter-recessionary measure, as it protected domestic industry. Higher taxes to reduce government budget deficits was a canon of responsible public policy at the time. Budget deficits themselves were considered a major economic negative; by resolving them, higher taxes were thought to help bring about economic recovery.

The study of economics was once known as “political economy.” The term differentiated from household economy, or the running of the household – the original meaning of the term “economics.” “Political” meant the study of government in the broad sense. Thus “political economy” meant, more or less, the study of government economic policy. This was a wide-ranging topic that had been explored from the earliest times, and discussed by the philosophers of ancient Greece and China. It involved taxation, money, price controls, regulation of every sort of economic activity, trade policy, welfare systems, public spending, education, religion and morality, the response to war, famine, disease, or natural disaster, and every other conceivable aspect of statecraft.

In the 1870s, as the Industrial Revolution forever changed economic relationships using the tools of science, technology, physics and mathematics, economists wished to advance their study from the realm of gentlemanly speculation to something like a science. In 1874, Leon Walras expressed the new spirit in his book *Elements of Pure Economics*. The title

itself suggested the new scientism: economics, like chemistry, had “elements,” which could be “purified” from the fuzzy wisdom of past philosophers. In the book, Walras portrayed an economy using a “theory of general equilibrium” potentially described in a set of simultaneous mathematical equations. The idea proved popular, and was reflected in “general theories” and “dynamic stochastic general equilibrium models” for over a century afterwards, and continuing to the present day.

This mathematization tended to reduce the study of political economy – that is, government policy – to the realm of prices, interest and money. Borrowing directly from chemistry and physics, they argued that prices represented an “equilibrium” between supply and demand. These prices, in turn, produced margins of profit and loss, returns on capital, which then led to investment and disinvestment, or expansion and contraction of production. Interest rates were essentially prices for capital, and their equilibrium between borrowers and lenders, or savers and investors, guided capital investment. Money was to remain neutral and unchanging – in practical terms, linked to gold – so as to least disrupt the formation of accurate equilibrium in these other markets, and consequentially, the productive activity of the economy. When they criticized the central planning ambitions of the socialists and communists, they focused on the “problem of rational economic calculation.” Without the mechanisms of prices and interest, activity in the complex industrial economy could not be effectively organized.

While all of these assertions were largely correct in themselves, they left out a vast range of economic issues. Governments themselves largely disappeared; their role was little more than to maintain the reliability of the currency, and the enforcement of property rights and contract law. The system seemed self-regulating, as prices – including wages, seen as the key price influencing employment – and interest rates adapted to changing realities. Recessions were conceived as being mild, transient and self-healing; extended periods of depression and decline even seemed, to some, to be impossible. If there was a downturn, the government’s response would be: “Do nothing.”

The ideas of Walras and his peers reflected the time in which they were created. In the Classical Gold Standard era of 1870 to 1914, governments generally did refrain from interference in the free formation of prices and interest rates, and kept the money reliably linked to gold. Trade was free; capital controls were rare; regulation was unobtrusive; taxation was minimal; government spending was modest; religion, education, public morality and the other foundations of society were strong; economic progress was abundant; setbacks were brief and mild. The issues, and government policy, that lay outside the perimeter of prices, interest and money were generally not a problem. Many of the identifiable problems of the 1870-1914 era were indeed monetary, such as the floating currencies

and devaluations of Spain or Argentina, or the financial crises surrounding the “free coinage of silver” debates in the U.S. or elsewhere.

Even before 1914, the small-government libertarian ideals of the time were already passing. Income taxes at high rates, large government spending programs including various new welfare programs, increasing regulation, and increasing intervention in economic affairs at all levels had been part of socialist and communist efforts since the mid-nineteenth century. World War I intensified all of these trends. The world that emerged in the 1920s was different: governments were bigger and more intrusive, and tax rates were much higher. The pressures of the 1930s further strengthened this big-government socialist trend. But in 1930, the idea of an economic disaster caused by nonmonetary factors, and driven by poor government policy, had no place in economists’ formulations developed over the previous sixty years. Prices and interest rates were still largely the product of free market forces, although unions had introduced some influence on wages. Money was linked to gold. Within their limited view, there didn’t seem to be any problem at all. Any downturn – they thought – was likely to be mild, brief, and self-adjusting. The proper response was: “Do nothing.”

Governments were not actually “doing nothing” in the early 1930s. They were imposing a barrage of taxes, tariffs and regulations, along with a general anti-business sentiment and turn toward socialist ideals including nationalized industries and central planning. But, none of these were in the realm of prices, interest and money. While acknowledging them, and sometimes wagging fingers, for many economists they didn’t seem to count. This tone continues to pervade academic discussion of the Interwar Period today: the most dramatic government actions of the time are passed over with little more than a shrug if they fall outside the realm of prices, interest and money; while the tiniest insignificant wiggle in some monetary statistic is claimed to have world-shattering consequences.

Faced with a horrifying vortex of economic collapse, and the persistence of Depression nullifying expectations of some self-adjusting return to prosperous “equilibrium,” economists did not expand their limited understanding to accommodate the dramatic new factors that had emerged. Rather, two distinct responses appeared, which tended to mirror broader political divides between big-government socialists and small-government conservatives.

The “big government” interpretation, associated with Keynesianism, was that capitalism was inherently unstable. Reflecting Marxist doctrine, the downturn of the Great Depression did not need an explanation, since it was considered a natural feature of capitalism. It was caused by an “autonomous decline in aggregate demand,” a non-explanation which didn’t mean much more than: “there’s a recession.” Instead, unstable capitalism required a big-government response: more spending, and implicitly, higher taxes to pay for it. Welfare programs, which had in some countries

(including Britain) been reduced to balance the budget exactly when they were needed most, would be expanded. Interest rates would be manipulated to produce desired reactions in investment and saving. Prices might be manipulated, through regulation or restrictions on supply. The money would become a floating fiat currency to allow interest-rate manipulation, or could be devalued to influence nominal prices, profit and loss, foreign exchange rates and trade relationships, or to effectively lower wages, the key price affecting employment. The Keynesian solution, expressed in Keynes' 1936 book *The General Theory of Employment, Interest and Money*, took the "general equilibrium" models of the nineteenth century, and put them to use in service of big-government socialism. A theory of self-organizing non-intervention became a roadmap for centralized influence and control, using prices, interest and money.

The economists allied with small-government conservatism, notably the Austrians and, later, the Monetarists, were not satisfied with the idea that capitalism was inherently unstable and doomed to ultimate failure. They wanted reasons for such an unprecedented disaster. But they too stayed within the prices, interest and money box. With little to complain about regarding prices and interest rates, which were largely free of government molestation, they focused on money.<sup>19</sup> Friedrich Hayek, Keynes' intellectual opponent in the 1930s, wrote books titled *Monetary Theory and the Trade Cycle* (1929), *Prices and Production* (1931) and *Profits, Interest and Investment* (1939). "The trade cycle is a purely monetary phenomenon," claimed economist Ralph Hawtrey in 1922.<sup>20</sup> It was an absurd notion, but it didn't seem so at the time.

The problem, they argued, was either that governments had interfered where they should not have, in prices, interest and money (Austrian), or that governments had failed in their job to keep the money stable (Monetarist). By claiming some sort of monetary problem, they implicitly or explicitly blamed the gold standard systems of the time. In this way, the small-government free-market economists, who had always been the primary defenders of Stable Money in principle and the gold standard in practice, became its primary critics. A strange role-inversion took place: As the conservatives "blamed money" in one way or another, the socialists did not.

The conservative economists also did not focus on the many nonmonetary errors of government policy taking place. This also had political roots: many of the errors, including higher tariffs, higher domestic taxes, an excessive fixation on budget deficits, and the slashing (in some countries) of welfare program budgets exactly when they were most needed, were undertaken by the small-government conservative politicians of the time. Then as now, economics was highly politicized, in no small part because economists tended to draw their livelihoods, directly or indirectly, via some political affiliation. A small-government conservative economist that criticized the policies of conservative governments did not have much

of a place to go in those days, and nobody wanted to lose their job in the middle of the Great Depression.

The idea that the Great Depression had nonmonetary causes – and that there was no particular problem with the gold standard systems of the time – was the prevailing view until the 1960s, and continues to be a major “interpretation” today. It always lay at the heart of the Keynesian view. But Keynesianism did not require any identification of causes at all; and consequently, did not find any. The idea that nonmonetary government policy – tariffs, taxes, regulation, and all the rest – was the initial cause of the Great Depression was not embraced until the 1970s, with the “supply side” school of economics. In the 1970s, the idea emerged that reducing high tax rates would produce an economic benefit. It was an ancient concept. The Confucian philosopher Mencius (372-289 B.C.) persuaded many princes of the benefits of the “well-field system” of taxation, which was an effective one-ninth (11%) tax rate on agricultural production – far more lenient than the oppressive and typically arbitrary tax practices in China at the time. For merchants, Mencius suggested 10%. The basic principle re-emerged as the “flat tax” proposals of the 1980s and 1990s. It was one of the first major intellectual excursions outside the realm of prices, interest and money since the 1870s, a century earlier.

People looked for historical examples of their low-tax principles, and discovered the tax reforms of president Kennedy in the 1960s, Andrew Mellon in the 1920s, those of Germany and Japan in the 1950s and 1960s, and France in the 1920s. It naturally followed that increasing tax rates, or other harmful nonmonetary incursions upon the workings of the private sector, could be an economic negative; and the Great Depression offered itself as an obvious example of the principle. With this insight, no longer was it necessary for a small-government conservative economist to choose between the uncomfortable idea that economies disintegrate for no good reason; or to otherwise claim that there was some kind of catastrophic problem with the money, even while governments adhered to the gold standard system. Capitalism was not inherently unstable, and did not require big-government socialism to tame it, including a floating fiat currency that would allow price and interest rate manipulation, or some sort of “easy money” response to problems that nobody understood.

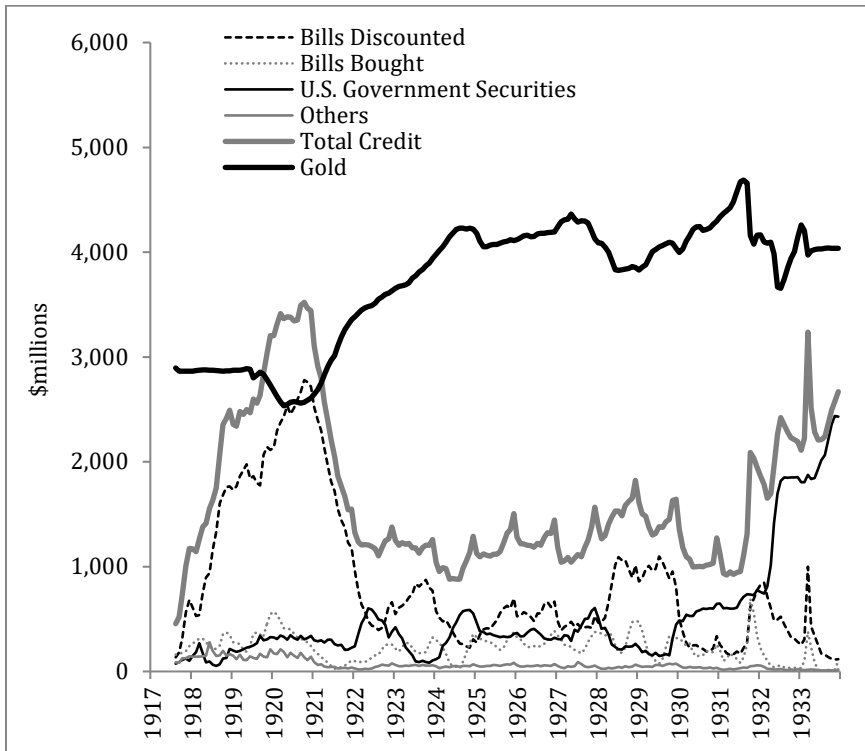
But, it did require that governments behave themselves, and implement constructive economic policy rather than destructive. “Political economy” was back. Again the field opened beyond prices, interest and money to embrace taxes, regulation, spending and welfare programs; all of government policy in all of its details and specifics, not just as some numerical aggregate of “government demand.” Microeconomics and macroeconomics were again merged in a coherent continuum of understanding. Now it could be seen why economists’ mathematical models, which they had cultivated since the 1870s, didn’t work.

### Austrian Interpretations

In *America's Great Depression* (1963), Murray Rothbard blamed the economic collapse of 1929-1932 on the crash of a credit bubble intentionally engineered by Federal Reserve governor Benjamin Strong.<sup>21</sup>

At the outset, this hypothesis raises a number of questions. How was this Federal Reserve-created credit bubble achieved while the dollar was on a gold standard system? The Keynesians accused the gold standard for exactly the opposite reason – that these “golden fetters” prevented central banks from “managing the economy with easy money” in any effective way.

Another question is: what did the Federal Reserve actually do?

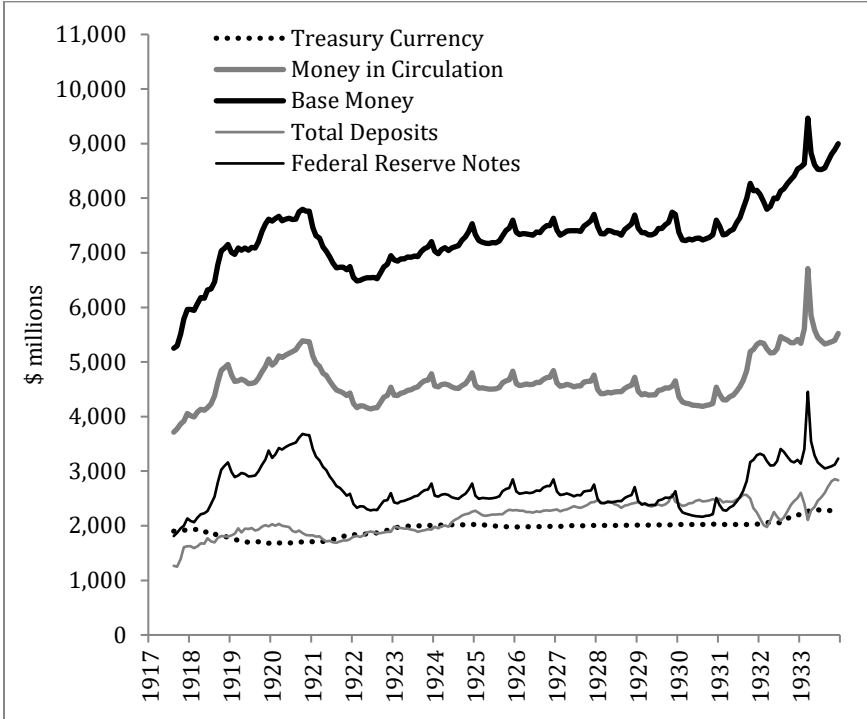


**U.S.: Federal Reserve Balance Sheet, Assets, 1917-1933<sup>22</sup>**

During the 1920s, the Federal Reserve was not a monopoly issuer of banknotes in the United States. Roughly half of the banknotes in circulation were U.S. Treasury gold certificates and other U.S. Treasury notes, and also banknotes of thousands of National Banks. The Federal Reserve balance sheet at the time aggregated the gold reserves of the Treasury and National

Banks, and also the banknote liabilities of the Treasury and National Banks, thus providing a picture of the total monetary system.

On the asset side of the Federal Reserve balance sheet, we find gold reserves, and also a variety of credit instruments, including “bills discounted,” “bills bought,” “U.S. government securities,” and “other” assets. These non-gold assets are aggregated as “total credit.”



### **U.S.: Federal Reserve Balance Sheet, Liabilities, 1917-1933<sup>23</sup>**

The liabilities side of the Federal Reserve balance sheet includes Federal Reserve banknotes, and also banknotes of the Treasury and National Banks, combined into “Treasury currency.” The total banknotes in circulation, combining both Federal Reserve notes and Treasury currency, are “money in circulation.” Deposits of the Federal Reserve include deposits of banks, the Treasury, and nonmembers. Deposits of the Treasury and nonmembers were quite minor, so Total Deposits consisted almost entirely of deposits of Federal Reserve member banks, sometimes called “bank reserves.” The combination of money in circulation and total deposits is “base money.”

Base money underwent a dramatic expansion and contraction in the 1917-1922 period. This was related to pressure by the U.S. Treasury on the

Federal Reserve to help finance the government during World War I and the period immediately after. The overissuance of currency led to declining dollar value, although this was hidden by wartime capital controls. As the wartime gold embargo was lifted in 1919, gold flowed out due to gold convertibility, indicating that the value of the dollar was below its gold parity of \$20.67/oz. To raise the value of the dollar, base money supply was limited and then contracted in 1921, accompanied by gold inflows. This contributed to a sharp but brief recession in 1921, which was also moderated by substantial reductions in the high tax rates left from the war. By the end of 1922, this period of correction was complete, and a return to normalcy at the prewar \$20.67/oz. parity was achieved including full gold convertibility.

After 1922, base money shows a smooth curve, with surprisingly little expansion despite the dramatic economic advances of the period. This curve of base money growth was essentially the residual outcome of the gold standard policy. If the dollar's value was below its parity, then gold outflows would lead to a contraction in the monetary base, as was the case in 1919. If the dollar's value was above its parity, gold inflows would lead to an expansion of the monetary base. Continual changes in the quantity of gold reserves show that this convertibility process was active.

The Federal Reserve also held a variety of credit assets over which it held some discretion, in large part replicating the manner of the Bank of England in the pre-1914 period. The composition of these credit assets varied considerably, but their total maintained a rather even level throughout the decade, with a seasonal spike related to the year-end. A minor dip can be noted in 1924, and a modest rise around 1928. These dips and rises were countered by changes in gold reserves, producing the smoother curve of overall base money. The changes in gold reserves came about via the conversion process. The reduction in base money caused by the dip in credit in 1924 led to a rising dollar value – for example, a dollar that was worth 1/20<sup>th</sup> of an ounce of gold on the open market (a “gold price of \$20.00/oz.”), rather than the parity value of 1/20.67<sup>th</sup> (“\$20.67/oz.”). If the market price is \$20.00/oz., and the Federal Reserve is willing to pay \$20.67/oz., then the Federal Reserve (or Treasury) becomes the highest bidder, and purchases gold. Base money expands.

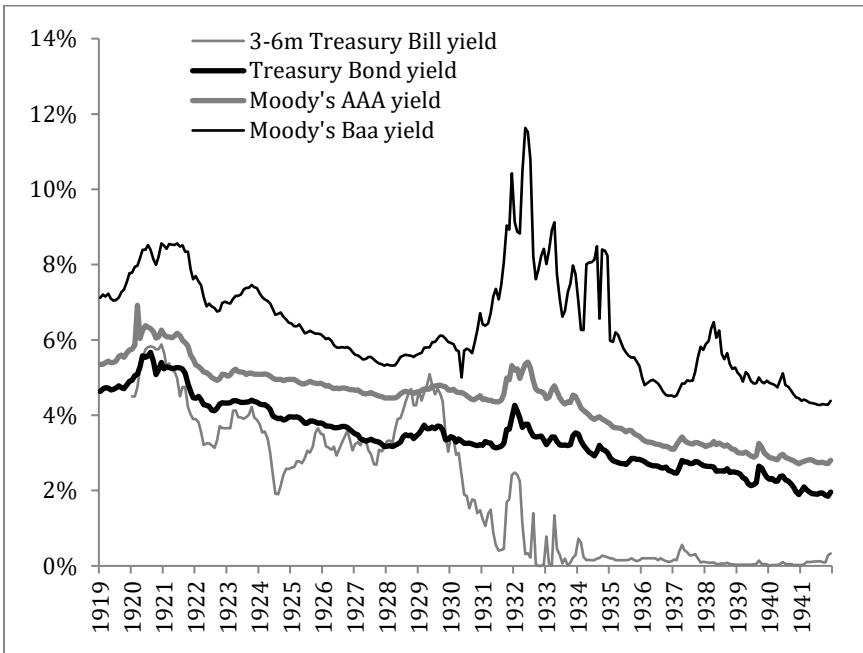
The contrary process took place in 1928. As base money expanded due to an increase in credit assets, the value of the dollar sank vs. its gold parity. For example, the open market value of the dollar could be 1/21<sup>st</sup> of an ounce (“\$21.00/oz.”) instead of 1/20.67<sup>th</sup>. The Federal Reserve becomes the cheapest seller of gold, gold flows out, and base money contracts.

The end result was that any excessive expansion of credit assets would be countered by gold outflows, and any excessive contraction of credit assets would be countered by gold inflows, thus producing a total base money supply that maintained the \$20.67/oz. gold parity. The base money supply was thus generated as an automatic consequence of the fixed-value



gold standard policy – described in Chapter 1 as a Currency Option One system. The Federal Reserve could increase or decrease its credit assets, but, due to gold convertibility, could not engage in any “discretionary” adjustment of the total base money supply – the “golden fetters” that soft-money advocates complained about.

Base money supply clearly did not expand by any meaningful amount, or even a trivial amount, so if there was a “credit bubble” of some sort during the decade, it could not have been caused by the Federal Reserve. Total U.S. private sector debt was 148% of GDP at the end of 1922, and 155% at the end of 1929 – hardly suggestive of a “bubble.” During that time, government debt declined from 41% of GDP to 29%. Total U.S. debt to GDP was 183% in 1929, compared to 189% in 1922 and 332% at the end of 2014. (Stock margin debt, however, had a huge rise into the 1929 peak.) Even the U.S. stock market, though it had risen dramatically, did not have a particularly high valuation. At its peak in September 1929, the market was valued at 20x trailing earnings and had a 3.0% dividend yield. Despite all the difficulties toward the end of the year, profits of listed companies rose 17% in 1929, from a year earlier.

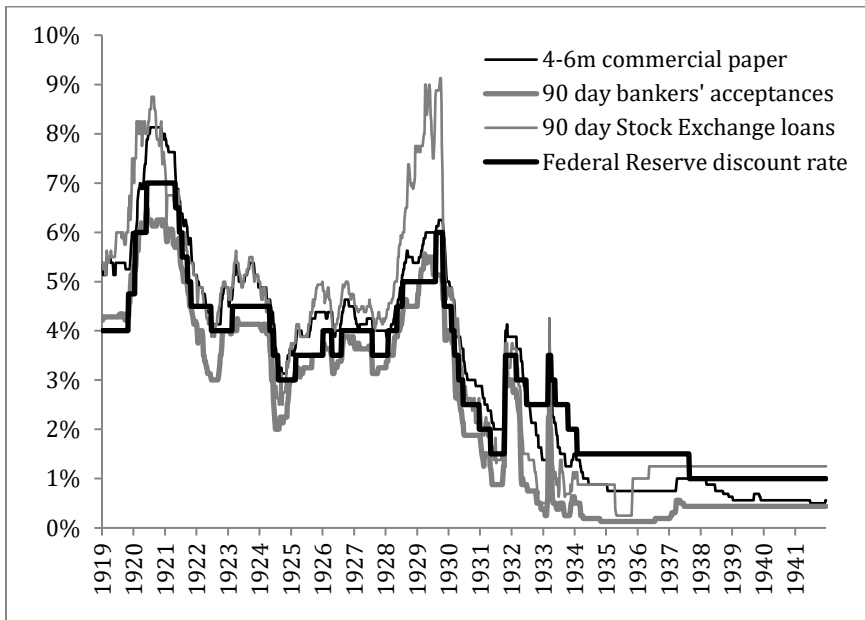


**U.S.: Interest Rates, 1919-1941<sup>24</sup>**

Many have claimed that the Federal Reserve’s actions were contrary to what they perceive to be the “rules” of a gold standard system: that changes

in base money should coincide exactly with changes in gold reserve holdings; or, a little more broadly, that non-gold reserve assets (total credit) should move in the same direction as gold reserves, expanding when bullion reserves expand, and vice versa.<sup>25</sup> But, this supposed “breaking of the rules” by the Federal Reserve reflects an incomplete and incorrect understanding of how central banks operated at that time. The Bank of England, in the pre-1914 period, did much the same thing as the Federal Reserve in the 1920s. The tendency toward complexity – the interplay between gold convertibility, discount policy, and open-market operations in government debt – obscured the basic principles of operation, both before and after 1914.

Ultimately, these details amounted to inconsequential internal affairs of central banks. The only thing that mattered to non-central bankers was the values of currencies, which were kept at their gold parities.

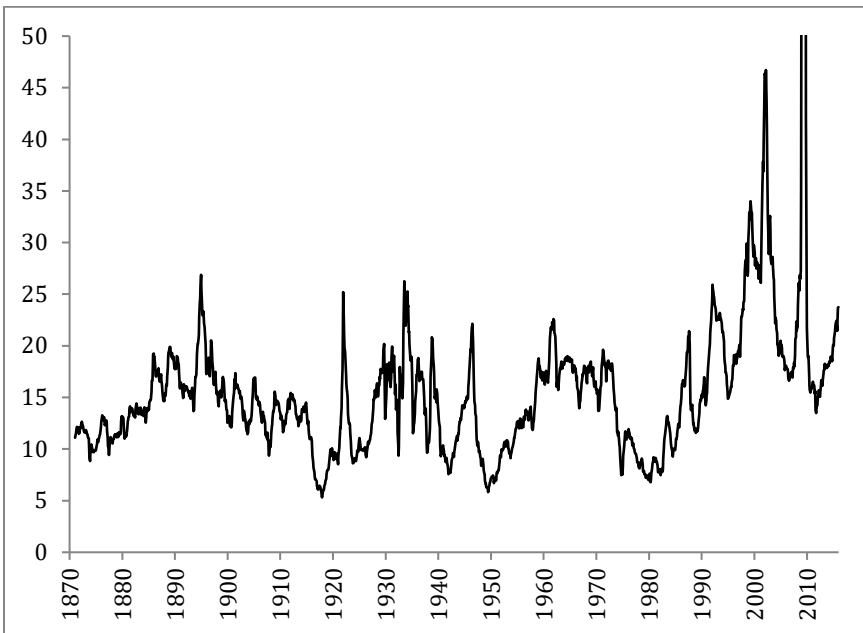


**U.S.: Short-Term Interest Rates, 1919-1941<sup>26</sup>**

Rothbard focused on a meeting of the heads of central banks in New York, in July 1927. Strong and Bank of England head Montagu Norman were there, along with the heads of the Bank of France and the Reichsbank. Strong seemed to have notions of “activist” macroeconomic management, in the midst of a mild recession that the National Bureau of Economic Research dates from October 1926 to November 1927.<sup>27</sup> Charles Rist, attending as Deputy Governor of the Bank of France, claimed that, at the

meeting, Strong said his actions would deliver “a little *coup de whiskey* to the stock market.”<sup>28</sup> In any case, a modest expansion in Total Credit, beginning in May 1927, accompanied a small reduction in the Federal Reserve’s official discount rate, which was reversed a few months later.

This expansion in credit was completely offset by gold conversion outflows, and resulted in no change in base money supply, from what it would have been without this action. The outcome was no different than if Strong had stayed home and played dominoes. The Federal Reserve could not have caused the effects Rothbard claimed, because the Federal Reserve did not actually do anything at all, and couldn’t have even if it wanted to (which, apparently, it did). But, the notion that the Federal Reserve was somehow engaging in a meaningful “activist” policy of discretionary management was thick in the air.<sup>29</sup> Strong himself seemed to believe so; and also Adolph Miller, a member of the Federal Reserve board of governors at the time. In Congressional testimony, he claimed that the 1927 actions were an inflationary policy that produced an “inevitable” reaction leading to the collapse of late 1929 – a position essentially the same as Rothbard’s.<sup>30</sup> Lionel Robbins, a prominent economist of the time, also took a similar view.



**U.S.: S&P 500 Trailing 12-Month Price/Earnings Ratio, 1870-2015<sup>31</sup>**

Rothbard colorfully called Montagu Norman, head of the Bank of England (1920-1944), the “Mephistopheles of the inflation of the 1920s.”

Yet Norman was one of the era's great gold standard advocates. According to Norman, failure to restore the gold standard, in Britain and throughout the world, would result in "violent fluctuations of the exchanges, with probably progressive deterioration of the values of foreign currencies vis-a-vis the [gold-linked] dollar; it would provide an incentive to all of those who were advancing novel ideas for nostrums and expedients other than the gold standard to sell their wares; and incentives to governments at times to undertake various types of paper money expedients and inflation."<sup>32</sup>

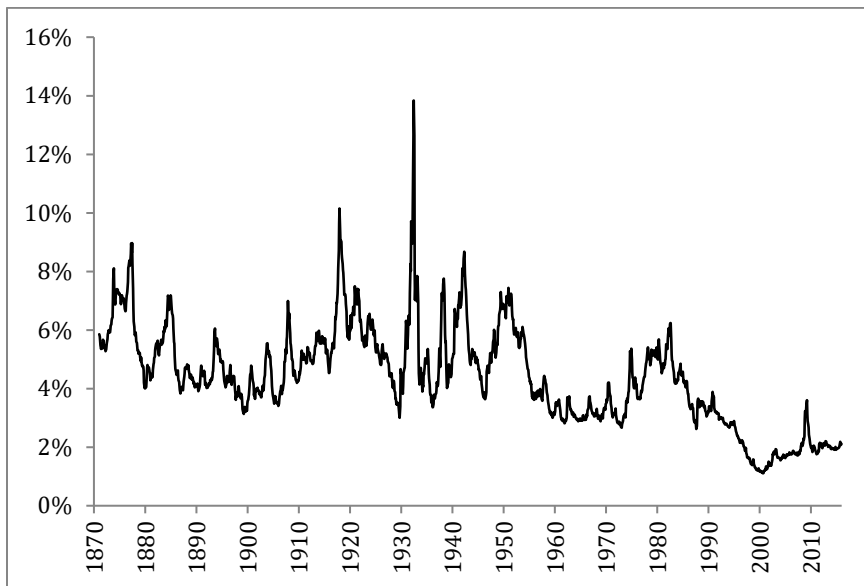
By the end of the 1920s, modest ambitions for an activist monetary policy had ensnared the era's gold standard advocates, even as they held the ramparts against a tide of more aggressive soft-money notions. The view commonly held before 1914, that the purpose of a gold standard system was simply to maintain the value of the currency at the gold parity, and that great economic advantages flow from this, was fading from their vision. The debates of the 1890s, the floating currency experience during and after World War I, the debates surrounding the return to gold in the 1920s, the general trend toward greater socialist involvement in all spheres of government – perhaps even the broad notion that the success of technological innovation justified overturning existing practices in all fields of endeavor – created a new interest in the possibilities presented by currency manipulation. In *A Tract on Monetary Reform* (1924) – the British pound was still a floating currency at the time – John Maynard Keynes wrote:

Those who advocate a return to a gold standard do not always appreciate along what different lines our actual practice has been drifting ... In truth, the gold standard is already a barbarous relic. All of us, from the Governor of the Bank of England downwards, are now primarily interested in preserving the stability of business, prices, and employment, and are not likely, when the choice is forced on us, deliberately to sacrifice these to the outworn dogma, which had its value once, of £3:17:10½ per ounce. Advocates of the ancient standard do not observe how remote it now is from the spirit and the requirements of the age.<sup>33</sup>

Keynes' rhetoric was exaggerated. The number who saw things as he did was still not so great; the number who saw that Britain's – and the world's – adherence to gold over the previous two centuries had been enormously successful, and had presented no obvious problems during that time, were still greater. The Governor of the Bank of England, the British government, and the rest of the world ignored Keynes, and reconstructed the global gold standard system in the 1920s. But the old Stable Money conviction was eroding.

Alongside this was a deterioration in the understanding of how gold standard systems, and central banks, actually worked; for, without this

clouding of their vision, they would surely have noticed that nothing was actually being achieved by their activist ambitions, and that nothing could be achieved without departing the gold standard policy entirely and embracing floating fiat currencies.



**U.S.: S&P500 Dividend Yield, 1870-2015<sup>34</sup>**

They inherited the traditions, habits and forms, but were forgetting the principles behind them. Nevertheless, enough held over from the pre-1914 period that effective management of the gold standard policy did take place. Currencies' real market values were maintained at gold parities, and base money adjustment was undertaken appropriately to achieve this goal. Gold convertibility was a chief element of this. To a large extent, even central bankers did not really understand what convertibility, the inflows and outflows of gold bullion, represented – variations in the value of their currencies from their gold parities. They blamed the actions of other central banks, a “balance of payments imbalance,” or a dozen other things, in much the manner that economists do today. All of these themes became more entrenched under the pressures of the 1930s, and further still in the Bretton Woods era of 1944-1971.

### **Monetarist Interpretations**

Where Rothbard saw a great “inflation” during the 1920s, Milton Friedman saw a great “deflation” during the early 1930s.

Both authors showed considerable confusion between monetary effects and nonmonetary effects. The terms “inflation” and “deflation” arise from popular speech, and reflect popular confusion. Rising currency value – for example, a rising value versus gold, as happened in Britain 1815-1821 and 1919-1925, or the U.S. 1865-1879 – causes certain effects commonly labeled “deflation.” Falling currency value, such as the British devaluation of 1931 or the U.S. in 1933, causes effects commonly known as “inflation.” However, the labels “deflation” or “inflation” are also applied to a wide variety of nonmonetary situations as well.

These changes in currency value (vs. gold), and the macroeconomic effects that result, are not possible under a gold standard system, whose primary purpose is to prevent such things. One could argue that the value of gold itself changed, by some amount sufficient to create meaningful macroeconomic effects. Some have made these arguments, but neither Rothbard nor Friedman did. Thus, any “inflation” or “deflation” identified by either Rothbard or Friedman, while the U.S. or any other country was on a gold standard system, had nothing to do with these effects that arise from changes in currency value. They were nonmonetary phenomenon.

In *A Monetary History of the United States, 1867-1960* (1963), Friedman and coauthor Anna Schwartz implied and alluded to a monetary contraction of the sort that would cause a great rise in currency value, similar to, though perhaps more dramatic still, than the events in the U.S. 1919-1922 or Britain in 1919-1925. Yet, the U.S. dollar did not change value vs. gold.

In effect, Friedman took Irving Fischer’s “debt-deflation” observation – a nonmonetary description – and looked at it from the perspective of banks’ liabilities, rather than their assets. A rhetorical trick was accomplished by defining “money” to mean, primarily, the deposit liabilities of banks – rather than the circulating medium (base money) managed by the Federal Reserve. By calling the nonmonetary bank deposit contraction a “monetary contraction,” Friedman implied, or suggested, a rise in monetary value of the sort that might be caused by a reduction in base money supply, and that this nonexistent “contraction” was an error by the Federal Reserve.

That the banking system (as represented by bank deposits, or “M2”) should expand or contract generally along with the economy as a whole (nominal GDP), should be no great surprise to anyone. By assigning responsibility for “M2,” or comparable “monetary aggregates” to a central bank, in effect the central bank becomes responsible – not to maintain the value of the currency at a gold parity – but for economic outcomes as a whole. It is a system for floating fiat currency manipulation. Friedman in essence recommended a devaluation and floating fiat currency response to unidentified economic problems – a conclusion identical to the Keynesians, though couched in a different line of argument. Not surprisingly, Friedman and his followers became floating currency advocates, largely indistinguishable from the Keynesians although they preferred measures of quantity rather than interest rates to justify their soft-currency ambitions.

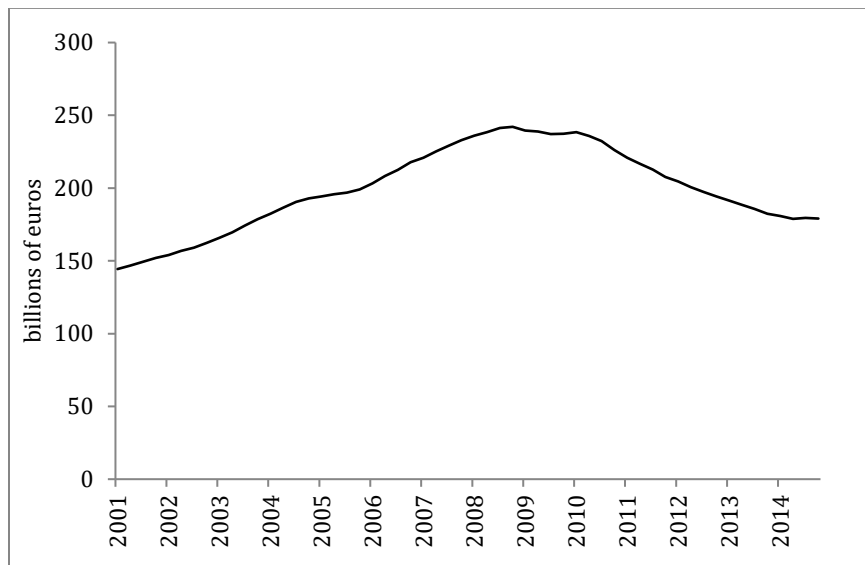
The Federal Reserve did not “contract the money supply” in 1929-1932. Total base money expanded. Should it have expanded more? To do so would have caused the value of the dollar to sag vs. its gold parity, leading to gold outflows and, if this expansion continued, the eventual failure of the gold standard system. Should the Federal Reserve, perhaps, have had less base money expansion? This would have created gold inflows, thus correcting any undersupply of base money, which is exactly what was already happening in 1929-1931. The actual base money supply of the Federal Reserve was thus exactly what it should have been, to maintain the value of the dollar at the gold parity. The automatic operating mechanisms of the gold standard system insured that it would be so. The Federal Reserve did not have the discretionary ability to take any action that would have meaningfully affected bank deposits. That would have required a floating currency.

The Federal Reserve’s task, in the 1920s and 1930s, was to maintain the value of the dollar at its gold parity, and to address any genuine liquidity-shortage crises that may arise, indicated by very high short-term borrowing rates. The Federal Reserve did both admirably, in challenging conditions.<sup>35</sup>

Between 2010 and 2015, the nominal GDP of Greece declined by 25%, as the economy buckled under relentless tax increases. This was without a tariff war (another form of taxes), or many of the other negative factors that were present during the 1930s. M2 in Greece, the credit measure favored by Friedman, fell by over 40% in the 2010-2015 period. Greece was part of the eurozone, and used the euro common currency. Many economists, comparing the euro to the gold standard of the early 1930s, called for Greece to leave the eurozone and devalue. But Greece’s problems were not monetary. Other eurozone members, that did not have Greece’s nonmonetary problems, also did not have Greece’s disastrous outcomes.

The idea of “activist” monetary policy had become widespread enough, by the early 1930s, that the Federal Reserve came under criticism that it was undersupplying base money. Under direct pressure from Congress, in 1932 the Federal Reserve embarked on an aggressive program of government securities purchases, to resolve any doubts that it was being stingy with its base money supply. The result was an immediate outflow of gold, indicating that base money was being oversupplied, and that the dollar’s value was sagging vs. its gold parity. The gold outflow naturally canceled out the effects of the purchase, in this case also accompanied by a decline in discount lending. (The decline in discount lending was related to the reduction in short-term market rates caused by the open-market purchases. If there was no decline in discount lending, gold outflows would have been larger.) The purchase of \$1,009 million of government securities between March and July 1932 was offset by \$431 million of gold outflows, and a \$239 million decline in other lending, resulting in a net base money expansion of \$336 million – a net expansion that still would have occurred

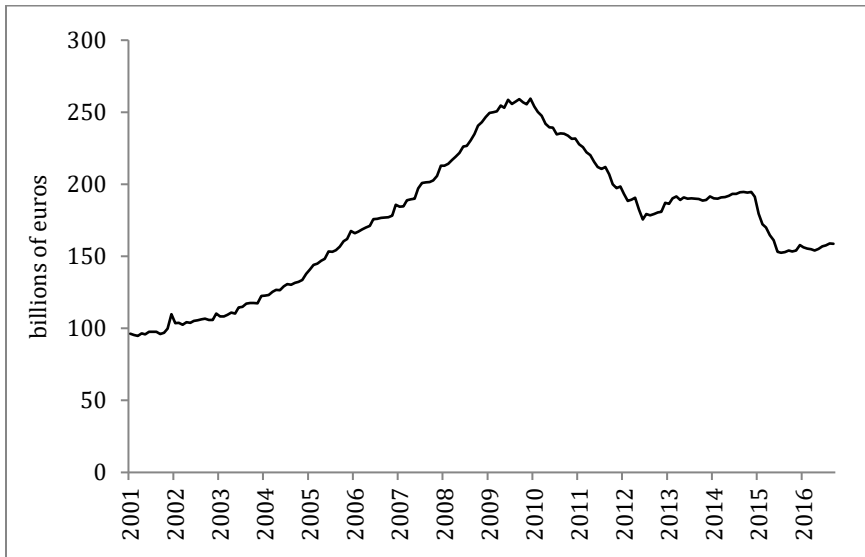
(via gold inflows) if there was no government securities purchase program at all. The automatic corrective mechanisms of the gold standard system, in particular gold conversion, again offset these attempts at an “activist” policy. The result was that the base money supply was little different than if nothing at all had been done, just as had been the case during Benjamin Strong’s more modest experiments with an “activist” policy in 1927-28. “Excess reserves” did not give a central bank a free pass to fool with its base money supply at will.



**Greece: Nominal GDP, 2001-2014<sup>36</sup>**  
*trailing four-quarter sum*

The Federal Reserve also came under some criticism for failing to act as a “lender of last resort” during a wave of bank failures in the early 1930s. During the early 1930s, overnight lending rates between solvent banks remained low, indicating that there was no systemwide shortage<sup>37</sup> – a conclusion shared by many at the time. Claims that the Federal Reserve should have been more active as a “lender of last resort” amount to the assertion that the Federal Reserve should have propped up failing banks, or perhaps, that the Federal Reserve should have attempted to prop up the economy as a whole with an expansionary policy. Use of the term “lender of last resort” outside of its historical context and meaning, as a label for “activist monetary policy,” amounts to semantic subterfuge. Any such action would have led to an oversupply of currency and eventual failure of the gold standard system.





**Greece: M2, 2001-2016<sup>38</sup>**

The Federal Reserve's increase in its discount rate in September 1931 has been accused of being somewhat perverse, given the economic difficulties of the time. The reason for the discount rate change was the British pound devaluation in September 1931, which set off shock waves throughout the world financial system. In the turmoil, market overnight lending rates had a sharp rise. The Federal Reserve's discount rate thus became significantly below the market rate, leading to a dramatic rise in discount lending, and a dramatic outflow of gold. To leave the discount rate far below the market rate would have led to further increases in discount lending, and further gold outflows. The British devaluation naturally raised great fears for more devaluations worldwide, including the U.S. dollar. The discount rate increase was largely to maintain the value of the dollar at its gold parity, in the midst of currency turmoil. Its modest rise to a brief peak of 3.50% had no great economic effects.

Rothbard and Friedman, between them representing the spectrum of conservative economic thought in the middle twentieth century, both focused on monetary explanations for the Great Depression, even while currencies were linked to gold. Both relied heavily on fallacious "quantity theory" to make their arguments. The result was a great contortion of Classical economic thinking, especially regarding money. Their "new explanations" required dynamiting their old expertise. By the 1960s, their monetary understanding had disintegrated badly.

The left-leaning Keynesian economists had long favored floating fiat currencies and monetary activism, as part of a broader "progressive" vision

of big-government management of the economy and society on every level. This dated at least as far back as the “free coinage of silver” arguments of the 1890s. After World War II, the small-government conservatives were split between Friedmanite monetarists who were also soft-money advocates of a different flavor, and a dwindling number of hard-money gold standard advocates who had lost the ability to create or manage such systems, or to correctly analyze economic events. The intellectual foundation upon which the ideal of Stable Money was based, and the worldwide gold standard that represented its practical implementation, was crumbling. The eventual end of the Bretton Woods gold standard system in 1971 was the outcome.

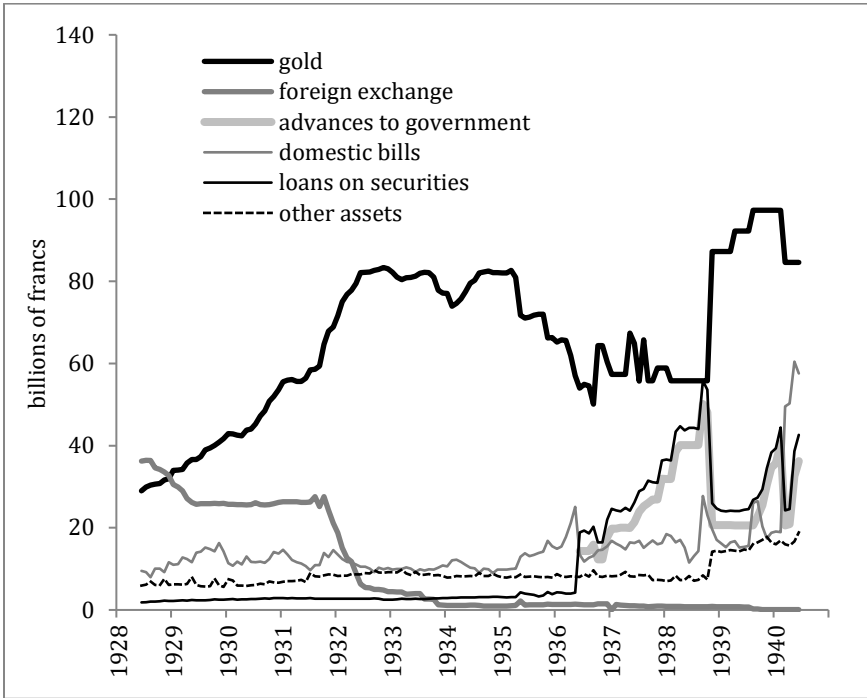
### **Blame France**

The Bank of France’s dramatic accumulation of gold bullion reserves, in 1926-1932, has proven irresistible to the legions of economists still searching for a monetary cause for the onset of the Great Depression. Yet again, the question arises: how could this have been a problem while the franc, and other currencies, were linked to gold? How could any kind of monetary problem of Great Depression-causing magnitude have emerged? The Bank of France’s gold accumulation did not change the value of the franc, or any other currency. (The Bank of France’s contribution to overall central bank bullion accumulation is addressed separately.) The gold standard system would naturally correct any excess or shortage of franc base money supply, in the process of keeping its value at the gold parity. This was also true of all other currencies, which remained fixed to gold, and whose adjustment mechanisms maintained this link, no matter what the Bank of France might do.

In *Gold, France and the Great Depression, 1919-1932* (1997), H. Clark Johnson made a variety of arguments that the Bank of France’s policy was “deflationary.”<sup>39</sup> Yet, the value of the franc did not rise, compared to gold or foreign currencies. If it did, by a small amount, gold convertibility would have led to gold inflows and an increase in the monetary base, thus immediately resolving the issue of undersupply. Indeed, this is exactly what happened during that period – large increases in base money were accompanied by gold inflows.

The Bank of France returned to a gold parity in 1926, at a value about one-fifth of the franc’s prewar gold parity. However, this was largely accomplished via transactions in foreign exchange, in effect a currency board-like mechanism or “gold exchange standard.” The result was a large accumulation of foreign exchange by the Bank of France. In 1928, gold convertibility for the franc was restored. The Bank of France then wanted to return to its pre-1914 policy of large bullion reserve holdings, and little or no foreign exchange. This required the sale of foreign exchange and acquisition of bullion, which was done according to a deliberate plan. The

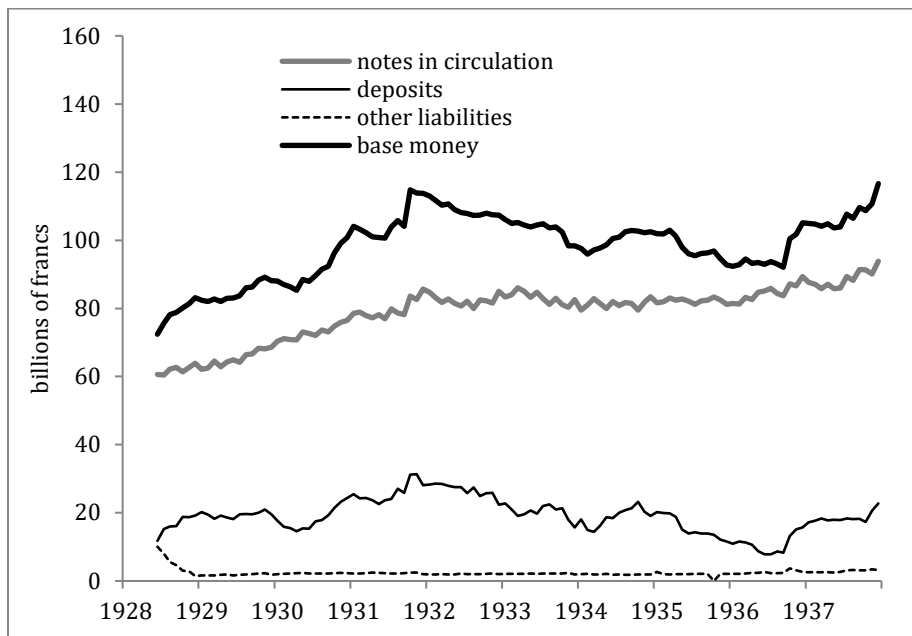
quantities were rather small – about 10.5 billion francs of foreign exchange sold and bullion purchased, or about 12.4% of total assets of 85 billion francs – and the operation was complete in early 1929.



**France: Bank of France, Assets, 1928-1940<sup>40</sup>**

Further sales of foreign exchange for gold bullion were done after the British devaluation of 1931, which made all too obvious the risks of holding the debt of foreign governments on central bank balance sheets.

This adjustment of reserve assets had no monetary effects, and was completely compatible with gold standard operating principles. The Bank of France had always held large bullion reserves, against its banknote and deposit liabilities. In 1907, the reserve ratio was 66%.<sup>41</sup> The United States itself had bullion coverage ratios that varied from less than 20% to over 100%, in the years 1880-1970. The Bank of England, especially before 1845, had bullion reserve ratios that varied wildly from less than 10% to over 60%. Nor did the Bank of France's reserve asset rebalancing have any effects on other central banks.<sup>42</sup> If at any time the Federal Reserve, Bank of England, or any other central bank felt that it held too little or too much bullion, they could have also adjusted their reserve asset mix just as the Bank of France did, with no monetary effects.



**France: Bank of France, Liabilities, 1928-1937<sup>43</sup>**

The Bank of France's monetary base expanded by 97% between 1926 and 1931. Certainly the mechanisms (primarily gold convertibility) for such an expansion were active.

### Keynesian Interpretations

By the publication in 1992 of *Golden Fetters: the Gold Standard and the Great Depression, 1919-1939*, by Barry Eichengreen, commitment to soft-money activism had reached such a degree, among Anglophone academics, that they could hardly imagine any alternative. Rather than a choice, between a hard money stable value system represented by the gold standard, in which one does not attempt to solve nonmonetary problems with a monetary solution, and a soft-money floating fiat system in which one does – or, perhaps, a once-a-century disaster that might warrant making an exception to monetary principles, as seemed to be Keynes' view later in life – they saw only madness and sanity. This is not a choice at all, but simply, in their view, a mistake. Eichengreen's book remains influential, and describes common sentiment among many academics to the present day.

Typical of Keynesian narratives – and also, mainstream narratives before mainstream thought itself became predominantly “Keynesian” after 1936 – the onset of the Great Depression was conceived of as being

nonmonetary in character. The gold standard is “blamed” not because it wasn’t functioning properly and caused some sort of problem, but because it prevented the monetary response that Keynesians favored – in this case, a major devaluation, which Eichengreen regarded as a success after it was implemented in many countries after 1931. Typical of Keynesians, Eichengreen offered a few notions regarding initial causes for the 1929-1931 downturn, but without much enthusiasm or details:

The initial downturn in the United States enters this tale as something of a *deus ex machina* ... The tightening Federal Reserve policy of 1928-29 seems too modest ... Hence the search for other domestic factors that might have contributed to the severity of the downturn, such as structural imbalances in American industry, an autonomous decline in U.S. consumption spending, and the impact of the Wall Street crash on wealth and confidence.<sup>44</sup>

The search was apparently not successful. Besides the fact that there was no real “tightening” in Federal Reserve policy in 1928-29 – reductions in total credit were offset by gold inflows – the notion of an “autonomous decline” amounts to “it just happened.” The emphasis on “confidence” following the stock market declines in 1929 mirrored Keynes’ “animal spirits,” the notion that Great Depression-type events can come about basically because people get the heebie-jeebies.<sup>45</sup>

Prior to the publication in 1963 of Friedman and Schwartz’s *Monetary History*, the conventional view was that the onset of the Great Depression was essentially nonmonetary in nature. Central banks could do little, because the problems lay outside their realm. This view remained popular afterwards as well. “For at least a quarter-century after the Depression’s nadir, the prevailing interpretation concluded that monetary factors, specifically the actions of the Federal Reserve, were quite simply unable to stem the decline,” concluded Frank Steindl, in a review of the intellectual landscape.<sup>46</sup> Anna Schwartz, Friedman’s collaborator, explained: “In the ’30s, ’40s, and ’50s, the prevailing explanation of 1929-1933 was essentially modeled on Keynesian income-expenditure lines. A collapse in investment as a result of earlier overinvestment, the stock market crash, and the subsequent revision of expectations induced through the multiplier process a steep decline in output and employment. ... Try as the Federal Reserve System might, its easy money policies ... did not stabilize the economy.”<sup>47</sup>

In *Did Monetary Forces Cause the Great Depression?* (1976), Peter Temin described the common thinking of that time:

It turns out that explanations of the Depression can be classified into two groups ... The two classes of explanations of the Depression have different events at their cores. What I have called the “money hypothesis” asserts that the collapse of the banking system was the

primary cause of the Depression, while the "spending hypothesis" asserts that a fall in autonomous aggregate spending lay at the root of the decline.<sup>48</sup>

Although Temin, like Eichengreen and other Keynesians, supported the idea of a monetary response – a devaluation – to the difficulties of the time, he answered the question of his book's title in the negative.

[T]he proposition that monetary forces caused the Depression must be rejected. ...

This study has shown that the spending hypothesis fits the observed data better than the money hypothesis, that is, that it is more plausible to believe that the Depression was the result of a drop in autonomous expenditures, particularly consumption.<sup>49</sup>

The "golden fetters" that Eichengreen's title refers to represents the notion that, with a gold standard system, central banks' hands are essentially tied. In any Currency Option One system, there is little role for discretionary policy. When Montagu Norman was asked by the Macmillan Committee in 1931 what the Bank of England could have done to address the soaring unemployment, Norman answered: "We have done nothing. There is nothing we could do."<sup>50</sup>

### **The "Gold Exchange Standard"**

The "gold exchange standard" systems of the 1920s have come under criticism in some circles, once again identified as a monetary cause of the Great Depression. This view is represented in the writing of Jacques Rueff, who, as the London-based manager in charge of the Bank of France's foreign reserves of British pounds in the 1920s, had an intimate view of the issue.<sup>51</sup> He later became deputy governor of the Bank of France.

Despite his privileged vantage point, Rueff's views were rather confused. A "gold exchange standard" is functionally much like a modern currency board, which causes no particular problems today. Rueff claimed that a flaw in the "gold exchange standard" led to dramatic and inflationary monetary expansion in both the reserve currency and the subsidiary currency, which then led to bust in a manner reminiscent of Rothbard's arguments. A currency board, or "gold exchange standard," does no such thing. Despite serving as the primary reserve currency for "gold exchange standards" worldwide, the Bank of England did not have even modest growth in base money in 1925-1930, nor any decline in currency value indicating an excess of base money supply. As for France, Rueff was probably witnessing, and reacting to, the consequences of the French franc's wartime devaluation and return to gold at roughly one-fifth of its prewar gold parity in 1926. Nominal prices in France would rise in

response, potentially by five-fold from their prewar levels, over a period of years. The devaluation alone created an artificial trade advantage for France. The fact that the franc was again a reliable gold-based currency after 1926 naturally increased the demand for francs, and to meet this demand, the Bank of France increased their supply. France also had substantial tax cuts in the 1920s, producing a boom there, much as was the case in the United States as well. The result was a roaring economy, rapidly expanding monetary base, and an upward trend in prices, in France in the 1920s – all factors that could suggest a destructive “inflationary overheating,” although, in this case, it was entirely benign.

Some economists put an undue emphasis on the supposed difference between the “gold exchange standard” policies of the 1920s, and the pre-1914 Classical gold standard period. This serves a rhetorical purpose – by claiming that the 1920s era “was not really a gold standard,” they can deflect criticisms that the Great Depression was supposedly caused by the gold standard. Also, it helps to reconcile the claims that a “great inflation” (or “great deflation”) of the most destructive consequences somehow emerged during a gold standard regime. A subtle cautionary element is often implied: although currencies were generally convertible to gold during the 1920s, they were more commonly convertible to large bars rather than coinage. After 1925, the Bank of England would deliver only 400 oz. bars in exchange for banknotes, instead of the £1 gold sovereigns common before 1914. The circulation of gold coinage dropped dramatically, as monetary gold was concentrated in central bank vaults. In the mind of the general public – including politicians who were not monetary specialists – gold’s role at the center of their monetary systems was becoming an increasingly remote abstraction.

In 1930, John Maynard Keynes described:

[Gold] no longer passes from hand to hand, and the touch of the metal has been taken away from men’s greedy palms. The little household gods, who dwelt in purses and stockings and tin boxes, have been swallowed by a single golden image in each country, which lives underground and is not seen. Gold is out of sight—gone back again into the soil. But when gods are no longer seen in a yellow panoply walking the earth, we begin to rationalize them; and it is not long before there is nothing left.<sup>52</sup>

A closer look shows that there was actually not very much difference between the arrangements of the late 1920s, and the arrangements of 1900-1914. Outside of the four major currencies (U.S., U.K., France and Germany), the average holding of foreign currency reserves by other central banks in Europe in 1913 was 24.6% of “international reserves” consisting of gold bullion and foreign currency. In the Americas, Africa, Asia and Australia, it was 38.8%. By 1929, these ratios had risen, but the difference

was largely one of degree. The increasing number of “gold exchange standards” among peripheral central banks after 1920 was due in large part to the fact that there were more central banks: in the aftermath of World War I, several new states were established in Eastern Europe, including Poland, Hungary, Czechoslovakia, Latvia, Lithuania, Estonia, and a shrunken Austria. In Latin America, the Kemmerer Commission established a series of new central banks during the 1920s, replacing prior arrangements based mostly on silver coinage and small local banks of issue.

Australia	30.2%	South Africa	46.8%	Peru	11.2%
Egypt	88.1%	Bulgaria	45.5%	Poland	42.8%
Albania	90.5%	Portugal	66.3%	Danzig	100.0%
India	67.4%	Latvia	70.1%	France	38.5%
Finland	69.3%	Estonia	78.9%	Switzerland	37.2%
Sweden	52.0%	Colombia	40.7%	Chile	85.9%
Ecuador	84.1%	Romania	42.5%	Italy	49.8%
Austria	79.7%	Czechoslovakia	64.3%	Netherlands	32.9%
Hungary	32.9%	Spain	3.8%	Belgium	33.0%
Norway	31.1%	Lithuania	69.2%		

### Foreign assets as a percentage of total gold and foreign assets, 1929<sup>53</sup>

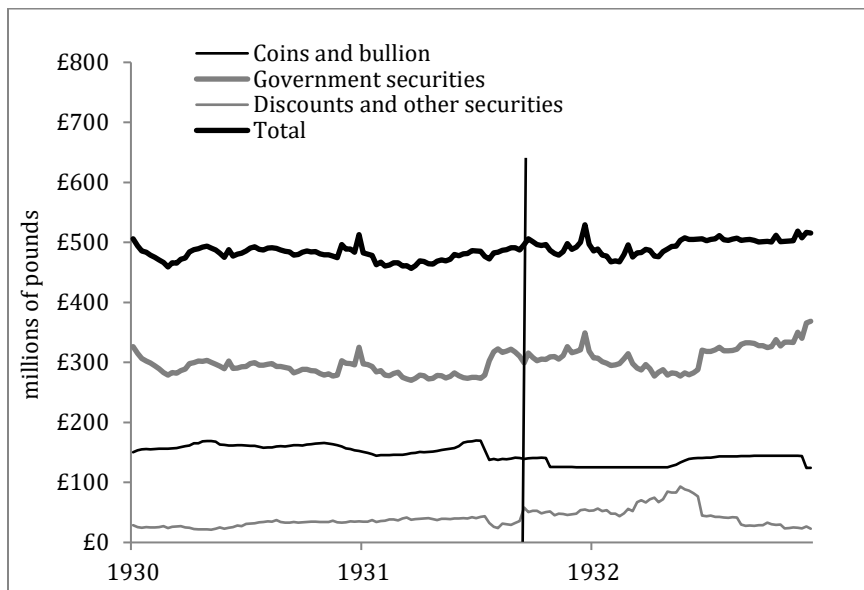
A related criticism of the “gold exchange standard” is that it is “pyramided” upon the bullion reserves of the central bank of the reserve currency; in this case, the Bank of England. It seemed as if dozens of central banks were precariously perched upon this small bullion base.<sup>54</sup> This notion arises from confusion between the liabilities of the Bank of England (banknotes and deposits of the Bank), and British pound liabilities in general, such as government bonds and commercial bank deposits, which are liabilities of governments and commercial banks. Currency boards (and “gold exchange standards”) generally hold the latter. It is true that bonds or commercial bank deposits could be liquidated for base money, and that base money converted to gold. But, in this, central banks holding British government bonds are no different than any private-sector holder of British government bonds, or private-sector commercial bank depositor, all of whom could do exactly the same thing. If anything, central banks are likely to be rather hesitant to take any such action: first, because it might create friction with the Bank of England; and second, because it is contrary to the principle of the gold exchange standard itself, the central bank’s current policy. The Bank of England needed only to maintain the value (and gold convertibility) of its own liabilities – banknotes and deposits, or base money. For this purpose, it held bullion reserves equivalent to about 30% of base money, which was more than adequate, especially when combined with a contraction of discounting and other debt assets if necessary.



Did the “gold exchange standard,” or subsidiary central banks seeking conversion of their reserves into bullion, force the British pound off of gold in September 1931?<sup>55</sup> If central banks did make such requests, it was only because the Bank threatened to devalue the currency, as John Maynard Keynes stridently advocated at the time. The reason the British pound was devalued in September 1931 had nothing to do with the “gold exchange standard,” but rather the neglect of the Bank itself to support the value of the pound as it came under pressure. This neglect itself caused fears of devaluation to soar – fears that, it turned out, were correct. As has been true almost universally in these cases through the decades, central banks can then blame external forces, when it was their own misbehavior that was to blame – misbehavior that, in the intensifying climate of monetary activism promoted by Keynes and many others, was not quite accidental. The outcome was exactly what many wanted, and criticism could be deflected elsewhere. “There are few Englishmen who do not rejoice at the breaking of our gold fetters,” John Maynard Keynes said in 1931, once again assigning his personal views to the population as a whole.

During the summer of 1931, gold conversion drained the reserves of the Bank of England. This was evidence that the pound’s value was low compared to gold, and that the proper response was to reduce the base money supply to support the pound’s value. Gold conversion itself would accomplish this automatically, if no other action were taken. The receipt of British pounds in the sale of gold at the conversion price would reduce the monetary base by the equivalent amount. Normally, in a crisis situation as this was, credit instruments (bonds and discounts) would also be reduced, thus reducing the monetary base still further. Discounts did decline, in response to an increase in the discount rate. However, the volume of discounts, as a percentage of total assets, was by this time so small that the effect was negligible. To this should have been added substantial selling of government bonds in open market operations.

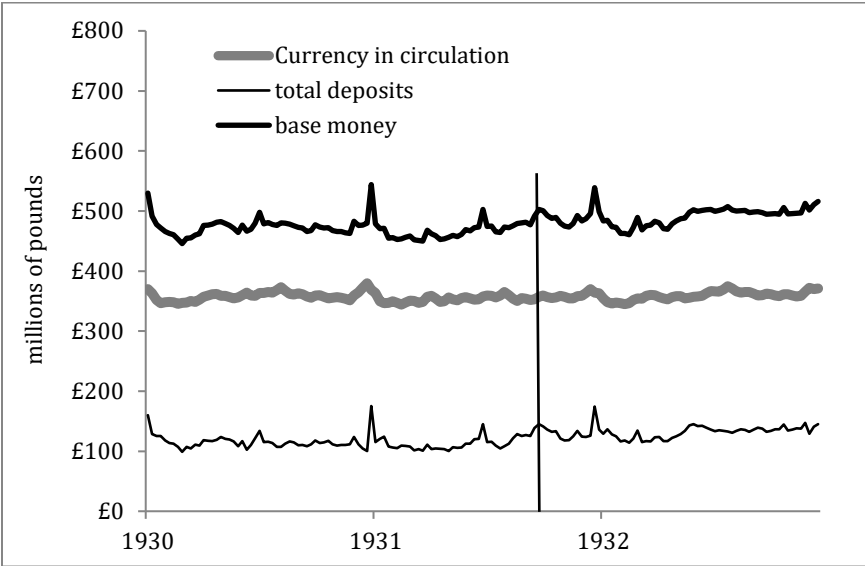
After the initial fall in gold reserves, further gold conversions were accommodated by borrowing gold from the Federal Reserve and the Bank of France in July and August of 1931. The total amount of gold conversion amounted to perhaps £200 million.<sup>56</sup> If these gold outflows were reflected in equivalent reduction in the overall monetary base, as would have occurred automatically if the Bank took no other action, the monetary base would have contracted by roughly 40%, a gigantic figure, and far more than would have been necessary to support the pound’s value. This did not happen; the monetary base expanded modestly. The initial gold outflows were offset by an expansion of government securities. Although the Bank claimed that a £15 million increase in fiduciary note issue at the beginning of August was only for the three weeks of the holiday season, the move created fears in the market of a new inflationary trend for the Bank.<sup>57</sup> (The increase in government securities was not reversed.)



**Britain: Bank of England, Aggregate Assets, 1930-1932<sup>58</sup>**  
*vertical line indicates the date of devaluation*

During the crisis, the Bank undertook no meaningful defense of the pound's value at all, and instead went in the opposite direction, with devaluation the inevitable outcome. Observers at the time were concerned that monetary base contraction would lead to higher interest rates, and "deflation." Contraction in the monetary base has no economic effect if it is done to support the currency's value – as opposed to a contraction that results in a higher currency value, as was the case in Britain in 1920-1925.<sup>59</sup> In effect, the contraction absorbs "excess" base money. If there were no contraction, the value of the currency would fall. Thus, it can be considered an "anti-inflationary" action.

This pattern, of no effective central bank response via monetary base reduction in the midst of gold outflows and sagging currency values, and a devaluation soon after, has been common in the decades since 1931, and was also the proximate cause of the demise of the Bretton Woods gold standard in 1971.<sup>60</sup> If the Bank had acted properly, the British pound could have easily maintained its gold standard parity. The devaluation of the pound set off a worldwide crisis. Fears swirled that the U.S. or France might follow Britain's example. Yet, the dollar and franc were not devalued. The Federal Reserve and the Bank of France weathered the crisis with their currencies intact. In both cases, this involved a reduction in the monetary base.



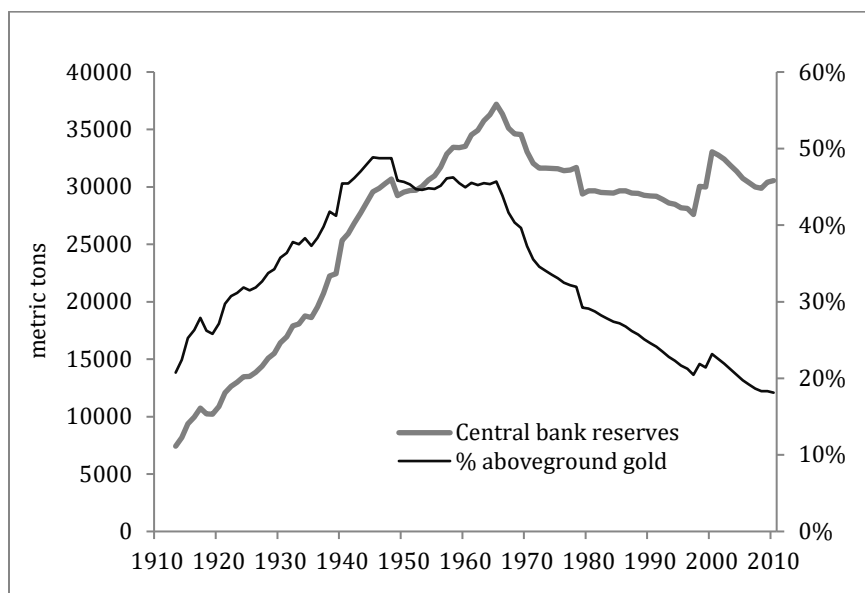
**Britain: Bank of England, Aggregate Liabilities, 1930-1932<sup>61</sup>**  
*vertical line indicates the date of devaluation*

The use of “gold exchange standards” – currencies that were linked to gold indirectly via a link to the British pound, rather than linked to gold directly – probably caused more countries to go off gold, in 1931 and 1932, than might have been the case if these monetary systems were structured in a more independent fashion. However, the “gold exchange standard” cannot take all the blame. The concurrent devaluation of the currencies of Egypt, India, and Singapore – parts of the British Empire – reflected broader political and economic ties beyond monetary technicalities alone. The devaluation of the Japanese yen in December 1931 was related to trade competition issues. Nevertheless, just as was the case with the devaluation of the U.S. dollar in 1971, the use of reserve-currency systems tended to tie many countries’ currencies to the fate of the British pound.

### **The “Rising Value of Gold” Interpretation**

The notion that gold itself underwent some radical change in value, a rise so abrupt and so gigantic in magnitude that it blew up the world economy, has actually been rather rare. None of the theories previously mentioned include it in any meaningful form. No evidence of any such rise in value appears in the history of gold over the prior 500 years. The only arguably similar episode was during the 1880s and 1890s, which can be perhaps better explained as a glut of commodity supply. In any case, the 1880s and 1890s were also a time of great economic expansion.

To produce anything like the effects witnessed during the Great Depression, the value of gold would have had to perhaps double, or perhaps rise even beyond that. There are a few examples of such a rise in currency value, such as the rise of the Japanese yen from 260/dollar to 120/dollar between 1985 and 1988. Even this, though it certainly created difficulties for the Japanese economy, did not cause anything resembling the Great Depression.



### Gold Bullion Holdings of Central Banks and Governments, 1913-2010

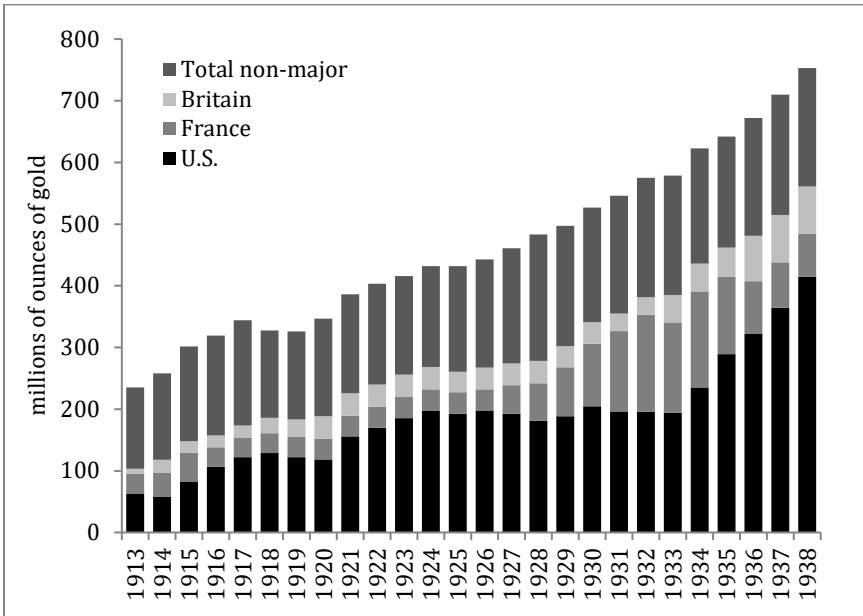
One such argument was that central banks reduced their gold reserve holdings dramatically during the floating-currency period of World War I, and increased them dramatically afterwards, as part of their return to gold convertibility in the 1920s.<sup>62</sup> This story was true for France, but not for central banks as a whole. Ex-U.S. central bank bullion holdings increased by 31% between 1913 and 1920. Including the U.S., they increased by 47%.<sup>63</sup>

However, the basic idea dates at least as far back as the debates of the 1890s. The dramatic rise in central bank gold reserves after 1850 suggested a rise in gold's value, which would create a similar rise in value for all currencies linked to gold, with the associated monetary effects.

The economist Gustav Cassel, in particular, focused on the potential problems arising from aggressive central bank bullion accumulation. He was influential at a 1922 meeting of central bankers in Genoa, where it was loosely agreed that countries returning to a gold standard after wartime currency floating would not pursue aggressive bullion reserve policies, but

instead make use of debt assets denominated in “reserve currencies,” especially British pounds and U.S. dollars. Although often cited as a dramatic embrace of “gold exchange standards,” this amounted to a continuation of common practice from before 1914.

The outcome, perhaps influenced by Cassel, was that there was no great change in the trend of central bank reserve accumulation before, during, or after World War I. The surprising result was that, despite the trauma of World War I and floating currencies, the reconstruction of the world gold standard system in the 1920s and its breakdown in the 1930s, hardly anything remarkable happened at all.



### Gold Reserves of Central Banks, 1913-1938<sup>64</sup>

From 1850 to 1950, central bank reserve holdings steadily rose, as a percentage of aboveground gold. Their levels in the 1920s were the highest in history up to that time. Yet, in the 1920s, commodity prices were unusually high in terms of gold; evidence that even eighty years of continuous central bank accumulation (1850-1930) did not have the effect of raising the value of gold, which would have implied low commodity prices. Central bank accumulation continued to the mid-1960s, to levels far above those of the 1920s or 1930s. Yet, the post-WWII period was also a time of high commodity prices, and a booming economy. When central bank accumulation finally turned to contraction in the mid-1960s – a far more significant shift than anything that happened around 1929-1933 – this too

had little discernible effect on commodity prices or economies during that time.

The trend of accumulation was also surprisingly smooth, with only a small dip around 1918.<sup>65</sup> Even taking the Bank of France's bullion accumulation into account, there was no dramatic change in central bank behavior that could have turned the booming 1920s into the catastrophic disaster of the 1930s – a disaster in which U.S. nominal GDP fell by over 50% in a few short years.<sup>66</sup> In 1929, central banks held 34.2% of world aboveground gold, and everything was fine. In 1933, they held 37.5%, and the world economy was a smoking ruin. In 1950, they held 45.7%, and everything was fine again. If one it to make the argument that gold rose in value in 1929-1933, to some catastrophic degree, then one must also accept that gold fell in value in 1933-1950 by a similar magnitude. If such a rise in gold's value was caused by central bank bullion accumulation, how did even greater bullion accumulation after 1933 result in the opposite effect?

The history of gold over centuries, as a standard of value, was that it did not undergo any sudden change of value that could cause dramatic economic effects. This was true during the period of central bank bullion accumulation 1850-1965 as well. Such descriptions flounder on the lack of evidence of any mechanism that would explain such a historically unprecedented outcome.

Between 1910 and 1940, the increase in monetary gold (central bank reserves plus gold coinage) represented 80% of mining production during that time period. A few have argued that mine production was low in the 1920s, causing a rise in gold's value. Production of 608 tons in 1929 was indeed below the 1912 peak of 707 tons; but it was still nearly four times higher than the 167 tons mined in 1880. Production in 1929 was 1.34% of the estimated aboveground world gold supply of 45,269 tons. In 1932, gold production made a new all-time high. These minor wiggles in production are hardly the causes of Great Depressions.

A related argument could be made for private-sector demand for gold. Wouldn't the bank insolvencies and sovereign defaults of 1929-1932 lead to a rush to hold gold bullion? It is a sensible argument, but again one with little evidence to support it. Suspension of convertibility in much of the world beginning in 1931, and even outright bans on gold ownership such as the United States adopted in 1933, tended to dampen any rush toward gold coinage.

In the United States, gold coinage in circulation did experience a dramatic rise in 1932, to \$166 million from \$76 million in 1931. However, the 1932 figure was still only 3.1% of the total U.S. currency in circulation, and far below the peak of \$680 million of gold coinage in circulation reached in 1899.<sup>67</sup> By the end of 1933, ownership of gold coinage was illegal in the United States. On a global basis, estimated circulation of gold coinage was 4,699 metric tons in 1910; 1,565 tons in 1925; 984 tons in 1930; and 300 tons in 1935.<sup>68</sup>

If there were a rise in the value of gold around 1929-1933 of extraordinary magnitude – perhaps a doubling of value – central banks would have had to push their currencies higher to maintain gold parities. To cause this rise in currency value, it might have been necessary to reduce the monetary base by a substantial amount; in any case, there should have been some sort of change in behavior reflective of the dramatic change in monetary conditions. But the balance sheet of the Bank of England was extremely quiet, and showed no such drama. The Federal Reserve had a gentle expansion of the monetary base, not a contraction. The Bank of France also continued to expand its balance sheet. Here too, there is no evidence supporting a claim of a dramatic rise in gold's value.

### **Gold's Stability of Value**

In the end, the only question we need to answer is: Did gold fail to serve its role as the Monetary Polaris, a stable standard of value? This claim can now be dismissed; and with it, all related claims that the gold-based monetary systems of the time were a primary cause of the Great Depression.

This conclusion should not be controversial. The Keynesian view, and the dominant view until the 1960s, was that there was no monetary problem, and little that central banks could do while remaining with the gold standard system. The Austrian and Monetarist views both tended to ignore the gold standard system altogether; both assume – erroneously – that central banks were already operating a highly discretionary floating fiat currency. Those that blame the “gold exchange standard” mostly blame it for the failure of gold standard systems in 1931. Those devaluations did indeed introduce a new element of turmoil, but “gold exchange standards” were not the primary cause of them.

By the end of the 1930s, academia had turned into a hothouse of soft-money enthusiasm. Governments and businessmen, however, were not convinced. Currency devaluations often brought some relief, but also a basket of nasty consequences. It had been no lasting solution – the Great Depression dragged on through the decade, and unemployment remained high. By the Tripartite Agreement of 1936, governments were moving back toward a system of stable exchange rates. In 1944, they gathered together, this time at a hotel in New Hampshire, to once again recreate the world gold standard system.

## Chapter 7:

# The Bretton Woods Period, 1944-1971

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The United States and Britain invaded German-held France at Normandy on June 6, 1944. This created a two-front war for Germany, which was already in rapid retreat on its Eastern front. The end of the war was in sight; and with it, a return to normalcy in commerce and finance. In July 1944, forty-four Allied governments assembled at the Mount Washington Hotel in Bretton Woods, New Hampshire, to rebuild a world monetary system based on gold.

The result was enormously successful. Worldwide economic growth and prosperity during the two decades that followed, the 1950s and 1960s, were the best of any time from 1914 to the present day. Technological wonders flowed forth: antibiotics, vaccines, synthetic fabrics, plastics, nuclear power, commercial jet aviation, transistors, superhighways, skyscrapers, and a “green revolution” in agriculture that resulted in a threefold increase in per-acre yields. The propeller planes of 1945 led to a small satellite, Sputnik 1, in orbit around the Earth in 1957. Only twelve years later, in 1969, a man walked upon the moon. Incomes soared: U.S. per capita GDP was \$1,611 in 1946, and \$5,246 in 1970 – all measured in a currency of unchanging value at \$35/oz. of gold. The 1970 figure represented 150 ounces of gold. It was the highest this measure ever reached. (U.S. per capita GDP in 2015 was equivalent to 48 ounces of gold.) Germany and Japan, reduced to rubble after the war, did even better than the United States.

The governments that gathered at Bretton Woods understood that something had gone terribly wrong in the 1930s. To prevent the kind of disorganized collapse of the international monetary system that began in September 1931, they established an International Monetary Fund. Its purpose was to defend the new gold standard system. Changes in gold standard parity values would have to get permission from the Fund; the Fund, in turn, would use its resources prevent any unplanned breakdowns. A World Bank would extend credit to governments in financing difficulties, thus preventing the kind of sovereign defaults that blackened 1931 and 1932. An International Trade Organization would prevent another cascading tariff war. The ITO was not constituted, and instead became the weaker General Agreement on Tariffs and Trade. Capitalism may indeed be unstable, but a downturn would not cause a structural failure of sovereign



default, currency breakdown, and trade war. A United Nations, established independently in 1945, would prevent military conflict.

Yet despite even these precautions – which did not exist in the pre-1914 period – and despite the fact that there never was any major economic downturn, the Bretton Woods era of prosperity and monetary calm was brief. The Bretton Woods era ended in 1971, when the U.S. dollar was devalued and floated from its gold parity at \$35/oz., first established in 1934. Currencies floated when Europe ignited into war in 1914. They did so again under the incredible strains of the Great Depression. But in 1971, the world gold standard disintegrated, to general horror, in one of the most prosperous eras of modern history, and at a time when the actual quantities of gold bullion, in central bank vaults, were the highest ever.

The Bretton Woods era began with an international conference, and widely held consensus, but it did not end with one. There was no international conference in which it was decided that the present arrangements were somehow unsatisfactory, and that new arrangements should be made. The broad consensus, in 1971, was that the Bretton Woods gold standard system should be preserved. The governments of Europe and Japan warned the U.S. of the consequences of leaving gold. On August 15, 1971, when U.S. president Richard Nixon announced the suspension of gold conversion that effectively rendered the dollar a floating currency, he said that it would be a temporary measure. And indeed it was – only a few months later, in December 1971, Nixon himself organized the Smithsonian Agreement, which officially relinked the dollar to gold at \$38/oz. Other countries agreed to relink their currencies to the dollar, thus eliminating floating exchange rates. Despite their good intentions, they did not know how to accomplish their goals. By early 1973, the internal contradictions, and general incompetence of all involved, were too great. The Smithsonian Agreement dissolved into unplanned floating currency chaos, which continues to the present day.

For the first time in 5000 years, going back in an unbroken line to the Sumerians and Egyptians of the third millennium B.C., the leading money of the world was not based on gold or silver. It was not based on anything at all – not even the various fleeting notions of the central bankers, who discovered, again and again, that currencies and economies did not follow their orders or behave according to their mistaken principles.

In 1910, when the British pound was the premier international currency and London the world's financial center, the Bank of England held seven million ounces of gold in its vaults – the highest level ever. The Bank had enjoyed over two hundred years of currency reliability, and there was no particular reason, in 1910, to suspect that it could not enjoy another two centuries more. In 1949, as the Bretton Woods system began, the United States reached a peak of 702 million ounces of gold in reserve – literally a hundred times greater than Britain, only thirty-nine years earlier. Yet, keeping the dollar at its gold parity value was chronically problematic from

the beginning. In 1971, after only 27 years, it seemed impossible. At the end, the U.S. held 276 million ounces of gold. Another 741 million ounces was held by other central banks, whose currencies also floated.

How did this disaster happen?

Already by the 1920s, economists and central bankers had become rather confused about the basic principles of gold standard management. Even as they recreated the gold standard that had been lost in 1914, they were forgetting that the purpose of a gold standard is to approach, as closely as possible, the ideal of a currency that was neutral and unchanging in value, an economic constant of commerce that served much as kilograms and liters served as measures of weight and volume. A currency of highest possible stability and reliability would allow economic cooperation to be most rational, effective, and productive. Corruption of the currency would corrupt the system of prices, interest rates, and contracts that allowed the free market system to function.

The idea was already widespread, by the 1920s, that a central bank could combine a policy of fixed exchange rates with gold, a domestic discretionary “monetary policy,” and free trade without capital controls. This was not possible – as expressed later by the “currency trilemma” described in Chapter 1. In 1944, academia had been largely won over by the Keynesian “New Economics.” This had a substantial element of self-interest: a government committed to centralized guidance of the economy, via a vast statistical apparatus, needed thousands of trained specialists. The pre-1914 system needed none. Economists and governments didn’t want to be left with little more than “do nothing” nostrums in the face of another downturn. They were going to do something – perhaps right away, as many feared a return to Depression-like conditions after the war. According to the Keynesian consensus of that time, that “something” would be a combination of government spending and “easy money.”

The Bretton Woods system, by design, attempted to reconcile these contrary urges. Currency values would be linked to gold – a gold standard system. However, central banks would be permitted to engage in “domestic monetary policy,” which centered primarily on short-term interest rates. The gold parity goal was thus divorced from an operating mechanism capable of achieving that goal. Gold parities could be “adjusted” from time to time, this “adjustment” inevitably in the downward direction; in other words, a devaluation. However, following such an “adjustment,” currency values would still be linked to gold, at a new, devalued rate – much as the U.S. did after its devaluation in 1933.

At the 1944 conference at Bretton Woods, these contradictory urges were expressed in a debate between the leading British representative, John Maynard Keynes, and the leading U.S. representative, Harry Dexter White. Keynes made a proposal in which governments could change their currency values readily, and impose trade and capital controls, in the process of maintaining a “domestic monetary policy” aimed at full

employment and “balanced trade.”<sup>1</sup> Keynes also proposed a supranational currency, the *bancor*, that could be managed to address economic issues, and managed by a supranational body similar to the International Monetary Fund. White aimed for fixed currency values, free flow of trade and capital, and a greater emphasis on gold as the standard of value for all currencies. The U.S. dollar was to be the effective “supranational currency,” as it already was in practical terms. The final compromise allowed for “adjustable pegs,” where currency values, in terms of gold or dollars, could change periodically, in an organized framework. The U.S. dollar was the only currency that would be convertible to gold, at the 1934 parity of \$35/oz. Even this could be done only by foreigners – it remained illegal for U.S. citizens to own gold, as had been the case since 1933. Other currencies were officially convertible only for dollars, even though other central banks held large amounts of gold reserves. Trade and capital controls were imposed.

After the end of World War II, the global gold standard established at Bretton Woods was expanded to include Germany and Japan. Communist China and the Soviet Union also linked their currencies to gold (or dollars and pounds linked to gold) thus participating in the system informally.

The Joint Statement issued at the conclusion of the Bretton Woods meeting in 1944 stated: “the maintenance of a high level of employment and real income ... must be a primary objective of economic policy.”<sup>2</sup>

Keynes himself said – approvingly – of the Bretton Woods agreement:

This plan is the exact opposite of [the gold standard]. ... For instead of maintaining the principle that the internal value of a national currency should conform to a prescribed *de jure* external value, it provides that its external value should be altered if necessary to as to conform to whatever *de facto* internal value results from domestic policies, which themselves shall be immune from criticism by the [International Monetary] Fund.<sup>3</sup>

Was the Bretton Woods system intentionally designed to fail? Keynes was a Fabian Socialist – a group founded to achieve similar ends as Marxism, by gradualist means. The Fabians’ logo was a wolf in sheep’s clothing. Harry Dexter White – born of Jewish Lithuanian immigrants, his real name was *Weit* – was later outed by Whittaker Chambers as a Soviet agent. Another defecting Soviet agent, Elizabeth Bentley, accused White of providing the Soviets with the U.S. Treasury’s plates for printing Allied occupation marks in Germany. White was the head of the International Monetary Fund in 1946-1947. When a Federal grand jury was ordered to investigate Bentley’s claims, he resigned his IMF post and vacated his office the same day. In 1948, in testimony before the House Un-American Activities Committee, White denied all charges. He died of a heart attack three days later. Soviet-era records, made public by the Russian

government in the 1990s, confirmed that White had indeed been a Soviet agent.<sup>4</sup>

Economist Frank Graham was also well aware of the Bretton Woods arrangement's inherent contradictions. He said in 1949:

It would seem that, after all this, we might have learned that we cannot both have our cake and eat it. We should know that we must either forgo fixed exchange rates or national sovereignty [independent domestic monetary policy] if we are to avoid the disruption of equilibrium in freely conducted international trade or the system of controls and inhibitions which is the only alternative when the internal values of independent currencies deviate ... There is ... not even the slightest provision for the adoption, by the various participating countries, of the congruent monetary policies without which a system of fixed exchange rates simply does not make sense.<sup>5</sup>

Graham added:

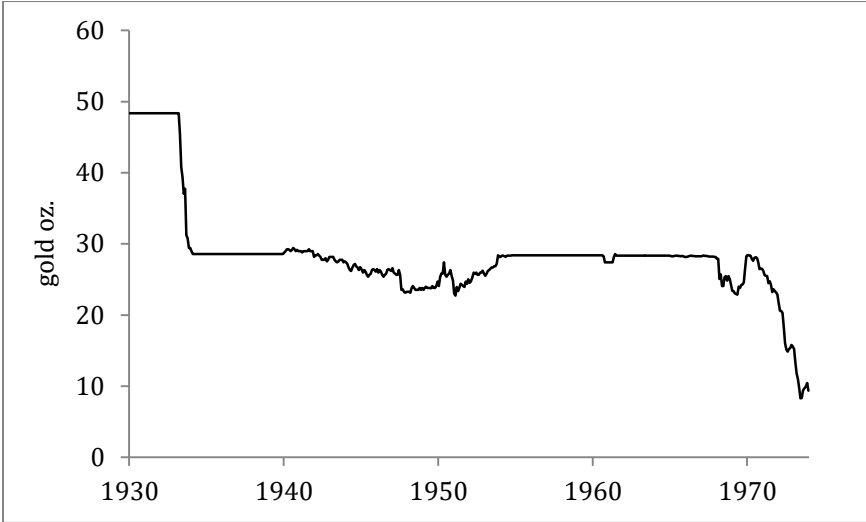
Uncoordinated national monetary policies, non-discriminatory, multilateral trade on the basis of free enterprise, and exchange rates fixed, even provisionally, cannot be made to mix. We must choose between them.<sup>6</sup>

This was a clear expression of the "trilemma" described in Chapter 1, and also the recognition that – unlike the Currency Option One systems in use before 1914 and during the 1920s – there was no coherent monetary operating mechanism, a currency-board-like automatic adjustment of the monetary base, to sustain fixed currency values. Rather, as Keynes described, monetary mechanisms would be used in a discretionary manner to manage the domestic macroeconomy.

While both Keynes and Graham seemed to have a clear sense of the inherent contradictions in the plan, most economists were not so insightful. For the next twenty-seven years, they puzzled over the apparent "imbalances" that seemed always ready to undermine and upset the fixed exchange rate systems of Bretton Woods. They had no clear idea of where these "imbalances" came from, and consequently, could not solve them.

The degree to which these impossible dual goals – of "internal" discretionary management and "external" fixed values – were pursued was the choice of individual governments and central banks themselves. Britain, in particular, actively embraced the macroeconomic management ideas expressed by Keynes. Germany and Japan, however, were much closer to an orthodox currency board, in which there is no discretionary element or domestic "monetary policy," and thus no internal conflict. The United States government, in the Employment Act of 1946, implicitly committed itself to a Keynesian approach, which also included monetary management by the

Federal Reserve “to promote maximum employment, production, and purchasing power.” This trend continued until it was more formally expressed by a change in the Federal Reserve Act in 1977, the “dual mandate” clause, which explicitly defines “the goals of maximum employment, stable prices, and moderate long-term interest rates.”



**U.S.: Value of \$1000 in gold oz., 1930-1973**

If anything, the Bretton Woods agreement, as originally conceived, was more of a departure from the principles of the gold standard than what actually transpired. Domestic monetary policy was expected to be more influential, and changes in exchange rates were expected to be more common. An initial flurry of experimentation in monetary macroeconomic management, accompanied by a burst of currency devaluations before 1950 led by Britain, proved to be an unpleasant experience. Governments afterward tended to moderate their domestic monetary policy ambitions, and adhere to fixed exchange rates, in general reflecting the influence of U.S. leadership over that of Britain.

In the U.S. as well, initial enthusiasm for soft-money experimentation waned by the early 1950s. The dollar’s value deviated from its \$35/oz. parity target markedly in the late 1940s, the result of a wartime financing program that had not yet been resolved. In April 1942, in order to help with the financing of large bond issuances, the Treasury demanded the Federal Reserve to limit the interest rate on Treasury bills to 0.375%. The limit on long-term bonds was 2.5%. In the process of meeting these targets, the Federal Reserve expanded its monetary issuance, and the dollar’s value sagged against its gold parity. This arrangement continued after the end of

the war. In 1947, the Federal Reserve raised its peg on the Treasury bill rate, but reluctantly continued to restrain yields. Disagreements between the Treasury and the Federal Reserve continued until, in March 1951, an accord was reached with the Treasury that eliminated the ceilings on bond yields. This allowed the Federal Reserve to address the problem of sagging dollar value, which began to recover soon after. The value of the dollar returned to its \$35/oz. parity in November 1953.

### **Confusion Over the “Balance of Payments”**

Most economists did not understand the inherent contradictions that caused endless difficulties during this time. But even if they did not understand them, they could not ignore them. They reacted by focusing their concern on the “balance of payments,” which reached a crescendo of absurdity perhaps unmatched over the previous two centuries.

The idea that trade should be “balanced” – that imports and exports should be equivalent – was tightly held by the Mercantilist economists of the seventeenth and eighteenth centuries, and expressed in all manner of trade restrictions and capital controls. The Classical economists of the late eighteenth and nineteenth centuries swept all of this away, culminating in the Classical Gold Standard era of 1870-1914, when trade and investment flowed freely worldwide. The result was enormous “trade imbalances,” which were simply the statistical mirror image of high levels of international investing, and which caused no problems in themselves. The international gold standard actually enabled these very large capital flows, by providing a system of stable currency value worldwide.

In 1965, a reporter asked James Callaghan, Britain’s Chancellor of the Exchequer: “Why do you have balance-of-payments problems now, when you didn’t have them fifty years ago?”

Callaghan answered: “There were no balance-of-payments problems fifty years ago because there were no balance-of-payments statistics.”

All trade is “balanced” by nature. Trade is the exchange of things of equal monetary value. This is true even in the extreme case of a customer that does not pay – the seller still has an accounts receivable, listed as an asset on the balance sheet, technically a form of debt, and easily saleable if the need arose. The buyer has effectively received goods, and offered a financial liability. Even a gift is “balanced” in the sense that both giver and receiver are satisfied with the transaction.

Without capital and financial flows, all trade would be “balanced” on the basis of goods and services alone. Otherwise, it would not occur. Nobody would offer goods and services, and receive nothing in return. Once parties engage in finance, the goods and services accounts can become what is misleadingly termed “imbalanced.” One party gives goods and services, and receives assets, typically in the form of equity and debt. The other receives goods and services, and offers assets. Trade is still “balanced,”

although with one side of the trade on the current account, and one side on the financial account.

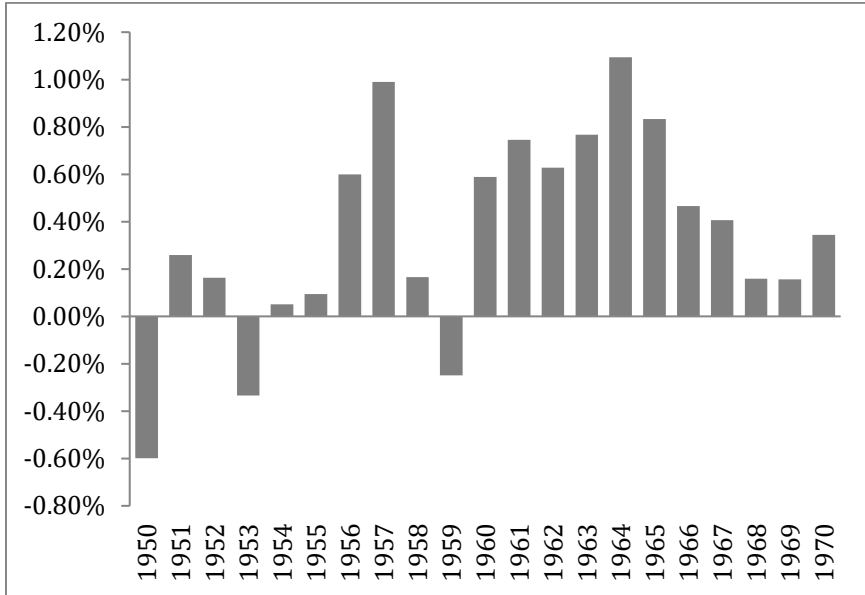
A “balance of payments” can be described between any two parties, or any two regions, using the same currency. It is not a monetary phenomenon. There is no “Britain” that is trading with “France.” These are simply statistical aggregates of millions of individual economic entities – individuals, corporations, government entities – who have been identified (often somewhat arbitrarily) as “British” or “French.” The only trade that actually exists is between individual economic entities. Just as individual entities in the same country can trade with each other without creating “imbalances,” so can individual entities that happen to reside in different countries.

Nevertheless, for a very long time – at least as far back as the Mercantilist writers of the seventeenth century, although one could reach even to Rome – governments have been intensely concerned about the “trade balance.” This often has a foundation in real issues. Government fiscal profligacy, or the expenses of war, can easily be reflected in trade statistics. A low savings rate, and a pattern of excessive household indebtedness, can lead, on the aggregate level, to borrowing money from and selling assets to foreigners. Before 1800, vagaries in the bimetallic coinage systems commonly in use could lead to a disappearance (via trade) of either gold or silver coinage, and resulting difficulties. Increased international trade can lead to new competitive pressures against established domestic industries, and what amounts indirectly to a new supply of cheap labor to compete with domestic labor. These are all genuine issues of concern, but they don’t have anything to do directly with the “balance of payments,” which is simply their statistical shadow, or the currency, which is simply the medium of exchange.

Over the centuries, so much concern has been directed at the “balance of payments” that it has served as an all-purpose political justification for anything and everything. Foreign competition must be blocked because of the “balance of payments.” Government deficits must be resolved because of the “balance of payments.” Currencies must be devalued because of the “balance of payments.” Policymakers typically cannot make much sense of this rhetoric. People say these things ... because people have always said these things. They do not actually understand what the “balance of payments” technically refers to, or what it represents. Unfortunately, most economists do not either, and don’t particularly want to. Many of them are employed, directly or indirectly, to provide rhetorical support for one interest group or another. The “balance of payments” has been one of their best tools for decades. And so it goes, up to the present day.

In the 1950s and 1960s, economic thought had turned away from the Classical conception of the nineteenth century, and, in so many ways, back toward the Mercantilist habits of the seventeenth and eighteenth centuries. Depression and World War had reintroduced big-government statism, and

with it, an economics that revolved around government influence and intervention. The old Mercantilist fallacies surrounding the “balance of payments” and the imaginary “price-specie flow mechanism” were revived in a new form.



### U.S.: Current Account Balance as a Percentage of GDP, 1950-1970

By the 1940s, the term “balance of payments” had achieved a bizarre new state of semantic schizophrenia. The term had two effective meanings: one was the literal balance of payments, as expressed by official trade statistics. The other was as an expression of the value of the currency in relation to its gold parity, which in turn led to bullion inflows and outflows via convertibility. (For currencies linked to the U.S. dollar or other reserve currencies, it meant inflows and outflows of foreign exchange.<sup>7</sup>) Thus, the common claim of the time was that the United States suffered a “chronic balance of payments deficit” of supposedly world-currency-system-destroying proportions, although the U.S. government’s own statistics show a current account surplus for every year of the 1960s, and most of the 1950s as well.

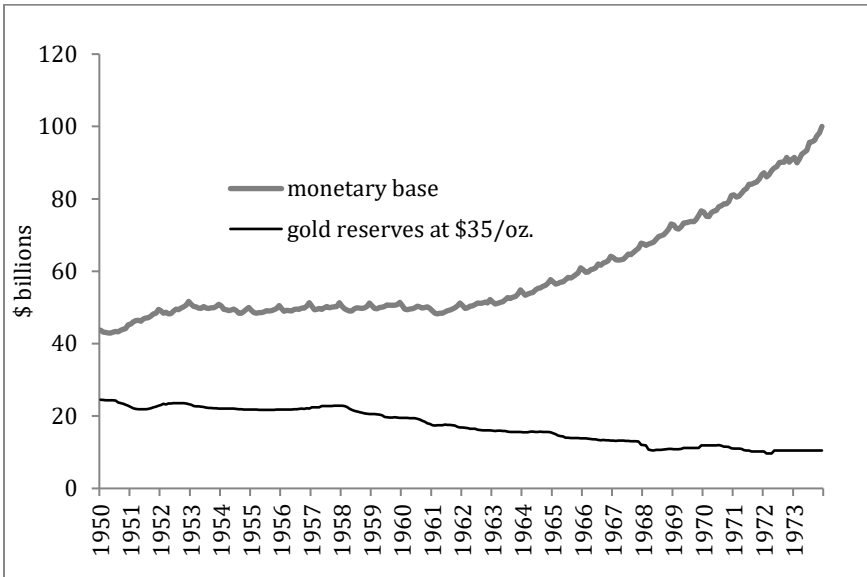
The “balance of payments deficit” that economists wrung their hands about was simply the fact that the value of the dollar was sagging beneath its gold parity value of \$35/oz.<sup>8</sup> In October 1960, the private market price of gold hit \$40/oz. – in other words, the value of the dollar had fallen to 1/40<sup>th</sup> of an ounce of gold.<sup>9</sup> The Federal Reserve, offering to sell gold at \$35/oz., suffered chronic bullion outflows. Vaguely referencing



Mercantilist-era “price-specie flow” notions, these outflows were perceived as a “balance of payments deficit.”

These fallacious notions had been common even in the 1920s. In 1924, as the Federal Reserve was experiencing bullion inflows, economist Ralph Hawtrey complained about the “delusion” that the Federal Reserve obtained gold due to a favorable “balance of payments.” “Apparently they have not yet learnt that they receive all this gold simply because they offer a higher price for it,” Hawtrey complained.<sup>10</sup>

Paraphrasing Hawtrey, one might have said in the 1960s: “Apparently they have not yet learnt that they emit all this gold because they offer the lowest price for it.”



**U.S.: Monetary Base and Gold Reserves, 1950-1973**

In the late 1950s, the economist Robert Triffin described a “Triffin Dilemma,” a supposed flaw whereby the accumulation of dollar foreign reserves by central banks would undermine the dollar itself. It characterized the confusion common at the time. The “dollar glut” could have been remedied at any time by the Federal Reserve. An underlying problem was that economists had become averse to any kind of currency-supporting action at all, believing that it would have negative economic consequences. Triffin’s erroneous logic, which led him to perceive the problems of the time as insoluble and innate rather than simple and easily remedied, led him to propose a unified world reserve currency system similar to Keynes’ *bancor* proposal two decades earlier.<sup>11</sup>

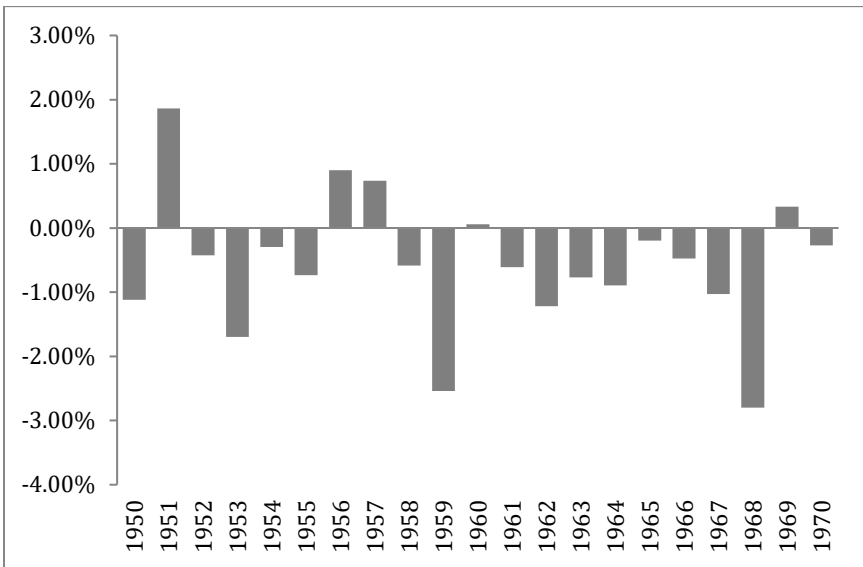
The conflict between “external” fixed values and “internal” monetary policy was resolved by capital controls. (Most European currencies did not even become convertible until the end of 1958.) However, the “internal” activist management could not proceed very far, even with capital controls, or the discrepancy between a currency’s real value and its fixed-rate parity would become too great to ignore. Thus, activist management was typically constrained within a fairly tight sphere. In Britain, this became known as the “Stop-Go” policy. An “easy” monetary policy would be pursued until the fixed exchange rate policy came under pressure. At that point, a “tight” policy would ensue, to support the value of the currency. Much the same principle was expressed by William McChesney Martin, the chairman of the Federal Reserve 1951-1970, who said in 1955 that the job of the Federal Reserve was to “take away the punch bowl just as the party gets going.”<sup>12</sup>

The situation irritated everyone. The domestic macroeconomic managers wished they weren’t constrained by the fixed-value parities. They didn’t want to take away the punchbowl. Defenders of the gold standard and stable exchange rates were constantly harried by the problems erupting from domestic monetary management. The trade and capital controls that were laid over the mess to keep it from breaking apart frustrated all manner of private trade and investment. This was nothing like the open and free markets, minimal government intrusion, and quietly reliable currencies of the pre-1914 era.

Confused by their chronic currency difficulties, economists reacted as if their problem really was one of current account deficits – current account deficits that did not actually exist. Beginning in 1961, the U.S. increased commercial staffs in U.S. embassies to boost exports. Visa requirements were simplified to increase tourist receipts. Export credit insurance facilities of the Export-Import Bank were expanded. Federal government expenditures abroad were curtailed. Taxes were raised on foreign earnings of U.S. corporations. The United States imposed an Interest Equalization Tax in 1963, to stem foreign investments. A Voluntary Foreign Credit Restraint program followed in 1965, to limit bank lending to foreigners. A Foreign Direct Investment program, also in 1965, requested nonfinancial corporations to limit foreign investment.<sup>13</sup> Though “voluntary” at first, it became more coercive and interventionist in time, and made mandatory in 1968. Many more minor policies of the sort were implemented during the 1960s. Other countries also facing a problem of sagging currency value followed a similar path.

The concern about current account deficits rippled outward along lines of loose association to include the U.S. government’s budget deficits. Unlike the nonexistent “current account deficit,” these budget deficits did actually exist – expenses related to the Vietnam War and Great Society welfare projects were a proximate cause – but they were small. During the decade of the 1960s, the average Federal government deficit was -0.8% of GDP, with a maximum of -2.8% in 1968. The Federal gross debt/GDP level had

been falling since the end of World War II due to rising GDP, and in 1970 reached 35%. Interest rates were indeed rising in the late 1960s, which was broadly interpreted as the precursor of a looming debt crisis. Given the minor deficit and low overall debt levels of the time, the rise was almost certainly due to growing concern that the U.S. dollar would be devalued. Although the Federal Reserve was not involved in direct deficit financing at the time, these concerns led to pressure on the Federal Reserve to continue to expand the monetary base at an aggressive pace by purchasing Treasury bonds.



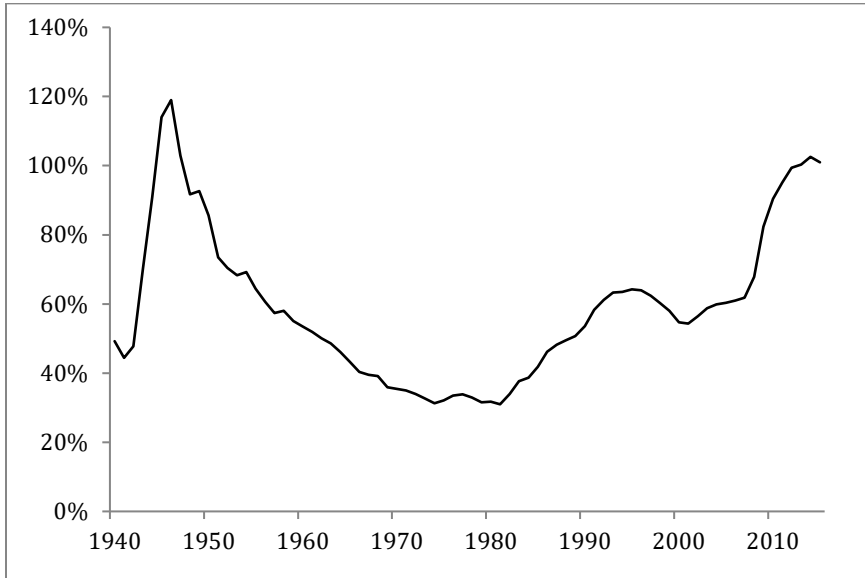
### U.S.: Federal Budget Deficit as a Percentage of GDP, 1950-1970

During the 1960s, it appears that the Federal Reserve loosely appropriated a monetarist framework of operation, practically expressed as a steady growth rate in the monetary base. In a memorandum to President Johnson, Martin wrote in 1965:

The immediate goal of monetary policy should be to provide the reserves needed to support a rate of growth in bank credit and money which will foster stable economic growth.<sup>14</sup>

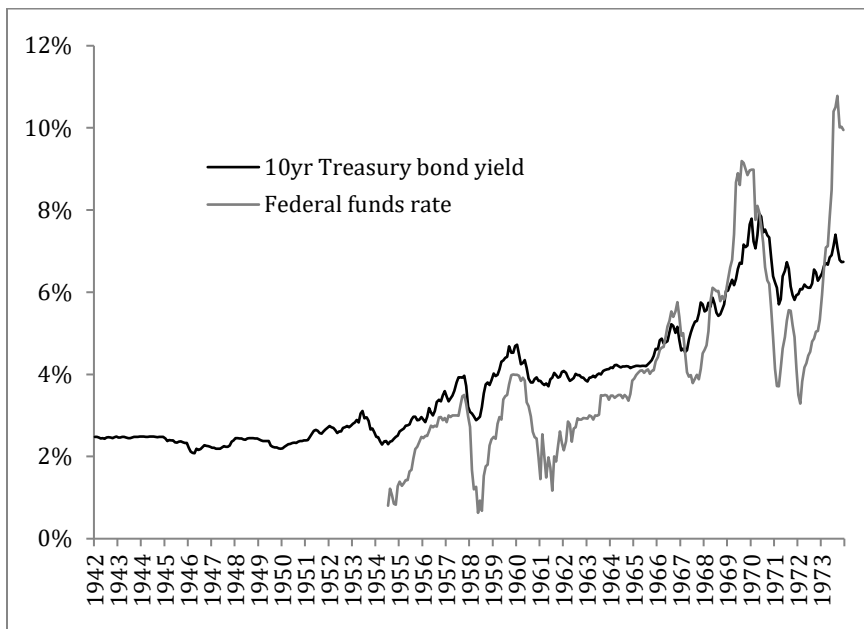
This reflected the ideas of Milton Friedman as expressed in *A Program For Monetary Stability* (1960). In that book, Friedman proposed an amendment to the U.S. Constitution, in which base money would grow by 3-5% per year.

As the problem of excess dollar supply and sagging dollar value remained unsolved, a further attempt to batter the situation into shape appeared in the form of the London Gold Pool, an agreement between the United States and seven major European governments to keep the price of gold in London at the \$35/oz. parity via various cooperative and coercive means.<sup>15</sup> It lasted from 1962 to 1968.



### U.S.: Gross Federal Debt as a Percentage of GDP, 1940-2015

Other countries struggled to varying degrees with the same contradictions. As the internal discrepancies overwhelmed even the capital controls in place and periodic interventions, a devaluation of the currency was the result. Economists cited “fundamental disequilibrium,” or “persistent imbalances,” seemingly colossal forces of history and destiny against which economists were as helpless as King Canute against the tides, but which did not mean anything more than: the currency’s value had diverged from its parity value. The British pound was devalued from \$4.03 in 1945 to \$2.80 in 1949 and \$2.40 in 1967.<sup>16</sup> The French franc’s value fell from 1.19/dollar in 1945 to 3.5/dollar after a series of devaluations in 1948 and 1949, 4.2/dollar in 1957, 4.94/dollar in 1958, and 5.55/dollar in 1969. The Spanish peseta was devalued from 60/dollar to 70/dollar in 1967. The Danish krone was devalued from 6.91/dollar to 7.5/dollar in 1967. The German mark was actually upvalued, from 4.2/dollar to 4.0/dollar in 1961, and again to 3.67/dollar in 1969, reflecting the sagging dollar value vs. gold at those times.



### **U.S.: Yield on 10yr Treasury Bond and Fed Funds Rate, 1942-1973**

Currencies of smaller countries and emerging markets showed a similar pattern, of either unchanging currency value or relatively modest devaluations. Of 156 currencies, 72 were unchanged, or depreciated by less than 10% vs. the dollar between 1950 and 1970.<sup>17</sup> Sixty-four had a decline in value of greater than 10%, but less than 50%. Thirteen had a decline in value of 50%-90%. Seven had a decline in value of more than 90%, with the worst descending into hyperinflation. These centered in Latin America: Bolivia's currency experienced a depreciation of 198:1; Brazil 269:1; Chile 232:1. Compared to the currency difficulties of smaller countries after 1971, including widespread hyperinflation, the Bretton Woods era was relatively benign for emerging markets and peripheral economies. Upon this stable monetary base, the better developing countries could soar just as the developed countries did. Between 1960 and 1970, the value of the Mexican peso was unchanged at 12.5 pesos/dollar. Nominal GDP in Mexico increased by 174% during that decade, a growth rate of 10.6% per year.

### **Hostility Toward Stable Money Principles**

While the basic principles of the gold standard were eroding badly among even the monetary specialists, they were floating outside the thoughts of nonspecialists altogether. It had been illegal for citizens to own gold coinage in the U.S. since 1933. But even before then, during the 1910s

and 1920s, gold coinage had been almost completely replaced by banknotes, and bank transactions. Despite the practical advantages, the effect was to further distance the relationship between gold and money in the public mind.

Even as gold remained central in the practical monetary affairs of the U.S. and the world, prominent economists declared an enmity toward gold-based money that drifted into propaganda. Historically, political conservatives had been the primary champions for the gold standard system. "Progressives" had been soft-currency advocates at least as far back as the 1870s. This continued in the 1960s with the Keynesian focus on "full employment," even at the cost of some "inflation," mathematically expressed in 1958 by William Phillips as the "Phillips curve." But Milton Friedman, one of the most popular conservative-leaning economists even into the 1980s, had been a floating currency advocate since the early 1950s. In 1960, he wrote: "Only a cultural lag leads us still to think of gold as the central element in our monetary system. A more accurate description of the role of gold in U.S. policy is that it is primarily a commodity whose price is supported, like wheat or other agricultural products, rather than the key to our monetary system."<sup>18</sup> It is hard to imagine that Friedman actually believed this; but, apparently, he wanted others to.

The idea of fixed currency values, and a dollar at \$35/oz. of gold, remained a cornerstone of public policy. Among academics, however, a consensus had formed both among the Keynesians and the Monetarists – between them encompassing perhaps over 90% of all academics at the time – that fixed exchange rates, and especially fixed exchange rates with gold, were a leftover artifact of a primitive era. They yearned to put all of their theories of macroeconomic manipulation into practice, in a world of floating fiat currencies. They could make no sense of the difficulties of their time, degenerating into a cacophony of confusion over the "balance of payments" or "fundamental disequilibriums."

The foundations of the Classical view had been undermined even during the 1920s. John Chamberlain, author of *The Roots of Capitalism* (1959), recalled his undergraduate education at Yale University during the early 1920s:

We never read Adam Smith's *The Wealth of Nations*. We heard plenty about it, however. The professors treated it condescendingly; we were told it was the fundamentalist Bible of the old dog-eat-dog type of businessman. ... After 1933 we began to get the centralized state and interventionist controls of industry. Actually, however, the inner spirit of the old America had been hollowed out in the Twenties. ... We were the ignorant generation. ... The first "great book" in economics we read was Marx's *Capital*. We had nothing to put against it.<sup>19</sup>

Within this most recent expression of the world gold standard system, the culmination of five thousand continuous years of gold and silver-based money in the Western world – even as gold remained the basis of the world’s major currencies, the official policy of governments, central banks and the IMF – gold standard advocates themselves had become outcasts. Two of the twentieth century’s leading economists in the Classical tradition, Ludwig von Mises and Friedrich Hayek, could not find a regular paying job in academia. Both were supported, during their U.S. careers, by private patrons. The president of the University of Chicago, Robert Hutchings, asked the economics department to give Hayek a position; they refused. Hayek later found more appreciation in Europe. He accepted a professorship in Germany in 1962. In 1974, the Swedes gave him a Nobel Prize. Von Mises’ position at New York University was funded by a private businessman, Lawrence Fertig. Despite Fertig’s seat on NYU’s Board of Trustees, Mises remained an unsalaried “visiting professor” for his twenty-four years at the institution.

Murray Rothbard described the situation in his 1962 book *The Case for a 100% Gold Dollar*:

To advocate the complete, uninhibited gold standard runs the risk, in this day and age, of being classified with the dodo bird. When the Roosevelt administration took us off the gold standard in 1933, the bulk of the nation's economists opposed the move and advocated its speedy restoration. Now gold is considered an absurd anachronism, a relic of a tribal fetish.<sup>20</sup>

But the gold standard advocates were often as confused as their Keynesian and Monetarist counterparts. Rothbard, one of the most influential gold standard advocates of the time and into the 1980s, expressed his disdain for the ideas of Walter Spahr. Spahr recommended a return to the situation of the 1920s, when monetary managers (mostly) did not attempt Keynesian macroeconomic management, but only maintained the currency’s value parity with the appropriate adjustment mechanisms, base money was convertible to bullion among all citizens, and gold coins remained in circulation. Spahr defended the official gold parity at \$35/oz. – not exactly a controversial position, one shared by the U.S. Treasury, Federal Reserve and International Monetary Fund at the time, and one that was, by all appearances, very successful. Domestic discretionary management, though allowed within Bretton Woods, was not required. Germany and Japan did not indulge in it, and perhaps the U.S. would not either.

Instead, Rothbard told his many followers that “fractional reserve banking” should be eliminated, and banknote issuers should hold 100% bullion reserves – a situation that had not existed in the Western world since 1700, and, arguably, not since the relaxation of Christian laws against

usury allowed banking to re-emerge in the twelfth-century Italian states. This proposal certainly deserved to be labeled “an absurd anachronism.”

But, perhaps most bizarrely, Rothbard seemed to have little appreciation for the idea that a currency should be stable in value – the primary purpose of a gold standard system, and indeed any fixed-value standard. Mocking Spahr’s attachment to the existing \$35/oz. parity, Rothbard argued:

Depending on how we define the money supply – and I would define it very broadly as all claims to dollars at fixed par value – a rise in the gold price sufficient to bring the gold stock to 100 percent of total dollars would require a ten- to twentyfold increase.<sup>21</sup>

The great “gold standard advocate” thus recommended devaluing the dollar by 90%-95%. The currency itself would be sacrificed, in pursuit of a quixotic war on “fractional reserve banking,” which had coexisted with gold-based money for the past six hundred years. This did not seem to bother Rothbard, who continued such arguments into the 1980s and attracted many equally-confused followers.

Jacques Rueff, another prominent gold standard advocate of the time, had gained considerable influence with Charles de Gaulle, president of France in 1959-1969. Rueff, the critic of the “gold exchange standards” of the 1920s, naturally blamed the “gold exchange standards” of the 1960s for all the problems of the day – arguments largely the same as those of Robert Triffin. Influenced by Rueff, France’s finance minister Valéry Giscard d’Estaing complained in 1965 about the “exorbitant privilege” enjoyed by the U.S., which found something like a forced buyer for its Treasury bonds among world central banks. But was this really so “exorbitant”? In 1969, foreign central banks held \$10.4 billion of U.S. Treasury bonds, out of a total gross Federal debt of \$367.4 billion.<sup>22</sup> This figure was actually unchanged from 1960, when central banks held \$10.5 billion of Treasury bonds. There had been no net demand for Treasury bonds among central banks for a decade. The Federal Reserve itself held over \$75 billion in 1969. British pounds actually remained a major reserve currency, with \$7.6 billion-worth held by central banks in 1960.<sup>23</sup> In 1969, the market yields on Treasury bonds were rising to their highest in U.S. history up to that time, hardly evidence of any “privilege.”

The solution, according to Rueff, was to convert foreign exchange holdings into gold bullion – a very French solution, as this was exactly the course that France took in 1928-1932, and was reflective of France’s practice in the pre-1914 era. Dependence on the U.S. dollar, as the sole direct link to gold, would be eliminated. By itself, this plan was feasible, although it would have required a large amount of bullion. Central banks already had a large amount of bullion: in 1969, eleven major countries had \$72.6 billion in banknotes and coins outstanding, against \$33.9 billion of



gold bullion reserves – an abundant ratio, even by nineteenth-century standards. Ex-U.S. central bank bullion holdings were roughly four times higher than they had been in 1913. However, using logic similar to Rothbard's, Rueff also argued that his goals should be achieved by devaluing the dollar to \$70/oz.<sup>24</sup> Once again, a "gold standard advocate" promoted a devaluation – the very action that he himself called "the monetary sin of the West."

Even among the dwindling number gold standard advocates, there was little understanding of the fundamental inconsistency of the Bretton Woods arrangement; little understanding of the proper operating principles of a fixed-value currency system; little appreciation for gold's role as a standard of value; little understanding of the principle of Stable Value in the most rudimentary form; and little ability to diagnose the problems of the time, or propose a practical solution. Lacking technical knowledge, many of their arguments degenerated into a faith in gold bullion itself to solve all their problems – the problem of dwindling U.S. gold reserves was "not enough gold," and the solution was "more gold," in the form of coins or in vaults. At its worst, it descended into the "tribal fetish" that critics claimed. But gold itself was simply an inert metal. It was gold's very special inertness that made it such a splendid basis for monetary exchange. The trick was to keep currencies' values tied to their gold parities. For that, the gold standard advocates were little better than their counterparts in mainstream academia, finance ministries, and central banks, which is to say: hopelessly lost.

Many of their proposals were politically and technically unfeasible. Many of them acted as if the world gold standard system had already passed away, in 1933, or 1931, or 1914. While this argument had plenty of truth to it, the impression it gave was that the battle to maintain the Bretton Woods arrangement centered around the dollar at \$35/oz. of gold – and perhaps amend it to a properly-constituted gold standard system as Spahr wished, without Bretton Woods' inherent contradictions – had already been lost, generations earlier.

### **The Bretton Woods Prosperity**

Despite all of the self-inflicted difficulties, the broader picture was that currencies' values were reasonably well linked to gold. Even the dollar's slide to a momentary nadir of \$40/oz. in 1960, though a gross deviation from the \$35/oz. peg, was not terribly important in the broader context. Money was tolerably stable in value. Exchange rates mostly remained fixed, which meant that other currencies tied to the dollar were also tied to gold. Before 1971, the consequences of the inherent contradictions of Bretton Woods were felt mostly in the form of capital and trade controls, and the rising interest rates representing the fear of the system's eventual rupture. To the continuing frustration of the Keynesian and Monetarist money

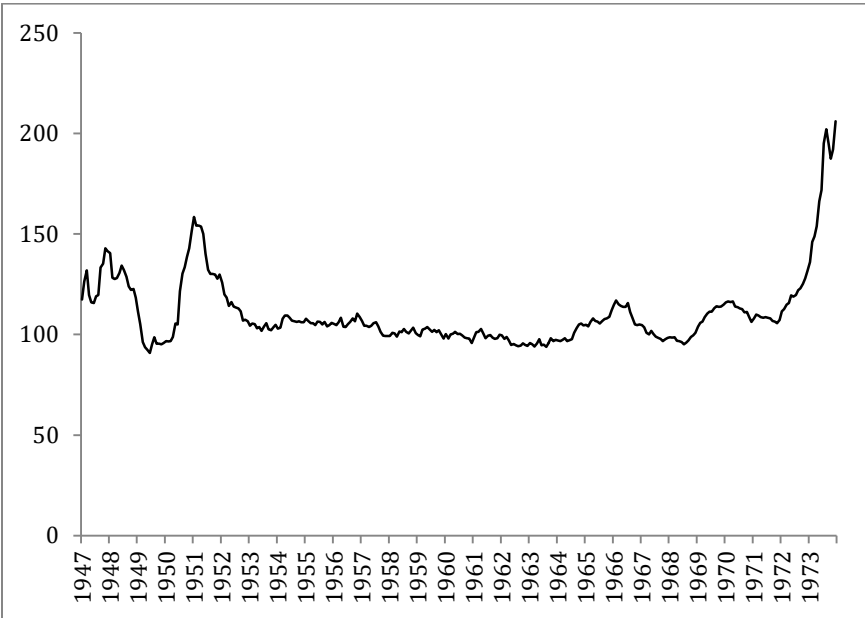
manipulators, gold was still the standard of currency value. Activist domestic monetary policy was curtailed if it endangered the gold parity. The Federal Reserve was still taking away the punchbowl. Just as was the case in 1880-1914, and again in the 1920s, gold-based money established the foundation for a wonderful economic expansion. U.S. nominal GDP increased by 372% between 1946 and 1970. With the dollar's value fixed at \$35/oz., "nominal" was essentially the same as "real." Germany's nominal GDP increased by 655%. Japan's increased by 1,405%.<sup>25</sup>

Was there anything at all gained by trying to stitch together a discretionary domestic "monetary policy" with gold standard fixed parity values? Was there any advantage from Currency Option Three? The countries that pursued a simple fixed-value system, and largely abandoned any "domestic monetary policy" – Germany and Japan – did the best. One reason for this was political: if leaders did not expect "monetary policy" to solve their problems for them, they would seek solutions via other means. In Germany and Japan, this took the form of aggressive growth-friendly tax reforms. Without the conflict with "domestic monetary policy," there would have been no need for trade and capital controls, no difficulties in maintaining the fixed gold parity values, and no need for the devaluations of Britain and France. Economic growth, though bountiful at the time, could have been even better. Interest rates, instead of soaring higher in the 1960s, would have remained low and stable indefinitely, just as had been the case in the nineteenth century. Better growth would have meant less pressure for government spending or new welfare programs, and greater tax revenues, leading to budget surpluses and potentially a move toward lower tax rates, as happened in the 1920s. A larger nominal GDP would have reduced the government debt/GDP ratio still further. The combination could have led the U.S. Federal government to actually pay off the entire Federal debt within twenty years. It would have been the true modern expression of the pre-1914 Classical Gold Standard, and could have continued indefinitely for centuries, just as Britain had done before World War I.

Gold itself served, by all indications, as an exemplary standard of stable value during the time. Commodity prices were extraordinarily stable, once they settled down after the Korean War (1950-53) and the weak dollar resolved by the Federal Reserve/Treasury Accord of 1951.

In 1968, the U.S. had been consistently losing gold reserves even despite the efforts of the London Gold Pool. In March 1968, gold conversion was effectively halted. Officially, the U.S. would still allow gold conversion for central banks; but, there was a distinct risk that, if a foreign central bank actually asked for bullion, they would be refused. "Special Drawing Rights" were introduced via the IMF, which supposedly served as an alternative to gold bullion as an international reserve asset. The SDR consisted of a basket of currencies, primarily dollars. To the British, French and Germans, converting dollars into a basket consisting of dollars, pounds, francs and

marks did not seem like it achieved anything at all. The dissolution of the London Gold Pool, and the effective end of gold conversion, allowed the London gold price to reflect the true value of the dollar at the time.



### **U.S.: CRB Commodity Index, 1947-1973**

The dollar quickly fell to a nadir of \$43.50/oz., a decline of 19.5% from its parity at \$35/oz. The growth rate of the U.S. monetary base had reached new highs near 8% in 1968 – perhaps influenced by Lyndon Johnson to help fund his “Great Society” programs, and the large budget deficit they created that year. The Fed funds rate rose to over 9.0% in August of 1969, from around 4.0% in mid-1967. The Federal Reserve reacted by slowing monetary base growth to under 5% in January 1970.

Maybe this was all that was ever required – not even a contraction in the monetary base, but simply a moderation in its growth rate. Could all of the difficulties of the time have been resolved with such a minor step? In practice, they were resolved: the dollar regained its \$35/oz. parity value in January 1970. The average open market value of the dollar that month was \$35.12/oz. If the dollar had risen a little farther in value, to perhaps \$34.00/oz., bullion conversion inflows may have begun for the first time since the 1940s. The Fed funds rate was still near 9.0%, and the yield on the ten-year Treasury bond had risen to 7.79% – both figures among the highest in U.S. history up to that time. These would probably have come down quickly, if the U.S.’s commitment to the \$35/oz. gold parity was

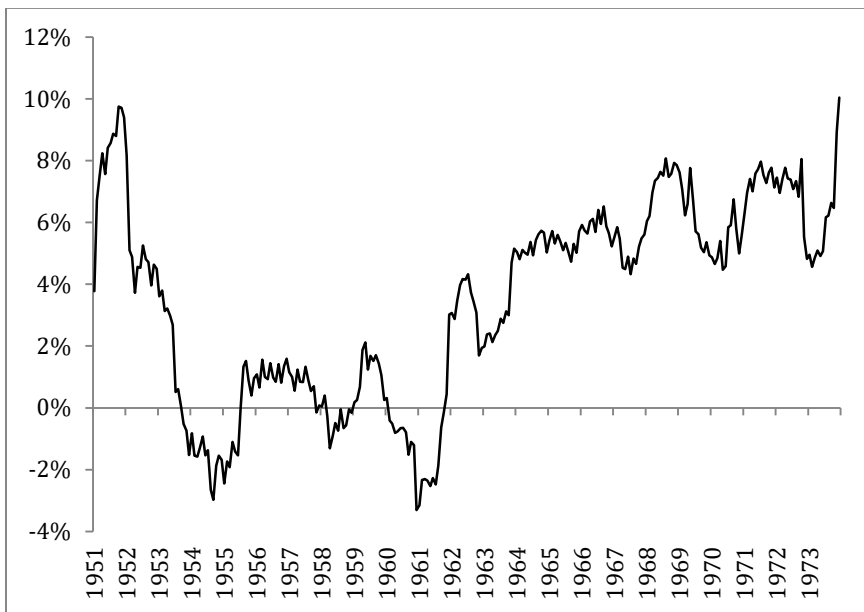
assured. Nearly 8% on a reliably gold-linked U.S. government bond was a very, very good deal. They had been at 4% just a few years earlier. William McChesney Martin had been the Chairman of the Federal Reserve since April 1951, a month in which the dollar traded at \$42.75/oz. in London. His first task in office was to return the value of the dollar to \$35/oz., which he achieved in 1953. At the beginning of 1970, he had done it again. His willingness to “take the punchbowl away,” when the dollar’s value sagged, helped keep the chronic dollar weakness of his term from erupting into crisis.

President Richard Nixon had blamed Martin’s tight-money policy for his narrow loss to John F. Kennedy in the 1960 presidential election.<sup>26</sup> The National Bureau of Economic Research dates a recession beginning in April 1960 and lasting to February 1961. Nixon didn’t want to go into the 1972 election with the highest sustained interest rates in U.S. history – interest rates that were soon blamed for a recession dated December 1969 to November 1970. In January 1970, as Martin’s term expired, Nixon replaced him with his long-time economic advisor, Arthur Burns. The Fed funds rate immediately tumbled after Burns’ installation, falling to 3.7% in March 1971. The ten-year Treasury yield fell to 5.7%. Monetary base growth ramped up again, over 7% in March 1971 compared to a year earlier. The dollar sank again vs. gold. In March 1971, it was at \$39.20/oz. In early August 1971, it was \$43.30/oz. – exactly the point at which the Treasury had backed off in 1951, and where Martin had pulled in the reins in 1968. European central banks had not asked for gold conversion since 1968, but in July 1971, Switzerland and France asked for additional bullion transfers. On August 12, Britain asked the U.S. to “cover,” or guarantee the value of, \$750 million of U.S. dollar reserves held by Britain. (Confusion over the message led the U.S. Treasury to interpret this as a guarantee – one step short of actual conversion – on \$3 billion held by the Bank of England.<sup>27</sup>)

On August 15, 1971, President Nixon announced that gold convertibility was officially suspended. Nixon called it a temporary measure, and buried it within a long list of other policy proposals. In practice, there hadn’t been much gold conversion since 1968. But, the official closing of the “gold window,” combined with an aggressively expansionist Federal Reserve under a new Chairman, indicated that the U.S. was happy with a weaker dollar. The U.S. Congress had issued a report on August 5 recommending a devaluation. Britain and France had devalued only a few years earlier.

In May 1971, Germany decided that it no longer wished to be tied to the declining dollar, and floated the mark. It immediately rose 7.5% against the dollar. Upon Nixon’s announcement, many governments followed Germany’s example and floated their currencies from the dollar, whose value soon fell in the foreign exchange market. The world of floating fiat currencies was born, and it was quickly perceived to be a disaster. In December 1971, a new agreement was formed among major governments,

the Smithsonian Agreement, in which the dollar would again be fixed to gold, and other currencies would again be fixed to the dollar. A devaluation of the dollar to \$38/oz. was accepted. However, there was no convertibility into gold, and no mechanism or obligation by the Federal Reserve to act in some way to maintain the \$38/oz. parity. In 1970, the Nixon administration calculated that, to achieve the economic growth they wanted, nominal GDP would have to rise by 9%. Following Monetarist doctrine, this was to be accomplished with money creation.



**U.S.: Federal Reserve, Monetary Base, 1951-1973**  
*percent change from a year earlier*

The Nixon/Burns “easy money” policy worked: 1972 seemed to be a great year, with official “real” GDP up 5.6%. Nominal GDP rose by 8.5% in 1971 and 9.8% in 1972, hitting the Nixonites’ nominal GDP targets with impressive precision. In the November election, Nixon won in a landslide. The dollar was trading around \$43.50/oz. in December 1971. In February 1973, it was trading around \$69/oz., roughly half of its Bretton Woods value of \$35/oz. That month, the U.S. declared that its new gold parity would be \$42/oz. It was a farce: the dollar had never been worth 1/38<sup>th</sup> of an ounce of gold, or even 1/42<sup>nd</sup>, since the beginning of the Smithsonian Agreement. In March 1973, the dollar’s value dropped to \$90/oz. Central banks around the world, seeing where this was going, again delinked their currencies from the dollar, allowing them to rise on the foreign exchange market. Floating fiat currencies were back.

Some economists today argue that monetary manipulation of the macroeconomy, and floating fiat currencies, are a consequence of democratic government. Certainly, the urge to be re-elected, exemplified by Richard Nixon, can drive politicians to an easy-money strategy. But does the electorate really favor monetary manipulation and floating fiat currencies? Central bank money manipulation is a pure expression of big-government statism, unchecked by any democratic process. The United States, particularly before 1913, was the world's greatest expression of a democratic republic since perhaps the early days of Rome, or the early Anglo-Saxons in Britain. Yet the United States was also one of the world's greatest examples of gold-standard discipline during the nineteenth century, and maintained the principle of gold-based money for nearly two centuries until 1971. When the electorate was actually allowed to vote on the issue, in the 1896 presidential election, it voted overwhelmingly to keep the gold standard.

Richard Nixon did win the 1972 election, but only after seemingly putting the Bretton Woods system back together via the Smithsonian Agreement in December 1971. In November 1972, the official value of the U.S. dollar was still \$38/oz., and foreign exchange rates were again fixed. The Watergate break-in that eventually brought Nixon down took place on June 17, 1972. After an early inquiry by the Federal Bureau of Investigation, national press reported on September 29, 1972 that John Mitchell, serving as Nixon's Attorney General, controlled a secret slush fund used to finance activities against Democratic candidates. On October 10, 1972, the FBI told the press that the Watergate break-in was part of an organized campaign of political spying and sabotage in favor of the Nixon re-election campaign. One month later, Nixon won his second presidential term. But as the Smithsonian Agreement disintegrated in March of 1973, and the dollar fell to new lows vs. gold, the scandal re-intensified. In August 1974, when Nixon became the only U.S. president ever to resign from office in the middle of his term, the dollar averaged \$155/oz. of gold, less than one-fourth of its value during Bretton Woods.

### **Intellectual Failure**

The conflict that Keynes and Graham identified at the beginning of Bretton Woods – the inherent instability of Currency Option Three – led to its demise.<sup>28</sup> Milton Friedman explained it in 1965:<sup>29</sup>

One [option] is the kind of automatic criterion that is provided by a commodity standard, a gold standard in which we do not have discretionary management of the system but in which the amount of money in the system is determined entirely by external affairs. I think such a system is neither desirable nor feasible in the United States today. ... [It] is not feasible because we are not willing at home to obey

its discipline; we are not willing to subordinate domestic stability to the necessities of the external balance of payments.<sup>A</sup>

Allan Sproul, the President of the Federal Reserve Bank of New York, described the problem in 1949:

We can't have, or we don't want, both an automatic gold coin standard and discretionary control of the reserve base by a monetary authority. The existence of two independent and frequently incompatible types of control over the reserves of our banking system is undesirable. In the light of that finding we abandoned the gold coin standard as a control over the domestic money supply, and placed our reliance in monetary management by the Federal Reserve. I think it has become established American policy that a principal means of Government intervention in the economic processes of the country is the administration of broad credit powers by the System. In this way a pervasive influence may be brought to bear on our economy, without intrusion upon specific transactions between individuals, which is likely to be the consequence of more detailed physical controls, and which would spell the end of democratic capitalism as we have known it.<sup>30</sup>

Yet, the striking thing is how poorly this was understood at the time, and how this misunderstanding also continues to the present. All of the talk of "balance of payments imbalances," liquidity, reserves, bullion flows, relative prices, budget deficits, "fundamental disequilibrium" and so forth, which consumed the attention of economists throughout the 1950s and 1960s, amounted to evidence of just how little economists comprehended of what was happening around them. They couldn't fix the problem, because they couldn't perceive the problem.<sup>31</sup>

This confusion continued into the 1990s: Britain – still at it – dropped out of the European Exchange Rate Mechanism (a kind of continental Bretton Woods) in 1992, as its domestic monetary policy once again came into conflict with the fixed-rate regime.<sup>32</sup> In 1997-1998, a large number of countries with "pegged" Currency Option Three systems experienced widespread failure. (Currency Option One currency boards in Hong Kong and Argentina, however, were fine.) Another group of mostly Eastern European countries, with Currency Option Three euro-pegged currencies, had similar failures in 2008-2009, while the euro-linked currency board systems remained unruffled. After four decades, the lessons of Bretton

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<sup>A</sup> In the terminology of the time, "domestic stability" meant active monetary management, and the "balance of payments" here referred to increases or decreases in the monetary base necessary to maintain fixed parity values.

Woods – the inherent instability of Currency Option Three – remained unlearned.

The tragic ignorance of the era was epitomized in a single person: Federal Reserve Chairman Arthur Burns. Burns had been the director of research at the National Bureau of Economic Research, a professor at Columbia University, and, in 1953-1956, the head of president Eisenhower's Council of Economic Advisors. He had risen to the pinnacle of prestige and influence. Just before the effective end of the Bretton Woods gold standard on August 15, 1971, a discussion was held among Nixon's top advisors. Most in attendance wanted to suspend gold conversion, or "close the gold window." The chief dissenter was: Arthur Burns. Nixon recounted in his memoirs: "Even if all the arguments were right, [Burns] said, he still felt that there was no rush. He warned that I would take the blame if the dollar were devalued. 'Pravda would write that this was a sign of the collapse of capitalism,' he said. On the economic side he worried that the negative results would be unpredictable ..." <sup>33</sup> Burns wrote in his diary: "My efforts to prevent the closing of the gold window ... do not seem to have succeeded. The gold window may have to be closed tomorrow because we now have a government that seems incapable, not only of constructive leadership, but of any action at all. What a tragedy for mankind!"

One might have expected that, in this council of the President of the United States, with access to the best minds in the country and the planet, there would have been a sensible discussion of whether to abide by the automatic discipline necessary to maintain a fixed-value currency system such as the existing \$35/oz. gold parity, or to embrace a program of active domestic macroeconomic management with a floating currency – Currency Option One or Currency Option Two.

But there was no such discussion. Those present did not seem to even conceive of the problem that such a discussion might resolve. Arthur Burns, the proximate cause of Bretton Woods' demise, Nixon's hand-picked agent of the "easy money" election strategy that was fatally undermining the dollar's value, was also the gold standard's final and most enthusiastic champion. He did not seem to perceive this as a contradiction. The rest of the economics profession was no better.

The Bretton Woods years had been prosperous and happy. Major governments, and Richard Nixon himself, anxiously attempted to patch things up in the Smithsonian Agreement just a few months later. But, they didn't know how. They had forgotten.



## Chapter 8: The Floating Currency Era, 1971-

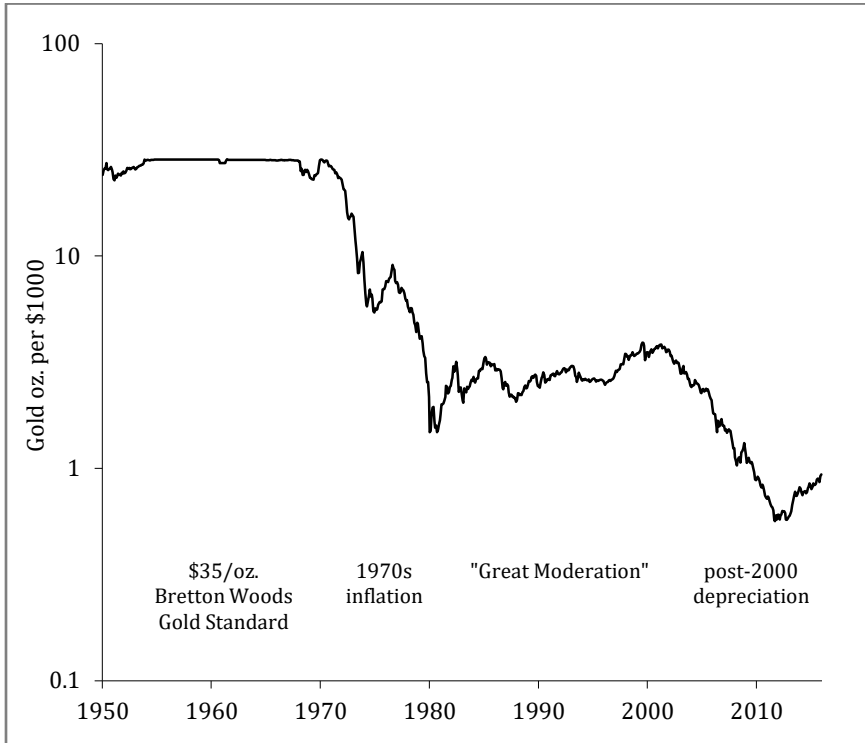
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The pre-1914 era, and also the brief 1925-1931 period, were examples of Currency Option One – a fixed-value system that is essentially automatic, has no domestic monetary policy, and has no need for trade or capital controls. The Bretton Woods system was an example of the unstable Currency Option Three – an attempted combination of both “external” fixed values and “internal” discretionary policy, bound together with trade and capital controls. The floating currency era that began in 1971 has been an example of Currency Option Two – floating fiat currencies, domestic monetary policy, no trade or capital controls.

This option emerged mostly by accident. The internal conflicts of Bretton Woods finally erupted in a system-destroying crisis. Nobody could remember how to establish Currency Option One – a gold standard in the pre-1914 model. Currency Option Two, floating fiat currencies, seemed to be the only option left.

The immediate result was a worldwide disaster. The bountiful 1960s economy crumbled into stagflationary decline in the 1970s. Foreigners called it the “Nixon shocks.” The U.S. government mostly blamed Middle East oil producers. The value of the dollar eventually fell to one-tenth of its Bretton Woods value versus gold, from \$35/oz. to around \$350/oz. during the 1980s and 1990s. In 1980, the dollar momentarily reached a nadir of \$850/oz.

Despite earlier notions that floating fiat currencies would allow every government to manage its domestic economy independently, this was never the case. Even those countries that were staunch advocates of the worldwide gold standard system found that, when the world’s major currencies were devalued, trade competitiveness issues tended to suck all countries into the vortex of devaluation. Much the same thing had happened after the British devaluation of 1931. Governments had floated their currencies from the dollar, and allowed them to rise, in a sort of protest against the U.S.’s abandonment of the \$35/oz. gold parity. But they were not able to organize themselves into an independent gold bloc. To prevent the trade consequences of gigantic exchange rate moves with the declining dollar, and all the currencies also declining alongside, even Germany, Japan and Switzerland, the governments most committed to Stable Money principles, allowed their currencies to depreciate vs. gold.

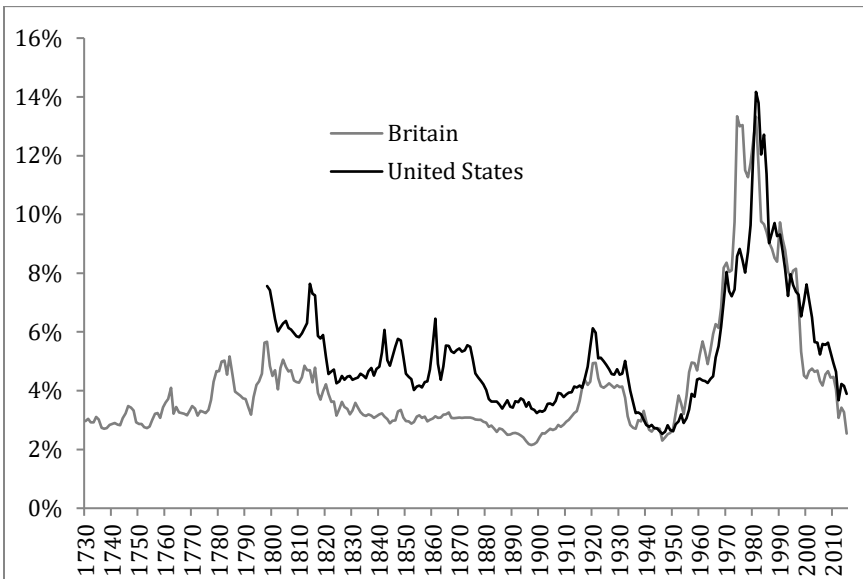


**U.S.: Value of \$1000 in Gold oz., 1950-2015**  
*logarithmic scale*

Interest rates around the world soared to levels not seen in the previous two hundred years. Prices for commodities – especially oil – quickly adjusted upward to reflect declining currency value. Prices for all other things also adjusted upwards, at a slower pace. “Inflation” raged. Economists were confused. They blamed anything and everything for the “inflation” – everything, that is, except the most obvious thing, a decline in currency value. The “inflation” was due to pushing costs and pulling wages, naughty Arabs, a world that was “running out of everything,” budget deficits, or any other fig leaf that could be used to cover up the fact that a major mistake had been made.

With all currencies essentially sucked into the wake of the declining dollar, the responsibility for halting this disaster also fell upon the United States. This took the form of Paul Volcker’s leadership of the Federal Reserve, which began in August of 1979. But it was more than one man. The political consensus had finally shifted. “Easy money” was no longer seen as the solution to all the economic problems of the day. It was seen as the cause.

Volcker had never been among the academic Keynesians and Monetarists braying for the glories of floating currencies and the continuous application of “easy money.” As Undersecretary of the Treasury for International Monetary Affairs, he had been present at the fateful meeting at Camp David in August 1971. “I hate to do this, to close the [gold] window,” he said at the meeting. “All my life I have defended fixed exchange rates.” He warned Nixon: “[W]e are releasing forces that we need not release.”<sup>1</sup> In late 1979, he began to put out the fires that had erupted globally after the end of Bretton Woods.



### **U.S. and Britain: Yield on Long-Term Government Bond, 1730-2015**

The process was rough – far rougher than it needed to be. The first result of Volcker’s initial fumbling was a sickening collapse in the dollar’s value. But, it turned out to be the last such breakdown, as Volcker found his footing. Years of trauma followed, as the dollar’s value careened up and down. In the past, the reinstatement of a gold standard system, after a period of floating and devaluation, had typically been the start of a great economic boom. This was the case in the U.S. in 1880, France in 1926, and Japan and Germany in 1950. Despite the early difficulties, in time the value of the dollar stabilized in a rough band – a very rough band – around \$350/oz. of gold, between 1982 and 2005. When it moved toward the edges of this band, beyond \$425/oz. or \$300/oz., problems erupted and efforts were made to bring the dollar back toward the \$350/oz. level. The 1985 Plaza Accord, formed when the dollar was at \$300/oz. was to deal with a strong dollar; the 1987 Louvre Accord, formed at \$400/oz. was to deal with

a weak one. The whole world was helping stabilize the dollar around \$350/zo.

Volcker was succeeded by Alan Greenspan at the Federal Reserve in August 1987. Greenspan had been among the few remaining gold standard advocates in the 1960s, part of a circle of libertarians associated with the writer Ayn Rand. In 1966, he penned a memorable essay called "Gold and Economic Freedom." In 1981 – already a member of the elite establishment following a term (1974-1977) as the head of president Gerald Ford's Council of Economic Advisors – he offered an op-ed for the *Wall Street Journal* calling for a return to the gold standard. While Volcker was appointed during the Carter administration, Greenspan was appointed under president Ronald Reagan, himself a gold standard admirer. For the 1980 election campaign, Reagan recorded a television advertisement outlining his support for a new gold standard system.<sup>2</sup> The ad never ran, however, after it was opposed by Reagan's Monetarist advisors.

After Greenspan's retirement in 2006, he again made numerous comments in praise of the gold standard system. He said in 2016: "Now if we went back on the gold standard and we adhered to the actual structure of the gold standard as it exists let's say, prior to 1913, we'd be fine. Remember that the period 1870 to 1913 was one of the most aggressive periods economically that we've had in the United States, and that was a golden period of the gold standard."<sup>3</sup> Perhaps it is no surprise that, during Greenspan's tenure, the dollar became even more stable vs. gold than it had been under Volcker.

The Volcker/Greenspan era, 1982-2005, is often called the "Great Moderation" by economists today, typically with little understanding of what had made it possible. As the value of the dollar was stabilized – in practical terms, stabilized against gold, even if the majority of economists wished to ignore that fact – interest rates again came down and economies prospered. The degree of prosperity was still far short of what had been achieved during the gold standard years, even the problematic Bretton Woods years. Yet, it was far better than the 1970s, and better than the period of stagnation and ever-increasing government control of markets and economies that followed Greenspan's departure. By intent or by accident, it amounted to a dirty gold standard. Greenspan explained in 2017:

When I was Chair of the Federal Reserve I used to testify before U.S. Congressman Ron Paul, who was a very strong advocate of gold. We had some interesting discussions. I told him that U.S. monetary policy tried to follow signals that a gold standard would have created. That is sound monetary policy even with a fiat currency. In that regard, I told him that even if we had gone back to the gold standard, policy would not have changed all that much.<sup>4</sup>

Problems began in 1997 as the dollar rose out of its crude trading band, reaching near \$250/oz. in 2000. Currency crises erupted worldwide. The too-strong dollar was corrected, but at the end of 2005, the dollar fell out of its “Great Moderation” range on the other side, its value descending below 1/500<sup>th</sup> of an ounce of gold and continuing to nearly 1/2000<sup>th</sup> of an ounce in 2011. Benjamin Bernanke, who replaced Greenspan at the beginning of 2006, was a lifelong academic Keynesian – or Monetarist; by this time, the two camps had meshed into an undifferentiated stew of soft-money rationalization.<sup>A</sup> He was followed, in 2014, by another soft-money academic, Janet Yellen. The “Great Moderation” was over, and a strange new era ensued, characterized by soaring and then crashing commodity prices, asset bubbles in housing, bonds, and finally, by 2015, seemingly everything. Central bank target interest rates fell to near-zero after 2008, and remained there for years. Aggressive “quantitative easing” programs, involving monetary expansion by trillions of dollars’ worth worldwide, became commonplace. Yields on sovereign debt fell to historic lows, and then even went negative for a sustained period, something that had never been seen in the past 500 years of capitalism. It was possible only with unprecedented coordination and control of asset markets.

### **Fixed-Value Currency Blocs Remain the Norm**

Fixed exchange rates, between trading partners, is such an obvious advantage that governments have always been pushed in that direction by business interests. When currencies share a standard of value that is extremely stable and reliable, causing no problems, then the entire world will naturally move toward sharing in the fixed exchange rate structure. This was the case during the gold standard era, before 1914, and stretching back for centuries previous. There were always a few governments who wanted to experiment with devaluing their currencies, or possibly floating them, even in the 1750s or 1890s. But most countries, perhaps after some bad experiences, eventually decided that it was better to participate in the global system of stable currency values based on gold.

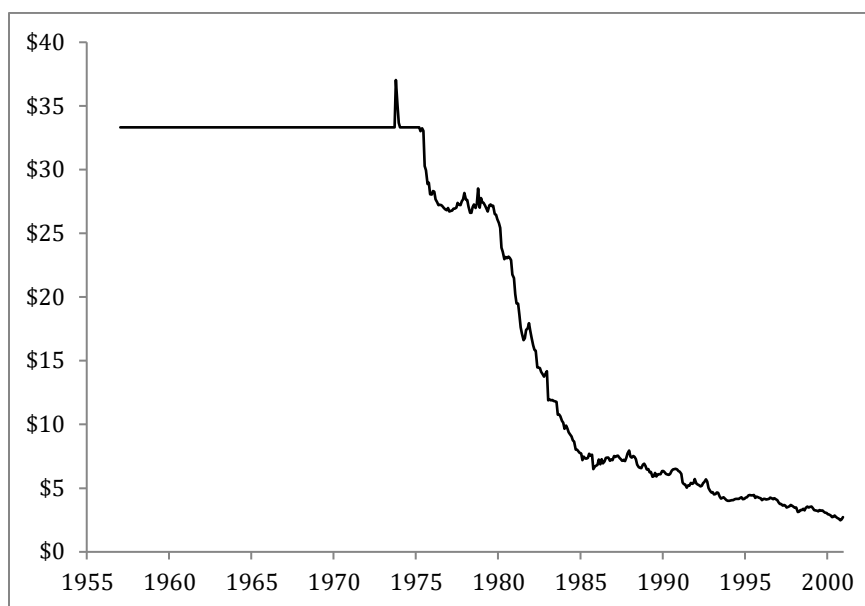
At the other end of the spectrum lies a situation in which nobody would want to participate – for example, a hyperinflationary currency like the German mark of 1920-1923. The German mark had been one of the world’s top four currencies before World War I, and a major reserve currency. After the war, when all currencies floated, it was not obviously worse than the U.S. dollar or British pound. The Treaty of Versailles in June 1919 changed the situation, however, and the mark’s value plummeted. Regional currencies linked to the mark (such as the currencies of the Baltic states)

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<sup>A</sup> “In one sense, we’re all Keynesians now,” Milton Friedman told *Time* magazine in 1965. “In another, nobody is any longer a Keynesian.” This was an advanced notion at the time, but accurately described the situation in 2015.

were also pulled into the hyperinflationary disaster. A similar thing happened to the former Soviet republics that achieved independence at the end of 1991. They continued to share the Russian ruble, which descended into hyperinflation during the early 1990s. The United States also seemed to be on a similar path in 1973, which is why other European countries decided to delink their currencies from the dollar. The dollar, once delinked from gold, ceased to be a standard of value that others could rely upon, or a currency bloc that they wanted to participate in.

Between these two poles lies a range of unstable tension, as various governments decide whether to join one or another currency bloc, switch their allegiances, or perhaps go it alone. Without the reliable standard that gold once provided, no solution has proved to be beneficial for very long.



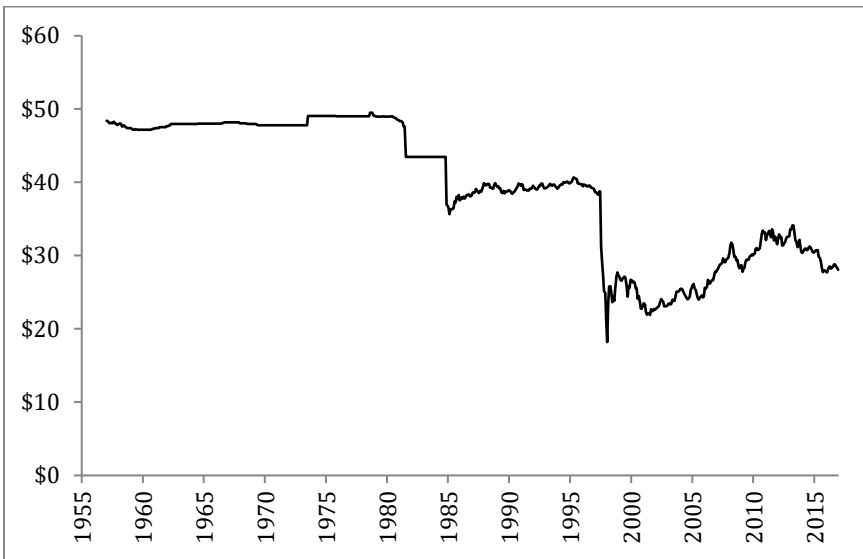
**Greece: Value of 1000 drachma in U.S. dollars, 1957-2000**

Even though it seemed as if the world broke up into floating fiat currencies in 1973, this was never really the case. Most countries in the world continued to link their currency to one of the major international currencies. In 2014, the International Monetary Fund found that, out of 188 countries and three territories, 66% had some kind of direct currency value link.<sup>5</sup> They were participating in one or another currency bloc, not much different than when they participated in the global unified currency bloc based on gold. Most of the remaining currencies categorized as “floating” were, in practice, a loosely-fixed arrangement in which large exchange rate

swings with major currencies were actively minimized. Fixed-value policies thus remain common throughout the world.

Most of these governments, that have a policy of fixing their currencies to an international standard, have had no great desire to engage in domestic money manipulation. The Keynesian dream is not widely shared outside of its Anglophone region of origin. However, the contradictions of Bretton Woods – Currency Option Three – continued in the decades to follow, and remained a major source of unnecessary problems.

The proper mechanism to facilitate a fixed-value system – Currency Option One – is a currency board. Several countries implemented or used pre-existing currency boards: Hong Kong in 1984; Argentina in 1992; Bosnia and Herzegovina in 1997; Bulgaria in 1997; Estonia in 1992; Lithuania in 1994; Brunei and Darussalam; Djibouti; Grenada; Dominica; and six countries using the East Caribbean dollar.

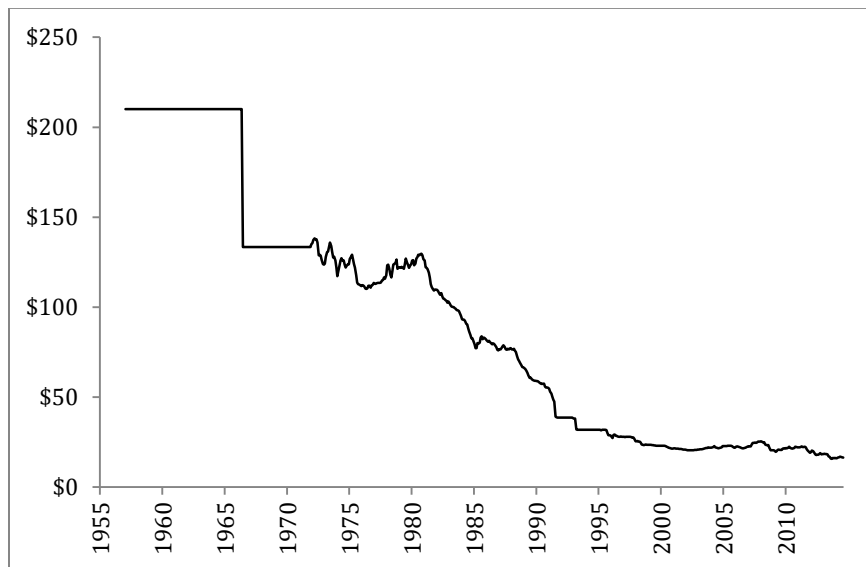


### **Thailand: Value of 1000 baht in U.S. Dollars, 1957-2016**

According to currency board expert Steve Hanke, of Johns Hopkins University, no properly-operated currency board has ever failed. They may be intentionally abandoned in times of crisis, as was the case for Argentina in 2002, to pursue other goals. Many countries solved the problem of maintaining fixed exchange rates by adopting either the dollar or euro itself. Besides the eighteen official members of the eurozone in 2016, an additional ten minor states and territories used the euro exclusively. Ten states were “dollarized,” including El Salvador and Ecuador. Another fourteen officially used the dollar alongside other currencies. Three states

shared the Australian dollar; two used the Indian rupee; five used the New Zealand dollar; and four used the South African rand.

Unfortunately, the majority of those 120+ countries that have some sort of fixed-value arrangement, have a Currency Option Three system (sometimes called a “pegged” arrangement), often without even the stabilizing element of substantial capital controls. The result has been an endless series of currency breakdowns, even by well-meaning governments with no wish to engage in devaluation or domestic monetary management.

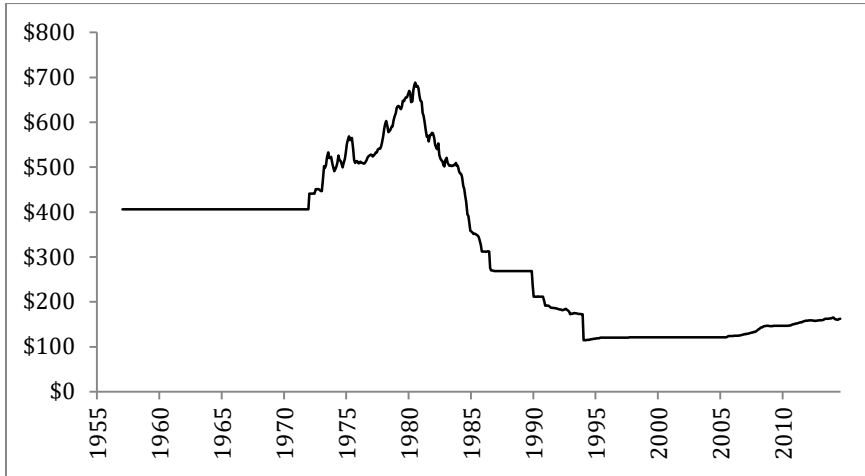


#### India: Value of 1000 Rupee in U.S. Dollars, 1957-2014

The small states of Europe, tightly linked in trade and finance over the centuries, had always used a shared currency standard – the gold standard – even to the point (among the members of the Latin Monetary Union) of issuing identical coinage. In 1972 – perhaps foreseeing the upcoming dissolution of the Smithsonian Agreement in 1973 – most governments of the European Economic Community agreed to tie their currencies together, and prevent exchange rate fluctuations of more than 2.25%. This was known as the “snake.” There was no central standard of value, although the deutschmark soon became the effective center of the system. The arrangement was troubled by chronic deviations and revaluations, as governments and central banks still did not have effective Currency Option One operating mechanisms to facilitate their goals. In March 1979, a formal standard of value was established with the European Currency Unit, in effect a supranational fiat currency standard similar to Keynes’ bancor in 1944 and the IMF’s SDR in 1968. The European Exchange Rate Mechanism



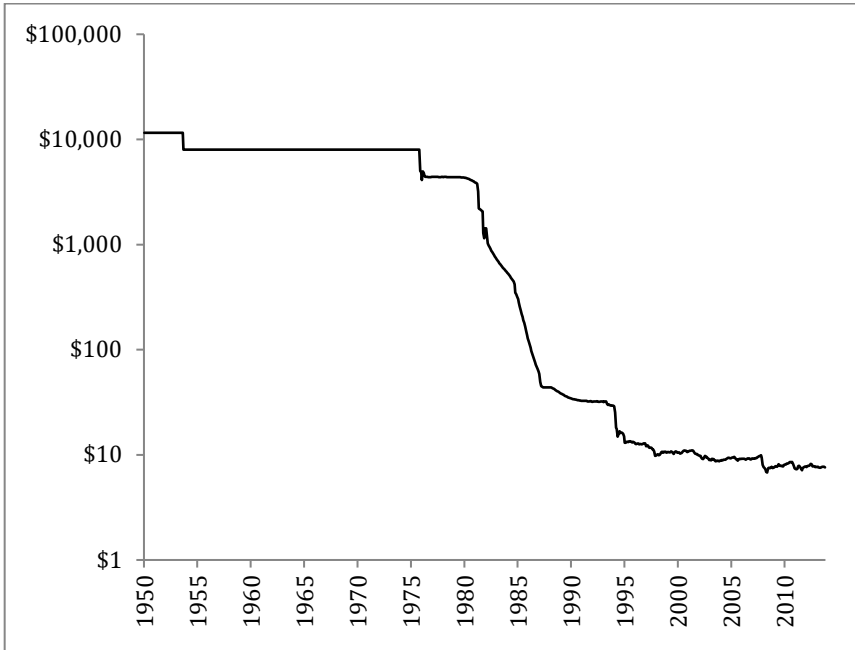
still suffered from chronic instability due to the lack of proper operating mechanisms. A crisis in 1992, in which Britain left the arrangement, further exposed the system's weakness. A more integrated system was agreed upon with the Maastricht Treaty of 1992, which led to the adoption of a shared currency, the euro, in 1999.



### **China: Value of 1000 Renminbi in U.S. Dollars, 1957-2016**

In Europe, the continuing problems of unstable exchange rates – Currency Option Three – provided the political impetus for the creation of a supranational undemocratic European federal state, the European Union, to go along with a supranational currency issuer, the European Central Bank. No such federalism is necessary even when countries share the same banknotes and coins, as the many countries that used dollars or euros without any other political connections demonstrated. Repeated claims that a common currency demands a consolidated fiscal policy were false, and amounted to federalist propaganda. Euro notes and coins themselves were not introduced until 2001. Between 1999 and 2001, the existing currencies of the eurozone were reliably linked to one another via currency-board-like mechanisms – the original goal of the “snake” or ERM – which demonstrated that there were certainly people who could solve these problems, if they wanted to. To ascribe all of these difficulties to ignorance and error is not credible; nor does it fit with the evidence.

The dollar's value fell by about 90% vs. gold during the 1970s. The currencies of at least forty-seven countries saw their currencies' value fall by more than 50% even against the sinking dollar during the decade, with hyperinflation in Iceland, Israel, Poland, Uruguay, Brazil, and elsewhere.



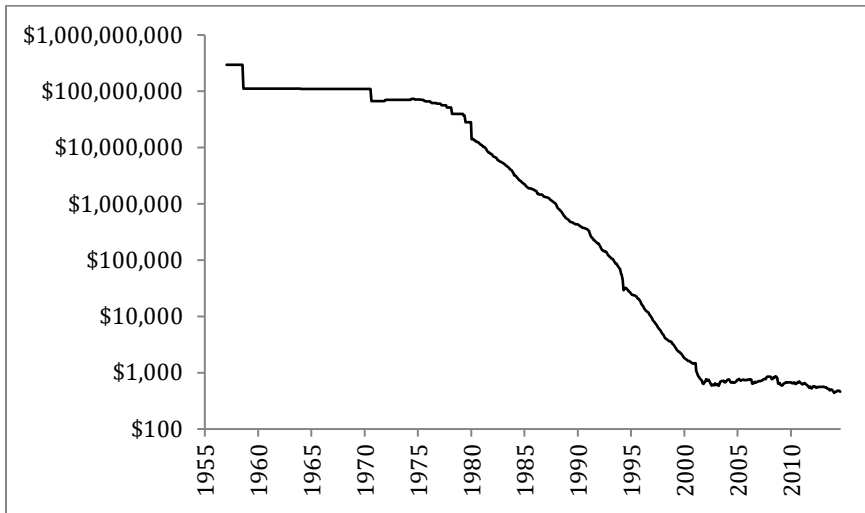
**Mexico: Value of 100 pesos in U.S. dollars, 1950-2014**  
*logarithmic scale*

The 1980s, the beginning of the “Great Moderation” period of currency stabilization among developed countries, nevertheless saw an explosion of currency disasters particularly in Latin America. Argentina, Bolivia, Brazil, Colombia, Chile, Costa Rica, Guyana, Mexico, Nicaragua, Peru, Paraguay, and Venezuela all had currency declines of at least 90% vs. the dollar – often much, much more. They were joined by the Democratic Republic of the Congo, Ghana, Guinea, Guinea-Bissau, Israel, Lebanon, Mozambique, Niger, Poland, Sierra Leone, Tanzania, Turkey, Uganda, Vietnam, Yugoslavia and Zambia. Hyperinflation raged across whole continents.

Latin America settled down during the 1990s, despite a high-profile collapse of the Mexican peso in 1995. New troubles emerged elsewhere: Many dollar-pegged currencies, particularly in Asia, suffered widespread breakdown in 1997-98. But the true disasters were in Eastern Europe. The Russian ruble had been reasonably reliable before 1989, though not used much in the Soviet command economy. The dissolution of the Soviet Union in 1991 led to hyperinflation throughout the former Soviet sphere, from Poland to the Sea of Japan. In 1993, Kazakhstan had a monthly inflation rate of 56%. In Armenia, the monthly rate was 438%.<sup>6</sup>

The International Accounting Standards Board, and also the U.S.’s Federal Accounting Standards Board, define the term “hyperinflation” as an

increase in the official consumer price index by more than 100% over three years. This is an annualized rate of 27%, or about 2% per month, which is far milder than the extreme hyperinflations that tend to attract attention. Nevertheless, a situation in which the official CPI is rising at 27% per year or more, for three years or more, is one in which normal monetary and market systems tend to break down. Lending becomes impossible, except for very short maturities and typically small volumes. Basic accounting, of costs or depreciation, turns into a guessing game. Pensions and savings are destroyed, along with all other long-term contracts and commitments. At least seventy-three countries had a hyperinflation episode during 1970-2013, according to this definition.<sup>B</sup>

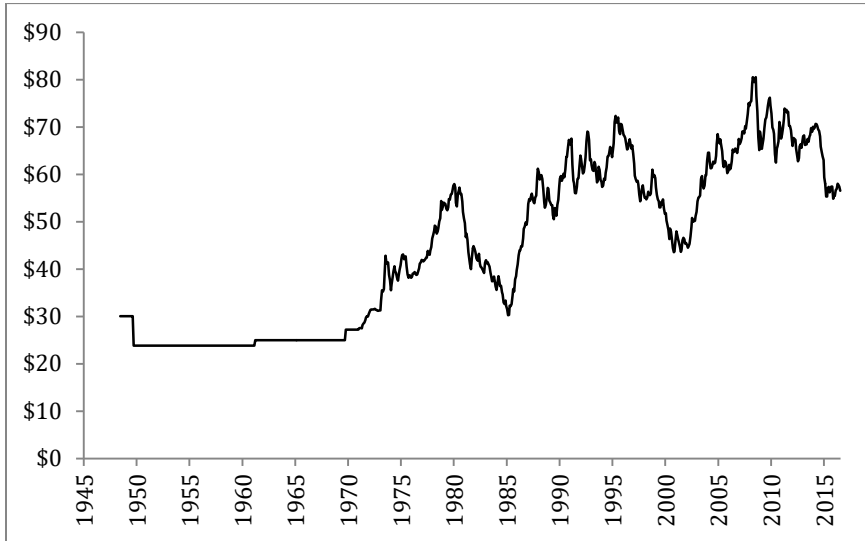


**Turkey: Value of 1000 lira in U.S. dollars, 1957-2014**  
*logarithmic scale*

This count does not include milder, but still quite destructive trends toward currency depreciation common throughout the globe. Between 1980 and 2000, the value of the Greek drachma fell by 5:1 vs. the dollar; the Indian rupee by 6:1; the South African rand by 9:1; and the Portuguese escudo by 4:1. Some currencies had the opposite problem: the Japanese yen was 260/dollar in 1985, and touched 80/dollar in 1995, more than a threefold increase in relative value. The German mark was 3.30/dollar in 1985, and 1.40/dollar in 1995. All attempts at international trade and finance were thrown into mayhem by these moves – a long way indeed from the prior era of “globalization” before 1914, when gold-based

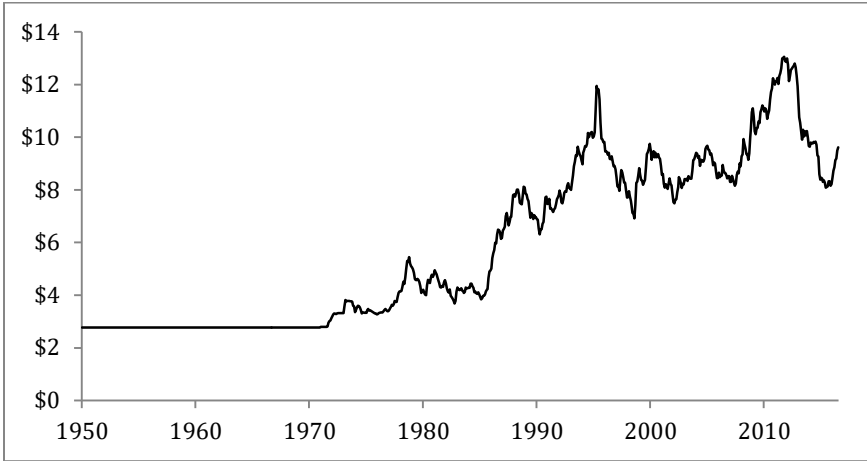
<sup>B</sup> This does not count numerous states that had such turmoil – including Afghanistan, Vietnam and Cambodia – that the IMF has no statistics at all.

currencies had fixed exchange rates. After the trade wars of the 1930s, governments embraced the principle of “free trade;” but “free trade” became nonsensical under such conditions, and endless conflicts broke out. The “Great Moderation” period was still troubled by debilitating currency turmoil, in both the developed and developing economies.



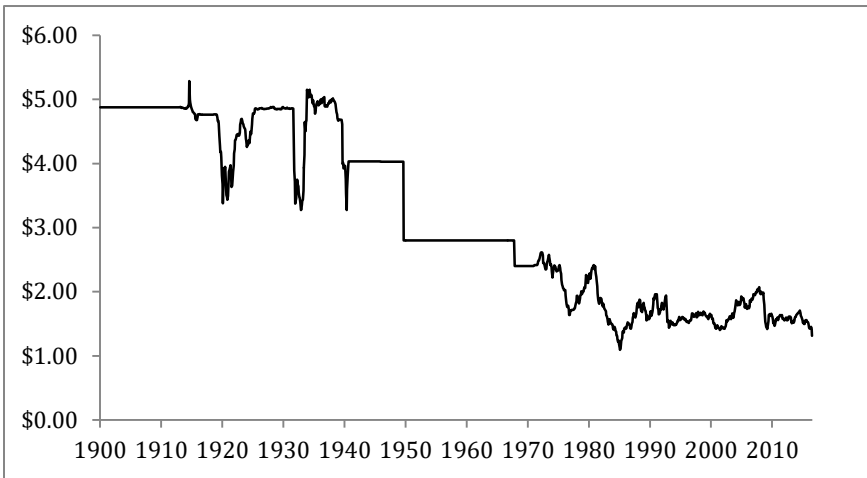
### Germany: Value of 100 marks in U.S. dollars, 1945-2015

The currency turmoil led to chronic financial crises. The high short-term rates of the 1970s and early 1980s demolished the U.S. savings and loan industry. Large U.S. commercial banks, not restricted to domestic residential lending, financed a surge of investment in developing economies, especially focused on commodity production. These went bust in the 1980s, causing industry-wide insolvency particularly among lenders to Latin American countries then collapsing in hyperinflation. Chastened by their Latin American losses, they pursued opportunities in Asia, which in turn went bust in 1997-98. The Asian Crisis caused attention to focus on seemingly-safe U.S. equities in general, and technology-media-telecom sectors in particular, driving valuation metrics to levels never before seen. Residential real estate was the next area of focus, which again had a history of seeming stability. The combination of declining currency values (vs. gold) and low interest rates also made houses a hard-asset inflation play, as had been so successful in the 1970s. This too turned to bust in 2007-2008, and again caused a wave of financial system insolvency. In 2012-2016, bond yields worldwide were pushed to levels never before seen; indeed, to levels that people once said were theoretically impossible.



**Japan: Value of 1000 yen in U.S. dollars, 1950-2015**

Currency instability and interest rate manipulation was a core cause in every case. Government bailouts became the norm – at least, for the largest banks. Smaller banks were liquidated by the hundreds, and their assets acquired by larger banks. Independent domestic banks were taken over by multinational giants. Government corruption and cronyism became a critical part of every large bank's survival strategy. In the boom times, they pocketed the profits. In the busts, they dumped their losses on taxpayers, and swallowed up their competitors.



**Britain: Value of British pound in U.S. dollars, 1900-2016**

The floating fiat regime had led to disaster and chaos over most of the globe. The IMF and World Bank, originally intended to keep currencies stable among the developed countries, found a new role as the engine of soft re-colonization as they saddled one government after another with debt and then commandeered economic policy – often, via deregulation and mass privatization, in favor of multinational corporations.

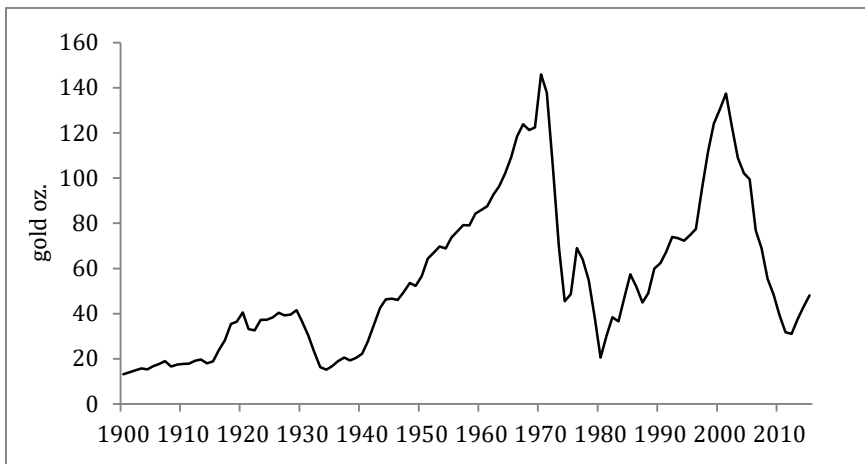
### **Confusion of Economic Cooperation**

“Divers weights, and divers measures, both of them are alike abomination to the Lord,” says the Bible, in Proverbs 20:10. This principle applied also to money and coinage, traditionally seen as a weight or measure of gold or silver. The U.S. Constitution, in Article I Section 8, allows Congress to: “coin Money, regulate the value thereof, and of foreign coin, and fix the Standard of Weights and Measures.” The “regulation” of the coinage, though some would love to interpret this to mean “change at will,” actually meant: to enforce a precise and unchanging specification. Congress did so in the Coinage Act of 1792. In Section 19 of the Act, the punishment was defined for anyone who changed the metal content of the coinage: death.

People long sensed that changing the value of the money would confuse and distort economic cooperation between humans, somewhat in the manner that a change in the kilogram, meter, or minute would. By the twentieth century, the old analogies between money and standard measures were supplemented by a more precise vision of the role that money plays in a market economy. An industrial market economy is, ultimately, a vast network of cooperation. The extraordinary productivity of the market economy has come about via increasing specialization, organization, and trade. The rudimentary cooperation of the pin factory described by Adam Smith in 1776, at the earliest glimmer of the Industrial Revolution, and its productive advantage over a single craftsman working alone, has grown today to a situation in which hardly anything is created without combining goods, services, labor and capital from all over the world. The simplest item today – a pencil, perhaps – combines capital from France and Brazil, machinery from Germany, management and labor from China, wood from Canada, distribution by a Greek shipping company, and a retail network in the United States. Every one of these components has their own globe-spanning networks of exchange and cooperation.

This cooperation is not consciously organized. The Soviet model of central planning and bureaucratic control was a failure, unable even to feed the population from the state’s vast and fertile agricultural lands. The network of cooperation is organized through the use of money, with information transmitted via prices, interest rates, profit and loss. These seemingly simple bits of information direct all economic activity. Every shopper seeks the most value at the lowest cost. Investment flows to where

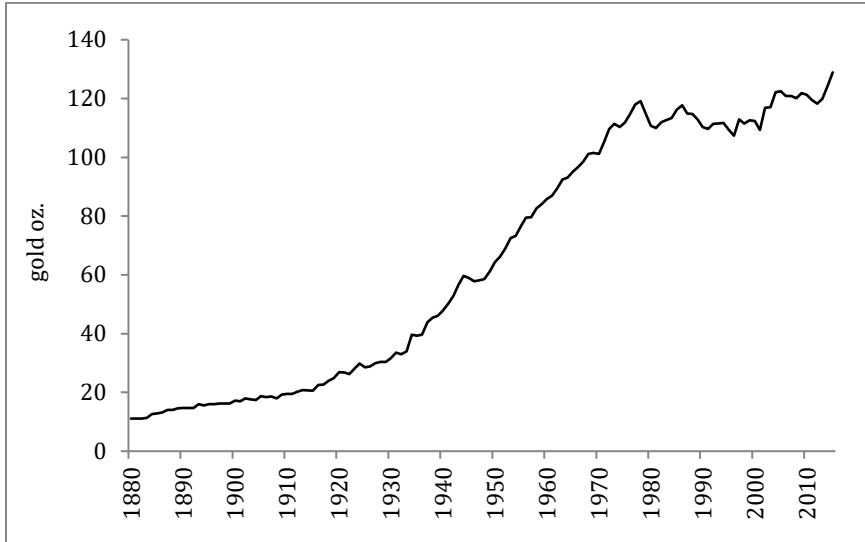
the returns on capital are highest, in turn causing increasing or decreasing employment in various industries. Production of unusually profitable goods or services expands; production of inadequately profitable ones is reduced. One production method is chosen over another for its cost. The implication is that it requires less input to produce the same output – that it is more productive. Inherent in the system is a constant focus on increasing wealth, the production of goods and services of greater perceived value. A good that is in demand gets a higher price; profit margins expand; returns on capital increase; capital investment rises; employment expands; production increases. Goods and services that are not sufficiently valued find that selling prices do not cover the costs of production; losses ensue; investment ceases; production declines, along with employment.



### **U.S.: Per Capita GDP in Gold Oz., 1900-2015**

When the value of money changes erratically, these economic signals become confused. Prices, interest rates, profit and loss are different than they would have been had money been stable in value. The result is that economic resources and activity are directed into unproductive and even wasteful or destructive channels, a process sometimes called “malinvestment.” If the profitability of housing construction, to take one potential example, does not reflect real need, desire, or ability to pay for housing, the result is that many more houses are built than are justified – an artificial boom. Although this activity shows up in statistics as “gross domestic product,” in effect it is waste. The artificial boom in the housing industry, resulting from some sort of monetary effect, can increase employment and produce the appearance of bustling economic activity. This is the effect that the soft-money advocates wish to intentionally create. However, the real productivity, and thus the real wealth or income, of the

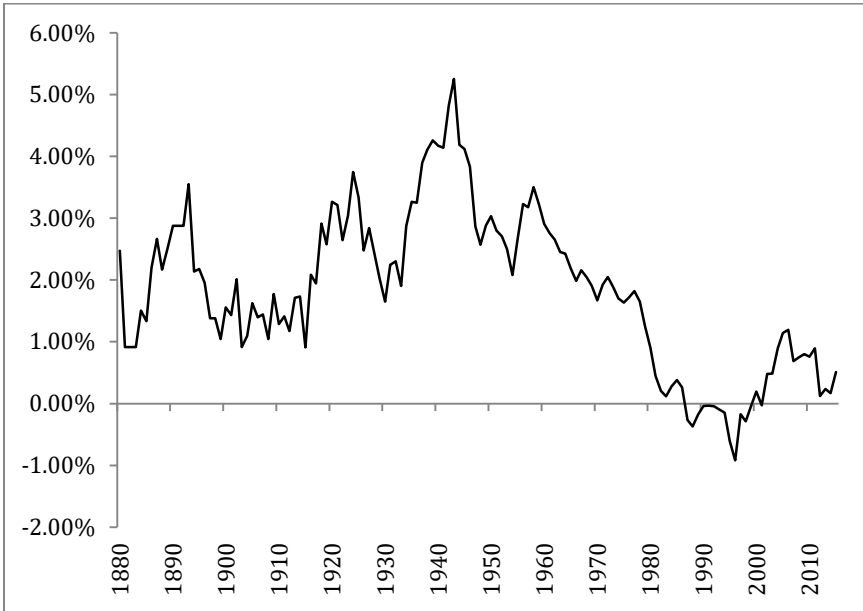
society declines. In the extreme example, all people spend all day building excess houses. Employment soars, along with official GDP; but the real productivity of the economy collapses. They soon die of starvation, in a landscape littered with empty buildings.



**U.S.: Hourly Wages of Production Workers,  
Adjusted by CPI, 1880-2015<sup>7</sup>**

Thus, it should be expected that economic health would become difficult, stagnate, or even decline, in a floating fiat currency regime. The information system – money, prices, interest, profits – that makes economic cooperation and organization possible, the basic mechanism that allows high levels of productivity in the free market economy, the signaling system that shows, via profit and loss, how cooperation can be optimized, productivity increased and waste avoided, has become corrupted. This has indeed been the case for most of the world since 1971. It is perhaps most obvious in those many unfortunate locales that suffered a major currency disaster, even hyperinflation. Employment in such situations is often quite high, but wages bring little more than bare subsistence. The economy is moribund, financial intermediation disappears, investment centers on acquiring existing assets at crisis-depressed prices, and nobody dares risk any significant capital on creating new businesses. However, even in the world's seemingly-successful developed economies, the great advances – and rising wages – common when money was based on gold, in the pre-1914 era, the prosperous 1920s, and even the Bretton Woods years, became strangely unobtainable.



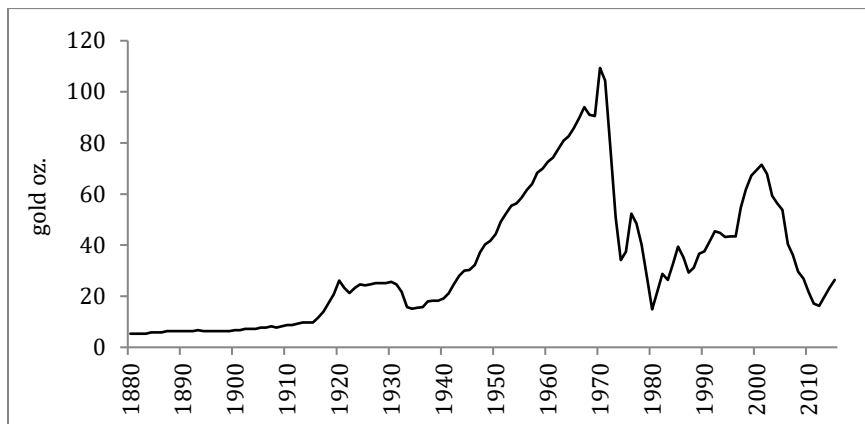


**U.S.: Annualized Growth Rate of Wages of Production Workers,  
Adjusted by CPI, Prior Ten-Year Period, 1880-2015**

At the simplest level, a major decline in currency value, as happened throughout the world during the 1970s, implies a decline in the value of wages paid. Nominal wages would rise in response to a decline in currency value, along with the price of everything else. However, reflecting the decline in overall economic productivity caused by monetary instability, the rise typically does not fully compensate for the decline in currency value. This is most obvious perhaps when some developing economy's currency collapses to a third of its prior value. The value of domestic wages, in terms of dollars, also collapses. Nominal wages rise in reaction, but it can take many years of recovery before they return even to their prior level in terms of dollars.

Certainly many improvements have occurred in technology and industrialization since 1800. Even Louis XIV, the Sun King of France, did not have antibiotics, smartphones, electric lighting, automobiles, plastics, or a thousand other amenities enjoyed today by the common masses. And yet, it would be absurd to say that middle-class people today are wealthier than Louis XIV. In a similar way, we can see that in a less-developed country today – perhaps Laos – for those who can afford it, practically any modern convenience and technology is available; and yet, the people of Laos are far poorer than the people of Germany. Technology, despite its benefits, does not in itself bring prosperity or high incomes. Americans of 2016 may be poorer, on average, than Americans of 1965. If we discount the change in

technology, evidence for this abounds: the lifestyle that could be supported by a single working parent, with a high school education – a house, a car or two, adequate healthcare, a college education for the children, and a 15% savings rate – often seemed unattainable in 2016, even for two working parents.

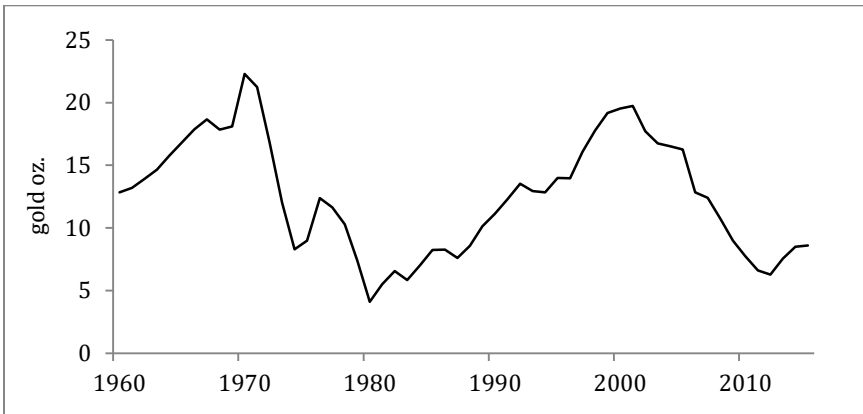


### **U.S.: Wages of Production Workers, 1000 Hours, in Gold Oz. 1880-2015**

In the United States, per capita GDP as measured in ounces of gold – the standard measure of value used in the United States for nearly two centuries before 1971 – was, in 2015, at a level comparable to the early 1950s. Hourly wages of production workers, adjusted by the official consumer price index, showed an extended stagnation after 1971 unprecedented in U.S. history. This is bad enough; but the official consumer price index itself was constantly modified since 1980, with each modification making it look better than it would have otherwise. When using a consumer price index calculated in the same fashion that it was done in 1980, the outcome is similar to the story told by gold – a decline in the real value of wages to levels of the 1950s, or even below that.<sup>8</sup>

Much of the developed world showed a similar pattern. Except for a few outliers, such as Hong Kong and Singapore, the experience of the rest of the developed world was not clearly superior to the United States after 1971. World per capita GDP, in terms of gold, tells a story much like that for the U.S. A few emerging markets had great success after 1970, notably in Asia: China, South Korea, Taiwan, Malaysia, Thailand, and, to a lesser degree, India. They were characterized by very high rates of savings and investment, relatively low tax rates, and a low tax revenue/GDP ratio. Their monetary policies focused on maintaining a fixed exchange rate with the U.S. dollar, largely abandoning any ambition to manage the domestic economy by monetary means. The most successful Asian countries did not get rich by being better money-fiddlers than the United States. They got rich

with savings and investment, in a business-friendly low tax environment, and the most stable money that they could achieve.

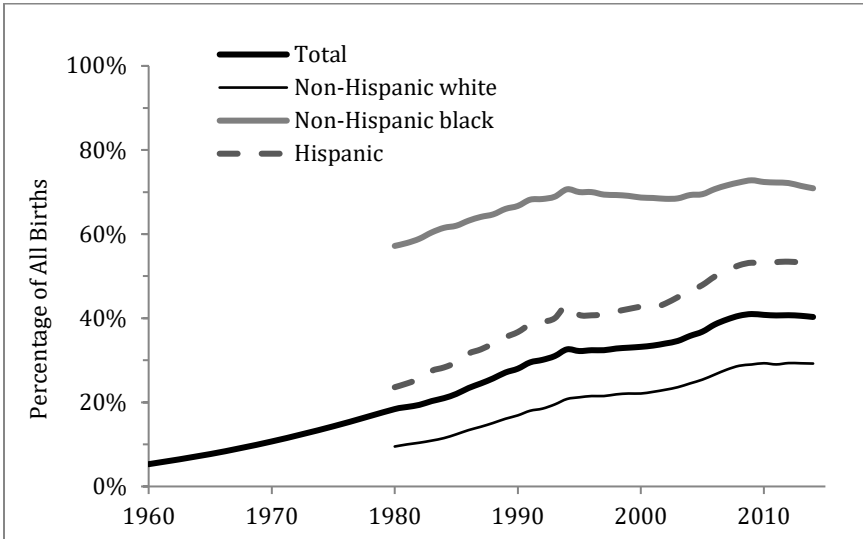


**World Per Capita GDP, In Gold Oz., 1960-2015**

With the exception of Hong Kong's currency board, however, the Asian countries did not have a coherent operating mechanism to achieve this goal, and instead used a grab-bag of vaguely Keynesian monetary tools – Currency Option Three. The result was periodic failure of currency pegs, in China in 1980-1994, followed by widespread failure across dollar-pegged currencies in Asia in 1997-1998.

### **Deterioration of Public Morality**

A decline in currency value (“inflation”) has long been associated with decay in the moral order of society. This is arguably true of floating currencies in general, even if – as in the 1980s and 1990s – they end up with roughly the value with which they began, or perhaps, even if they rise substantially. “Morality,” at base, refers to mutually-beneficial behavior towards other people. Outside of the family unit, the primary interaction between people is via money. Unstable money undermines public morality because monetary transactions *are* public morality. Profit and loss, success and failure, reward and punishment, are meted out not by relative merit – what one might, with more elevated language, call “justice” – but by fluctuations in currency value, at times seemingly random, or perhaps managed intentionally to benefit one group or another. The economy becomes inherently unjust. As currency values are no longer fixed to long-held and commonly agreed-upon absolutes, like gold, but become changeable and relativistic, so too moral values become changeable and relativistic, provisional and expedient: It all depends on your point of view.



### U.S.: Births to Unwed Mothers, 1960-2015<sup>9</sup>

The Golden Rule – “Do unto others as you would have them do unto you” – is rendered, in terms of a long-term debt, pension or wage contract, as: pay me in a currency whose value is the same as when we formed the agreement. In the U.S. before 1933, this commonly took the form of a “gold clause” in commercial contracts. In the environment of floating currencies, no such assurances could be made. “You get what you get” was the principle of the age, expressed in every daily interaction, and anyone who aspired to a higher ideal was seen as hopelessly naive. No longer did people feel constrained by moral principles codified in legal contract. “Do as thou wilt” becomes the subtle principle of all business. In politics, in divorce court, during a weekend in Las Vegas, it becomes the principle of all life.

In such an environment, capitalism loses its moral foundation. Personal reward does not lead to collective prosperity. In *The Foundations of Morality* (1964), the libertarian economist Henry Hazlitt wrote:

There is hardly an ethical problem, in fact, without its economic aspect. Our daily ethical decisions are in the main economic decisions, and nearly all our daily economic decisions have, in turn, an ethical aspect.

Moreover, it is precisely around questions of economic organization that most ethical controversy turns today. The main challenge to our traditional “bourgeois” ethical standards and values comes from the Marxists, the socialists, and the Communists. What is under attack is the capitalist system; and it is attacked mainly on

ethical grounds, as being materialistic, selfish, unjust, immoral, savagely competitive, callous, cruel, destructive.<sup>10</sup>

In a 1923 essay called "Social Consequences of Changes in the Value of Money," John Maynard Keynes wrote:

If the depreciation of money is a source of gain to the business man, it is also the occasion of opprobrium. ... In his heart he loses his former self-confidence in his relation to Society, in his utility and necessity in the economic scheme. He fears the future of his business and his class, and the less secure he feels his fortune to be the tighter he clings to it. The business man, the prop of Society and the builder of the future, to whose activities and rewards there had been accorded, not long ago, an almost religious sanction, he of all men and classes most respectable, praiseworthy, and necessary, with whom interference was not only disastrous but almost impious, was now to suffer sidelong glances, to feel himself suspected and attacked, the victim of unjust and injurious laws, – to become, and know himself half guilty, a profiteer.

No man of spirit will consent to remain poor if he believes his better to have gained their goods by lucky gambling. To convert the business man into the profiteer is to strike a blow at capitalism, because it destroys the psychological equilibrium which permits the perpetuance of unequal rewards. The economic doctrine of normal profits, vaguely apprehended by every one, is a necessary condition for the justification of capitalism. The business man is only tolerable so long as his gains can be held to bear some relation to what, roughly and in some sense, his activities have contributed to Society.<sup>11</sup>

Although floating currencies eroded economies as a whole, some found that they could prosper in this environment. In the discussions surrounding the "free coinage of silver" debates of the 1890s, Andrew Carnegie, one of the wealthiest men of the time, wrote:

Nothing places the farmer, the wage-earner, and all those not closely connected with financial affairs at so great a disadvantage in disposing of their labor or products as changeable "money." ... You all know that fish will not rise to the fly in calm weather. It is when the wind blows and the surface is ruffled that the poor victim mistakes the lure for a genuine fly. So it is with the business affairs of the world. In stormy times, when prices are going up and down, when the value of the article used as money is dancing about—up to-day and down to-morrow—and the waters are troubled, the clever speculator catches the fish and fills his basket with the victims. Hence the farmer and the

mechanic, and all people having crops to sell or receiving salaries or wages, are those most deeply interested in securing and maintaining fixity of value in the article they have to take as "money."

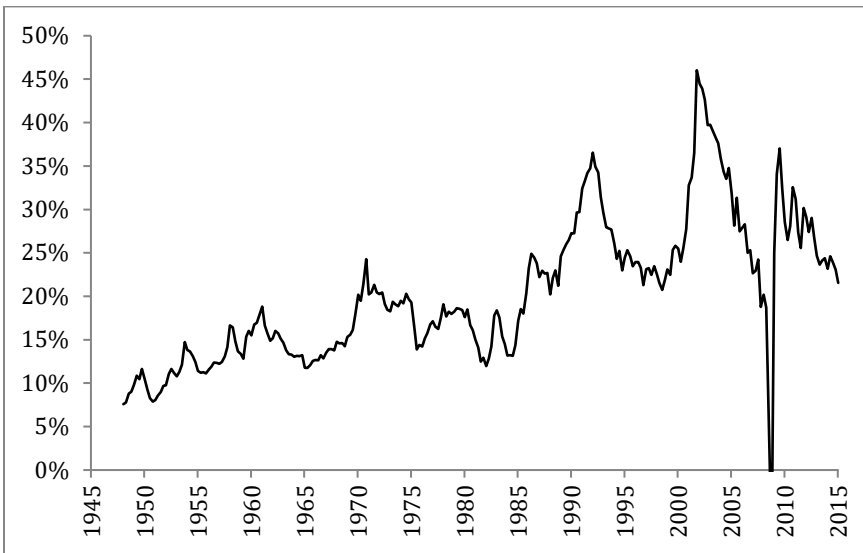
In his fourteenth-century work *De Moneta*, Nicholas Oresme warned of the consequences of altering the coinage:

Some sections of the community are occupied in affairs honourable or profitable to the whole state, as in the growing of natural wealth or negotiating on behalf of the community. Such are churchmen, judges, soldiers, husbandmen, merchants, craftsmen and the like. But another section augments its own wealth by unworthy business, as do money-changers, bankers or dealers in bullion: a disgraceful trade as was said in Chapter XVIII. These men, then, who are as it were unwanted by the state, and some others such as receivers and financial agents, etc., take a great part of the profit or gain arising from changes in coinage and by guile or by good luck, draw wealth from them, against God and Justice, since they are undeserving of such riches and unworthy of such wealth. But others, who are the best sections of the community, are impoverished by it; so that the prince in this way damages and overburdens the larger and better part of his subjects and yet does not receive the whole of the profit; but the persons abovementioned, whose business is contemptible and largely fraudulent, get a large part of it.

The warnings of Carnegie and Oresme seem oddly appropriate today. By the 1990s, profits of financial companies had swollen to around 30% of all corporate profits, far above the levels of prior decades. Financial companies, which produce no final goods and services, function as middlemen between investors and the real economy of nonfinancial industry. At base, this is important and necessary. However, their old roles had actually become even less profitable during the 1980s and 1990s, as margins – on direct lending, new issuance of securities, and secondary trading of securities – were eroded by competition and advances in information technology. If anything, the financial system should have become a smaller, cheaper, and less-obtrusive part of the economy, declining in price and increasing in value like other economic sectors. In the floating-fiat world, in-house speculation, dealing in derivatives and foreign exchange, and financial engineering were the new profit centers. Ultimately, this amounted to sheer parasitism. It didn't hurt that they were shareholders in the Federal Reserve. The ultimate loss, however, was not the money that financial companies extracted while providing little of value. Rather, it was the talent they absorbed – talent that, simply because it is

talented, would have expressed itself in a myriad of new creative forms, creating millions of productive jobs in the process.

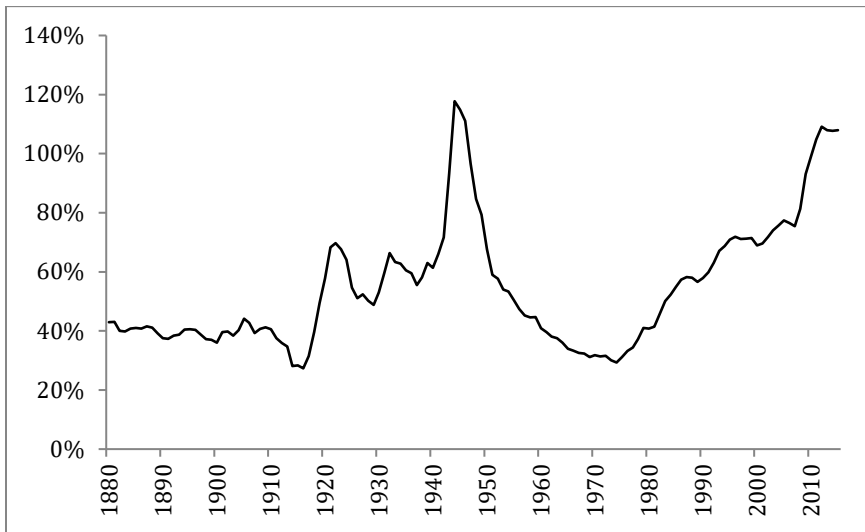
It has long been popular to argue that a gold standard system disallows government deficits. This is nonsense: governments are certainly able to finance deficits via debt issuance with a gold standard system, and did so for centuries. If anything, the very low long-term interest rates typical under gold standard regimes makes this process easy. It is true that governments are not able to finance deficits via the printing press. Historically, this was common only during wartime, and a suspension of gold standard parities.



### **U.S.: Profits of Financial Corporations, as a Percentage of Total Corporate Profits, 1948-2015<sup>12</sup>**

However, a look at history reveals a more subtle pattern. Since 1880, estimated government debt/GDP ratios have generally been stable or falling during peacetime. The pattern that seems inevitable among governments today – a chronic inability to limit expenditures, continuous deficits, and a steady rise in debt/GDP ratios – is a historical anomaly. At any time, there are always those in government who want to spend more; and also those who want to spend less. Outside of the demands of large-scale war, the political balance had been found at a point that limited debt/GDP ratios, or even allowed them to fall. Beginning in the early 1970s – even with the advantage of inflationary diminishment of prior debt balances – debt/GDP in advanced economies began to rise, to a level unprecedented outside of the demands of World War II.

In U.S. history, Federal government expenditures of \$18.5 billion in 1919, related to World War I, fell to \$5.1 billion in 1921 and \$2.9 billion in 1927. In that year, the government had tax revenue of \$4.0 billion. Expenditures of \$92.7 billion in 1945 fell to \$34.5 billion in 1947 and \$29.8 billion in 1948. In that year, tax revenue was \$41.6 billion. Although budgets were not always balanced, from 1792 until 1971, the U.S. Federal government had managed to reduce its debt/GDP level during every era of peace and prosperity, registering a small rise only during the Great Depression.



### Government Debt to GDP in Advanced Economies, 1880-2015<sup>13</sup>

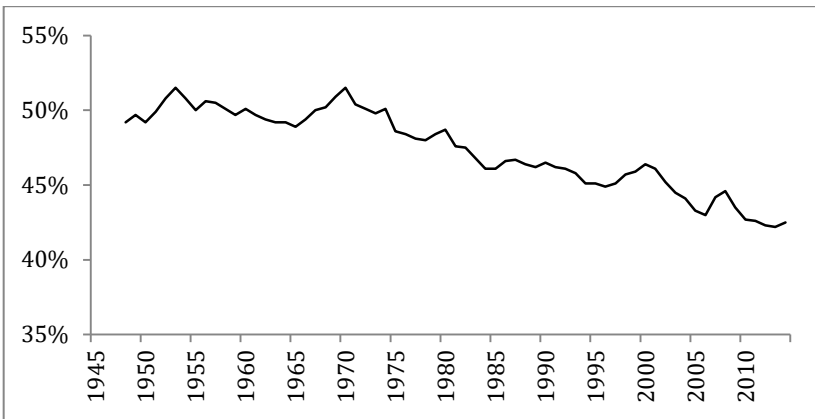
Why did the political balance change, right around 1971 with the emergence of floating fiat currencies? Why did the budget discipline that had been common throughout the Western world for two centuries, suddenly evaporate at that time? At some level, perhaps people understood that the money didn't have to be paid back in a currency of unchanging value. The debt would, in essence, be inflated away. Almost immediately people sensed the change in mood, described in detail by James Buchanan and Richard Wagner in *Democracy In Deficit* (1977).

The core flaw in floating fiat currencies, Currency Option Two, may be that it encourages expediency, short-termism, and self-interest in all aspects of life, from marriage, family, employment, and business, up to Congress, the Presidency, and the Federal Reserve itself – a deterioration of what, in the nineteenth century, would have been called “public morality.”

The purpose of a floating fiat currency is to attempt to use monetary distortion as a tool to solve nonmonetary problems. Since monetary

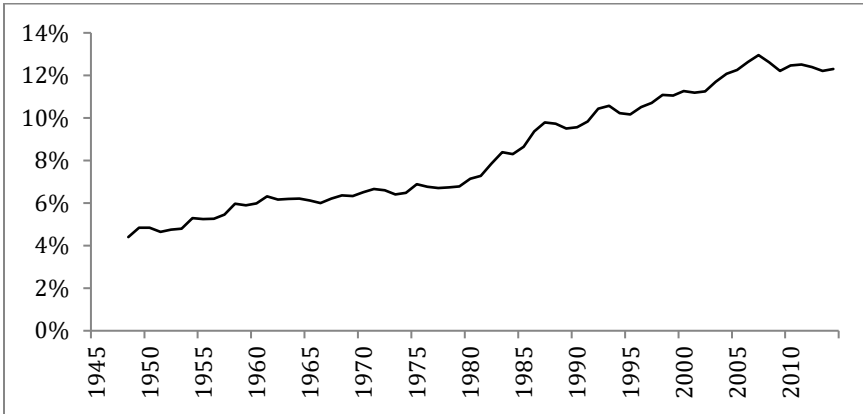


distortion affects nearly all economic relationships, it eventually comes to pass that the monetary distortion is seen as a cure for every imaginable economic ill. With this comes a perception of responsibility: central banks then become responsible for making all good things happen. This tends to cripple the entire political process. Rather than using all of the other tools of government – tax reform, regulatory reform, budget discipline, expanding new programs and ending others – legislatures and administrations fall into a mood of complacency and indolence, hoping and then insisting that central banks will take care of all their problems. The legislative or administrative reform process is difficult, contentious and time-consuming. How much easier it is simply to rely upon – pressure, if necessary – the central bank, which can act immediately, which has no democratic process, and whose remedies apparently have no cost.



### **U.S.: Wages as a Percentage of GDP, 1948-2015**

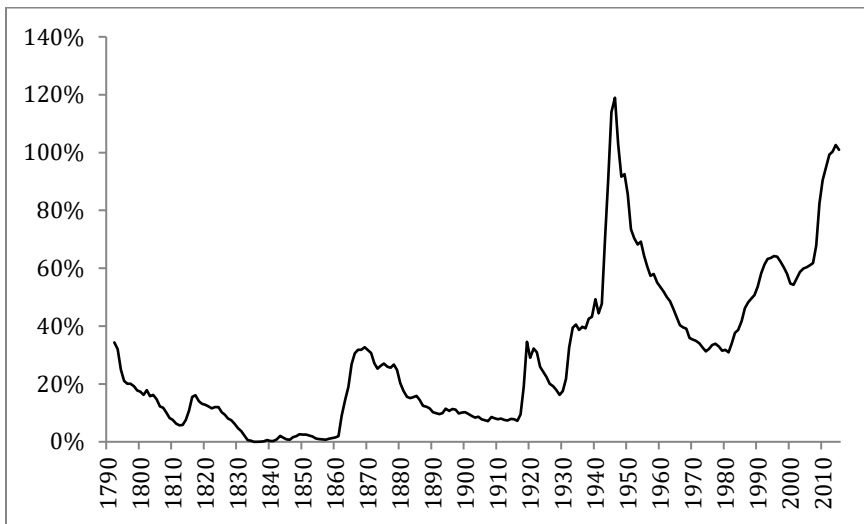
But, a central bank cannot ultimately do anything except distort the money that allows the economy to function. This mechanism, though it may grant favors and advantage to some, cannot, by its nature, create lasting prosperity. Its whole method of operation is to undermine the market systems that create prosperity. Thus, a society puts all of its hopes on a vehicle that is inherently destructive, while all other matters of economic policy languish for lack of attention. When governments give up the idea of an independent monetary policy – when they go from Currency Option Two to Currency Option One – attention returns to their other policy options. One effect of the introduction of the euro common currency, in 1999, was that European governments could no longer hope that their independent central banks would solve their domestic difficulties. One result was that these governments engaged in an aggressive program of corporate tax rate reductions, to allow greater economic activity.



### **U.S.: Wages of Financial Sector, Percent of All Corporate Wages, 1948-2014**

In 2016, the issue of public debt was already being resolved by the printing press. “Quantitative easing” had been variously implemented by the Federal Reserve, Bank of England, European Central Bank and Bank of Japan since the aftermath of a financial crisis in 2008. Initially, this offset a dramatic rise in demand for central bank reserves among commercial banks, but by 2012 it took on a flavor of government debt management. By 2016, assets of major central banks had increased to \$17.2 trillion, from \$6.5 trillion at the beginning of 2008. In 2016, the European Central Bank continued to purchase government bonds via base money expansion – what, in earlier times, would have been called the “printing press” – at a rate of €960 billion per year, equivalent to about 9.1% of eurozone GDP. The euro area’s aggregate gross government debt/GDP ratio was 90.7%, but that manageable figure obscured continuing sovereign debt crises among several members including Greece, Italy, Spain, Portugal and Ireland. The Bank of Japan was purchasing ¥80 trillion of bonds per year in 2016, equivalent to 15.0% of GDP. Japan’s gross government debt/GDP ratio was 229%.

The forty-plus years of floating fiat currencies since 1971 have been a relatively brief period, compared to Britain’s 379 years under a largely unchanged gold/silver standard from 1552 to 1931,<sup>14</sup> or the 722 years (312 – 1034) that the gold content of the Byzantine solidus remained unchanged. The floating fiat era’s end may already be in sight. At least, the end of its first iteration; over the past three and a half centuries, the Western governments have tended to return to a gold standard system after the failure of a fiat paper regime, but the Chinese experience of the eleventh through fifteenth centuries showed that many more cycles of reconstruction and collapse are possible.



**U.S.: Federal Debt to GDP, 1792-2015<sup>15</sup>**

The floating fiat era was accidental and unplanned, born of ignorance and failure, wanted by no government. Despite the glee of certain economists, who saw monetary manipulation as the solution to all conceivable problems, the immediate result was a decade of worldwide currency decline and economic stagnation. Recessions were not particularly rare, or gentle. Unemployment was never very low. Financial crises and rounds of systemic bank insolvency became, if anything, more common. Curious asset bubbles began to pop up, in equities, housing, bonds, or art, and observers blamed monetary causes. As one bubble collapsed, governments and central banks seemed eager to replace it with another. At no time did people look back on what they had created, and say, as people said in 1910: it is good.

Times were best when currencies were most like the gold standard era. Real economic progress was made in the 1980s and 1990s, the “Great Moderation,” although the results did not come anywhere near the stellar successes of the 1960s or the 1880s. The more unreliable and changeable the money became – in 1971-1982, or 1998-2015 – the more disappointing the economic results. Much the same was true for less-developed countries as well. The most successful had a reliable currency, in practice achieved by linking its value to a major international currency such as the dollar, deutschmark or euro. When their currencies became unstable, economic stagnation and decline was the common result.

Continuous currency chaos, and with it endless contention over trade, polluted relations between the major developed countries. Incomes stagnated across much of the developed world, as a parasitic financial

system grew in size and political influence. The moral foundations of civilized society, from the most personal level to the highest halls of power, seemed to erode from decade to decade, along with the values of currencies themselves. Government debt levels soared, for the first time during peacetime. The idea of “paying it back,” as previous generations did, seemed laughably naive; the alternative remained unspoken. Among the less-developed countries, chronic currency disasters became a sad fact of life. Hyperinflation flared up again and again, and the advice of the IMF or World Bank only seemed to make things worse. The “low interest rates” once promoted as the source of all good things economic, did not materialize after the floating fiat regime emerged in 1971; instead, interest rates soared to their highest in centuries. Finally, after 2012, they fell to their lowest in centuries, and still no benefit was found. It was just another unsustainable anomaly, produced by central bank manipulation and destined to collapse in failure once again.

It was, by any and every measure, a big mess. In 2016, the U.S. dollar was worth less than a thirtieth of its value during Bretton Woods, compared to gold. This did not seem to bother anybody; indeed, the dollar remained a favored international currency because nearly every other currency had fared worse.

## Chapter 9: Conclusions

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People rarely thought about why they used gold and silver as money. It was a human institution, like language or marriage, so intrinsic to daily life that it did not apparently need to be discussed. When Aristotle briefly took up the topic in the mid-fourth century B.C., people in the eastern Mediterranean region had been using gold and silver for over two millennia. The subject did not get much attention, at least among Western philosophers, in the following two millennia either. What we do know is that gold and silver defeated all other contenders. Japan made its first contact with Europeans when Portuguese sailors landed on a southern island in 1542. Yet, Japanese had been using gold and silver coinage for roughly nine hundred years, hardly different from the coins used by the Portuguese themselves. People had different languages, different religions, different traditions of philosophy, different forms of economic organization and different forms of government, but they did not have different money. We can only surmise as to why this was so. It was certainly not a “superstition,” “mania,” “obsession” or “fetish.” The simplest reason is the same reason why the Japanese and Portuguese of the sixteenth century both carried swords made of steel: because it was the best thing for the job.

“Money” is a human ideal – a universal medium of trade, a unit of account, and a standard of value. Humans then search for the practical implementation that most closely fits this concept. If nothing better is available, beaver pelts, shells, cigarettes or whale’s teeth may be pressed into service. Inherent within the concept of money is the idea that it should be as stable in value as possible – that it should serve as a universal measure of the market values of all the other goods and services in an economy, in something of the fashion that meters and kilograms are standards of length and weight. The simplest expression of unchanging value is physical: gold doesn’t rot. The idea that the metallic content, and thus the value, of coinage should not be changed, and that many negative consequences flow from this, goes back as far as the creation of coinage itself. By the nineteenth century, a more complete view emerged: the idea that gold and silver themselves became used as money, not only because of their convenient physical properties but because they closely approximated this monetary ideal of “unchanging value” – a result that seemed to have something to do with the large aboveground stock of gold or silver, compared to annual mine production.

The free market economy has, inherent within it, the assumption that money is stable in value. This is the basis upon which its mechanisms work. Through the processes of market prices, profit margins, interest rates, and returns on capital, all of the activities of the market economy are organized. When the nominal market price of corn rises, that is interpreted to represent some change in the supply and demand characteristics of corn, not a decline in the value of the money. The result of the price change might be that some people curtail their corn consumption, and others increase their corn production – a productive and beneficial response to real changes in the supply and demand for corn, and a nonsensical or destructive response if it is caused by changes in the money.

When building condos in Florida produces an ample profit margin and a high return on capital, while making steel in Pennsylvania does not, capital is directed at producing condos in Florida, while capital is withdrawn from steelmaking in Pennsylvania. Condo construction increases; steelmaking production declines. Jobs are created here and lost there, people migrate, population expands in one city and declines in another; all according to the informational signals produced by prices, profit margins, and returns on capital. As described by George Gilder in *The Scandal of Money* (2016), this process can function properly when money itself is as “noiseless” as possible, so that the “signals” of the informational market economy are least corrupted. When money becomes “noisy,” the market signals are corrupted, and economic activity becomes chaotic, wasteful, inefficient, and destructive. The failure of the free market system to produce productive outcomes then leads to greater government intervention and control of all economic processes. This intervention too then leads to greater free market failure.

No economic problem can arise from money that is perfectly stable in value. A rise in the value of money causes certain distortions; a fall also causes distortions. The floating currency advocates believe that they can use these distortions to their advantage. An economy can certainly have a great many problems, even when its money is stable. But, these are not monetary problems.

The various advantages claimed by soft-money doctrines come about, in large part, because stability of value is inherent in the concept of money. This is the “money illusion” – the tendency for people to treat money as unchanging, when it is not. Even supposed sophisticates complain today that gold is “too volatile,” assuming – in defiance of all evidence – that the floating fiat currencies in which gold’s price is expressed are themselves perfectly stable in value.

Nobody can claim that gold and silver – and finally, after the retirement of silver in the 1870s, gold alone – were a perfect representative of this ideal of “stable money,” as precise and unchanging as the length of the meter. But we can confirm that gold has been close enough to this ideal that whatever minor variance existed didn’t matter very much. A more perfect

expression of stable monetary value has never been found. Mostly, people didn't feel the need to search for one.

Unfortunately, there is no perfect measure of value against which gold can be compared, to gauge with certainty how much the value of gold has deviated from that perfect ideal over the centuries. Commodity prices are an imperfect measure, since commodity values themselves vary due to the supply and demand for commodities. If gold were perfectly stable in value, we would expect to see variation in commodity prices roughly equivalent to what we do indeed see – year-to-year variance within a relatively small range, and longer trends related to broad changes in supply and demand for commodities. Changes in mining production seem to have had virtually no effect on the value of gold, probably due to the large amount of aboveground gold in relation to annual production. Even the tenfold increase in mining production around 1850 seems to have had no discernible effect. A tenfold increase in silver production, in the second half of the sixteenth century, was accompanied by only a modest and slow decline in the value of silver vs. gold.

If we could measure gold's value against some perfect scientific standard, what would it look like? Perhaps it would look something like silver's relationship to gold, in the centuries before 1870.

Any variation in the value of gold, large enough to have substantial economic effects, should be apparent in commodity prices. The historical record shows only two episodes of importance, outside of the disruption of large-scale war – the decline of commodity prices in the 1880s and 1890s, and the decline in the 1930s. The first can be explained primarily – perhaps, entirely – as a result of increased commodity supply. If there was some rise in the value of gold during that time, it did not interfere with the splendid economic expansion of that period. The primary economic difficulties, around 1890-1896, were related to the threats, via “free coinage of silver” arguments, that the U.S. dollar, and other currencies worldwide, would be devalued. The Classical Gold Standard era, 1870-1913, is not remembered as a time of difficulty and distress, but as a *belle époque*, the most perfect expression of the Stable Money ideal that humans have ever achieved.

The idea that the Great Depression “had something to do with the gold standard” is pervasive today. Yet, the claim that gold somehow failed to serve its role as a stable standard of value – the only meaningful criticism that can be made – has not been common. To make that claim is to say that gold somehow had an aberration of value unprecedented in half a millennia; that this happened, for no obvious reason, in the middle of the late-1920s prosperity; and that it was unrelated to any significant change in supply/demand conditions for gold. Perhaps, given these difficulties, it is no surprise that the most common (“Keynesian”) view of the Depression is that it emerged from undefined nonmonetary causes, expressed as a “decline in aggregate demand.” More monetary-themed views, from the Austrian or Monetarist schools, nevertheless did not claim any change in

gold's value. They mostly ignored the fact that the gold standard existed at all. The relatively small group that claimed some sudden and gigantic rise in gold's value, a rise large and abrupt enough to blow up the world economy, blamed an increase in central bank accumulation that demonstrably did not exist. The decline in commodity prices during the 1930s was a nonmonetary phenomenon related to the economic downturn, itself arising from nonmonetary causes – a cascade of error involving virtually every aspect of economic policy, except for the money. It was, after all, the Great Depression.

The world gold standard was once again reassembled after World War II; and once again, it helped produce prosperity and bounty everywhere. But a fatal flaw had been introduced, at the beginning in 1944. The idea that governments could conduct a discretionary “domestic” monetary policy, while maintaining an “external” fixed exchange rate with gold or the U.S. dollar, was inherently contradictory and caused endless problems. Most economists still did not perceive this error even in 1971, instead blaming a host of imaginary “imbalances” and “dilemmas” somehow related to the “balance of payments.” It was, they insisted loudly, Not Their Fault. The actual problem was solved by the comically effortless means of reducing the rate of base money growth, which allowed Federal Reserve Chairman William McChesney Martin to return the value of the U.S. dollar to its \$35/oz. gold parity in January 1970. But, it was the last month of his term.

It had taken a World War, a Great Depression, and then another World War, to break up the world gold standard of the past. The Bretton Woods system disintegrated in the midst of blue-sky prosperity and friendly international cooperation, despite even the many safeguards put in place to prevent such an event.

### **The Classics and the Mercantilists**

Throughout history, a dispute has ensued between those who wished to keep the money as stable and unchanging as possible, and those who think they can gain some sort of advantage, or some solution to their problems, by altering the money unit. At the beginning of the sixth century B.C., Solon of Athens reduced the silver content of the Greek drachma in an effort to reduce debtors' burdens and lower interest rates. In 1736, Japanese emperor Tokugawa Yoshimune debased the coinage to stimulate the economy and raise prices. The British Mercantilist writers, 1600-1770, constantly praised the advantages to be gained by increasing the money supply. After 1650, the Mercantilists' vision included a floating fiat paper currency, to be overseen by a “statesman” that would carefully control interest rates, credit growth, and economic activity. After the British pound became a floating currency due to the outbreak of war in 1797, many argued that it should stay that way even during peacetime. The idea of manipulating economic relationships by changing the value of the money



has been around since the invention of coinage introduced the initial fracture between face value and metallic content. The only surprising thing is how little the arguments have changed. The primary innovation of the past century has been to sprinkle spurious math upon these age-old claims. The math itself is not convincing; rather, it is confusing, which is convincing.

The Classical economists, who became dominant after 1780 following the popularity of Adam Smith, instead focused on the importance of a stable and unchanging monetary unit. This idea too is as old as coinage itself: the first coinage debasement was certainly followed by the first complaint about coinage debasement. Since the very first known coins of Lydia were inherently debased, not containing the metallic content claimed by their face value, these complaints also must have begun very early. Later, the ideal of Stable Money was expressed in the Classical Gold Standard of the latter part of the nineteenth century. The success of the Stable Money paradigm – exemplified by Britain, the U.S., France and Germany – stood in contrast to the difficulties of those countries that allowed their currencies to deviate from that ideal. The devaluations and floating currencies of Italy, Spain, Greece, Portugal or several Latin American countries, in 1850-1914, caused nothing but problems. Not one of them, by way of some sort of skillful manipulation of their floating currencies, rose to challenge the British Empire, or the financial dominance of London.

Coinage was often debased, but it rarely floated. Coinage values typically reflected their metal content. The introduction and spread of paper money, a token currency, after 1650 created the possibility of a currency that could float, up and down unpredictably, for long periods of time. Before 1850, paper money experiments tended to either stay soundly attached to a metallic basis, or quickly decline in a one-way road to oblivion. After 1850, as paper currencies became more common worldwide along with monopoly central banks, floating fiat currencies could remain viable for some extended period of time, even if they still tended to depreciate. The British pound's floating fiat era during wartime, in 1797-1821, was an early example of this principle.

The Classical ideal of a neutral and unchanging money, a universal constant of commerce free of human intervention – practically expressed by the gold standard system – experienced some erosion towards the end of the nineteenth century. The idea of a “lender of last resort,” as it developed around the middle of the century, introduced a new element of discretionary management and apparent intervention by central banks. In actual practice, the “lender of last resort” function was wholly compatible with the gold standard system, and aimed to address short-term variance in base money demand. There was no ambition to influence the broader economy, or alter currency values. However, this was not very well understood. The idea that central bankers could “resolve financial crises” or “reduce interest rates” with discretionary money creation – the idea that

had already been widely expressed in the writings of the British Mercantilists in previous centuries – began to spread again.

The decline in commodity prices in the 1880s and 1890s combined with the decline in silver's value since the 1870s to create a "free coinage of silver" movement worldwide that amounted to a major devaluation. Family farms constituted a major interest group. Other industries did not seem to suffer, and the idea of currency devaluation was roundly rejected. Nevertheless, the idea persisted among academics. As the first PhDs in economics were issued, the first claims were made that economies should be managed by people with PhDs, via the mechanism of monetary distortion.

By the 1920s, the experience of floating currencies during the First World War, and the various debates surrounding a return to a gold standard system at either prewar parities or devalued rates, created a new emphasis on the macroeconomic effects of monetary changes. Academics enthusiastically embraced the new ideas expressed by John Maynard Keynes, as part of a broader program of socialist economic intervention that included new welfare programs and punitive taxes on income and inheritance. The necessities of war itself created a new experience with central planning, state control, and high taxes. A new Soviet Union emerged in the East.

Statesmen and businessmen were unimpressed by these novelties, and hewed to the Classical liberal doctrine of fixed currency values based on gold. But the idea of active intervention in monetary affairs saturated the atmosphere even before 1930, in turn causing chronic currency difficulties as people wondered if this unhealthy daydreaming might soon have unpleasant consequences. For the most part, central banks adhered to effective fixed-value operating mechanisms, particularly regarding bullion conversion, which naturally canceled out any experimentation with central banks' debt assets.

After 1930, under the pressures of a Great Depression that few understood, Mercantilist money-manipulation ambitions became prominent, especially among intellectuals. The Bretton Woods arrangement of 1944 attempted to weld Classical and Mercantilist ideals into one unit. This failed in 1971, leaving a wreckage of floating fiat currencies in its aftermath.

### **Recent Moves Toward Classical Ideals**

Over a century has now passed since the end of the Classical Gold Standard in 1914. Only a few alive today even have an adult memory of the flawed gold standard system of the Bretton Woods era.

Many people today would claim that recreating a world gold standard system is "impossible." By this, they mean: politically unlikely in the near term. It is not very difficult at all to use gold as a standard of value, instead

of using the euro or dollar as a standard of value, as dozens of countries do today. "Political impossibility" is, of course, a hurdle, but one that can be overcome – surprisingly quickly and easily, under the right conditions. Even this assessment of politics reflects mostly the Anglophone countries, a very small subset of governments as a whole, and a subset whose influence in global affairs, so important in 1700-2000, may now be on the wane. Soft-money ideals are not so popular in the rest of the world. Many governments worldwide have been expressing their interest in a world currency system based on gold, including Russia, Malaysia, the Gulf States, Libya and others.

In 2009, the head of the People's Bank of China, Zhou Xiaochuan, wrote:

The outbreak of the current crisis and its spillover in the world have confronted us with a long-existing but still unanswered question, i.e., what kind of international reserve currency do we need to secure global financial stability and facilitate world economic growth, which was one of the purposes for establishing the IMF? There were various institutional arrangements in an attempt to find a solution, including the Silver Standard, the Gold Standard, the Gold Exchange Standard and the Bretton Woods system. The above question, however, as the ongoing financial crisis demonstrates, is far from being solved, and has become even more severe due to the inherent weaknesses of the current international monetary system.

Theoretically, an international reserve currency should first be anchored to a stable benchmark and issued according to a clear set of rules, therefore to ensure orderly supply; second, its supply should be flexible enough to allow timely adjustment according to the changing demand; third, such adjustments should be disconnected from economic conditions and sovereign interests of any single country. The acceptance of credit-based national currencies as major international reserve currencies, as is the case in the current system, is a rare special case in history. The crisis again calls for creative reform of the existing international monetary system towards an international reserve currency with a stable value, rule-based issuance and manageable supply, so as to achieve the objective of safeguarding global economic and financial stability.<sup>1</sup>

The Chinese seem to know exactly what they want, and, though they don't say the words outright, exactly how to get it.

Most governments in the world have already repudiated the idea of domestic monetary manipulation, and have adopted a fixed-value policy by joining a major currency bloc. Their attention then turns from domestic affairs to international: the major currency blocs must themselves be beneficially managed. The conclusion of this line of thought is a world gold

standard system similar to the single “currency bloc” of the Classical Gold Standard and Bretton Woods era.

Even in the United States, although academic opinion remained heavily skewed towards soft-money ideals, in 2016 five Republican presidential contenders – Donald Trump, Rand Paul, Ben Carson, Ted Cruz and Mike Huckabee – indicated that they were friendly toward the idea of restoring the dollar’s link to gold. One of them, Donald Trump, became president. In 2010, Mike Pence, then a Congressman from Indiana, said:

[A] debate has started anew over an anchor to our global monetary system. My dear friend, the late Jack Kemp, probably would have urged me to adopt the gold standard, right here and now in Detroit. Robert Zoellick, the president of the World Bank, encouraged that we rethink the international currency system including the role of gold, and I agree. I think the time has come to have a debate over gold, and the proper role it should play in our nation’s monetary affairs. A pro-growth agenda begins with sound monetary policy.<sup>2</sup>

Pence became Trump’s vice-president. Ben Carson also joined Trump’s cabinet. Newt Gingrich, an advisor to the Trump administration, was a co-sponsor of Congressman Jack Kemp’s Gold Standard Act of 1984.

As a young man, Paul Volcker defended the Bretton Woods gold parity at \$35/oz. Later, as Chairman of the Federal Reserve, he halted the decline of the 1970s and crudely stabilized the dollar around \$350/oz. In 2014, he said:

The two words, “Bretton Woods,” still seem to invoke a certain nostalgia – memories of a more orderly, rule-based world of financial stability, and close cooperation among nations. ... With prices stable in the United States ... the use of the dollar convertible into gold at the center of the system was rarely questioned. ...

By now I think we can agree that the absence of an official, rules-based cooperatively managed, monetary system has not been a great success. In fact, international financial crises seem at least as frequent and more destructive in impeding economic stability and growth.<sup>3</sup>

During his eighteen-year stint at the Federal Reserve, Alan Greenspan’s leadership was skillful enough that he gained an extravagant nickname: “the Maestro.” In 2002, while still in office, he received a knighthood in Britain – a foreign country – for his “contribution to global economic stability.” The “Great Moderation” that took place under his watch was as good as the post-1971 floating fiat era ever got. In 2004, Greenspan explained what he was doing:

[The] most effective central banks in this fiat money period tend to be successful largely because we tend to replicate which would probably have occurred under a commodity standard in general.<sup>4</sup>

But even his tenure was marred by numerous distortions, booms and crashes that, to many, looked suspiciously like they had a monetary origin: the Asian Crisis of 1997-1998, the tech bubble of 1999-2000, and the housing bubble of 2002-2005, among others. As successful as he was, he was also, by his own implicit judgment, not successful enough. In 2017 he remained, as in his youth, an admirer of the pre-1914 Classical gold standard era:

I view gold as the primary global currency. ... The gold standard was operating at its peak in the late 19th and early 20th centuries, a period of extraordinary global prosperity, characterised by firming productivity growth and very little inflation.

But today, there is a widespread view that the 19th century gold standard didn't work. ... It wasn't the gold standard that failed; it was politics. ...

[I]f the gold standard were in place today we would not have reached the situation in which we now find ourselves.<sup>5</sup>

Mervyn King was the governor of the Bank of England for a decade, 2003-2013. What did he learn from this experience? In *The End of Alchemy: Money, Banking, and the Future of the Global Economy* (2016), he said:

There are those who advocate even more monetary and fiscal stimulus to trigger a recovery ... Further monetary stimulus, however, is likely to achieve little more than taking us further down the dead-end road of the paradox of policy. ...

Only a recognition of the severity of the disequilibrium into which so many of the biggest economies of the world have fallen, and of the nature of the alchemy of our system of money and banking, will provide the courage to undertake bold reforms.<sup>6</sup>

King did not share Greenspan's Stable Money convictions. But even in the citadels of soft-money rationalization, an uneasy recognition spread that the entire contemporary system of monetary and financial manipulation – the “alchemy” – was rotten and self-destructive. During King's tenure, researchers at the Bank of England found:

Overall, the evidence is that today's [international monetary and financial] system has performed poorly against each of its three objectives, at least compared with the Bretton Woods system, with

the key failure being the system's inability to maintain financial stability and minimize the incidence of disruptive sudden changes in global capital flows.<sup>7</sup>

In *Fed Up: An Insider's Take On Why The Federal Reserve Is Bad For America* (2017), Danielle DiMartino Booth described ten contentious years on the staff of the Federal Reserve. Finally disgusted with the process by which the monetary alchemy is concocted, she concluded:

We must demand that the Fed stop offering excuse after excuse for its failures. Short-term interest rates must return to some semblance of normality and the Fed's outrageously swollen balance sheet must shrink in size. And most of all, the Fed must never follow Europe by taking interest rates into negative territory.

No more excuses. The Fed's mandate isn't to have a perfect world. That only exists in fairy tales, dreams, and the Fed's econometric models.<sup>8</sup>

In 2015, former Federal Reserve Chairman Benjamin Bernanke and former head of the IMF John Lipsky both reportedly used the same word to describe the international monetary system: "incoherent."<sup>9</sup>

Retirement helps. It seems that central bankers are afraid to say what they really think until they have nothing to lose, and even then, in the mildest language. Yet their warnings, to younger men perhaps, seem clear. They have actually gone through the process. They have spent their ablest years reading stacks of economic statistics; listened to the advice of their research staff of hundreds; attempted to juggle a constellation of different factors in their minds; finessed the infinitesimal subtleties of wording in their policy statements; tramped off to international conferences to argue with their counterparts worldwide; dispatched their lackeys and rattled their press contacts to make public hints of some undercurrent of changing opinion; hashed out their differences in heated policy council debates; been the target of endless public attack, and the beseeching of one interest group after another; been blamed for everything, and then, given responsibility to fix every problem; gotten angry phone calls from presidents and prime ministers; seen their intentions crumble time and again as financial markets refuse to follow their tune; seen how academic theory has not played out in economic reality, leaving them little alternative but ad hoc improvisation; seen how little it has all amounted to, at best, and how much can go wrong, at worst; and have concluded: this is a game you cannot win. The best thing would be to stop playing.

In the past, it perhaps did not require much convincing why gold should be the basis of currency value. Money was based on gold (and silver, before 1870) because money had always been based on gold. Only a few economic philosophers bothered to examine the reason for this outcome,

and the logic behind it. Today, the idea that money should be, or even could be, based on something besides the variable whims of central bankers can be a little unfamiliar.

We can no longer rely upon habit and custom. A new grasp of the underlying principle of Stable Money is necessary. Only money that is stable in value can prevent the distortion of prices, interest rates, profit margins and returns on capital, and all the other myriad effects that follow from money that either rises or falls in value. Gold is simply a tool to achieve this result – the best tool that humans have ever found, and perhaps the only tool humans ever needed.

When the principle of Stable Money is fully grasped, today's floating fiat currencies, and the activities of major central banks, are seen as abhorrent and absurd.

Yet still we hesitate. We still carry a kind of emotional trauma, from all of the monetary failures, and broader economic policy failures, of the past century. This trauma should be examined and resolved.

**Do Something Vs. Do Nothing:** As the study of economics restricted itself to Prices, Interest and Money in the late nineteenth century, the guiding principle was *laissez-faire* – a subtle set of ideas, among lesser minds crudely expressed as: Do Nothing. When tariffs, taxes and all manner of interventionist regulation ballooned – begun by president Herbert Hoover in the U.S., and then expanded dramatically by Franklin Roosevelt – economists trained in the old principles had little to offer but to recommend again that nothing be done. This was completely unacceptable. Before long, some economists demanded that something be done. Using the same framework of Prices, Interest and Money, this naturally led to forms of price intervention, various arguments to lower interest rates, and, via one rationale or another, a depreciation of currency value and abandonment of the gold standard system.

A concurrent battle was fought over fiscal policy, which also tended to reduce to one single numerical figure, the budget deficit. Classicals wanted to eliminate the deficit, via lower spending and higher taxes – a strategy summarized as “austerity.” The consequences were economic contraction due to the higher taxes, new spending demands for welfare and to purchase political support in the deteriorating economic environment, depressed tax revenues, and persistent deficits. The new Mercantilists recommended increased government spending, and increased deficits, with little care as to what form the extra spending might take. Even the sacrifice of blood and treasure in war could work, in a pinch; paying people to “dig holes and fill them back up,” an expression of perfect waste, could be a less-violent alternative. Higher taxes tended to follow the higher spending, toward a longer-term socialist goal of greater government involvement in all matters. This was called “stimulus.” The idea of lower taxes, combined with either

higher spending (to provide needed welfare support), or lower (to eliminate waste) was nowhere to be seen.

All of these approaches – Do Nothing or Do Something, Stimulus or Austerity – were failures. Today, increased government spending as an economic remedy still has some advocates (to a large degree, this is a cover story for a cruder process of political patronage) but expectations of its effectiveness have been greatly curtailed after decades of mediocre results. Various forms of price intervention – price controls, or various forms of price support such as restrictions on production or government purchases of products – have also fallen out of favor. From the Great Depression’s menu of policy failure, which still informs action today even if its origins are largely forgotten, two main options are left: Interest and Money. Both are today the purvey of central banks. “Do Something” today means: to interfere with interest rates and either the quantity or value of money. Without this one flawed tool, the economic simpletons are reduced to “Do Nothing,” which remains unacceptable. Although governments have carefully avoided further tariff wars since the 1930s, the basic drama of the Great Depression played out again among several southern European governments after 2010, where “austerity” tax increases were soon followed by a crumbling economy and calls to leave the eurozone and devalue.

The nineteenth-century Classical liberals were right. Governments should not intervene in the free market formation of prices and interest rates. Money should remain stable and reliable – in practice, a gold standard system. But that still leaves a vast realm of economic policy: taxes, regulation, and spending programs of every sort including welfare, healthcare and the military, in all of their complicated details and consequences, not compressed into a single numerical value of Spending or the Deficit. Within this realm lie many opportunities to Do Something, for better and for worse. Economists should do things for the better; and if something harmful is done, the problem should be quickly identified and remedied.

No longer should economists rely solely on central banks’ manipulation of Interest and Money to attempt to remedy nonmonetary problems. When this principle is grasped, then people can again return to the ideal of Stable Money, without reservation or hesitation.

**Currency Option One Vs. Currency Option Three:** Governments did not want to abandon the Bretton Woods gold standard system in 1971. Rather, it seemed that the gold standard had abandoned them. It became, to their eyes, so obstreperous and difficult to manage, subject to so many “fundamental disequilibriums” and “Triffin dilemmas,” that even the great many capital controls and earnest international agreements laid upon it could not keep it from disintegrating. Currencies, it seemed, wanted to float freely, and nothing could keep them from doing so. Governments and



central bankers were even a little happy to be relieved of the responsibility for maintaining the system; a responsibility that, as twenty-seven years of experience had shown, they were incapable of fulfilling. It too seemed like a game that they could not win, even as many economists, including Milton Friedman, told them it was a game they did not need to play. They attempted to deflect blame onto any other conceivable thing, but their failure was obvious, and embarrassing.

All of these problems can be expressed as the difference between Currency Option One and Currency Option Three. Currency Option Three, though common, should not even be considered an "option" at all, but rather a form of error to be avoided in all instances.

When economists claim that a fixed-value system would be "subject to speculative attack," or a "one-way bet," and would "soon collapse," they are referring to Currency Option Three systems, for which all these things are true. Currency Option One systems, such as currency boards today, are rarely subject to speculative attack, and do not fail when they are. The gold standard systems of the nineteenth century were notable for their absence of speculative pressures. If anything, speculation tended to be in favor of maintaining gold parity values. Economists who make such warnings simply do not have a good grasp of the principles involved. They should probably find some other branch of economics more suited to their abilities.

**It is not the right time:** Despite all the brilliant arguments by David Ricardo and others, returning Britain's floating pound to its gold anchor was "politically impossible" until after the wars with France ended in 1815. Today, governments have spent the last four decades making promises with the tacit assumption that it would all be eventually resolved by the printing press. To return to a gold standard system today would mean that all those obligations – existing government debt, state pensions (Social Security), healthcare obligations, and the habit of persistent deficits – would have to be either paid off in hard money, or completely renegotiated. This is possible: the British government's giant debts after the Napoleonic Wars, estimated at possibly over 200% of GDP, were eventually paid off in a currency of unchanging value. The U.S. Federal government's debt of 119% of GDP in 1946 shrank to 35% of GDP in 1970, entirely through an increase in GDP, since the nominal amount of debt increased. These displays of virtue and fortitude have been rare, however, and demonstrate one reason why Britain dominated world affairs after 1815, and the U.S. after 1945.

The political balance at this time may favor a monetary resolution, whether through a short-term event or a long period of erosion sometimes called "financial repression." This position would rarely be voiced in those terms. Just as was the case in Britain prior to Waterloo, it would be expressed as a continual stream of threadbare rationalizations why the floating fiat system must continue, and why central banks, and their money-creation mechanism, must be the final response to all concerns of statecraft.

If so, then so be it. Such a political consensus is likely to lead to its own demise before too long, especially since its own demise is an inherent part of its constitution. In the time that comes after, a time of broken promises and broken currencies, a wholly different political consensus will form, which will be: anything but that.

### **New Forms of Gold Standard Systems**

All gold standard systems have the same goal – to fix the value of the currency to a defined quantity of gold. The institutional arrangements used to attain this goal have always varied, over time and among different governments. The world gold standard systems of the twenty-first century would be different, in their details, from those of the nineteenth, and certainly different from the flawed Bretton Woods arrangements.

Over time, the world economy's demand for money has tended to grow faster than available aboveground gold. It would not be possible today to replace all base money (banknotes and central bank deposits) with gold coins and bullion, a pure coinage or "100% reserve" system. It might be difficult to return to the roughly 30% reserve ratios common to central banks in the late nineteenth century. Certainly a small country could do so – Malaysia, perhaps – but not the world as a whole. This is not a problem, because it is necessary only to maintain the value of currencies at their gold parities, not to warehouse giant amounts of bullion in vaults. Indeed, it would arguably be better – that gold would more perfectly serve its role as a stable standard of value – if most of the gold in the world was in private hands, trading freely, rather than being locked up by central banks and possibly subject to centralized decisions to buy and sell. Today, roughly 20% of the world's aboveground gold is reportedly held by central banks, a ratio that seems appropriate for the purpose, and also the same ratio as in 1910.

Some have suggested forms of a gold standard system which do not require any bullion reserves at all, and in which base money is not convertible to bullion at the currency issuer.<sup>A</sup> This is technically possible, but politically weak: such systems are more prone to accidental or intentional mismanagement. Traditionally, central banks have offered unlimited bullion conversion. In practice, this was not a problem. However, any central bank might justifiably feel nervous about making such a commitment when gold reserves are perhaps 5%-10% of base money liabilities. At the end of 2016, the United States had official gold holdings of 261 million oz., worth \$313 billion at \$1200/oz., against Federal Reserve base money liabilities of \$3,531 billion – a reserve ratio of 9.5%.

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<sup>A</sup> A "gold price rule," described in detail in Chapter 8 of *Gold: The Monetary Polaris*. A currency board with a major international gold-based reserve currency is one common variant of this theme, and popular since the late nineteenth century.

One solution is to allow limited conversion. If the Federal Reserve agreed to sell up to one million ounces of gold at \$1,200/oz. per day (worth \$1.2 billion), and this maximum was reached every day, it would take 261 working days, or a little more than a calendar year, for the reserve to be completely depleted. This would give the Federal Reserve more than enough time to respond to the problem of sagging dollar value via measures such as open market operations (selling government bonds and reducing the monetary base) in whatever size was necessary to achieve the goal. At the same time, speculators would be reluctant to pay more than \$1,200/oz. on the open market, preferring perhaps to wait a day and get their bullion at the parity price from the Federal Reserve. With proper management, the value of the dollar could rise at some point slightly above its \$1,200/oz. parity, at which point the Federal Reserve would experience bullion inflows.

Especially since 2011, various “paper gold” markets including the U.S. Comex futures exchange and the London Bullion Market Association, have exerted enough influence upon gold prices that such prices apparently do not reflect actual supply and demand conditions for bullion itself. This prompted several efforts, the most prominent of which was the Shanghai Gold Exchange, to provide a mechanism for gold pricing that reflected large-scale and liquid trade in actual bullion for immediate delivery. Certainly a market for actual gold bullion, as opposed to gold-flavored derivatives that can be created or extinguished at will, is a necessity for gold to best serve its role as a standard of value. One advantage of including gold conversion by central banks is that central banks themselves in effect act as bullion dealers, in multi-billion dollar size. Bullion in large quantity could be bought or sold with central banks themselves, in the process illustrating the relationship of currency value to bullion itself without the influence of any external “paper gold” pricing mechanism.

Central banks – monopoly currency issuers – are a relatively recent innovation, with a dubious history of for-profit private ownership. People have always sought uniformity in their monetary affairs, but monopolization has exposed monetary systems to a single point of failure, and the actions of a few people. A more distributed multi-issuer model, known as “free banking,” has been common throughout history. Like central banks today, currency issuers should be segregated from all other banking activities. A system with perhaps a few dozen issuers, none of which has more than a 20% market share, could provide diversification and reliability that today’s currency monopolies lack.

An even more libertarian vision of multiple independent alternative currencies, some based upon gold and some based on whatever their creators imagine, may be surprisingly close at hand. The popularity of Bitcoin, and its many imitators including some based upon gold, suggests that this may be the favored template for the eventual replacement of

monopoly central banks – even if, for the time being, Bitcoin itself is far too volatile to serve as the basis of contracts or coherent pricing.

### **Crisis and Renewal**

Can any group of money bureaucrats, supported by whatever statistical apparatus, create a standard of value more stable than gold, a standard that can serve as the basis of a world currency system just as gold served this role – to resounding success! – over the centuries? There is no evidence that they can. There is not much evidence that they even want to. Out of hundreds of floating fiat currencies, not one has ever been managed with this goal in mind; not one has ever attained it. Not very many of these people even know what “stable value,” in this context, means.

But beyond these fundamental problems lie several other complications. The euro project came attached to an ambitious program of federalization, an incremental, decades-long effort to weld Europe’s sovereign democratic governments into a single super-state – a super-state divorced of democratic principles, and run by a bureaucratic elite. It appears to be a monarchy without a monarch; but, perhaps the monarch simply wishes to remain unseen.

Can the same trick be pulled on the world as a whole? Out of some period of financial and monetary chaos, could a new currency order be imposed, perhaps based initially around the IMF’s SDR?<sup>10</sup> Would some unified world currency system, with a world central bank in the model of the European Central Bank – even one initially, and temporarily, based on gold – act as the public justification for a world superstate, a world government of unassailable domination, a tiny ruling class that rules forever; an administrative class that executes their orders; a great working class that toils in endless serfdom? This principle would be inherent in the money itself. These ruling classes may decide that monetary disintegration, rather than monetary order, better serves their purposes. Perhaps a decade of global hyperinflation would best cement their rule, pressing the desperate to give up every remaining freedom in exchange for the crudest elements necessary to sustain life – just as the breakdown of the Roman coinage system eventually pressed small landholders to voluntarily enter into slavery, and began a thousand years of feudal serfdom. Or perhaps a milder pattern of calculated boom and bust would effectively shear the sheep of their wealth with a minimum of bleating. Already, the longstanding effort to eliminate banknotes, and restrict payment strictly to electronic banking methods, has reached its implementation phase. The League of Nations, and then the United Nations, laid the blueprint for a world superstate decades ago. Alger Hiss, the Secretary General of the international meeting in 1945 that founded the United Nations, and primary author of the United Nations Charter, was a communist agent.

Another communist agent, Harry Dexter White, helped create the IMF, and served as its first director.

An international gold standard system requires no such superstate, or single global currency run by a world central bank. Any country that wished to participate could do so, unilaterally. There need be no other policy coordination on any other level. Currencies would not be under the control of an unelected board of bureaucrats, at the national or international level, but could be provided by a multi-issuer “free banking” model.

Throughout history, gold has been the money of liberty and sovereignty, justice and morality, prosperity and cooperation. Fiat currencies have been the money of absolutism and tyranny, favoritism and expediency, parasitism and conflict. Governments have devalued, debased and floated their currencies many times for many reasons, but never because gold itself failed to serve its role as a reliable standard of value – not in 1914, not in 1931, and not in 1971. If a crisis is in our future, wiping away the present order, let the solution be one that benefits all of humanity, not one that serves as a new mechanism of global enslavement. We know what that solution is.

Would it work? It has always worked. It has always been the only thing that worked.

# Notes

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## Chapter 1:

<sup>1</sup> Edwin Walter Kemmerer, who established gold standard systems for several countries between 1905 and 1930, explained in 1944:

The third function that [gold] convertibility performs is fundamentally the most important one. It is the function of maintaining the gold parity of the monetary unit by continually adjusting the currency supply to changing currency demand. ...

When, under a normally functioning international gold standard, the supply of currency in any country becomes excessive relative to demand, ... exchange rates move toward the gold export point; ... These exports [of gold] are continued until the reduction of the country's money supply has made the monetary unit so valuable that further exportation of gold becomes unprofitable.

Under conditions of such currency redundancy and resulting gold exportation, the central banks must always be in a position to give out gold freely, as long as it is required, to relieve the country of its relatively redundant currency and to force exchange rates below the gold-export point.

Kemmerer (1944), pp. 218-219.

<sup>2</sup> Gallarotti (1995), p. 22.

<sup>3</sup> Source: Bank of England (2016).

<sup>4</sup> Mundell and Friedman (2001).

## Chapter 2:

<sup>1</sup> Interview with National Public Radio, November 19, 2010.

<http://www.npr.org/sections/money/2011/02/15/131430755/a-chemist-explains-why-gold-beat-out-lithium-osmium-einsteinium>

<sup>2</sup> Mill (1848), III.7.6

<sup>3</sup> The Silver Institute (2016).

<sup>4</sup> The objects at Nahal Kana appear to have been an early form of "ring money."

<sup>5</sup> Powell (1996).

<sup>6</sup> Crawford (2004), p. 159.

<sup>7</sup> Postgate (1992), p. 203

<sup>8</sup> Postgate (1992), p. 66

<sup>9</sup> Postgate (1992), p. 202

<sup>10</sup> Postgate (1992), p. 193

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<sup>11</sup> Heichelheim (1958).

<sup>12</sup> Mundell (2002).

<sup>13</sup> Mundell (2002).

<sup>14</sup> Postgate (1992), p. 193

<sup>15</sup> Crawford (2013).

<sup>16</sup> Powell (1996) and Postgate (1992).

<sup>17</sup> Among the 282 laws:

113: If a man hold a [debt of] grain or money against a man, and if he take grain without the consent of the owner from the heap or the granary, they shall call that man to account for taking grain without the consent of the owner from the heap or the granary, and he shall return as much grain as he took, and he shall forfeit all that he has lent, whatever it be.

114: If a man do not hold a [debt of] grain or money against a man, and if he seize him for debt, for each seizure he shall pay one-third mina of silver.

122: If a man give to another silver, gold or anything else on deposit, whatever he gives he shall show to witnesses and he shall arrange the contracts and (then) he shall make the deposit.

123. If a man give on deposit without witnesses or contracts, and at the place of deposit they dispute with him (*i.e.*, deny the deposit), that case has no penalty.

124: If a man give to another silver, gold or anything else on deposit in the presence of witnesses and the latter dispute with him (or deny it), they shall call that man to account and he shall double whatever he has disputed and repay it.

<sup>18</sup> Davies (1994), p. 50.

<sup>19</sup> Postgate (1992), and Powell (1996).

<sup>20</sup> Mundell (2002), footnote 63.

<sup>21</sup> Green (2007), p. 40.

<sup>22</sup> Johnson (1999), p. 113.

<sup>23</sup> Neumann (1995).

<sup>24</sup> Gentet and Maucourant (1991).

<sup>25</sup> Green (2007), p. 52.

<sup>26</sup> Johnson (1999), p. 79-83.

<sup>27</sup> Johnson (1999), p. 214.

<sup>28</sup> Rostovtzeff (1941), p. 1285.

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- <sup>29</sup> Davies (1994), p. 52.  
<sup>30</sup> Heichelheim (1958), Vol. III p. 122.  
<sup>31</sup> Kenoyer (1998), p. 97.  
<sup>32</sup> Thornton (2013).  
<sup>33</sup> Mundell (2002), p. 27.  
<sup>34</sup> Milne (1930), p. 184.  
<sup>35</sup> Extensively described in Milne (1930).  
<sup>36</sup> Roche (2005), p. 573.  
<sup>37</sup> Translated by Benjamin Jowett (1892).  
<sup>38</sup> Herodotus. *Histories*. Chapters 27-29 and 38-39.  
<sup>39</sup> It has been argued that “niksha” copper beads, of about 1200 B.C., served as a sort of coinage in India. See Bhatt (1998).  
<sup>40</sup> Pliny, *Natural History*, Book XII, Chap. 41.  
<sup>41</sup> Duncan-Jones (1982). In Davies (1994), p. 92.  
<sup>42</sup> Davies (1994), p. 107.  
<sup>43</sup> Green (2007), p. 207.  
<sup>44</sup> Von Glahn (1996), p. 32.  
<sup>45</sup> Swan (1950), p. 377.  
<sup>46</sup> Green (2007), p. 179.  
<sup>47</sup> Green (2007) p. 180.  
<sup>48</sup> Green (2007), p. 171.

### Chapter 3:

- <sup>1</sup> Warren and Pearson (1933), p. 316.  
<sup>2</sup> Drelichman and Voth (2011).  
<sup>3</sup> Green (2007), p. 245.  
<sup>4</sup> Kohn (1999).  
<sup>5</sup> Davies (1995), p. 180-181.  
<sup>6</sup> Yang (1952), p. 53.  
<sup>7</sup> Yang (1952), p. 57.  
<sup>8</sup> Yang (1952), p. 61.  
<sup>9</sup> Von Glahn (1996), p. 61-62.  
<sup>10</sup> Yang (1952), p. 64.  
<sup>11</sup> Von Glahn (1996), p. 71.  
<sup>12</sup> Yang (1952), p. 67.  
<sup>13</sup> Yang (1952), p. 95.  
<sup>14</sup> For an exhaustive record of Indian gold coinage, see Friedberg and Friedburg (2009).  
<sup>15</sup> Toda (1882).  
<sup>16</sup> Lochan (1988), pp. 222, 229-230.  
<sup>17</sup> Wicks (1992), p. 184.  
<sup>18</sup> Wicks (1992), p. 278.  
<sup>19</sup> for example: Hosler (1988), p. 832-855.



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<sup>20</sup> See Mann (2006).

<sup>21</sup> Kolata (2013), p. 141.

<sup>22</sup> Moseley (1992), p. 73.

<sup>23</sup> Green (2007), p. 269.

<sup>24</sup> D'Altroy (2002), p. 84.

<sup>25</sup> McEwan (2006), p. 130.

<sup>26</sup> D'Altroy (2002), p. 67.

<sup>27</sup> D'Altroy (2002), p. 73.

<sup>28</sup> McEwan (2006), p.131.

## **Chapter 4:**

<sup>1</sup> Columbus was born in Genoa, Italy in 1451, and did not migrate to Spain until 1485. Known as Cristóbal Colón in Spanish, his name in Latin was Christophorus Columbus, and in Italian Cristoforo Colombo.

<sup>2</sup> Green (2007), p. 285.

<sup>3</sup> Von Glahn (1996), p. 113.

<sup>4</sup> Von Glahn (1996) estimated that, between 1550 and 1645 roughly 7,200 metric tons of silver was imported into China. Surprisingly, Von Glahn concluded that roughly half of this (3,700 tons) came from Japan, 2,300 tons came from the Spanish mines via the Pacific, and 1,230 tons came from the west via India and Europe. (p. 140) During the overlapping 1601-1700 period, Von Glahn estimated total imports of 4,704 tons, of which 3,596 tons came from Japan. (p. 232)

<sup>5</sup> Quinn and Roberds (2012), p. 10.

<sup>6</sup> Griffin (1994), p. 173.

<sup>7</sup> Suprinyak (2011).

<sup>8</sup> Mayhew (1999), p. 105.

<sup>9</sup> See Selgin (2008).

<sup>10</sup> Davies (1994), p. 253.

<sup>11</sup> Shareholders' equity is the sum of "capital" (initial capital) and "rest" (essentially, retained earnings). Source: Bank of England (2016).

<sup>12</sup> Davies (1994), p.279.

<sup>13</sup> Davies (1994), p. 259.

<sup>14</sup> Source: Bank of England (2016).

<sup>15</sup> Source: Bank of England (2016).

<sup>16</sup> Davies (1994), p. 316.

<sup>17</sup> Davies (1994), p. 256.

<sup>18</sup> Source: Bank of England (2016).

<sup>19</sup> Rothbard (2002), p. 61.

<sup>20</sup> Gouge, (1833), part II page 32.

<sup>21</sup> Rothbard (2008), p. 193.

<sup>22</sup> Wikipedia.com. 2015. "Bank of North America"

<sup>23</sup> Galbraith (1975), p. 72.

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- <sup>24</sup> The First Bank was likely controlled by the Rothschild family. See Griffin (1994), p. 331.
- <sup>25</sup> Wettereau (1937).
- <sup>26</sup> Holdsworth (1910).
- <sup>27</sup> Holdsworth (1910).
- <sup>28</sup> Galbraith, (1975), p. 72.
- <sup>29</sup> Griffin (1994), p. 329.
- <sup>30</sup> U.S. Bureau of the Census (1975), p. 1018, 1020.
- <sup>31</sup> Holdsworth (1910). p. 204.
- <sup>32</sup> Holdsworth (1910). Appendix F.
- <sup>33</sup> Krooss (1983), pp. 26-27. Quoted in Griffin (1994), p. 350.
- <sup>34</sup> U.S. Bureau of the Census (1975), p. 1020.
- <sup>35</sup> U.S. Bureau of the Census (1975), p. 995.
- <sup>36</sup> Warren and Pearson (1933), p. 316.
- <sup>37</sup> See White (1990), p. 251-276.
- <sup>38</sup> Quigley (1966), p. 515.
- <sup>39</sup> Nataf (1992).
- <sup>40</sup> Source: White (2011), pp. 245-274.
- <sup>41</sup> Davies (1994), p.567.
- <sup>42</sup> Copernicus (1985), pp. 190-191.
- <sup>43</sup> Rothbard (1995a), p. 213.
- <sup>44</sup> Cantillon (2010), p. 223.
- <sup>45</sup> Book II, Chapter XXVII.
- <sup>46</sup> Rothbard (1995b), pp. 207-208.
- <sup>47</sup> Source: Indiana Monetary Commission (1898), p. 554-555.
- <sup>48</sup> The amount of gold obtained by Pizarro in the initial looting of the Inca hoards has been estimated at five metric tons. Bernstein (2000), p. 130.
- <sup>49</sup> Magee, J.D. (1910), pp. 54-58.
- <sup>50</sup> Source: Magee (1910), years 1500-1686; measuringworth.com, years 1687-2011.
- <sup>51</sup> The value of the British pound was devalued from 2000 troy grains of silver in 1543 to 1200 grains in 1545, 800 grains in 1546, and 400 grains in 1551, before being restored to 1768 grains in 1552. Thus, the volatility of commodity prices in terms of gold in Britain around 1550-1560, as represented here from the calculations of Jastram (1977), may have been mostly an effect of these monetary changes.
- <sup>52</sup> Source: Jastram (1977).
- <sup>53</sup> "The intricate debate that has run on for two-and-a-half centuries is the product of an erroneous interpretation," Bank of Italy researcher Filippo Cesarano argued. "In Hume's essay, the law of one price is not violated and in fact is the foundation of his analysis." Cesarano (2006), p. 23. Also see Cesarano (1998). Hume, and his imitators, were basically describing, somewhat poorly, the mechanisms by which the Law of One Price becomes manifest.

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<sup>54</sup> Source: Jastram (1977).

<sup>55</sup> Green (1999), p. 20.

## **Chapter 5:**

<sup>1</sup> A similar opinion was put forth by McCloskey and Zecher (1976):

What has been established here is that there is a reasonable case ... for the postulate of integrated commodity markets between the British and American economies of the late nineteenth century, vindicating the monetary theory. There appears to be little reason to treat these two countries on the gold standard differently in their monetary transactions from any two regions within each country.

Thus do we come round again to the conclusions of David Hume in 1742:

What happens in small portions of mankind, must take place in greater. The provinces of the Roman empire, no doubt, kept their balance with each other, and with Italy, independent of the legislature; as much as the several counties of Great Britain, or of several parishes of each county. And any man who travels over Europe at this day, may see by the prices of commodities, that money [gold and silver], in spite of the absurd jealousies of princes and states; has brought itself nearly to a level; and that the difference between one kingdom and another is not greater in this respect, than it is often between provinces of the same kingdom. ("On the Balance of Trade," 1742)

Hume's observations are totally contrary to the "price-specie flow" theory attributed to his name, in which persistent "balance of payments imbalances" (Hume says they do not exist) cause localized changes in the supply and consequently the value of money (Hume says it is the same everywhere), which lead to changes in prices (Hume says they are the same everywhere), which in turn leads to reversed bullion flows, which then resolves the (nonexistent) "balance of payments imbalance."

An extensive discussion of Hume's writings and the "price-specie flow mechanism" is found in Cesarano (1998). A more recent interpretation of Hume, in Cesarano (2006, p. 22), found that the "price-specie flow mechanism" attributed to Hume was due to "the emphasis placed on a single passage cited out of context."

An extended discussion of the intellectual history of the "price-specie flow mechanism" can be found in Bordo (1984). Gallarotti (1995, pp. 35-41)

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summarized the extensive inconsistencies between the “price-specie flow” theory and observed conditions.

<sup>2</sup> Cesarano (2006), p. 23. See also Kemmerer (1944), p. 214:

On this subject there has been much confusion growing out of the popular notion that gold moves in international trade only “to pay balances.” As a matter of fact, gold moves for the same fundamental reason that any other commodity moves—to seek the best market. It goes abroad whenever it is worth abroad more than at home, by a sufficient margin to yield an attractive profit after paying all the expenses of its exportation. Its importation from abroad is merely the other side of the same shield.

<sup>3</sup> Source: Jones and Obstfeld (2001), available at [nber.org](http://nber.org), and the International Monetary Fund.

<sup>4</sup> A description of the high degree of market integration within the United States and across the Atlantic – including the ease with which gold bullion could be transported – can be found in Calomiris and Hubbard (1996).

<sup>5</sup> The first use of the term “rules of the game” was ascribed to Sir Robert Kindersley, a director of the Bank of England, in February 1930 during testimony before the Macmillan committee. (Comment by Donald E. Moggridge, in Dutton (1984).) It was picked up and used by John Maynard Keynes two weeks later, as meaning, in Keynes’ words: “you so conduct your affairs that you tend neither to gain nor to lose large quantities of gold.” In other words, the currency’s value is maintained at its gold parity. The Macmillan committee concluded that:

It is difficult to define in precise terms what is implied by the “rules of the game.” The management of an international standard is an art and not a science, and no one would suggest that it is possible to draw up a formal code of action, admitting of no exceptions and qualifications, adherence to which is obligatory on peril of wrecking the whole structure. Much must necessarily be left to time and circumstance.

There were no hard and fast rules, naturally frustrating later attempts to find them. Due to the wide variety of operating mechanisms available (gold convertibility, open market operations in bonds, foreign exchange operations, and operations via lending and discounting), plus the option of altering asset composition at will, considerable discretion was allowed to central bankers, with the goal, as per Keynes, of maintaining the currency’s value at its gold parity. The ultimate rule was that base money should be contracted, by some means, when the currency value was less than its parity value (causing gold conversion outflows), and increased when the currency value was greater (causing gold conversion inflows). In the end,

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changing the monetary base, via one mechanism or another, is the only thing that central banks are able to do, so to say that a gold standard system is maintained by appropriate changes in the monetary base is close to a tautology.

The modern equivalent of such a system is a currency board. Because it has only one operating mechanism – foreign exchange transactions – its operation is much more easily reduced to a simple rule, which is to buy or sell at the parity price. Even in this case, however, a central bank has some discretion as to its reserve asset mix. The equivalent would be a gold standard system where base money adjustment would be done entirely via gold conversion, and there would be no open-market operations, lending and discounting, or foreign-exchange transactions. The Issue Department of the Bank of England was structured along these lines after 1844, although in practice it worked as part of an integrated system with the Banking Department.

<sup>6</sup> McGouldrick (1984) came to this conclusion in regard to Germany during the 1879-1913 period.

<sup>7</sup> Source: Bank of England.

<sup>8</sup> Gallarotti (1995), p. 22.

<sup>9</sup> See *Gold: The Monetary Polaris* (Lewis, 2013) for a much more detailed discussion of central bank operating techniques.

<sup>10</sup> U.S. National Monetary Commission (1910a), p. 20.

<sup>11</sup> Source: Bank of England.

<sup>12</sup> A typical expression of this view is from Bayoumi and Eichengreen (1996):

Despite the attention lavished on it by generations of scholars, the question of why the pre-1914 gold standard operated so smoothly for so long remains stubbornly unresolved. Under the gold standard, the exchange rates of the major industrial countries were firmly pegged within narrow bands (“the gold points”) in an environment free of significant restrictions on international flows of financial capital. This is precisely the sort of international monetary arrangement that recent experience suggests should be fragile, precarious and difficult to maintain. The breakdown of the Bretton Woods System following the liberalization of international capital markets in the 1960s and the collapse of the narrow-band European Monetary Systems (EMS) on the heels of the removal of Europe’s residual capital controls in the 1980s illustrate this point. How the pre-1914 gold standard managed to avoid the same fate constitutes an analytical mystery and an important policy question.

...

Eichengreen (1992), for example, focuses on credibility and cooperation as the dual pillars of the policy regime.

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The “mystery” is no mystery to anyone who understands the distinction between Currency Option One and Currency Option Three. Without this insight, the authors were naturally drawn to invent other scenarios, mostly involving “international cooperation,” “credibility” and “confidence,” somewhat in the fashion of the International Monetary Fund or London Gold Pool of the Bretton Woods period – the notion that currency parities could be maintained for decade after decade by little more than bluffing. Even at the late date of 1996 (just before another group of Currency Option Three systems were destroyed in the Asia Crisis of 1997-1998), this apparently seemed like a credible idea.

<sup>13</sup> Source: Bank of England.

<sup>14</sup> Source: Bank of England.

<sup>15</sup> U.S. National Monetary Commission (1910b), p. 173.

<sup>16</sup> U.S. National Monetary Commission (1910b), p. 173.

<sup>17</sup> U.S. National Monetary Commission (1910b), p. 293.

<sup>18</sup> Dutch National Bank, “History of the DNB,” [dnb.nl](http://dnb.nl).

<sup>19</sup> U.S. National Monetary Commission (1910b), p. 293.

<sup>20</sup> Source: Bank of England.

<sup>21</sup> Source: Jordà-Schularick-Taylor Macrohistory Database.

[www.macrohistory.net/data](http://www.macrohistory.net/data); Center for Financial Stability, Historical Financial Statistics [centerforfinancialstability.org](http://centerforfinancialstability.org).

<sup>22</sup> U.S. National Monetary Commission (1910c), p. 28-37.

<sup>23</sup> Source: Jordà-Schularick-Taylor Macrohistory Database.

[www.macrohistory.net/data](http://www.macrohistory.net/data); Center for Financial Stability, Historical Financial Statistics [centerforfinancialstability.org](http://centerforfinancialstability.org).

<sup>24</sup> Federal Reserve (1943).

<sup>25</sup> Reti (1998), pp. 55-56.

<sup>26</sup> Hawtrey (1919), p. 311.

<sup>27</sup> Reti (1998), pp. 136-153.

<sup>28</sup> Bloomfield (1959), p. 14.

<sup>29</sup> Kemmerer (1944), p. 163. Kemmerer, who established gold-exchange standards in several countries beginning with the Philippines in 1905, has an excellent discussion of the characteristics of those systems.

<sup>30</sup> Betancourt (2008).

<sup>31</sup> Hawtrey (1927), p. 73.

<sup>32</sup> Source: Fregert (2014).

<sup>33</sup> Betancourt (2008).

<sup>34</sup> Source: Fregert (2014).

<sup>35</sup> Jonung (1984), p. 386.

<sup>36</sup> Source: Center for Financial Stability, Historical Financial Statistics [centerforfinancialstability.org](http://centerforfinancialstability.org).

<sup>37</sup> Lindert (1969), p. 23.

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- <sup>38</sup> Source: Jordà-Schularick-Taylor Macrohistory Database. [www.macrohistory.net/data](http://www.macrohistory.net/data); Center for Financial Stability, Historical Financial Statistics [centerforfinancialstability.org](http://centerforfinancialstability.org).
- <sup>39</sup> Lindert (1969), p. 10-12.
- <sup>40</sup> Lindert (1969), p. 76.
- <sup>41</sup> Bordo and Rockoff (1996). pp. 326-311.
- <sup>42</sup> U.S. National Monetary Commission (1910b), p. 79-80.
- <sup>43</sup> U.S. National Monetary Commission (1910b), p. 27.
- <sup>44</sup> U.S. National Monetary Commission (1910a), p. 13.
- <sup>45</sup> Jonung (1984). p. 364.
- <sup>46</sup> Jonung (1984), p. 369.
- <sup>47</sup> Fratianni and Spinelli (1984) p. 433-434.
- <sup>48</sup> U.S. National Monetary Commission (1910b), p. 245.
- <sup>49</sup> U.S. National Monetary Commission (1910b), p. 202.
- <sup>50</sup> Flink (1930), p. 24.
- <sup>51</sup> U.S. National Monetary Commission (1910b), p. 197.
- <sup>52</sup> U.S. National Monetary Commission (1910b), p. 340.
- <sup>53</sup> U.S. National Monetary Commission (1910b), p. 345.
- <sup>54</sup> Board of Governors of the Federal Reserve System (1943).
- <sup>55</sup> Friedman and Schwartz (1963). p. 704.
- <sup>56</sup> Green (2007), p. 326.
- <sup>57</sup> GFMS, in Turk (2012).
- <sup>58</sup> GFMS, in Turk (2012).
- <sup>59</sup> GFMS, in Turk (2012).
- <sup>60</sup> Warren and Pearson (1933).
- <sup>61</sup> Source: Warren and Pearson (1933).
- <sup>62</sup> Green (2007), pp. 344-348.
- <sup>63</sup> Again, this figure is based on the GFMS estimates and is subject to interpretations of pre-1492 aboveground supply.
- <sup>64</sup> Source: GFMS.
- <sup>65</sup> Source: GFMS.
- <sup>66</sup> Source: GFMS.
- <sup>67</sup> Latham and Neal (1983).
- <sup>68</sup> National Bureau of Economic Research, "macro history database" [nber.org](http://nber.org)
- <sup>69</sup> U.S. Bureau of the Census (1975), p. 898-899.
- <sup>70</sup> Source: Green (1999), GFMS.
- <sup>71</sup> See, for example, Bordo, Landon-Lane and Redish (2009), Atkenson and Kehoe (2004), White (2013), and Selgin (1997).
- <sup>72</sup> National Bureau of Economic Research, "macro history database." [nber.org](http://nber.org).
- <sup>73</sup> National Bureau of Economic Research, "macro history database." [nber.org](http://nber.org).
- <sup>74</sup> Source: Jastram (1977).

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<sup>75</sup> National Bureau of Economic Research, “macro history database.” [nber.org](http://nber.org).

<sup>76</sup> Timberlake (1993), pp. 166-182.

<sup>77</sup> Paloera and Taylor (2001). p. 76.

<sup>78</sup> Ricardo (2005b), pp. 59-60.

<sup>79</sup> Mises (1981), p. 145.

<sup>80</sup> Shlaes (2007), p. 153.

<sup>81</sup> In Yeager (1984).

<sup>82</sup> Anderson (1949), pp. 3-4, 6. Quoted in Yeager (1984).

<sup>83</sup> Keynes (1920), pp. 10-12. Quoted in Yeager (1984).

<sup>84</sup> Grant (2014), p. 29.

## Chapter 6:

<sup>1</sup> Dowd (2001).

<sup>2</sup> Source: [Globalfinancialdata.com](http://Globalfinancialdata.com).

<sup>3</sup> This chart, and others in this series, do not accurately represent currency values vs. gold before 1920. The figures are calculated as a product of exchange rates vs. the dollar, and dollar prices of gold. However, during wartime, both exchange rates and dollar gold prices came under capital controls. The real value of the U.S. dollar vs. gold in 1916-1919 did not remain at its gold parity at \$20.67/oz., as the Federal Reserve expanded aggressively to fund U.S. government wartime deficits. Source: Board of Governors of the Federal Reserve (1943).

<sup>4</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>5</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>6</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>7</sup> Shlaes (2007), p. 97.

<sup>8</sup> Wanniski (1978), pp. 136-159, and Reynolds (1979).

<sup>9</sup> Wanniski (1978), pp. 136-159.

<sup>10</sup> Hall and Ferguson (1998), p. 71.

<sup>11</sup> Saint-Etienne (1984), p. 27.

<sup>12</sup> Hall and Ferguson (1998), p. 72.

<sup>13</sup> See “Dates of Adoption of Major State Taxes,” [taxfoundation.org](http://taxfoundation.org).

<sup>14</sup> Reinhart, Carmen and Kenneth Rogoff (2009), p. 96.

<sup>15</sup> “All Debtors To U.S. Excepting Finland To Default Today,” *New York Times*, June 15, 1934.

<sup>16</sup> A summary of nonmonetary factors, as they were understood in academia at the time, is given in Gordon and Wilcox (1981). An excellent new history of the U.S. during the Great Depression, including many nonmonetary elements, was given by Shlaes (2007).

<sup>17</sup> Eichengreen (1995), p. 188-191.

<sup>18</sup> Saint-Etienne (1984), p. 24.



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<sup>19</sup> Steindl (1995) gives a good summary of monetary theories of the Great Depression. As an example of the near-total focus on monetary factors common in recent years, see Smiley (2002), pp. 31-70.

<sup>20</sup> Hawtrey (1922). Quoted in Cesarano (2006), p. 74. Italics in the original.

<sup>21</sup> A similar argument, in much greater detail, was given by Silvano Wueschner in *Charting Twentieth Century Monetary Policy: Herbert Hoover and Benjamin Strong, 1917-1927* (1999).

<sup>22</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>23</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>24</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>25</sup> For example, Meltzer (2003), p. 167.

<sup>26</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>27</sup> Meltzer (2003), p. 216.

<sup>28</sup> Rothbard (1963), p. 155.

<sup>29</sup> Meltzer (2003), p. 261.

<sup>30</sup> Meltzer (2003), p. 226. Friedrich Hayek, Lionel Robbins and Benjamin Anderson apparently shared similar views. See Selgin (2013).

<sup>31</sup> Source: Robert Schiller, <http://www.econ.yale.edu/~shiller/>

<sup>32</sup> Meltzer (2003), p. 165.

<sup>33</sup> Keynes (1924), pp. 172-173.

<sup>34</sup> Source: Robert Schiller, <http://www.econ.yale.edu/~shiller/>

<sup>35</sup> Meltzer (2003) gives an extended and more contemporary version in Chapter Five, "Why Did Monetary Policy Fail in the Thirties?" including references to many influential interpretations. Yet, the Federal Reserve did not fail, in its mandate to maintain the dollar at its gold parity, and to resolve any liquidity-shortage crisis issues. The whole notion of "failure" presumes that the Federal Reserve was already on a floating-fiat system, with a mandate for broad macroeconomic management. While the authors of the many papers and books that Meltzer references would no doubt agree with the notion that floating fiat currencies, and an aggressive activist policy, are preferable to a fixed-value gold standard policy, their advocacy for floating currencies has unfortunately clouded their interpretation of history to such an extent that they fail to perceive the basic elements of policy at the time.

<sup>36</sup> Source: St. Louis Federal Reserve.

<sup>37</sup> This argument was also made by Temin (1976), p. 169.

<sup>38</sup> Source: Bank of Greece.

<sup>39</sup> Similar arguments were made by Douglas Irwin (2010), and Irwin (2012). See also Eichengreen (1990), pp. 83-112.

<sup>40</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>41</sup> U.S. National Monetary Commission (1910a), p. 218.

<sup>42</sup> Bernanke (1991) suggested a "deflation" caused by the Bank of France's gold accumulation. Yet, the franc, pound and dollar did not rise vs. gold; Federal Reserve and Bank of England gold reserves were higher in July

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1931 than they were in 1926, even as France's reserves tripled; and the monetary bases of the Federal Reserve and Bank of France had expanded considerably, while the Bank of England's was essentially unchanged. These suggestions of "deflation" (without argument that the value of gold itself rose) are not supported by theory or evidence.

<sup>43</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>44</sup> Eichengreen (1995), p. 12.

<sup>45</sup> The idea that the 1929 stock market crash had serious psychological consequences was popular especially in Keynesian circles for many decades. However, this idea was largely discarded after the 1987 stock market crash had few consequences for the economy, with not even a mild recession resulting.

<sup>46</sup> Steindl (1995).

<sup>47</sup> Schwartz (1981), p. 5-6

<sup>48</sup> Temin (1976), p. 7.

<sup>49</sup> Temin (1976), p. 171, p. 178. Temin reiterated his views in Temin (1989): "The decline that started in 1929 was due to a failure of aggregate demand." (p. 60.)

<sup>50</sup> Boyle (1967), p. 258.

<sup>51</sup> Rueff (1932), and Rueff (1954).

<sup>52</sup> Keynes (1963), p. 183-184. Quoted in Bernstein (2000), p. 293.

<sup>53</sup> source: Eichengreen (1990).

<sup>54</sup> This conclusion was prominent in the Macmillan Report, issued July 23, 1931. Hall and Ferguson (1998), p. 96.

<sup>55</sup> Eichengreen (1990, pp. 239-270) has a discussion of the "gold exchange standard" including good information about the details of reserve holdings of "gold exchange standard" countries.

<sup>56</sup> Bernstein (2000), p. 314.

<sup>57</sup> Davies (1994), p. 381. It is not clear here whether the expansion in government securities came first, and thus caused the gold outflow, or whether the gold outflow was followed by a purchase of government securities. Either action had dire consequences.

<sup>58</sup> source: Bank of England (2016b).

<sup>59</sup> The claim that a contraction in the monetary base, to support the currency's value in the context of a gold standard, is "deflationary," was made by Temin (1989). It is incorrect. The notion is related to the "price-specie flow mechanism" idea, which is also incorrect. "The response to a shortage of reserves [gold outflows] was to be deflation rather than devaluation" (Temin, 1989, p. 19). Certainly a "gold standard system" which opts for devaluation whenever there is a gold outflow would not last for very long.

<sup>60</sup> Numerous detailed examples of this pattern were given in *Gold: The Monetary Polaris* (Lewis, 2013).

<sup>61</sup> source: Bank of England (2016b).

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<sup>62</sup> This argument is touched upon in Johnson (1997) and Mundell (1999).

<sup>63</sup> Board of Governors of the Federal Reserve (1943), p. 544.

<sup>64</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>65</sup> This is entirely due to Russia, whose reserves are assumed to fall to zero after the Communist Revolution in 1917. The actual fate of Russia's gold reserves is unclear.

<sup>66</sup> A similar conclusion was reached in Eichengreen (1990), p. 241.

<sup>67</sup> Source: Board of Governors of the Federal Reserve (1943).

<sup>68</sup> Green (1999).

## Chapter 7:

<sup>1</sup> Eichengreen (1996), p. 96

<sup>2</sup> Quoted in Cesarano (2006), p. 162.

<sup>3</sup> Quoted in Cesarano (2006), p. 166.

<sup>4</sup> Wikipedia.org, "Harry Dexter White."

<sup>5</sup> Quoted in Cesarano (2006), p. 179.

<sup>6</sup> Quoted in Cesarano (2006), p. 179.

<sup>7</sup> By the 1970s, economists began to unravel the confusion of the 1950s and 1960s. Rabin and Yeager (1982) stated:

The monetary approach to the balance of payments (MABP) presupposes fixed exchange rates. A version associated with Harry G. Johnson and his followers became fashionable in the early and middle 1970s. We will call it the "strong" version. It *identifies* a country's balance-of-payments surplus under fixed exchange rates with a process of satisfying a demand for domestic money to hold in excess of actual holdings, and it *identifies* a payments deficit with a process of working off a supply of domestic money in excess of desired holdings. ... We begin with statements of the strong version. According to Johnson (1976, pp. 282-283),

The central point of the monetary approach to balance-of-payments policy theory is that balance-of-payments deficits or surpluses reflect stock disequilibrium between demand and supply in the market for money.

By this point, they are not talking about any real "balance of payments" at all, but simply the regular adjustment process of a properly-operating fixed-value currency regime, like a currency board or gold standard system. However, the continued use of the term "balance of payments" reflects the continuing confusion of economists of that time, to the present.

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<sup>8</sup> For example, in Garber (1993, p. 468), the U.S. balance-of-payments deficit is “defined as official U.S. gold sales plus foreign accumulations of liquid dollar claims on the United States.”

<sup>9</sup> Eichengreen (1996), p. 128.

<sup>10</sup> In Meltzer (2003), p. 160.

<sup>11</sup> Triffin (1964), Triffin (1968).

<sup>12</sup> Martin, William McChensney. 1955. “Address ... before the New York group of the Investment Bankers Association of America.” Federal Reserve. Available at [fraser.stlouisfed.org](http://fraser.stlouisfed.org).

<sup>13</sup> Steil and Hinds (2009), p. 196.

<sup>14</sup> Meltzer (2009), p. 480.

<sup>15</sup> A good account of the London Gold Pool is given by Eichengreen (2007).

<sup>16</sup> Bordo (1993) has a good description of the policies that led to the British devaluation of 1967. “Declining output and rising unemployment in early 1967 led to a reversal of the tight fiscal and monetary policies. The balance of payments deteriorated in the summer of 1967. ... A speculative attack on sterling mounted in November. This time the \$3 billion rescue package was insufficient to stem the tide. On 18 November 1967, sterling was devalued by 14.3% to \$2.40.” pp. 449-451.

<sup>17</sup> Author’s calculations based on information from the International Monetary Fund’s *International Financial Statistics* database.

<sup>18</sup> Quoted in Cesarano (2006), p. 193.

<sup>19</sup> Skousen (1985), p. 217.

<sup>20</sup> Rothbard (1962), p. 19.

<sup>21</sup> Rothbard (1962), p. 67.

<sup>22</sup> Meltzer (2009), p. 275.

<sup>23</sup> Kenen (1963), p. 3.

<sup>24</sup> Rueff (1972), pp. 30-31, p. 87. Rueff also suggested at the time that the “price of gold” could change from time to time in response to mining production. Rueff (1972), p. 90-91. Rothbard said that this idea, of devaluing to \$70/oz., was also held at the time by Ludwig von Mises and Henry Hazlitt, and cites Mises’ influence on Rueff. Rothbard (1962), p. 11.

<sup>25</sup> Figures for nominal GDP for Germany and Japan were derived from the Penn World Table 9.0 data series. Available at [fred.stlouisfed.org](http://fred.stlouisfed.org).

<sup>26</sup> The Fed funds rate in 1960, around 3.8%, was the highest in decades, and preceded a recession dated from April 1960 to February 1961. The high rates of 1969 were followed by a recession dated December 1969 to November 1970.

<sup>27</sup> Wells (1994), p. 75.

<sup>28</sup> For an explicit expression of this idea, see James (1996), p. 226:

Three features had characterized the evolving international financial system in the 1960s:

- Increasing freedom of capital movements

- An insistence on autonomy and growth-orientation in the national policy setting
- A fixed exchange rate system

The development of the second half of the decade showed that these characteristics were mutually incompatible.

James' book was commissioned by the International Monetary Fund for the organization's fiftieth anniversary.

<sup>29</sup> Friedman (1965). The term "balance of payments" refers to the increase or decrease in the monetary base required to maintain currency parity values.

<sup>30</sup> Rist (1961), p. 248.

<sup>31</sup> A good discussion of the intellectual history that led to the failure of Bretton Woods is in Cesarano (2006), p. 188-216.

<sup>32</sup> See, for example, Bordo and Eichengreen (1993).

<sup>33</sup> Quoted in "Nixon Shock: Getting Off Gold VI: Fed Chairman Arthur Burns Objects" August 15, 2011. [thegoldstandardnow.org](http://thegoldstandardnow.org).

## **Chapter 8:**

<sup>1</sup> Wells (1994), p. 76.

<sup>2</sup> In 2016, this television advertisement was rediscovered by the Lone Star Project, and used in a television advertisement in support of presidential candidate Ted Cruz.

<sup>3</sup> Interview with Bloomberg Television, June 28, 2016.

<sup>4</sup> Greenspan (2017).

<sup>5</sup> International Monetary Fund (2014). The IMF classified the eighteen members of the European monetary union as having a "floating" currency. These were reclassified as "fixed."

<sup>6</sup> The "Hanke-Krus Hyperinflation Table."

<sup>7</sup> Lawrence H. Officer and Samuel H. Williamson, "Annual Wages in the United States, 1774-Present," MeasuringWorth, 2016. Lawrence H. Officer and Samuel H. Williamson, "The Annual Consumer Price Index for the United States, 1774-2014," MeasuringWorth, 2016.

<sup>8</sup> See John Williams' alternate 1980-base CPI at [shadowstats.com](http://shadowstats.com). Nominal wages adjusted by Williams' alternative CPI is described in Lewis (2013), p. 23.

<sup>9</sup> Source: [childtrends.org](http://childtrends.org).

<sup>10</sup> Hazlitt (1964), p. 301-302.

<sup>11</sup> Keynes (1963), p. 94-95

<sup>12</sup> Bureau of Economic Analysis, National Income and Profits Accounts.

<sup>13</sup> Source: IMF World Economic Outlook (October 2012), IMF World Economic Outlook (April 2016).

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<sup>14</sup> The adjustment of the gold parity in 1717, which effectively made gold the standard of value for the pound instead of silver, was a relatively minor adjustment to a silver basis of the pound that was officially unchanged since 1601, when the “62 shilling standard” (62 shillings per troy pound of silver) was introduced. This was a minor adjustment from the 60-shilling standard of 1552, which stabilized the value of the pound after a series of major debasements earlier in the sixteenth century. Thus, the value of the pound, defined in silver and then gold, did not change much from 1552 to 1931. Changes in the silver/gold ratio, and issues relating to coin wear, introduced elements of variability, but these were not related to government policy.

<sup>15</sup> Samuel H. Williamson, “What Was the U.S. GDP Then?” MeasuringWorth.com, 2015. U.S. Bureau of the Census (1975).

## **Chapter 9:**

<sup>1</sup> Zhou (2009).

<sup>2</sup> Speech at Detroit Economic Club, November 29, 2010.

<sup>3</sup> Remarks by Paul Volcker at the Bretton Woods Annual Committee, 2014.

<sup>4</sup> Congressional testimony, July 21, 2004.

<sup>5</sup> Greenspan (2017).

<sup>6</sup> King (2016), p. 358, 369.

<sup>7</sup> Bush, Farrant and Wright (2011).

<sup>8</sup> Booth (2017), p. 266.

<sup>9</sup> Rickards (2016), p. 278.

<sup>10</sup> For a discussion of existing plans along these lines, see Rickards (2016).

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