Sound Money Review

Second Edition | 2027

Presented by Money Metals, Sound Money Defense League, and Sound Money Foundation

Sound Money Review

Second Edition | 2027

Advancing the Principles of Sound Money

Published by Money Metals, Sound Money Defense League, and Sound Money Foundation

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Editor-in-Chief, Jp Cortez
Editor, Joshua D. Glawson
Art Designer, Alicia Guevara
Fellowship contributions by Antón Chamberlin and Joseph Solis-Mullen
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Money Metals

Savvy, self-reliant investors have embraced Money Metals as their trustworthy, low-cost source for gold and silver bullion coins, bars, and rounds.

With over one million customers, Money Metals also operates the largest privately owned precious metals depository in North America and has been rated the "Best Overall" precious metals dealer by Investopedia, a global financial industry authority. Money Metals News Service provides high-quality issue briefs and commentary, gold and silver price charts, and breaking news alerts to over 1.2 million subscribers.

Sound Money Defense League

The Sound Money Defense League is the nation's leading non-partisan public policy group working nationally to restore sound money at the state and federal level.

Founded in 2014, the Sound Money Defense League works with allies in elective office to introduce and pass legislation that ends taxes on gold and silver, empowers state treasurers to invest state funds in gold, audits the nation's gold reserves, and audits the private bank cartel that has been delegated government power (the Federal Reserve System). The League also supports broad recognition and use of sound money.

Through aggressive grassroots citizen action, the Sound Money Defense League works to expose the global money managers running the Federal Reserve and the tax-and-spend politicians who undermine the U.S. economy by supporting crushing debt, crony bailouts, and reckless currency debasement.

Sound Money Foundation

The Sound Money Foundation is pioneering principles of sound money through education, research, and other collaborative advocacy efforts.

The Foundation aims to expand the research and discourse surrounding sound money and free-market monetary systems. By actively participating in, as well as funding, scholarly research to highlight the shortcomings of centrally planned economic systems and develop a deeper understanding of sound money nationwide.

Sound Money Fellowship

Building on the success of the annual Sound Money Scholarship, Money Metals, Sound Money Defense League, and Sound Money Foundation have created the **Sound Money Fellowship**.

The **Sound Money Fellowship** is the nation's first program specifically designed to support graduate, postgraduate, and independent researchers dedicated to advancing the scholarship and understanding of sound money across the globe.

Through this paid opportunity, participants will produce original research and writing that contributes to the study of sound money and its historic, economic, and social implications, fostering renewed discussion in this ever-important field.

The Sound Money Fellowship is open to:

- Graduate students currently enrolled in an accredited program.
- Post-graduate students pursuing advanced degrees.
- Independent researchers with a demonstrated interest in sound money.

Fellowship participation spans approximately six months and includes a stipend for producing assigned works.

Fellows are encouraged to explore various topics related to sound money, including but not limited to:

- Monetary history and its implications for modern policy.
- Policy analysis of state or federal sound money legislation.
- Comparative studies of different monetary systems and their effects.

For more information and to apply for the Sound Money Fellowship, prospective applicants should visit **https://www.moneymetals.com/fellowship**.

Foreword

It is my great honor to present the second edition of the Sound Money Review, our one-of-a-kind scholarly journal dedicated to advancing and immortalizing principles of sound money.

The Sound Money Review aims to curate and republish compelling and relevant research on past monetary events and monetary systems rooted in gold and silver. Re-examination of previous insights helps us better navigate the current economic uncertainty facing the U.S. today. As part of our mission, we are proud to support the next generation of scholars pursuing free-market solutions rather than an economy commanded by central planners.

This year's journal includes in-depth analysis from economists and political scientists, while also highlighting the wisdom found in the works of an intellectual giant of history. These contributions come together to form a collection of foundational writings on this topic of increasing national and international importance.

The second edition of the Sound Money Review will feature original work from the second class of Sound Money Fellows, Antón Chamberlin, Ph.D., and Joseph Solis-Mullen.

Chamberlin, a multiple-time Mises University alumnus who received his doctorate in economics from Middle Tennessee State University, produced strong analysis on the dangers of interest rate manipulation, limitations in central planning, and the ostensible claim that American consumers are "resilient." His research paper focuses on the convergence between sound money and monetary policy, and housing and family formation.

Solis-Mullen, a political scientist, economist, and professor at Spring Arbor University and Jackson College, studied the impact of sound money on global trade, the relationship between Wall Street and sound money, and the rise of militarism coinciding with the rise of monetary fiat expansion. His research paper reexamines the (perhaps infamous) attempt by the Hunt Brothers to corner the silver market in the late 1970s and 1980s, and the state's role in creating the conditions that led to the attempted squeeze.

In addition to showcasing our Sound Money Fellows' work, the Sound Money Review is proud to feature the work of Polish polymath, astronomer, and inventor Nicolaus Copernicus. Though he is best known for his work revolutionizing astronomy by disproving geocentrism and instead promoting heliocentrism, Copernicus was an astute observer of monetary realities as well.

In 1526, Copernicus wrote *On the Minting of Money (Monetae Cudendae Ratio)*. On the 500th anniversary of the treatise, Ralph Benko, longtime gold advocate and one of 23 official witnesses before President Ronald Reagan's Gold Commission, has edited and produced the leading edition of Copernicus's influential writing. In it, the Polish genius displays an incredible understanding of monetary systems and the great transgression that is currency debasement and inflation long before "sound money" was an established economic concept.

For reference, Carl Menger, founder of the Austrian School of Economics, wrote his seminal works, *Principles of Economics* and *On The Origin of Money*, in 1871 and 1892, respectively. Copernicus's insights

predate Menger's work by roughly 350 years. Even centuries ago, the brightest scientific minds knew of the dangers of debauching a currency. His treatise begins:

> *Although there are countless maladies that are forever causing the decline of kingdoms, princedoms, and republics, the following four (in my judgment) are the most serious: civil discord, a high death rate, sterility of the soil, and the debasement of coinage. The first three are so obvious that everybody recognizes the damage they cause; but the fourth one, which has to do with money, is noticed by very few thoughtful people, since it does not operate all at once and at a single blow, but gradually overthrows governments, and in a hidden, insidious way.*

Writings produced by our Fellows and Copernicus's monograph are immortalized in our journal. Together, these works examine the historical, social, and legal considerations of gold as money and free-market monetary systems.

The longstanding impact of sound money is captured in the second edition of the Sound Money Review, spanning from Copernicus's work to present-day scholars continuing to study this crucial topic. As a result of global debt, currency debasement (in Copernicus's era, often by reducing the precious metals content of coinage), and geopolitical uncertainty, the world is undergoing a global monetary realignment. Countries all over the world, allies and adversaries, have recognized the value of politically neutral, inflation-proof money. Gold and silver have checked these boxes for thousands of years.

Our mission to restore sound money is more urgent than ever. Our robust program includes enacting meaningful policy changes across the nation at the state and federal level, offering paid scholarships and fellowships, and publishing nationwide state scorecards on enacted sound money laws. We are thrilled to offer yet another resource in the form of the second edition of the Sound Money Review. We hope you enjoy.

-Jp Cortez
Executive Director, Sound Money Defense League

Meet Our Fellows: Antón Chamberlin, PhD

Antón Chamberlin holds a PhD in economics from Middle Tennessee State University, as well as Bachelor's and Master's degrees from Loyola University New Orleans and Troy University. He is currently pursuing an MA in Theology from the University of Notre Dame.

With over a decade of studying free market economics, he has published in peer-reviewed journals and on popular websites promoting economic liberty. His primary interests are Austrian economics, Mexican economic history, Catholicism, and sports economics.

Sound Money Fellowship Highlights:

Interest Rate Manipulation: The Fed's Fatal Feature:
https://www.moneymetals.com/news/2026/04/22/interest-rate-manipulation-the-feds-fatal-feature-004846

Oil Shock Reveals Central Planning Limitations:
https://www.moneymetals.com/news/2026/06/10/oil-shock-reveals-central-planning-limitations-004981

Are American Consumers Actually "Resilient?":
https://www.moneymetals.com/news/2026/06/19/are-american-consumers-actually-resilient-004994

Meet Our Fellows:
Joseph Solis-Mullen

Joseph Solis-Mullen is a political scientist, economist, and Ralph Raico Fellow at the Libertarian Institute. He teaches history and politics at Spring Arbor University and economics at Jackson College.

A graduate of Spring Arbor University, the University of Illinois, and the University of Missouri, his work can be found at the Ludwig Von Mises Institute, Quarterly Journal of Austrian Economics, Libertarian Institute, Journal of Libertarian Studies, Journal of the American Revolution, and Antiwar.com. Author of several books on China, the history of liberalism, and economics.

Sound Money Fellowship Highlights:

Fixing Trade With Sound Money:
https://www.moneymetals.com/news/2026/04/18/fixing-trade-with-sound-money-004845

Wall Street and Sound Money:
https://www.moneymetals.com/news/2026/04/28/wall-street-and-sound-money-004875

Sound Money and the Myth of Militarism:
https://www.moneymetals.com/news/2026/06/05/sound-money-and-the-myth-of-militarism-004970

The Price of Entry: Sound Money, Monetary Policy, Housing, and Family Formation

By Antón Chamberlin, PhD

ABSTRACT: Monetary easing is commonly seen as “helping families” through lower interest rates and by increasing access to homeownership. In this essay, Antón Chamberlin, PhD, states that monetary policy does not impact households uniformly, raising wealth and reducing costs for incumbents while raising costs and pricing new entrants out of the market. These uneven effects extend past housing and into family formation.

The Price of Entry: Sound Money, Monetary Policy, Housing, and Family Formation

I. Introduction: One House, Two Meanings

Lowering interest rates is often described as a policy to "help families" with the intention of reducing mortgage rates and facilitating homeownership. Families who were kept out of the housing market due to the higher rates find themselves able to afford a loan once interest rates start falling. As with other government policies, however, the aggregate measures mask an underlying bifurcation between current and prospective homeowners.

Monetary policy does not affect families in a uniform manner. Monetary easing, while reducing mortgages and increasing wealth for homeowners, ultimately results in higher acquisition costs for prospective buyers who cannot immediately take advantage of the reduction. Once the expansion is met with contractionary policy, lower-income and first-time buyers are disproportionately excluded from the housing market as current owners are protected by recently acquired equity gains and previously contracted fixed-rate mortgages. The result, then, is not only a change in the average cost of housing but of the distribution of housing and opportunities to form and expand a family.

The argument is *not* that monetary policy is the sole determinant of housing unaffordability or declining housing formation, but that monetary conditions alter housing prices, borrowing costs, and market access unevenly, causing a redistribution of wealth similar to the effects explained by Cantillon. Such a situation is mediated by sound monetary policy, where such interventions are not possible.

This article proceeds as follows: Section II explains the need to disaggregate "the family." Section III establishes the connection between monetary policy and the housing market, while Section IV begins the disaggregation of households in this context. The different experiences of credit expansion and tightening are discussed in Sections V and VI, with Section VII extending the disparity to family formation. Section VIII considers the preferability of a sound money regime, where purchasing power is stable and the currency's value is resistant to inflation and political manipulation due to its tie to some commodity, for the amelioration of this housing inequality, and Section IX concludes.

II. The Representative Family Does Not Exist

There are a myriad of aggregate measurements used for economic analysis, such as inflation rates, average mortgage rates, house-price indices, and measures of household debt. Whatever economic value they may contain, however, they obscure substantial differences between actual households in the economy.

One household might own a home, own financial assets, and hold a fixed-rate debt, while another might rent, have all its savings in cash, and not even qualify for a mortgage. A rise in housing prices, whether the result of monetary policy or not, will have competing effects for these two households. The first may see an increase in net worth, while the second sees its savings become even *less* sufficient for a down payment.

Through income and cash-flow channels, monetary policy can affect households through an income effect. By influencing employment status, wages, interest rates, and debt repayment, the level of income available for costs like housing and childcare affects the barriers to establishing and expanding a family. It also causes changes to balance sheets as homes and assets are revalued, along with the real burden of outstanding nominal debts. All of these impact net worth, perceived financial security, and borrowing capacity, along with the ability to make a down payment or finance a home for a larger family.

Given the diversity in household situations, there is also diversity in the experience of monetary policy as it pertains to housing. Fixed-rate owners, adjustable-rate borrowers, renters, and new mortgage applicants fundamentally interact with the same rate adjustment differently.

This difference in experience of the same monetary policy can be illustrated with the framework of Cantillon effects. As Jeff Degner (2023) shows, in the tradition of Richard Cantillon, newly created money must enter the economy through particular channels at particular moments, *not* through a simultaneous increase in income and price. Because of this, there are those who receive the new money before it has made its way through the economy, altering prices. The first recipients experience an increase in real income before prices start to rise as a result of the expansion, while those who have not yet received the new money experience a decrease in real income as prices rise. The result of both of these occurring is a redistributive effect from those who cannot yet take advantage of the new money to those who can.

For the housing market, the intervening financial institutions transmit this new money into the economy, and this distribution is neither direct nor uniform. Once central-bank policy affects banking conditions, like interest rates and future expectations, banks and other mortgage lenders translate these new conditions into loan availability, refinancing opportunities, and mortgage terms. Monetary easing, from the perspective of households, is only encountered *after* it has passed through the financial institutions that will choose applicants based on income, employment, collateral, savings, credit history, and existing debt.

Timing can, therefore, heavily influence how a household experiences the same monetary expansion. Those able to obtain a mortgage or refinancing arrangement early may receive lower costs before the full consequences of the expansion are incorporated into prices and interest rates. If the same lower rates also lead to greater housing demand, the current owners may also receive gains through appreciation. Those whose wages, savings, and credit eligibility, however, adjust more slowly to the expansion may fail to see the same benefits due to the rising acquisition costs as the market adjusts to the new money. A subsequent tightening may not provide sufficient relief either, as the rising mortgage rates may not offset falling prices once demand subsides.

The mere presence of lower rates is not sufficient for borrowing, refinancing, and purchasing of assets. One's income, employment stability, possession (or lack) of savings and collateral, credit score, and outstanding debt may impede any such activity. The relevant unit of analysis cannot be, then, "the family" in the aggregate but households distinguished by criteria like ownership, debt, income, savings, credit access, and timing within a Cantillon event.

III. How Monetary Policy Enters the Housing Market

Expansionary monetary policy tends to lower both short-term and long-term interest rates, including mortgage rates, which would lower the expected monthly payment for the house. Central banks have stronger influence on short-term rates, with long-term rates also heavily influenced by expected future policy, inflation expectations, and market conditions. Policy decisions are endogenous to the general state of the economy, often in response to inflation, employment, and other economic developments, and all of these have their own independent effects on housing and family decisions. Nevertheless, both rates often respond to changes in policy, and these changes propagate through the economy, like the housing sector.

Downward pressure on rates and expected future financing costs lowers mortgage rates, often met with smaller monthly payments. Smaller payments mean buyers can bid more for the same property or qualify for larger loans. This almost surely will increase the demand for housing. Prices respond accordingly, as the increased demand begins to bid prices and rates back up. Assuming these do not move simultaneously in tandem, lower relative rates might be met with rising principal costs, leading individuals to borrow more. If the supply of housing responds

slowly, some of the financing benefits become capitalized into higher prices. Thus, the benefit to prospective buyers depends upon how much the lower rate offsets the higher selling price. Current owners, though, will receive the price appreciation of their homes without having to repurchase it at the new price.

Granted, monetary policy is not a complete explanation of housing prices. Various market and non-market phenomena will affect the economy's ability to meet this rising demand with rising supply. Few impediments to construction will facilitate more housing, while zoning regulations, geography, permit requirements, and other constraints will limit supply. The remaining demand, then, is destined to raise the price of existing homes.

Research from Gorea, et al. (2024) shows that changes in mortgage rate expectations are transmitted rapidly into housing prices. Using US data from 2001 through 2009, the article found that when an unexpected episode of monetary contraction raises the average thirty-year mortgage rate by 0.25 percent, housing list prices decrease by roughly one percent within two weeks. Much of this passes through to sale prices and persists for at least a year. It is due less to the unexpected nature of the change and more to changes in expected future rates.

This indicates that housing prices are affected by monetary policy, and quickly so. This downward pressure, though, does not automatically mean that affordability improves. A prospective buyer who has not yet experienced a wage increase in this situation simultaneously faces lower relative prices, yes, but *rising* financing options, a higher monthly payment, and possibly the need for a higher down payment or more collateral as competition among prospective buyers for homes increases. Nevertheless, there is a clear connection between credit manipulation, mortgage rates, and housing prices. If expected mortgage rates are capitalized rapidly into prices, then financing conditions and acquisition costs cannot be separated.

Housing functions as a consumption good *and* an asset for many. It provides the context for everyday life and provides shelter, stability, and a locale to enter. It also stands as equity, collateral, a possibly appreciating piece of property, and a store of household wealth.

Higher prices, then, tend to codify existing owners and renters, with appreciation increasing the wealth of current owners, raising the cost of entry for prospective buyers. This creates an asset-entry divide, where the gains for established households mean increased acquisition costs for those trying to enter the market. This divide affects family behavior.

IV. One House Price, Two Family Effects

As with any other economic phenomenon, the effects are not evenly distributed across groups. Rising house prices, accordingly, do not have the same economic significance for households that already own homes and those who do not. For present homeowners, home appreciation can increase net worth, home equity, collateral value, as well as perceived financial stability. On the other hand, renters and prospective buyers experience the same appreciation as increases in down payments, mortgage principals, and the amount of time necessary to save in order to enter the housing market at all.

We see this illustrated in the literature. Dettling and Kearney (2014) found that these opposing economic situations are tied to opposing fertility responses when housing prices increase. An increase in housing prices can produce two effects potentially at odds with each other. For non-owners and those seeking a larger house, higher prices reduce the feasibility of market participation. With household size often a major consideration for children, this serves as an increased barrier. Existing homeowners, on the other hand, see an increase in equity. The financial benefits of this — such as increased wealth, greater collateral, increased financial confidence — may lead to *increased* fertility for *these* households.

Dettling and Kearney dove into this situation using data from the 1997-2006 housing expansion. By relating price changes within metropolitan areas

to fertility rates for demographic groups, they were able to parse out whether the response differed according to each group's baseline homeownership rate. A negative price effect was distinguished from an offsetting home-equity effect by the increasingly positive response from groups with higher ownership rates.

The main findings were threefold, across demographic groups and not limited to just first births. They estimated that a $10,000 house-price increase is associated with (1) a 5 percent *increase* in fertility among current homeowners, (2) a 2.4 percent *decrease* among nonowners, and (3) a 0.8 percent net increase at the average US homeownership rate. This suggests that one of the results of housing appreciation is redistribution of economic opportunities as they pertain to family growth, as opposed to simply helping or harming "families" as a monolith. Neither are owners entirely unaffected negatively. Should current owners seek a replacement or secondary home, these purchases would also be more expensive. Those who stay put would see a clearer wealth effect. The positive homeowner estimate is also a *net average* effect.

This does not, of course, establish that housing prices *determine* family size, changes in marriage, or the broader decline in American fertility, at least not exhaustively. Nevertheless, it does establish that changes in the housing market affect family decisions, and this effect is bifurcated by *at least* those who currently own and those who do not, making ownership status essential for understanding monetary policy's effects on the household.

V. Cheap Credit Is Not Equal Credit

There are benefits to some when interest rates are lowered, and this holds true for certain families through reducing mortgage payments, expanding refinancing opportunities, and making the original principal easier to service. These benefits are not evenly distributed due to differences in income, collateral, credit history, savings, and existing debt obligations, to name a few. Borrowing before a substantial episode of housing appreciation might result in favorable financing and future equity gains, but those who find themselves entering the housing market after such an episode may need a much larger loan, even if interest rates remain lower.

Cumming and Dettling (2024) found that rate cuts induced by a central bank increased births among existing homeowners whose mortgages were adjustable, allowing monthly payments to fall in response to the policy change. The primary mechanism works as follows: Once policy rates fall, eligible mortgages reset, reducing required monthly payments. This leads to an increase in discretionary income, which is then met with either having children sooner or having an additional child. There is a bifurcation here between those eligible and ineligible for a rate adjustment, where the former received a benefit from large rate reductions while the latter did not. They found that a one-percentage-point decline in the policy rate from the Bank of England increased birth rates by about 3 percent among those households who were eligible for a mortgage-rate adjustment. While the institutional differences between the US and the UK, such as the prevalence of fixed-rate mortgages, limit the transferability of the magnitude, the underlying mechanism remains the same: credit expansion affects household decisions via mortgage channels when lower rates affect monthly payments. The research now extends from an owner-nonowner distinction made by Dettling and Kearney to monetary policy, through its effects on mortgage payments, influencing birth rates in Cumming and Dettling. This shows a positive relationship between monetary easing and family expansion, but primarily for those who already possess mortgages, and adjustable ones at that.

This does not mean that renters, prospective buyers, or fixed-rate borrowers experience the same benefits from monetary easing. Those wishing to enter the housing market may be presented with a lowered mortgage rate, but effective access depends upon the entire financial package, including the purchase price, required down payment, collateral, and household income. Some of the lower rate might be capitalized into the higher price. The lower rate, then, may be a marginal improvement for the seekers' net position — or at worst, a net deterioration.

Contractionary monetary policy creates an even greater distinction between current and prospective owners. The established households may be able to retain their previous rates, while those on the outside looking in have no option but to enter at the more expensive financing rates.

VI. Tightening Does Not Reset the Market

There are many effects of tightening, including weakening housing demand, and falling prices, which may give the appearance of a reversal of the affordability problems caused by the earlier expansion.

With housing, however, a fall in sale price does not necessarily mean the house is more affordable once the higher mortgage rate is taken into consideration. The principal may be smaller, but the higher monthly payment still may be prohibitive. Those looking to buy must finance their homes at the current market rate, while the incumbents might remain protected by their fixed lower rates.

Daniel Ringo (2023) found socioeconomic disparities in this regard, showing that increased mortgage rates caused by policy rate hikes disproportionately decreased low- and moderate-income homebuying participation, most notably among first-time buyers. This is because the latter are more likely to face a binding budget constraint. When mortgage rates rise, a handful of things tend to happen. One, monthly payments increase, causing some borrowers to no longer be able to satisfy loan terms. This might be compensated with larger down payments, or cheaper houses, but these still require liquid savings or the availability of suitable cheaper housing. Without these resources, households are more likely to simply leave the market.

Ringo found a handful of results to support this. A one-percentage-point increase in mortgage rates, caused by monetary policy, reduced the low- to moderate-income share of homebuyers by approximately 7.5 percent, with the low-income share by itself falling 16 percent. These percentages increase when considering first-time buyers, with both categories seeing a fifty percent increase in percentage point reduction, and low-income in isolation moving from a 1.1 percentage point reduction to a 3 percentage point fall. He also found no substantial increase in the average down payment, suggesting that households, when faced with an increased rate, were unable to produce enough savings to increase the down payment in the pursuit of preserving a lower monthly payment.

From this we can see, then, that monetary tightening does not simply reduce the number of transactions on the housing market, but instead changes the composition of the transactions, too. This means a change in which households possess the income, savings, and borrowing capacity necessary to stay in the housing market. First-time buyers in particular, unlike repeat buyers, do not tend to have the necessary equity, profit from previous sale, or existing low-rate mortgage to counter the higher financing costs.

There can also be an incentive for current homeowners to stay put, even if they would rather move, not wanting to give up their favorable mortgage and financial situation for a new home at a higher rate. The increased cost of moving results in this mortgage rate lock-in, reducing listings, even when the existing home no longer suits the owners' needs. Libersohn and Rothstein (2025) estimated a 16 percent reduction in mobility among mortgaged homeowners in 2022 and 2023 after rising rates. Meanwhile, Aladangady, Krimmel, and Scharlemann (2024) attributed 44 percent of the decline in mortgage-borrower mobility in 2021 and 2022 to the same phenomenon. They also found upward pressure on existing home listings due to this lock-in, though magnitudes varied.

Tightening after an expansion, then, will not fully reverse the price effects of the expansion. In fact, it cannot, since cycles are path dependent and asymmetric by nature. The expansion is asymmetrical with respect to its distributional effects, and so is the tightening. The same mechanism that slowly filters the expansion into the economy works the same way with the contraction. Moreover, the existing fixed-rate mortgages do not disappear when rates rise again, nor are the earlier equity gains to the current owners eliminated entirely. First-time buyers, on the

other hand, experience the full effects of the higher rates and the restricted supply from mortgage lock-in, even if prices start to decrease. The contraction *may* reverse the preceding house appreciation to the point of improving housing affordability, but this is not automatic. The overall burden of the price, rate, down payment, and monthly payment just remains the center of analysis. The same mismatch applies to an inflationary episode, where existing homeowners see a reduction in their real mortgage burden, while new borrowers typically will pursue or receive a loan at a rate already incorporating inflation expectations.

VII. From Housing Inequality to Family-Formation Inequality

The divide caused by these interventions does not only lie between homeowners and renters, but may influence which households can successfully enter the housing market, absorb the cost of children, and institute long-term family growth plans. The evidence strongly suggests that monetary policy, in either direction, substantially impacts mortgage rates, housing prices, household payments, and access to homeownership. Though not quite as strong, it also suggests an impact on fertility and marriage.

While it is true that marriage and parenthood do not *require* homeownership, it is certainly true that suitable and affordable housing can influence whether couples feel prepared and able to fully establish their household or expand their family. This is where the inequality in family formation occurs — when similar family aspirations are acted upon or unacted upon because of wealth, debt, savings, and access to credit. Even without ownership, the effects on the housing market as manifested in availability, cost, supply, and size most certainly affect household independence, the necessity of commuting, proximity to friends and family, and a myriad of considerations for childrearing. Without being strictly speaking essential, housing availability, size, location, and cost nevertheless impact the material reality present when considering family aspirations.

The reasoning is often threefold. One, higher housing costs clearly influence household independence, whether in the realm of young adults leaving their parents, couples choosing their residence, or couples considering the costs of raising children. Two, while expensive housing does not prevent family formation *in toto*, it can alter the timing, location, financial structure, and perceived feasibility of both marriage and parenthood for the onlookers. Three, it can alter fertility decisions, as shown by Dettling and Kearney (2014) and by Cumming and Dettling (2024).

Further research finds an association between higher housing prices and lower marriage rates, which suggests that marriage itself, not just household formation or fertility, is also negatively affected. Bowmaker and Emerson (2014), considering county-wide marriage rates from 1970 through 1999, found that not only does higher housing per capita correlate with a lower marriage rate, but the greater the gap between the annual cost of owning versus renting as a proportion of per capita income in a county, the lower the marriage rate.

Wealthier households are able to better respond to fluctuating housing costs by means like offering higher down payments, acquiring family assistance, leveraging existing assets, and utilizing stronger credit, while poorer individuals meet the same situation with delay, heavier debts, or continuing to rent. Two couples with an equal desire for marriage or children will be presented with entirely different financial landscapes dependent upon whether they already own a home, have a low-rate mortgage, or have to enter the market at higher prices and rates. Thus, while monetary policy cannot eliminate the desire for marriage and children, it can introduce financial barriers that could prevent acting upon those desires.

It is apparent, then, that monetary policy can contribute to an increasing divide between the established and the prospective homeowners, where housing wealth, mortgage benefits, and entry costs are unevenly distributed — in fact, skewed in the direction of the incumbents— to the benefit of affluent households, who generally possess more room for adjustment, while the more constrained households are more likely to delay purchasing homes.

VIII. Sound Money and the Conditions of Family Life

All this is not to say that monetary policy ought to be used to engineer marriage rates, fertility, or household structure in any direction. The effects of any intervention are never contained to the desired sphere, as Frederic Bastiat taught in the nineteenth century with his booklet, *That Which Is Seen, and That Which Is Not Seen*. Even if it could be ascertained that the fertility or marriage target had been reached, unintended consequences could never be avoided — consequences that could very well negate the "gain" of the policy.

Even if a policy *could* produce desirable economic conditions, it is no replacement for cultural norms that value family life, nor personal virtues of fidelity and responsibility. Monetary efforts that successfully produce affordable family housing are moot if the populace places no value on family life. Affordable housing at whatever might be considered a "reasonable" rate is less valuable when met with a population incapable of saving or managing its finances responsibly.

The *monetary* question is whether households should be beholden to favorable timing within credit expansion, the good fortune of being an early recipient of the new money, beneficial asset appreciation, and later tightening in order to achieve economic independence regarding shelter. These complications unnecessarily interfere with the housing market, leading to the effects we have seen on the family and fertility.

Sound money can offer a more dependable situation where purchasing power is maintained (if not rising), savings are not eaten by inflation, and long term plans are not quite as reliant upon increasingly risky inflation hedging. Such a policy would be twofold, as explained by economist Ludwig von Mises (1971, pgs. 414-416):

> *"[T]he sound money principle has two aspects. It is affirmative in approving the market's choice of a commonly used medium of exchange. It is negative in obstructing the government's propensity to meddle with the currency system…Sound money meant a metallic standard…The excellence of the gold standard is to be seen in the fact that it renders the determination of the monetary unit's purchasing power independent of governments and political parties."*

In the current economy, the important element is not that the commodity-based money be a precious metal, but simply *some valued commodity* for its use outside of exchange, at least at the outset. Though history does seem to hint that the best fits are gold and silver. Whichever good is chosen by the market, it is imperative that it be independent of political influence.

A more stable monetary system would significantly reduce the redistribution effects discussed that benefit the incumbents at the expense of the rest. Already owning a house, holding fixed-rate debt, receiving credit early, and entering the market *after* prices have risen would become less of a requirement for new entrants. All of this would be coupled with greater economic stability *en bloc*, which would facilitate easier long-run calculations for households, even if other factors like zoning restrictions and construction shortages remain unaddressed.

IX. Conclusion: The Price of Entry

A single market price, like in the housing sector, has multiple economic meanings. For those who currently possess assets and mortgages, a period of monetary easing may increase their home equity or reduce their payments if they have an adjustable mortgage. Those outside the ownership market, however, must purchase after some of those benefits have already been capitalized into prices, and only after the lower rates and rising wages make housing affordable, at least ostensibly. Later tightening only raises the financial cost and the easing period comes to an end, and this period is not able to simply undo the economic redistribution of wealth that occurred during the expansion of credit.

The result, then, of this credit cycle for housing is entrenchment. Similarly to general

Cantillon effects, the new money moves through the housing sector in such a way that benefits the incumbents and early recipients at the expense of the prospective buyers. This leads to differing marriage and fertility decisions between the two types of families, though the average between the two might lead to the specious conclusion that "families" are doing better since the cycle began. To mitigate this problem, sound money, though not capable of creating strong families across the board on its own, can reduce the extent to which access to housing and family independence is incumbent upon favorable timing in a business cycle.

Bibliography

-Aladangady, A., Krimmel, J., & Scharlemann, T. (2024). Locked in: Mobility, market tightness, and house prices. Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System, 2024-088. https://doi.org/10.17016/FEDS.2024.088r1

-Bowmaker, S. W., & Emerson, P. M. (2014). Brick, mortar, and wedding bells: Does the cost of housing affect the marriage rate in the US? Eastern Economic Journal, 41(3), 411-429.10.1057/eej.2014.24

-Cumming, F., & Dettling, L. J. (2024). Monetary Policy and Birth Rates: The Effect of Mortgage Rate Pass-Through on Fertility. Review of Economic Studies, 91(1), 229-258.
https://doi.org/10.1093/restud/rdad034

-Degner, J. (2023). The Family in the Inflation Culture (Dissertation ed.). University of Angers.

-Dettling, L. J., & Kearney, M. S. (2014). "House Prices and Birth Rates: The Impact of the Real Estate Market on the Decision to Have a Baby. Journal of Public Economics, 110, 82-100. https://doi.org/10.1016/j.jpubeco.2013.09.009

-Gorea, D., Kryvtsov, O., & Kudlyak, M. (2024). House Price Responses to Monetary Policy Surprises: Evidence from US Listings Data. Bank for International Settlements, BIS Working Papers(No. 1212). https://www.bis.org/publ/work1212.htm

-Liebersohn, J., & Rothstein, J. (2025). Household mobility and mortgage rate lock. Journal of Financial Economics, 164. https://doi.org/10.1016/j.jfineco.2024.103973

-Mises, L. v. (1971). The Theory of Money and Credit (2nd ed.). Foundation for Economic Education.

-Ringo, D. R. (2023). Monetary Policy and Home Buying Inequality. Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System, 2023-006.
https://ideas.repec.org/p/fip/fedgfe/2023-06.html

The Hunt Brothers Silver Episode, an Austrian Reinterpretation

By Joseph Solis-Mullen

ABSTRACT: This essay by Joseph Solis-Mullen re-examines the episode in the late 1970s-early 1980s when the silver price surged and crashed. Most who pontificate about this chapter blame the excessive greed of the Hunt brothers, who attempted to corner the silver market. This paper challenges this narrative by reinterpreting this event through a lens of Austrian economics. Citing post-Bretton Woods monetary expansion, inflation, and shifting regulatory requirements, Solis-Mullen argues that investment in silver was rational behavior and the Hunt brothers' behavior was consistent with this thesis. This paper offers monetary instability and institutional intervention as more compelling analysis explaining this episode than simply private greed.

The Hunt Brothers Silver Episode, An Austrian Interpretation

Introduction

After seeing a steady increase in price over the course of the 1960s and 70s, the price of silver suddenly soared at the end of that decade into 1980. It then crashed abruptly at the beginning of that year. An interested contemporary wishing to know what had happened would have found a simple and ubiquitous narrative quick to hand in any paper of record they chose: greedy Texas billionaires had manipulated the market, stoked a speculative excess, and created a bubble so dangerous it threatened the entire U.S. financial system.[1] Indeed, the dominant narrative of events then and now is overwhelming moralizing and personalizing, making the episode not a question of economics but morality, not one of broader monetary or regulatory contexts, but of a man's, or pair of mens', selfish individual pursuits.[2]

This is wrong. And with silver once again dominating headlines, it is more important than ever that the deficiencies of popular understanding be corrected.[3] That is the purpose of the present study: to reinterpret the specific events of the 1960s, 70s and 1980 through the lens of Austrian economics in order to show that the crisis was effectively a manufactured one, the product of inflation and intervention. The subject of this analysis, then, is not what happened – that has been amply and ably documented in the press, then and now, as well as in a handful of books and chapters that deal directly with the events that culminated in the final crash of silver in March 1980.[4] Rather, it examines how monetary uncertainty and regulatory intervention caused the crisis. It will show that the Hunts' silver strategy was shaped by rational responses to inflation, and how the crisis itself was a product of exchange rule changes and regulatory uncertainty. It will also propose further avenues for research on this subject, which will confirm the thesis of this analysis.

Before illustrating this, it is necessary to situate the events of the latter half of 1979 and early 1980 in their proper context. Since the Hunts' accumulation of silver took place over the course of the 1970s, amidst the backdrop of turbulent happenings in the global monetary system, this must form the starting point of any analysis.

Part I. The Death of Bretton Woods

On August 15, 1971, Nixon closed the gold window, thereby ending dollar convertibility.[5] There had been little choice in the matter; Washington had been running a structural balance of payments deficit for years, and the welfare-warfare-state promised no end in sight. This rapidly eroding confidence in the post-war Bretton Woods system was manifest in the drain of gold from Washington in the years prior.[6] Indeed, from their post-war high of approximately 20,000 metric tons, by the time of the "Nixon Shock," U.S. gold reserves had dwindled to around 8,000. Faced with chronic instability and the looming threat of redemption in the face of an obvious dollar glut, Nixon moved without warning, severing the last formal link between the international monetary system and a physical commodity.[7] An attempt was made to reestablish fixed exchange rates under the new fiat regime, consisting of repeated revaluations as the dollar was continually devalued, but by 1973 the game was up: floating exchange rates among depreciating fiats was all that remained.[8]

Predictably, the money supply, accelerating in its expansion since the 1960's dual folly of Vietnam and welfare expansion, accelerated further. From 1971-1979, the Federal Reserve, first under Arthur Burns and then William Miller produced average year-on-year M2 expansion of over 10 percent, doubling the money stock over that time.[9] In addition to this monetary inflation were added multiple supply side shocks. These put further upward pressure on prices. To this monetary inflation, multiple supply-side shocks were added that put further upward pressure on prices. From 1972-74, U.S. food prices

rose nearly 20 percent due to a combination of poor harvests (most especially in 1972 in the USSR), large export volumes (again, especially to the USSR in 1972), and adverse weather conditions in various regions, from Australia to India. This coincided with the first oil shock, 1973-74, which saw the price of a barrel of oil rise by roughly 300 percent (from around $3/barrel to $12).[10] Unsurprisingly, then, the period 1971-79 saw average year-on-year CPI increases of approximately 7.6 percent.[11]

In terms of Americans' pocketbooks and bank accounts, things were actually worse than these headline numbers suggest. This is because, at the same time Washington was destroying roughly 44 percent of the dollar's value, it was engaged in mass acts of financial repression, preventing savers from obtaining what would have been properly priced market rates of return. Under Regulation Q, banks and savings institutions were subject to ceilings on the interest they could pay depositors. During periods of high inflation, these caps left savers earning deeply negative real returns. The predictable result was a widespread search for alternatives. Money began to pour into new money-market instruments and jumbo CDs, real estate, collectibles, and commodities. Meanwhile, institutional investors increasingly sought higher returns through riskier ventures; this "reach for yield" manifested itself in several ways, most memorably and destructively in the form of the eventual Latin American debt crisis.[12] In short, the destructive fruits of Washington's fiscal and monetary profligacy were prompting Americans of all economic backgrounds to seek protection from the silent, or not so silent, tax of inflation. Seen against this backdrop, the Hunts beginning to accumulate silver with the express intent of protecting themselves from the erosion of their wealth by inflation made them not an aberration but entirely in line with the times.

Part II. The Hunt Brothers and the Accumulation of Silver

The Hunts began purposefully buying silver in the early 1970s.[13] This fact alone is telling, since even Streeter, a decidedly hostile source as far as the Hunts are concerned, admits, "The silver mania started sometime in the 1960s."[14] Indeed, the price of silver doubled during the course of that decade.[15] Properly contextualized, then, the Hunts' decision to begin buying silver was no different than the decisions of many other investors concerned about inflation and the stability of the international monetary system, and who viewed precious metals as a store of value capable of preserving wealth.[16] Testifying before Congress, Herbert Hunt put it as clearly as one could: "My analysis of the recent economic history of the United States had led me to believe that the wisest investment is the one which is protected from inflation. In my opinion, natural resources meet this criterion, and to that end, in oil, gas, coal, and precious metals, including silver."[17]

Beginning gradually, the Hunts began accumulating first bullion and then silver contracts on the CBOT.[18] While the precise scale of the Hunts' silver holdings remains the subject of debate, even the most conservative estimates place their position by late 1979 at well over 100 million ounces.[19] Also subject to debate, indeed a principal point of controversy, is the claim that the Hunts' purchases were coordinated with a cabal of wealthy Sheiks and Oriental expatriates in an attempt to corner the market.[20] This, however, was never conclusively shown.[21] Also controversial is whether the Hunts' holdings violated existing rules prior to the critical changes of October 1979 and early January 1980 (As the exchanges had not yet adopted specific position limits, these would have been violations of the existing anti-manipulation provisions of the Commodity Exchange Act). This, too, is unsubstantiated by a preponderance of the evidence.[22] While neither of the above charges is the subject of the present analysis, they will be dealt with tangentially in the course of the detailed examination of the regulatory intervention that follows.

Setting such matters aside for a moment, and taking the Hunts' investment decisions at face value, it is clear that the Hunts' decision to buy silver as a hedge against the rampant inflation of the fiat regime was prudent – indeed, even setting aside the recent rise in prices beyond $50/ounce, purchasing silver in 1971 at $1.50/ounce and holding it would

have led to appreciation of somewhere in the area of 1,400 percent, while holding the same $1.50 in paper would have seen a decline in value of approximately 82 percent.[23] What was not prudent, however, were the decisions to buy on margin and to hold positions in the futures market.[24] Both were fundamentally dangerous for the same reason: they made the Hunts susceptible to sudden changes in the rules of the game. This is precisely what happened.[25] By the dawn of 1979, the Hunts and the other large players in the silver market together controlled somewhere in the range of 70 percent of the silver stock, in bullion or in contracts. The price at the end of August had climbed over $8/ounce and would double by the end of October. It was at this point that the rumblings of intervention began to be heard.

Part III: The Regulators Become Involved

We now come to the heart of the present analysis: the interplay of the response of the Fed, regulators, and decision-makers governing the exchanges. These ultimately put a stop to the rise in the price of silver. And, as it slowly fell thereafter, it triggered cascading margin calls and sell orders that reduced the price from a high of just over $50 dollars at the end of January to just over $10 by March. In Parts III and IV, a host of questions shall be raised: Why were position limits imposed in January, rather than earlier? How is it possible that position limits set in January could be applied in an ex post facto fashion to positions opened prior to the new rules being put in place? From where did the authority of exchanges to institute "sell only" order, the so-called "Silver Rule 7," come? What conflicts of interest existed, and were the politics of the Hunts at issue? How did the specific structure of the Hunts' investments in silver contribute to the rapid rise and fall in price?

That said, a few notes are necessary at the outset. First, that while all organizations change over time, it is particularly important to appreciate the changes that have taken place with regard to the Commodity Futures Trading Commission (CFTC). It was barely ten years old at the time of the Hunt Silver episode, and its lack of clarity over its own authority and conflicts over its mission among its members introduced a high level of uncertainty to the situation that is frankly shocking to contemporary observers. Second, for all that the specific authority of the CFTC or Federal Reserve, vis a vis private financial actors, might have evolved in the four decades since Silver Thursday, the fundamental power dynamics of their relationship remain: what appear to the ears of the laity as mere "observations" or "complaints," by the Fed Chair or key regulator, are recognized by those initiated into the arcana of their discourse as more akin to warnings if not outright directions. Third, the players involved in commodity market futures at that time almost solely consisted of active participants in the physical commodity in question, hedging against falls in the price of their stores or else locking in a guaranteed price for delivery, and that by taking delivery the Hunts were seen by other participants as violating the purpose of the market if not sacrosanct, albeit unwritten, rules. Fourth, the exchanges were operated by those with definite stakes in them. Fifth, with regard to statements of intent by interested actors involved in certain decisions, their statements will be presented as given, with any relevant information that throws doubt on the face value of their statements outlined in a footnote. Finally, while what follows draws from all available literature, there necessarily exist gaps where we must either make qualified speculations or remain entirely silent.

The Commodity Futures Trading Commission

We begin, then, with the Commodity Futures Trading Commission (CFTC). The CFTC had been established through the Commodity Futures Trading Commission Act of 1974. Prior to its creation, federal oversight of commodity markets had been comparatively limited and dispersed. The new agency was intended to provide comprehensive supervision of futures markets, prevent manipulation, and maintain public confidence in organized exchanges.[26] The futures markets were thus a hybrid arrangement in which private exchanges continued to exercise substantial self-regulatory authority while operating under federal supervision. Critically, although it had virtually unlimited power to intervene should

any "person manipulate or attempt to manipulate the price of any commodity," thus allegedly "preventing the market accurately reflecting supply and demand," the Act omits any definition of what might constitute "manipulation," such as a corner or squeeze.[27] Lastly, at the time of the Hunt episode the Commission was controlled, like much of bureaucratic Washington, by Democrats: James Stone (a technocrat who had been a state insurance commissioner for Michael Dukakis), David Gartner (a long-time staffer of Hubert Humphrey), Robert Martin (Read Dunn (a reporter for the Democrat-Times and spokesman for the Commodity Credit Corporation), and Robert Martin (a founding member of the commission).[28] These were, in short, men unlikely to be favorably inclined to the Hunts.[29] Off the agenda for a couple of years, since their brush over soybean futures in 1977, beginning in July of 1979 the brothers became an increasingly prominent topic of conversation, and eventually concern.[30]

The Commodity Exchanges

The exchanges were also places where the Hunts were unlikely to find allies. They were outsiders, from Texas rather than the East Coast; they were new money, rather than old; they violated the unwritten rules of the exchanges, taking delivery rather than settling the difference in cash at expiry; and perhaps most obnoxious of all, they were avowed silver bulls at a time when the silver futures markets were the almost exclusive domain of those whose business was highly sensitive to price swings in the commodities in question, and who used the contracts to hedge price movements rather than profit from their movement one way or the other. Two other peculiarities need noting, as well. First, that the exchanges were also run by those with direct stakes in them, their boards consisting largely of major exchange members; and second, that the exchanges depended for revenue on their trading volume. With regard to the latter, it is therefore easy to see why the exchanges were hesitant to crack down on the increasingly high volumes of trade in silver in the latter half of the 1970s: it was a boon to revenue.[31] With regard to the former, it is easy to see why once prices began to move upward exponentially, rather than as hitherto gradually on an upward slope, major stakeholders of the exchanges, either powerful in their own right or in key decision-making positions, began to grow uncomfortable. Their typical hedging positions were becoming extremely expensive.[32] By late summer of 1979, then, at the same time the commissioners of the CFTC were becoming concerned, consternation on the exchanges was growing as well.[33]

The Federal Reserve

For his part, newly minted Fed Chair Paul Volcker was also less than pleased by what he saw unfolding in the commodity markets. Nominated in 1980 and determined to crush inflation by hiking interest rates and contracting the money supply,[34] he spoke openly multiple times about his desire to see lenders not making loans to fund additional speculative purchases.[35] While he and the rest of the Fed did not directly intervene, then, their policy of credit restriction and higher interest rates did help stoke what would become a crisis, making the credit the Hunts were using in their purchases scarcer, their positions much more expensive to finance, and alternatives much more attractive.[36]

The Rumblings of Intervention

By the second half of 1979, talk at the CFTC had turned in a decidedly interventionist direction. In August the question of intervention was specifically raised, and through September actions were discussed and debated, though a divided board could agree on nothing.[37] On the exchanges, too, talk of restrictions was in the air. In September, COMEX raised margin requirements, but it made no impact on the rising price of silver, which approached $15/ounce by the end of that month.[38] In October, officials from the COMEX and CBOT approached the Hunts about decreasing their position, but were rebuffed by Bunker on the grounds that he wasn't interested in selling something valuable, which he expected to become more valuable, and the sale of which in any case would create massive tax liabilities for him.[39] Accordingly, the CBOT resolved to take action "immediately" and imposed stringent limits on future futures contracts. "They're

not playing fair," Bunker would complain.[40] Be that as it may, the intervention had begun.

Part IV. Intervention and Crisis

And so it was that the table was set for the most turbulent six months the silver market has arguably ever seen. Following the September actions of COMEX to raise margin requirements, and the CBOT to place limits on the size of futures contracts in October, COMEX raised margin requirements multiple times in November and December. Neither of these stemmed the rise in the price of silver, nor did they deter the Hunts, who continued rolling their giant variety of positions. Then, in early January, COMEX took the first of the drastic actions that were to prompt the crisis: they imposed retroactive position limits.[41] Still not satisfied that their intervention would end the rise in silver's price, indeed, a week and a half later silver would hit its highs for the episode,[42] COMEX declared liquidation only.[43] The CBOT followed their example, imposing liquidation-only restrictions and ordering reductions in February long positions.[44] COMEX wasn't finished, however, ordering aggregation of all Hunt-related positions for the purposes of enforcing limits, then doubling margin requirements.[45] Unsurprisingly, the price of silver began its decline.[46] As it fell, the Hunts began receiving margin calls - $10 million here, another $15 million there, day after day, until they were finally handed the March 27th call of $100 million by Bache which they just couldn't meet.[47] It was this failure that precipitated the climax of the episode: Silver Thursday, when the price of silver hit its bottom, and the Hunts were forced out.[48]

But what had prompted the intervention? What had actually been in danger? Not the U.S. financial system – not even any of its central players. What had the threat been? More expensive jewelry? More expensive photographs? Even the firms involved in the silver market, banks such as First Chicago, brokers like ACLI, Conti, Merrill Lynch, Shearson, Paine Webber, and dealers Moccata and Engelhard, even Bache, ultimately made money on the quarter, much of it from the Hunts.[49] The answer, unless one takes the conspiratorial line (which the Hunts certainly did),[50] is that it was fear. It was fear of what "might happen" should the price continue to rise, were the Hunts not stopped. Businesses hate uncertainty, and the exchanges were and remain businesses, run for the benefit of themselves and their most important customers. With the support of the CFTC, they acted with the intention of protecting themselves and said principal players. By so doing, however, it is almost certain that they caused the near crisis of early 1980, which otherwise would not have occurred.[51] For the Hunts' position would not have become untenable had the price of silver not been manipulated by the actions of the exchanges – and therefore, even those firms who had exposure to them, again, most principally Bache, would have been in no danger.

To further understand why intervention by the exchanges with the support of the CFTC was responsible for the crisis that actually unfolded, it is important to highlight an extremely neglected aspect of the episode that is critical: the institutional mechanics through which prices in physically settled commodity markets are actually formed. Intervention in those mechanics caused an array of specialized problems.[52] Silver was a deliverable commodity whose spot and futures prices were linked through arbitrageurs, whether merchants, dealers, refiners, and traders, willing to finance purchases, warehouse bullion, and make or take delivery. As monetary instability increased demand for physical silver throughout the 1970s, deliverable stocks tightened, convenience yields rose, and the relationship between paper claims and underlying bullion became progressively more fragile. Viewed from this perspective, the decisive events of late 1979 and early 1980 were not simply the accumulation of an unusually large, long position on the part of the Hunts but a series of regulatory interventions that fundamentally altered the arbitrage mechanism responsible for coordinating the physical and futures markets. The resulting collapse in silver prices was not merely the bursting of a speculative bubble; it was, at least in part, the product of an abrupt change in the institutional architecture through which price discovery itself occurred. This is testable, and it presents the most fruitful avenue for future research. By accessing the historical

record, pulling the physical receipts for warehouse stocks, open interest, delivery notices, et cetera, this relationship could be empirically established and mathematically proved.

Part V. Aftermath

For all that we may rationally analyze from the security of the calm present, rare was the contemporaneous observer who could step back from the overwhelming narrative of greed, deception, and imminent danger to state the obvious: that while the Hunts had been less than forthcoming with their array of lenders and brokers, the responsibility for due diligence was on them, and they failed predictably and spectacularly.[53] What danger had been present, in the case of Bache, to take the most prominent example, could have been entirely averted by proper due diligence, verifying accounts, not making exceptions for "special customers," et cetera.[54] In the civil case of Minpeco vs. Hunt, one finds the same. Minpeco's losses were almost exclusively the result of its own failed corporate controls.[55] Then as now, none of these facts mattered in the court of public opinion. The Hunts were tarred, made a legal example of, and made significantly poorer as a result of the episode. The Hunts had violated an unwritten rule of an institution, the commodity exchanges, over which they had no control, but which held their fate in its hands.[56] They had offended public opinion and officials in Washington.[57] They thus became a cautionary tale, the facts underlying the narrative seldom questioned. Clearly, whatever their faults, and there were plenty, this was not entirely fair.[58] And for those who believe in silver as a long-term investment, this was not helpful.

Part VI. Conclusion

Whatever one may think of the Hunts, good or bad – that they were far-sighted entrepreneurial victims of an insider plot, that they were greedy schemers rightly thwarted, et cetera – one cannot escape the conclusion that they were reckless, or at the very least heedless, of the needless danger they were placing themselves in. If one takes Herbert's testimony at face value, as this analysis has done, and that their silver strategy was based on expectations of continual devaluation of the new fiat U.S. dollar and the need for a hard money hedge, the thing to have done was to hold their own physical bullion and their own dollar. From the Austrian perspective, this is entirely sound. The U.S. dollar has and will continue to be devalued. Meanwhile, trust in the system, even a nominally private one like a commodity exchange – nominally because of its extremely close relationship with federal regulators – will make one a party to their own expropriation if and when it finally comes.

Footnotes

[1] Some of the most memorable and representative come courtesy of the March 26 New York Times and the May 12 Time, both in 1980, which referred to the Hunts' activities as "unconscionable" and as creators of a "speculative bubble," respectively. Not to be outdone, the April 7 Newsweek offered the title, "The Billion-Dollar Gambler."
[2] Later representative examples include Phoenix's Refining's January 29, 2026 commentary "How Two Billionaires Broke the Silver Market," and or even the WSJ's notice of Herbert Hunt's death on May 3, 2024.
[3] This is particularly important as beginning in late 2025 the spot price of silver began climbing, surpassing even its 1980 high; and, then as now, it has occurred against the backdrop of inflation, international monetary uncertainty, supply side shocks, and geopolitical instability.
[4] Even definitely moralizing and ideologically hostile accounts, such as that of former Sunvday Times Labour editor Stephen Fay, are faultless in their presentation of the relevant events, number of buys, position size, dates, et cetera.
[5] It is always worth remembering that actual dollar convertibility by the population had been killed in the 1930s, by a combination of Executive Order (6102, in 1933) and Congressional action (The Emergency Banking Act of 1933 and the Gold Reserve Act of 1934), and that what was ended by Nixon was convertibility by other governments and central banks with claims on the U.S. Treasury.
[6] See, the Triffin Dilemma.
[7] By 1971 the dollar's overvaluation no secret: France had been redeeming dollars for gold since the mid-1960s (DeGaulle's speech denouncing Bretton Woods took place in 1965), the London Gold Pool had collapsed in 1968, West Germany effectively abandoned Bretton Woods in May of '71 by allowing the Mark to float (rapidly appreciating), and shortly thereafter the Swiss and British requested redemptions of $50 million and $3 billion respectively.
[8] This was the Smithsonian Agreement, December 71-73.
[9] For data, https://fred.stlouisfed.org/series/M2REAL, and then for calculations FV = PV (1 + r)n and r = (1530 / 710)1/8 – 1 = 10% (approximately).
[10] The second oil shock, which followed the Iranian Revolution of 1979, and which coincided with the central episodes under later discussion, pushed the price over $40 by 1980.
[11] For CPI data, https://www.bls.gov/cpi/tables/historical-cpi-u-201710.pdf – given CPI-U of 40.5 in 71 and 72.6 in 79, we find r = (72.6 / 40.5)1/8 – 1 = 7.6% (approximately).
[12] Joseph Solis-Mullen, "How the Fed's Easy Money Spurred Today's Financial Frenzies," Mises Wire, July 18, 2024, https://mises.org/mises-wire/how-feds-easy-money-spurred-todays-financial-frenzies; Joseph Solis-Mullen, "How the Fed Helped Create Another Calamity: The Ongoing Emerging Market Debt Crisis," Mises Wire, August 26, 2024, https://mises.org/mises-wire/how-fed-helped-create-another-calamity-ongoing-emerging-market-debt-crisis; Joseph Solis-Mullen, "Money and Banking in the US after the Crises of the 1970s and '80s," Mises Wire, September 16, 2024, https://mises.org/mises-wire/money-and-banking-us-after-crises-1970s-and-80s; Joseph Solis-Mullen, "The Federal Reserve, Interest-Rate Suppression, and the Reach for Yield," Libertarian Institute, July 25, 2024, https://libertarianinstitute.org/articles/the-federal-reserve-interest-rate-suppression-and-the-reach-for-yield/; Joseph Solis-Mullen, "Yeah, It Was Mostly the Fed's Fault," Libertarian Institute, September 5, 2024, https://libertarianinstitute.org/articles/yeah-it-was-mostly-the-feds-fault/.
[13] Absolutely no later than 1974.
[14] R. W. Streeter, The Silver Mania: An Expose of the Causes of High Price Volatility of Silver (Dordrecht: D. Reidel Publishing Company 1984), 179.
[15] From around $0.92 to just under $2.00.
[16] Purportedly influenced by Jerome F. Smith's Silver Profits in the 70s: the Coming Boom in Silver, Gold, and Platinum, Bunker was on the record repeatedly saying silver was an investment to be held for the long run. As a potential counterpoint, Fay claims to have Smith on the record as meeting Hunt in early 1979 and the latter being uninterested in Smith's thoughts on his (Bunker's) strategy, specifically the use of futures contracts (Fay, pg. 43). What does not seem debatable, however, is that the Hunts believed in the strategy of holding for the long term. As shall be seen, they devoted enormous resources to the venture, did not sell when they could have, never had a clear exit strategy, and were on the record as saying their goal was to amass and hold as much silver as they could.

[17] Congressional testimony on page 280: https://babel.hathitrust.org/cgi/pt?id=pur1.32754076879802&seq=286 Note: An interesting fact underlying the Hunts' decision to move aggressively into silver in the early 1970s was that it was prior government distortion of the silver market that made it look like such an attractive investment. Not only was it a hard money, but a massive gap in production and industrial demand was growing – temporarily offset by sales from government stores, which were soon to run dry, sending the price skyrocketing. As Streeter, no friend of free markets, was forced to admit, "Since the law of supply and demand had been repealed for silver [a consequence of the Thomas Amendment of 1933 and Silver Purchase Act of 1934] it was not operating when industrial usage started its climb […] Speculative demand was developing [by] 1961 […] Treasury had a big problem" (Streeter 31-34).

[18] That is, on the Chicago Board of Trade (and eventually on the bigger COMEX, that is the Commodity Exchange of New York. More on these in Part III). With respect to futures contracts, these are standard derivative instruments whose value is based on price movements in the underlying asset, and which are agreements between the seller of the contract and the buyer on an agreed amount of a given commodity, at a given price, for delivery by a certain date of expiry. In the case of the Hunts, these were contracts that bought them the option of taking delivery of a certain amount of silver at a predetermined price by a specific date – again, more on these in Parts III and IV.

[19] This included holdings in physical bullion and futures contracts, both of which were owned by Herbert and Bunker separately, jointly, and through various companies formed for this purpose. These included the International Metals Investment Company (IMIC), accounts with Merrill Lynch and Bache Halsey Stuart Shields (henceforth referred to simply as "Bache"), a variety of Hunt family partnerships, corporations, and Hunt-controlled investment entities – even positions held on behalf of or in the name of their children. Critically, the majority of these holdings were not owned outright, but were rather financed, and thus exposed to the vagaries of price movements and subsequent margin calls.

[20] The alleged goal being to execute a short squeeze, an unsubstantiated charge that became central to subsequent mistaken interpretations of the silver episode. Indeed, it is sharply at odds with the Hunts' behavior during the period – at no point, for example, even when it was clear that the price of silver would not be going back up, after the institution of Silver Rule 7, did they take their enormous profits (measured in the billions almost until the very end). In his Congressional testimony the charge was categorically denied. He said, "At no time did I attempt to corner, squeeze, or manipulate the silver market. At no time did I participate in an agreement to corner, squeeze, or manipulate the silver market. At no time did I attempt or agree with others to manipulate the silver market," https://babel.hathitrust.org/cgi/pt?id=pur1.32754076879802&seq=287 from page 281.
section V during discussion of the civil case MINPECO, S.A. v. Hunt.

[21] While it is absolutely certain that the Hunts spoke with wealthy associates about what they were doing, such as Khalid bin Mahfouz, Abdullah al-Mubarak, Naji Nahas, and encouraged the buying of silver as an investment, indeed had a joint position in the IMIC, and associates used fronts such as Gillian Financial and Litardex Traders, to increase their positions, such activities do not de facto constitute an attempt to corner the market. More on this in section V during discussion of the civil case MINPECO, S.A. v. Hunt.

[22] As shall be demonstrated in Part III, prior to the restrictions adopted by the CBOT beginning in October 1979 and the more sweeping COMEX rule changes of January 1980 the Hunts had violated no exchange rules; that, in fact, it was in response to the ability of large players in the silver market to continue accumulating as much silver as their resources allowed that the rules were implemented with the design of preventing further accumulation. These the Hunts definitely sought to evade, definitely in spirit if not in point of fact.

[23] During 1971 silver fluctuated between $1.80 and $1.30, while the period 2015-2025 saw prices range between $15 and $30 (therefore, 22.50-1.50/1.50 X 100 = 1400), with the dollar having lost 82% of its value over the same period due to inflation (1/8.2 X 100 = .12195).

[24] In an interview with Barbara Walters, Bunker actually said, "Invest in silver if you want a good investment on a long-term basis […] With silver you can't go wrong. I think Prices are going up. It is too risky to buy on credit […] You need to hold it, because if the price come down, you're in serious trouble. You could lose your shirt if you did it on credit" (Fay 188).

[25] At times the brothers displayed an incredible naivete with regards to the American system – given their recent experience in Libya, their failure to foresee such a possibility is striking
[26] Specifically, the 1974 Act gave the CFTC the broad authority to promulgate regulations under the Authority of the Commodity Exchange Act of 1936, approve or disapprove changes to rules by the exchanges, to investigate manipulation and fraud, bring enforcement actions, seek federal injunctions, declare market emergencies, or even direct exchanges to take emergency actions.
[27] Something even the zealously anti-Hunt Fay is forced to concede (page 112).
[28] As shall be discussed in Part IV, this did not mean a course of action was automatically guaranteed – Gartner, for example, was skeptical of government intervention in commodity markets, while Stone was a zealous supporter of "consumer protection." There were also personal conflicts that likely prevented easier cooperation – again, as between Gartner and Stone.
[29] Whose support of the Birchers and Christianity, opposition to communism, regulation, and the eastern establishment, et cetera, were well-known.
[30] Fay 110.
[31] Note: because the CBOT was a member-owned non-profit, and thus was not forced to file SEC disclosures or file quarterly earnings reports, this must be inferred by things like trading volume, transaction fees, and seat values, all of which correlate positively with revenue. For a discussion of demutualization, which in the case of the CBOT occurred in 2007, when CME acquired it, ending 150 years of independence, see Roberta S. Karmel's "Turning Seats into Shares: Causes and Implications of Demutualization of Stock and Futures Exchanges," available at: https://repository.uclawsf.edu/hastings_law_journal/vol53/iss2/2
[32] To take a prominent example, that of Henry Jarecki of Mocatta, in the latter half of 1979 his company was holding 30 million ounces of silver and so, following standard practice, he took an equivalent 30 million ounce short position: as the price rose, margin calls came in at the tune of $30 million per $1 dollar rise in silver's price (Fay 127).
[33] Key players included, at COMEX John Rainbolt (Chairman of the Board of Governors), William McDonough (President of COMEX), Vincent D'Ambrosio (COMEX Governor), and Morris Schapiro (former Governor and Executive Committee Member), and at the CBOT James Lovell (Chairman of the Board of Governors), James Worthy (CBOT Governor), Charles Carey (Senior CBOT Officer, later Chairman and President), and Patrick Arbor (Governor). Along with these were key players on the exchanges like Jarecki and Richard Dennis, who were influential though not in a position to explicitly make policy.
[34] In fact the money supply did not contract – although it is likely that the rise in interest rates at least temporarily slowed the rate of expansion – proving this via a simulated counterfactual is not within the scope of the present argument. What is important for our analysis, is to note that the price of funding their leverage became almost twice as expensive as a result of the rate hikes Volcker introduced shortly after becoming Fed Chair in August of 1979.
[35] Initially a heavily hinted at suggestion in the form of a request in October, by March it would be official policy under the Special Credit Restraint Program (SCRP) (Fay 185).
[36] Banks had been specifically instructed to avoid making speculative loans in commodity markets, interest expenses were skyrocketing as the Fed began its tightening, and money was beginning to flow heavily into Treasurys and CDs as interest rates rose dramatically.
[37] This was when the question of position limits were first raised – with Stone and Dunn on one side and Martin and Gartner on the other (Fay 132).
[38] Ibid. 124.
[39] He did offer in that same meeting to "work" with the exchange on delivery until reserves could be built up – a frankly incredible gesture of good-will, though it did nothing to mollify the exchange, particularly as in the same conversation Bunker said he intended to add to his position (Tucille page 340).
[40] Ibid. 341.
[41] The so-called Silver Rule 7, effective January 7, 1980.
[42] This was on January 18, when it hit a spot price in London of $49.45/oz and prices of $50.36 and $52.80 on COMEX and the CBOT, respectively (all prices were intraday).

[43] Effective January 21, 1980.
[44] This was a day later, on January 22.
[45] On January 23 and February 4, respectively; the latter raised margin requirements from $30,000 per contract to $60,000, putting unbearable pressure on the Hunts' already strained liquidity; while the former gathered together all the Hunt family positions, Bunker's, Herbert's, Lamar's, those they had taken out in the children's names, their IMIC positions – in short, everything – in order to force liquidation.
[46] From their highs on January 18, they fell into the $30s through late January and February, below $20 by the third week of March, and finally cratering on Silver Thursday at just over $10/oz.
[47] Technically, the Hunts hadn't made a margin call in over a week by that point, the first technical lapse having occurred on March 17 – Bache, which was by that point tied to the hip with the Hunts, had chosen to accept warehouse receipts as collateral and make the call itself.
[48] As should be obvious to the reader, despite the hyperbolic narratives surrounding the day by the time it came Silver Thursday was actually rather anti-climactic. Silver had already fallen. Despite the rumors of the day about systemic risk, in fact the danger was confined to a handful of institutions, chiefly Bache. The broader market was able to sort through the noise with remarkable efficiency – the panic selling in stocks lasting all of thirty minutes, from about 3:00 when the announcement of the Hunts failing to make their margin call to 3:30, when panic selling subsided and buyers stepped in, the market ending the day down just two points (Tuccille 353) – silver, too, rallied in the following days.
[49] Fay 266.
[50] Bunker: "They got themselves a real nice club there. The exchanges are run by the shorts, for the shirts, with the connivance of the shorts […] there are twenty-three people on the COMEX and almost half of them went short on silver before they changed the rules on us. One guy alone, I heard, made $15 or $20 million from us. It was a sting, a scam" (Tuccille 369).
[51] The pressure of hundreds of thousands and millions of market participants was already working hard against further upward price movements in silver – on the one hand were those who had rode the precious metals ride up and could now, thanks to aggressive Federal Reserve tightening, get so-called "risk free" returns of double digits by pouring that same money into Treasurys; on the other hand, there were the many attics and basements that were being emptied out and silver was pouring onto the market: tea-pots, cutlery, fixings, et cetera (Ibid. 347).
[52] The original insight was prompted by the mechanics of the 1987 crash, where arbitrageurs were constantly trying to pull the value of futures contracts in line with the current price of the actual market. Unlike equity index futures during the 1987 crash, where program trading and portfolio insurance generated arbitrage between futures and the underlying basket of stocks, silver futures represented claims on a physically deliverable commodity. And so under normal conditions, cash-and-carry arbitrage constrained deviations between spot and futures prices by inducing traders to purchase, warehouse, finance, and ultimately deliver physical silver whenever futures traded above carrying costs, while reverse arbitrage operated in the opposite direction. As the Hunts and other investors increasingly withdrew deliverable metal from circulation, the convenience yield associate with immediate possession rose, warehouse inventories tightened, and the linkage between paper claims and physical metal became progressively more fragile. Emergency position limits, followed by liquidation-only trading, did not merely suppress so-called speculative demand, they interrupted the very arbitrage mechanism through which futures and spot prices ordinarily converged, forcing liquidation of paper positions while leaving the underlying scarcity of bullion unresolved.
[53] The business had been profitable for them, particularly at a time of immense economic difficulty for the financial sector – See: Richard Donnelly, "Hunt for a Scapegoat," Barron's, March 31, 1980.
[54] Indeed, we have a good example of a firm exercising precisely this diligence and eschewing business with the Hunts for that reason.
[55] Ismael Fonseca, the company's chief silver trader, accumulated short futures positions that extended far beyond Minpeco's ordinary commercial hedging requirements. That is, rather than limiting his trades to those that would offset the Peruvian company's anticipated silver production, Fonesca believed the price had gone far higher than justified and took large, naked short positions – a bet on the price of silver that exposed the company to escalating

margin obligations as silver prices rose. His activities represent a classic case of rogue trading, worthy of standing alongside the more well-known infamous cases of Nick Leeson and Jerome Kerviel. Just as with Barings and Soc. Gen. senior management in Lima allegedly remained unaware of Fonseca's activities, with internal reporting and risk controls inadequate to the task.

[56] Again, that rule being that so-called speculators, or non-commercial participants, not take physical deliveries.

[57] As has been demonstrated the press was decidedly one-sided, and the Congressional hearings did nothing to counter the narrative – if anything, it offered political opponents like Rosenthal (D-NY) an opportunity to pillory them on a grand stage. With regard to the notion that the globalists – the Trilateralists, Bushes, et cetera – were out to get him, Bunker's belief, there is much suggestive, but nothing conclusive. To take one example: after getting a deal in place for one of his companies, whereby sugar would be effectively paid for with silver, he was informed by Ferdinand Marcos that the IMF had put the kybosh on the idea, threatening to yank its money lines if the country attempted to use silver as a currency (Trucille 331).

[58] One of the faults one can probably rightly accuse them of is deliberately seeking to evade position limits after they were imposed – though this is perhaps understandable as a defense response, though it could equally well be argued that the proper thing to have done at that point was close out their exposed (i.e. leveraged contract) positions.

Bibliography

-Barron's. Donnelly, Richard. "Hunt for a Scapegoat." March 31, 1980.
-Bureau of Labor Statistics. Consumer Price Index for All Urban Consumers (CPI-U): Historical Tables.
-Fay, Stephen. Beyond Greed: How the Two Richest Families in the World, the Hunts of Texas and the House Saud, Tried to Corner the Silver Market-How they Failed, Who Stopped them, and Why it could Happen Again. New York, Viking Press: 1982.
-Federal Reserve Bank of St. Louis. FRED: Real M2 Money Stock.
-Karmel, Roberta S. "Turning Seats into Shares: Causes and Implications of of Demutualization of Stock and Futures Exchanges." Hastings Law Journal 53, no. 2 (2002).
-Libertarian Institute. Various articles on economic history by Joseph Solis-Mullen.
-Mises Wire. Various articles on economic history by Joseph Solis-Mullen.
-New York Times. Various articles on the Hunt Brothers and the silver market.
-Phoenix Refining. "How Two Billionaires Broke the Silver Market." January 29, 2026.
-Streeter, W.J. The Silver Mania: An Expose of the Causes of High Price Volatility of Silver. Dordrecht, D. Reidel Publishing Company: 1984.
-Time. Various articles on the Hunt Brothers and the silver market.
-Tuccille, Jerome. Kingdom: The Story of the Hunt Family of Texas. Ottawa, Jameson Books: 1984.
-U.S. Congress. Silver Prices and the Adequacy of Federal Actions in the Marketplace. Hearings before the appropriate congressional committee, 1980.
-Wall Street Journal. Notice of Herbert Hunt's death, May 3, 2024.

On the Minting of Money: *Introduction*

By Ralph Benko

ABSTRACT: With the publication of *On the Minting of Money* by Nicolaus Copernicus on the 500th anniversary of its original publication, editor Ralph Benko offers the most thorough and up-to-date collection of Copernicus' writings which amount to the foundation for today's understanding of monetary integrity and currency debasement. Benko's introduction to the collection explores the famous astronomer's early observations of money, gold's role in the U.S. monetary system throughout history, and how the dangers of unmooring the dollar from a tangible asset with real value.

On the Minting of Money: Introduction

The Golden Intellectual Provenance of the Gold Standard

The classical gold standard has a more profound pedigree than many know.

It is fairly widely understood that the classical gold standard originally was designed, in 1717, by Sir Isaac Newton, then master of the mint of Great Britain. It lasted for two centuries, and it is an irony of history that John Law's notorious experiment with paper money, which ruined his investors, France, and himself and lasted but three years, was initiated in the same year.

The fact of Newton's role as architect alone would provide the gold standard with a most dignified intellectual provenance. Now comes a new, meticulously researched, and lucidly devised translation by classicist Gerald Malsbary (PhD, University of Toronto, 1988; currently director of first-year symposium at Belmont Abbey College).

Through this translation, scholars, intellectuals, and policymakers will readily be able to discern that the fundamental intellectual groundwork for the classical gold standard was laid by another scientific icon, Nicolaus Copernicus.

Yes, Copernicus, the very same who placed the sun in the center of the solar system.

Prof. Malsbary's translation shows Copernicus's widely overlooked tract *On the Minting of Money* as no more dated than heliocentricity, contemporary and as lucid as anything ever written on monetary policy. Copernicus was as great a stylist as Lord Keynes. And, as his fundamental breakthrough in astronomy suggests, Copernicus was the more rigorously scientific thinker.

Copernicus's observations are as pertinent today as when he composed them in 1526. Prof. Malsbary has compared all available extant earlier translations of this work into English and, moreover, provides a rich critical apparatus. Malsbary hereby furnishes an invaluable addition both to scholarship and to the contemporary policy discourse, now fomenting in the United States Congress and around the world, on monetary reform.

Economists seek to present their work as rigorous science. It therefore is an irony and an oddity that modern academic economists find themselves falling within the political provenance of William Jennings Bryan and Richard Nixon rather than the scientific provenance of Copernicus and Newton.

Bryan's great silver-tongued speech at the Democratic convention of 1896 propelled him then, and twice later, to a presidential nomination and finally into the role of secretary of state under President Wilson. On the convention floor he declaimed against the restoration of the classical gold standard. "You shall not press down upon the brow of labor this crown of thorns. You shall not crucify mankind upon a cross of gold."

And yet, notwithstanding these resounding phrases (which failed to propel him into the presidency, which went to his Republican rival, William McKinley, who instituted the gold standard in 1900), Bryan was not greatly respected by his contemporaries as a thinker. As Roger T. Johnson wrote in Historical Beginnings … The Federal Reserve (published by the Federal Reserve Bank of Boston, revised 2010, p. 20).

> *For years Bryan had a reputation as one of the nation's most outstanding and enthralling publicspeakers, but some people who knew him best believed that the power of his oratory concealed the paucity of his intellect. One of his cabinet colleagues later sneered: "I discovered that one could drive a prairie schooner through any part of his argument and never scrape against a fact or a sound statement."*

More ironically yet, Bryan today probably is best remembered for his role in prosecuting Tennessee

schoolteacher John Scopes for daring to teach evolution in the public schools of Tennessee — as dramatized in the play Inherit the Wind. How odd, then, that the academic experts should ignore Copernicus and Newton to embrace the position of Bryan, a creationist, in championing fiduciary paper currency (itself monetary creationism).

How odd, also, that academics, almost unanimously of a progressive political bent, should find themselves apologists for a monetary policy visited upon the world by Richard Nixon. Nixon was, from his earliest days, and remains in memory, something of a *bête noire* of progressives. And yet the preeminent progressive economists of today find themselves in effect apologists for a policy that is the legacy of Richard M. Nixon.

Even Karl Marx was for the gold standard. And yet, progressives remain the only remaining enthusiastic champions of the last vestige of Nixon's "New Economic Policy," the final repudiation of the gold standard. It strikes this writer as no coincidence that the stagnation of middle-class earnings — and the emergence of severe income inequality — correlates tightly with the embrace of a system of free-floating (or, rather, sinking) paper currency.

Why, then, do progressive academic economists obsessively defend this last artifact of Nixonomics? A vast, and unwarranted, disdain among economists clouds the reputation of the classical gold standard. The most likely answer derives from what the late professor Jacques Rueff (member of L'Académie française and of the Ordre national de la Légion d'honneur), writing in *The Monetary Sin of the West* (Macmillan Company, 1972, pp. 23–24), termed "the outcome of an unbelievable collective mistake which, when people become aware of it, will be viewed by history as an object of astonishment and scandal."

The "unbelievable collective mistake" that he refers to was the supplanting of the classical, or true, gold standard with the "gold-exchange standard." The Great Depression was attributed, falsely (although not maliciously), to the gold standard. But the true gold standard had been suspended almost a decade prior, at Genoa, to be replaced by its "evil twin," the superficially similar but inherently defective gold-exchange standard. Prof. Rueff called it a grotesque caricature of the gold standard.

Public intellectuals (although not yet most academic economists) are beginning to unwind this crucial collapsed distinction. Perforce, new interest in the classical gold standard is beginning to arise in the policy discourse. A renewed appreciation of the classical gold standard is evident from the fact that its proponents recently being treated with dignity in respected venues such as ProCon.org, Debate.org, and IntelligenceSquared.com.

Perhaps Hayek (himself no proponent of the classical gold standard), in his Nobel Prize lecture delivered December 11, 1974, put his finger on the root cause of the disdain that academic economists show toward the classical gold standard. He entitled this lecture "The Pretence of Knowledge":

> *"There is as much reason to be apprehensive about the long run dangers created in a much wider field by the uncritical acceptance of assertions which have the appearance of being scientific as there is with regard to the problems I have just discussed. What I mainly wanted to bring out by the topical illustration is that certainly in my field, but I believe also generally in the sciences of man, what looks superficially like the most scientific procedure is often the most unscientific, and, beyond this, that in these fields there are definite limits to what we can expect science to achieve. This means that to entrust to science — or to deliberate control according to scientific principles — more than scientific method can achieve may have deplorable effects. The progress of the natural sciences in modern times has of course so much exceeded all expectations that any suggestion that there may be some limits to it is bound to arouse suspicion. Especially all those will resist such an insight who have hoped that our increasing power of prediction and control, generally regarded as the characteristic result of scientific advance, applied to the processes of society, would soon enable us to mould society entirely to our liking. It is indeed true*

> *that, in contrast to the exhilaration which the discoveries of the physical sciences tend to produce, the insights which we gain from the study of society more often have a dampening effect on our aspirations; and it is perhaps not surprising that the more impetuous younger members of our profession are not always prepared to accept this. Yet the confidence in the unlimited power of science is only too often based on a false belief that the scientific method consists in the application of a readymade technique, or in imitating the form rather than the substance of scientific procedure, as if one needed only to follow some cooking recipes to solve all social problems. It sometimes almost seems as if the techniques of science were more easily learnt than the thinking that shows us what the problems are and how to approach them.... If we are to safeguard the reputation of science, and to prevent the arrogation of knowledge based on a superficial similarity of procedure with that of the physical sciences, much effort will have to be directed toward debunking such arrogations, some of which have by now become the vested interest of established university departments." (Emphasis in original.)*

Consider, though, that from 1792, when the United States under Treasury Secretary Alexander Hamilton put the US on a bimetallic gold and silver standard, the conversion price of the dollar to gold was $20.67/oz. The interwar gold standard, adopted at Genoa in 1922, replaced the gold standard with the gold-exchange standard.

The gold-exchange standard was characterized by French economist Jacques Rueff as "a grotesque caricature" of the gold standard, having the superficial appearance of a gold standard without the mechanisms to effect world monetary stability. This devolution is comprehensively outlined by Prof. Robert Mundell in his 1999 Nobel Prize in Economics acceptance speech.

That substitution of the gold-exchange standard for the classical gold standard caused (as noted by agricultural economist George Warren — the leading commodity price expert of his era and FDR's original monetary policy advisor) an increase in the general price level by 50%. The price of gold was fixed to its pre-war parity. This contributed to — in the opinion of Rueff, caused — the Great Depression.

Warren, recognizing the toxic deflationary pressure caused thereby, persuaded FDR to revalue the dollar to $35/oz. As documented by Liaquat Ahamed in his Pulitzer Prize in History-winning *Lords of Finance: The Bankers Who Broke the World*, this revaluation promptly lifted the Great Depression ... until the Treasury, unclear on the concept, sterilized the resulting international gold inflows to the US. A severe second dip ensued.

From 1934 to 1971, the U.S. dollar was legally defined at $35 per troy ounce of gold. This was internationally codified from 1946 to 1971 under the Bretton Woods international monetary system. Thereby, most other currencies were legally convertible to the gold-convertible dollar, making the dollar the world's reserve currency, a status characterized by French finance minister (later president) Valery Giscard d'Estaing as an "exorbitant privilege."

President Lyndon Johnson, *de facto*, and President Richard Nixon, *de jure* (in "temporarily closing the gold window" on the deeply unfortunate advice of his Treasury Secretary John Connally) brought an end to the last remnants of the gold standard. Their unmooring of the dollar has caused a sustained loss of value, with gold, as of this writing, trading over $4,500 per ounce.

Presumably, Copernicus and young Keynes would have been horrified. But not surprised.

The more impetuous members of the profession of economics, whether young or old, indeed could benefit by soberly "debunking such arrogations." To begin this, there hardly can be a better place to start than Copernicus's *On the Minting of Money*. Profound gratitude is due to this volume's co-editor, Charles Kadlec, for the critical role he played in commissioning Prof. Malsbary to undertake this project. Frs. Vincent Fitzpatrick and C. John McCloskey deserve recognition and appreciation

for their providential roles in finding and effecting an introduction to Prof. Malsbary. Likewise, to the technical editor of the 2026 edition, Andy Fluke, for his assistance with this update for the 500th anniversary of the text.

Special heartfelt thanks are offered to Lewis E. Lehrman, the great living disciple of Prof. Rueff and eminence grise of the classical gold standard and author of, among other significant works, *The True Gold Standard* and *Money, Gold, and History*, for furnishing the foreword to Prof. Malsbary's new translation of this timeless classic.

In addition to the gratitude to those already referenced herein, in justice let tribute be paid to the valiant ones who kept raised the torch beside the golden door during the classical gold standard's long eclipse.

The roster, too long to recite in its entirety, includes the Hon. Jack Kemp, George Gilder, Dr. Arthur B. Laffer, the Hon. S.S. Tarapore, the Hon. Manuel Hinds, Sean Fieler, Paul Fabra, Prof. Brian Domitrovich, Prof. William Luther, Prof. Lawrence White, Prof. Richard Timberlake, Prof. Steve Hanke, Dr. Ron Paul, Dr. Kurt Schuler, Dr. Lawrence Parks, Steve Forbes, Lydia Mashburn Newman, Doug Centilli, John Allison, John Tamny, James Grant, Howard Segermark, Seth Lipsky, Richard Lowrie, Hugo Salinas-Price, John Mueller, Nathan Lewis, and members of the rising generation such as Rich Danker and Jonathan Decker. The world remains much indebted to the great Jacques Rueff.

It is an honor to present On the Minting of Money, by Nicolaus Copernicus (1526), translated from the original Latin by Gerald Malsbary with his prefatory remarks and bibliography. The elegance of the provenance of the gold standard hereby is restored to its deserved level.

On the Minting of Money

By Nicolaus Copernicus

Reprint of selected sections of *On the Minting of Money (Monetae Cudendae Ratio)*, 1526, courtesy of Ralph Benko

Abstract: In 1526, renowned astronomer Nicolaus Copernicus, best known for his work in placing the sun at the center of our solar system, applied the same scientific rigor to his analysis of money. In the sections of his treatise, *Theoretical Foundations, the Debasement of Prussian Currency, a Brief History, A Plan for Reform, and Epilogue on the Restoration of Money*, Copernicus identifies the gradual debasement of currency as one of the most destructive acts that kings (and today, central banks) regularly engage in. Through a historical account of the degradation of Prussian currency due to excessive printing and coin clipping (debasement), Copernicus lays the foundation for the importance of sound money roughly 350 years before the founding of the Austrian School of Economics.

On the Minting of Money

Theoretical Foundations

Although there are countless maladies that are forever causing the decline of kingdoms, princedoms, and republics, the following four (in my judgment) are the most serious: civil discord, a high death rate, sterility of the soil, and the debasement of coinage. The first three are so obvious that everybody recognizes the damage they cause; but the fourth one, which has to do with money, is noticed by only a few very thoughtful people, since it does not operate all at once and at a single blow, but gradually overthrows governments, and in a hidden, insidious way.

Money, or coinage, is gold or silver that has been specially marked — in accordance with policy established by any government or head of government — for the purpose of reckoning the prices of things that are bought and sold. Money is therefore a kind of common "measuring stick" for the valuation of things. Now, whatever is taken as a measure has to be stable — must keep to a fixed limit. Otherwise, public order will necessarily be disturbed, and the buyers and sellers of things will be cheated many times over, just as if basic measures of length [Latin *ulna*, or *ell*], bulk measure [Latin *modius*, *orpeck*], or weight did not have a fixed quantity. Now, I think that the relevant measure here is the *valuation* [Latin *aestimatio*] of the money as such, and, although this is *founded* in the quality of the metal it is made of, nevertheless, money's material or metallic value [Latin *valor*] must be distinguished from its valuation as money [*aestimatio*]; for money can be valued more in itself than the material it is composed of and vice versa [i.e., its material value may be more than its actual valuation].[1]

It is necessary for money to be established: even though exchange could also take place simply by weights of gold or silver alone (since, by universal human consent, gold and silver are everywhere highly valued); nevertheless, money is needed for two reasons: first, because of the inconvenience of always having to carry around heavy weights of metal, and second, because the real value of the metals is not easily grasped by everyone at a glance. Thus it has become customary to mark money with a public seal, by means of which the proper amount of gold or silver is indicated as present in each coin, and that the public authority is to be trusted in this.

It is customary for coins — especially silver coins — to be made with an alloy of bronze,[2] and this for two reasons (as I judge at least): (1) that the coins be less exposed to the danger of being hoarded up and remelted than they would be if they were made of pure silver and (2) so that the silver divided up into tiny portions, by being mixed with bronze, can have a convenient size in the form of small coins; a third reason can be added as well: (3) with the support of the bronze alloy, the coins will last longer and not quickly wear away with use.

Now a correct and fair valuation of money is in place when each coin holds slightly less gold or silver than the amount of gold or silver it can buy: the difference would be the added value due to the expense of minting the coins. The mark put on the coin, that is to say, must add some worth to the material as such.[3]

This worth is cheapened, for the most part, through too much quantity [of silver]: that is to say, if so much silver is made into coins that people desire the sheer mass of the silver[4] more than the money itself; in this way, the worth of the money [*dignitas*] is damaged when it is not possible to buy as much silver by its means as the money itself contains, and a greater value is realized by destroying (i.e., melting down) the money to get the silver. The remedy for this problem is to withhold from the coining of new money until it equals out, and the money is worth more than the silver.[5]

The [material] value of money is lessened in many ways: either through defect of material alone, namely, when more bronze is mixed with silver than is right for that particular weight of coin; or through the loss of [total] weight of the coin, even though the proportion of bronze to silver is correct; or (and this is the worst case) through both of these defects

occurring at the same time; finally, the value can just diminish on its own through usage, over a long passage of time, and this is the only reason for making new money. The evidence of this happening is, if the silver in the money is found to be significantly less than what can be bought with it — and this is rightly considered debasement [or *poverty*: Latin *penuria*] of the currency.[6]

The Debasement of Prussian Currency, A Brief History

These basic principles of coinage having been set out, let us consider the specific case of Prussian monetary history, and show, first, how it reached such a low level of value.

This money circulates under the names of *marks*, *scots*, and so forth, and there are also weights going by the same names: a *weighed* mark [i.e., a mark "of weight" — Latin *marcha ponderis*] is one half-pound. But a *counted* mark [i.e., a mark of money — Latin *marcha numeri*] consists of sixty *solids* [Latin *solidi*, French *sous*, German *schillings*]. All this is commonly known. In order to ward off any confusion about these two kinds of mark, from this point forward, whenever the term *mark* is used, it will be understood to refer to the *counted* or money type of mark; by the name of *pound* [Latin *libra*], however, a weight of two [*weighed*] marks will be signified, it being understood that a half-pound is equivalent to one mark of weight.

Now, we learn from ancient archives and written accounts that, under the reign of Conrad of Jungingen,[7] (i.e., not long before the Battle of Tannenberg[8] [1410]), a ½-pound (or 1 mark) of pure silver could be purchased for 2 Prussian marks [of money] and 8 scots,[9] when a 1/4th part of bronze was alloyed with 3/4ths of silver. From a ½-pound of that [alloyed] mass they made 112 *solidi* [or *schillings*].[10] Adding 1/3rd of this to it (1/3rd of 112 equals 37 1/3) makes a total of 149, plus 2 *denarii* [i.e. 2 *obols* or pennies, each a 1/6th part of a schilling: or 1/3rd of a schilling] making 149 1/3 schillings, weighing 2/3rd of a whole pound, or 32 scots of silver [i.e., 24 for a 1-weight mark plus 8 for another 1/3rd of a mark], which will clearly be 3/4th pure silver (and that was a ½-pound of pure silver to begin with [in weight]). But it has already been said that the price of that much silver was 140 *solidi* per ½-pound. The other 9 1/3 solids were accounted for by the value of the coinage per se [i.e., its *aestimatio*].[11] In this way its valuation was conveniently correlated with its material value.

This was the money of Winrich [of Kniprode], and Conrad and Ulrich [of Jungingen],[12] and pieces of it can still be found in their treasuries. But after the defeat of Prussia and the battle mentioned above, the decline of the republic began to appear in the currency. The *solids* [i.e., *schillings*] under Heinrich,[13] although they looked just like the ones we described above, have been discovered to contain no more than 3/5ths silver. This error progressed to the point where there were 3 parts of bronze to a 1/4th part of silver — the exact inverse of before. It was really "copper money," not silver anymore, even though the weight was still 112 solids per ½-pound.[14] But since it does not at all make sense to introduce new, good money while the old, cheaper money is still in circulation, so much the more was it mistaken to introduce new, cheaper money when the old, better money was still circulating, because this not only tainted the old money, but as it were, overthrew it completely. The administration of Michael [of Sternberg] and [Paul Belitzer of] Rusdorff[15] wanted to fix this problem and bring the currency back to its original state. They minted new *solidi* that we now call *grossi*; but since it didn't seem possible to abolish the older, cheaper money without taking a substantial loss, the old solidi remained in use along with the new, and this was a signal error.

Two "old schillings" now passed for one of the new, and now the people had a double kind of mark, made of old schillings or of new ones. The new or good mark, and the old or cheap mark, were both worth sixty schillings. *Obols* [smallest unit, a kind of *penny*] remained in use, but for an old schilling six were exchanged, for a new one, twelve. (We can easily gather from this that originally a *solidus* was made up of twelve *obols*. For just as we call a fifteenth part a *mandel*, so in many parts of Germany the word *schilling* is used for a twelfth part). But the name of *novi solidi* [or *new schillings*] remained until

the times when I can remember: how they eventually became *grossi* [or *groats*] I will explain below.

Eight marks, then, of new schillings (sixty each) contained one pound of silver. This is sufficiently clear from their composition: they are one-half bronze and one-half silver, and eight marks weigh about two pounds. The old ones weighed the same, but had half the silver content [Latin *valor*]: it took sixteen marks to get a pound of silver, so the ratio of weight to silver content was four to one.

Afterwards, however, when there was a change of government, when the cities were granted the power to mint coinage (and they fully used this privilege), money increased in quantity but not in quality [Latin *bonitas — goodness*].[16] A fifth part of silver began to be combined with four parts of bronze in *old schillings*, until it required twenty marks to be changed for a pound of silver.[17] At this stage, since the *new schillings* [i.e., of the reformed value] were now more than twice the worth of the latest schillings, they were made into scots, that were now to be twenty-four [instead of sixty] to the lightweight mark.[18] Thereby a fifth part of the worth [Latin *bonitas*] of the mark was lost.[19] After that, when the new schillings (now made into scots) disappeared since they had been accepted even through the March [of Brandenburg], [20] it was decided to recall them through the [new] valuation of *groats* [Latin *grossi*], that is, to have each groat be the equivalent of three [old, cheaper] schillings.[21] This was a huge mistake and completely beneath the dignity of such a wise gathering of leaders; as if Prussia could not survive without them, although they were not worth more than fifteen pennies each [Latin *denarii*] of the current value of money, when the quantity was overwhelming its valuation [Latin *aestimatio*]. Thus the groats were out of sync with the schillings by being worth a fifth or sixth part less than what they were established to be,[22] and by this fallacious and unfair valuation, they detracted from the dignity of the schilling. Perhaps it was only fitting to take revenge for the injury that schillings had first inflicted on the groats by forcing them to become scots![23]

But woe to you, Prussia! With your collapse, you are paying the price of a badly administered republic!

And now, although both the material value and the valuation of your money are vanishing everywhere, still there is no cessation from the coining of money, and even when the expenses [of doing so] are not being met, through which the later coinages would seem to be equivalent of the earlier, and a later coin was always introduced that ruined the quality of the earlier coin, until the valuation of schillings became proportionate to the material worth of the groats, and twenty-four light marks went for one pound of silver. At long last, even such a diminished value of the money should have remained: indeed, there was no thought of formally establishing it. But what had over so long a period of time become the inveterate habit (or license) of adulterating, pilfering, and cheapening the money,[24] has not ceased in our day. For what it later became and what it is today I am ashamed to say. The value has collapsed so much that now *thirty* marks scarcely contain a pound of silver! What will come next, unless we do something? Prussia will be totally empty of gold and silver and will have only copper money. Imports of foreign goods will cease and soon all business dealings as well. What foreign merchant will want to exchange his goods for copper? And finally, what one of our merchants will be able to acquire foreign goods with that same money? But those who are in charge think little of this huge disaster of the Prussian republic, and their most sweet fatherland (to which they owe — in second place, of course, to their piety toward God — not only their occupations but their very lives) allow it to languish and go to ruin, more and more as the days go by, through their spineless negligence.

So then, while Prussian currency, and thus the entire country, suffers from such great problems, only the goldsmiths and people who are expert in judging the quality of metals profit from these miseries. This is because they are good at collecting the old money out of the mix, can melt it down and sell the silver, always getting more silver out of the inexperienced populace. Once those early shillings have completely disappeared, they start to collect the second best, leaving a pile of inferior money left over. This is what leads to that constant complaint people make that the price of gold, silver, the family grocery bill, the cost of services, and anything that anybody needs is going up; but we are blind to the fact that the expensiveness

of everything proceeds from the debasement of the money. Everything goes up or down according to the condition of money, and especially gold and silver, whose value we do not determine by bronze or copper but by gold and silver: the point is, gold and silver are a kind of basis upon which the appreciation of money's value [*aestimatio*] depends.

But perhaps someone will object, "A leaner money is more advantageous to human uses: it really helps the poor, by bringing a lower price of groceries and by supplying the other necessities of life more easily, whereas when the money is of higher value, everything becomes more expensive, and tenant farmers and people who have to pay annual rents are burdened more than usual." The people who will applaud this point of view are the ones who have been deprived of their hope of the profits they were planning to make, before their ability to mint money was prohibited, and probably certain merchants and craftsmen might agree: people who won't otherwise lose anything, when they sell their services and goods at the value of gold, and can exchange that for a greater sum of money, the cheaper the money's worth.

But if such persons will only consider the common good [*communis utilitas*], they certainly will not deny that an excellent currency is good not only for the state but for themselves and all classes of people, and that cheap money is harmful. The truth of this is clear, not only for many other reasons but especially thanks to that wise teacher, experience: we see countries that have good money flourishing most of all, and those with poor money declining and perishing. It is no wonder that Prussia was flourishing when one Prussian mark was changed for two Hungarian florins, and when, as I said in the beginning, two Prussian marks and eight scots were exchanged for a half-pound, that is, a (weighted) mark of pure silver. But since then, the money has been cheapening more and more every day, and our country through this pestilence and other catastrophes has been nearly brought to ruin. It is also well known that wherever cheap money is in use, the practice of the better arts and human talents is neglected through laziness, lack of interest and a kind of cowardly idleness, and there is no abundance of anything: nobody has forgotten how inexpensively grain and food could be purchased in Prussia when we still had good money. Now that the currency is debased, we are experiencing a rise in the price of everything useful for human life. And therefore it is clear that cheap money encourages laziness rather than helps anyone's poverty. Nor will an improvement of money burden those who pay a yearly rent, for although they may seem to be paying more than usual for their property, they will also be selling the fruits of their land, their livestock, and that kind of thing for a larger price themselves. The reciprocal give-and-take of buying and selling will be balanced out through the proportionate measurement of the money.

A Plan For Reform

If it has finally been determined, then, to rescue, some day, the present disastrous condition of Prussia through a restoration of the currency, we must first of all take care to avoid the confusion that comes from having a variety of mints producing the money. The multiplicity prevents uniformity, and it will be more work to keep a number of mints on the right path than one.… *It would be advantageous therefore for there to be only one common mint for all Prussia,*[25] *in which every type of money would be stamped on one side with the insignia of the lands of Prussia: they should have a crown at the top, so that the superiority of the kingdom would be recognized. On the obverse, the insignia of the duke of Prussia could be seen under the crown above it.*

But if the duke of Prussia refuses this arrangement, and wants to have his own mint … let two places (at most) be designated, one in the lands of the royal majesty and the other in the territory of the duke.[26] In the former, let money be minted with royal insignia on one side but with [the insignia of] the lands of Prussia on the other, but in the latter mint, let one side have royal insignia and the other the duke's insignia. Let both coinages be subject to the royal authority and be used and accepted throughout *the entire land by the order of His Royal Majesty. This measure will have no small impetus toward reconciling those who disagree and toward encouraging the successful pursuit of business operations.* the entire land by the order of His Royal Majesty. This measure will have no small impetus toward reconciling those

who disagree and toward encouraging the successful pursuit of business operations.

It would be worth the trouble to have both these coinages of the same grain [*granum*], metallic value [*valor*], and monetary value [*aestimatio*], and that they stay that way permanently, through the vigilant supervision of the political authorities, according to the arrangement now to be established.[27] And it would also be important that the authorities in both operations obtain no profit from coining money: let only so much bronze be added that the monetary value exceeds the metallic value just enough to reimburse the cost of making the money, and to remove the temptation to melt it down again.[28]

In order, then, to avoid falling once again into the confusion of our times caused by the mixture of the new money with the old money, it seems imperative to get rid of the old money completely, and let it perish, once the new money has been made; and that this old money then be exchanged for new, according to the proportion of its metallic value. Otherwise, the work of renewing the coinage will be a waste of time, and the resulting confusion perhaps worse than before. Once again, the old money will adulterate the worth of the new money: the mixed money will make the total weigh less than what is proper, and once it has been excessively increased [in quantity], will lead to the problem described above.[29] Now, before this time people have sought to solve this problem by keeping the old money in circulation and simply allowing it a smaller comparative worth in proportion as its metallic value is less or cheaper than that of the new money. But this cannot be done without huge confusion: there is already such a complicated diversity of groats [*grossi*] and schillings [*solidi*] and even pennies [*denarii*] that any given coin can hardly be judged for its value, or be distinguished from other coins. This is how an artificially induced variety of money generates inextricable confusion and increases trouble for merchants and labor contractors, not to mention other problems. Therefore, it will always be preferable to completely abolish the old money when restoring new money. Such a relatively minor loss should always be endured with patience — if we should even consider a "loss" what actually increases profits and brings continual improvement and growth to the republic.

But it is extremely difficult — and, after the catastrophe we have suffered, almost impossible — to restore Prussian money to its original quality. But, although any restoration will take a lot of trouble, nevertheless in the conditions of our time it does seem possible and convenient to effect a renovation, so that at least one pound of silver would go into twenty marks, in the following way: let three pounds of bronze be used for the schillings, along with one pound of silver minus one half-ounce or however much must be allowed
for the expenses of minting. Let that molten mass be made into twenty marks, which will be able to pay for one pound (or two-weight marks) of silver. Scots, groats, and obols [i.e., pennies] could then be produced as desired, according to the same formula.

Epilogue on the Restoration of Money

The following points need to be taken into account in understanding the repair and preservation of money.

First: let there be no renewal without the slow deliberation and unanimous decree of the rulers.

Second: let there be only one place set aside, if possible, for an official mint, and let such a mint produce money with a stamp on it, not in the name of one city alone, but for the whole country, together with its symbols. The Polish money demonstrates the significance of this recommendation, for it is only because of this that it keeps its value over so much territory.

Third: when new money is being minted and distributed, let the old money be taken out of circulation and abolished.

Fourth: let it be invariably, and without any compromise, perpetually, observed that twenty marks and no more be made from one pound of pure silver, with only so much being subtracted as can cover the expenses of the minting. In this way, Prussian money will be proportionate to Polish money, and twenty Prussian groats as well as twenty Polish groats will be the equivalent of one Prussian mark. Polish groats will be the equivalent of one Prussian mark.

Fifth: that the excess production of money be avoided.

Sixth: that the money be simultaneously produced in all its denominations. Scots or groats, solids [schillings], and obols [pennies] should all be minted. With respect to the amount of alloy: whether groats or solids are produced, or even silver *denarii* which can add up to a *ferto* [one fourth of a mark — German *Viertel*] or halfmark, or even a whole mark, let it be decided according to the wishes of those who are concerned, provided only that moderation be exercised and that a decision is made that can have lasting effectiveness.

Let there be provision for *obols* as well, since they have simply too little value now, with an entire mark's worth of them containing barely more silver than in one groat.

A final difficulty arises from the existence of contracts and obligations made before and after the renewal of the money. A way should be found for solving these issues that does not overly burden the contracting parties.

Footnotes

[1] This distinction appears to be one of Copernicus's most serious points, as will be seen in its applications later. The French translation by Wolowski 1864 and the German translation by Sommerfeld 1978, as well as the four previous English translations by Taylor 1955, Moore 1965, Reiss 1979, and Rosen 1985 have been helpful for clarifying many choices in my translation.
[2] The Latin word *aes* refers usually to an alloy of mostly copper and a small amount of tin, known as bronze (not brass). This alloy is in turn alloyed with silver in the making of silver coins.
[3] Later in the essay it is explained that 1/15th of the silver value was allowed for this — at least in the early days.
[4] That is, in ingot, bar, or bullion form.
[5] This can happen when money is circulating with the same "face value" but quite different material values: if you can tell the difference between a silver-rich coin and a silver-poor coin, it would make sense to smelt the good ones down and produce a greater quantity of the cheaper type. This would be an instance of "Gresham's Law."
[6] We should note the important difference between the metallic value of the coin being "slightly less" (Latin *paulo minus* — two paragraphs above) and "significantly less" (Latin *notabili quantitate minus*) than its power to purchase gold or silver. The former is a sign of healthy money, the latter of unhealthy.
[7] Grand Master of the Teutonic Knights, 1393–1407.
[8] Also known as the Battle of Grunwald. The Knights, defeated by Poles and Lithuanians, afterwards began to decline.

[9] This would be 140 solids. A scot was 1/24th of a mark, and so 8 scots = ⅓ mark. Therefore, 2⅓ marks (2 marks, plus 8 scots) could in those days buy a ½-pound of pure silver. This sum would also be 140 *solidi*, or "solids" (1 mark = 60 solids; 2 x 60 = 120; 120 + 20 solids [i.e., ⅓ of 60, which is also the equivalent of 8 scots] = 140 solids).
[10] The figure 112 is arrived at as follows: we now have (in our alloy) only 3/4 of the original ½-pound of silver (which cost 140 solidi). That means the worth of the silver in this smaller quantity is now only 105 *solidi*. Seven *solidi* (or 1/15th of 105) are then added to this to reflect the cost of the minting itself (the bronze, the stamping, etc.): 105 + 7 = 112.
[11] Copernicus appears now to be showing the consistency of the old system by explaining how the outcome coin value of the ¾-silver–¼-copper alloy can be computed a different way: by starting with the original ½-pound of silver — to which the 1/4th part of bronze has already been alloyed (i.e., already a full 140 solids' worth of silver) — we would still have to *add* something to reflect the value of the minting, as before. Again, the proportion of the small addition would be the same (i.e., 9⅓ solids' worth, or exactly 1/15th of 140), for a total of 149⅓ solids.
[12] These reigns cover the years 1352–1410 (see Reiss and Hinderliter 1979, p.307, n. 54, and Sommerfeld 1978, p. 79).
[13] Heinrich Reuss reigned 1410–13.
[14] This point illustrates how the "½-pound weight" (or "weight mark") used for making 112 solidi was always a ½-pound of *alloyed* metal, but now with the proportion of pure silver ever shrinking, it is ¼ silver, ¾ copper.
[15] See Reiss and Hinderliter 1979, p. 307 n. 56, who correct the names. The period is 1413–40.
[16] In the second half of the fifteenth century, a large part of Prussia became subject to the Polish crown ("Royal Prussia"). The eastern parts were still under the Teutonic knights until 1525, when they became a secular dukedom in feudal subordination to the Kingdom of Poland ("Ducal Prussia"). The area where Copernicus lived (Varmia) was yet-another semi-independent ecclesiastical province of Poland, surrounded on three sides by Ducal Prussia.
[17] The steps of the decline would be (a) ¾ silver–1/4th copper: about 5 marks per pound of silver; (b) 3/5th silver–2/5th copper: about 6 marks and 10 solidi for a pound of silver; (c) 1/4th silver–3/4th copper: about 16 marks per pound of silver; (d) reform under Michael and Rusdorff: ½ silver–½ copper: 8 marks per pound of silver ("new shillings"); (e) new coinages of the cities: 1/5th silver– 4/5th copper: 20 marks per pound of silver.
[18] We should recall from an earlier paragraph that the scot was worth 1/24th of a mark. Now, setting 8 marks' worth of *new schillings* (60 x 8 = 480 schillings to a pound of silver) beside 20 marks of the "recent" schillings (60 x 20 = 1,200 schillings to a pound of silver), shows that the new were exactly 2 ½ times as valuable as the old (8 x 2.5 = 20). Since 24 x 2.5 = 60, it was reasonable to redefine a new schilling as a scot (or 1/24th) of the light (or cheap) mark.
[19] Copernicus seems to be referring here to the change from the 16-mark pound (= stage c in n. 17 above) to the 20-mark pound (= stage e), since an inflation of 4 marks is exactly 1/5th of 20.
[20] Reiss and Hinderliter 1979, p. 308. The use of multiple coinages from the variety of neighboring states is clearly another part of the problem.
[21] This is the narration promised earlier: how *solidi* became *grossi*.
[22] There are now 20 groats to the mark in the place of 60 schillings: 3 (old) schillings now make 1 groat (instead of 2 ½ old schillings being the equivalent of the new schilling-turnedscot). An inflation from 2 ½ to 3 is "a fifth or sixth part" (1/5th of 2 ½ and 1/6th of 3).
[23] A touch of humor. New schillings became scots (and disappeared), but then groats got revenge by "taking over" the old schillings, 3 to 1.
[24] Taylor 1955 has it thus: "[the] habit of melting down money and re-issuing it at a debased value"; Reiss 1979 has it as the "custom … of counterfeiting, clipping and altering money." Taylor's rendition seems closer to the meaning in the context, where the quasi-official actions of local minting enterprises is in question, rather than sheer criminal "counterfeiting."

[25] The sentences in italics appear in three manuscripts but were crossed out in two. Since the sentences recommend only a single mint for both Prussias, the attempt to remove the passage probably reflects the interests of Ducal Prussia in having its own mint rather than sharing a single mint with other parts of Prussia. If the sentences in italics are omitted, the treatise tactfully leaves aside the disagreement between the king and the duke on this point.

[26] Duke Albrecht (1490–1568), the former grand master of the Teutonic Knights, ruled his part of Prussia after April 8, 1525, as a secular (and Lutheran) fief of the Kingdom of Poland. Since the word *duke* (Latin *dux*, *ducis*) is used here instead of *Magister* as with earlier rulers, the document has been dated to after April 8, 1525, and probably before July 17, 1526, when a royal decree concerning new currency brought some, but not all, of Copernicus's recommendations into effect. See Rosen 1985, p. 171.

[27] This appears to refer to the new regulations that would be put into effect on July 17, 1526.

[28] Note again Copernicus's emphasis on the delicate balance between too much and too little metallic worth: if the money is too "rich" in silver, it will be tempting to re-melt it down at some later time; if it is too "lean" in silver, the mint authorities will be making a profit on debased coinage.

[29] There is a divergence among the previous English translators at this point in the text. Rosen's interpretation seems to be the most correct one, but I have followed the Latin wording somewhat more closely: I have translated "summam … nimium multiplicatam" as "total … excessively increased" (as opposed to Rosen's "aggregate's … quantity excessive" (Rosen 1992, p. 193). This would describe "Gresham's Law."

A Brief History of Money

By Ralph Benko

Reprint of selected section of *On the Minting of Money (Monetae Cudendae Ratio)*, 1526, courtesy of Ralph Benko

Abstract: One of the most fundamental questions of our times regards money. What is money? Where does it derive its value? Why do we use it? Ralph Benko explores these questions through the works of three important figures in history: Nicolaus Copernicus, Isaac Newton, and Joseph Priestley. These notable scientists, lacking access to today's understanding of monetary policy and economic history, intuitively understood the importance of preventing excessive money production, counterfeiting, and currency debasement.

A Brief History of Money

"[T]he study of monetary questions is one of the great causes of insanity."

– U.S. Senator and National Monetary Commission Chairman Nelson Aldrich.

Introduction

Money

Money is a technology designed to facilitate commerce and investment. Money was primarily developed by scientists, not economists, although first definitively defined by that great economist William Stanley Jevons.

Economists study money. Scientists defined and engineered it.

When the notorious Scottish economist John Law meddled in French monetary policy, he infamously muddled it, destroying France financially.

What is Money?

Wikipedia summarizes the consensus well:

"In Money and the Mechanism of Exchange (1875), William Stanley Jevons famously analyzed money in terms of four functions: a medium of exchange, a common measure of value (or unit of account), a standard of value (or standard of deferred payment), and a store of value. By 1919, Jevons's four functions of money were summarized in the couplet:

Money's a matter of functions four, A Medium, a Measure, a Standard, a Store.

"This couplet would later become widely popular in macroeconomics textbooks. Most modern textbooks now list only three functions, that of the medium of exchange, unit of account, and store of value."

Not for nothing did U.S. Senator Nelson Aldrich — while reporting, in 1909, on the observations of his National Monetary Commission, in a speech before the Economic Club of New York — archly quote McLeod to the effect that:

"the study of monetary questions is one of the great causes of insanity."

This was almost certainly a swipe at free silver demagogue and presidential candidate William Jennings "You shall not crucify mankind upon a cross of gold" Bryan.

Not so incidentally, let us recall quantum physicist Niels Bohr's comment to Wolfgang Pauli:

"We are all agreed that your theory is crazy. The question that divides us is whether it is crazy enough to have a chance of being correct."

As it happens, money has a sterling scientific provenance.

Money's Provenance

Copernicus

Money's modern scientific provenance goes back at least to Nicholas Copernicus, the very same savant who persuaded the Earth to orbit the Sun instead of the Sun orbiting the Earth as previously believed.

In 1526, yes, nearly 500 years ago, Copernicus wrote a brilliant treatise *On the Minting of Money*. It was my arcane privilege to serve as the lead co-editor of what may be its most esteemed modern translation.

Copernicus warned:

"Although there are countless maladies that are forever causing the decline of kingdoms, princedoms, and republics, the following four (in my judgment) are the most serious: civil discord, a high death rate, sterility of the soil, and the debasement of the coinage. The first three are so obvious that everybody

recognizes the damage they cause; but the fourth one, which has to do with money, is noticed by only a few very thoughtful people, since it does not operate all at once and at a single blow, but gradually overthrows governments and in a hidden, insidious way."

He went on to observe:

"Money, or 'coinage', is gold or silver that has been specially marked — in accordance with policy established by any government or head of government — for the purpose of reckoning the prices of things that are bought and sold.

"Money is therefore a kind of common 'measuring stick' for the valuation of things. Now, whatever is taken as a measure has to be stable — must keep to a fixed limit.

Otherwise, public order will necessarily be disturbed, and the buyers and sellers of things will be cheated many times over, just as if basic measures of length [Latin ulna, or ell], bulk measure [Latin modius, or peck], or weight did not have a fixed quantity.

"Now, I think that the relevant measure here is the valuation [Latin aestimatio] of the money as such, and, although this is founded in the quality of the metal it is made of, nevertheless, money's material or metallic value [Latin valor] must be distinguished from its valuation as money [aestimatio]; for money can be valued more in itself than the material it is composed of and vice versa [i.e., its material value may be more than its actual valuation].

"It is necessary for money to be established: even though exchange could also take place simply by weights of gold or silver alone (since, by universal human consent, gold and silver are everywhere highly valued).

"Nevertheless, money is needed for two reasons: first, because of the inconvenience of always having to carry around heavy weights of metal, and second, because the real value of the metals is not easily grasped by everyone at a glance. Thus it has become customary to mark money with a public seal, by means of which the proper amount of gold or silver is indicated as present in each coin, and that the public authority is to be trusted in this.

...

"The [material] value of money is lessened in many ways: either through defect of material alone, namely, when more bronze is mixed with silver than is right for that particular weight of coin; or through the loss of [total] weight of the coin, even though the proportion of bronze to silver is correct; or (and this is the worst case) through both of these defects occurring at the same time; finally, the value can just diminish on its own through usage, over a long passage of time, and this is the only reason for making new money.

"The evidence of this happening is, if the silver in the money is found to be significantly less than what can be bought with it — and this is rightly considered debasement [or poverty: Latin penuria] of the currency.

The Prussian nobles who Copernicus was addressing did not heed his wise advice. They eventually suffered the fate he predicted.

Newton

In addition to observing an apple's fall and founding modern physics, Sir Isaac Newton served, professionally, as the Master of the Royal Mint of Great Britain toward the end of the 17th and beginning of the 18th century.

Per the Royal Mint itself:

"When Sir Isaac Newton came to the Royal Mint Britain's finances were approaching crisis, with up to one in ten circulating coins believed to be forged. His vision of matchless quality led him to root out and prosecute notorious counterfeiters, improve assaying techniques (the way coin quality is checked), and refine weights and measures to standards never seen before.

"In 1699 Newton became Master of the Mint. After overseeing the new coinage for the accession of Queen Anne in 1702 he also supervised the huge task

of bringing Scottish coinage into line with English coinage, following the Union of England and Scotland in 1707. Thanks to Newton's vision, Royal Mint coins remain unrivaled in their accuracy and purity to this day."

How great a figure was Newton?

Just for a moment, consider the last words of the first celebrity economist, John Maynard Keynes, delivered posthumously by his brother, Geoffrey, singing the praises of Newton in the 1940's.

"Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago. Isaac Newton, a posthumous child born with no father on Christmas Day, 1642, was the last wonderchild to whom the Magi could do sincere and appropriate homage."

And per Christianity Today:

"Even in Newton's lifetime, his contemporaries' adulation verged on worship. Following his death in April 1727, Newton lay in state in Westminster Abbey for a week. At the funeral, his pall was borne by three earls, two dukes, and the Lord Chancellor. Voltaire observed, 'He was buried like a king who had done well by his subjects.'

"No scientist before or since has been so revered and interred with such high honor.

"Who was this man whose stature has dominated the scientific landscape for three centuries? Why did his achievements have such an impact on society? What role did Newton's faith play in his life and work?"

...

"For Newton the world of science was by no means the whole of life. He spent more time on theology than on science; indeed, he wrote about 1.3 million words on biblical subjects. Yet this vast legacy lay hidden from public view for two centuries until the auction of his nonscientific writings in 1936.

"Newton's understanding of God came primarily from the Bible, which he studied for days and weeks at a time. He took a special interest in miracles and prophecy, calculating dates of Old Testament books and analyzing their texts to discover their authorship. In a manuscript on rules for interpreting prophecy, Newton noted the similar goals of the scientist and the prophecy expositor: simplicity and unity."

Although the Sermon on the Mountain contains an aphorism holding that you cannot serve both God and money, Newton proves a clear exception to that rule.

What was Newton's Monetary Legacy?

A happy accident by Newton led to the gold standard, a monetary system which helped Great Britain prosper, proving instrumental in Britain's becoming a dominant world power. Wikipedia:

"Great Britain accidentally adopted a de facto gold standard in 1717 when Sir Isaac Newton, then-master of the Royal Mint, set the exchange rate of silver to gold too low, thus causing silver coins to go out of circulation.

"A formal gold specie standard was first established in 1821, when Britain adopted it following the introduction of the gold sovereign by the new Royal Mint at Tower Hill in 1816.

"As Great Britain became the world's leading financial and commercial power in the 19th century, other states increasingly adopted Britain's monetary system.

...

"The gold specie standard came to an end in the United Kingdom and the rest of the British Empire with the outbreak of World War I."

Contemporaneously with Newton, John Law, a Scottish economist, introduced a paper money standard (what some today call "fiat") in France. This led to a speculative bubble, horrendous inflation, and both France's and Law's financial ruin.

Per Wikipedia:

"[Law] served as Controller General of Finances under the Duke of Orleans, who was regent for the juvenile Louis XV of France. In 1716, Law set up a private Banque Générale in France. A year later it was nationalized at his request and renamed as Banque Royale. …

"Law also set up and directed the Mississippi Company, funded by the Banque Royale. Its chaotic collapse has been compared to the 17th-century tulip mania in Holland. The Mississippi bubble coincided with the South Sea bubble in England, which allegedly took ideas from it. Law as a gambler would win card games by mentally calculating odds…. The term 'millionaire' was coined for beneficiaries of Law's scheme.

…

"Speculation gave way to panic as people flooded the market with future shares trading as high as 15,000 livres per share, while the shares themselves remained at 10,000 livres each.

"By May 1720, prices fell to 4,000 livres per share, a 73 per cent decrease within a year. The rush to convert paper money to coins led to sporadic bank hours and riots…"

The descent of a relatively unknown man came as fast as his rise, leaving an economic power vacuum. Law's theories live on 300 years later and 'captured many key conceptual points which are very much a part of modern monetary theorizing.'

Priestley

Fast forward again, now toward the mid-to-late 1700s. One of the first great chemists, Joseph Priestley, the discoverer of oxygen and the inventor of carbonation (an invention upon which our soft-drink industry is based) wrote extensively and eruditely on the gold standard, providing an extensive lecture on the mechanics of money later published in his Lectures on History and General Philosophy (1793).

Per Wikipedia:

"Lectures on History and General Policy (1788) is the published version of a set of lectures on history and government given by the 18th-century British polymath Joseph Priestley to the students of Warrington Academy.

"The Lectures cover an array of topics — 'forms of government, the feudal system, the rise of corporations, law, agriculture, commerce, the arts, finance and taxation, colonies, manners, population, war and peace' — demonstrating how all-encompassing Priestley believed the study of history to be.

"Priestley offers a version of history in which all events are 'an exhibition of the ways of God.' Studying history and nature, according to Priestley, 'leads us to the knowledge of his perfections and of his will.' Understanding history thus allows one to comprehend the natural laws God established and the perfection towards which they allow the world to tend. This millennial outlook is tied together with Priestley's belief in scientific progress and the improvement of the human race."

Conclusion

And there you have a potted history of the scientists who invented money as we knew it and know it today: Copernicus, Newton, Priestley.

I have treated you to the scientific provenance of the key makers of money, with brief detours to the distinguished monetary economist Jevons, a passing reference to the first celebrity economist, John Maynard Keynes, and a revelation of the notorious economist John Law, proponent of promiscuously issued paper money with its attendant catastrophic debasement.

Contemplating the contributions of distinguished scientists, coupled with brief forays to three influential economists, gives us insight into the potential future of money, governance and the law.

Let us reprise the view of the great discoverer of oxygen who offers: "A version of history in which all events are 'an exhibition of the ways of God;'" studying history and nature, according to Priestley, to lead

"us to the knowledge of [God's] perfections and of [God's] will".

Let us reprise the quest of the great Newton, who sought, both as to prophecy and science, simplicity and unity.

Sound Money Defense League
PO Box 2599, Eagle, ID, 83616
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“Bringing back gold and silver as America’s constitutional money”