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Behavioral Market Irrationality: An Exploration of Financial Literacy Awareness, Behavioral Finance, and Financial System Investing

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ABSTRACT

Since the dawn of recordable civilization, monetary systems have shaped the developments of history. From the Akkadian shekel to the Roman denarius, the Spanish piece of eight, the British pound sterling, and the United States dollar. The wellbeing of the civilization is dependent on the (mis)management of the currency system. While currencies touch the lives of nearly every human, the history, fundamentals, and causational relationships of currencies and their derivatives are not universally known. This paper examines the degree of financial and currency system awareness within the surveyed population and how it varies within the sub-categories of the surveyed population. Available models of investor and market decisions, actions, and results in the modern financial system are explored. The survey results support the hypothesis that basic financial literacy is more widespread than currency final literacy. The secondary hypothesis that financial memory is greater concentrated within relatively more recent financial events is not supported. The primary hypothesis that survey participants treat an investment good the same way they treat a consumer good when pricing is the only consideration is supported.

INTRODUCTION

The modern United States is described as a primarily mixed economic, social, and political worldscape. Mixed are the tenants of capitalism and government intervention, which simultaneously flow within the developed system. The ability to generate and realize positive returns, commonly referred to as profits, using capital appears to be a central determinant of the lifestyles individuals and groups alike are able to freely enjoy. As such, the field of finance applies the mechanisms of capital to achieve those desired profits. How can I make money? This research paper seeks to find the answer to that all-encompassing lifestyle question inside the financial markets. While awareness alone may not bring one financial profit, it may lead to the mindsets, questions, behaviors, decisions, and actions that are fundamental to providing individuals and groups alike with those coveted financial profits in a mixed economy.

In light of access to relatively vast amounts of information in the digital age, different financial outcomes exist amongst different financial investors. With the assumption of similar access to information, it is proposed the causation of these different financial outcomes is rooted in how individuals mentally & emotionally deal with their natural cognitive desire to not lose what they have appeared to have just gained (unrealized capital gains) and to have a larger risk appetite to lose more when they have appeared to have just lost (unrealized capital loses).

This research paper starts with an investigation into factors correlated and uncorrelated with financial literacy. Then, examines a history of the concepts of money and central banking. The insights from the literature review are subsequently applied to an original conducted financial literacy survey, upon which a discussion frames and attempts to answer the following primary research question:

> What degree of financial system awareness is prevalent amongst the surveyed population and how does it vary within the surveyed population? What is the most accurate available model of investor and market decisions, actions, behaviors, and results in the modern financial system?

The intention of the paper is to acquire a historical perspective on the concepts of money, financial markets, and investing. With a greater understanding of how the financial system has developed, current financial opportunities and obstacles can be more easily put into perspective and viewed as the continuation of financial innovations.

LITERATURE REVIEW

Financial Literacy

Financial literacy is a hard-to-pin-down idea. Is it a skill, a behavior, or a mindset? Or perhaps, a combination of all the above? For some, financial literacy is required for obtaining financial prosperity; for others, financial literacy, or the awareness of financial ideas, is distinct and separate from measurable levels of financial prosperity, such as income, net worth, or lifestyle dependence on working for money. As there are numerous methods for measuring financial prosperity, fairly called financial well-being, there are a plethora of methods for measuring financial literacy. As an IQ (Intelligence Quotient) test seeks to measure one's apparent level of intelligence, a financial literacy test intends to describe the test-taker's awareness of financial-related topics, ideas, and concepts. Anecdotally, possessing the ability to read does not automatically grant one the ability to write. Or does it? In a similar manner, research on the potential correlations between the ideas of financial literacy and financial prosperity is examined.

Investopedia defines financial literacy as both knowing and using financial skills by an individual. "Financial literacy is the ability to understand and effectively use various financial skills, including personal financial management, budgeting, and investing," (Fernando, 2023). Meanwhile, the National Financial Educators Council describes financial literacy as financial knowledge that enables individuals to make financial decisions. "Possessing the financial knowledge, behaviors, systems, team, and plan to confidently take effective action that best fulfills an individual's personal, family, and global community goals," (Stoll, 2022). Perhaps a personal definition of scope of financial literacy is more useful than a prescriptive definition. For the purpose of this paper, financial literacy is separated into two components: Financial literacy awareness and financial literacy application. Financial literacy awareness

describes the knowledge one possesses in financial topics. Financial literacy application describes the actions an individual takes and their results when applying financial concepts to achieve their personal goals.

The literature indicates certain demographic factors are related in varying degrees to financial literacy, financial participation, and financial prosperity. These factors include gender, age, standard education level, race, business ownership, and financial planning. Also, financial literacy is correlated with financial participation and financial prosperity, particularly when measured through net worth (an equity device).

Aren and Aydemir's 2015 publication within the "Procedia-Social and Behavioral Sciences" journal examined the correlation between the choice of financial investment instrument alternatives with demographics, risk criteria, and financial literacy of a 112-participant sample in Turkey. They found that women over men are more likely to invest in bank certificates of deposits (CDs). Men over women prefer investing in stock instruments. Higher traditional levels of education are correlated to an increased disposition in investing in bonds (fixed-income securities). An increase in financial literacy is correlated with higher expected financial returns and higher risk tolerances when investing. This is believed to cause a higher preference in choosing stock instruments (Aren & Aydemir, 2015)

Li, Li, and Wei's 2020 publication in the "Pacific-Basin Finance Journal," examined the correlation between measurable financial literacy and Chinese households' financial investment returns and their portfolio instrument selections. The data was compiled from the 2014 China Family Panel Studies (CFPS). An increase in financial literacy significantly increases risk tolerance. Furthermore, this increase in risk tolerance expresses higher actual investment into risky assets (The definition of risk in the situation is the presence of variation in outcome, specifically volatility within an instrument's price, not risk as the possibility of loss or injury).

Higher incomes are correlated to higher household engagement in risky financial markets. Older household heads' age is correlated to investing in risky financial markets. The authors surmise that the demand for income from investments is greater for older households compared to younger households that generate larger amounts of income from working. Higher education levels are correlated with household participation in risky financial markets. House ownership is correlated to participation in risky financial markets (Li et al., 2020).

In their surveys, Rooij, Lusardi, and Alessie find respondents are selectively aware of a few tested financial concepts, yet widespread understanding of basic financial literacy topics is not prevalent. Respondents have noticeably less advanced financial literacy knowledge compared to basic financial literacy; whereas it is indicated that basic financial literacy itself is not widespread. While the assumption that investors are financially rational, competent, and knowledgeable drives most financial literacy research, it is found that it is not necessarily true for all market participants. Individuals with lower levels of financial literacy invest less in stock instruments. Therefore, higher financial literacy is correlated with greater stock market participation (Rooij et al., 2011).

Individuals surveyed displayed less knowledge on the workings of bond instruments compared to stock instruments. It is possible that the "Mere Exposure Effect" is a contributing factor to this discrepancy in financial literacy between two market instruments. Higher standard education levels are correlated with both higher basic and advanced financial literacy. The survey finds that age is statistically correlated with financial literacy. Men exhibit higher levels of financial literacy when compared to women (Rooij et al., 2011).

The act of planning for financial retirement is correlated with higher levels of wealth and financial literacy (Lusardi & Mitchell, 2007). This "planning effect" indicates the importance of clarity reduction and future foresight in realized financial wealth, although the correlation is not distinctly explained by the results. Possibly, financial literacy leads to financial retirement planning, which results in relatively higher financial wealth. On the other hand, financial planning encourages financial literacy, which enables higher financial wealth. While

it is unclear whether financial planning causes or results from financial literacy, the research indicates they are correlated, which is of great value to the topic of financial literacy.

"The standard economic model of wealth accumulation posits that consumption decisions are made in a life-cycle framework, where consumption-smoothing requires one to save during the working years to support consumption after retirement," (Lusardi & Mitchell, 2007). This concept that current income can become future income through investment vehicles is a pillar in the understanding the purpose of investments. This is one of the identified purposes of investing; the topic will be discussed more thoroughly later.

Financial Literacy and Performance

In uncovering whether financial literacy is linked with financial planning and financial prosperity in retirement, Lusardi and Mitchell examined the breakdown of survey participants' net worth. They found that at the mean distribution of net worth, housing equity represented about one-third of total net worth. At the median distribution of net worth, housing equity represented about one-half of total net worth. A large portion of the cohort's net worth was in home equity, as opposed to non-home equity. This illustrates the importance, but not necessarily the need, that home equity has for individuals' total net worth. The highest net worth households are significantly business owners (Lusardi & Mitchell, 2007).

Higher education is significantly correlated with higher net worth. Additionally, within education groups, the mean is higher than the median for all education groups (less than high school, high school graduate, some college, college graduate), indicating that the data is skewed to the right, with a few individuals holding the majority of the net worth within the education groups (Lusardi & Mitchell, 2007). The means being higher than the medians illustrate that a few individuals in each standard level of education have significantly higher net worth than their peers. While traditionally this evidence reinforces the concept of wealth inequality in society, for this research paper, it signifies that while higher education results in higher net worth, solely having higher education is not completely responsible for the variation within variation seen in the research. Therefore, each of these demographic factors

in isolation are not as powerful in resulting in higher net worth or higher financial literacy as the combination of numerous correlated factors.

Lusardi finds that race is correlated with net worth. In order of decreasing mean, net worths by measured race are Whites, Other, Hispanic, and Black. Additionally, mean is greater than the median, indicating a few individuals holding the majority of net worth within each of the race groups. Married individuals have two-and-a-half times greater net worth than non-married individuals. Also, mean is higher than median. Males have just under two times greater net worth than females. Also, mean is higher than median. This trend of mean being higher than the median when comparing net worths of participants using demographic criteria indicates a right skewed distribution; in familiar media terms, wealth inequality is prevalent in society (Lusardi & Mitchell, 2007).

Business ownership is significantly correlated with top wealth distribution. This is partly explained by the fact that business equity adds to total net worth (equity), therefore, owning a business in addition to a home provides multiple sources of equity when measuring net worth.

The study finds that only 25% of respondents have thought "a lot" about retirement, with the result having only considered retirement "Some", "A little", or "Hardly at all," (Lusardi, 2007). This again points out that the expectation of market participant rationality and knowledge should not be expected as the norm in society. "For all four measures, literacy rises steeply with education: the more educated are much more likely to answer the economic and political literacy queries correctly. These differences are statistically significant," (Lusardi & Mitchell, 2007). This reinforces the concept that planning results in higher net worth.

Some interesting perspectives raised by the researchers in the current literature are best shared directly.

> A one-size-fits-all approach is unlikely to do much to build retirement wealth, and education programs must be targeted specifically to particular subgroups.

> Nevertheless, differences in planning behavior do help explain why household retirement assets differ, and why some people cross the retirement threshold with very low (or no) wealth. (Lusardi & Mitchell, 2007).

It is recommended that education is targeted to subgroups to promote financial literacy and financial well-being.

> As more workers transition to a system where they have to decide how much to save for retirement and how to invest their retirement wealth, it is important to consider ways to enhance their financial sophistication or to guide them in their financial decisions via, for example, financial education programs. (Rooij et al., 2011).

This recommendation into society providing financial literacy education indicates that more knowledge can be learned by aspiring and current market participants.

The most interesting conclusion from the study of financial literacy so far comes from Li's 2020 research. Their ". . . results show that financial literacy increases investment returns for younger and better educated households while reducing the returns for older, less educated households," (Li et al., 2020). Interestingly, financial literacy has opposite effects for younger, more educated households compared to older, less educated households; where an increase in financially literacy increases financial returns for the younger, more educated households while decreases financial returns for the older, less educated households.

This indicates that information (financial literacy awareness) does not produce an equal outcome (as measured by financial returns) depending on the demographic factors of Chinese households (Li et al., 2020). All these points of unique information are to be further explored.

In Cambell's 2006 exploration of Household Finance, it found that while a majority of households invest effectively, a minority of households are responsible for significant mistakes. Their study finds that measurable asset returns are disproportionally held by the higher end of households based on wealth and risk tolerance. That is, positive investing returns are concentrated amongst a majority of households, skewing the mean to be above the median returns. Higher education, higher income, and higher wealth are correlated with

holding public equity (stocks). Households with private business ownership are correlated with higher levels of wealth and income. White as opposed to non-white households have a higher likelihood of business ownership. Higher education is strongly correlated with equity ownership.

> Nonparticipating households may be aware of their limited investment skill and may react by withdrawing from risky markets altogether. Other households, wishing to delegate financial decisions to professionals, may pay high fees to financial planners, mutual funds, or banks. (Campbell, 2006).

Rosen and Wu 2004 examined the relationship between health status and portfolio choices.

> Households in poor health are less likely to hold risky financial assets, other things (including the level of total wealth) being the same. Poor health is associated with a smaller share of financial wealth held in risky assets and a larger share in safe assets. (Rosen & Wu, 2004).

Poor health is correlated with lower levels of retirement account, bonds, and risky assets holdings. Poor health households have proportionally higher amounts of wealth in safe assets as opposed to risky assets. This indicates that lower health is correlated with a higher risk aversion. While many avenues are proposed as to why poor health and portfolio allocation are correlated, the specifics as to how these two areas of individuals' lives interact is not precisely clear (Rosen and Wu, 2004).

Bertaut and Starr in 2000 found that Americans classically hold a checking account, savings account, and a tax-deferred retirement account amongst the potential investment vehicles. Age had no correlation on possessing stock or safe investments. Higher net worth was correlated across the board with higher ownership in stocks, safe assets, housing, and businesses. Higher net worth was negatively correlated with the possession of consumer debt.

> . . .higher income raises the probability of owning stock-based assets; it also raises the probability of homeownership. However, it has no significant effect on the probability of owning safe investment assets or a business, and it has negative effect on the probability of having consumer debt. (Bertaut & Starr, 2000, p. 21).

College education possession was correlated with stock ownership (Bertaut and Starr, 2000).

Bejamin, Brown, and Shapiro examined Chilean high school students to identify the potential correlations of cognitive abilities and risk aversion. It was found that students with higher standardized test scores, in the form of GPAs, had lower small-stakes risk aversion. That means, according to the study, higher performance in standard education increases the willingness to partake in risk, as measured by GPA (Benjamin et al., 2013).

A survey conducted on alumni from an American midwestern university looked at the impact of high school and college financial education courses on savings rates. It was found that the taking of a college level personal finance course was correlated with both financial literacy and reported saving rates. Interestingly, the high school level personal finance courses did not have a significant impact on either financial literacy or savings rates (Peng et al., 2007).

Through the examination of sin stocks, stocks with socially repugnant industries, it was found the selected sin stocks actually performed better than the average stock market return from January 1970 to June 2007. The industries of adult services, alcohol, biotech, defense, gaming, and tobacco comprised 267 companies from 21 nations. The annual return of the sin stocks was 19.02%, compared to the average stock market return of 7.87% during the same exact time-period, “Thus, the positive risk-adjusted returns we find also support the argument that the sin industries which have survived have earned positive monopolistic returns,” (Fabozzi et al., 2008, p. 93).

Society is fundamentally arranged in a freedom to contract environment. This means individuals are able to enter into contractual relationships with others as they see fit. In most contracts, a principal-agent relationship exists. This is where one party typically provides capital to another to do something with it. Information asymmetry exists in any principal-agent relationship. A lack of financial literacy is the very definition of information asymmetry within a financial contract by a principal. A principal that does not gain an understanding of the market they are participating in is highly like to be involved in frauds and scams that cause damage to the uniformed principal. Therefore, the purpose of possessing and using

financial literacy for the individual principal is to avoid scams where their principal could be lost due to engaging in contracts with agents that have a conflict of interest with that of the principal. What is not known can cause damage to the uniformed in the financial markets.

Through the examination of the literature on financial literacy, it is found that certain measured demographic information is correlated to financial literacy awareness. Furthermore, financial literacy awareness is correlated to financial literacy application, as measured in participation in financial markets and net worth. The factor of education exists as an experience that can be acquired more readily than other demographic factors. Being correlated with higher financial literacy, it is therefore important for general education to include financial topics if the desired result is individuals with a greater propensity to participate in the financial markets.

Henceforth, this literature review examines the concepts of money and central banking. These concepts are proposed to be included in financial literacy awareness programs due to their relevance in the financial system.

History of Money

What is money? When was it invented? Why was it invented? Peter Zeihan answers these questions in his full-scale investigation into the risks of societal collapse of modern civilization due to the continuations and new developments in the choices made by societies at large. If one chooses to believe that history tends to rhyme, not repeat itself, then it is prudent to understand what, when, and why events have happened in our recordable history.

Money starts with trade. Trade is the exchange of goods and services between at least two parties. A good is a physical, tangible item. A service is a non-physical, intangible item. In the case of a tree: the wood is a good, the chopping of the tree is a service. A party is an individual, group of individuals, or an organization bound by a common interest who agree to represent themselves as a single entity. To illustrate: Simon is an individual party, the House

of Simon is a party of a group of individuals, while Simon's Caravan is party in the form of an organization.

When trading between parties occurs, the issue of the value of the goods and services arises. In the trade of wood with barley, what determines the value of each of the goods? The quantity is the starting point. The wood can be measured in cords while the barley can be measured in quarts. An exchange rate can be established between cords of wood and quarts of barley based on the perceived difficulty of acquiring the respective materials. If a relatively stable exchange rate between two goods exists, individuals can specialize in the acquisition of specific goods. Since an individual has confidence in their ability to acquire another good by possessing a good, more time and energy can be devoted to becoming an expert in that good. If more individuals specialize, more goods exist. More goods mean more trading can occur, which enables higher standards of living, where there are more goods for the same number of individuals. Hence, trade encourages specialization which improves productivity.

Under the basis that trade can improve societies, the question arises: what should be traded? Things of value. In Mesopotamian civilizations, "Barley was the currency of exchange for more than two millennia," (Zeihan, 2022, p. 165). In the fertile crescent, there was a relatively higher salt content in the soil due to salt runoff from the mountains evaporating in the low-latitude desert river valleys. Barley as a grain was (and still is) able to thrive in relatively higher soil-salt levels compared to other plants, making it a dominant food source for the region. As such, barley was considered the staple of value in the region.

Since barley was valued, it saw widespread use in trading. One noticeable issue in using barley for trade is its bulk in transportation makes it challenging to move over long distances. Something that was less bulky would be able to be transported further distances and reach new markets for trade. In the Akkadian Empire,

> The circa 2000 BCE solution was the shekel. Three one-hundredths of a shekel could be traded for one quart of barley. One shekel was equal to 11 grains of silver. Over

> time the shekel became synonymous with our modern concept of money. (Zeihan, 2022, p. 165).

With the Akkadian Shekel, the use of silver as an expression of value improved the issue of transportation of value. Using 3/100 of a shekel being traded for one quart of barley, 33 and one-third of a quart of barley could be traded for one shekel. Using one shekel as a weight of 11 grains of silver, it became more convenient to carry one shekel instead of 33 and one-third quart of barley. Through the use of a densely valued metal, silver, value became easier to transport. Easier transportation encouraged the development of more trade. As previously mentioned, more trade ideally improves productivity.

In this development on money, the concepts of measurements (in the form of weights), exchange rates, and store of value take center stage. In the case of the Akkadian Shekel, silver was used as the metal for storing value. The rough exchange rate of one quart of barley for 3/100 of a shekel was a relatively stable occurrence. The measurement of one shekel as 11 grains of silver clarified the weight, and in turn the value, of the shekel.

Establishing the convenience of using silver coins as a form of money instead of an intrinsically valued currency such as barley, the use of silver coins as currency requires trust. Trust that shekels can be readily exchanged for barley. Trust that barley exists in abundance. In this example, as long as barley is abundant, shekels are a valid form of currency. As such, for the Akkadian empire to mint shekels for use as money, the empire is motivated to encourage the ample production and development of agriculture, particularly barley. If the empire could supply food, then shekels would be a valued form of currency.

"Income from anything-else [not farming] could be swapped for barley at a known rate. After all, the shekel was literally redeemable for food," (Zeihan, 2022, p. 166). This resulted in the shekel being widely used from modern day Turkey to Egypt to India. As Zeihan points out, ". . .if the wolf of civilizational collapse is no longer at the door, you're more willing to accept payment in coin as opposed to barley." (p. 167-168). Money, in the form of currency or

finance, is only commonly useful in relative periods of civilization stability where trust is abundant.

The Roman Republic and Empire used a combination of coinage throughout its duration based on the Italian peninsula. Throughout the Roman faction, metal coins were continuously changing, whether in exchange rate, metal purity, or types of coins. Britannica details the development of coinage through the policies of different administrations. It is generally remarked that bronze coins from the Greeks were used as early Roman coins, influencing the use of metal as money in Rome.

Roman coins in order of decreasing value: Aureus, Denarius (Denarii), Sestertius (Sesterce), Dupondius, and As. Aureus was a gold coin. Denarii and Sesterce were silver coins. Dupondius and As were either bronze coins or copper coins (copper as a coin was a later development) (Editors of Encyclopaedia Britannica, 2023).

While the exchange rates of Roman coins fluctuated, a general understanding can be made with the following example: One gold Aureus equal to 25 silver Denarii. One silver denarius equal to four silver Sesterce. One silver Sestertius equal to two bronze (or copper) Dupondius. One bronze (or copper) Dupondius equal to four bronze (or copper) As (Editors of Encyclopaedia Britannica, 1998) (Ely Museum, n.d.)

This distinction of using multiple types of metal coins as concurrent currency between Roman coins and the Akkadian Shekel was an innovation. While using silver instead of barley decreased the bulk of transportation value significantly in Mesopotamia, using gold, silver, and bronze (copper) enabled different quantities of value to be transported more efficiently. As an illustration, bronze, as a metal of lower value, could be used to trade for items of lesser value when compared to gold, a metal of higher value. The trading for a cup of wine would be more suited through the use of bronze coins, while the trading of pieces of land would more likely use gold coins. Through the usage of metals of varying densities of value, the

sophistication of Roman coinage promoted trading at different levels of perceived value, ultimately increasing the utility of metal coins as currency.

With all the various types of coinage flowing around the Roman economy, base metals were needed to mint the coins of currency. Metals of gold, silver, and bronze had to be mined before they could be minted into coins. A technical note, bronze is the byproduct of heating and mixing the metals of tin and copper together; so while the mining of bronze did not actually occur, the mining of tin and copper did occur, bronze was effectively mined in spirit.

> The [Roman] empire was by far the most stable political entity humanity had yet to invent [up to that point]. That stability encouraged development and technological evolution and trade within the Roman system. That required more currency, and more precious metals to back the currency. That need forced the Romans to expand beyond territories within easy reach and beyond territories that could generate wealth into ever-farther-removed lands simply in order to secure mines. (Zeihan, 2022, p. 170).

These places included the Iberian Peninsula, Southern Anatolia, Mali, and southern Egypt (Nubia). While the Akkadian empire needed to secure fertile land to grow barley to support its shekel, the Roman Republic and Empire needed to secure mines rich in metals to mint their plethora of metal coins. The point can be made, at least in part, that the military expansion of Rome was motivated by securing the metals to supply an ample currency of metal coins.

Where the acquisition of more mines was not feasible in order to supply reserves of metal for coins, debasement was an alternative solution. Debasement occurred when coins were minted with a lower quantity of metal, a lower grade of metal, or were clipped. Image a perfect gold Aureus coin contained 100% gold purity. Debasement would occur when another gold Aureus coin was instead made with 75% gold, the rest being made of a lesser valued metal such as silver. Both the 100% gold Aureus coin and the 75% gold Aureus coin have a face value of one Aureus, but the metal content of each is different. A mint is able to produce more 75% purity Aureus than 100% purity Aureus coins because they are debasing the metal purity of the coins. In essence, stretching the value of the metal or making more money. Modernly, debasement would be labelled as inflation. Clipping is where metal coins in circulation would

be clipped. By clipping multiple coins, new coins are struck using the same amount of metal in circulation. The difference is that debasement is decided before the coins are minted while clipping can happen after the coins are minted.

The Spanish Empire's Spanish Dollar, more commonly referred to as pieces of eight, was the next evolution of commonly traded currency. Like its Roman and Akkadian predecessor, Spanish pieces of eight were silver coins. Spain occupying the Iberian Peninsula gave the empire an advantage in metal coins, for they were able to mine the same mines the Romans had conquered to acquire for their own metal coin supply. For the Spanish Empire,

> Launching the first truly global system required two things. The first was a single economic and military structure that could span multiple continents. The second was a large enough volume of precious metals to support a global currency. Potosi funded the first and provided the material to back the second. For several decades in the sixteenth and seventeenth centuries, Potosi produced more silver than the rest of the world combined. (Zeihan, 2022, p. 172).

The discovery of the mines of Potosi in modern day Bolivia and across the continents of America generated an enormous influx of silver into the Spanish Empire. Pieces of eight became widespread across the world as a recognized form of currency. Pieces of eight were the unofficial currency of Spain's neighbor, Portugal, in addition to the developing British American colonies.

A combination of factors led to the downfall of the value of pieces of eight along with the Spanish Empire. The massive influx of silver to Spain created a situation of inflation, decreasing the value of existing silver coins every time new coins were minted. The Napoleonic Wars' briefly turned Spain into a vassal state, demoting its military prowess. The independence movements in Peru and Bolivia severed the supply of silver from mines such as Potosi. Combined, the fall of the Spanish Dollar was succeeded by the rise of the British Pound to dominant the world as a global currency.

The British Pound of interest was the pound sterling. Silver coins were called sterling. The weight of a pound of sterling gave rise to the name pound sterling as the British Empire's metal currency. As the Roman and Spanish Empires conquered territories to supply sufficient quantities of metal from mines back to the homeland for minting into coins, the British Empire used its naval powers to acquire and administer an extensive array of overseas colonies. Britian having no mountain range of mines in its homeland had to acquire metal reserves from abroad.

As the era of metallic coins demonstrates, the use of metal coins as money required ever-increasing amounts of physical metal assets to back up the currency. As civilizations and empires developed stable economies, an ever-increasing specialization of these economies necessitated increasing quantities of currency to lubricate such economic developments.

The American Federal Reserve Note rose to the status of global currency. The conflicts of both World War I and World War II saw Britain (reorganized into the United Kingdom) attempting to preserve its status of global empire. In order to compete in those wars, the majority of European nations at the time engaged in debasement of their currencies. This resulted in inflation for those nations. Additionally, the Americans became a large creditor to the Europeans, where massive amounts of loans were taken out for war efforts by the Europeans from the Americans.

> . . .the Americans were perfectly willing to provide the World War II Allies with anything they needed - oil or fuel, steel or guns, wheat or flour - so long as they were paid in gold . . .After all, the metals-backed currencies of Europe were the culmination of all human civilizations of all eras stripping the entire planet of precious metals since before the dawn of recorded history. Now it was in Fort Knox. (Zeihan, 2022, p. 175).

The Bretton Woods agreement formalized the realization that the American Federal Reserve Note was the next suitable candidate for a global currency, since as a major creditor to the Europeans, who had most of the gold supply up to that point in history, the reserves of metals had ended up with the Americans.

During the 1960's, America engaged in a combination of military and social spending programs. The Europeans, heeding the lessons of runaway inflation of a currency, began exchanging Federal Reserve Notes for gold from America as the Bretton Woods Agreement stipulated.

> Faced with the possibility of a global economic depression that would leave America facing down a nuclear-armed Soviet Union alone, the Americans did the only thing they could. In a series of steps in the early 1970s, the Nixon administration cut the cord and put the U.S. dollar on a full, free float. For the first time, a major government didn't even pretend to have anything in the vault. The only 'asset' backing the dollar was the 'full faith and credit' of the U.S. government. The very nature of America's post-1971 globalization-fueled alliance gambit was quite literally based upon none other than Tricky Dick Nixon saying, 'Trust me.' We have zero ideas what to expect as, hand in hand, we all gaily skipped down the road less traveled: the road of fiat currency. (Zeihan, 2022, p. 178).

As a result of American President Richard Nixon suspending the convertibility of dollars into gold, metals ceased to act as a reserve to a world currency. With the American Federal Reserve Note as the world's reserve currency backed by no physical assets of metals, the modern age of money is of fiat currency (Zeihan, 2022). The temporary suspension of the convertibility of dollars into gold has so far lasted to the writing of this paper. While fiat currency is the de facto form of money today, history shows how money has developed through the course of continuously compounding currency innovations.

Banking and the Federal Reserve System

The exploration of current financial understandings necessitates the definition of a handful of reoccurring themes evident in writing. What is banking? What is central banking? What are the origins of modern currency, specifically the Federal Reserve Note? How has the history of these concepts evolved into their current relevance in modern finance? These questions, upon others, are answered through the perspective research of Bill Still & Patrick S.J. Carmack, BBA, JD, composed into a 1996 visual documentary entitled *The Money Masters - History of*

Central Banking 1996 Documentary. The description provided of the evolution of the monetary system is compiled as to its relevancy to the topic of this research.

It should be duly noted that the descriptive research is ultimately framed for prescriptive means. It is highly recommended to learn of the material directly either by video or transcript, for full context. The information provided below not attributed directly from a source is attributed at large to the research from the works of Still & Carmack 1996.

The central bank of the United States is the Federal Reserve. The Federal Reserve Act of 1913 was passed on December 23, 1913, by the Senate and President Woodrow Wilson (the House had passed the bill in September of the same year) (U.S. Senate: The Senate Passes the Federal Reserve Act, n.d.). The Federal Reserve was created as a reaction to the Panic of 1907, a financial crisis in America that required the loaning of money by J.P. Morgan to banks to stop the freefall of the stock market, banking sector, and the economy. It was reasoned at the time that such a financial panic (today the word recession describes similar periods of economic decline) should not be allowed to occur again and that a large solution be found to address it. Through the creation of a central bank, such a bank would act as a lender of last resort to prevent much disliked financial panics.

To understand the concept of lender of last resort, imagine the following hypothetical: An individual needs money to pay for something. If the individual doesn't have the money in their savings, they go to the bank to borrow the money. If the bank doesn't have the money to lend out to be borrowed, then the bank borrows from the central bank. As the lender of last resort, the central bank is the final institution that can be relied upon to provide money to be lent out. Where does the lender of last resort borrow from when they run out of money? They don't, they just create the money.

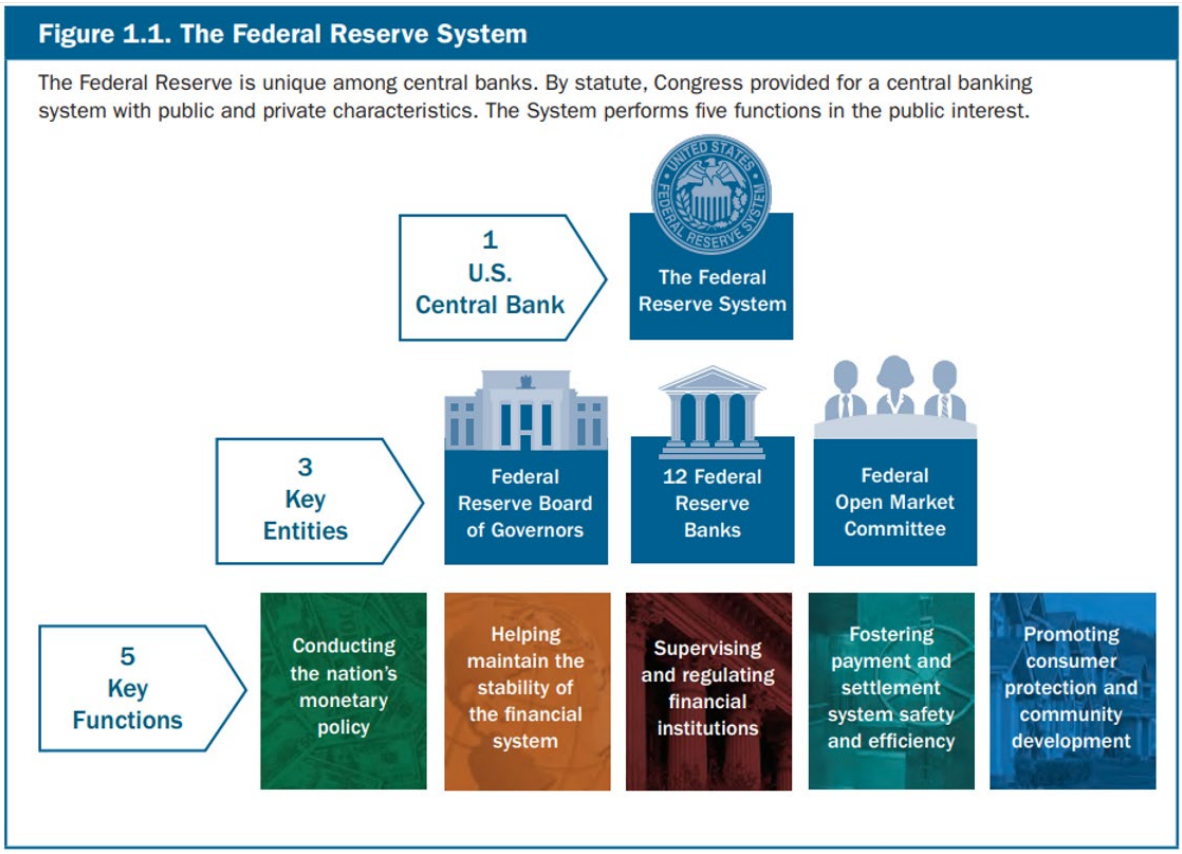
Currently, the Federal Reserve describes its purpose as to ". . . provide the nation with a safer, more flexible, and more stable monetary and financial system," (Board of Governors of the Federal Reserve System, 2017). Why not name the institution that acts as its central bank

after the country it provides monetary policy for? Would "The Central Bank of the United States" not be simpler and more intuitive than the name "Federal Reserve?" The Federal Reserve has no physical-asset reserves and is not a federally operated federal institution. Instead, "…the Federal Reserve is a private bank owned by private stockholders," (Still & Carmack, 1996, Chapter 1).

It appears counter-intuitive that a central bank of a nation would be a private corporation. The purpose of a corporation is to share with and grow profits for its shareholders. The public purpose of a central bank is to prevent economic swings, depressions, and promote stability of the economy, including prices, employment, and credit. As the Federal Reserve makes clear in its 2016 republication of its role:

Figure One

The Federal Reserve System

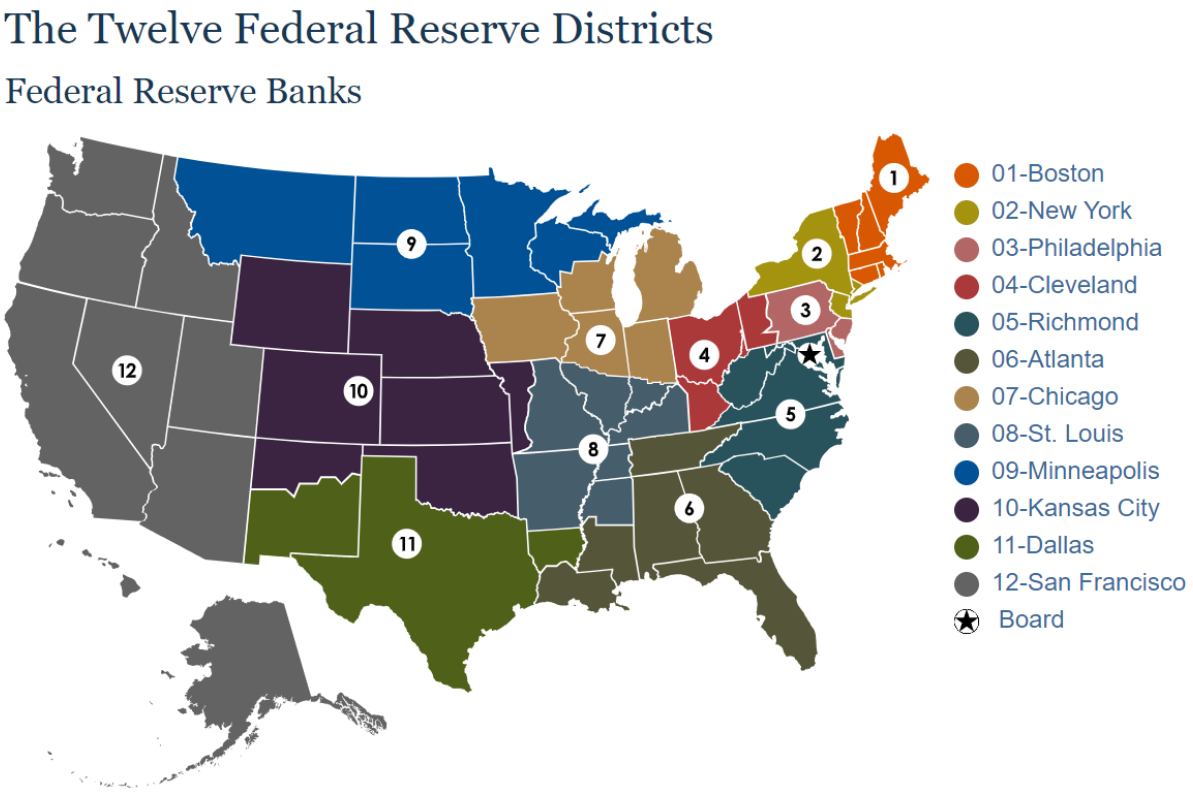


The Board of Governors acts as the executive function of the Federal Reserve. There are seven Governors on the Board of Governors. Each Governor candidate is nominated by the President of the United States and confirmed by the Senate. Each Governor, when confirmed, serves a 14-year term, with every two years one Governor seat being open for renomination. All seven of the Board of Governors simultaneously serve on the 12-member Federal Open Market Committee, which dictates the central bank's monetary policy. The remaining five members of the FOMC are the president of the Federal Reserve Bank of New York, and four of the remaining 11 Reserve Bank presidents, who serve a one-year term on a rotating basis (Federal Reserve, 2019).

The United States is split into 12 respective Federal Reserve Districts, with each Federal Reserve District have one local Federal Reserve Bank. The 12 respective Federal Reserve Banks comprise the Federal Reserve System.

Figure Two

The Twelve Federal Reserve Districts



The FOMC, on behalf of the Federal Reserve (or the Fed), has the monetary tools of 1) Interest Rates 2) Open Market Operations 3) Reserve Requirements.

Interest is the amount of money charged for borrowing in addition to the amount being borrowed. For example, the borrowing of $100 at 5% annually means that the $100 borrowed is the principal, the 5% is the interest rate, which is annually calculated to identify the payment of both principal and interest. Over the course of one year, this $100 at 5% interest would now cost $105, $100 from principal (original amount borrowed) with $5 from interest (5% of $100 = $5). Interest is recognized as the cost of borrowing money, or more simply the cost of money. When the interest rate is higher, the cost of money is said to be higher. When the interest rate is lower, the cost of money is said to be lower.

If the interest rate was 0%, the cost of borrowing $100 today would still be $100 in one year ($100 from principal + $100 at 0% = $100 + $0 = $100). However, if the interest rate was 100%, the cost of borrowing $100 today would cost $200 in one year ($100 from principal + $100 at 100% = $100 + $100 = $200).

By controlling the cost of borrowing, or the interest rate, the FOMC directly influences the amount of money in the economy. This interest rate, when set by the FOMC, is called the Federal Funds Rate. The federal funds rate is the rate at which commercial banks borrow and lend excess reserves to each other overnight. The federal funds rate for May 2023 was 5.00% to 5.25%, with the effective federal funds rate for May 2023 at 5.06%, while for November 2023 the target was 5.25% to 5.50% with an effective rate at 5.33% (for the purposes of this explanation, the federal funds rate is the interest rate) (FRED, 2023). How does the establishment of the federal funds rate work? Banks deal in the exchange of loans (bank assets) and deposits (bank liabilities). The amount of money held in the bank is not always the amount the bank should have to cover its balance sheet (see capital reserve requirements). When the bank needs more money, it can borrow money from other banks that have more money than they need (excess reserves). Since borrowing has a cost, the cost of the borrowing is set at an interest rate; this interest rate is the federal funds rate for overnight borrowing

between banks. The federal funds rate is applied for the duration an amount of money is borrowed between banks, typically overnight. For example, $100 borrowed for one day at the 5.06% annual federal funds rate costs about $0.01 in interest, meaning $100.01 would be paid back for borrowing $100 between banks for one day (or overnight). The higher the federal funds rate, the more expensive the cost of borrowing is, the less likely borrowing is to occur. The opposite is also true.

Open Marketing Operations are the use of Fed money (or the creation of money) to purchase assets. Assets are typically items that either hold value, generate cash flow of money, or both. When the Fed wants to increase the money supply, they spend money on assets such as government bonds or private securities. When the Fed buys $100 of bonds from the U.S. Treasury, the U.S. Treasury now has $100. The Treasury can spend the $100 on government services that Congress (legislative branch) has approved in their budgets. This spent $100 in turn becomes the income of some other part of the economy. Once the $100 is part of the economy, it acts as a lubricate to the production, sale, purchase, and exchange of goods and services.

When the Fed wants to decrease the money supply, they sell the assets they have purchased on the market. That $100 bond bought by the Fed could be sold back to the U.S. Treasury, who could either get the money from issuing new bonds to pay for the old bond or from taxes on the economy, a private investor from the part of the economy he has in his monetary account, or by another foreign bank. Now that $100 is back in the accounts of the Fed.

The more money is in circulation in the economy, the less valuable the money is, the higher the prices of goods and services will be. This is known as inflation. The less money in circulation, the more valuable the money is, the lower the prices of goods and services. A change in the money supply results in a change in general prices. Recall in the history of money section, debasement was the term most related to the modern concept of inflation.

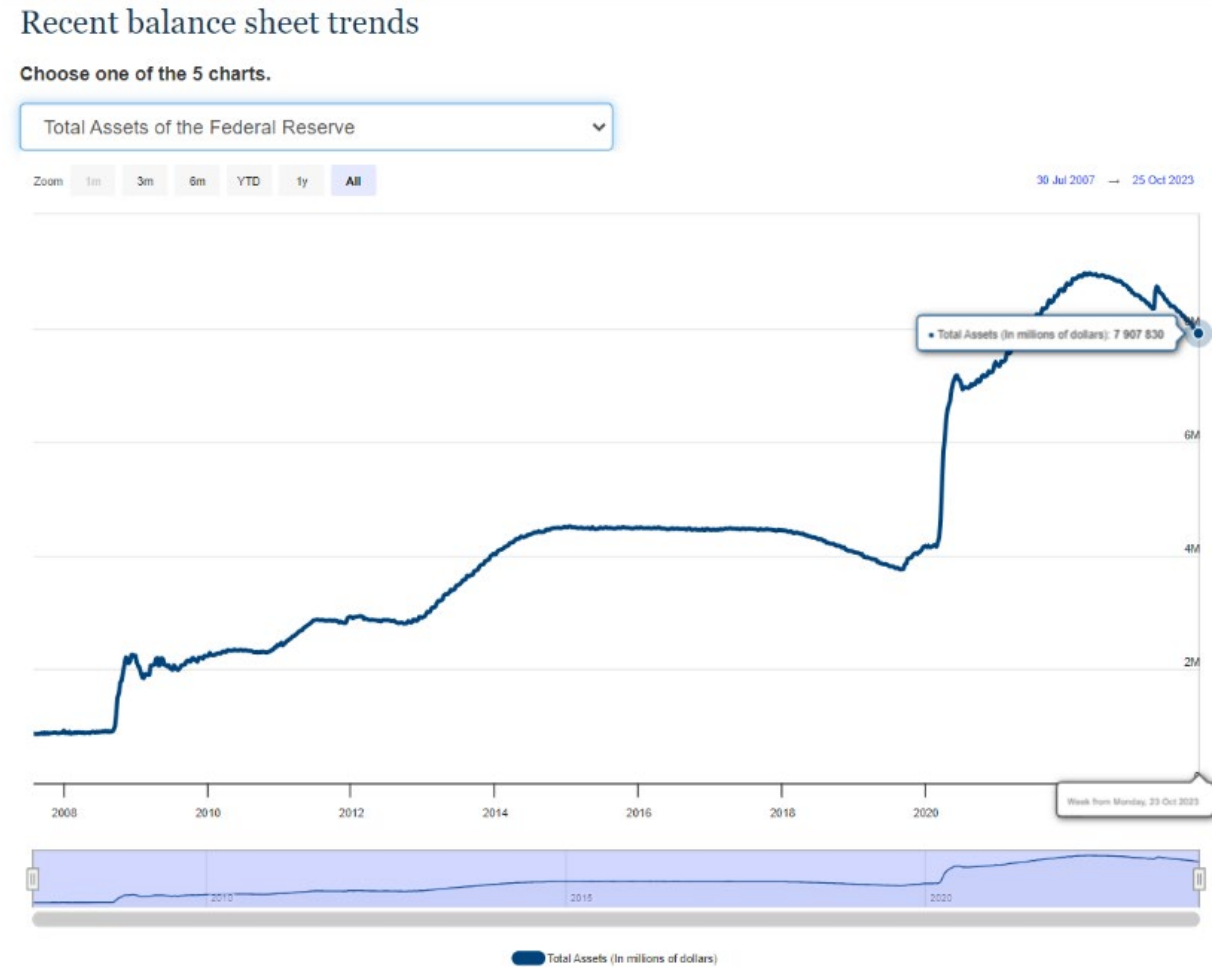
The Fed can either use the capital that has been used by member banks to buy into the Federal Reserve System to conduct open market operations or it can create money. The power of money creation stems from the creation of currency. Currency is created primarily by the central bank, not the U.S. Treasury.

> Each year, the Federal Reserve Board projects the likely demand for new currency, and places an order with the Department of the Treasury's Bureau of Engraving and Printing, which produces U.S. currency and charges the Board for the cost of production. The 2023 currency operating budget is $931.4 million. (Board of Governors of the Federal Reserve System, n.d.).

While the Fed's claim they do not print money is a truism, money is printed by the Bureau of Engraving and Printing, the Fed does in fact create money. The Fed uses language such as adjustment of the money supply, but changes in the money supply can only be made through the creation or destruction of money itself. When a government issues a bond, they are issuing an IOU, which, in exchange for the value of the bond today, the buyer of the bond will receive the value of the bond (principal) plus interest. When the Fed buys a bond, they are creating money. Where does the Fed get the money from to buy the bond? They don't get it from anywhere, they just create it. The bond the Fed owns is considered an asset on its balance sheet while it is a liability, in the form of debt, for the U.S. Treasury (which issued the bond).

Figure Three

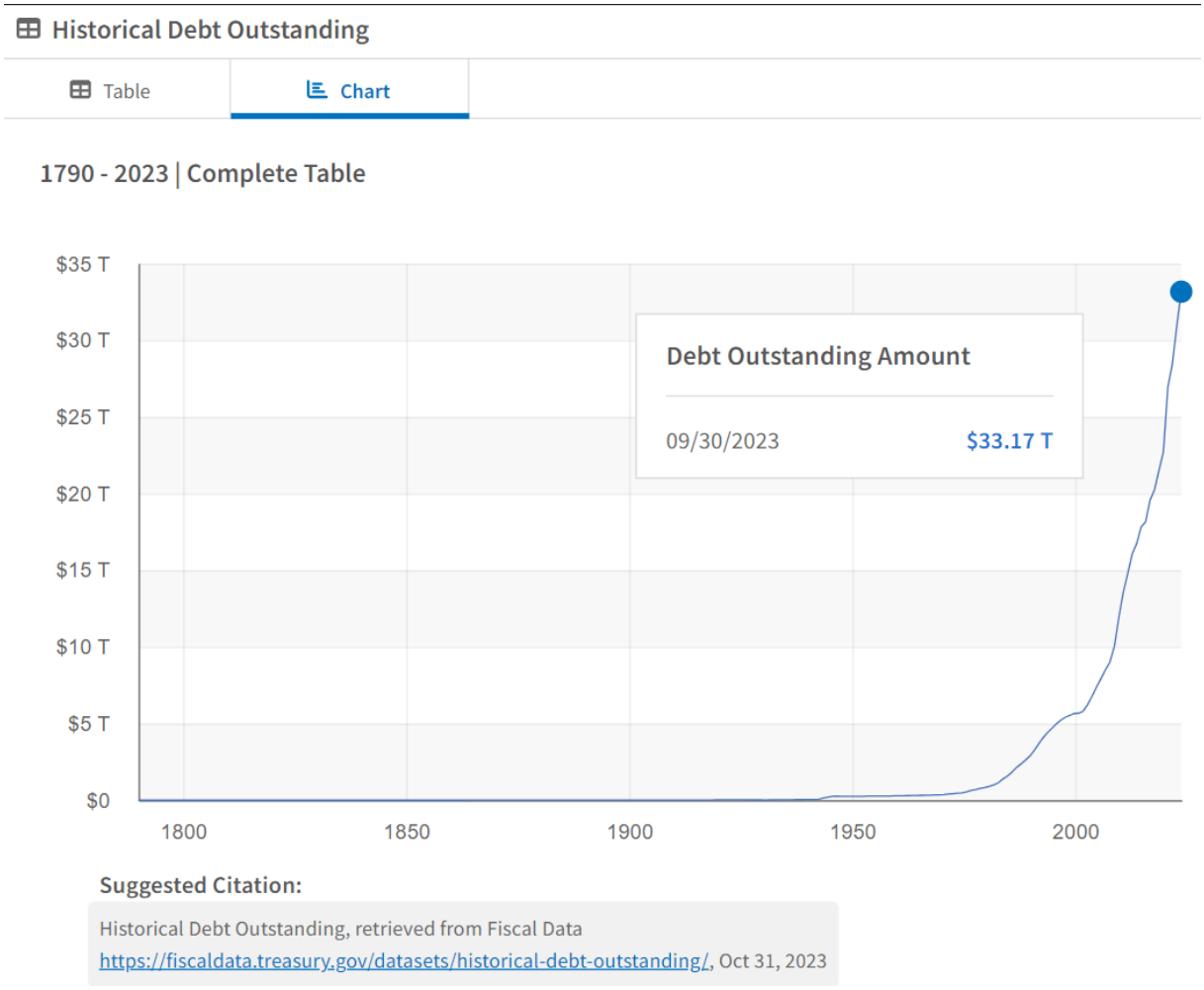
Fed's Recent Balance Sheet Trends



Note the Fed has about $7.9 trillion in assets on its balance sheets as of October 2023.

Figure Four

US Treasury's Historical Debt Outstanding

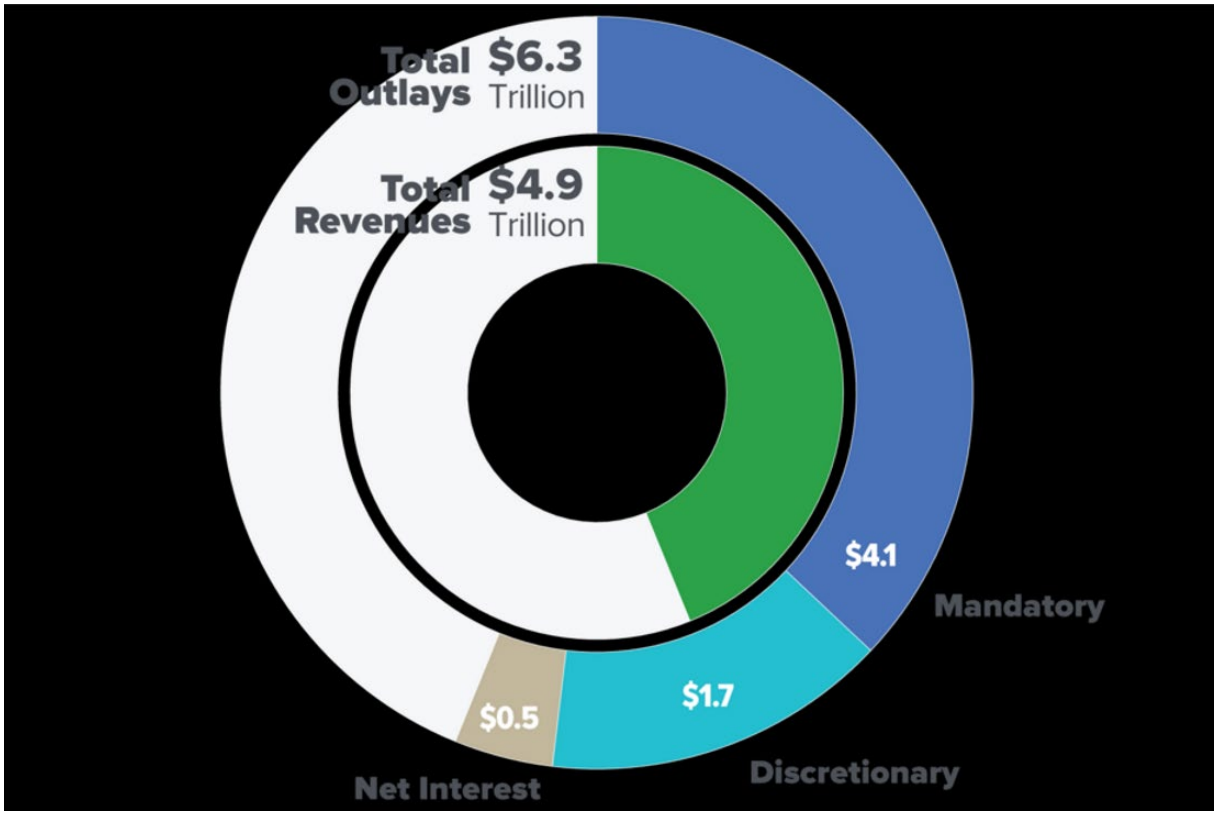


Note the U.S. Treasury has about $33 trillion in liabilities on its balance sheets as of October 2023.

The U.S. must pay back the principal and interest accrued on the bond to settle the debt. The government gets money either by issuing new bonds to pay off the old debt (bonds) or through taxation of its citizens. The US government pays interest on debt to the Fed for the money the Fed creates. How much interest? $475 billion in fiscal year 2022 was paid by the US Treasury just on interest (Congressional Budget Office, 2023).

Figure Five

US Treasury's Fiscal Year 2022: Total Outlays & Revenues



Notice, in 2022 the US Congress spent $6.3 trillion while earning $4.9 trillion; this negative difference between revenues and outlays is a budget deficit. That $1.4 trillion deficit is borrowed by the US Treasury from the Fed through the issuing of bonds by the Treasury, which is bought by money created by the Fed. Those bonds need interest paid on them, for the cost of borrowing the money, which the government pays to the central bank, the Federal Reserve, which has no physical-asset reserves, and is not a federally operated federal institution.

The third tool of the US private central bank is reserve requirements. Reserves are highly recognized assets that maintain adequate liquidity in order to cover outstanding liabilities. If the reserve requirement of a bank is 100%, then every dollar of money deposited into the bank by depositors must be covered by assets held within the bank. In this case, a $100 deposit requires the bank to have $100 in reserves inside the bank. These reserves could be in gold

coins, silver bullion, government bonds, or other assets, so that when the depositor requests their money back, for any given reason, the bank can satisfy the transaction. Say the reserve requirement is 10%. For every dollar deposited into the bank, the bank needs to only maintain 10% of the deposits in reserves. So, a $100 bank deposit requires the bank to only keep $10 in reserves. But, since the bank has $90 more dollars in its vaults than it needs in reserves, it can loan out the difference. A $100 deposit at 10% reserve requirements sustains $1000 of money inside the bank, $100 as reserves and $900 as potential loans. Please refer to Appendix A and C for visual demonstrations, Appendix B and D for data demonstrations of fractional reserve banking. Why would a bank loan out more money than it has? Interest.

Since it costs to borrow money, a lender makes profit on the interest accrued on loans outstanding. $100 in loans at 5% interest annually is $5 at the end of the year in revenue for the bank for lending. $900 in loans at 5% interest annually is $45 at the end of the year in revenue for the bank for lending. $45 of revenue is 45% of the original $100 deposit. A 45% return on an initial deposit into the economy being quite different than a 5% return for loans is a massive understatement. This practice of loaning out more money than is held in reserves is known as fractional reserve lending, or fractional reserve banking.

Where does the issue of fractional reserve lending come from? If the bank, at 10% reserve requirements, has $100 in deposits, $50 in reserves, and $500 in loans outstanding, experiences depositors take back $20 of their deposits, deposits drop from $100 to $80 and reserves drop from $50 to $30. The bank is stable, above water, sound, since it can cover the withdrawal of deposits from reserves. Now say some economic event triggers people to take out all of their money from the bank. The bank has $80 in deposits (to cover), $30 in reserves (covered), and $500 in loans. First, this loan amount is not supported by $30 of reserves, so the bank either needs to sell the loan to another bank (but other banks can't buy more loans without violating their own reserve requirements) or the bank calls in the loans. This forces loan holders to pay their loan immediately (or more than the regular payment). This causes deposits to withdraw deposits from the bank. All $80 in deposits are attempted to be withdrawn, but with only $30 in reserves, $50 of deposits cannot be covered by the bank.

Under such depositor withdrawal, the bank has just failed. When a lot of banks fail in a short amount of time, this is known as a bank panic.

The higher the reserve requirement for banks, the less loans they can make because the more reserves they must hold. This decreases the risk of a banking panic, since even in a financial shock, most deposits can be covered by reserves. However, less revenues from interest can be made, since less loans are outstanding. The opposite is the same. The current reserve requirement set by the Fed as of March 26, 2020, is 0%, "As announced on March 15, 2020, the Board reduced reserve requirement ratios to zero percent effective March 26, 2020. This action eliminated reserve requirements for all depository institutions," (Federal Reserve, 2022). The previous reserve requirement was 3% for net transactions below the low reserve tranche and 10% for net transactions about the low reserve tranche (tranche is French for a portion of something. Think tranche means portion or a piece).

The paid in capital members (stockholders) of the Fed are awarded a 6% dividend for capital held within the Fed.

> Dividend Amount. After all necessary expenses of a Federal reserve bank have been paid or provided for, the stockholders of the bank shall be entitled to receive an annual dividend on paid-in capital stock of-- in the case of a stockholder with total consolidated assets of more than $10,000,000,000, the smaller of-- the rate equal to the high yield of the 10-year Treasury note auctioned at the last auction held prior to the payment of such dividend; and 6 percent; and in the case of a stockholder with total consolidated assets of $10,000,000,000 or less, 6 percent. (Board of Governors of the Federal Reserve System, n.d.-a).

Also, the Fed (and its shareholders) are largely exempt from government taxation, "Exemption From Taxation. Federal reserve banks, including the capital stock and surplus therein, and the income derived therefrom shall be exempt from Federal, State, and local taxation, except taxes upon real estate," (Board of Governors of the Federal Reserve System, n.d.-a). Having a dividend paid out to shareholders of the Fed and sweeping tax exemptions from such incomes, the Federal Reserve is a private institution.

Having identified the basics of the Federal Reserve System, understanding the history of central banking and banking as a whole is useful in understanding why the US has come to be possessed by a central bank.

History of Banking

In 48 BC, Julius Caesar of Rome engaged in the acts of coining money, minting coins, and using the new coinage to construct public works projects. This expansion of the money supply was popular at large with the citizenry. Potentially, this expansion of the money supply through the coinage of money, largely done by money changers before Julius Caesar, was a partial motivation in the assassination of Julius Caesar. The collapse of the Roman Republic was a result of the shrinking of the money supply by 90% (Still & Carmack, 1996, Chapter 4). With less currency circulating across the empire, the ability for those residing within the empire to engage in economic transactions and purchase goods needed to maintain lifestyles plummeted. The economic collapse was followed by the political collapse of the Roman Empire.

This brings up the question of who are the money changers? Money changers are defined as, "Those who loan out and manipulate the quantity of money," (Still & Carmack, 1996, Chapter 4). Money could be created by the forging of metal coins, whose value typically derived from the quantity and purity of a precious metal contained by the coin, such as, but not limited to gold, silver, bronze, or copper. Additionally, the creation of credit by money changers through the contracting of loans with borrowers constitutes money creation. In an exchange, borrowers exchange their newly created debt for credit to spend on activities while the lender (money changers) exchange their newly created credit for debt. The credit and debt are destroyed, or settled, when the borrower pays the lender the amount credited to them (principal) in addition to the cost of borrowing (interest), where the payment is expected to come from the activity engaged in by the borrower; using a loan to pay laborers to clear a wooded plot of land would expectantly generate revenues when the field is used for agriculture, where the revenue generated can pay for the cost of the loan.

The Biblical story of Jesus driving the money changers out of the temple is worthy of reference. Jews travelling to a temple had to pay a tax for entering the temple. The temple required payment in a specific half shekel coin, being of half ounce silver quantity. The coin was used since it did not contain the face of a pagan (non-Jewish) Roman emperor on its head. Since the coin was rare (of limited supply), most of the coins had been purchased by the temple money changers, allowing them to charge relatively higher prices for the specific coin. By controlling the coin supply of a specific coin, exuberant profits were enjoyed. This is the only recorded instance of Jesus using force on others recorded in the Bible (Matthew 21:12-13).

Going to Medieval Europe, money changers were primarily goldsmiths. Such smiths, who worked with the valuable metal gold, had protective measures to ensure the gold they worked with could remain safe. Recognizing the vault of a gold smith was a worthy place for the safekeeping of other people's metal coinage, gold smiths kept other people's gold and coinage in their vaults. Societally, instead of exchanging metal coins, such as gold, as a form of payment for economic productivity, receipts of gold held in goldsmith's vaults were exchanged. When these gold receipts were presented to the goldsmith, the receipt could be exchanged for the physical gold in the vault. Suddenly, gold receipts were as valuable as gold societally, since they could be exchanged for gold on demand. Additionally, the convenience of carrying around paper instead of metal propelled the exchangeability of gold receipts as a form of money.

Goldsmiths were able to act as bankers (money changers) by loaning the amount of gold in their vaults to qualified borrowers, who would agree to pay back the loans, with interest. Additionally, with other people depositing gold into their vaults, goldsmiths could use such gold deposits to increase the amount of loans they offered. For a goldsmith, the more loans outstanding, the more interest being earned (as long as there are no defaults of the loans), the more profits could be generated. This financial incentive towards lending out more loans was of interest, "Gold smiths noticed that only a small fraction of the depositors ever came in and

demanded their gold at only one time," (Still & Carmack, 1996, Chapter 4). Therefore, loans could be made using gold receipts that were not fully backed by gold in the vault; gold receipts were recognized by society as a form of money due to the trust they could be exchanged for gold on demand, reducing the need to actually practice this exchange. "Then they could loan out this extra money and collect interest on it. This was the birth of fractional reserve banking, that is loaning out many times more money than you have assets on deposit," (Still & Carmack, 1996, Chapter 4).

The financial incentive for money changers/goldsmiths/bankers is the more loans that are created, the more interest borrowers are paying. The more money the money changers collect in interest in revenue, the richer they can become. Fractional reserve banking was created on the premise that gold receipts could be exchanged freely for physical gold, reducing the need to actually exchange gold receipts for physical gold. Whenever a goldsmith loaned out gold receipts to borrowers, it was societally entrusted that each gold receipt was covered fully by gold in the gold smith's vault. The more loans in circulation resulted in greater profits for the goldsmiths. The only downfall of such fractional reserve banking is when more gold receipts are demanded to be exchanged for gold than can be honored with the gold existing in the vault. This banking panic effect, which will be expanded upon further, is enabled by the practice of fractional reserve banking. If all loans outstanding were fully covered (full reserve) by gold in the vaults, the exchange of every piece of gold receipt for physical gold could be honored, making a bank panic not possible.

Profits were not just achievable through the usage of interest and fractional reserve banking. Moreso, the timing and quantity of loans offered by gold smiths was a profit engine in of itself.

> The ancient goldsmiths discovered that extra profits could be made by rowing the economy between ease money and tight money. When they made money easier to borrow, then the amount of money in circulation expanded. Money was plentiful. People took out more loans to expand their business. But then, the money changers would tighten the money supply. They would make loans more difficult to get. (Still & Carmack, 1996, Chapter 4).

With new loans not being able to be acquired to pay off unsound old loans, borrowers would go bankrupt, having to sell their accumulated assets to the goldsmiths to cover defaulted loans. Who would be able to buy the assets of the newly bankrupt? Goldsmiths. Having money in their vaults (gold), they were able to purchase for pennies on the dollar the assets of those bankrupt as a result of a contracting the money supply, which in of itself was controlled by the efforts of the goldsmiths. As illustrated, the third profit potential for gold smiths was the rowing of the money supply, in addition to interest and fractional reserve banking.

During the Middle Ages, the Catholic Church frowned upon the charging of interest on loans, notably by St. Thomas Aquitaine (Kaczor, 2007). Such an economic decree by a religious institution illustrates the importance of interest, money, and money creation. The crime of charging exorbitant interest on loans in Europe was called usury, bringing rise to the concept of usury laws and limits.

In 1100 AD, King Henry the 1st of England invented the Talley Stick system. This monetary system was used for 726 years, until discontinuation in 1826 (Still & Carmack, 1996, Chapter 5). The purpose of the Talley Stick system was to prevent the counterfeiting of currency. A piece of polished wood had notches cut along its edge to indicate monetary denominations. This wooden stick was split in half lengthwise. One piece would be sold into the market to be used as currency. The second piece would be kept by the King to prevent counterfeiting of the currency, since counterfeits would not be of the exact same length. The Talley Stick system illustrates that any item can be used as a currency as long as it is recognized as legal currency. "…the secret is that money is only what people agree on to use as money," (Still & Carmack, 1996, Chapter 5). The demand for Talley Sticks was created by requiring taxes to be paid in tally sticks.

The Bank of England was chartered in 1694 as a privately owned central bank. Capital was inserted into the bank to begin making loans by shareholders paying in (with money) to receive shareholder status in the private venture. "In exchange, the new bank would loan

British politicians as much as the new currency as they wanted. As long as they secured the debt by direct taxation of the British people," (Still & Carmack, 1996, Chapter 6).

> The nation sells bonds to the central bank to pay for things it does not have the political will to raise taxes to pay for. But the bonds are purchased with money the central bank creates out of nothing. More money in circulation makes your money worth less. The government gets as much money it needs and the people pay for it in inflation. (Still & Carmack, 1996, Chapter 6).

The British government debt grew from 1.25 million pounds to 16 million pounds. With raised taxes, it was proposed that the Red Sea be drained to find the gold lost by Moses. Once the central bank was instituted, booms and busts we now call the business cycle followed in kind.

Since the Bank of England (BOE) was chartered, Great Britian was involved in the wars: The Great Northern War 1700-1721, The War of Spanish Succession 1701-1713, The War of Jenkin's' Ear 1739-1748, The War of the Austrian Succession 1740-1748, The Seven Years' War 1756-1763 (Oxford Reference, 2012). By January 1763, Great Britain held an outstanding debt balance of 122 million pounds (Library of Congress, 2023). In order to pay of the accumulated debts, taxes were levied and more strictly enforced on the British American colonies.

In the British American colonies, a chronic lack of metal coins existed. To remedy this, this colonies experimented with trading their own paper money. Colonial Scrip was a created currency used for inter-colony exchanges. The currency was not backed by any reserve. When Benjamin Franklin was asked by British BOE officials as to why the colonies were so prosperous, he replied in 1763:

> That is simple. In the Colonies we issue our own money. It is called Colonial Scrip. We issue it in proper proportion to the demands of trade and industry to make the products pass easily from the producers to the consumers. In this manner, creating for ourselves our ow paper money, we control its purchasing power, and we have no

> interest to pay to no one. (Still & Carmack, 1996, Chapter 8, reference Benjamin Franklin).

In 1764, the British Parliament passed the Currency Act of 1764

> An Act to prevent Paper Bills of Credit,
> hereafter to be issued in any of His Majesty's Colonies or Plantations in America,
> from being declared to be a legal Tender in Payments of Money ; and to prevent the legal Tender of such Bills as are
> now subsisting, from being prolonged beyond the Periods limited for calling in and
> sinking the same. (Currency Act, 1764).

Benjamin Franklin described in his autobiography how the issue of currency origination was the primary purpose motivating the American Revolutionary War,

> The colonies would gladly have borne the little tax on tea and other matters had it not been that England took away from the colonies their money, which created unemployment and dissatisfaction. The inability of the colonists to get power to issue their own money permanently out of the hands of George 3rd and the international bankers was the PRIME reason for the Revolutionary War. (Still & Carmack, 1996, Chapter 8, reference Benjamin Franklin's autobiography)

In order to pay for the Revolution, the Continental Congress had to issue its own debt and currency. US money supply at start of Revolution was $12 million, at the end of Revolution the money supply was $500 million. This caused the issue of inflation, where,
"A wagon load of money will scarcely purchase a wagon load of provisions," (Still & Carmack, 1996, Chapter 8, reference George Washington)

As such, the issue of the creation of paper currency was a factor in the causation of the American Revolution.

In 1781, the Continental Congress chartered the Bank of North America. This was a privately-owned attempt at a central bank by Robert Morris to model the Bank of England. The charter required $400,000 in initial capital, which when failed to be raised, gold was deposited on loan from France. The Bank of North America then loaned out its money using fractional reserve banking to its shareholders, who reinvested into the shares of the bank making it 'fully capitalized'. This bank was granted a monopoly over national currency by the Continental Congress. In 1785, the bank charter was not renewed due to inflation of currency outstanding. Alexander Hamilton, who worked for the Bank of North America, later became the first Secretary of the Treasury.

Thomas Jefferson and James Madison disagreed with the inclusion of a provision for a private central bank during the Constitutional Convention. Alexander Hamilton supported a private central bank as part of the eventual Constitution. The First Bank of the United States was granted a 20-year charter in 1791. The proposed intention of this chartered central bank was to achieve price stability and stop inflation.

> If the American people ever allow private banks to control the issue of their currency, first by inflation, then by deflation, the banks and the corporations which grow up around them will deprive the people of all property until their children wake up homeless on the continent their fathers conquered. . . I wish it were possible to obtain a single amendment to our Constitution - taking from the federal government their power of borrowing. (Still & Carmack, 1996, Chapter 10 & 11, reference Thomas Jefferson).

In 1803, the Louisiana Purchase was acquired by the US from France for a price of $15 million. $3 million was paid as a downpayment in gold to France, with the remainder as a cancelling of existing debt and the issuing of new debt (bonds) (Glass, 2017). In the same year of 1803, the Bank of France, which was established in 1800, was granted the exclusive privilege of issuing bills payable, enabling the financiering of the government activities of France by the central bank (“Uniform National Currency,” 1864).

> When a government is dependent upon bankers for money, they and not the leaders of the government control the situation, since the hand that gives is above the hand that takes. Money has no motherland; financiers are without patriotism and without decency; their sole object is gain. (Still & Carmack, 1996, Chapter 12, reference Napoleon Bonaparte).

In 1811, the bill to renew the charter of the First Bank of the United States was not passed. From 1812 to 1815, the War of 1812 was engaged between primarily the United States and Great Britian. In 1816, the Second Bank of the United States was chartered. A special note to be attended to is the timing of the change of banking law and wars, particularly between nations. The Napoleonic Wars, arguably from 1799 to 1815, with the War of 1812 (until 1815) was an expression of engagement between national powers of the age.

Great Britain, which joined with Ireland to become the United Kingdom in 1801, was a participant in both of the wars during the time period (The Editors of Encyclopedia Britannica, 2019). Additionally, having established a central bank in 1694, the United Kingdom had the longest history of operating a central bank; this financing strength for the United Kingdom was in at least part a contribution to the ability of the United Kingdom to engage in largescale military operations. "Why would a central bank finance opposing sides in a war? Because war is the biggest debt generator of them all. A nation will borrow any amount for victory," (Still & Carmack, 1996, Chapter 14). Typically, loans of the defeated party are honored by the victor, which is great business for the loaners of money.

In 1832, a request to renew the charter of the Second Bank of the United State was made four years before it was set to expire. The bill was passed by both chambers of Congress yet was vetoed by Andrew Jackson. In 1833, Jackson appointed Roger B. Taney as the secretary of the Treasury as a recess appointee. The Treasury then moved government funds from banks part of the Second Bank of the United States to banks deemed as state or safe banks. Nicholas Biddle, the third serving president of the Second Bank of the United States, was opposed to the killing of the central bank. "This worthy President thinks that because he has scalped

Indians and imprisoned Judges, he is to have his way with the Bank. He is mistaken," (Still & Carmack, 1996, Chapter 16, reference Nicholas Biddle). In a continued expression of opposition to the policies of the Jackson administration, Biddle wrote,

> Nothing but widespread suffering will produce any effect on Congress … Our only safety is in pursuing a steady course of firm restriction - and I have no doubt that such a course will ultimately lead to restoration of the currency and the recharter of the bank. (Still & Carmack, 1996, Chapter 16, reference Nicholas Biddle letter to William Appleton on January 27, 1834).

By January 1835, the US government paid off all of its interest-bearing debt, which would be the first and last time for this to happen in the history of the US. Also in 1835, on January 30th, an attempted assassination on Jackson proved unsuccessful (Boissoneault, 2017). Banks generally called in old loans and did not issue new loans, eventually resulting in the Panic of 1837. This banking panic was blamed on Jackson for not renewing the chart of the bank by the likes of Biddle. Meanwhile, it was being blamed on the banks for engineering a financial depression to create a public will to recharter the bank by the likes of Jackson. Jackson recounted his best accomplishment as "I killed the bank," referring to the Second Bank of the United States.

The United States Civil War, from 1861 to 1865, coincided with developments in banking and currency practices within the States. In 1861, demand notes were authorized by Congress. Such notes were redeemable for specie on demand and had a signature green ink on the back side. Through the Legal Tender Act of 1862, United States Notes were issued. Although colored with green ink the same as demand notes, US notes were not redeemable for specie. This is an example of fiat currency, a currency not backed by a definite supply of specie reserves, being used to finance military operations during the US Civil War. Collectively, demand notes and US notes are considered to be greenbacks, while only demand notes were redeemable for metal, as the US notes were a full fiat currency. This effectively suspended the convertibility of Treasury notes into specie, whether gold or silver (Woodward, 2011).

US notes were encouraged by Colonel Dick Taylor of Illinois, who recommended creating non-interest-bearing and non-redeemable currency to finance the activities of the Union. Colonel Taylor passed on this idea to then President Lincoln in regards to financing the Union, "Why, Lincoln, that is easy; just get Congress to pass a bill authorizing the printing of full legal tender treasury notes … and pay your soldiers with them and go ahead and win your war with them also," (Still & Carmack, 1996, Chapter 17, reference Colonel Dick Taylor). A contributing factor to the Union winning the US Civil War was the industrial capacity to mobilize labor, machinery, goods, and services into achieving political goals, most of which require payment in currency. Such mobilization of industrial capacity was lubricated by the issuing of currency, among other forms of capital raising, which enabled potential industry to prove productive in a war time scenario. In order to promote the executive power's use of created money, Lincoln described,

> The Government should create, issue, and circulate all the currency and credit needed to satisfy the spending power of the Government and the buying power of consumers. The privilege of creating and issuing money is not only the supreme prerogative of the Government, but it is the Government's greatest creative opportunity. By the adoption of these principles … the taxpayers will be saved immense sums of interest. Money will cease to be master and become the servant of humanity. (Still & Carmack, 1996, Chapter 17, reference Abraham Lincoln).

On April 15, 1865, Abraham Lincoln was successfully assassinated (Bemis, 2017). With the Contraction Act of 1866, the US Treasury was instructed to retire the supply of greenbacks (demand notes and US notes). The Coinage Act of 1873 suspended the minting of silver dollars, with gold coin minting continuing. "Previous to 1873, anyone who brought silver to the US mint could have it struck into silver dollars free of charge. No longer," (Still & Carmack, 1996, Chapter 18). The amount of coinage and paper decreased from the end of the American Civil War towards 1873 (Appendix E for coinage, Appendix F for paper). This is in line with the modern monetary policy of quantitative tightening, where the reduction in monetary supply results in a contraction of economic activity. This conclusion was made by the 1876 US Silver Commission,

> The disaster of the Dark Ages was caused by decreasing money and falling prices … Without money, civilization could not have had a beginning, and with a diminishing supply, it must languish and unless relieved, finally perish. At the Christian era the metallic money of the Roman Empire amounted to $1,800,000,000. By the end of the Fifteenth century it had shrunk to less than $200,000,000 … History records no other such disastrous transition as that from the Roman Empire to the Dark Ages … (Still & Carmack, 1996, Chapter 18, reference United States Silver Commission).

The 1878 Sherman Silver Purchase Act reintroduced, if only for some time, the minting of silver coins. The importance of the creation of money is illustrated by the following statement made by James Garfield,

> Whosoever controls the volume of money in any country is absolute master of all industry and commerce … And when you realize that the entire system is very easily controlled, one way or another, by a few powerful men at the top, you will not have to be told how periods of inflation and depression originate. (Still & Carmack, 1996, Chapter 18, reference James Garfield).

On July 2, 1881, James Garfield was successfully assassinated (Hurdle, n.d.).

Through the adjustment of currency in circulation, with the firmly established national banking association, economic booms followed by economic depressions encouraged public support for the creation of an official central bank within the US again. The time period from 1873 onwards held the debates over the positions of free silver versus the gold standard. Free silver proponents wanted an increase in monetary supply, akin to the experimentations during the Civil War, to increase economic activity with inflation. Gold standard proponents wanted a careful adherence to stable currency supply to gold supply relationship produce stable prices (in other words, not inflation). This debate over the control of the money supply took place as banking operations by the banking association were coordinated,

> On September 1st 1894 we will not renew our loans under any consideration. On September 1st we will demand our money. We will foreclose and become mortgages in possession. We can take two-thirds of the farms west of the Mississippi, and thousands of them east of the Mississippi as well, at our own price ... Then the farmers

> will become tenants as in England ... (Still & Carmack, 1996, Chapter 19, reference 1891 American Bankers Association, as printed in the Congressional Record of April 29, 1913).

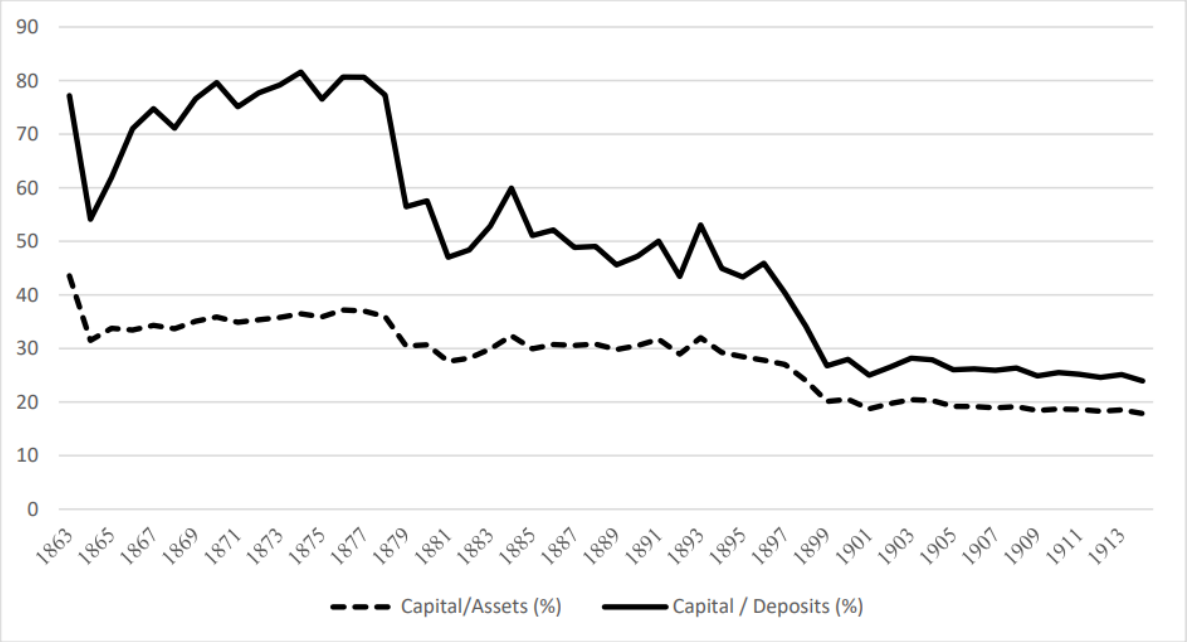
This debate was embodied by the 1896 and 1900 presidential races between William Jennings Bryan (free silver) and William McKinley (gold standard). "We will answer their demand for a gold standard by saying to them: You shall not press down upon the brow of labor this crown of thorns, you shall not crucify mankind upon a cross of gold," (Still & Carmack, 1996, Chapter 19, reference William Jennings Bryan). The Gold Standard Act of 1900 formalized the Coinage Act of 1873, with demonetized silver and US Treasury currency to be only redeemable in gold coin as specified. The gold standard fixed the exchange rate of $20.67 in currency for 1 troy ounce of gold. On September 6, 1901, William McKinley was successfully assassinated (NCC Staff, 2023).

The Bank Panic of 1907 was stemmed from becoming a financial depression through the infusion of credit into banks, companies, and securities that had a steep drop off in market value through private financing. The panic created a public demand to change the banking and currency regulations so as to prevent large swings in the financial markets. It should be duly noted that such a panic occurred while the National Banking Act of 1863, its revisions, the Office of the Comptroller of The Currency, and the gold standard as of seven years were in effect. These banking and currency regulations included a national banking association, decreasing reserve requirements, and a fixed exchange rate. Figure 6 illustrates the capital to assets ratio and capital to deposits ratio of the national banks in the United States during the time period from 1863 to 1913. The change in behavior of the data roughly around 1900 coincides with the Gold Standard Act of 1900, per below.

Figure 6

1863-1914 Capital/Asset & Capital/Deposit Ratios

Figure 2: Capital-to-Assets Ratio and Capital-to-Deposits Ratio: All National Banks, 1863–1914



Source: OCC Annual Reports

On November 22, 1910, the meeting at Jekyll Island off the coast of Georgia occurred. The participants wrote, in secret, a banking bill. Through the Aldrich Plan of 1910, a National Reserve Associations, proposed 15 branches of federal banks and a 46-member Board of Directors. This association would be able to create reserves to satisfy on demand deposit withdrawals. The details of the meeting on Jekyll Island were made public after the event,

> I was as secretive - indeed, as furtive - as any conspirator … Discovery, we knew, simply must not happen, or else all our time and effort would be wasted. If it were to be exposed that our particular group had got together and written a banking bill, that bill would have no chance whatever of passage by Congress. (Still & Carmack, 1996, Chapter 21, reference Frank Vanderlin, February 9th, 1935 Saturday Evening Post).

The bill was reworked into the Glass-Owens Act and passed on December 23, 1913, by Woodrow Wilson. It has hence been remembered as the Federal Reserve Act of 1913, establishing the Federal Reserve System which operates as the current central bank of the United States. One of the primary focusses of the Federal Reserve System was to enable the orchestration of elastic currency. An elastic currency has the capacity to fluctuate, including expand and contract, the money supply to achieve desired aims. The Federal Reserve System's Dual Mandate is to promote one maximum employment, two stable prices, and three moderate long-term interest rates (Federal Reserve, n.d.). This is accomplished through open market operations, reserve requirements, discount window lending, forward guidance, and large-scale asset purchases. More simply put, the Federal Reserve System has the power to control the money supply of the nation. The ability is manifested in the setting of interest rates (the cost of borrowing), the fluctuation of the supply of money and credit (inflation rates), and regulations (for lenders and borrowers).

Few commentators of the age voiced their perspective of the importance of the passing of the Federal Reserve Act,

> The ... Bill grants just what Wall Street and the big banks for twenty-five years have been striving for - private instead of public control of currency. It [the Glass-Owen bill] does this as completely as the Aldrich Bill. Both measures rob the government and the people of all effective control over the public's money, and vest in the banks exclusively the dangerous power to make money among the people scarce or plenty. (Still & Carmack, 1996, Chapter 22, reference Alfred Crozier, Ohio attorney).
>
> This Act establishes the most gigantic trust on earth. When the President signs this bill, the invisible government by the Monetary Power will be legalized. The people may not know it immediately, but the day of reckoning is only a few years removed … The worst legislative crime of the ages is perpetrated by this banking bill. (Still & Carmack, 1996, Chapter 22, reference Rep. Charles Lindbergh (R-MN)).

The Aldrich bill was condemned in the platform … when Woodrow Wilson was nominated … The men who ruled the Democratic party promised the people that if they were returned to power there would be no central bank established here while they held the reins of government. Thirteen months later that promise was broken, and the Wilson administration, under the tutelage of those sinister Wall Street figures who stood behind Colonel House, established here in our free country the worm-eaten monarchical institution of the 'king's bank' to control us from the top downward, and to shackle us from the cradle to the grave. (Still & Carmack, 1996, Chapter 22, Rep. Louis McFadden (D-PA)).

To cause high prices, all the Federal Reserve Board will do will be to lower the rediscount rate …., producing an expansion of credit and a rising stock market; then when … businessmen are adjusted to these conditions, it can check … prosperity in mid-career by arbitrarily raising the rate of interest. It can cause the pendulum of a rising and falling market to swing gently back and forth by slight changes in the discount rate, or cause violent fluctuations by a greater rate variation, and in either case it will possess inside information as to financial conditions and advance knowledge of the coming change, either up or down. This is the strangest, most dangerous advantage ever placed in the hands of a special privilege class by any Government that ever existed. The system is private, conducted for the sole purpose of obtaining the greatest possible profits from the use of other people's money. They know in advance when to create panics to their advantage. They also know when to stop panic. Inflation and deflation work equally well for them when they control finance … (Still & Carmack, 1996, Chapter 22, reference Rep. Charles Lindbergh (R-MN)).

We have come to be one of the worst ruled, one of the most completely controlled government sin the civilized world - no longer a government of free opinion, no longer a government by … a vote of the majority, but a government by the opinion and duress of a small group of dominant men. Some of the biggest men in the United

> States, in the field of commerce and manufacture, are afraid of something. They know that there is a power somewhere so organized, so subtle, so watchful, so interlocked, so complete, so pervasive, that they had better not speak above their breath when they speak in condemnation of it. (Still & Carmack, 1996, Chapter 22, reference Woodrow Wilson).

> If our nation can issue a dollar bond, it can issue a dollar bill. The element that makes the bond good, makes the bill good, also. The difference between the bond and the bill is the bond lets money brokers collect twice the amount of the bond and an additional 20%, where as the currency pays nobody but those who contribute directly in some useful way. It is absurd to say that our country can issue $30 million in bonds and not $30 million in currency. Both are promises to pay, but one promise fattens the usurers and the other helps the people. (Still & Carmack, 1996, Chapter 22, reference Thomas Edison).

In 1913, the 16th amendment to the US Constitution was ratified, granting Congress the authority to collect taxes on incomes, "The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration," (16th Amendment, U.S. Constitution).

The Great War (now referred to as World War One) broke out in 1914 between (eventually) the major powers of the world at the time. As the United Kingdom had effectively won the end of the Napoleon Wars with the greatest ability to finance its military operations and the Union had effectively won the American Civil War through the mobilization of industry through currency reforms, the Allies effectively won the Great War with the renewed deployment of national capital into industrial output.

The time period after the war to end all wars become the roaring twenties, at least from the perspective of the United States. During this time period, a relative increase in economic productivity was experienced. The generally ascribed factors of mass production,

electrification, urbanization, laissez faire economics from the Harding and Coolidge administrations, and the benefits of having the great war not fought on the continent were present during the roaring 20's. During the time period from July 1, 1920, to June 29, 1929, the debt outstanding of the United State federal government decreased by -34.76% from $25,952,456,406.16 ($26 billion) to $16,931,088,484.10 ($17 billion) (U.S. Treasury Fiscal Data (Fiscal Data Treasury.gov, n.d.). The work of Murry Rothbard in his book America's Great Depression examined the change in the US money supply during the roaring 20's. From 1921 to 1929, the Rothbard-expanded money stock increased by 62%, which included the M2 money supply, savings and loan share capital and life insurance net policy reserves (Timberlake, 1999). The roaring 20's saw both a reduction in national debt and an increase in the money supply in the US.

An increase in the money supply, which is the increasing of credit in an economy, was burst with the stock market crash of 1929. Black Monday of October 28, 1929, saw nearly a 13% decline in the Dow (stock market index) while Black Tuesday of October 29, 1929 saw nearly a 12% drop in the Dow. From the Dow's peak in September 1929 to its trough in July 1932, the Dow slide 89% (Richardson, 2013). The discount rate from the Fed was increased: On August 5, 1927, the discount rate was 3 and 1/2%. On August 9, 1929, the discount rate was approved to 6% (X-6737 Report, n.d.). From the fall of 1930 to the winter of 1933, the money supply fell by nearly 30 (Richardson, 2013b). This decrease in the money supply during a time of financial uncertainty was a factor in turning the stock market crash of 1929 in fence post for the Great Depression. “The Federal Reserve definitely caused the Great depression by contracting the amount of currency in circulation by one-third from 1929 to 1933,” (Still & Carmack, 1996, Chapter 24, reference Milton Friedman, Nobel Prize winning economist).

Executive Order 6102 on April 5, 1933, by FDR required all persons to deliver gold to the Federal Reserve, for which it would be bought at a price of $20.67 per troy ounce (in accordance with the Gold Act of 1900). The penalty for failure to comply with the executive order was a $10,000 fine, up to 10 years in prison, or both. The Gold Reserve Act of 1934 changed the official price of 1 troy ounce of gold from $20.67 to $35. This enabled the US to

increase the monetary supply. Gold and gold certificates were transferred from the Fed to the US Treasury. The act also established the Exchange Stabilization Fund, which enabled the US Treasury to stabilize the exchange rate of the US currency on the global markets. This act made it largely illegal for US citizens to hold gold while enabling the Treasury to trade gold with foreigners, to maintain the peg (Modern Coin Market, 2023). Through the control of the gold to dollar exchange rate and possessing the, for the most part, entire gold supply of the US, FDR was able to enact and direct New Deal programs during the interwar period. The controlling of the money supply increased the money supply and the debt outstanding of the US.

From June 30, 1931, to June 30, 1939, the debt outstanding of the US Treasury went from $16,801,281,491.71 ($17 billion) to $40,439,532,411.11 ($40 billion), an increase of 140.69%. With the official outbreak of World War Two on September 1, 1939, the US would officially declare war on December 8, 1941, on Japan and on December 11, 1941 on both Germany and Italy. This war would see the US debt go from on June 30, 1939, $40,439,532,411.11 ($40 billion), to on June 30, 1945, $258,682,187,409.93 ($259 billion). This was an increase of 539.68% in total debt outstanding for the US (Fiscal Data Treasury.gov, n.d.).

The Bretton Woods Conference was held in July of 1944 in Bretton Woods, New Hampshire. The International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD) were established. IBRD would later become part of the World Bank Group. The Bretton Woods Agreement had members states peg their currencies to the USD, which was in turn pegged to the gold standard of $35 per troy ounce. This Bretton Woods system became operational in 1958 (Still & Carmack, 1996).

On August 15, 1971, Nixon temporarily suspended the convertibility of dollars into gold.

> I have directed Secretary Connally to suspend temporarily the convertibility of the dollar into gold or other reserve assets, except in amounts and conditions determined

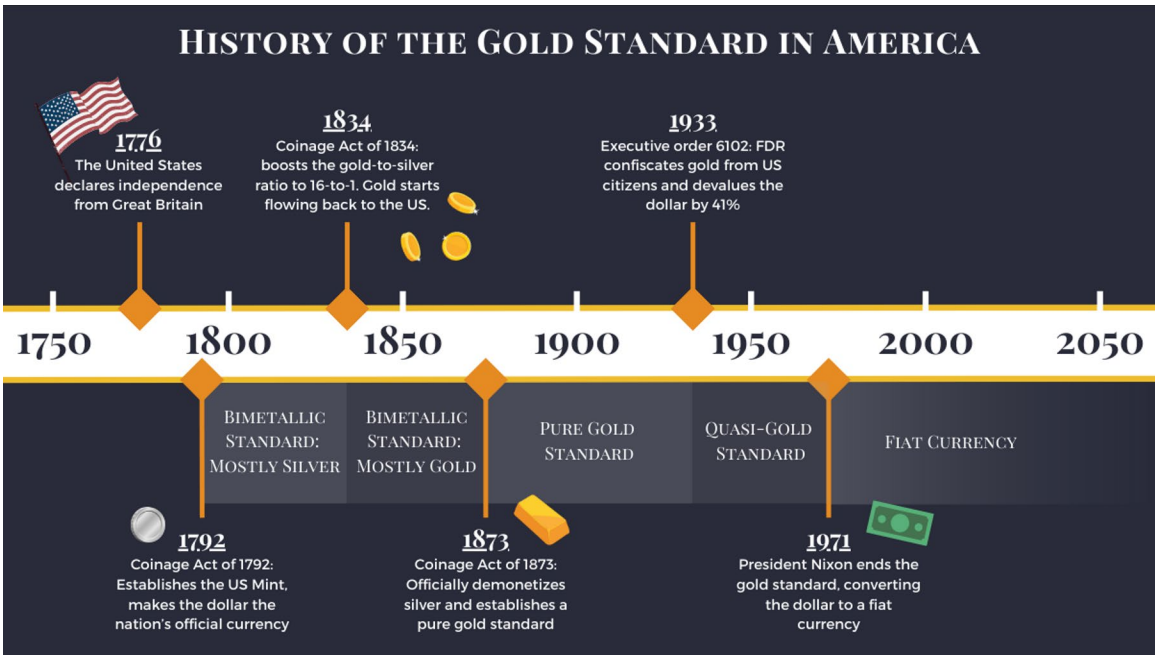
> to be in the interest of monetary stability and in the best interests of the United States. (The American Presidency Project, 1971).

This closed the gold window for foreigners, as US citizens were not allowed to own gold since Executive Order 6102, from April 1933. Additionally, the Bretton Woods system was dismantled, as foreign governments were no longer allowed to trade their reserves of US currency for US gold, per the peg of $35 to 1 troy ounce. Since 1971, the age of fiat currency has been the dominant form of currency.

For the United States, the following graphic illustrates the change of the reserve standards for currencies issued within the United States. From the aforementioned research, pre-1792 could be described as a combination of the use of colonial scrip (unbacked paper currency credit issued by colonies), the pound sterling enforcement by the motherland (Great Britian required taxes be paid in coinage issued by The Royal Mint, referred to as motherland-colony currency capture), and foreign currency dependance (Spanish pieces of eight, or Spanish Dollars, were an unofficial currency in the colonies), or more simply a currency hodge-podge.

Figure 7

History of US Currency Reserve Standards



It is with the above-described history that banking, central banking, and currencies have come to the states which they exist in modernly. Nunc Scis.

RESEARCH QUESTIONS/HYPOTHESIS

Research Question

The research question for the paper is as follows:

> *What degree of financial system awareness is prevalent amongst the surveyed population and how does it vary within the surveyed population? What is the most accurate available model of investor and market decisions, actions, behaviors, and results in the modern financial system?*

The first part of the research question is measured through a survey on financial literacy awareness. The second part of the research question is discussed in light of the survey results and the literature review components.

Hypotheses

The following hypotheses are made with their adjacent reasonings:

1. Survey participants will score higher on financial literacy than currency financial literacy.
    a. Currency financial literacy comprises of advanced financial and economic concepts which are not as widely used as basic financial literacy concepts.
2. Survey participants will match more recent financial-related events compared to more historical financial-related events.
    a. The availability of information does not presume the awareness of the same information. Individuals have a tendency to remember information most relevant to their personal experiences.
3. Survey participants will treat an investment good the same way they treat a consumer good when pricing is the only consideration.

a. Individuals utilize a consumption mindset when engaging in investment behaviors due to strong experiences in behaving as a consumer. This experience is transferred to the separate behavior of investing subconsciously, unless an investment mindset is otherwise developed purposefully.

METHODOLOGY

A quantitative survey was distributed via Qualtrics. Responses on demographics, psychographics, financial literacy, currency financial literacy, financial memory, and behavioral finance were collected to support, oppose, or refine the literature on the behavioral finance hypotheses. The survey was distributed to Bryant University students, faculty, staff, northern Rhode Island financial advisors (FAs), and groups within the network of the researcher.

RESULTS ANALYSIS

A total of 54 survey results were collected. Due to the ability for respondents to not answer questions they felt uncomfortable answering or were unsure of, the number of responses for each of the questions varies. The analysis of the results is based on the fully completed questions by survey participants.

Demographics

Age

#	Answer	%	Count
1	0-17	0.00%	0
2	18-24	45.65%	21
3	25-34	15.22%	7
4	35-44	6.52%	3
5	45-54	13.04%	6
6	55-64	10.87%	5
7	65-74	6.52%	3
8	75-84	2.17%	1
9	85-94	0.00%	0
10	95+	0.00%	0
	Total	100%	46

The age range of survey participants is skewed to the right.

Gender

#	Answer	%	Count
4	Female	40.43%	19
5	Male	59.57%	28
6	I prefer not to answer	0.00%	0
	Total	100%	47

The gender split of survey participants is 40% female, 60% male.

Household Income

#	Answer	%	Count
1	$0 - $50,000	26.09%	12
2	$50,000 - $150,000	34.78%	16
3	$150,000+	39.13%	18
	Total	100%	46

A majority of survey participants have annual incomes in excess of $50,000.

Income Type

#	Answer	%	Count
1	Wages/Salaries/Tips	84.78%	39
2	Business Pass-Thru	6.52%	3
3	Investments	8.70%	4
	Total	100%	46

Nearly 85% of survey participants' primary form of income is through wages, salaries, and tips, indicating employment as a means for financial attainment.

High Level of Formal Education Completed

#	Answer	%	Count
1	High School or less	36.17%	17
2	College degree (Bachelors)	42.55%	20
3	Post-graduate degree (Masters/Ph.D)	21.28%	10
	Total	100%	47

Slightly more than 20% of survey participants have acquired a post-graduate degree.

Psychographics

Primary Investor Status

#	Answer	%	Count
1	I invest on my own	46.67%	21
2	Others invest for me	35.56%	16
3	I do not invest	17.78%	8
	Total	100%	45

82% of survey participants participate in the financial markets, with 47% engaging in self-directed investing and 36% using the services of others for investing.

Number of Years of Experience in Financial Markets

#	Answer	%	Count
1	0 (Never participated in financial markets)	22.22%	10
2	0-1 year	24.44%	11
3	1-8 years	26.67%	12
4	8+ years	26.67%	12
	Total	100%	45

53% of survey participants have more than one year of experience investing in the financial markets.

Average Number of Financial Trades per Year

#	Answer	%	Count
1	0 per year	26.67%	12
2	1-10 per year	46.67%	21
3	10-30 per year	20.00%	9
4	30+ per year	6.67%	3
	Total	100%	45

The most expressed number of financial trades per year is between 1 and 10, representing 47% of the survey participants.

Personal Investment Time Horizon

#	Answer	%	Count
1	Less than 1 year	13.95%	6
2	1-10 years	16.28%	7
3	10+ years	69.77%	30
	Total	100%	43

70% of survey participants have an investment time horizon greater than 10 years in length.

Primary Investment Type

#	Answer	%	Count
1	Stocks	77.27%	34
2	Bonds	6.82%	3
3	Neither	15.91%	7
	Total	100%	44

77% of survey participants primarily invest in equity instruments when compared to 7% who primarily invest in debt instruments, given the choice between equity and debt.

Primary Form of Residence

#	Answer	%	Count
1	Rent	15.91%	7
2	House with mortgage	52.27%	23
3	House with mortgage paid off	31.82%	14
	Total	100%	44

Only 16% of survey participants engage in renting for their housing needs.

Financial Literacy

Stock Definition

#	Answer	%	Count
1	Stock	86.11%	31
2	Bond	5.56%	2
3	Option	8.33%	3
	Total	100%	36

86% of survey participants were able to match the definition of a stock (equity) instrument.

Bond Definition

#	Answer	%	Count
1	Bond	77.78%	28
2	Stock	11.11%	4
3	Option	11.11%	4
	Total	100%	36

78% of survey participants were able to match the definition of a bond (debt) instrument.

Interest Rate, Price of Bonds Outstanding Relationship

#	Answer	%	Count
1	Decrease	55.56%	20
2	Same	13.89%	5
3	Increase	30.56%	11
	Total	100%	36

56% of survey participants recognize the inverse relationship between interest rates and the price of bonds outstanding.

Mortgage Interest Payments, Time Relationship

#	Answer	%	Count
1	Option 1 / 15-year	97.30%	36
2	Option 2 / 30-year	0.00%	0
3	The same	2.70%	1
	Total	100%	37

97% of survey participants recognize the relationship between time and cumulative interest payments when comparing two mortgage choices.

Compound Interest

#	Answer	%	Count
1	More than $105	75.68%	28
2	Exactly $105	18.92%	7
3	Less than $105	5.41%	2
	Total	100%	37

76% of survey participants correctly described the effects of compound interest.

Currency Financial Literacy

US Central Bank

#	Answer	%	Count
1	Federal Reserve	91.67%	33
2	U.S. Treasury	5.56%	2
3	The U.S. does not have a central bank	2.78%	1
	Total	100%	36

92% of survey participants named the Federal Reserve as the central bank of the United States.

Federal Reserve Ownership

#	Answer	%	Count
1	Member banks	41.67%	15
2	U.S. government	47.22%	17
3	American citizens	11.11%	4
	Total	100%	36

47% of survey participants responded with the United State Government as the owner of the Federal Reserve, compared to 42% who responded correctly with member banks as the owners of the Fed.

US Official Paper Currency

#	Answer	%	Count
1	Federal Reserve Note	44.44%	16
2	United States Note	30.56%	11
3	United States Greenback	25.00%	9
	Total	100%	36

44% of survey participants named the Federal Reserve Note as the note which acts as legal tender for all debts, public and private for the United States.

US Currency Originator

#	Answer	%	Count
1	Federal Reserve	30.56%	11
2	U.S. Treasury	66.67%	24
3	International Monetary Fund	2.78%	1
	Total	100%	36

67% of survey participants believe the United States Treasury holds a monopoly on the creation and origination of American currency, as opposed to 31% who correctly believe the Federal Reserve holds the exclusive monopoly on the United States money supply.

US Monetary Policy

#	Answer	%	Count
1	Federal Open Market Committee (FOMC) [Federal Reserve]	75.00%	27
2	Congressional Budget Office (CBO) [Congress]	19.44%	7
3	Executive Office of Management and Budget (OMB) [President]	5.56%	2
	Total	100%	36

75% of survey participants named the FOMC as responsible for the United States monetary policy.

Reserve Requirement Effects

#	Answer	%	Count
1	$900	41.67%	15
2	$110	47.22%	17
3	$10	11.11%	4
	Total	100%	36

42% of survey participants were able to describe the effect of reserve requirements on the amount of loans outstanding in a fractional reserve banking system.

Financial Memory

Financial Memory of Relatively Recent Financial Events

#	Question	1913		1929		1987		2000		2008		2020		2023		Total
1	Federal Reserve Created	81.25%	26	3.13%	1	12.50%	4	0.00%	0	0.00%	0	0.00%	0	3.13%	1	32
2	Great Depression	0.00%	0	90.91%	30	6.06%	2	0.00%	0	3.03%	1	0.00%	0	0.00%	0	33
3	Black Monday	9.38%	3	3.13%	1	75.00%	24	9.38%	3	3.13%	1	0.00%	0	0.00%	0	32
4	Dot-Com Bubble	3.03%	1	0.00%	0	0.00%	0	81.82%	27	9.09%	3	0.00%	0	6.06%	2	33
5	Financial Crisis	3.03%	1	0.00%	0	3.03%	1	3.03%	1	81.82%	27	0.00%	0	9.09%	3	33
6	COVID Crash	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	100.00%	33	0.00%	0	33
7	Banking Panic	6.25%	2	3.13%	1	3.13%	1	9.38%	3	3.13%	1	0.00%	0	75.00%	24	32

The only financial event all survey participants could correctly match was the COVID Crash of 2020.

The Banking Panic of 2023 and Black Monday of 1987 had the relatively lowest correct response rates at 75% each for all survey participants.

The Great Depression of 1929 had the second highest correctly matched financial event, at 90.91%.

Behavioral Finance

Consumer Good – Gasoline

#	Question	Buy		Hold		Sell		Total
1	$2.00	97.06%	33	0.00%	0	2.94%	1	34
2	$3.00	96.88%	31	0.00%	0	3.13%	1	32
3	$3.50	87.50%	28	9.38%	3	3.13%	1	32
4	$3.90	68.75%	22	28.13%	9	3.13%	1	32
5	$4.00	8.82%	3	85.29%	29	5.88%	2	34
6	$4.10	3.03%	1	48.48%	16	48.48%	16	33
7	$4.50	0.00%	0	31.25%	10	68.75%	22	32
8	$5.00	0.00%	0	18.75%	6	81.25%	26	32
9	$6.00	0.00%	0	12.12%	4	87.88%	29	33

Survey participants generally followed a buy low, sell high strategy for a consumer good.

Investment Good – ABC Stock

#	Question	Buy		Hold		Sell		Total
1	$2.00	88.24%	30	5.88%	2	5.88%	2	34
2	$3.00	87.50%	28	6.25%	2	6.25%	2	32
3	$3.50	81.25%	26	12.50%	4	6.25%	2	32
4	$3.90	68.75%	22	28.13%	9	3.13%	1	32
5	$4.00	8.82%	3	88.24%	30	2.94%	1	34
6	$4.10	6.06%	2	51.52%	17	42.42%	14	33
7	$4.50	6.25%	2	37.50%	12	56.25%	18	32
8	$5.00	0.00%	0	18.75%	6	81.25%	26	32
9	$6.00	0.00%	0	12.12%	4	87.88%	29	33

Survey participants mostly followed a buy low, sell high strategy for an investment good.

DISCUSSION

The results of the survey support two of the three hypotheses presented in this research paper. The first hypothesis was that *survey participants will score higher on financial literacy than currency financial literacy*. The five selected results from the financial literacy section had the following correctness rate: Stock Definition 86%, Bond Definition 78%, Interest Rate, Price of Bonds Outstanding Relationship 56%, Mortgage Interest Payments-Time Relationship 97%, Compound Interest 76%. The mean of these selected responses is 78.6% of the financial literacy questions were answered correctly. The six selected results from the currency financial literacy section had the following correctness rate: US Central Bank 92%, Federal Reserve Ownership 42%, US Official Paper Currency 44%, US Currency Originator 31%, US

Monetary Policy 75%, Reserve Requirement Effects 42%. The mean of these selected responses is 54.3% of the currency financial literacy questions were answered correctly. The survey results indicate that survey participants were more knowledgeable on basic financial literacy topics when compared to currency financial literacy topics, supporting the first hypothesis.

The second hypothesis was that *survey participants will match more recent financial-related events compared to more historical financial-related events*. The relatively recent financial events and their response rates were 2000 Dot-Com Bubble 81.82%, 2008 Financial Crisis 81.82%, 2020 COVID Crash 100%, and the 2023 Banking Panic 75%. The mean of the relatively recent financial events was 84.66% correctly matched. The relatively historic financial events and their response rates were 1913 Federal Reserve Created 81.25%, 1929 Great Depression 90.91%, and the 1987 Black Monday 75%. The mean of the relatively historic financial events was 82.39% correctly matched. While the 2020 COVID Crash was the only financial event that had a 100% correct response rate, the difference between correct response rates of the relatively recent versus the relatively historic financial events did not support the hypothesis. The second hypothesis that survey participants would have a greater financial memory for relatively recent financial events was not supported from the survey results.

The third hypothesis was that *survey participants will treat an investment good the same way they treat a consumer good when pricing is the only consideration.* The examination of the buy, hold, and sell responses between the investment good ABC stock and the consumer good gasoline demonstrate a buy low, sell high strategy, regardless of the good type. As such, the hypothesis that the consumer mindset is present when investment decisions are being made is supported. This survey was unable to determine whether the third hypothesis is evidence of unsophistication of retail traders when it comes to sophisticated investing or an inherent wisdom of most people to buy low and sell high, regardless of what the final good or service is. This insight into the lasting effect of the consumer mindset when investing is a useful revelation for a financial market participant. For retail traders, the hypothesis reveals the

natural bias to treating investments like consumer goods, therefore, training of the mind and behavior to process information related to investments in a manner separate from consumption is recommended. For institutional investors, the hypothesis reveals the predictable behavior of retail traders, therefore, investment strategies can be generated with the assumption that retail traders will generally follow a buy low, sell high mindset, when pricing is the only consideration. An exploration into whether this supermarket sale effect is present when pricing is not the only consideration is the next step in refining or disproving the hypothesis, from a behavioral finance perspective.

To the underlying question of *what is money?* history indicates the following concepts:

1. Money is a unit of account: Qualities of importance tend to be quantified using systems of weights and measurements. The usage of money seeks to account for, in detail, the properties of desirable concepts.
2. Money is a store of value: The minds of individuals and organizations alike place value on the experiences throughout life. The ability to place, recognize, and store value is a property of money.
3. Money is a medium of exchange: The ability to transfer items of value through trade illustrates the utility of money. Where there are items to be traded between parties, money may play a role in facilitating and lubricating such transactions.
4. Money is an expression of trust: The willingness for parties to use intrinsically worthless items and concepts is based on the trust that other parties will also value the prescribed value of the monetary unit. When verification and remedies break down within a society, the expression of trust in money fluctuates with perceived belief of the money. Confidence is as important in monetary systems as intrinsic value.

LIMITATIONS

All results of this survey are only representative of the participants who completed the survey. The participants sampled in this survey are in no way intended to represent the population of a larger group of people. The survey questions have not been previously tested in the format

presented in this survey. This survey does not use a benchmark to compare its results to. All insights from the results of this survey are to be taken as is.

FUTURE RESEARCH

For future research on the topics of financial literacy awareness, financial memory, and behavioral finance, it is recommended that a broader sample is acquired for a survey. Additionally, narrowing down the focus of the questions would be expected to produce a higher completion rate amongst survey participants, as a result of a relatively shorter survey length.

One potential research format is to present news articles to participants. Then, the interviewer would question the participants on what type of investment ideas and choices they would be likely to make based on the news articles presented. Furthermore, asking the participants why they would or would not invest in a particular manner would be expected to provide insight into the investment process based on the interviews of numerous participants.

Likewise, research that could be designed to test the question *what drives behavior* could have wide reaching implications on literature of behavioral finance.

Recommendations for additional relevant topics not included in this research:

> BIS (Bank for International Settlements), IMF (International Monetary Fund), World Bank (World Bank Group), ICSID (International Centre for Settlement of Investment Disputes), Basel Accords (1, 2, 3), capital adequacy ratios (in reference to bank risk-weight assets), SDR (Special Drawing Rights), Petro-dollar, ECB (European Central bank [European Union contrast to US Fed]), BOJ (Bank of Japan [Japanese contrast to US Fed]), BRICS (Brazil, Russia, India, China, & South Africa).

Recommendations for additional relevant readings not included in this research or references:

> The Creature from Jekyll Island (G. Edward Griffin), Princes of Yen (Richard Werner), Why Nations Fail (Daron Acemoglu & James A. Robinson), The House of Morgan (Ron Chernow), The House of Rothschild (Niall Ferguson), The Wealth of

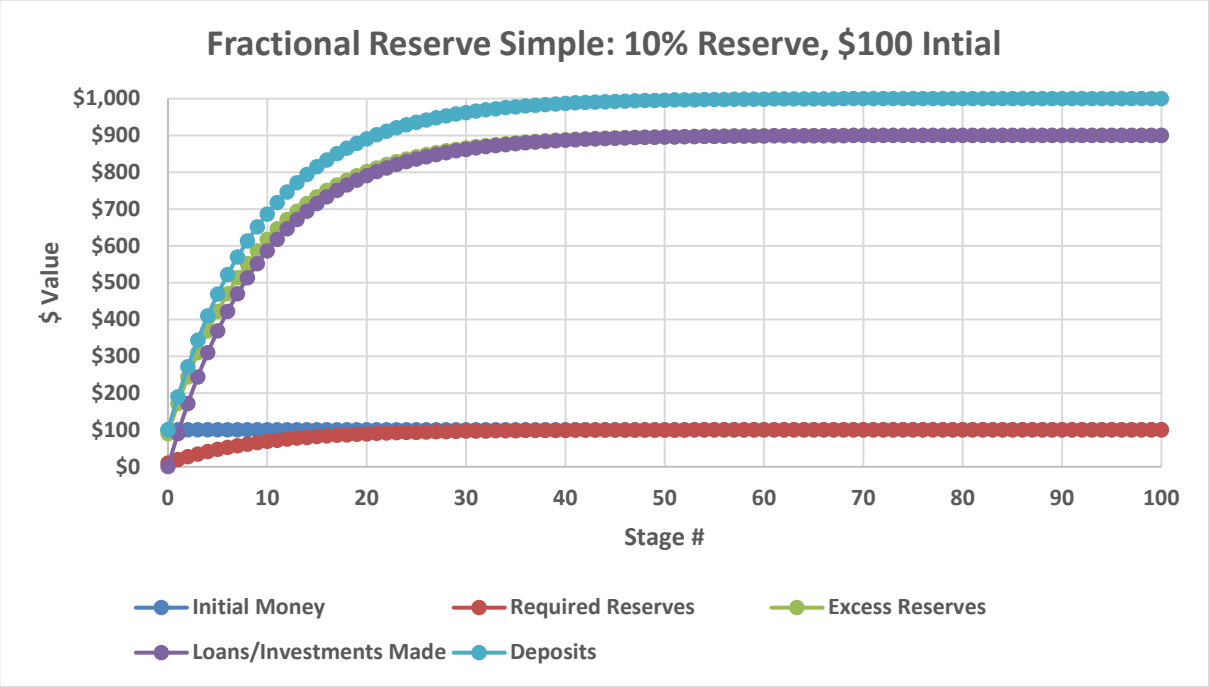
Nations (Adam Smith), Lords of Finance (Liaquat Ahamed), The Price of Time (Edward Chancellor), Boom and Bust (William Quinn & John D. Turner), Principles for Dealing with the Changing World Order (Ray Dalio), The Lords of Easy Money (Christopher Leonard), Fed Up (Danielle DiMartino Booth).

CONCLUSION

The survey results support the hypothesis that basic financial literacy is more widespread than currency final literacy. The secondary hypothesis that financial memory is greater concentrated within relatively more recent financial events is not supported. The primary hypothesis that survey participants treat an investment good the same way they treat a consumer good when pricing is the only consideration is supported. The implication of the third hypothesis is that market participants behave irrationally as opposed to rationality, when pricing is the only consideration. The evidence of the supermarket sale effect, a consumer mindset, transferred to the activities of investing implies financial market participates have a subconscious bias to treat investment opportunities like consumption opportunities. While the effectiveness of applying this behavioral strategy for a long-term retail investor may produce satisfactory financial returns, for a shorter time horizon investor this behavioral strategy may prove unprofitable based on the investing strategy employed. Hence, investors should be made aware of their highly trained consumer mindset subconsciously present when conducting investments research, development, and implementation activities.

APPENDICES

Appendix A – Fractional Reserve Simple Visual Demonstration: Using 10% Reserve Requirement and $100 Initial Deposit



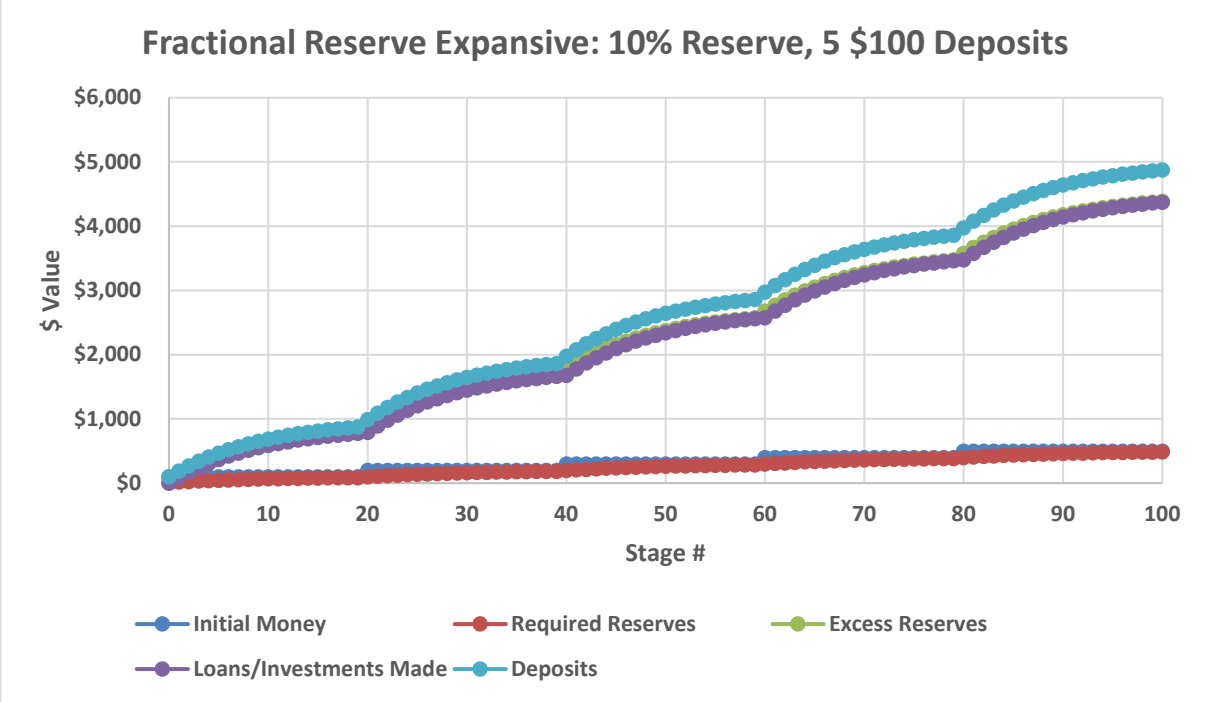
Appendix B – Fractional Reserve Simple Data Demonstration: Using 10% Reserve Requirement and $100 Initial Deposit

	Initial Money	**$100.00**			
	Reserve Requirement	**10%**			
		Assets			**Liabilities**
Stage #	**Initial Money**	**Required Reserves**	**Excess Reserves**	**Loans/Investments Made**	**Deposits**
0	$100	$10.00	$90.00	$0.00	$100.00
1	$100	$19.00	$171.00	$90.00	$190.00
2	$100	$27.10	$243.90	$171.00	$271.00
3	$100	$34.39	$309.51	$243.90	$343.90
4	$100	$40.95	$368.56	$309.51	$409.51
5	$100	$46.86	$421.70	$368.56	$468.56
6	$100	$52.17	$469.53	$421.70	$521.70
7	$100	$56.95	$512.58	$469.53	$569.53
8	$100	$61.26	$551.32	$512.58	$612.58
9	$100	$65.13	$586.19	$551.32	$651.32
10	$100	$68.62	$617.57	$586.19	$686.19
11	$100	$71.76	$645.81	$617.57	$717.57
12	$100	$74.58	$671.23	$645.81	$745.81
13	$100	$77.12	$694.11	$671.23	$771.23
14	$100	$79.41	$714.70	$694.11	$794.11
15	$100	$81.47	$733.23	$714.70	$814.70
16	$100	$83.32	$749.91	$733.23	$833.23
17	$100	$84.99	$764.91	$749.91	$849.91
18	$100	$86.49	$778.42	$764.91	$864.91
19	$100	$87.84	$790.58	$778.42	$878.42
20	$100	$89.06	$801.52	$790.58	$890.58
21	$100	$90.15	$811.37	$801.52	$901.52
22	$100	$91.14	$820.23	$811.37	$911.37
23	$100	$92.02	$828.21	$820.23	$920.23
24	$100	$92.82	$835.39	$828.21	$928.21
25	$100	$93.54	$841.85	$835.39	$935.39
26	$100	$94.19	$847.67	$841.85	$941.85
27	$100	$94.77	$852.90	$847.67	$947.67
28	$100	$95.29	$857.61	$852.90	$952.90
29	$100	$95.76	$861.85	$857.61	$957.61
30	$100	$96.18	$865.66	$861.85	$961.85
31	$100	$96.57	$869.10	$865.66	$965.66
32	$100	$96.91	$872.19	$869.10	$969.10

33	$100	$97.22	$874.97	$872.19	$972.19
34	$100	$97.50	$877.47	$874.97	$974.97
35	$100	$97.75	$879.72	$877.47	$977.47
36	$100	$97.97	$881.75	$879.72	$979.72
37	$100	$98.18	$883.58	$881.75	$981.75
38	$100	$98.36	$885.22	$883.58	$983.58
39	$100	$98.52	$886.70	$885.22	$985.22
40	$100	$98.67	$888.03	$886.70	$986.70
41	$100	$98.80	$889.22	$888.03	$988.03
42	$100	$98.92	$890.30	$889.22	$989.22
43	$100	$99.03	$891.27	$890.30	$990.30
44	$100	$99.13	$892.14	$891.27	$991.27
45	$100	$99.21	$892.93	$892.14	$992.14
46	$100	$99.29	$893.64	$892.93	$992.93
47	$100	$99.36	$894.27	$893.64	$993.64
48	$100	$99.43	$894.85	$894.27	$994.27
49	$100	$99.48	$895.36	$894.85	$994.85
50	$100	$99.54	$895.83	$895.36	$995.36
51	$100	$99.58	$896.24	$895.83	$995.83
52	$100	$99.62	$896.62	$896.24	$996.24
53	$100	$99.66	$896.96	$896.62	$996.62
54	$100	$99.70	$897.26	$896.96	$996.96
55	$100	$99.73	$897.53	$897.26	$997.26
56	$100	$99.75	$897.78	$897.53	$997.53
57	$100	$99.78	$898.00	$897.78	$997.78
58	$100	$99.80	$898.20	$898.00	$998.00
59	$100	$99.82	$898.38	$898.20	$998.20
60	$100	$99.84	$898.54	$898.38	$998.38
61	$100	$99.85	$898.69	$898.54	$998.54
62	$100	$99.87	$898.82	$898.69	$998.69
63	$100	$99.88	$898.94	$898.82	$998.82
64	$100	$99.89	$899.04	$898.94	$998.94
65	$100	$99.90	$899.14	$899.04	$999.04
66	$100	$99.91	$899.23	$899.14	$999.14
67	$100	$99.92	$899.30	$899.23	$999.23
68	$100	$99.93	$899.37	$899.30	$999.30
69	$100	$99.94	$899.44	$899.37	$999.37
70	$100	$99.94	$899.49	$899.44	$999.44
71	$100	$99.95	$899.54	$899.49	$999.49
72	$100	$99.95	$899.59	$899.54	$999.54
73	$100	$99.96	$899.63	$899.59	$999.59

74	$100	$99.96	$899.67	$899.63	$999.63
75	$100	$99.97	$899.70	$899.67	$999.67
76	$100	$99.97	$899.73	$899.70	$999.70
77	$100	$99.97	$899.76	$899.73	$999.73
78	$100	$99.98	$899.78	$899.76	$999.76
79	$100	$99.98	$899.80	$899.78	$999.78
80	$100	$99.98	$899.82	$899.80	$999.80
81	$100	$99.98	$899.84	$899.82	$999.82
82	$100	$99.98	$899.86	$899.84	$999.84
83	$100	$99.99	$899.87	$899.86	$999.86
84	$100	$99.99	$899.88	$899.87	$999.87
85	$100	$99.99	$899.90	$899.88	$999.88
86	$100	$99.99	$899.91	$899.90	$999.90
87	$100	$99.99	$899.92	$899.91	$999.91
88	$100	$99.99	$899.92	$899.92	$999.92
89	$100	$99.99	$899.93	$899.92	$999.92
90	$100	$99.99	$899.94	$899.93	$999.93
91	$100	$99.99	$899.94	$899.94	$999.94
92	$100	$99.99	$899.95	$899.94	$999.94
93	$100	$100.00	$899.96	$899.95	$999.95
94	$100	$100.00	$899.96	$899.96	$999.96
95	$100	$100.00	$899.96	$899.96	$999.96
96	$100	$100.00	$899.97	$899.96	$999.96
97	$100	$100.00	$899.97	$899.97	$999.97
98	$100	$100.00	$899.97	$899.97	$999.97
99	$100	$100.00	$899.98	$899.97	$999.97
100	$100	$100.00	$899.98	$899.98	$999.98

Appendix C – Fractional Reserve Expansive Monetary Policy Visual Demonstration: Using 10% Reserve Requirement and Five Separate $100 Deposits



Appendix D – Fractional Reserve Expansive Monetary Policy Data Demonstration: Using 10% Reserve Requirement and Five Separate $100 Deposits

Stage	**20**	**$100**				
Stage	**40**	**$100**	**Initial Money**	**$100.00**		
Stage	**60**	**$100**	**Reserve Requirement**	**10%**		
Stage	**80**	**$100**	**Assets**			**Liabilities**
	Stage #	**Initial Money**	**Required Reserves**	**Excess Reserves**	**Loans/Investments Made**	**Deposits**
$100.00	0	$100	$10.00	$90.00	$0.00	$100.00
$0.00	1	$100	$19.00	$171.00	$90.00	$190.00
$0.00	2	$100	$27.10	$243.90	$171.00	$271.00
$0.00	3	$100	$34.39	$309.51	$243.90	$343.90
$0.00	4	$100	$40.95	$368.56	$309.51	$409.51
$0.00	5	$100	$46.86	$421.70	$368.56	$468.56
$0.00	6	$100	$52.17	$469.53	$421.70	$521.70
$0.00	7	$100	$56.95	$512.58	$469.53	$569.53
$0.00	8	$100	$61.26	$551.32	$512.58	$612.58
$0.00	9	$100	$65.13	$586.19	$551.32	$651.32

$0.00	10	$100	$68.62	$617.57	$586.19	$686.19
$0.00	11	$100	$71.76	$645.81	$617.57	$717.57
$0.00	12	$100	$74.58	$671.23	$645.81	$745.81
$0.00	13	$100	$77.12	$694.11	$671.23	$771.23
$0.00	14	$100	$79.41	$714.70	$694.11	$794.11
$0.00	15	$100	$81.47	$733.23	$714.70	$814.70
$0.00	16	$100	$83.32	$749.91	$733.23	$833.23
$0.00	17	$100	$84.99	$764.91	$749.91	$849.91
$0.00	18	$100	$86.49	$778.42	$764.91	$864.91
$0.00	19	$100	$87.84	$790.58	$778.42	$878.42
$100.00	20	$200	$99.06	$891.52	$790.58	$990.58
$0.00	21	$200	$109.15	$982.37	$891.52	$1,091.52
$0.00	22	$200	$118.24	$1,064.13	$982.37	$1,182.37
$0.00	23	$200	$126.41	$1,137.72	$1,064.13	$1,264.13
$0.00	24	$200	$133.77	$1,203.95	$1,137.72	$1,337.72
$0.00	25	$200	$140.39	$1,263.55	$1,203.95	$1,403.95
$0.00	26	$200	$146.36	$1,317.20	$1,263.55	$1,463.55
$0.00	27	$200	$151.72	$1,365.48	$1,317.20	$1,517.20
$0.00	28	$200	$156.55	$1,408.93	$1,365.48	$1,565.48
$0.00	29	$200	$160.89	$1,448.04	$1,408.93	$1,608.93
$0.00	30	$200	$164.80	$1,483.23	$1,448.04	$1,648.04
$0.00	31	$200	$168.32	$1,514.91	$1,483.23	$1,683.23
$0.00	32	$200	$171.49	$1,543.42	$1,514.91	$1,714.91
$0.00	33	$200	$174.34	$1,569.08	$1,543.42	$1,743.42
$0.00	34	$200	$176.91	$1,592.17	$1,569.08	$1,769.08
$0.00	35	$200	$179.22	$1,612.95	$1,592.17	$1,792.17
$0.00	36	$200	$181.30	$1,631.66	$1,612.95	$1,812.95
$0.00	37	$200	$183.17	$1,648.49	$1,631.66	$1,831.66
$0.00	38	$200	$184.85	$1,663.64	$1,648.49	$1,848.49
$0.00	39	$200	$186.36	$1,677.28	$1,663.64	$1,863.64
$100.00	40	$300	$197.73	$1,779.55	$1,677.28	$1,977.28
$0.00	41	$300	$207.96	$1,871.60	$1,779.55	$2,079.55
$0.00	42	$300	$217.16	$1,954.44	$1,871.60	$2,171.60
$0.00	43	$300	$225.44	$2,028.99	$1,954.44	$2,254.44
$0.00	44	$300	$232.90	$2,096.09	$2,028.99	$2,328.99
$0.00	45	$300	$239.61	$2,156.48	$2,096.09	$2,396.09
$0.00	46	$300	$245.65	$2,210.84	$2,156.48	$2,456.48
$0.00	47	$300	$251.08	$2,259.75	$2,210.84	$2,510.84
$0.00	48	$300	$255.98	$2,303.78	$2,259.75	$2,559.75
$0.00	49	$300	$260.38	$2,343.40	$2,303.78	$2,603.78
$0.00	50	$300	$264.34	$2,379.06	$2,343.40	$2,643.40

$0.00	51	$300	$267.91	$2,411.15	$2,379.06	$2,679.06
$0.00	52	$300	$271.12	$2,440.04	$2,411.15	$2,711.15
$0.00	53	$300	$274.00	$2,466.03	$2,440.04	$2,740.04
$0.00	54	$300	$276.60	$2,489.43	$2,466.03	$2,766.03
$0.00	55	$300	$278.94	$2,510.49	$2,489.43	$2,789.43
$0.00	56	$300	$281.05	$2,529.44	$2,510.49	$2,810.49
$0.00	57	$300	$282.94	$2,546.49	$2,529.44	$2,829.44
$0.00	58	$300	$284.65	$2,561.85	$2,546.49	$2,846.49
$0.00	59	$300	$286.18	$2,575.66	$2,561.85	$2,861.85
$100.00	60	$400	$297.57	$2,678.09	$2,575.66	$2,975.66
$0.00	61	$400	$307.81	$2,770.29	$2,678.09	$3,078.09
$0.00	62	$400	$317.03	$2,853.26	$2,770.29	$3,170.29
$0.00	63	$400	$325.33	$2,927.93	$2,853.26	$3,253.26
$0.00	64	$400	$332.79	$2,995.14	$2,927.93	$3,327.93
$0.00	65	$400	$339.51	$3,055.62	$2,995.14	$3,395.14
$0.00	66	$400	$345.56	$3,110.06	$3,055.62	$3,455.62
$0.00	67	$400	$351.01	$3,159.06	$3,110.06	$3,510.06
$0.00	68	$400	$355.91	$3,203.15	$3,159.06	$3,559.06
$0.00	69	$400	$360.32	$3,242.84	$3,203.15	$3,603.15
$0.00	70	$400	$364.28	$3,278.55	$3,242.84	$3,642.84
$0.00	71	$400	$367.86	$3,310.70	$3,278.55	$3,678.55
$0.00	72	$400	$371.07	$3,339.63	$3,310.70	$3,710.70
$0.00	73	$400	$373.96	$3,365.66	$3,339.63	$3,739.63
$0.00	74	$400	$376.57	$3,389.10	$3,365.66	$3,765.66
$0.00	75	$400	$378.91	$3,410.19	$3,389.10	$3,789.10
$0.00	76	$400	$381.02	$3,429.17	$3,410.19	$3,810.19
$0.00	77	$400	$382.92	$3,446.25	$3,429.17	$3,829.17
$0.00	78	$400	$384.63	$3,461.63	$3,446.25	$3,846.25
$0.00	79	$400	$386.16	$3,475.46	$3,461.63	$3,861.63
$100.00	80	$500	$397.55	$3,577.92	$3,475.46	$3,975.46
$0.00	81	$500	$407.79	$3,670.13	$3,577.92	$4,077.92
$0.00	82	$500	$417.01	$3,753.11	$3,670.13	$4,170.13
$0.00	83	$500	$425.31	$3,827.80	$3,753.11	$4,253.11
$0.00	84	$500	$432.78	$3,895.02	$3,827.80	$4,327.80
$0.00	85	$500	$439.50	$3,955.52	$3,895.02	$4,395.02
$0.00	86	$500	$445.55	$4,009.97	$3,955.52	$4,455.52
$0.00	87	$500	$451.00	$4,058.97	$4,009.97	$4,509.97
$0.00	88	$500	$455.90	$4,103.07	$4,058.97	$4,558.97
$0.00	89	$500	$460.31	$4,142.77	$4,103.07	$4,603.07
$0.00	90	$500	$464.28	$4,178.49	$4,142.77	$4,642.77
$0.00	91	$500	$467.85	$4,210.64	$4,178.49	$4,678.49

$0.00	92	$500	$471.06	$4,239.58	$4,210.64	$4,710.64
$0.00	93	$500	$473.96	$4,265.62	$4,239.58	$4,739.58
$0.00	94	$500	$476.56	$4,289.06	$4,265.62	$4,765.62
$0.00	95	$500	$478.91	$4,310.15	$4,289.06	$4,789.06
$0.00	96	$500	$481.02	$4,329.14	$4,310.15	$4,810.15
$0.00	97	$500	$482.91	$4,346.22	$4,329.14	$4,829.14
$0.00	98	$500	$484.62	$4,361.60	$4,346.22	$4,846.22
$0.00	99	$500	$486.16	$4,375.44	$4,361.60	$4,861.60
$0.00	100	$500	$487.54	$4,387.90	$4,375.44	$4,875.44

Appendix E – The Federal Reserve Bank of St. Louis: Some Tables of Historical U.S. Currency and Monetary – Working Paper 2003-006A, Table 1

Table 1 p.1

Table 1 Currency in circulation, by kind: 1800-2002
For 1800-1859, figures are approximate annual averages. For 1860-1976, figures are as of June 30. Beginning 1977, figures are as of September 30.
(thousands of dollars)

	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
	Coin							
	Gold Coin in Circulation: 1860-1933	Dollar Coin in Circulation: 1878-2002	Fractional Coin in Circulation: 1981-2002	Subsidiary Silver Coin in Circulation: 1860-1980	Minor Coin in Circulation: 1900-1980	Federal Reserve Notes in Circulation: 1915-2002	United States Notes in Circulation: 1862-2002	"Currency no longer issued" in circulation, total: 1981-2002
1800	----	----	----	----	----	----	----	----
1810	----	----	----	----	----	----	----	----
1820	----	----	----	----	----	----	----	----
1830	----	----	----	----	----	----	----	----
1831	----	----	----	----	----	----	----	----
1832	----	----	----	----	----	----	----	----
1833	----	----	----	----	----	----	----	----
1834	----	----	----	----	----	----	----	----
1835	----	----	----	----	----	----	----	----
1836	----	----	----	----	----	----	----	----
1837	----	----	----	----	----	----	----	----
1838	----	----	----	----	----	----	----	----
1839	----	----	----	----	----	----	----	----
1840	----	----	----	----	----	----	----	----
1841	----	----	----	----	----	----	----	----
1842	----	----	----	----	----	----	----	----
1843	----	----	----	----	----	----	----	----
1844	----	----	----	----	----	----	----	----
1845	----	----	----	----	----	----	----	----
1846	----	----	----	----	----	----	----	----
1847	----	----	----	----	----	----	----	----
1848	----	----	----	----	----	----	----	----
1849	----	----	----	----	----	----	----	----
1850	----	----	----	----	----	----	----	----
1851	----	----	----	----	----	----	----	----
1852	----	----	----	----	----	----	----	----
1853	----	----	----	----	----	----	----	----
1854	----	----	----	----	----	----	----	----
1855	----	----	----	----	----	----	----	----
1856	----	----	----	----	----	----	----	----
1857	----	----	----	----	----	----	----	----
1858	----	----	----	----	----	----	----	----
1859	----	----	----	----	----	----	----	----
1860	207,305	----	----	21,000	----	----	----	----
1861	266,400	----	----	16,000	----	----	----	----
1862	283,000	----	----	13,000	----	----	72,866	----
1863	260,000	----	----	11,000	----	----	312,481	----
1864	184,346	----	----	9,375	----	----	415,116	----
1865	148,557	----	----	8,713	----	----	378,917	----
1866	109,705	----	----	8,241	----	----	327,792	----
1867	72,882	----	----	7,082	----	----	319,438	----
1868	63,758	----	----	6,520	----	----	328,572	----
1869	62,129	----	----	5,695	----	----	314,767	----
1870	81,183	----	----	8,978	----	----	324,963	----
1871	72,391	----	----	12,022	----	----	343,069	----
1872	76,575	----	----	12,064	----	----	346,169	----
1873	62,718	----	----	13,679	----	----	348,464	----
1874	78,948	----	----	14,940	----	----	371,421	----
1875	64,446	----	----	22,141	----	----	349,686	----
1876	74,839	----	----	26,055	----	----	331,447	----
1877	78,111	----	----	42,885	----	----	337,899	----
1878	84,740	1,209	----	58,918	----	----	320,906	----
1879	110,505	8,036	----	61,347	----	----	301,644	----
1880	225,696	20,111	----	48,512	----	----	327,895	----

Table 1 p.2

1881	315,313	29,342	----	46,839	----	----	328,127	----
1882	358,251	32,404	----	46,380	----	----	325,255	----
1883	344,653	35,651	----	46,474	----	----	323,242	----
1884	340,624	40,690	----	45,661	----	----	318,687	----
1885	341,668	39,087	----	43,703	----	----	331,219	----
1886	358,220	52,669	----	46,174	----	----	323,813	----
1887	376,541	55,549	----	48,584	----	----	326,667	----
1888	391,114	55,527	----	50,362	----	----	308,000	----
1889	376,482	54,457	----	51,477	----	----	316,439	----
1890	374,259	56,279	----	54,033	----	----	334,689	----
1891	407,319	58,826	----	58,219	----	----	343,207	----
1892	408,569	56,817	----	63,294	----	----	339,400	----
1893	408,536	56,930	----	65,470	----	----	330,774	----
1894	495,977	52,565	----	58,511	----	----	325,525	----
1895	479,638	51,986	----	60,350	----	----	319,094	----
1896	454,905	52,117	----	60,204	----	----	256,140	----
1897	517,590	51,940	----	59,616	----	----	306,915	----
1898	657,950	58,483	----	64,057	----	----	310,134	----
1899	679,738	61,481	----	69,066	----	----	328,627	----
1900	610,806	65,889	----	76,161	26,080	----	317,677	----
1901	629,791	66,921	----	79,235	27,890	----	330,045	----
1902	632,394	68,747	----	85,721	29,724	----	334,292	----
1903	617,261	72,391	----	92,727	32,040	----	334,249	----
1904	645,818	71,314	----	95,528	33,763	----	333,759	----
1905	651,064	73,584	----	101,438	35,458	----	332,421	----
1906	668,655	77,001	----	111,630	38,043	----	335,940	----
1907	561,697	81,710	----	121,777	40,907	----	342,270	----
1908	613,245	76,329	----	124,178	41,139	----	339,396	----
1909	599,338	71,988	----	132,332	42,585	----	340,118	----
1910	590,878	72,433	----	135,584	46,328	----	334,788	----
1911	589,296	72,446	----	138,422	49,049	----	338,989	----
1912	610,724	70,340	----	145,034	50,707	----	337,697	----
1913	608,401	72,127	----	154,458	54,954	----	337,215	----
1914	611,545	70,300	----	159,966	57,419	----	337,846	----
1915	587,537	64,499	----	159,043	58,516	70,810	309,796	----
1916	624,939	66,234	----	171,178	62,998	149,152	328,227	----
1917	666,545	71,754	----	193,745	68,411	506,756	311,595	----
1918	537,230	77,201	----	216,492	74,958	1,698,190	291,859	----
1919	474,875	79,041	----	229,316	81,780	2,450,278	274,119	----
1920	474,822	76,749	----	248,863	90,958	3,064,742	278,144	----
1921	447,272	65,883	----	235,295	91,409	2,599,598	259,170	----
1922	415,937	57,973	----	229,310	89,157	2,138,715	292,343	----
1923	404,181	57,262	----	247,307	93,897	2,234,660	302,749	----
1924	393,330	54,015	----	252,995	96,952	1,843,106	297,790	----
1925	402,297	54,289	----	262,009	100,307	1,636,108	282,578	----
1926	391,703	51,577	----	270,072	104,194	1,679,407	294,916	----
1927	384,957	48,717	----	275,605	108,132	1,702,843	292,205	----
1928	377,028	46,222	----	278,175	111,061	1,626,433	298,438	----
1929	368,488	43,684	----	284,226	115,210	1,692,721	262,188	----
1930	357,236	38,629	----	281,231	117,436	1,402,066	288,389	----
1931	363,020	34,326	----	273,147	117,393	1,708,429	299,427	----
1932	452,763	30,115	----	256,220	113,619	2,780,229	289,076	----
1933	320,939	27,995	----	256,865	112,532	3,060,793	268,809	----
1934	----	30,013	----	280,400	119,142	3,068,404	279,608	----
1935	----	32,308	----	295,773	125,125	3,222,913	285,417	----
1936	----	35,029	----	316,476	134,691	4,002,216	278,190	----
1937	----	38,046	----	340,827	144,107	4,168,780	281,459	----
1938	----	39,446	----	341,942	145,625	4,114,338	262,155	----
1939	----	42,407	----	361,209	154,869	4,483,552	265,962	----
1940	----	46,020	----	384,187	168,977	5,163,284	247,887	----
1941	----	52,992	----	433,485	193,963	6,684,209	299,514	----
1942	----	66,093	----	503,947	213,144	9,310,135	316,886	----
1943	----	83,701	----	610,005	235,672	13,746,612	322,343	----
1944	----	103,325	----	700,022	262,775	18,750,201	322,293	----
1945	----	125,178	----	788,283	291,996	22,867,459	322,587	----
1946	----	140,319	----	843,122	316,994	23,973,006	316,743	----

Table 1 p.3

1947	----	148,452	----	875,971	331,039	23,999,004	320,403	----
1948	----	156,340	----	918,691	346,112	23,600,323	321,485	----
1949	----	163,894	----	939,568	355,316	23,209,437	318,688	----
1950	----	170,185	----	964,709	360,886	22,760,285	320,781	----
1951	----	180,013	----	1,019,824	378,350	23,456,018	318,173	----
1952	----	191,306	----	1,092,891	393,482	24,605,158	318,330	----
1953	----	202,424	----	1,150,499	412,952	25,608,669	317,702	----
1954	----	211,533	----	1,164,912	418,754	25,384,606	320,224	----
1955	----	223,047	----	1,202,209	432,512	25,617,775	319,064	----
1956	----	236,837	----	1,258,555	453,044	26,055,247	317,643	----
1957	----	252,607	----	1,315,325	473,904	26,329,345	321,148	----
1958	----	267,927	----	1,346,429	486,571	26,341,854	316,851	----
1959	----	285,491	----	1,415,483	513,876	27,028,617	316,166	----
1960	----	305,083	----	1,484,033	549,367	27,093,693	318,436	----
1961	----	328,680	----	1,548,135	585,234	27,352,908	318,338	----
1962	----	359,590	----	1,663,485	629,423	28,622,224	318,420	----
1963	----	411,489	----	1,789,924	676,291	30,291,625	318,537	----
1964	----	481,721	----	1,987,138	736,049	32,355,954	320,721	----
1965	----	481,698	----	2,355,380	824,585	34,823,233	301,978	----
1966	----	481,694	----	2,907,355	874,769	37,315,989	302,781	----
1967	----	481,691	----	3,238,822	920,815	39,290,336	300,178	----
1968	----	481,689	----	3,877,813	949,604	41,723,506	299,188	----
1969	----	481,688	----	4,260,860	1,047,364	44,547,642	294,478	----
1970	----	481,675	----	4,519,799	1,126,617	47,626,751	296,784	----
1971	----	481,675	----	4,790,952	1,198,961	51,304,990	321,401	----
1972	----	632,899	----	5,100,151	1,283,291	54,572,723	320,276	----
1973	----	704,881	----	5,413,938	1,379,210	59,665,019	319,792	----
1974	----	764,956	----	5,770,589	1,504,082	65,186,131	321,309	----
1975	----	815,566	----	6,069,276	1,611,568	72,093,807	322,200	----
1976	----	940,799	----	6,602,212	1,701,536	79,029,427	321,705	----
(TQ)	----	951,389	----	6,669,300	1,727,364	79,598,211	321,002	----
1977	----	998,932	----	7,017,118	1,859,692	87,350,004	317,338	----
1978	----	1,063,180	----	7,427,862	2,012,735	96,566,832	313,485	----
1979	----	1,434,980	----	7,833,581	2,177,387	106,681,190	311,571	----
1980	----	1,482,744	----	8,342,258	2,352,944	117,152,826	309,542	----
1981	----	1,491,561	11,385,546	----	----	125,047,751	306,779	276,190
1982	----	1,504,164	11,948,767	----	----	135,173,614	303,346	275,150
1983	----	1,523,841	12,549,767	----	----	148,167,037	298,840	274,076
1984	----	1,530,775	13,189,973	----	----	160,043,377	293,641	272,870
1985	----	1,510,366	13,781,121	----	----	171,481,319	293,003	271,581
1986	----	1,535,226	14,350,565	----	----	184,175,870	292,335	270,302
1987	----	1,552,720	14,979,342	----	----	199,672,479	291,754	269,192
1988	----	1,564,477	15,699,692	----	----	217,671,916	291,138	268,029
1989	----	1,572,343	16,378,796	----	----	229,070,581	290,385	266,763
1990	----	1,602,449	17,008,614	----	----	252,731,683	289,633	265,514
1991	----	1,619,843	17,478,627	----	----	273,778,955	288,461	264,438
1992	----	1,612,276	18,111,592	----	----	297,617,547	288,116	263,132
1993	----	1,622,662	18,939,450	----	----	330,414,467	284,811	261,904
1994	----	1,697,707	19,820,157	----	----	363,501,640	283,464	260,455
1995	----	1,764,875	20,710,069	----	----	386,257,165	281,118	258,954
1996	----	1,832,801	21,603,383	----	----	406,514,866	318,626	257,544
1997	----	1,892,053	22,271,691	----	----	433,566,154	271,783	256,207
1998	----	1,946,455	22,982,620	----	----	468,747,233	269,662	255,026
1999	----	2,012,891	24,537,438	----	----	517,010,907	267,783	253,988
2000	----	2,682,240	26,617,944	----	----	538,793,654	265,966	253,964
2001	----	2,885,210	28,033,721	----	----	580,600,044	264,075	252,737
2002	----	3,026,657	29,364,557	----	----	627,201,717	262,275	251,335

Notes by Series

1.1 The Treasury notes that, for 1862 and 1863, the figure shown is the total stock. It is not possible to accurately separate the amount held by the Treasury from amounts held by the public.

1.4 The Treasury notes that, for 1860 through and 1863, the figure shown is the total stock. It is not possible to accurately separate the amount held by the Treasury from amounts held by the public.

Table 1 p.4

1.9	1.10	1.11	1.12	1.13	1.14	1.15	1.16
Paper					Nieneteenth Century Notes		
Gold Certificates in Circulation: 1866-1980	Silver certificates in circulation: 1878-1980	Treasury Notes of 1890 in circulation: 1891-1980	National Bank Notes in Circulation: 1864-1980	Federal Reserve Bank Notes in Circulation: 1916-1980	Fractional currency in circulation: 1863-1878	Other U.S. Currency in Circulation: 1862-1878	State Banknotes in Circulation
----	----	----	----	----	----	----	10,500
----	----	----	----	----	----	----	28,000
----	----	----	----	----	----	----	44,800
----	----	----	----	----	----	----	61,000
----	----	----	----	----	----	----	77,000
----	----	----	----	----	----	----	91,500
----	----	----	----	----	----	----	91,500
----	----	----	----	----	----	----	94,840
----	----	----	----	----	----	----	103,692
----	----	----	----	----	----	----	140,301
----	----	----	----	----	----	----	149,186
----	----	----	----	----	----	----	116,139
----	----	----	----	----	----	----	135,171
----	----	----	----	----	----	----	106,969
----	----	----	----	----	----	----	107,290
----	----	----	----	----	----	----	83,734
----	----	----	----	----	----	----	58,564
----	----	----	----	----	----	----	75,168
----	----	----	----	----	----	----	89,609
----	----	----	----	----	----	----	105,552
----	----	----	----	----	----	----	105,520
----	----	----	----	----	----	----	128,506
----	----	----	----	----	----	----	114,743
----	----	----	----	----	----	----	131,367
----	----	----	----	----	----	----	155,165
----	----	----	----	----	----	----	171,673
----	----	----	----	----	----	----	188,181
----	----	----	----	----	----	----	204,689
----	----	----	----	----	----	----	186,952
----	----	----	----	----	----	----	195,748
----	----	----	----	----	----	----	214,779
----	----	----	----	----	----	----	155,208
----	----	----	----	----	----	----	193,307
----	----	----	----	----	----	----	207,102
----	----	----	----	----	----	----	202,006
----	----	----	----	----	----	53,040	183,792
----	----	----	----	----	15,884	93,230	238,677
----	----	----	31,235	----	19,133	169,252	179,158
----	----	----	146,138	----	21,729	236,567	142,920
10,505	----	----	276,013	----	24,687	162,739	19,996
18,678	----	----	286,764	----	26,306	123,727	4,484
17,643	----	----	294,369	----	28,999	28,859	3,164
29,956	----	----	291,750	----	30,442	3,343	2,559
32,085	----	----	288,648	----	34,379	2,507	2,223
17,790	----	----	311,406	----	34,446	1,064	1,968
26,412	----	----	329,037	----	36,403	849	1,701
34,251	----	----	338,962	----	38,076	701	1,399
18,015	----	----	340,266	----	38,234	620	1,162
17,549	----	----	340,547	----	37,905	551	964
24,175	----	----	316,121	----	32,939	500	1,047
32,298	----	----	301,289	----	20,242	456	909
24,898	7	----	311,724	----	16,368	428	806
15,280	414	----	321,405	----	----	----	----
7,964	5,790	----	337,415	----	----	----	----

Table 1 p.5

5,760	39,111	----	349,746	----	----	----	----
5,029	54,506	----	352,465	----	----	----	----
59,807	72,621	----	347,856	----	----	----	----
71,147	96,427	----	330,690	----	----	----	----
126,730	101,531	----	308,631	----	----	----	----
76,044	88,116	----	307,665	----	----	----	----
91,225	142,118	----	276,855	----	----	----	----
121,095	200,760	----	245,313	----	----	----	----
117,130	257,156	----	207,221	----	----	----	----
130,831	297,556	----	181,605	----	----	----	----
120,063	307,236	40,349	162,221	----	----	----	----
141,094	326,693	98,259	167,222	----	----	----	----
92,642	326,824	140,856	174,670	----	----	----	----
66,340	326,991	134,681	200,220	----	----	----	----
48,381	319,623	115,943	206,953	----	----	----	----
42,198	330,657	95,045	215,168	----	----	----	----
37,285	357,849	83,470	226,318	----	----	----	----
35,812	390,127	98,306	222,991	----	----	----	----
32,656	402,137	92,562	237,805	----	----	----	----
200,733	408,466	75,304	300,115	----	----	----	----
247,036	429,644	47,525	345,111	----	----	----	----
306,399	446,558	29,803	345,477	----	----	----	----
377,259	454,733	19,077	399,997	----	----	----	----
465,655	461,139	12,902	433,028	----	----	----	----
485,211	454,865	9,272	480,029	----	----	----	----
516,562	471,520	7,337	548,001	----	----	----	----
600,072	470,211	5,976	589,242	----	----	----	----
782,977	465,279	4,964	631,649	----	----	----	----
815,005	477,717	4,203	665,539	----	----	----	----
802,754	478,597	3,663	683,660	----	----	----	----
930,368	453,544	3,237	687,701	----	----	----	----
943,436	469,224	2,916	705,142	----	----	----	----
1,003,998	469,129	2,657	715,754	----	----	----	----
1,026,149	478,602	2,428	715,180	----	----	----	----
821,869	463,147	2,245	782,120	----	----	----	----
1,050,266	476,279	2,098	716,204	1,683	----	----	----
1,082,926	468,365	1,970	690,635	3,702	----	----	----
511,190	370,349	1,851	691,407	10,970	----	----	----
327,552	163,445	1,745	639,472	155,014	----	----	----
259,007	97,606	1,656	689,608	185,431	----	----	----
200,582	158,843	1,576	721,421	129,942	----	----	----
173,342	265,335	1,510	727,681	71,868	----	----	----
386,456	364,258	1,460	711,076	19,969	----	----	----
801,381	364,414	1,423	733,835	10,066	----	----	----
1,004,823	382,780	1,387	681,709	6,921	----	----	----
1,057,371	377,741	1,356	651,477	5,453	----	----	----
1,007,075	375,798	1,327	650,057	4,606	----	----	----
1,019,149	384,577	1,304	650,212	4,029	----	----	----
934,994	387,073	1,283	652,812	3,616	----	----	----
994,841	386,915	1,260	650,779	3,206	----	----	----
996,510	377,149	1,240	648,363	2,929	----	----	----
715,683	352,605	1,222	700,894	2,746	----	----	----
265,487	360,699	1,186	919,614	125,845	----	----	----
149,740	401,456	1,189	901,872	141,645	----	----	----
117,167	701,474	1,182	704,263	81,470	----	----	----
100,771	954,592	1,177	366,105	51,954	----	----	----
88,116	1,078,071	1,172	268,862	37,616	----	----	----
78,500	1,230,156	1,169	217,441	30,118	----	----	----
71,930	1,453,573	1,166	186,480	25,593	----	----	----
66,793	1,581,662	1,163	165,155	22,373	----	----	----
62,872	1,713,508	1,161	150,460	20,268	----	----	----
59,399	1,754,255	1,158	139,131	18,717	----	----	----
56,909	1,648,571	1,155	132,130	584,162	----	----	----
53,964	1,587,691	1,154	125,887	597,030	----	----	----
52,084	1,650,689	1,150	120,012	527,001	----	----	----
50,223	2,025,178	1,149	113,948	464,315	----	----	----

Table 1 p.6

47,794	2,060,728	1,147	106,429	406,260	----	----	----
45,158	2,060,869	1,146	99,235	353,499	----	----	----
42,665	2,060,852	1,145	92,524	308,821	----	----	----
40,772	2,177,251	1,145	86,488	273,788	----	----	----
39,070	2,092,174	1,145	81,202	243,261	----	----	----
37,855	2,087,811	1,145	77,364	220,584	----	----	----
36,596	2,121,511	1,143	73,403	200,054	----	----	----
35,481	2,135,016	1,142	70,005	180,277	----	----	----
34,466	2,169,726	1,142	66,810	162,573	----	----	----
33,483	2,148,369	1,142	64,239	146,629	----	----	----
32,541	2,161,589	1,142	61,745	132,566	----	----	----
31,797	2,199,532	1,142	59,411	120,225	----	----	----
31,046	2,154,916	1,142	57,385	110,051	----	----	----
30,394	2,126,833	1,142	55,652	99,987	----	----	----
29,803	2,094,379	1,142	54,262	91,811	----	----	----
29,270	2,009,073	142	53,066	84,835	----	----	----
19,858	1,846,537	142	37,148	78,247	----	----	----
19,379	1,722,995	142	36,320	73,276	----	----	----
13,209	829,177	42	22,167	68,333	----	----	----
4,107	581,715	11	21,300	64,301	----	----	----
3,973	394,656	11	20,906	61,057	----	----	----
3,868	225,266	11	20,664	58,854	----	----	----
3,804	222,828	11	20,467	56,885	----	----	----
3,731	220,061	11	20,271	55,272	----	----	----
3,676	217,516	11	20,116	53,894	----	----	----
3,609	215,255	11	19,971	52,561	----	----	----
3,546	213,456	11	19,843	51,532	----	----	----
3,493	211,953	11	19,762	50,830	----	----	----
3,464	210,655	11	19,692	50,119	----	----	----
3,425	209,491	11	19,645	49,417	----	----	----
3,415	209,227	11	19,635	49,357	----	----	----
3,390	208,135	11	19,581	48,860	----	----	----
3,338	207,126	8	19,542	48,455	----	----	----
3,318	206,508	8	19,511	48,153	----	----	----
3,300	205,877	8	19,508	47,881	----	----	----
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Appendix F – The Federal Reserve Bank of St. Louis: Some Tables of Historical U.S. Currency and Monetary – Working Paper 2003-006A, Table 2

Table 2 p.1

Table 2: Currency stock and currency in circulation, by where held, 1800-2002
Figures for 1800-1859 are estimated annual averages, for 1860-1976 are as of June 30, and beginning 1977 are as of September 30.

(thousands of dollars)

	Coin and Paper Currency issued in the United States in US dollars				
	2.1	2.2	2.3	2.4	2.5
	Total	held in the Treasury	held in Federal Reserve Banks	in circulation	
				Total	held outside the United States
1800	28,000	1,500	----	26,500	----
1810	58,000	3,000	----	55,000	----
1820	69,100	2,000	----	67,100	----
1830	93,100	5,756	----	87,344	----
1831	109,100	6,015	----	93,085	----
1832	121,900	4,503	----	117,397	----
1833	122,150	2,012	----	120,138	----
1834	135,840	11,703	----	124,137	----
1835	154,692	8,893	----	145,800	----
1836	205,301	5,000	----	200,301	----
1837	222,186	5,000	----	217,186	----
1838	203,639	5,000	----	198,639	----
1839	222,171	2,467	----	219,704	----
1840	189,969	3,663	----	186,305	----
1841	187,290	987	----	186,303	----
1842	163,734	230	----	163,504	----
1843	148,564	1,449	----	147,114	----
1844	175,168	7,857	----	167,310	----
1845	185,609	7,658	----	177,950	----
1846	202,552	9,126	----	193,426	----
1847	225,520	1,701	----	223,819	----
1848	240,506	8,101	----	232,405	----
1849	234,743	2,185	----	232,558	----
1850	285,367	6,605	----	278,762	----
1851	341,165	10,912	----	330,254	----
1852	375,673	14,632	----	361,041	----
1853	424,181	21,943	----	402,238	----
1854	445,689	20,138	----	425,551	----
1855	436,952	18,932	----	418,020	----
1856	445,748	19,901	----	425,847	----
1857	474,779	17,710	----	457,069	----
1858	415,208	6,398	----	408,810	----
1859	443,307	4,339	----	438,968	----
1860	442,102	6,695	----	435,407	----
1861	488,006	3,600	----	484,406	----
1862	629,452	23,754	----	605,698	----
1863	1,010,747	79,473	----	931,274	----
1864	1,062,841	55,226	----	1,007,615	----
1865	1,180,197	96,657	----	1,083,541	----
1866	1,068,066	128,388	----	939,678	----
1867	1,020,927	161,567	----	859,360	----
1868	888,413	116,529	----	771,884	----
1869	873,759	133,118	----	740,641	----
1870	899,876	124,909	----	774,966	----
1871	894,376	100,220	----	794,156	----
1872	900,571	71,361	----	829,209	----
1873	903,316	65,065	----	838,252	----
1874	950,116	86,510	----	863,606	----
1875	925,702	91,912	----	833,789	----
1876	905,238	98,114	----	807,124	----
1877	916,548	102,458	----	814,090	----
1878	984,225	164,221	----	820,004	----
1879	1,033,641	215,009	----	818,632	----

Table 2 p.2

1880	1,185,550	212,169	----	973,382	----
1881	1,349,592	235,355	----	1,114,238	----
1882	1,409,398	235,108	----	1,174,290	----
1883	1,472,494	242,189	----	1,230,306	----
1884	1,487,250	243,324	----	1,243,926	----
1885	1,537,434	244,865	----	1,292,569	----
1886	1,561,408	308,707	----	1,252,701	----
1887	1,633,413	315,874	----	1,317,539	----
1888	1,691,441	319,270	----	1,372,171	----
1889	1,658,672	278,311	----	1,380,362	----
1890	1,685,123	255,872	----	1,429,251	----
1891	1,677,794	180,353	----	1,497,441	----
1892	1,752,219	150,872	----	1,601,347	----
1893	1,738,808	142,107	----	1,596,701	----
1894	1,805,079	144,270	----	1,660,809	----
1895	1,819,360	217,392	----	1,601,968	----
1896	1,799,975	293,540	----	1,506,435	----
1897	1,906,770	265,787	----	1,640,983	----
1898	2,073,574	235,714	----	1,837,860	----
1899	2,190,094	286,022	----	1,904,072	----
1900	2,366,220	284,989	----	2,081,231	----
1901	2,511,472	308,275	----	2,203,198	----
1902	2,593,910	314,796	----	2,279,114	----
1903	2,717,646	317,914	----	2,399,732	----
1904	2,838,023	285,117	----	2,552,906	----
1905	2,919,494	296,154	----	2,623,340	----
1906	3,109,380	334,690	----	2,774,690	----
1907	3,158,111	344,248	----	2,813,863	----
1908	3,423,068	343,913	----	3,079,155	----
1909	3,451,521	302,695	----	3,148,826	----
1910	3,466,856	318,172	----	3,148,684	----
1911	3,606,989	343,935	----	3,263,053	----
1912	3,701,965	366,744	----	3,335,220	----
1913	3,777,021	358,329	----	3,418,692	----
1914	3,797,825	338,391	----	3,459,434	----
1915	4,050,783	348,236	382,965	3,319,582	----
1916	4,541,730	299,127	593,345	3,649,258	----
1917	5,678,774	796,005	816,365	4,066,404	----
1918	6,906,237	1,568,557	855,984	4,481,697	----
1919	7,688,413	2,001,139	810,636	4,876,638	----
1920	8,158,496	1,675,026	1,015,881	5,467,589	----
1921	8,174,528	2,001,446	1,262,089	4,910,992	----
1922	8,276,070	2,515,005	1,297,893	4,463,172	----
1923	8,702,788	2,671,678	1,207,836	4,823,275	----
1924	8,846,542	2,620,299	1,376,935	4,849,307	----
1925	8,299,382	2,116,582	1,367,591	4,815,208	----
1926	8,428,971	2,070,588	1,473,118	4,885,266	----
1927	8,667,282	2,062,851	1,753,110	4,851,321	----
1928	8,118,091	1,738,889	1,582,576	4,796,626	----
1929	8,538,796	1,935,513	1,856,986	4,746,297	----
1930	8,306,564	2,043,489	1,741,087	4,521,988	----
1931	9,079,624	2,031,632	2,226,059	4,821,933	----
1932	9,004,505	1,513,985	1,795,349	5,695,171	----
1933	10,078,417	2,085,971	2,271,682	5,720,764	----
1934	13,634,381	6,953,734	1,305,985	5,373,470	----
1935	15,113,035	8,398,521	1,147,422	5,567,093	----
1936	17,402,493	7,800,438	3,360,854	6,241,200	----
1937	19,376,690	9,475,429	3,454,205	6,447,056	----
1938	20,096,865	10,132,397	3,503,576	6,460,891	----
1939	23,754,736	13,271,527	3,436,467	7,046,743	----
1940	28,457,960	17,124,764	3,485,695	7,847,501	----
1941	32,774,611	19,781,266	3,380,914	9,612,432	----
1942	35,840,908	19,937,577	3,520,465	12,382,866	----
1943	40,868,266	19,676,674	3,770,331	17,421,260	----
1944	44,805,301	18,489,163	3,811,797	22,504,342	----
1945	48,009,400	17,517,449	3,745,512	26,746,438	----
1946	49,648,011	17,539,072	3,863,941	28,244,997	----
1947	50,599,352	18,538,131	3,763,994	28,297,227	----
1948	52,601,129	20,769,375	3,928,896	27,902,859	----

Table 2 p.3

1949	53,103,980	21,736,254	3,874,816	27,492,910	----
1950	52,440,353	21,464,308	3,819,755	27,156,290	----
1951	50,985,939	18,979,646	4,197,063	27,809,230	----
1952	53,853,745	20,610,303	4,217,518	29,025,925	----
1953	54,015,346	19,729,629	4,160,765	30,124,952	----
1954	53,429,405	19,234,197	4,273,259	29,921,949	----
1955	53,308,618	18,989,892	4,089,403	30,229,323	----
1956	54,008,743	19,060,827	4,232,727	30,715,189	----
1957	55,363,063	19,887,518	4,393,632	31,081,913	----
1958	54,058,080	18,642,860	4,243,480	31,171,739	----
1959	53,260,402	16,994,973	4,351,256	31,914,173	----
1960	53,070,922	16,608,562	4,397,741	32,064,619	----
1961	51,947,136	14,818,780	4,723,662	32,404,694	----
1962	52,194,980	13,720,548	4,704,904	33,769,527	----
1963	53,334,680	13,010,106	4,854,775	35,469,798	----
1964	55,450,634	12,760,173	4,956,767	37,733,694	----
1965	56,689,683	14,411,477	2,554,020	39,719,801	3,736,000
1966	46,641,417	320,797	3,766,598	42,554,022	4,064,000
1967	48,126,693	799,071	2,615,178	44,712,443	4,338,000
1968	51,138,815	496,863	3,001,489	47,640,463	4,555,000
1969	54,019,573	292,960	2,790,588	50,936,024	4,929,000
1970	57,416,085	117,164	2,947,949	54,350,972	5,445,000
1971	61,914,778	197,123	3,324,464	58,393,190	5,983,000
1972	66,351,352	244,633	3,905,971	62,200,747	6,438,000
1973	72,184,607	261,887	4,151,493	67,771,228	7,102,000
1974	78,413,597	167,772	4,412,710	73,833,116	7,957,000
1975	86,689,445	364,281	5,128,806	81,196,358	9,156,000
1976	94,551,377	480,064	5,193,645	88,877,667	10,835,000
1977	104,966,499	434,266	6,709,172	97,823,061	12,759,000
1978	121,272,546	299,299	13,310,683	107,662,564	15,242,000
1979	135,281,270	336,700	16,228,363	118,716,207	18,397,000
1980	150,938,443	465,634	20,555,922	129,916,887	22,341,000
1981	164,107,796	457,114	25,142,854	138,507,828	26,002,000
1982	171,324,130	437,089	21,681,999	149,205,042	29,857,000
1983	188,661,044	479,491	25,367,992	162,813,560	34,711,000
1984	206,119,414	477,929	30,310,848	175,330,637	39,494,000
1985	222,372,875	544,257	34,491,228	187,337,391	44,497,000
1986	241,365,914	495,010	40,246,605	200,624,298	48,074,000
1987	270,944,811	477,550	53,701,774	216,765,487	53,106,000
1988	284,295,559	408,537	48,391,771	235,495,251	59,365,000
1989	297,100,581	441,412	49,080,302	247,578,867	64,895,000
1990	317,134,369	527,367	44,709,109	271,897,893	80,411,000
1991	387,004,877	661,019	92,913,535	293,430,323	96,832,000
1992	378,833,511	568,202	60,374,646	317,890,663	109,634,000
1993	417,285,130	385,389	65,376,447	351,523,294	129,853,000
1994	471,785,273	364,123	85,857,728	385,563,422	150,006,000
1995	496,634,759	315,915	87,046,663	409,272,181	167,128,000
1996	558,179,845	185,408	127,467,217	430,527,220	178,769,000
1997	575,145,363	196,990	116,690,485	458,257,889	201,480,000
1998	606,504,679	69,397	112,234,287	494,200,995	221,751,000
1999	854,531,574	110,940	310,337,624	544,083,009	238,195,000
2000	795,566,016	181,420	226,770,829	568,613,768	249,493,000
2001	775,494,948	398,232	163,060,929	612,035,787	269,009,000
2002	785,504,626	351,360	125,046,726	660,106,541	293,769,000

Notes by series

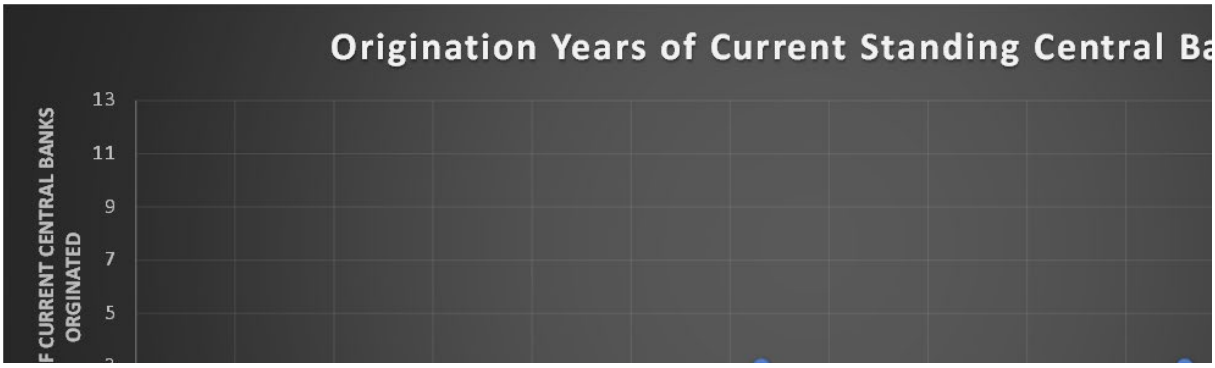
2.1 For 1831, 1934 and 1965, the figures reported by the Treasury for total currency stock do not equal the sums of their components. This discrepancy has been noted in previous editions of Historical Statistics.

2.2 For 1800, 1810, 1820, 1836, 1837 and 1838, figures reported by the Treasury are marked (by the Treasury) as "Estimated."

2.4 For 1860-1863, includes the total stock of silver dollars and subsidiary silver in the United States. For 1862-1863, includes the total stock of gold coin and bullion in the United States. For these years, it is impractical to separate amounts held by the public from amounts held by the Treasury.

2.5 Data are as of September 30 (Quarter 3) for each year in the series.

Appendix G – Origination Years of Currently Standing Central Banks



Appendix H – Survey Questions

Topic: Financial Literacy Awareness, Behavioral Finance, & Financial System Investing
Time: December 2023
Description: The survey consists of six intended components: Demographics, Psychographics, Basic Financial Literacy, Currency Financial Literacy, Financial Memory, and Behavioral Finance. Provided are the questions developed to be distributed for the survey.

Purpose: Categorization for Correlation
Demographics

- Age
  - 0-17
  - 18-24
  - 25-34
  - 35-44
  - 45-54
  - 55-64
  - 65-74
  - 75-84
  - 85-94
  - 95+
- Gender Assigned at Birth
  - Female
  - Male
  - I Prefer Not to Answer
- Race/Ethnicity
  - American or Alaska Native
  - Asian
  - Black or African American
  - Hispanic, Latino, or Spanish Origin
  - Middle Eastern or North African

    - Native Hawaiian or Other Pacific Islander
    - White
    - Other
- Household Income
    - $0 - $50,000
    - $50,000 - $150,000
    - $150,000+
- Income Type: Primary Form of Income
    - Wages/Salaries/Tips
    - Business Pass-Thru
    - Investments
- Household
    - Single
    - Married
    - Widowed
    - Divorced / Separated
- Highest Level of Formal Schooling Completed
    - High School or less
    - College degree (Bachelors)
    - Post-graduate degree (Masters/Ph.d)

Purpose: Financial Categorization for Correlation
Psychographics

- Primary Investor Status
    - I invest on my own
    - Others invest for me
    - I do not invest
- Number of Years of Experience in Financial Markets
    - 0 (Never participated in financial markets)
    - 0-1 year
    - 1-8 years
    - 8+ years
- Financial Markets Participation Frequency (Average number of financial trades per year)
    - 0 per year
    - 1-10 per year
    - 10-30 per year
    - 30+ per year
- Primary Type of Financial Analysis Used
    - Fundamental Analysis
    - Technical Analysis
    - Both equally important
    - Neither/Other

    - I don't know
- Personal Investment Time Horizon (How long you intend to be investing for)
    - Less than 1 year
    - 1-10 years
    - 10+ years
- Primary Investment Type
    - Stocks
    - Bonds
    - Neither
- Indicate if the following two concepts mean the same thing:

Retirement | Financial Independence

    - Yes
    - No
- Business Ownership
    - I am a sole business owner
    - I am at least partially a business owner
    - I am not a business owner
- Primary Form of Residence
    - Rent
    - House with mortgage
    - House with mortgage paid off
- Primary Employment Type
    - Student
    - Educator
    - Private Industry
    - Public Official
    - Other

Purpose: Financial Awareness Measured
Basic Financial Literacy
Basic (The correct answer is listed first)

- (Equity Instrument) When a company sells an investor partial ownership of the company to share in profits and losses, what type of financial instrument has the investor purchased?
    - Stock
    - Bond
    - Option
- (Debt Instrument) When a company receives a sum of money from an investor with the promise to pay it back in full, plus interest, over a specific time frame, what type of financial instrument has the investor purchased?
    - Bond
    - Stock
    - Option

- (Option Instrument) When an investor acquires the right, but not the obligation, to buy or sell an instrument at a specific price, specific quantity, and prior to a specific time, what type of financial instrument has the investor purchased?
  - Option
  - Stock
  - Bond
- (Bond Pricing) In the event interest rates increase, what will most likely happen to the price of bonds outstanding?
  - Decrease
  - Same
  - Increase
- (Time Value of Money) The choice exists to receive $100 today or $100 1 year from today. Is the $100 more valuable today or 1 year from today?
  - Today
  - 1 year from today
  - The same
- (Payment vs Time) Imagine 2 borrowing options for a $300,000 mortgage exists. *Option 1* is a 15-year mortgage. *Option 2* is a 30-year mortgage. Which option has a higher monthly payment and a lower cumulative interest paid by the end of the mortgage?
  - Option 1 / 15-year
  - Option 2 / 30-year
  - The same
- (Inflation/Purchasing Power) Imagine $100 exists in a checking account today. The 1-year inflation rate is 2%. What is the effective purchasing power of the $100 1 year later?
  - Less than $100
  - Exactly $100
  - More than $100
- (Deflation/Purchasing Power) Imagine $100 exists in a checking account today. The 1-year deflation rate is 2%. What is the effective purchasing power of the $100 1 year later?
  - More than $100
  - Exactly $100
  - Less than $100
- (Compound Interest) Imagine $100 exists in a checking account today. The 1-year interest rate is 1%. After 5 years of compounding annually, what is the value of the $100?
  - More than $105
  - Exactly $105
  - Less than $105

- (Long Position) An investor believes the price of a stock will increase from $10 to $15. What type of position should they open now to profit from this expected increase in price?
    - Buy
    - Short
    - Cover
- (Short Position) An investor believes the price of a stock will decrease from $10 to $5. What type of position should they open now to profit from this expected decrease in price?
    - Short
    - Buy
    - Sell
- (Central Bank) Which institution operates as the functional central bank of the U.S.?
    - Federal Reserve
    - U.S. Treasury
    - The U.S. does not have a central bank

Purpose: Currency Financial Literacy Measured
Currency Financial Literacy
Currency (The correct answer is listed first)

- (Federal Reserve) Who owns the Federal Reserve?
    - Member banks
    - U.S. government
    - American citizens
- (US currency) Which currency operates as "This note is legal tender for all debts, public and private" for the United States of America?
    - Federal Reserve Note
    - United States Note
    - United States Greenback
- (Currency Origination) Which institution holds a monopoly on the *creation* and *origination* of American currency (NOT the monopoly on *printing*)?
    - Federal Reserve
    - U.S. Treasury
    - International Monetary Fund
- (US Bond) When the United States Treasury issues a bond, or government IOU, for purchase on the open market, what does it cost the Treasury to issue such a government bond?
    - Principal plus interest
    - Principal only
    - Nothing, the U.S. Treasury creates money without cost

- (Monetary Policy) Which institution is responsible for establishing the *monetary policy* of the United States?
  - Federal Open Market Committee (FOMC) [Federal Reserve]
  - Congressional Budget Office (CBO) [Congress]
  - Executive Office of Management and Budget (OMB) [President]
- (Federal Funds Rate) An increase in the interest rates determined by a central bank will have what likely effect on the cost of borrowing?
  - Increase
  - Stay the same
  - Decrease
- (Reserve Requirement) Imagine the reserve requirements are at 10%. An initial bank deposit of $100 would be able to uphold maximum loans outstanding of:
  - $900
  - $110
  - $10
- (Fractional Reserve Banking 1) Which banking practice is responsible for the risk of *bank panics*, where the amount of assets inside of a bank is unable to cover all the outstanding deposits?
  - Fractional Reserve Banking
  - Full Reserve Banking
  - Zero Reserve Banking

Purpose: Identify memory versus history for potential market participants
Financial Memory

Financial memory (of events): *Matching columns, dates provided, events provided, participant needs to correctly match the dates with the events*

- **1913 Federal Reserve Creation**
- **1929 Great Depression**
- **1987 Black Monday**
- **2000 Dot-Com Bubble**
- **2008 Financial Crisis**
- **2020 COVID Crash**
- **2023 Banking Panic**

Drag-and-drop timeline, events and times given separately, must match them

Purpose: Behavior is Influenced by Pricing, Ceteris Paribus
Behavioral Finance

For the following section, you will be provided with an "item" you are in the market for. Please indicate whether you would prefer to *Buy, Hold,* or *Sell* the "item" based on the provided information:

How to read: *For "item", if yesterday's price was $4.00 and today's price is "this", would I prefer to buy, hold, or sell the "item"?*

Item: Gasoline
Yesterday's Price: $4.00

Today's Price	Buy	Hold	Sell
$2.00			
$3.00			
$3.50			
$3.90			
$4.00			
$4.10			
$4.50			
$5.00			
$6.00			

Item: ABC Stock
Yesterday's Price: $4.00

Today's Price	Buy	Hold	Sell
$2.00			
$3.00			
$3.50			
$3.90			
$4.00			
$4.10			
$4.50			
$5.00			
$6.00			

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