An Examination of the History of Resource Costs in Monetary Systems: A Necessary Review

An Honors Thesis (HONR 499)

by

Colin Steitz

Thesis Advisor
Dr. Nicholas Curott

Ball State University
Muncie, Indiana

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ABSTRACT

In recent years, a growing number of economic historians have argued that countries with well-developed financial institutions have faster rates of economic growth due to financial innovation. Missing in this "finance-led growth" literature is the due emphasis on the importance of paper currency as a financial innovation. Adam Smith argued that one of the main benefits of the introduction of a paper currency was that it resulted in significant savings on the resource cost of the monetary system by replacing specie (usually gold and silver), with paper bank notes, which is a much less costly medium of exchange. Smith argued that this resource cost savings was one of the main drivers for Scotland's high rate of finance-led growth in the late 1700s. Some economists and notable figures in financial history emphasized this concept resource savings as the primary benefit of paper currency over a strict commodity standard, yet it seems most modern economic historians have neglected the importance of this resource savings. This article examines the role that resource savings of paper currency played in the finance-led growth of Scotland and England, and examines the relevance of the argument in historical debates over ideal monetary systems.
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PROCESS ANALYSIS STATEMENT

I am a senior with a major in Economics and a minor in Mathematics. As a person who is deeply interested in Monetary Policy and subsequently Monetary History, I felt drawn to a topic related to these topics. With the help of my thesis advisor Dr. Curott, I found a topic that we had an interest in and with his help I could construct my thesis. Economics is more than simply an exercise in straining data to theoretical limits to draw conclusions, it also requires an understanding of history and the evolution of economic literature. I felt that by engaging in this work I would be able to explore how a topic so vital to the original literature of economics, became overlooked, even though it was not disproved, and in many ways, is one of the central tenants in early economic history.

My project was conducted using a review of existing literature reviews and new reviews of older works to highlight how such a vital topic became lost to a hypothesis that should embrace it. The research examines several works that describe and show examples of the "Finance-Led-Growth" hypothesis, and point out that they lack significant mention of the Resource Cost Savings argument that derives from Adam Smith's theories. Engaging with this topic led me to learn more about the "Finance-Led-Growth", and Milton Friedman's arguments against partial commodity standards, which I had not understood before. This process led to gaining a better understanding of what it is like to do a proper research paper, that I expect to do while I am in graduate school. Some insight gained from this project is a better understanding of how arguments exist even when they fall off the radar, and how older ideas still have applicable value even if the gains have hypothetically been gained. I also faced challenges in formatting this thesis, battling timing constraints, and fully comprehending all arguments made.

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Overall, this project means that there are gaps within in the "Finance-Led-Growth" literature that should be explored. If Economic Historians wish to truly understand the growth in the Early US, Scotland, and in general then an understanding of the benefits of paper money is vital. The audience should approach the thesis from the part of a budding economist that simply wishes to emphasize a point, that has been forgotten in modern debates about the history of economic growth. It is that I present this paper.
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THESIS

Introduction

Finance-Led-Growth is one of the most important hypotheses in terms of trying to explain early American growth. It is a hypothesis that attempts to explain the effect financial and monetary reforms have had on nations. One element of the literature seems to go overlooked. When we consider currency, we understand the functions that it has in terms of facilitating exchange. By having a currency, we bypass the double coincidence of wants that tends to plague barter economies with high degrees of specialization. For the most part, countries that have created currencies have generally started out with a currency that is backed by some precious metal. The concept of specie or commodity backed currency is one of the first major innovations in monetary history. Perhaps the bigger innovation though is the move away from full backing. In which case we have the benefit of needing fewer resources to back our currency freeing up those commodity resources for other uses and reducing the cost of maintaining the money stock, which are costs that are no longer borne, which allows for more effort into other areas of production.

The case can be made that the resource cost savings of switching away from fully backed commodity currency, has been a notable driver of the Finance-Led-Growth hypothesis. It is also possible to see how such a concept has existed within the arguments of several key financial innovators and economic thinkers.

Finance-Led-Growth Hypothesis

Before we enter into a discussion on the resource cost of monetary systems, it is important to examine the existing literature to gain a better understanding of finance-led growth which
describes the benefits of monetary systems. Borrowing from Levine (Levine, 2004), finance-led growth can be broken down into five categories for study:

1. Produce ex-ante information about potential investments and allocate capital
2. Monitor existing investments and exert corporate governance after providing finance
3. Facilitate the trading, diversification, and management of risk
4. Mobilize and pool the savings of individuals
5. Reduce the costs of exchanging goods and services

These are crucial functions that are present in nearly all financial systems, though the degree they achieve them can be markedly different. It would only be natural for growth within the financial sector to be accompanied by an improvement in the ability to execute those five functions, and/or reduce the total costs arising from information, enforcement, or transactions. Levine further goes on to conclude that if finance is to explain, at least partially, long-run economic growth, then we need to understand and develop a theory that describes how financial developments influence the resource allocation decisions that then lead to growth. This is where we look at the five aforementioned categories to examine how financial developments spur growth.

The case for the first point rests on the fact that in order to make sound productive investment decisions, it often takes many factors. The main result is that the cost of information can increase, thus making it difficult to align financial resources with investors. Levin cites research which implies that financial developments and financial firms can decrease the cost of finding and evaluating investment opportunities.

For the third element, we can follow Levine's framework to note that financial systems can create portfolio investments that amply spread out monetary resources in a way that balances risk versus return. The ability to better manage risk and facilitate new investment vehicles has been key to development. As Levin notes in an argument by Hicks (1969, p.143-145), it is possible to decrease liquidity risks through capital markets. It was almost necessary for the
industrial revolution to be paired with a financial revolution so that investors could make large capital commitments (Bencivenga, Smith, and Starr, 1995).

We can look to the wealth management industry and banking institutions to see how financial firms are able to amass deposits and use people's savings to then invest in firms or entrepreneurs through loans or equity purchases. This allows for large-scale investment that is impossible from the point of view of most individuals that wish to simply save, thus the pooling of savings is key to generate large-scale investment.

Levine notes the debt we owe to Adam Smith's notion of specialization and we can draw upon the concept that as financial systems become more specialized the productivity should increase. Going further if we examine the fifth point and recognize the costs of a currency, we can gain insight into how resource savings through paper money help reduce the cost of exchanging goods, by reducing the burden of resource accumulation inherent in a commodity-backed currency. This final point is satisfied in part by the resource cost savings of paper money.

The story of Scotland

When we examine the literature on finance-led growth we see that there is a theoretical backing. It is also of importance to look to historical examples of financial innovation to examine if there are historical examples of financial innovation spurring economic growth. The best argument for the existence of such an effect can be traced to Adam Smith's explanation of the rise of economic growth in Scotland during their free banking era. Smith highlights the benefit of cash accounts to the increase in mercantile activity. "By means of those cash accounts every merchant can, without imprudence, carry on a greater trade than he otherwise could do." (Smith, II.2.46). This supports some of the more traditional arguments within the finance-led growth
literature. Smith also notes the benefits of note issuance over the usage of gold and silver coin. This is the most important part for our purposes. This requires an understanding of Smith and his view of capital and revenue. Adam Smith in looking at the net revenue of a country notes an important point about revenue and capital maintenance.

"The gross revenue of all the inhabitants of a great country comprehends the whole annual produce of their land and labour; the net revenue, what remains free to them after deducting the expense of maintaining—first, their fixed, and, secondly, their circulating capital... (II.5)"

Money most certainly falls into circulating capital for the most part; however, there are parts of money that undoubtedly fall within the scope of fixed capital. If we examine the nature of the currency, the production and the maintenance of the coin and specie does constitute some form of fixed capital. Thus, when we examine the money that is used within the scope of exchange we see that money plays the role of circulating through the market and has maintenance component. Thus, if we find a way to economize on the cost of maintenance, it is plausible and likely that we will see a benefit to the economy. This is the main concept behind the resource cost savings behind the transition to paper money. When we consider paper currency, or to some degree non-specie coins, we see that the cost of producing and maintaining a given level of paper money requires less than the overall cost of maintaining a given level of specie. Smith also notes the source of the costs of specie and thus the value of the specie is related to the costs of acquiring specie from the ground.

"The proportion between the value of gold and silver and that of goods of any other kind depends in all cases not upon the nature or quantity of any particular paper money, which may be current in any particular country, but upon the richness or poverty of the mines,
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which happen at any particular time to supply the great market of the commercial world
with those metals. (II.105)"

Thus, the transition to paper notes will not have the effect of sinking the value of gold and silver
as the prices of specie are not determined, in Smith's view, by the quantity of note issuance.

"It depends upon the proportion between the quantity of labour which is necessary in
order to bring a certain quantity of gold and silver to market, and that which is necessary
in order to bring thither a certain quantity of any other sort of goods. (II.5)"

We also need to understand the tradeoff that Smith is mentioning. If we consider that note
issuance moves specie out of the hands of people, and towards foreign trade or into bank
reserves, we can look at this impact on the freeing of capital from the mining of specie, into other
potential mining ventures. The demand from the market for the maintenance of specie in hand
will drop the demand for the mining of specie, to some extent. Thus, we should see a freeing of
resources to, in Smith's words, "bring thither a certain quantity of any other sort of goods". With
the movement away from specie in normal consumption and investment patterns within the
home country, it can still be a wonder what will occur with the specie that is being displaced by
paper currency. Smith has the following insight,

"But though so great a quantity of gold and silver is thus sent abroad, we must not
imagine that it is sent abroad for nothing, or that its proprietors make a present of it to
foreign nations. They will exchange it for foreign goods of some kind or another, in order
to supply the consumption either of some other foreign country or of their own. (II.31)"

This goes along with our understanding that redemption of bank notes to meet a demand
to hold specie is difficult the further the notes go from the bank of issuance. This can, of course,
be mitigated through clearing house systems, but either way, specie was the main way to conduct foreign trade at the time. Thus, specie is most useful in the execution of foreign commerce. Thus, by switching towards a paper currency we will see outflows of specie that will result in the general purchase of foreign goods. Smith notes this idea,

“If they employ [specie] in purchasing goods in one foreign country in order to supply the consumption of another, or in what is called the carrying trade, whatever profit they make will be an addition to the net revenue of their own country. It is like a new fund, created for carrying on a new trade; domestic business being now transacted by paper, and the gold and silver being converted into a fund for this new trade. (II.32)”

Smith does give a guess as to the goods that will be purchased using specie.

“If they employ [specie] in purchasing foreign goods for home consumption, they may either, first, purchase such goods as are likely to be consumed by idle people who produce nothing, such as foreign wines, foreign silks, &c.; or, secondly, they may purchase an additional stock of materials, tools, and provisions, in order to maintain and employ an additional number of industrious people, who reproduce, with a profit, the value of their annual consumption. (II.33)”

If this second part is the case then we can predict that switching from specie to paper notes will have a positive effect. Home consumption will utilize a significantly lower amount of specie, while specie will be free to flow out of the country. These outflows will have a positive effect on capital accumulation and the ability to maintain capital. This will increase the productive capacity of the home nation leading to higher potential production and creation of wealth. This early driver of growth all stems from the benefit of switching from specie to paper
notes. Smith notes the exceptional growth does describe the existence of a mechanism by which the conversion of the money stock from specie to paper can bolster the purchase of foreign sources of capital, or the purchase of "idle" goods. This could partly explain the great growth that occurred in Scotland. This capital accumulation occurs by way overflows as well if currency issuance exceeds what is desired by those that demand currency. If banks issue notes that are more than sufficient to meet home consumption we will expect specie outflows.

"The channel of circulation, if I may be allowed such an expression, will remain precisely the same as before. One million we have supposed sufficient to fill that channel. Whatever, therefore, is poured into it beyond this sum cannot run in it, but must overflow. One million eight hundred thousand pounds are poured into it. Eight hundred thousand pounds, therefore, must overflow, that sum being over and above what can be employed in the circulation of the country. But though this sum cannot be employed at home, it is too valuable to be allowed to lie idle. It will, therefore, be sent abroad, in order to seek that profitable employment which it cannot find at home. But the paper cannot go abroad; because at a distance from the banks which issue it, and from the country in which payment of it can be exacted by law, it will not be received in common payments. Gold and silver, therefore, to the amount of eight hundred thousand pounds will be sent abroad, and the channel of home circulation will remain filled with a million of paper, instead of the million of those metals which filled it before. (II.30)"

Such an insight makes sense with what we would expect based on the nature of bank notes. This can be a detriment if specie outflows are great as there still is a demand for specie by the note-issuing banks; however, if banks are still able to meet their domestic demand for specie all will be well. It also lays out the limitation of early bank notes, in that the redeemability of banknotes
issued by local banks only extends so far. Though we should note that as banks seek acceptability of their notes within the marketplace, they would often accept the banknotes of their competitors, should someone seek to redeem the banknotes.

What is important to realize in Smith's argument is that the overflow of money will flow out of the country in the form of specie. This is due to the then universal acceptance of specie as a means of foreign trade. If there had existed an international clearinghouse system for bank notes, it might not have been the case, but the issues of creating and running such a system would have been daunting at the time. Consider though how international money changers operate in the current economy, and we get the idea of how clearinghouses would have had to operate and coordinate over vast distances. In any event, the outflow of specie will bring in foreign goods and the potential for foreign capital to improve the existing capital stock thereby increasing the productivity and the potential wealth of a given nation. When we look at the evidence provided by Smith, it seems to check out and imply that our insights are correct to some degree.

"The business of the country is almost entirely carried on by means of the paper of those different banking companies, with which purchases and payments of kinds are commonly made. Silver very seldom appears except in the change of a twenty shillings bank note, and gold still seldomer. (II.41)"

As to the effects of growth due to these financial innovations we see that Scotland has benefited greatly. This implies that the banking revolution in Scotland was vital to the growth of Scotland.

"I have heard it asserted, that the trade of the city of Glasgow doubled in about fifteen years after the first erection of the banks there; and that the trade of Scotland has more
than quadrupled since the first erection of the two public banks at Edinburgh, of which the one, called the Bank of Scotland (II.41)"

It is apparent that the finance-led growth had some major role in the explosion of growth in commerce in Scotland. It is also likely that the benefits of reducing the resource cost of the money stock had some role in the expansion of capital and the furthering of foreign trade within the region. This occurred alongside the general spread and adoption of notes issued by banks that were redeemable for specie. The finance-led growth hypothesis seems to hold in Smith's case, but even more so it gives some level of credence to the value of the resource cost-saving argument which we seek to promote and revitalize as it is central to understanding Smith and early Finance-Led Growth.

Finance-Led Catch Up in the US

Having gone over the finance-led growth hypothesis and the classic example we note in the case of Scotland, we can use this hypothesis and try to find evidence of its impact on the US. The example and the topic covered here will be the evidence of the finance-led growth hypothesis and its impact on the US economy. Specifically looking at the time period of 1790-1850, where the US economy was able to build up and begin to catch up with the economy of Great Britain. We consider the work of Peter Rousseau and Richard Sylla in their 2005 paper "Emerging Financial markets and early US growth". They reinforce and explore the notion that, "...financial development promotes entrepreneurial efforts and economic growth." As I will explore later we see that financial innovations in Scotland led to growth. The question that must now be considered is whether there lies within the history of the US, a similar pattern. We first turn to the start of the United States as a country. In the words of Rousseau,
"The US case is instructive. A newly independent country with a small population, the United States had a primitive financial system and was effectively bankrupt in the 1780s. In the 1790s, it experienced a financial revolution that established a modern, articulated financial system. In short order, the United States attracted the capital and labor of other nations on such a scale that it can be considered history's most successful emerging market."

This understanding of the state of the US financial system gives us the notion that the US may well have had an experience to dissimilar from Smith's Scotland. We have evidence of new financial security in both the public and private sector, that would seem out of place in the earliest days of the US. With the government being able to finance the Louisiana Purchase through the selling of dollar-denominated US government securities to foreign European investors (Rousseau 2005). The story of the rise of the US economy has previously been attributed to the growth in productivity, expansion of foreign commerce, and the investment into manufacturing and transportation technologies.

This is an accurate attribution to the direct causes and drivers of growth; however, the scale of such investments requires a financial system that can handle these investments. It is noted that the reforms to the financial system that came within 5 years of ratifying the US Constitution predate the "real-sector developments". This reformation, lead to the creation of a modern financial system that was able to finance the developments, and thus lead to growth. This suggests that while finance is not the driver of growth, it is the vital support pillar to ensure that the investments that drive growth are financed.

Rousseau and Sylla focus on providing support and backing for such a view. The first thing that was done to create a modern financial system was the establishment of centralized
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revenue collection under the Treasury Department. Hamilton's early management of existing state debt helped alleviate issues that states were dealing with during the early years of the US. The formation of the dollar as the national monetary unit also added stability and firmness that was sorely lacking until then. The banking system also began to flourish as states began to charter more banks that, due to their limited liability structure, began to attract capital. Sylla's earlier work in 1998, is also cited to show that while previous economic histories mention the role of the Sterling in the world at the time, the US had 2.4 times as much banking capital as that of England. This difference suggests that the financial markets in the early US were growing extraordinarily and would lead to ease of financing for investments. These differences are the result of regulatory differences and the monopolies given by England, to the Bank of England. Also, consistent with the finance-led growth hypothesis we see that the US had an emerging securities market. It is noted by Sylla that,

"By 1803, more than half of the government's debt and the stock of the Bank, and fully half of all American securities issued to that date were held by European investors. For the United States, capital market globalization arrived early in the nation's history, long before the more celebrated capital market globalizations of the late 19th and late 20th centuries.

We also witness, "...by 1825, the size of the US and English equity markets was virtually the same." Suggesting that the US had been successful in creating a securities market. The conclusion is also important,

"That the United States had an equity market capitalization virtually the same as England's in 1825, but with fewer securities listed, implies that the average listed US equity was more highly capitalized than the average English equity. "

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Thus, we see that capital was being allocated well by the systems that had been created and those that emerged. Implying that the capital allocation element of the financial system was able to move enough financial capital to allow for large-scale investment.

As the economy grows we should see a rise in the money stock, as a way to ensure that transactions are able to occur, and through the natural process of fractional reserve banking. We see that growth in the money stock is an important factor during early stage economic growth. What Rousseau and Sylla do is attempt to create a picture of the growth in the money stock from 1790-1850. They note that their estimate is that the money stock tripled over this time frame. Implying that overall economic expansion was fueling the desire to hold more cash and that the financial system was working properly to ensure that cash requirements were fulfilled.

Considering the empirical evidence of their theory they conclude,

“To summarize, our first set of VARs (Table 4) are consistent with the view that monetization of the US economy and the expansion of securities markets fueled domestic investment, with no evidence of feedback from investment to money growth or securities markets, at least in the medium-run. The second set of VARs (Table 5) suggests that growth in banking and securities markets also encouraged entrepreneurial activity, as measured by business incorporations, and not the other way around.”

This is important as it shows that there is empirical evidence of their view on the finance-led growth being an important factor in the US catch-up to Britain. They conclude that "The remarkable economic growth of the United States, we think, may very well have been "finance led." Having understood finance-led growth and its impact on the US, we can go into more depth in understanding the arguments that underlined the major reforms. The goal is to see if this resource cost savings argument was present or in any way influential. We also should note that

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the argument for resource cost savings from the fractional reserve currency is omitted from their paper, which speaks towards the omission of such a pivotal theory that was used in the work of Smith that was used earlier. It may be due to a lack of desire to empirically prove such a theory, or it is simply the fact that the argument has been forgotten.

Jefferson and Hamilton

As mentioned earlier in the previous section, the United States foundational years were not marked by success in the financial realm. It is true that states and the federal government had been able to finance the war through war bonds, but if we examine the discount rate on the bonds, we can note that the faith in the state and federal governments to pay off the bonds was extremely low. This explains why some state bonds were trading for as low as 10% of their face value. We noted in the section on the US example of finance-led growth, that the US was able to radically alter its financial institutions and put itself in a position whereby it could borrow money with credibility.

Here we are going to examine the debate around one of the pivotal institutions that were created in the early financial history of the United States. The First Bank of the United States was crucial in the revitalization and creation of the market for US government bonds. Two pivotal figures in the debate over the creation of the First Bank of the United States were Alexander Hamilton and Thomas Jefferson.

First, let's examine the arguments and the thought process that formed the basis for the support for the First Bank of the United States. Going into 1790 and 1791, the federal debt was a huge concern for the United States. Having just fought a war against Great Britain, the fledgling
United States was trying to establish itself and one of the first ways it could do so was to tighten up its then current financial woes. The issue of the national and state debts was massive, though the burden of State issued debt was by far more troubling. Considering the likelihood of needing to borrow money going forward, the United States needed to find a way to pay off its' debt and put itself in good financial standing going forward, lest they find themselves in rough times, with no borrowing power.

In considering the argument by the Federalist backers of the First Bank of the United States, we see a call for the United States to pay off the debt and made plans for how to manage debt going forward. The main way that the Federalists wanted to deal with the debt was by creating a sinking fund. The backing concept of this sinking fund was to retire debt through funds raised through taxation. The taxes at the time though were mostly collected through tariffs. This concentrated the cost of retiring current and future debt on the southern agrarians.

To ensure that states did not default on their massive debt obligations the Federalists also planned for the federal government to acquire and nationalize the outstanding state debt. This then allowed the federal government to use its powers to retire it over time. In order to increase the value of government debt, and therefore reduce its discount rate, Hamilton had to find a way to give it value. The fear of default was pushing the discount rate on the debt up, but unless people had a use for the bonds, or had faith in the government's ability to pay off the debt, the value of the bonds was not likely to increase.

This is where we get a key element of the First Bank of the United States. The creation of a national bank was likely to be one that would attract many investors. Seeing a gap in the market, and the potential returns to their investment, any calls for a bank with a federal charter were likely to be met with calls by people who wish to purchase stock in the bank. This means
that if the government were to create the First Bank of the United States, it would likely see no shortage of investors. This is where the structure of the stock in the First Bank of the United States becomes crucial. Stock in the First Bank of the United States could only be purchased through a combination of hard money and outstanding government debt.

As many people seek to purchase stock in the First Bank of the United States, this creates a market for holders of outstanding federal debt, to sell to investors seeking to meet the requirements so that they can buy a stake in the First Bank of the United States. So, in one fell swoop, Hamilton created a market for what was previously worthless government debt. Another point that is important to note is that many close friends of Alexander Hamilton owned a large amount of debt, debt that they had bought on speculation. Thus, we see some potential private interest in the creation of the bank as well.

To understand the case against the Federalist agenda for a bank with a federal charter we must understand the position of the Anti-Federalists and the position of Thomas Jefferson. Thomas Jefferson was the head opponent to Hamilton’s vision for the First Bank of the United States. As we noted earlier the debt that had to be paid off through the concept of the sinking fund, was to be collected through tariffs. Being a representative of the Agrarian areas of the country, his constituents were the people most affected by the tariffs that would be used to retire the debt. Thus, any plan that involved a sinking fund would harm the people he represented.

We also reconcile the opposition to the First Bank of the United States, by examining its expansion of governmental power. Giving credit to the legal argument over its constitutionality, we see that the creation of a bank with a federal charter will lead to an expansion of the federal government beyond what is explicit in the Constitution. This combined with the Anti-Federalist
against large government, and it is easy to make the connection as to why Jefferson would be vehemently against any legislation.

Jefferson was no proponent of the proposal for the First Bank of the United States to have the ability to issue paper money. We need to understand another touchstone that was present in the anti-federalists, the anti-federalists were for the most part opposed to fractional reserve banking. If we examine the debacle concerning the "Continentals", which was the fiat currency issued prior to and during the Revolutionary War, we see what can potentially happen with a currency that isn't fully backed. The Continentals were overprinted and lead to a large amount of inflation and were a source of early instability in the US economy. This memory lingered in the mind of many Anti-Federalists, and lead to them opposing most forms of fractional reserve banking. Fractional reserve banking for most intents and purposes requires the ability of a bank to issue paper currency.

This is where we can examine the effects of the First Bank of the United States and what it would mean for growth. By switching the country to a paper currency backed by gold, we see the earlier insights that we gleaned from Smith. We move from a high resource cost to a low resource cost, thus reducing the fixed capital required to support the money stock. This will lead to more consumption of either normal goods, or lead to purchases of capital. Thus, we can see that the desire to move the country towards a paper currency is a rather beneficial move.

We know Hamilton and Jefferson had read The Wealth of Nations, the question we then have to ask is to what degree did they understand the arguments of Smith, and how much influence did it have. We see that Jefferson did note that a paper currency had the benefit of economizing resource cost of the money stock, but he seemed to have ignored the other benefits that flow from the switch to a paper currency. We also note that Jefferson seems to see the
potential benefits of fractional reserve banking, but is more sensitive to the costs of fractional reserve banking than what may seem to be sensible. Reconciling this with his prior experience though paints a more detailed picture reasoning behind his opposition to paper money, even if he is probably wrong.

Looking for the inspiration for the First Bank of the United States from Hamilton, we can look to his early mentor William Morris who was the architect of the Bank of North America. This early foray into large banking combined with his knowledge and affinity for the Bank of England, and the desire to copy the success or apparent success that it had. This seems to be the main rationale for Hamilton though it appears that he had a better understanding of Smiths arguments, or at the minimum saw them as a complement to his desire for a National Bank.

If we do a quick look at the results of the First Bank of the United States, we see that paper money issuance increases to around a third to a half of the existing money stock. This seems to imply that the mechanism we described earlier has room to occur. We also note that there is a bubble in the stock market for bank stock. We see a recession occur in 1796 as we follow the patterns of the money stock and specie flows, noting a deflation around 1796-1797. On the evidence, it seems that the First Bank of the United States had a role to play in the financial overhaul of the early United States and likely was the main conduit for the resource cost savings that contributed to the finance-led growth in the early US. As for the influence of the argument, it seems to have only been on the mind of Jefferson, yet he was not swayed by it, due to his general distrust of fractional reserve banking.

**Friedman’s Argument**
We see the arguments that made their way to the minds of Jefferson and Hamilton. It is also important to note that the case for the resource cost savings due to a switch to paper currency, also made its way to the mind and through the work of Milton Friedman. The following section deals exclusively with his 1951 article "Commodity-Reserve Currency". We first note his mention and acknowledgment of the physical cost of producing commodity currency, and the effects of changes in these costs have on the overall price level.

"The vices of strict commodity standards are the other side of their virtues. Being automatic, they may not provide sufficient flexibility or adaptability to prevent substantial swings in prices or in income. The physical cost of production of currency does not make either moderate inflation or substantial deflation impossible; it means that price movements may be produced by technological changes in the relative cost of production of the currency commodity and that some resources are devoted to the creation of money. (206)"

Here we see the resource cost and the cost associated with the fixed capital component of commodity (or specie backed) money, plays into a variation of the price level. This concept echoes the insight Smith had near the end of Book two Chapter two of Wealth of Nations where he explains how the gold backed currency effectively means that price levels are tied to the cost of mining specie. Friedman goes on to fully explain the mechanism that drives prices when specie is gold backed. Then we move into a question of the advantages and drawbacks of fully backed commodity currency. Above we note that we see an argument that is akin to the Golden Handcuff argument, that Gold Standards bind governments ability to impose improper or reckless spending. He notes that the drawbacks of a Gold Standard are for others the benefit of such a standard.
"The limitation that a strict commodity standard imposes on national monetary or economic policies is a feature that some will regard as an advantage, others as a disadvantage. (207)"

We move further to note that he recognizes one of the biggest issues with a commodity currency, which is the cost of the resources required and notes that the incentive for financial innovation is in part, or fully, due to the savings of the fixed capital component of the monetary standard. Friedman says, "The prospect of saving the resources they require is no mean incentive for the invention of less costly methods of providing a circulating medium. (207)" He then goes on to consider and calculate the cost of a fully backed Gold Standard which would create this commodity currency, and the large burden that it would have regardless of its benefits.

"As we have seen, in a world in which total output is growing in response to technological and other changes and in which the velocity of circulation is fairly constant, a strict commodity standard requires the regular use of a considerable volume of resources for additions to the monetary stock in order to keep prices stable. To use the example given above, something like 1.5 per cent of the resources of the United States would have had to be devoted to the production of currency commodities for monetary use. (210)"

Many critics of Friedman have attacked his use of a commodity standard, which does seem on the face of things to be a valid critique of his unwillingness to consider fraction-commodity standards. Friedman does note his concerns as follows.
"Partial commodity standards thus lead to two major evils: government intervention into lending and investing activities that can appropriately be left to the market and inherent instability in the monetary system. (213)"

The first concern that of "government intervention into lending and investing activities that can appropriately be left" would seem to be a reason why the strict commodity standard would be preferable. The second concern is that of the "inherent instability in the monetary system". He then poses that this inherent instability can be corrected by the following means.

“One way to eliminate this inherent instability is to prohibit the use of the currency commodity as a circulating medium, restrict its use to reserves, and make the reserve requirements uniform for all types of currency (212)"

Unless there are mechanisms that create such a situation it leaves the potential for government interference which would likely negate any such benefits of a partial reserve standard. This stems from a public choice argument.

“The tendency for part of the circulating medium to be created as an incident of the lending and investing activities of "banks" has meant government intervention into these activities in the course of attempts to control the circulating medium. Thus it has meant extension of government control to activities that could appropriately be left to competition if they were not intertwined with the creation of currency (212)"

This leads to his point that stems from his quote on the “two evils” of Partial commodity standards.

“These evils can be eliminated by acceptance of either of two extreme monetary standards: (1) a circulating medium composed entirely of the physical currency
commodity or literal warehouse certificates—i.e., a strict commodity currency; or (2) a circulating medium composed entirely of a single kind, or essentially equivalent kinds, of fiat currency (213)”

This sentiment is central to understanding Friedman’s unwillingness to endorse a partial commodity standard. This goes back to why we should consider that Friedman would only be willing to endorse a commodity currency that would cost, "something like 1.5 per cent of the resources of the United States … (210)". Friedman notes that even if the two extremes are adopted we have another issue with those standards.

“This [The Two standards] would eliminate both evils only if the government monopolized the creation of the fiat currency. If the government did not do so but allowed private banks to create the currency under strict rules that kept the circulating medium uniform, the evil of inherent instability would be eliminated but not the evil of government intervention into lending and investing activities.(213)”

We note that Friedman was supportive of commodity standards but believed the public would not be willing to use a commodity other than gold, even if gold isn’t a great commodity to use. Noting the need for a commodity to have a highly elastic current supply. "In terms of these criteria, gold and silver—the commodities most widely used as currency—do not rank very well. (208)”. He does note that gold and silver are good in that they have, "in terms of the size of the stock that shifts fairly readily between monetary and non-monetary uses. (208)". We are then treated to a detailed recounting of an argument over a brick standard that only fails because quote, "the chief defect of the brick standard is simply the impossibility of getting anyone to think seriously of bricks as money." Which is why any commodity standard is to likely be a silver standard or a gold standard. This is a desire for gold as the commodity standard stems from

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symbolic imagery that follows gold and silver. Friedman says of gold and silver standards, "is the symbolism that has been attached to them, which has made it possible for them to afford a real bulwark against government "tinkering."

With that considered, Friedman notes similar issues with both commodity standards and gold standards, "Under either standard this would require the use of substantial resources to provide for secular growth in the money supply. (226)". Friedman makes clear his view on the value of the general notion of commodity standards.

"The only basically attractive features of any commodity standard are the restraints it can impose on unwise political intervention and the possibilities it offers of an international currency. If political intervention is not to be feared either because it is universally wise or because other restraints exist, there is no reason to waste resources in piling up monetary stocks instead of adopting the essentially costless alternative of a fiat standard. (232)"

Here we see that Friedman harps on the resource cost savings that are attributable to fiat currencies. If we don't fear government intervention or government intervention is restrained, there is little reason to consider any commodity standard, at least by Friedman's argument.

In consideration of the argument that Friedman takes against commodity currency, i.e. the resource cost argument, we can expand our scope to look at the current state of gold holdings at the Federal Reserve. We note that there are holdings in the vaults of the New York Federal Reserve Bank. While these gold deposits are held by other nations, we would expect a boost to the economy should we free up the gold held in the vaults, if that gold is to re-enter the market and move towards more productive uses. The Federal Reserve currently holds slightly more than
$11 Billion dollars' worth of gold in its vaults, while it also has $7.8 Billion in gold that it has earmarked under foreign accounts. This implies that there is a sizable amount of gold being held out of the marketplace when it serves little to no purpose with respect to the current money standard we are using, and maintenance of such reserves is being lost to the potential productivity of the economy.

If we are to embrace any argument for the resource cost savings inherent in fractional reserve banking, as Friedman clearly does, with either a commodity standard or fiat currency, we would be swayed to promote a policy that sees these unnecessary gold holdings released by some mechanism back into resource markets and a small boost to growth. This shows that the resource cost argument is still used, but it never was disproved before it was forgotten in the new literature.

Conclusion

In considering the work above, it becomes clear that the resource cost argument for either partial reserve currency or fiat currency carried notable support up until the time of Friedman. It was mentioned by Smith as being able to stimulate the purchase of foreign capital and free up resources. It was noted by Jefferson as the only significant benefit of the First Bank of the United States, though his aversion to partial reserve currency saw him disregard such a benefit. We also see it crop up in Friedman's major critique of commodity-based currency. The significance of the argument is notable and has been to some point influential and a better understanding of the resource cost savings that is attributable to the move away from fully backed currency is a part of understanding the financial revolution that preceded the rise of the US and the growth of Scotland. It also provides insights into potential savings that can still be found by finding resources that are better served elsewhere, and impose at least some cost on the US economy.
That is why it is a shame that such an argument has been ignored in the literature, hopefully, it will be examined and work can be done to estimate the full impact of an effect that Smith saw as the driver of Scotland’s amazing growth.
REFERENCES


