PROBLEMS IN ANALYZING INFLATION DURING THE CIVIL WAR

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ABSTRACT

In the American Civil War, a drastic increase in the level of "high powered money" with the issuance of the greenbacks had a relatively modest effect on the measured price level. The existence of a free market in gold and the presence of specie are offered as an explanation for the constrained movements both in the money multiplier and in movements in measured income velocity. These unusual results largely reflect the fact that in such a world of freely fluctuating multiple currencies, a rise in the measured price level does not reflect the decline in the value of money.

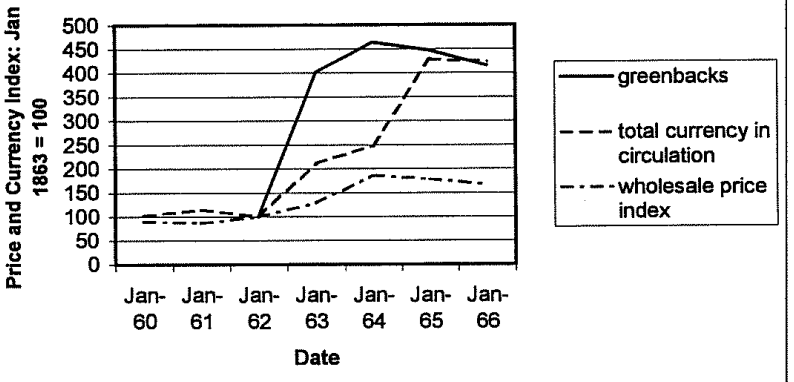
In the American Civil War, a drastic increase in the level of "high powered money" with the issuance of the greenbacks had a relatively modest effect on the measured price level. In this paper, we argue that the existence of a free market in gold and the presence of multiple monies acted to constrain movements both in the money multiplier and in movements in measured income velocity, thereby dampening the inflation that otherwise would have emerged.

The consequences of government issuance of a vast quantity of paper money during the American Civil War seem to have been most extraordinary. Though the quantity of "high powered" money over this period increased by at least five times, there was a bare doubling of the observed general price level (see Figure 1). With apparently no dramatic increase in real output, the logically possible explanations are to be found in the failure of the "money multiplier" to yield up large increases in the total money supply, given the increases in high powered money, and in the relative stability of measured "velocity." The money multiplier itself will be inversely related to the bank reserve ratio and to the public's holdings of currency relative to deposits. We argue that the multiple currency system that existed in the U.S. during the Civil War inhibited movements in both the "money supply" and in "velocity" compared with what we would expect to observe in a single money economy for similar increases in high powered money.[1] It is the characteristics of the multiple currency system that explain the relatively limited rise in the price level.

The analysis here poses important problems for the understanding of high inflation in the context of multiple currencies. The methodology for the analysis of inflation is adapted from Friedman's general exposition of the quantity theory[2] in which an increase in the price level (as a result, for instance, of an increase in the money supply) leaves the *relative* prices of goods and services in the economy unchanged: a doubling of the price

level is equivalent to a halving of the value of money. But in situations of high inflation in which secondary monies are available, a decline in the value of the currency (in our case greenbacks) will not be accurately reflected by the rise in the prices of goods and services, since at least some of the loss of confidence in the currency will flow in the direction of the secondary monies. In this paper, we deal with the substantive consequences of the presence of secondary monies in the context of the Union's financing of the Civil War.

Figure 1: Currency and Prices in the North



Source: Friedman and Schwartz 1970, 224-225 and Mitchell 1903.

The Nature of Pre-War Finance

For the purpose of this study, the most decisive aspects of American financial history prior to the Civil War were the simultaneous existence of gold (or specie) and the notes of state banks as means of payment, and the lack of central regulation of the note issuances of state banks.

Gold was taken to be the implicit standard of value, and it was taken for granted that it would not significantly depreciate, but notes were used for the bulk of transactions. Until the value of the paper currency was brought into question during the war, the system continued to function. However, even when the mechanism seemed to be working appropriately, it was clear that the amount of money available for transactions was constrained by the quantity of specie: if the quantity of state bank notes was increased too quickly, the relationship between the notes and specie could be brought into question, and discounting and then a bank panic could result. The specie - bank note dichotomy was vital: with the re-establishment of the Independent Treasury System in 1846 only Treasury notes, gold and silver were receivable for public dues. Furthermore, federal government stocks of specie were not held in the banks, but in the Government's own independent sub-treasury system. This proved to be crucial with the coming of the War.

The situation that is relevant to the Civil War and of much of the preceding period is one in which there are at least two circulating media that are not in a fixed legal relationship to each other. In this instance a failure of confidence in bank notes would not necessarily drive gold or specie out of circulation, nor, necessarily, drive up the price level - they could in fact merely depreciate in terms of gold or specie. The importance of the latter proposition can be seen in the monetary history of the U.S. before the Civil War. Specie payments were suspended in 1814, 1818, 1837, 1841, 1857 and 1861-1879.[3] What is striking about this phenomenon is that we observe the periodic ballooning of the circulating medium that is so common to countries with poorly developed banking and fiscal institutions, but not the corresponding runaway inflation.

The state bank notes, while a medium of exchange, were not a store of value. They were in fact promises to pay in terms of specie, and if their value was brought into question, they depreciated in terms of specie by discounting, at least until such a time that they became viewed as worthless and a panic resulted. Thus, specie was a binding constraint on note issue, and the general price level seemed to be linked to specie rather than to the state notes.

One other element in the pre-war picture is necessary to complete it. In modern developed economies, we tend to think in terms of a well-defined market in government securities, but this presumption is inappropriate for the period under consideration. From 1847 to 1861 government expenditures ranged from $41 to $74 million. The highest deficit in these years was $29 million.[4] These are small magnitudes compared to expenditures during the Civil War, and it would seem that many of the wartime complaints about the inability of marketing the large amounts of securities without significant discounts may be explained by the primitive development of the government securities market.

The War Years[5]

It is common to perform the following simple mental "experiment" in monetary theory: what would be the effect upon prices, real output and interest rates of a governmental increase in the quantity of paper money? This seemingly straightforward question has no answer that is invariant to historical conditions. A series of questions must first be answered. Is this money good for all debts public and private? Is it used as reserves by banks? Is there attached to this money any promise to redeem it in the future in terms of gold or specie?

These are not trivial considerations. In modern developed domestic economies the answer to the first two of the above questions is yes, and the answer is no to the third. During at least part of the Civil War, the answers to the above questions were quite the opposite.

These institutional factors had a decisive effect on the outcome of the economic and financial events of the Civil War. The pivotal event of the issuance of paper legal tender in 1862 must be seen in the context of the financial institutions existing at the time: a

host of circulating monies ranging from specie to bank notes of all kinds, a free market in gold and a banking system that was unregulated by any central agency for most of the War.

Thus, we see that the issuance of paper currency, while it is amenable to theoretical analysis, cannot make use of textbook formulae: the "money multiplier," and therefore the supply of money will be affected by the suspension of specie payments; the "demand for money," and therefore measured "velocity" will be critically affected by the presence of other circulating currencies, prospects for redemption, and, of course the fortunes of war.

On July 17, 1861 Congress projected expenses of $320 million and taxes of $80 million, necessitating the raising of some $240 million in additional revenues. In the eventual bond issues, about three-fourths turned out to be issuances of long term bonds payable in specie at 7%; but one-fourth were Treasury notes bearing no interest, payable on demand, *but redeemable at any time in terms of gold.* It was this clause, seemingly unimportant, which appeared to make the issuance of the original demand notes unexceptional compared with the eventual issue of greenbacks.

One month later the first $50 million of the loan came through. It now became critical that there was no well-developed market in government securities. The loan was handled through banks in New York, Boston and Philadelphia, which possessed an aggregate capital of $120 million and combined specie of only $63.2 million (the bonds, of course, had to be purchased by the public in specie). The plan was for the banks to sell the securities to the public, and the government would then quickly pay out the cash, which would hopefully flow back to the banks. But Treasury Secretary Chase insisted that the loan be paid in specie into the vaults of the sub-treasury, thereby depriving the banks of the accumulated specie. This fact was later to prove critical. The first instalment of the loan went as planned, as did the subsequent offerings on October 29th and November 16th.

Two events took place that upset the precarious balance that existed. The first was the Chase report in December of 1861 that stated that fiscal year July 1861 to June 1862 was to have revenue of $35 million from customs and public land sales, instead of $60 million while expenses would be $534 instead of $320 million. In addition, new taxes were offered equal to only $50 million, while the remaining deficits were to be made up by bond sales.

The second event that took place was the Trent Affair (the boarding of a British ship) in November, which offered the possibility of the British intervening on the side of the South. On December 16th, government security prices fell 2 to 2.5%. Due to the alarm, specie stopped flowing into the banks. The banks, which were holding $50 million in 7.3% bonds, could not sell them for specie without a tremendous capital loss. As a result, on December 28, 1861 the banks suspended specie payments and the Treasury soon stopped paying specie on demand notes. Having forced the banks into suspending specie payments, and having refused to finance the bulk of new expenditures by taxation, "The choice lay not between irredeemable paper money and borrowing at high rates of

interest ... for [nobody] denied the possibility of borrowing provided the government was ready to sell its bonds at their market price."[6]

There was in fact a good deal of controversy over the introduction of paper currency. The most obvious dissent came from those who demanded higher taxes: "Not one dollar of tax has been raised," said Mr. Thomas, "and yet we are talking of national bankruptcy and launching upon a paper currency. I may be very dull, but I cannot see the necessity or wisdom of such a course."[7]

The first Legal Tender Act was passed on February 25, 1862. $150 million was authorized, $50 million of which was to replace the old demand notes. The issuances were legal tender in the payment of all debts, public and private and *interest on the public debt.* A further $300 million was authorized in two additional acts in July of 1862 and March of 1863. The latter act also provided for $400 million in securities that could take the form of legal tender interest bearing notes. Most of these interest bearing notes were held by the banks for reserve purposes.

The Money Supply

It is clear that a multiple currency system is likely to exacerbate the ordinarily difficult problems of trying to estimate a "money supply." Especially with the suspension of specie payments, as the value of the paper currency declined in the eyes of the public, there existed a hierarchy of ways of holding wealth in a "monetary" form: gold and specie were perceived to be the most stable in value, while least "worthy" were monies denominated purely in paper terms, such as most bank notes after the suspension of specie payments. Greenbacks came in an intermediate category, since they contained the promise of ultimate redemption at par in terms of gold, as did various sorts of other financial instruments, both government and private.

There are further difficulties of money supply estimation in the case of the Civil War, since there were several financial offerings of the government that had an ambiguous usage as part of the circulating medium, such as the compound interest notes. The latter, though technically legal tender, did not serve as a medium of exchange but (presumably because of the repayment of principle and interest in specie) did serve as reserves for banks and were therefore a kind of high powered money. The banking system's legal constraints (including the changes with the passage of the National Currency Act of 1863) and therefore the functional definition of various money supply components were affected in other ways by the actions of the Federal government, such as Chase's demand for payment in specie and the subsequent suspension of specie payments by the banks. There is as well the range of state regulations on both bank behavior and on repayments of public debt (especially with regard to specie provisions). These regulations might affect whether we would categorize different financial components as part of the money supply and/or as part of bank reserves, or in neither of these ways. For these reasons, in addition to the intrinsic problems of data collection that the period contains, Mitchell suggested that the quantity of money couldn't be ascertained.[8]

In addition to the reservations of Mitchell, it is well known that the continuous series of monetary statistics collected by Friedman and Schwartz begins in the year 1867. The reason for the exclusion of the earlier period is that when "...the National Banking (Currency) Act was passed during the Civil War, it was believed that state banks would shortly go out of existence. As a result, organized federal collections of statistics for state banks ceased, though, as it happens, state banks suffered only a temporary and never a complete eclipse. Better data exists for the period before the Civil War than for the years 1863 to 1867."[9]

We shall suggest, however, that the above problem does not seem to be fatal to the compilation of a self-consistent series for a "money supply" in the years 1860-1865 that seems to exhibit rather unambiguous properties in its broad trends. We take each of the main components separately.[10]

Table 1 exhausts the sub-categories that would unambiguously be counted as "money" before we consider the issuances of the banks. It is clear that the increases in high-powered money were very large indeed. One other government issuance is, however, worthy of note: the aforementioned category of interest bearing legal tender notes. While they would not be included in a calculation of a "money supply" on a means of payment definition, these notes, as we have indicated, were used as reserves by banks, and would therefore be reasonably included in the high powered money calculation because of the implied effect on potential bank behavior. Even without these notes, the increase in high-powered money is large; with them included, it is absolutely enormous.

Table 1
Money Holdings in the North (millions of dollars)

Date	Specie held by public	Government currency held by public	Total interest bearing legal tender notes	Total high powered money (col 2 plus 3)	Total Deposits (excluding interbank)	Bank notes held by public
1860	228.3-231.1	---	---	228.3-231.1	254.0	180.1
1861	282.4-284.0	---	---	282.4-284.0	296.3	158.5
June 1862	277.7	125.9	---	403.6	393.7	180.5
June 1863	262.6	337.7		600.3	---	163.4
June 1864	193.7	603.5	168.5	792.7 (965.7)	---	205.1
June 1865	157.3	637.2	236.1	794.4 (1030.6)	482.0	267.3

Notes: figures in brackets include interest bearing notes in column four.
Sources: Friedman and Schwartz 1963 and 1970, Mitchell 1903.

On the estimation of the bank related components of the money supply, the problems are a good deal less severe than they first appear. It is true that figures are missing for two years in the column for total deposits (excluding interbank). However, Friedman and Schwartz's main concern is to construct a consistent money supply series to 1960

based on bank deposits. Since, in fact, demand deposits did not come to be used in any significant amount until after the Civil War, we can construct a usable and consistent money supply figure on a means of payment definition from the relatively complete data on bank note issuance, which make up the overwhelming source of bank supplied means of payment throughout this period.[11] We therefore present the series on bank note issuance as a plausible representation of the bank's monetary behaviour.

Thus, in the absence of evidence of very large systemic bias in the data, the evidence, using all available measures, would seem to point dramatically to a very small increase in bank money for the increase in high powered money, i.e. a very small "money multiplier." This fact has been pointed out for the Civil War as early as 1952, when Friedman noted the apparently very small expansion rates of government money to total money in this period. Friedman's argument was that the expansion ratio was very small for the Civil War because expansion by private banks was inhibited by the absence of a central bank to support the financial system in the event of crisis.[12] There is very likely an important element of validity in this explanation, but we can add to its richness by noting the effects on bank behaviour and on the behaviour of the public of the wealth holding possibilities existent under the multiple money system.

With the suspension of specie payments by the New York banks on December 30, 1861, gold at once commanded a premium in paper money. As the inflation proceeded, the public no longer treated currency and the bank notes (even of respectable institutions) as functionally identical. Since even greenbacks had attached to them the (vague) promise to be redeemed in gold, the public's desired currency ratio, either in terms of its greenback-bank note ratio, or its specie-bank note ratio certainly went up, which had an inhibiting effect on bank expansion. Thus, to the extent that we view bank notes as a means of payment, the public's disaffection with bank notes may be viewed as a rise in the currency ratio.

The rise in the bank's reserve ratio was due to an effect that is rather subtly linked to the above. When Chase took advantage of his discretionary power to issue Treasury notes that were payable in gold "... the banks feared (that) the government paper would drive their own from circulation."[13] Other possible causes of restriction on bank note issuance may have been due to the loss of traditional loan recipients in the South, and the possible inhibition from proposed banking legislation after 1861, which would especially affect smaller banks.

Apparently, the public preferred government specie-backed paper not only as a form of currency, but also as a form of wealth holding, and they would have been willing to accept bank notes only at a substantial discount. As the banks were unable (or unwilling) to issue their notes in a manner that would make them attractive either as a currency or as a form of wealth holding, they tended to be driven out of circulation.[14]

These effects are examples of a kind of reverse Gresham's law, but they should not be confused with the usual effect, which is due to the fixing of non-market parities between monies. As we have just seen, the failure to set a "competitive" price is a factor in the driving out of bank notes, but the dominant effect is best described in terms of the

modern literature on market signalling, in which it is made clear that in situations of uncertainty people often fall back on simple rules (such as a reliance upon brand names or professional qualifications) in order to make decisions.[15] In this case it is clear that the public used the link to specie in its decision rule.

There are other, related reasons why the existence of multiple monies may well have inhibited bank behaviour. Chase's demand that the banks pay gold to the government when lending to it is an example of a way in which bank expansion may have been more inhibited by government fiscal policy than would ordinarily be measured by the decline in bank reserves, to the extent that the banks had a desired level of *gold* reserves, and to the extent as well that the banks felt under some constraint to lend to the government at a given price.

A further way in which note issuance (and therefore growth in the money supply) was inhibited contradicts conventional notions of bank and public response to inflation and the effect of the public's inflationary expectations on the rate of inflation itself. In single money economies, we presume that, *ceteris paribus*, for an increase in the rate of inflation expected by the banks (or the public), there would be a *decrease* in the public's willingness to part with bank reserves (or cash) in exchange for government bonds at a given *(nominal)* interest rate. There would thus be an inhibition in the multiple contraction of the money supply that ordinarily accompanies the reduction of the monetary base: as a result of an increase in the public's expected rate of inflation, either less money would be "soaked up" by the government (because of the need to sell the bonds at a discount) or, if the government refuses to sell at a suitable discount, the bank reserves (or the public's cash) would remain available for expanding the money supply. But one contemporary seemed to think that under the financial conditions of the Civil War the opposite was true:

> The Treasury found difficulty...in borrowing currency to pay for the necessary loans; consequently more currency should be issued. ... Mr. Watts declared that he would issue legal tender notes "until the rate of interest should come down to such a reasonable notch that the government could afford to go with some prospect of ultimately paying the amount of its indebtedness and interest...*to decrease the value of the currency to the point where $100 in greenbacks was worth less in the minds of the public than the promise of a gold income of $6 for a term of years and final repayment in coin.*" (Mitchell 1903,115, emphasis added).

In this analysis, to the extent that government bond issues were backed with a promise of repayment in specie, then the greater the fear of inflation, the less of a discount the government would have to make on the bond offerings and the *larger* the contraction of the money supply that would result. While these kind of extravagant notions were not of much practical influence on the Civil War government, the theoretical possibilities they raise are indeed fascinating and seem to contradict our usual predictions on the effects of inflation upon bank behaviour.

PROBLEMS IN ANALYZING INFLATION DURING THE CIVIL WAR

The overall importance of the factors in this section on the growth of the money supply should not be underestimated. In advanced contemporary monetary economies we tend to think that the government has "ultimate" control of the money supply, and that the activities of banks and the public are of secondary and short run importance. It is clear, however, that the thin market in government securities gave the central authorities a good deal less influence than we would expect under modem institutions, and that the effects upon the behaviour of the banks and the public of a multiple money system must be taken as significant.

Income Velocity and the Price of Gold

The calculation of movements in income velocity during the Civil War is made difficult by the absence of well-developed national income statistics. However, most controversies in this area seem to concern the rate of long term development and there does not seem to be great disagreement that "... in spite of the financial crisis of 1857, the nation was prospering and growing as seldom before when the War broke out."[16] We therefore think that the possibility of a "war induced prosperity" is minimal and that Frickey's index of manufacturing production (North and South) gives an upper bound on movements in overall economic activity (see Table 2).

Table 2
Output and Prices in the North and South

Year	1860	1861	1862	1863	1864	1865
Output index	100	100	94	106	113	106
Wholesale price index	100	103	120	153	221	212
Consumer price index	100	101	113	139	176	175

Source: Clark 1962.
Note: output index is Frickey's manufacturing production index

These numbers are consistent with a current dollar calculation of GDP, which puts the movement from 1858 to 1865 at from $3692 million to $9000 million. The data for this and similar periods are, in our opinion, far from being precise enough to construct a true index of income velocity. However, even the briefest mental arithmetic using our data indicates an exceptional stability in velocity, despite the enormous increase in high-powered money and the general climate of civil and economic instability that surrounded the period. In this section we suggest why, in a multiple money system such as existed during the Civil War the movement in measured velocity is likely to have been constrained even in the context of a civil war largely financed by the printing press. We will further point out how the existence of a free market in gold might have redirected the structure of "real" output.

Historically, hyperinflations take place in the context of substantial civil unrest. The public's valuation of government issuances would therefore be affected not only by the expected rate of increase in the price level and the prospects for currency reform, but by the likelihood of the continued existence of the government in question. In the case of the American Civil War, movements in the price of gold reflect not only changes in the value of paper money in terms of goods and services and the state of the international trade account, but the fortunes of the Union Army as well.[17]

By the end of the war, the fall in the dollar value of gold was not inconsistent with the movement in the (wholesale) price index (see Table 3).[18] This suggests that the dollar price of gold merely *reflected* movements in the price level; however, we suggest that the existence of a free market in gold might itself have *affected* general price movements. The gold market absorbed possible "shock effects" that might otherwise have been manifest in movements in the general price level.[19]

Table 3
Movements of the dollar versus gold on the New York Gold Market

Date	Dollar value in gold	Percent change	Annual rate of change
Dec 1861	1.00		
Feb 1862	.966	- 3.4	- 20.4
Apr 1862	.985	2.0	11.8
Feb 1863	.623	- 36.8	- 44.1
Aug 1863	.785	27.6	55.2
Jul 1864	.387	- 51.3	- 56.0
May 1865	.737	90.4	108.5
Dec 1865	.684	- 7.2	- 12.3

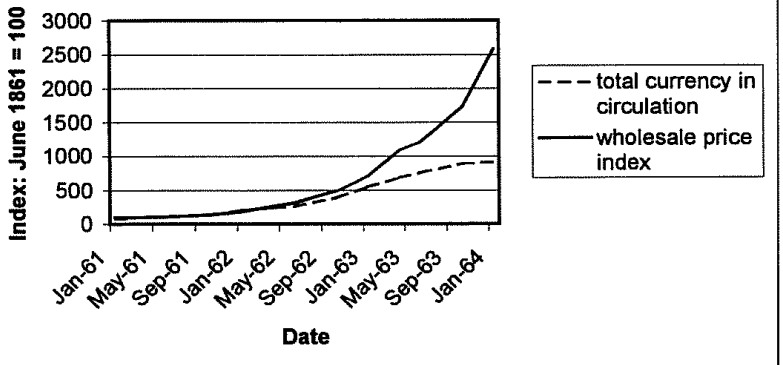
Source: Mitchell 1903.

We believe that the ability to speculate upon the gold market can influence our conventional measurements of income velocity, as well as having effects upon relative prices and therefore on the "real" economy. Even durable goods and land are sought out by wealth-holders in preference to money during conditions of (severe) devaluation of the currency. For a given money supply, a sudden decision to dishoard due, for instance, to a battlefield disaster, would register an immediate rise in the ordinary indices of inflation (with an accompanying rise in measured income velocity). By contrast, a speculative rise in the gold market in such circumstances would not cause an equivalent rise in measured income velocity: to the extent that purchases and sales on the gold market can be thought of (in the short run) as analogous to a market in a non-produced commodity like (non-newly issued) stock market equity, these purchases will have their effect on *transactions* velocity, but will not register any immediate direct change in income velocity (and therefore the general price level) since the trade takes place in the (existing) gold stock and not in a currently produced good or service. Furthermore, gold will not receive a weight in any ordinary price index that is comparable to its current transactions prominence.[20]

This phenomenon clearly could not have a longer run effect, since "excess" money balances would not disappear with the purchase of gold, but would be available for the bidding up of commodity prices. However, the absorption of the shock effect of a battle defeat may still have been of great practical import. Let us assume that the demand for money (and therefore velocity) is substantially affected by the public's expectation of future inflation, which is itself positively related to the present rate of price rises. In an economy with a gold market, we may periodise the analysis as follows: the first round effect of battlefield defeat will be a rise in gold market prices; the second round will register the "spillover" of money from the gold market (still reflecting only the loss of confidence in the government). Only in the third round will the dishoarding of money balances reflect not only the decline in the value of money due to fears about the government's continued survival, but also the expectation of higher inflation due to the rise in commodity prices in round two.

In a system without a gold market, in round one we would expect commodity prices to rise. Already in round two the public's dishoarding would reflect not only the loss of confidence in the government, but the expectation of greater inflation that was set off by the commodity price rises in round one. Thus the "shock absorption" effects of a gold market on velocity are quite plausible in the conditions of the Civil War. The behavior of the money supply and price level in the south are consistent with this theory (see Figure 2).

Figure 2: Currency and Prices in the Confederacy



Source: Friedman and Schwartz 1970, 224-225 and Mitchell 1903

The presence of a free market in gold will also be manifest in the "real" economy. When the gold market is absent (or unavailable, as it was for the Confederacy), the public's decision to dishoard currency will bid up the prices of those commodities such as land and durable goods which the public has chosen to endow with money-like store of value characteristics. To the extent that these goods are, like land (and unlike gold), central to the process of the generation of real income, this distortion in relative prices,

coupled with secondary distortions in other prices, will be likely to cause a decline in real income. Thus, the presence of a free market in gold results in a set of economic, political and social outcomes that are significantly different from those which would emerge in a situation in which a gold market is absent.

A related example of the effects upon income velocity brought on by the presence of a multiple money system can be seen in the wartime arguments over whether greenbacks should be admissible as payment as interest on government bonds. It was argued that the refusal to use United States notes for interest would be an admission in advance of a difference in value between paper and coin, the effects of which would be to discredit the government's issues. In reply it was pointed out that "... so far from exaggerating the depreciation of the paper currency, the amendment would diminish it; for *coin interest would tend to increase the value of the bonds and so indirectly of the notes which were exchangeable for the notes at par*; and second, that only by paying interest in coin could the government borrow on favourable terms."[21]

Despite the lack of historical significance of this particular provision,[22] it serves to illustrate that the existence of multiple monies could have unexpected effects on income velocity, the value of money and on inflationary expectations. Thus, Cagan's hypothesis that variations in real cash balances will be inversely related to the expected rate of change in prices loses much of its *a priori* plausibility when cash is potentially exchangeable for a security which is linked to specie, as in the passage above. In such a world, an increase in inflationary expectations could in principle lead, on the one hand, to a "lock-in" effect on cash and thus a constraint on movements in velocity,[23] or to the possible decrease in the money supply that we noted earlier, as the cash is actually exchanged for the government bonds.

Conclusion

There are several reasons for believing that changes in the income velocity of circulation during inflationary periods (and not just its absolute level, as in traditional formulations) are contingent upon legal and institutional relationships present in a society, especially with regard to the use of secondary monies. The presence of secondary monies will have the tendency to dampen movements in the measured income velocity in periods of inflation. This effect, combined with the aforementioned inhibition in the growth of the money supply when secondary monies are present implies that, during the Civil War, the rate of inflation in the north, with all its attendant consequences, may have been significantly reduced by factors that were neither fully understood by subsequent analysts, nor intended by contemporaries. It is thus possible that a somewhat accidental component in the legal and institutional framework of the Civil War period had important consequences both for the historical events and for our evaluation of the wisdom and probity of the decision makers, and of their control and understanding of what was passing before them.

There are a host of issues that remain open for future research in this area. In the historical realm, there are issues surrounding the growth of the real economy prior to,

and during the Civil War, the dynamics and response of the banking sector and the gold market in this period and many other issues. In analytical terms, there are a whole host of questions surrounding the conceptual meaning of "the" price level and "the" money supply in the multiple money conditions that pertained during the Civil War. The multiple money context appears to be relevant to a broad range of historical circumstances in which the one money quantity theory has previously been applied. On the basis of the findings here, the differences between the two approaches yield significant substantive differences in historical outcomes.

Notes

1. The Confederacy, for example. See Figures 1 and 2 for a comparison.

2. Milton Friedman, "The Quantity Theory of Money - A Restatement," In *Studies in the Quantity Theory of Money*, ed. by Milton Friedman (Chicago: Univ. of Chicago Press, 1956).

3. Harold White, *Money and Banking Illustrated by Economic History* (Boston, MA: Wiley and Sons, 1914), 454.

4. Davis R.Dewey, *Financial History of the US,* (New York: Longmans Green and Co., 1928.), 269.

5. Much of this section is taken from Wesly C. Mitchell, *A History of Greenbacks,* (Chicago: University of Chicago Press, 1903), chapters 1 to 4.

6. Mitchell, *A History of Greenbacks,* 49 and 74. For a slightly different interpretation see Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States 1867-1960* (Princeton: Princeton University Press, 1963), 59.

7. Mitchell, *A History of Greenbacks,* 63.

8. Ibid, 271.

9. Friedman and Schwartz, *A Monetary History,* 3.

10. The source for what follows unless otherwise noted is Milton Friedman and Anna J. Schwartz, *Monetary Statistics of the United States,* (New York: National Bureau of Economic Research, 1970), 224-30. In our discussion we will not repeat all of the qualifications on the nature of the data to be found in chapter 7.

11. On notes and deposits, see Friedman and Schwartz, *A Monetary History,* 7 and 18, and Phil Cagan, "The First Fifty Years of the National Banking System - an Historical Appraisal," In *Essays in American Economic History,* edited by A. Coats and R. Robertson, London: Edward Arnold, 1969).

12. Milton Friedman, "Price, Income and Monetary Changes in Three Wartime Periods," *American Economic Review* 42 (May 1952): 635.

13. Mitchell, *A History of Greenbacks,* 26.

14. The failure of bank interest rates to reflect price rises, even in hyperinflations, has been recognized by Phil Cagan, "The Monetary Dynamics of Hyperinflation," in *Studies in the Quantity Theory of Money*, ed. Milton Friedman (Chicago: Univ. of Chicago Press, 1956), 79. The persistence of nominal rates of interest that in no way compensated for the rate of inflation during the War would seem to imply the necessity of an inhibition in note issuance, given the unwillingness or the inability of the banks to offer the notes at a competitive discount. See Mitchell, *A History of Greenbacks,* 367 and Reuben Kessel and Armen Alchian, "Real Wages in the North During the Civil War: Mitchell's Data Re-interpreted," in *The Reinterpretation of American Economic History,* eds.Robert Fogel and Stanley Engerman (New York: Harper and Row, 1971).

15. George Akerloff, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *Quarterly Journal of Econmics* 84, no. 3 (August 1970) and Michael Haupert ,"Investment in Name Brand Capital: Evidence from the Free Banking Era," *American Economist* 35, no. 2 (Fall 199l).

16. Victor Clark, "Manufacturing Development During the Civil War," in *The Economic Impact of the American Civil War,* ed. Ralph Andreano (Cambridge, MA: Schenkman Publishing Co., 1962), 41.

17. See Gregor W. Smith and R. Todd Smith, "Greenback-Gold Returns and Expectations of Resumption, 1862-1879," *Journal of Economic History* 57, no. 3 (September 1997) and Kristen L.Willard, Timothy Guinnane, and Harvey Rosen,"Turning Points in the Civil War: Views from the Greenback Market," *American Economic Review* 86, no. 4 (September 1996).

18. Wesley C. Mitchell, "Greenbacks and the Cost of the Civil War," in *The Economic Impact of the American Civil War,* ed. Ralph Andreano (Cambridge, MA: Schenkman Publishing Co., 1962), 70 and Milton Friedman and and Anna J. Schwartz, *A Monetary History of the United States 1867-196.*(Princeton: Princeton University Press, 1963), 62.

19. For the duration of the war, there were three organized gold markets, in addition to the New York Stock Exchange itself, as well as the regular reports in the financial columns of the daily papers, and several financial journals. Gold is used here as an example (albeit a very crucial one) of a secondary money because of its historical prominence and because of a well-defined market showing its changing relationship to paper money; the overall theoretical points might just as well have been illustrated with specie if there were a greater availability of empirical data.

20. A similar argument is made for the case of stock market equity in Armen Alchian and Ben Klein, "On A Correct Measure of Inflation," *Journal of Money, Credit and Banking* 5, no. 1 (February 1973).

21. Mitchell, *A History of Greenbacks*, 77.

22. Section one of the Legal Tender Act provided that holders of legal tender notes were exchangeable