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Henry Simons and the Quantity Theory of Money

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Abstract

Henry Simons is one of the most puzzling figures in the history of monetary economics. He was the founder of the Chicago School of monetary economics. Indeed, George Stigler dubbed him the “Crown Prince” of Chicago economics. He was an advocate of the quantity theory of money, and helped preserve it in the 1930s and 1940s when it was under attack. Yet he held many positions that are almost the exact opposite of what can be thought of as Chicago positions on monetary economics. He favored a long list of restrictions on the financial system, he thought that Federal debt management (changing the maturity structure of the federal debt) was a powerful instrument of stabilization policy, and most surprising of all, he thought that federal deficits could relieve the depression, and that Federal Reserve open market operations could not. Here I show that all of these paradoxical positions flowed logically from the unique version of the quantity theory with which he worked. Unraveling the Simons paradox is worthwhile simply as an exercise in the history of monetary thought. But I also argue that Simons's framework allowed him to anticipate a number of recent developments in monetary economics, suggesting that his approach may still provide a useful way of thinking about monetary phenomena.

I. The Simons Paradox¹

Henry Simons was one of the most influential monetary economists of the twentieth century. He was the leader of the Chicago School of monetary economics during its formative years. Textbooks on money and banking still discuss his famous proposal for 100 percent reserve banking, the grandfather of current proposals for narrow banking. And his essay "Rules vs. Authorities" (Simons 1948 [1936]) has had a permanent influence on the way economists think about monetary institutions.

Yet many of Simons's positions remain puzzling, especially because they come from a founder of the Chicago school of monetary economics. Simons was an early and enthusiastic supporter of Keynes who believed that fiscal policy could, and monetary policy could not, end a depression. He believed that federal debt management policies had important macroeconomic consequences, and he advocated placing severe legal restrictions on the market for public debt. He also favored a long list of restrictions on private financial markets. His approach to monetary economics differed fundamentally, to say the least, from the approach of his most famous student, Milton Friedman.

Friedman (1969), Patinkin (1972), Laidler (1993) and Steindl (1990, 1995) depict Simons as a user of the standard quantity theory of the day -- as developed by Fisher, Hawtrey, Currie, Warburton, and other contemporary theorists -- but as a quantity theorist who emphasized the instability of velocity. This picture of Simons, however, only adds to the sense of paradox. It is consistent with his advocacy of monetary rules. But it fails to explain his enthusiasm for bond

financed federal deficits, his disparagement of “mere” central bank policies, his concern with federal debt management (the maturity structure of the federal debt), and many of his other policy proposals.

Recent papers on the origins of the Chicago school of monetary economics have done much to clarify the origins of the modern quantity theory, but have also sharpened the sense of paradox. On the one hand, Laidler (1993) has shown that Ralf Hawtrey, Lauchlin Currie, and several economists at Harvard held essentially the monetarist interpretation of the Depression later developed in detail by Friedman and Schwartz in *A Monetary History*. The Great Depression, according to this view, was not inevitable. It could have been prevented, or at least greatly ameliorated, by Federal Reserve Open Market operations. Increased government spending financed by bond issues, on the other hand, was neither necessary nor sufficient to cure the Depression. Friedman and Schwartz laid out the argument in more detail, and with better data, but the basic policy conclusions are the same as in the earlier work.

On the other hand, George S. Tavlas (1997) has shown that the Chicago economists of the Depression era, while agreeing that the Depression was not inevitable, held exactly the opposite views about monetary and fiscal policy. They believed that Federal Reserve Open Market operations were neither necessary nor sufficient to end the Depression. But, they believed that bond financed federal deficits could have prevented, or at least greatly ameliorated, the Depression.

Some of the Chicago economists, such as Paul Douglas, drew on underconsumptionist theories. But Simons, who I will focus upon here, viewed himself as a quantity theorist, and yet he argued that monetary policy as conventionally defined could not, and fiscal policy could, end the

Depression. Simons (1948 [1942], 190) was especially at pains to distinguish himself from Hawtrey, although Laidler identifies Hawtrey as a precursor of Friedman. Simons described Hawtrey as an advocate "of mere central-bank action." Simons placed himself among those economists who thought, "central-bank action is a feeble, inadequate, and anomalous implementation of monetary policy." The question is how do we reconcile adherence to the quantity theory with the belief that only fiscal policy matters. We can put the question still more sharply by quoting Simons. (1938, 222).

Once a deflation has gotten under way, in a large modern economy, there is no significant limit which the decline in prices and employment cannot exceed, if the central government fails to use its fiscal powers generously and deliberately to stop the decline. Only great government deficits can check the hoarding of lawful money and the destruction of money substitutes once a general movement is under way. While the technical limits of cumulative movements are more nearly significant in the case of upswings or booms, the proper checks in this direction also are to be found in the taxing, borrowing and spending activities of the national government.²

In other words, how do we explain the fact that the founder of the Chicago School of Monetary Economics was a Keynesian?!³

One possible answer to the Simons paradox is that Simons thought that federal government borrowing was necessary to create debt that the Federal Reserve could buy. Monetary policy was the ultimate determinate of GDP, but fiscal policy was a necessary intermediary. This argument, however, won't work for two reasons. First, there was there was a substantial amount of debt in private hands on the eve of the Depression, about \$15.4 billion. The stock of high-powered money was only \$7.0 billion in December 1929. The Federal Reserve, evidently, could have more than tripled the monetary base by monetizing the existing debt. Whatever the legal restraints on Federal Reserve actions, it could easily have gotten them changed by asking Congress for a change in the

law. The Federal Reserve did not lack for something to buy. Second, if Simons had thought that federal deficits merely created a necessary vehicle for open market operations, he would have said so, and he never did. He was not shy about expressing himself in plain English.

The resolution to the Simons paradox, I believe, is simple, but nevertheless easy to miss. In his mature writings Simons adhered to an unusual definition of money that included a wide array of assets of varying degrees of moneyness. He believed that most forms of debt (whether privately or publicly issued) were, to some degree, money. From this Simons drew the conclusion, to take one of his most puzzling positions, that bond financed federal government deficits would alleviate the depression because they money, or at least “93 percent” money. Open market operations would be relatively weak because, at best, they merely replaced assets that were 93 percent money with assets that were 100 percent money. This solution to the Simons paradox raises a host of questions, concerning second round effects, the money multiplier, other instruments of monetary policy, and so on. But I will postpone answering them until I have developed his analytic framework in more detail, and shown that it can make sense of his proposals for reform.

II. Simons’s Version of the Quantity Theory

Simons thinking about monetary economics evolved rapidly as he turned his mind to it in the early 1930s. Initially he worked with a standard version of the quantity theory, such as the following.

$$(1) \quad M = kPy$$

where M is money, defined as currency plus deposits, k is the usual Cambridge k, P is the price

level, and y is real output. But by the time he wrote “Rules vs. Authorities” (1948 [1936]) he was working with a much broader definition of money. His mature version of the quantity theory could be written as follows.

$$(2) \quad C + \beta_1 D + \beta_2 S + \beta_3 TB + \beta_4 TN + \beta_5 TB + \beta_6 CP + \beta_7 CL + \beta_8 CB + \dots = kPy$$

Where C is currency, D is demand deposits, S is savings deposit, TB is treasury bills, TN is treasury notes, TB is treasury bonds, CP is commercial paper, CL is call loans, and CB is corporate bond.

The β 's are coefficients representing the moneyness of assets (a number between 0 and 1, with $\beta = 1$ for cash). The β 's tell us, in other words, how much a particular asset is like currency. Simons referred to an asset's β as its "degree of effective circulation."

The assets are ordered so that the β 's decline from left to right.⁴ I have tried (on the basis of comments in Simons's writing) to order assets in the way that Simons did, but I cannot be sure that my ordering is precisely what Simons would have come up with had he decided to make his framework explicit. Indeed, one reason why Simons did not make his model explicit may have been the belief that the set of assets influencing aggregate spending was so extensive, and shifted so violently over time, that any attempt to write out an explicit equation would be misleading.

All of the assets are promises to pay amounts fixed in nominal terms and are relatively short-term. Equities and very long-term bonds, a consol being the extreme case, are excluded. In principle even these assets warrant a place on the monetary continuum. They lie so far away from cash (their β 's are so low) that for many purposes their moneyness can be ignored.⁵ Other assets, however, might be included, hence the ellipsis at the end of the left-hand side of (2).

One way of describing Simons's framework is to say that he defined money as a weighted

aggregate of a large set of assets with weights that varied over time. In his policy writings, of course, Simons did not use the word "money" to refer the sum on the left-hand side of (2). This would have been confusing given contemporary usage. Instead, Simons used other terms -- near moneys, substitute moneys, practical moneys, even ersatz moneys -- to refer to the exotic items in the left-hand side of equation (2). There is evidently a striking parallel between Simons's work in monetary economics, which insists on a very broad definition of money, and his work in public finance, which insists on a very broad definition of income.

Simons, of course, was not unique in defining money as a weighted average. This approach to the definition of money has a long history, and is currently the subject of much research by economists exploring Divisia indexes.⁶ Indeed, Irving Fisher's approach to the Quantity Theory can be viewed in these terms, a subject I will turn to below when I explore his influence on Simons. But behind the equivalence at the formal level, there is a major difference between Simons's approach and that of other proponents of weighted-average definitions of money. Typically, it is assumed that the properties of an asset that determine its moneyness are more or less permanent and identifiable characteristics -- interest rates, service charges, and so on. Simons believed that the moneyness of assets was a matter of opinion and tended to vary with economic circumstances. This comes out in a striking way in the exchange with Fisher discussed in section IV.

The conventional interpretation of Simons's analytic framework, I should note, is based on the "Appendix on Banking and Business Cycles" in Simons (1933).⁷ This document presents a standard quantity-theory interpretation of the Depression (based on equation 1) stressing the cumulative contraction of commercial bank lending and deposits, and the associated fall in velocity.

There is no mention of the ubiquity of money that was at the heart of Simons's later policy proposals. But as I suggested above, Simons was thinking intensively about money in the early thirties and his views were evolving rapidly. The policy proposals in his famous essay "Rules vs. Authorities" (1948 [1936]) and later essays reflect a different understanding of the quantity theory.

The evidence that equation (2) describes Simons's framework consists of two types. First, I show (in the next section) that the expanded version of the quantity theory explains Simons's puzzling policy proposals. Second, I discuss (in section IV) a number of passages in Simons's writings that are verbal statements of equation (2), and the "smoking gun," a revealing exchange of letters with Irving Fisher.

III. Simons on Monetary and Fiscal Policy

Simons's policy proposals were aimed mainly at alleviating the Depression and making sure that it would never happen again. He also became concerned, in the late 1930s and early 1940s, with the danger that current policies although aimed at alleviating the depression, or financing the war, were setting the stage for a future inflationary crisis. In "A Positive Program for Laissez Faire..." published in 1934, Simons (1948 [1934], 54) explained the Depression along traditional monetarist lines.

We should characterize as insane a governmental policy of alternately expanding rapidly and contracting precipitously the quantity of paper currency in circulation ... Yet that is essentially the kind of monetary policy which actually obtains, by virtue of usurpation by private institutions (deposit banks) of the basic state function of providing the medium of circulation (and private "cash" reserves). It is no exaggeration to say that the major proximate factor in the present crisis is commercial banking.

A bit further on in the same essay (1948 [1934], 74) he restated this point and emphasized the role of sticky costs.

The depression is essentially a problem (1) of relative inflexibility in those price which largely determine costs and (2) of contraction in the volume and velocity of effective money.

Simons, at that time, was implicitly using equation (1), although distinguishing between the moneyness of currency and deposits. The Depression had occurred because deposits and velocity ($1/k$) had declined, depressing spending, and because prices had fallen faster than costs, assuring that part of the decline in spending would be absorbed by real output.⁸

In "Hansen on Fiscal Policy," we find Simons (1948 [1942], 199) mature view of the monetary history of the twenties and thirties.

...proceeding without policy, we did avoid intolerable money shortage by recourse to a mass of *ersatz* moneys which could function only while the illusion persisted that they were really convertible into the real thing. In other words, we evaded long-term deflation by continuously courting deflation catastrophe.

Equation (2) now better represents his views. The long list of assets on the left-hand side of (2) include these ersatz monies. And ersatz moneys functioned only as long as the *illusion* persisted that they were convertible into cash. Decreases in the evaluation of their ability to substitute for cash, in other words decreases in the β 's in equation (2), depressed spending.⁹

The adjustment process set in motion by the perception that the liquidity of near moneys had declined was, according Simons, extremely damaging because it created a scramble for cash. Short-term loans were not renewed, or when possible, called in, forcing borrowers to cut back planned spending or to engage in a fire sale of assets to come up with cash. Banks, of course, were a

prime example of short-term borrowers scrambling for cash and as a result engaging in the "forced liquidation" of their assets. The solution (to be adopted in lieu of more fundamental reforms) was to restrict banks to long-term investments, thus freeing them from the "illusion of liquidity" inherent in short-term lending (Simons 1948 [1936], 328). Thus, Simons anticipated Bernanke (1983) and subsequent writers influenced by him, who stress the deterioration in the credit-intermediating role of banks in the Depression.

Simons's proposals for monetary reform followed directly from his determination to prevent a repetition of the Great Depression and his enlarged view of the quantity theory. I will begin with what today would be regarded as a minor tool of economic policy, the Treasury's decisions with respect to the maturity structure of the federal debt. I begin with debt policy because it is the simplest and clearest example of how Simons moved from his analytic framework to his policy recommendations. His discussion of debt policy while it follows directly from the interpretation of Simons developed here, makes little sense under the standard interpretation.

A. Reading "On Debt Policy"

Simons (1948 [1944], 220-30), unlike today's macroeconomists, viewed debt management (altering the term structure of the federal debt) as a powerful policy instrument. The reason is evident when we examine equation (2): A pure swap of one form of government debt for another would directly alter the amount of money. If the Treasury converted say, Treasury Notes (TN) into Treasury Bills (TB), it would be converting β_4 assets into β_3 assets, thus increasing the amount of money, and producing an expansionary impact on the economy. The opposite conversion, from TB to TN, would lower the amount of money in the economy, producing a contractionary effect.

Simons did not follow up this analysis with advice to the Treasury to use debt management wisely. It was all too likely that the Treasury would end up deceiving the public about its real intentions, and confusing itself. Instead, he argued that debt management should be simplified by eliminating all maturities other than cash or consols.

Since consols would normally pay a higher interest rate than shorter maturities, the interest on the debt (or the proportion of the debt that people conventionally considered debt) would be at the highest possible level. Hence, his paradoxical conclusion that the government should aim at the highest possible level of interest on its debt.¹⁰

What proportion of intermediate-term debt should be converted into consols and what proportion into currency? The government, according to Simons, should proceed experimentally, guided by the goal of price-level stability. If too much intermediate-term debt were being converted into consols, the left-hand side of equation (2) would fall, producing deflation. If too much intermediate-term debt were being converted into currency, the left-hand side of equation (2) would rise, producing inflation.

B. Reading “Rules vs. Authorities”

Converting the Federal Debt into cash and consols was only one small part of the much larger set of reforms that Simons advocated. The full set is laid out in his famous paper “Rules vs. Authorities” (Simons 1948 [1936], 160-183). One of the basic morals of the essay, that it is better to bind monetary authorities with rules than to permit them to use their discretion, is widely understood, and I will not repeat the argument here. Many other sections, however, remain obscure

until they are read through the lens of Simons's version of the quantity theory. Another source of confusion is that Simons discussed several second best cases – optimal monetary policy in the absence of reform, or with only the reform of the federal debt – as well as optimal monetary policy given an optimal reform of the system.

The Best Rule for Monetary Policy in the Absence of Reform

Simons argued that the best rule for monetary policy, in the absence of reform of the financial system, was price stability. The reason appears in what may be the most frequently quoted passage in all of Simons's work. (1948 [1936], 164).

The fixing of the quantity of circulating media might merely serve to increase the perverse variability in the amount of "near-moneys" and in the degree of their general acceptability, just as the restrictions on the issue of bank notes presumably served to hasten the development of deposit (checking-account) banking.

Although the passage is quoted frequently, the crucial phrase, "and in the degree of their general acceptability," has escaped comment. Nevertheless, it is crucial. If each asset possessed a fixed "degree of general acceptability" then the monetary authority could estimate them -- in other words, estimate the β 's in equation (2) -- and measure the stock of money. A rule based on the weighted-average stock of money would work. But if the "degree of their general acceptability" varies over time, then all hope of removing discretion by formulating a rule for "money" would be lost. The problem would be compounded if, from time to time, new near moneys arrived on the scene.

Thus, in a second best world in which no fundamental changes were made in the financial system, price level stability was by default, the better choice. This rule involved many difficulties, including the problem of accountability and the problem of political pressures on the agency

defining the price level. But these problems, especially the latter, were more tractable than the problem of defining money when there were many monetary assets and the "degree of their general acceptability" could change.¹¹

Reform of the Public Finances

Simons, as I noted in section III.A, argued that the public debt should be converted into currency and consols. A simplification of the debt would make it easier for both the government and the public to think through the consequences of debt policies and avoid mistakes. Attempts to lower interest rates on the debt by converting medium-term securities into short-term maturities, for example, would not inadvertently produce inflation, and the issue of medium term maturities would not create inflationary pressures that would build as the term to maturity of the outstanding bonds shrank.

Once this reform was accomplished, there would be no need for an independent central bank. The ability to implement monetary policy would reside in the Treasury. When faced with a deficit, the Treasury would make a simple decision, either to borrow money (issue consols) or create new money (issue cash).¹²

In "Hansen on Fiscal Policy" Simons (1948 [1942]) develops this point by arguing that the "great task of a monetary authority is simply that of advising Congress..." Patinkin (1979, 230) finds this paragraph "obscure." But I believe its meaning is clear once we view it through Simons's underlying model. A rule of price stability in a growing economy will imply, normally, an increase in the supply of money. This would be carried out by the Treasury, which would decide what

proportion of the deficit should be financed by issuing cash and what proportion by consols. The "monetary authority" would then be simply a group of experts who advised the Treasury on what that proportion should be. Simons (1948 [1942], 206) thought that once the system was up and running:

It might be unnecessary for the authority to take any overt action beyond that of giving publicity to index movements and some advance notice of its recommendations.

Although partial reforms -- the simplification of the debt, the replacement of the independent central bank by a monetary authority that advised the Treasury, and the adoption of a price level rule -- would go a long way toward achieving monetary stability, they still fell short of the comprehensive reforms needed to insure that the Great Depression never happened again.

Comprehensive Reform

Simons, if he had his way, would have gone even further. His complete list of legal restrictions necessary to create a "financial good society," including his famous proposal for 100 percent reserve banking, followed directly from his version of the quantity theory. Surely few economists pondering equation (2), however, would have been able or willing to make the radical intellectual leaps that Simons made. He called for the elimination or regulation of all of the terms in equation (2) beyond cash.

We can set these reforms out as a series of tasks to be accomplished by Congress.

(i) Eliminate Treasury Bills (TB), Treasury Notes (TN), and Treasury Bonds (TB). All debt issued by the government would be in the form of cash or consols.

(ii) Eliminate commercial paper (CP) and all similar forms of near money issued by

private nonbank corporations. Even financing by issuing long-term bonds should be eliminated, because long-term bonds tend to become liquid as their term to maturity shortens.

This reform would leave the financial system still short of the "unattainable" ideal of eliminating all "fixed money contracts" and thus eliminating completely the possibility of creating "effective money substitutes" or of forcing "wholesale liquidations" (Simons 1948 [1936], 165). Writing equity-only finance into corporate charters would eliminate commercial paper and longer-term corporate debt. Corporate charters traditionally include a variety of restrictions -- on the lines of business that can be engaged in, on the form of governance, and the types of liabilities that can be created, and so on. Simons evidently believed that modifying corporate charters to eliminate fixed money contracts would be a relatively easy addition, in the atmosphere of the 1930s. Going further and eliminating all fixed-money contracts would mean interfering with contracts between individuals (as opposed to corporations and individuals), and would raise serious legal and philosophical objections.

(iii) Impose a 100 percent reserves reserve requirement on banks. This would have two effects. First, it would make the sum of deposits and currency held by the public equal to the total amount of currency outstanding, what would later be called high-powered money. In addition, 100 percent reserves would ensure that $\beta_2 = 1$, even during recessions, because the public would never have any concerns about the availability of cash.

Reforms (i) through (iii) would reduce the quantity equation from (2) to

$$(3) C^* = C + D = kPy,$$

where C^* is cash issued by the government, the sum of currency held by the public (C) and currency

held by the banks and therefore equal to deposits (D).

Once this version of the financial good society was reached, a monetary rule could be imposed -- the best of all possible rules, in the best of all possible worlds -- freeze C^* . This rule would have two very desirable properties. First, it would be so simple and easily understood that a new "religion of money," analogous to the religion of the gold standard, could develop around the idea that the government should never alter C^* . Second, with C^* frozen, and with k stable -- remember that most changes in k as conventionally measured, were due to changes in the β 's in equation (2) or to hoarding due to bank panics, both eliminated by the financial reforms -- prices would fall at about the same rate that real income rose, thus distributing widely the benefits of economic growth.¹³

This last point was important to Simons because he believed that some factor prices, especially some wages, were sticky. If prices fell as real income rose, then workers who could not change their nominal wages would benefit from the general increase in productivity brought about by scientific and technical progress. If a rule of stable prices was followed -- meaning in the Financial Good Society that C^* would grow at the same rate as real income (assuming no secular changes in k) -- then the benefit of a general increase in productivity could be obtained only by negotiating a higher nominal wage. A minister who was too shy to press his congregation for a salary increase would benefit from economic progress under a rule of frozen money but not under a rule of frozen prices.¹⁴

In retrospect it is easy to view Simons's Financial Good Society as a crank proposal. In the short-run it would have involved many serious, but perhaps solvable transition problems (Hart

1951, [1935]). In the long run it would have prohibited a wide range of mutually beneficial transactions between borrowers and lenders, and acted as a break on the accumulation and effective allocation of capital. We are fortunate that his plan was never adopted. But we are also fortunate that Simons followed his position to its logical conclusion because his views greatly stimulated the discussion of monetary economics. Simons's proposals, as outlandish as they may seem now, were not the result of logical mistakes. His proposals reflected the incorporation of plausible, although, I would judge, mistaken assumptions about empirical magnitudes, into a sound analytic framework.

C. Simons the Keynesian

The presence of treasury securities in equation (2) explains how Simons could draw Keynesian policy conclusions from the quantity theory. For Simons it mattered little whether the government issued currency, Treasury bills, Treasury notes, or even Treasury bonds. All were money, or close substitutes for it; all entered the left-hand side of equation (2), and thus all had an expansionary impact. To be sure, issuing currency (bonds with a maturity of zero) might be the most efficient in a deflationary emergency.¹⁵ But for every issue of currency there would be a slightly larger issue of longer-term government debt that would have the same impact. Action by the monetary authority was not needed to make a deficit expansionary. Only if the government issued consols would the expansionary effect of deficits be zero, or close to it.

The identity between monetarism, as Simons conceived it, and Keynesian economics meant that the labels could be used interchangeably. In reviewing Alvin Hansen's book Fiscal Policy and Business Cycles Simons (1948 [1942], 189) wrote that "Hansen, as judged by his policy proposals,

is the extreme advocate of monetary explanation."

Skidelsky (1992, 393) has claimed that although Chicago economists favored deficit spending in the early 1930s they lacked the concept of a multiplier, and so, presumably, could not make as persuasive a case for deficit spending as Keynes made in the *General Theory*. Here we see that Simons, by interpreting a deficit as an increase in money, could use velocity in the same way Keynes used the multiplier, to argue that a deficit would lead to a much larger increase in national income. The multiplier for an increase in government financed by treasury notes would be (from equation 2) simply (β_4/k) .

Simons's Keynesianism also embraced the belief that changes in the structure of the tax system (holding both expenditures and revenues constant) could stimulate or depress the economy, (Simons 1938, 23n). Increased progressivity of the tax system -- which Simons thought was a good thing on normative grounds -- would shift income from taxpayers with a high propensity to save to taxpayers with a low propensity to save. If higher savings were correlated with larger money holdings, then the effect of increased progressivity would be to reduce savings and the demand for money (increase velocity).

There is nothing inevitable about the correlation between savings and velocity. It is conceivable that taxpayers in higher income groups will spend a higher fraction of their income on savings and yet a smaller fraction on money balances. Much would depend on whether non-monetary vehicles for savings paid attractive interest rates. But Simons believed that in a Depression, when rates on non-monetary assets were unusually low, the correlation between savings and money demand would be positive; an increase in the progressivity would therefore be

expansionary. He did not, however, advocate using changes in taxes to achieve monetary goals. Changing the structure of the tax system would affect an array of other important objectives. Financial reforms and monetary rules would be a better way to achieve macro stability.

Although Simons was a staunch supporter of Keynesian policies in the early 1930s, he became a staunch critic of Keynesian economics as it was developed by some of Keynes's disciples in the late 1930s. The problem with late-1930s Keynesianism, as Simons saw it, was its emphasis on secular deficits. "Injection of money, within limits," he wrote, referring to fiscal deficits in a Depression (1948, 196), "is like putting fuel in the furnace; borrowing, like accumulating dynamite in the basement, with explosion risk growing as the pile accumulates."

Why did borrowing, by which Simons meant issuing very long-dated bonds or consols, resemble accumulating dynamite in the basement? In the short run the stimulative effect of borrowing would be small or negligible because long dated bonds enter equation (2) with very low β 's. In the long run, however, long-dated bonds and consols hold out the risk of an inflation explosion. One reason is technical. Although long dated bonds, say 20 or 30 years, enter the left-hand side of equation (2) with very low β s, their term to maturity gradually shortens -- 20 year bonds become 19 year bonds and then 18 year bonds, and so on. As their maturity shortens, their liquidity increases (β_5 bonds become β_4 bonds, and then β_3 bonds, and so on) creating inflationary pressures. The government could avoid this trap by rolling over long-term bonds, or by issuing consols. But there was another problem that could not be solved so easily. Continuous deficits meant that the debt might grow relative to GDP. Sooner or later bondholders would lose confidence in the ability of the government to meet interest payments. Interest rates on government debt would

skyrocket. At some point only currency issues would avoid default. Keynesian economics, pursued according to Hansen's directives, built into the financial system the potential for inflationary disasters analogous to the deflationary disasters of the early 1930s. It all added up to what would later be called "unpleasant monetarist arithmetic." Sargent and Wallace (1994 [1981]), Woodford (1996). This is one illustration of the point made by Davis (1968, 481) that Chicago economists in general in the 1930s did not object to Keynesian economics when it called for deficits during recessions; they objected when the conclusion was the need for secular deficits.

Granted, given Simons's framework, a fiscal deficit would be expansionary, even when the money supply, as conventionally measured by M1 or M2 was unchanged. But why was it that only government deficits could reverse a major depression? Why couldn't the second order gains in liquidity from Federal Reserve actions be sufficient?¹⁶

First, it's important to distinguish between discount policy, and open market operations. Simons was extremely skeptical about the effectiveness of discount policy. During the early 1930s banks made relatively little use of the opportunity to borrow from the Federal Reserve. Partly the infrequent use of the discount window was the result of the Federal Reserve's long-standing policy of discouraging borrowing. Borrowing was constrained too, by the belief held by the banks that depositors would interpret borrowing as a sign of weakness. When it needed cash the individual bank preferred to liquidate securities or loans.

Open market operations would be most effective (in the first round) when they replaced long-term bonds or consols with cash. Longer-term government debt existed in the early 1930s, but the net effect of monetizing it still would have been small, given Simons's intuitions about the

moneyiness of various forms of government debt. Of the \$15.4 billion of Federal debt that was in private hands about 17 percent would mature within five years, 56 percent within 10 years, and 82 percent within 20 years.¹⁷ Moreover, 51 percent of the debt was callable within 5 years. Simons (1948 [1942], 227) argued that call provisions increased the moneyiness of bonds because they created the expectation that the bond would be converted into cash if short-term rates turned out to be lower than expected. Thus, only a small proportion of the federal debt consisted of the very long-term-non-callable debt that Simons thought would maximize the leverage of open market operations.

Granted that the first round effects of central bank purchases of securities would be small, wouldn't the subsequent expansion of deposits stimulate the economy?¹⁸ First, we have to consider the position of the banks. Since they would regard government bonds and cash as close substitutes, a change in the composition of their holdings of these assets might not produce a dramatic effect on their lending. Second, even if banks maintained stable cash reserve ratios, the multiplier effects of open-market operations might not offset the decline in the liquidity of the deposit liabilities of the banks.

Open-market purchases replace a given quantity of government securities with a hopefully larger mix of deposits and currency. If the average liquidity of deposits is low during a deep depression because of bank failures (a low β_1 and β_2 in equation 2) while the liquidity of government securities is high (a high β_3 in equation 2), then the liquidity generated by the new mix of currency and deposits could be lower than the liquidity of the treasury securities displaced.

We can see the potential magnitudes involved by looking at the money multiplier in the

depths of the depression. Define “c” to be the ratio of currency held by the public to demand deposits and savings deposits held by the public. Define “r” to be the ratio of cash held by banks (reserves) to demand deposits and savings deposits held by the public. Assume to simplify things, that the β on demand deposits and the β on savings deposits are the same and equal to β_1 . Then the multiplier on an open market purchase of Treasury Bills, the ratio of the change in money (dM) to the change in high-powered money (dH), would be the right hand side of (4).

$$(4) \text{ dM/dH} = (c + \beta_1)/(c + r) - \beta_3$$

At the high point in March 1933 the currency ratio, c, stood at .23, and the reserve ratio, r, was .12.

If

β_1 was 1.00 and β_3 was 0.00 (the conventional assumptions) the multiplier (the right hand side of 4) would be 4.24, revealing plenty of scope for effective open market operations. Reverse the assumptions, however -- make β_1 equal 0.00 (deposits cease to be regarded as money) and β_3 equal 1 (treasury bills are virtually cash) -- and the multiplier would be -.35. Open market operations would be totally ineffective. These assumptions are extreme. Most economists would be inclined, I believe, to place intermediate values on the β 's, if they were willing to concede at all that the β 's had fallen. And at most intermediate values the multiplier would be positive. For example, if β_1 was .5 and β_3 was .5 the multiplier would have been 1.61, leaving some scope for effective open market operations.

The net effect of a change in the monetary base in the extreme case, in terms of conventional definitions of money (M1 and the corresponding velocity V1), would be a larger money supply and a correspondingly lower velocity. Thus, implicit in Simons's view of the

Depression was a liquidity trap similar to, but distinct from, Keynes's.

IV. Some Evidence: An Exchange of Letters with Irving Fisher

Passages that can be given mathematical form along the lines of equation (2) occur throughout Simons's later writings. In "Rules vs. Authorities," for example, Simons (1948 [1936], 326) insists on the infeasible nature of reforms that depend on a sharp distinction between circulating media and "non-circulating near moneys," listing "time deposits, savings accounts, treasury bills, and commercial paper of large corporations," as examples of near moneys. And in referring to private debts in general, Simons (1948 [1936], 327) notes, "They come close to the money category, or become significant as money substitutes, only as they approach maturity...", and he adds that "these distinctions obviously relate merely to differences of degree along a continuous scale." Surveying the wide range of debt maturities issued by the Federal government Simons (1948 [1944], 221) concluded that the government was issuing "moneys, practically moneys, and near moneys under other names." Simons's insistence on the importance of near moneys comes out again in his review (1935) of Lauchlin Currie's *The Supply and Control of Money in the United States*.¹⁹ To cite one key passage from the review:

We must see that there is little difference between demand deposits and savings accounts, and that all institutional borrowing and lending at short term presents the same problems and anomalies as does deposit banking.

The "smoking gun," appears in a letter to Irving Fisher dated July 4, 1934.²⁰ This statement shows not only that Simons insisted on including a long list of assets in equation (2), but also that Simons believed the β 's on some of the exotic assets in equation (2) were ordinarily close to one.

Much is gained by our coming to regard demand deposits as virtually equivalent to

cash; but the main point is likely to be lost if we fail to recognize that savings-deposits, treasury certificates, and even commercial paper are almost as close to demand deposits as are demand deposits to legal tender currency.

Fisher strongly rejected this claim. His reply throws into sharp relief the difference between not only Simons and Fisher, but also the difference between Simons and many subsequent quantity theorists.

It seems to me quite preposterous to consider savings deposits on all fours, or very similar to, deposits subject to check. I feel sure that a statistical study will convince you of this if you will take the trouble to make it.

Fisher went on to explain that the payment of interest was the crucial dividing line: Assets that paid interest were not money. As evidence, he cited a case that has received renewed attention in recent years.²¹

I remember Professor Sumner impressing me, when I studied under him, with the attempt in the Civil War to circulate \$50 bonds bearing $7 \frac{3}{10}\%$ interest amounting to the exact figure of one cent per day, the idea being that this was so easy to calculate that these bonds would circulate as currency. But the very fact that they drew interest led to their being held and they were a flop as currency.

Fisher did not even bother to address Simons's claims that treasury certificates and commercial paper were also money. Today most monetary economists, I believe, would reject the claims that treasury certificates or commercial paper should be considered near monies. Yet in retrospect, Simons claim that savings deposits should be considered money has fared well, and Fisher's claims that savings deposits are not money, and that interest bearing assets cannot be money have fared badly.

Simons's interest in near moneys is hard to miss, and has been noted in passing by most of the writers who have examined his views, for example, Mints (1945, 220-222), Mints (1950, 122-

23, 203-05), McKean (1951), Friedman (1969), Patinkin (1972), Stein (1987), and Laidler (1993).

The reference that draws the most attention to Simons's emphasis on near moneys is McKean (1951, 66)

"... in elaborating the quantity theory of money, economists tended to obscure the other balance-sheet items and to focus attention on the influence of one particular asset -- money - - which had to be defined arbitrarily. Some -- Henry Thornton was one of the earliest, and Henry Simons one of the most persuasive -- sought further in the balance sheet for influences on the level of spending and emphasized that liquid assets other than those defined as money were near-moneys or money substitutes."

Indeed, McKean (1951, 83) believed that Simons "may have exaggerated the significance of near-moneys." The extent to which Simons's concern with near moneys pushed him in unique directions, however, has been missed.

V. Connections with Prior and Subsequent Monetary Theorists

Nowhere in his writings does Simons explicitly set out his analytic framework. Indeed, Simons must be unique among writers on monetary economics in never having published a single equation. His writings on money consist solely of his proposals for reform and his critiques of the proposals of others. Simons, moreover, does not cite the writings of other monetary economists, even in the articles published in professional journals.²² So it is hard to trace the origins of his ideas. His tragic early death, moreover, deprived us of the knowledge of what he would have made of subsequent developments in monetary economics. Nevertheless, it is possible, I believe, to make some good guesses about his connections to prior and subsequent writers.

A. Where did these Ideas come from?

One possible influence was Fisher. Simons's version of the quantity theory can be approached from Fisher's version, and it may be that this was the path that Simons followed.

Fisher's version of the quantity theory can be written as follows. (Fisher 1922, 48).²³

$$(5) CV_0 + DV_1 = Py$$

Where C is currency held by the public, D is demand deposits, P is the price level, y is real income, and V_0 and V_1 are the velocities of circulation.

Fisher regarded his equation as an extension of the traditional quantity theory because it shows bank deposits as well as money effecting the price level. Fisher did not consider deposits money because they were not generally acceptable, but he thought that they did influence the level of nominal income and hence should be included. By simply adding additional assets we can go from Fisher's equation to Simons's. Thus, a "Simonized" version of Fisher's equation could be written as

$$(6) CV_0 + DV_1 + SV_2 + TBV_3 + TNV_4 + CPV_5 + CLV_6 \dots = Py$$

where S is savings deposits, TB is treasury bills, TN is treasury notes, CP is commercial paper, CL is call loans, as in equation (2), and $V_2 \dots V_6$ are the corresponding velocities. If we divide through by V_0 , we have an equation in which each asset is weighted by its velocity relative to the velocity of currency.

$$(7) C + D(V_1/V_0) + S(V_2/V_0) + TB(V_3/V_0) + TN(V_4/V_0) + CP(V_5/V_0) + CL(V_6/V_0) \dots \\ = (1/V_0)Py$$

From this point of view it would be natural to describe the weights on each asset – (V_1/V_0) , (V_2/V_0) , and so on – as "degrees of effective circulation," that is as measures of how close assets was to

currency in terms of their ability to circulate.

Simons may also have been influenced by ideas encountered during his stay in Germany in 1928 (Stigler 1982, 166). The definition of money was widely discussed in Germany at the time, in a way that would have appealed to Simons's philosophical approach to economics. Simons's insistence that only government issued currency can truly be considered money appears to have much in common with the ideas of the "chartalists" such as George Friedrich Knapp, author of *The State Theory of Money*.²⁴

Finally, it is not hard to detect in much of Simons's writings the Populist sentiments that were so widely held and debated in the Midwest when he was growing up. *The Positive Program for Laissez Faire*, for example, contains lists of reforms – nationalization of monopolies, progressive income taxation, expansion and control of the money supply (Simons 1948 [1934], 57) – that bare a striking resemblance to the demands in the famous Populist "platforms," such as the Omaha Platform of 1892.²⁵

B. From Simons To Friedman

The difference between Simons and Friedman is their definition of money and, more fundamentally, what they believed to be the correct method for defining money. Simons did no quantitative research, and there is some evidence that he disdained some of those who did (Steindl 1995, 82), while Friedman based his definition of money on the accumulation of masses of quantitative data. Simons's attitude probably was the result of a number of factors. The similar attitude of Frank Knight, Simons's mentor at Chicago, undoubtedly played a role (Reder 1982, 6). Simons's belief that money is ubiquitous also discouraged empirical research. If one believes, as did

Simons, that money is created in all nominally defined contracts of shorter than infinite duration, and that the degree to which those assets are money changes over time, the task of estimating the stock of money would appear insoluble.

Empirical research, on the other hand, was a high priority for Friedman. By the time he turned to monetary economics, he had already compiled an outstanding record in empirical research and had worked closely with two of the leading practitioners: Henry Schultz and Simon Kuznets.

In the case of Friedman's monetary research, I believe, it was the influence of Henry Schultz that would prove the most influential. At first glance my reference to Schultz, whose magnum opus, The Theory and Measurement of Demand, consisted of a series of studies of the demand for agricultural products, may seem to be a strange choice as an influence on monetary economics. But it was Schultz's influence, I believe, that explains the particular brand of empirical analysis that separated Friedman from both Simons and the Keynesian school.²⁶

Friedman's essay "The Quantity Theory of Money -- A Restatement" can be read as an attempt to construct a framework for testing the quantity theory against Keynesian monetary economics by estimating demand curves for money analogous to Schultz's demand curves for agricultural products. On this reading, Schultz's decision to include only a few variables in the demand function for, say corn, including the price of corn and the prices of other cereals, becomes the basis of Friedman's decision to include in the demand function for money only a few variables including the own rate of return on money (for currency, the rate inflation) and the rates of return on bonds and equities. Just as Schultz is then able to use his estimates to evaluate the effects of New Deal agricultural policies, Friedman is able to use his estimates to evaluate the effect of alternative

monetary policies. Schultz assumes, to take another example that the demand for corn was relatively stable compared with the supply, so an ordinary least squares regression of quantity on price (or price on quantity) would reveal the demand curve for corn. Schultz's assumption is similar to the assumption, which Friedman identified with the Chicago monetary tradition, that the supply of money tends to vary greatly compared with demand: the demand for money also can be estimated by ordinary least squares.

This brings us to the comment by Friedman (1969, 84) that the differences between Simons and Friedman can be attributed to "A few facts that we now know, and that he did not." Simons, of course, was aware of the decline in the stock of money. Simons, as Patinkin (1979, 222-24) points out, was familiar with Lauchlin Curries's estimates of the stock of money, which show declines similar to those estimated by Friedman and Schwartz, with other sources of data, and with interpretations that blamed Federal Reserve policy for at least some of the damage.

In his list of the "facts that we now know" Friedman, however, does not include the simple fact that the stock of money fell. Instead, he stresses a number of more subtle empirical findings: (1) the dating of the period of monetary restraint to mid-1928, (2) the role of the Federal Reserve in producing the first phase of the monetary contraction, (3) the imposition by the Federal Reserve of a tight money policy after Britain left gold in 1931, and (4) the general conclusion (1969, 91) that "at all times throughout the 1929-33 contraction, alternative policies were available to the System by which it could have kept the stock of money from falling and indeed could have increased it at almost any desired rate." Friedman points, too, to other evidence uncovered by him and his students that preventable changes in the stock of money led changes in velocity.

All of these are, of course, facts that strengthen the case for the Friedman-Schwartz interpretation of the depression. But they do not fully address Simons's concerns. They do not explain, for example, why changes in the stock of money brought about by open-market operations can not halt the fall in total spending once a crisis was underway.

On my reading of Simons, the crucial evidence that would have made him abandon his defense of Keynesian fiscal policies in deep depressions and his advocacy of radical financial reforms would have been evidence -- much of it provided by Friedman and Schwartz (1970) -- that a simple sum of currency outside banks and deposits was an adequate definition of money. Had Simons been aware of the Friedman-Schwartz demonstration of the utility of a simple sum definition, he might have followed them in stressing the control of M2 as the key to recovery from the Depression and the avoidance of future Depressions. This conclusion, however, is far from certain. Simons stressed the tendency of the weights on monetary assets, "the degree of their general acceptability," to decline during a depression. That possibility was consistent with the evidence provided by Friedman and Schwartz that most of the time a simple-sum definition of money was adequate.²⁷ Simons also stressed that, in the absence of legal restrictions, financial innovation might undermine the effectiveness of a particular monetary rule. Thus, Simons might well have been among those economists who interpreted the decline in velocity in the early 1980s as a result of changes in the relevance of traditional measures of the money stock, and thus as evidence favoring a price level rule as opposed to a money growth rule.

Finally, I should emphasize that while subsequent Chicago economists have ignored or downplayed Simons's emphasis on near-monies, his more general point that central banks should be

bound by explicit rules, has strongly influenced each generation of Chicago economists.²⁸

VI. Can we Learn Anything Useful from Simons?

Henry Simons is one of the most puzzling figures in monetary economics. He was the dominant personality among the founders of the Chicago school of monetary economics. Indeed, he was as George Stigler (1982, 166) put it, the "Crown Prince" of Chicago economics. Yet he was a strong supporter of Keynesian economics in the early 1930s (although a critic of the stagnationist version that emerged in the late 1930s), and he advocated a wide range of legal restrictions on financial markets. His interpretation of the Great Depression, moreover, was almost the exact opposite of the interpretation developed by Friedman and Schwartz in *A Monetary History*.

These puzzles are resolved when we recognize that although Simons worked with the quantity theory, it was a quantity theory that included a wide range of near moneys (including most government securities), and which emphasized the time varying character of the moneyness of near moneys. Bond financed deficits, for example, were expansionary in Simons's view, even if monetary policy in terms of M1 or M2 was unchanged, simply because treasury securities were money, or as Simons put it, practically money.

Laidler (1993) is correct when he argues that from a long-run perspective Simons's major direct contribution to monetary thought was his emphasis on the distinction between rules and authority. Simons's version of the quantity theory played no direct role in the future development of the field. I would argue, however, that Simons's version of the quantity theory played an important indirect role by keeping the language of the quantity theory alive at Chicago. In the 1930s most

monetary economists outside Chicago lost confidence in the ability of central banks to influence the level of economic activity, at least in deep depressions. Only fiscal policy seemed to offer any hope. To most economists this meant abandoning the quantity theory in favor of the Keynesian income-expenditure approach. Simons, however, because he held to a version of the quantity theory that encompassed cases in which fiscal and debt management policies were effective and changes in narrowly defined monetary aggregates brought about with open market operations were not, saw no reason to abandon the quantity theory.

Language is important. Although economists who spoke in terms of $C+I+G$ might study the definition of money or the determinants of velocity, and sometimes did, they were more likely to study the consumption function or the determinants of investment. Economists who spoke in terms of MV might study the consumption function or the determinants of investment, and sometimes did, but they were more likely to study the definition of money or the determinants of velocity. The final irony is that, when Milton Friedman and his coworkers revived the quantity theory it was a quantity theory in the image sketched by Fisher, Currie, Hawtrey, Warburton, and other non-Chicago monetarists, rather than in the image sketched by Simons.

Granted, Simons is important in the history of economic thought. But is there any reason to take his ideas seriously today? Have not all of his valid ideas been incorporated into mainstream economics? I believe that Simons may still have something important to teach us. That Simons's framework led him to ascribe a major role to the asset side of bank balance sheets, anticipating recent research by Bernanke and others, is only one fact suggesting that there may still be gold in the mine. The notion that the moneyness of near moneys is, to some extent, a matter of the

consensus of the market place, a consensus that can change radically during short periods of times, is still worth pondering. Periods of rapid change, such as financial crises, wars, changes in the legal structure of financial institutions (for example deregulation) tend to surprise macroeconomic models. Taking the effects that Simons had in mind may help improve our understanding of these periods. Of course, to push our understanding forward would probably require the sort of empirical studies that Simons himself was unwilling to undertake.

The history of economic thought is not a high priority on the agenda of economists nowadays. If progress in economics were linear, if wrong ideas were always discarded and right ones incorporated into the mainstream of the discipline, the relegation of the history of thought to the fringes of the discipline might make some sense. We might be entitled to ignore Simons's theoretical machinery on the grounds that anything good in it must already be incorporated in modern economics. But if as seems to be the case, economics sometimes goes in circles, then an understanding of where we have been should be of more than antiquarian interest.

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Endnotes

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2. Evidence of this attitude recurs throughout his work. Perhaps the earliest statement occurs in an unpublished memorandum listed in the Simons papers as an "Unidentified Statement on Government Expenditure and Depression," Simons (n.d., 2). "If action is needed to raise prices (and we believe it is), it should take the form of generous federal expenditures, financed without increase of taxes on commodities or transactions."
3. Indeed, in discussions with Keynes in 1931 the Chicago economists were stronger advocates of deficit spending than was Keynes, who still thought that central bank led reductions in interest rates could reverse the slump. They were, as Skidelsky (1992, 392) put it, "more Keynesian than Keynes." The question is why they were so convinced that deficit spending would work. Simons, at least, as I show below, had a clear rationale.
4. The equation, as I have written it, does not distinguish gold coins from redeemable paper currency, since this distinction will not be needed to unravel the puzzles discussed below. But this is a logical extension (Simons 1948, 168). Devaluation, or going off gold altogether, would lower the moneyness of currency, and other gold substitutes, putting downward pressure on GNP.
5. Simons did believe, however, that ordinary corporate bonds were money substitutes, so only corporate bonds of very long term should be excluded. Simons (1945, 280).
6. Barnett, Fisher, and Serletis (1992) provided a good overview of the work on Divisia indexes. Research has continued apace, but I am not aware of a more recent survey of the field.
7. Milton Friedman (1969, 82, note 1) reports Aaron Director's recollection that the memorandum was written largely by Simons, and thus Friedman relies heavily on this document to infer Simons's views. Subsequent writers have followed Friedman. But Simons (1948, 163) refers to the ideas in the memorandum as reached by "a group, including the present writer, in connection with some tentative proposals for banking reform." This formula suggests that the views in the memorandum, even if written largely by Simons, probably expressed a consensus, and in any case, reflected an early stage in his thinking about the causes and cures for the Depression.
8. Sticky costs were the result, Simons believed, of monopolies such as labor unions and industrial cartels. This part of the story is what connects Simons's monetary analysis to his views on the organization of industry. See De Long (1990) for a recent exposition of Simons's views on industrial organization.

9. This interpretation of the depression is developed, in somewhat less flamboyant language, in Mints (1950, 122-23) where he cites accounts and notes receivable as examples of short-term debt whose perceived liquidity decreased during the depression. By way of evidence, he mentions, without a specific citation, a study of 25 businesses that decreased their holdings of accounts and notes receivable, and increased their holdings of cash.

10. As he pointed out, this rule does not work for call provisions. Call provisions tend to raise the yield to maturity, but Simons would eliminate call provisions along with all maturities between cash and consols.

11. Simons, in (1933, 12-14, and the supplementary memorandum, "long-time objectives of Monetary Management") argued against price level stabilization under the contemporary monetary regime. One concern is that price level stabilization normally requires a continuous increase in the stock of money, and that under fractional reserve banking that means that the banking sector will share (unfairly) in the seignorage. These ideas reflect an early stage in Simons's thinking.

12. Friedman (1953 [1948]) included restricting the debt issued to finance a federal deficit to money (in ordinary times) in his "A Monetary and Fiscal Framework for Economic Stability."

13. Friedman (1984) revived Simons's proposal to freeze highpowered money, and offered a similar rationale. Friedman, however, would combine the freeze on highpowered money with free banking, rather than with 100 percent reserves and other restrictions on the financial sector.

14. Simons was not original in advocating a "productivity norm." Similar rules were endorsed by many previous and contemporary economists including Newcomb, Marshall, Edgeworth, Hayek, and Robertson. Selgin (1990) is a recent and comprehensive restatement of the case for a productivity norm. What is original in Simons is the combination of the productivity norm with his other proposals.

15. Simons (n.d., 5-6) says that "Outright issue of Greenbacks - with provision for retirement as production, employment, price, and federal revenues increased - would probably be the easiest and wisest course. To indulge inflation in this most straightforward manner, is perhaps the best insurance against excessive indulgence."

16. There are institutional connections between the deficit and open-market operations. At the time that Simons wrote, the Federal Reserve collected the interest on the Federal debt it held, but paid a franchise tax on the interest. Under these arrangements an open-market purchase would leave the net position of the Treasury unchanged only if some other tax was reduced (or expenditure increased) to offset the increase in franchise-tax receipts.

17. The figure for total Federal Debt in private hands is from U.S. Board of Governors (1943, 512, table 149). The breakdown by maturity is from the same source (511, table 147) but is for total debt outstanding. The maturity structure of the debt in private hands might be slightly different. A more

important reservation is that the breakdown may be by maturity at time of issue, and may not reflect actual number of years remaining.

18. While the following argument is consistent with Simons's approach it is not clear that he ever fully thought through the implications of the relationship between open market operations and the multiplier process. Simons blamed fractional reserve banking for creating unwanted volatility in the stock of money. And he was aware of Chester A. Phillips's Bank Credit, which explained part of the process -- it was on his reading list at Chicago. But as Steindl (1995) has shown, Simons, like other monetarists who preceded Friedman and Schwartz, lacked a money supply model that could easily integrate his insights. In Steindl's view this was one of the key innovations of Friedman and Schwartz that made their analysis of the Depression much more persuasive than that of their monetarist predecessors.

19. Currie's definition of money corresponds roughly to Friedman and Schwartz's M1. There are, however, many differences in detail that lead to differences in cyclical timing. See Friedman and Schwartz (1970, 268-9).

20. The letter (Simons 1934) accompanied Simons's margin notes on Fisher's manuscript on 100 percent money (Fisher 1935).

21. See Gherity (1993) and Woodward (1995). White (1987) explains why currency is not normally interest-bearing.

22. This peculiarity does not extend to his writings on public finance which include numerous references to other writers.

23. I have modernized the right-hand side of Fisher's equation by replacing total transactions with total real income. This does not effect the subsequent analysis.

24. Cowen and Kroszner (1994, pp. Chapter 5) present a detailed account of the lively debates over the nature of money that Simons would have encountered.

25. Hicks (1931) is one of the classic histories of Populism.

26. Friedman served as Schultz's research assistant in 1934, and at several points in the text Schultz acknowledges Friedman's contribution to the project.

27. Timberlake and Forston (1967) regressed changes in nominal income on changes in M1 and time deposits and found that in the 1930s the weight on demand deposits was lower and the weight on time deposits higher, than in previous periods, and concluded, in a passage that Simons would have approved, that "demand deposits lost some of their moneyness due to the additional risk imputed to them by depositors."

28. It is unnecessary here to trace this idea forward in detail. I will note, however, that Mints (1950) one of the earliest postwar statements of the Chicago position emphasizes his obligation to Simons.