The Dog that Didn't Bark: The Curious Case of Lloyd Mints, Milton Friedman and the Emergence of Monetarism*

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ABSTRACT

Lloyd Mints has long been considered a peripheral figure in the development of monetary economics at the University of Chicago. We provide evidence showing that the standard assessment of Mints's standing in Chicago monetary economics -- and in American monetary economics more broadly -- is mistaken. In light of the originality and the breadth of his monetary contributions, and given the degree to which those contributions shaped part of Milton Friedman's monetary framework and were pushed forward by Friedman, we argue that, far from being a peripheral figure in the development of Chicago monetary economics, Mints played a catalytic role.

Keywords: Lloyd Mints, Milton Friedman, monetarism, Chicago monetary tradition.

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1. *Introduction*

Lloyd Mints has long been considered a peripheral figure in the development of monetary economics at the University of Chicago. Thus, although the literature on the development of Chicago monetary economics during the 1930s and 1940s has systematically assessed the relevance to later monetary thinking of the monetary writings of such Chicagoans as Henry Simons, Jacob Viner, Frank Knight, Paul Douglas, and Aaron Director, including their possible influences on Milton Friedman's monetarist framework, Mints's contributions have, by-and-large, been neglected.[1] In this paper, we provide evidence showing that the conventional assessment of Mints's standing in Chicago monetary economics -- and in American monetary economics more broadly -- is mistaken. We argue that, far from being a peripheral figure in the development of Chicago monetary economics, Mints, especially through the cross-fertilization of his thinking with that of Friedman in the late-1940s and early-1950s, played a catalytic role in the emerging Chicago monetarism of that period.

We show that Mints made important, original contributions that were later adopted and pushed forward by Friedman. In particular, Mints argued that: (i) exchange-rate volatility is not so much a function of the specific exchange-rate regime in place, as it is of the volatility of the underlying macroeconomic fundamentals; (ii) there is a frictional rate of unemployment that represents the lower bound of what monetary policy can achieve; a central bank that attempts to go below this rate is destined to bring about high and uncertain inflation, and a higher rate of unemployment -- that is, there is a positively-sloped Phillips curve going through the frictional rate of unemployment; and, (iii) discretionary monetary policies are the main culprit for macroeconomic instability due both to the uncertainty they create and the lags that characterize their effects. In addition, Mints built on the work of other economists in the areas of (i) the Federal Reserve's role in the Great Depression, (ii) the role of wealth effects in the transmission of monetary policy, (iii) the use of a portfolio-balance model of the demand for money, and (iv) the advantages of a money-supply growth rule.

Mints taught at Chicago from 1919 until his retirement in 1953, the longest

[1] The neglect of Mints's work is evidenced by the fact that there is no biographical information on him on any economics (including history of economics) websites; likewise, there is no collection of his writings or correspondence. A book on the Chicago School, edited by Emmett (2010), contains biographical articles on nineteen early Chicagoans, including Director, Douglas, Knight, Simons, and Viner, but not on Mints.

consecutive stretch of any of the earlier Chicagoans. Moreover, Mints specialized in monetary economics and taught the graduate course in money and banking at Chicago. Additionally, Mints's tenure at Chicago overlapped with both the early-1930s, the formative years of the Chicago monetary tradition, and with the years 1946 to 1953, which marked the formative period of Friedman's monetary thinking. Moreover, Mints published two major books -- *A History of Banking Theory*, in 1945, and *Monetary Policy for a Competitive Society*, in 1950. The former book became a standard reference in the literature on monetary doctrine and helped establish Mints's scholarly reputation within the profession while the latter book, reflecting that reputation, was reviewed, generally positively, by such notable economists as Harry Johnson (1951), Dennis Robertson (1951), and James Tobin (1951).

As indicated, however, discussions of Mints's monetary views, and their possible influence on Friedman's thinking, have been sparse. By-and-large, these studies (see Tavlas, 1977; McIvor, 1983; Steindl, 1995; Rockoff, 2010) have focused on Mints's criticisms of the Federal Reserve's policies during the Great Depression and the similarity of those criticisms with those of Friedman and Schwartz (1963)[2]. None of these studies provided a systematic analysis of Mint's original contributions, contained in his publications between 1945 and 1951; or, the interplay between Mints's contributions and the maturation of Friedman's monetary thinking during the late-1940s and early-1950s.

Why has Mints's work been neglected in studies on the Chicago monetary tradition? Two possible reasons are the following: First, previous studies focused mainly on the pre-*General Theory* (Keynes, 1936) period, 1927-35, a period during which Mints published only a single article, "The Elasticity of Bank Notes," in 1930 that bore essentially no relationship to the characteristics that would mark the Chicago monetary tradition. Second, and related to the first point, apart from occasional book reviews, primarily in the *JPE*, Mints did not publish *anything* between 1931 and 1945, the year his book, *A History of Banking Theory*, appeared. Following the publication of that book, however, Mints published several articles and his 1950 book; these works exhibited both a continuity with key aspects of the early-1930s Chicago monetary tradition as well as breaks with that tradition, with the breaks displaying clear

[2] Rockoff (2010, p. 97) noted that "it is possible that Mints's views on the role of the Federal Reserve in the Great Depression formed part of the background that shaped the narrative in *Monetary History* but his views … are not cited explicitly."

similarities to Friedman's emerging monetarist thinking. A third possible reason for the neglect of Mints's work is discussed in the concluding section of this paper.

This paper describes Mints's monetary views during the period 1945-51 and relates those views to both the Chicago monetary tradition of the early-1930s and Friedman's evolving views during the late-1940s and early-1950s. Section 2 provides a biographical sketch of Mints. Section 3 discusses the main characteristics of 1930s Chicago tradition. Section 4 begins with a brief presentation of Simons's views -- which had a substantial impact on the thinking of both Mints and Friedman -- during the early-1940s; the section then describes Mints's monetary economics, which, we argue, provided a bridge between Simons's views and those of Friedman, and played a catalytic role in helping shape Friedman's monetarism. Section 5 discusses possible influences of the work Clark Warburton during the 1940s on Mints's monetary economics.[3] Section 6 concludes.

2. *Biographical Sketch*[4]

Lloyd Winn Mints (1888-1989) was born near Bushnell, South Dakota. He received his Bachelor's Degree in 1914 and his Master's Degree in 1915 -- both from the University of Colorado. After completing his Master's Degree, he worked for the federal government -- first in Washington D.C., and then in Chicago. While in Chicago, he enrolled in the economics program at the University of Chicago in 1919, but was assigned by the university's administration to teach without having formally applied for a teaching position. He never completed the Ph.D. program at Chicago. From 1919 until 1925 he taught courses to undergraduates mainly in the area of financial organization. During the 1924-25 academic year he was assigned to teach the graduate courses on Money and Banking (Econ. 330, 331) and Problems in Money and Banking (Econ. 332), the former of which was later taken by, among other, Friedman.[5] The

[3] Warburton was a U.S. empirical economist who worked at the Federal Deposit Insurance Corporation. Warburton wrote on monetary issues mainly during the period from the early-1940s to the early-1950s.

[4] This section draws on Peterson and Phillips (1991), Phillips (2006), and University of Chicago catalogs for various academic years contained in the University of Chicago's Special Collections Research Center. Based on the material contained in the catalogs, some of the information provided in the first two sources is inaccurate.

[5] The numberings assigned to these courses occasionally varied over the years. The syllabus and lecture notes taken by Glenn Johnson, one of Mints's students from the 1946 course on Money and Banking have been reproduced and coedited by Johnson and Johnson (2009); neither of the coeditors is related to Glenn Johnson. The course in question (*i.e.,* Econ. 330) was taken by Friedman during the academic year 1932-33. Leeson (2003) provided an analysis of Friedman's lecture notes from Mints's 1932 course on Money and Banking.

former course was devoted mainly to doctrinal issues related to the development of the quantity theory of money; after 1936, the course included a discussion of the impact of the Keynesian revolution on the quantity theory. Mints's highest position was that of Associate Professor.

During the period 1919 to 1930, Mints published three articles, each in the *JPE*. Two of the articles were published in the February and April issues of 1923, respectively, and were titled "Open Market Borrowing to Finance the Production of Goods Sold for Future Delivery" and "Expansion of Fixed and Working Capital by Open Market Borrowing." Reflecting Mints's specialization at that time in the area of financial organization, neither of these articles had anything to do with monetary economics; each was a case study on the financial problems dealt with by specific firms.[6] Mints 1930 article, "The Elasticity of Bank Notes," brought him into the realm of monetary policy. The article was concerned with the view, inherent in the real-bills doctrine, that a bank-note currency based upon commercial paper would provide an "elastic currency" in the sense that such a currency would automatically expand and contract on the basis of the "legitimate" needs of borrowers. Mints took issue with that view. He argued that the elasticity of a currency is a matter of the ability of banks to make loans, which depends on the existence within the banking system of adequate reserves, and is not a matter of the kind of security underlying the notes issued. In turn, the existence of adequate reserves, he argued, was "entirely a question of the presence within the banking system of a non-profit-seeking institution [*i.e.,* a central bank] possessed of sufficient resources [*e.g.,* gold reserves under the gold standard] for the purpose" (1930, pp. 470-71). Mints's critique of the real-bills doctrine would form the core thesis of his next substantive publication -- his 1945 book, *A History of Banking Theory*.

During 1932 and 1933, Chicago economists coauthored and circulated to politicians a series of memoranda that provided policy proposals aimed at combating the Great Depression.[7] Mints's signature appeared on three of these memoranda: (1) a January 1932 telegram sent to President Herbert Hoover advocating expansionary open-market and re-discounting operations;[8] (2) an April 1932 memorandum, sent to Congressman

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[6] The February 1923 article was concerned with a firm called the Edelstone Leather Company, and the April 1923 article dealt with a firm called the Fountain Refrigerator Company.

[7] These memoranda are described in detail in Tavlas (2019a).

[8] The telegram was based on discussions during a conference on "Gold and Monetary Stabilization" held at the University of Chicago from January 28 to January 30, 1932. Participants included both

Samuel Pettengill, calling for money-financed fiscal deficits; and (3) a March 1933 memorandum addressed to forty individuals, including Henry Wallace, the Secretary of Agriculture (who forwarded it -- with a positive recommendation -- to President Franklin D. Roosevelt), calling for (a) money-financed fiscal deficits, (b) the establishment of a one-hundred-per-cent scheme for the banking system, (c) the suspension of the United States from the gold standard, and (d) the adoption of a long-run rule for monetary policy.[9]

3. The 1930s Chicago Monetary Tradition

In his restatement of the quantity theory of money, Friedman (1956) stated:

> Chicago was one of the few academic centers at which the quantity theory continued to be a central and vigorous part of the oral tradition throughout the 1930s and 1940s, where students continued to study monetary theory and to write theses on monetary problems. The quantity theory that retained this role differed sharply from the atrophied and rigid caricature that is so frequently described by proponents of the new income-expenditure approach -- with some justice to judge by much of *the literature on policy* that was spawned by quantity theorists (italics supplied, p. 3).

Friedman then went on to present a model of the quantity theory in which that theory was cast as a portfolio-balance model of the demand for money, under which, according to Friedman, a quantity theorist is someone who accepts the empirical hypothesis that "the demand for money is highly stable" (p. 15).

In fact, the *theoretical* edifice of the 1930s Chicago monetary tradition was very different from that described by Friedman; as we discuss in this paper, contributions by Mints in the 1940s would contribute to the emergence of a monetarist framework that differentiated that framework from the earlier Chicago approach. The key characteristics of the 1930s Chicago monetary tradition were the following[10]: (i) in contrast to Friedman's presentation (1956) of the quantity theory as a stable portfolio-balance model of the demand for money, the earlier Chicagoans used Fisher's *MV=PT* framework to argue that economic fluctuations are caused by sharp, autonomous

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Chicagoans and non-Chicagoans. Twelve Chicagoans and twelve non-Chicagoans signed the telegram. The emphasis on traditional open-market operations and re-discounting operations reflected the view of the non-Chicago economists. Subsequent memoranda signed by only Chicago economists focused only on money-financed fiscal deficits to combat the Great Depression. For details, see Tavlas (2019a).

[9] The March 1933 memorandum underwent two revisions -- in March 1933 and April 1933, respectively. See Tavlas (2019a).

[10] See Patinkin (1969) and Tavlas (2019a).

variations in V, which impact (in a cumulative way), first, upon prices and, then, via sticky wages, on output; (ii) the effects of cumulative changes in V are greatly exacerbated by the perverse behavior of a fractional-reserve banking system, which expands credit (and, thus, demand deposits) in booms and contracts it in depressions; (iii) to stabilize the perverse behavior of a fractional-reserve banking system, the earlier Chicagoans favored 100 per cent reserves on deposits, an idea that became known as the "Chicago Plan of Banking Reform" (Hart, 1935); (iv) anti-depression policy requires a countercyclical expansion in M; (v) the necessary variation in M can be generated either by open-market operations or by money-financed budget deficits; (vi) during depressions, the most effective way to put money into circulation is by generating budget deficits. Finally, the earlier Chicago approach was differentiated from other quantity-theory approaches of the 1930s by (vii) the strong emphasis on monetary-policy rules -- preferably a rule that either fixes the quantity of money or stabilizes the price level -- to help reduce policy uncertainty and to ameliorate the business cycle; and (viii) the call for the abandonment of the gold standard and the advocacy of a more-flexible exchange-rate system.

4. Mints and Friedman, 1945-51

4.1 Prelude: Simons in the Early-1940s

During the first half of the 1940s, the only member of the early-1930s Chicago monetary group who continued to write actively on monetary issues was Simons, who passed away unexpectedly in June 1946, two months before Friedman began teaching at Chicago.[11] The views of Simons during that period are important to consider in order to understand the transformation of the Chicago monetary tradition through the interplay of Mints and Friedman. A brief synopsis, based on Simons's December 1944 paper "On Debt Policy," published eighteen months before his death, follows.[12]

To neutralize the perverse behavior of a fractional-reserve banking system, Simons favored the one-hundred-per-cent-reserve scheme (1944, p. 228). He thought that short-term government debt should be "converted into currency and consols, in whatever

[11] See the collection of essays in Simons (1948), edited by Director.

[12] For more on Simons's views, see Tavlas (2015). Knight's article, "The Business Cycle, Interest and Money: A Methodological Approach," published in 1941, was the only substantial article on monetary issues published by a member of the core Chicago group other than Simons during the first half of the 1940s. Knight's article was entirely consistent with the early-1930s Chicago quantity-theory framework.

proposition is requisite for price-level stabilization" (1944, p. 220). The aim of eliminating short-term debt was to prevent destabilizing shifts between money and money substitutes. Monetary policy, he believed, should be based on a legislated rule aimed at stabilizing "some broad [wholesale-price] index" (1944, p. 265). Changes in the money supply should be implemented mainly through the federal budget, complemented, where necessary, by "a traditional open-market policy" (1944, p. 265). Under Simons's fiscal-monetary proposal, the level of federal spending would be kept "relatively stable." Changes in revenues would be the main driver of the budgetary position; revenue changes would be "partly automatic," but "might best be effected by raising or lowering the personal exemptions and without change of marginal or bracket rates of tax" (1944, p. 265). The implementation of monetary policy should be directed by "Treasury action, or by action of the Reserve banks or branches of the Treasury" (1944, p. 265). Simons believed that his proposed framework would "minimize … monetary uncertainty" (1944, p. 281). An application of his proposal globally, he thought, would produce international monetary stability, such that "occasional alterations of exchange rates" would be necessary, "but large disturbances [would] not be expected" (1944, p. 266).[13]

4.2 Mints, 1945

Following his fifteen-year absence from substantive academic writings, Mints returned to the publishing fold with his 1945 book, *A History of Banking Theory*. He also published a review in 1945 in the *AER* of Ragnar Nurkse's 1944 book, *International Currency Experience: Lessons of the Inter-War Period*. Mints's views in that review closely foreshadowed the appraisal subsequently made by Friedman (1953), the latter of which played an influential role in converting the economics profession to favor flexible exchange rates during the 1960s.[14]

A History of Banking Theory.[15] Mints's views on business cycles and monetary policy reflected earlier Chicago thinking.[16] Business cycles were caused by "changes in

[13] Simons (1935, p. 1421) favored "leaving foreign exchange rates to find their own level."

[14] This point was made by Bordo (1993, p. 30-31) in his definitive study on the Bretton Woods System.

[15] The book, which evidently took years to research and to write, is primarily a critique of the real-bills doctrine. Mints argued that a major problem with the real-bills doctrine is that the nominal value of real bills will rise during inflations and fall during deflations. Thus, monetary policy operating under the real-bills principle would simply ratify inflation or deflation, instead of stabilizing the price level. The bibliography contains over four hundred references to authors and to over six hundred works. In a review of the book, Horsefield (1946, p. 136) wrote: "The first impression of this book is one of incredible industry."

[16] In the preface, Mints (p. 5) expressed his gratitude to Director, Simons, and Viner for having "read the

velocity (shifts to cash) or, in liquidity preferences." However, while the 1930s Chicago tradition used the quantity theory to study the effects of velocity on the economy, Mints (1945a, pp. 219-222) employed a portfolio theory of the demand for money that was similar to that of Keynes in *The General Theory* (1936). Open-market operations and discounting operations were not considered to be effective policy tools, especially during depressions because during such episodes "the impairment of confidence" makes the interest-rate elasticity of investment very low (1945a, p. 280). To help eliminate the effects on the business cycle stemming from behavior of a fractional-reserve banking system, Mints called for 100 per cent reserves (1945a, p. 270). In light of "the unavoidable influence of fiscal policy on monetary affairs," changes in the money supply should be effected mainly through the government's fiscal position, with open-market operations playing a supporting role (1945a, p. 281). Mints also believed that monetary-policy implementation should be based on a legislated rule in order to stabilize private-sector expectations and, thus, economic activity (1945a, p. 269). The particular rule he favored, like Simons (1944), involved the stabilization of the price level (1945a, p. 275).[17] Finally, echoing Viner's (1931) view, Mints, even if he did not blame the Fed for causing the Great Depression, claimed that the "absence [of vigorous monetary policy] during the years following 1929" severally worsened the Depression (1945a, p. 275).[18]

A significantly-novel element in *A History of Banking Theory* is the provision of a detailed analysis of the effects of lags in monetary-policy actions:

> It takes time for men to become aware of new opportunities that are opened up by a reduction in the rate of interest; it takes time to make plans, both business and engineering; and in the case of investments in fixed capital, it takes time to obtain bids, let contracts, and actually to get construction under way. Moreover, under some circumstances, it may take time for the central bank to make its rate policy effective in the sense merely of obtaining the desired influence on the customer rate charged by the member-banks, and it will take still more time to influence the long-term rate (1945a, p. 279).

Mints believed that the effectiveness of monetary policy was challenged not only by the

manuscript in its entirety" and for their "many useful suggestions for improvement."

[17] Mints (1945a, p. 272) stated that: "the problem of a legislatively prescribed and definite rule, as opposed to discretionary action by the central bank, has been explicitly presented, and very definitely defended, only by H. C. Simons."

[18] Mints had been critical of the Fed's policies in the Great Depression prior to his published criticisms. McIvor (1983, p. 889) wrote that Mints's classroom criticisms of the Fed's policies during the Great Depression provided "the basis for lively discussions in [Mints's] graduate monetary policy course" in the late-1930s. Mints implicitly expressed a similar view in a 1940 review of a book authored by Edwin Kemmerer on the structure and functions of the Federal Reserve System. In his book, Kemmerer (1938) praised the Fed's action to raise the discount rate during the autumn of 1931 (when Great Britain left the gold standard). Mints (1940, p. 602) made it clear that he disagreed with that view.

existence of lags, but also by informational requirements since "(it) would require that the [central bank] be able to forecast economic conditions with at least a fair degree of accuracy and a considerable time in advance," an ability which Mints thought that central banks did not possess (1945a, p. 279). Nelson (2017, Chapter 4, pp. 199-200) pointed-out that, three years later, Friedman (1948) would reject policy proposals that relied on forecasts. Finally, at a time when the economics profession overwhelmingly believed that cost-push factors, working through the wage-setting behavior of unions, were the primary determinant of inflation,[19] Mints (1945a, pp. 274-75) argued: "[The] case for attempting to stabilize the price level by monetary means lies in the fact that the quantity of money is the one easily and controllable factor and in the belief that variations in the stock of money can be so managed as to largely offset disturbing fluctuations in other factors, particularly the velocity of circulation" (1945a, pp. 274-75).

Review of Nurkse.[20] Nurkse (1944) argued against floating exchange rates on the basis of the experience of the 1920s and the 1930s.[21] Based on the experience of the French franc in the 1920s, Nurkse (1944, p. 118) argued that freely-floating rates inevitably lead to destabilizing speculation and unstable exchange rates. He also argued that the experience of the 1930s, following the devaluation of sterling in 1931, led to a series of competitive devaluations and overshooting of exchange rates because of the destabilizing nature of speculative capital flows (Nurkse, 1944, p. 123). Nurkse advocated an adjustable peg system, very much like Bretton Woods, supported by capital controls and discriminatory exchange controls. Nurkse (1944, p. 106) also expressed the view that "regulation of the quantity of money has proved relatively ineffective even in steadying the level of prices." The reviews of the book by economists were overwhelmingly favorable, with Mints's review being an exception.[22]

Mints made three major criticisms of Nurkse's theses. First, taking issue with Nurkse's advocacy of exchange controls, Mints argued (1945b, p. 194) that such

[19] See Schwarzer (2018).

[20] Nurkse's book (1944) appeared under the authorship of the League of Nations. Apart from William A. Brown, who wrote Chapter VI on "Exchange Stabilization Funds," the rest of the book was written by Nurkse.

[21] Bordo (1993, p. 31, fn. 16) wrote that "Nurkse's (1944) interpretation of the lessons of the interwar period should be viewed as largely reflecting the collective views of [John Maynard] Keynes, [Harry Dexter] White [the two architects of the Bretton Woods System] and others."

[22] Ellis (1946, p. 378) called the book "international monetary analysis at its best." Salera (1945, p. 129) stated that the book "is perhaps the best available study of international monetary developments during the interwar period." See, also, Knox (1945) and Nichols (1945).

controls typically involve the "undervaluation of the domestic currency," leading to "discriminatory" commercial policies (1945b, p. 194). Second, he challenged Nurkse's view that regulation of the quantity of money had proved ineffective at maintaining price stability:

> There is little evidence to support this statement. There was no serious attempt to prevent the decline in the volume of money in the United States in the three years following the beginning of the depression in 1929. Before we can say that regulation of the quantity "has proved" ineffective we must make an attempt at such regulation (1945b, p. 194).

Third, and most importantly, Mints challenged Nurkse's interpretation of exchange-rate movements during the interwar period:

> Nurkse is opposed to freely fluctuating exchange rates. However, this opposition seems to be founded in very large part upon a belief that the difficulties of the 1930's are inherent in any system of free exchanges. It is one thing to condemn, as one must, exchange fluctuations which are the consequence of widespread internal instability, and of consequent speculation in, and flights from, particular currencies; and it is quite a different thing to condemn, as one need not, such exchange fluctuations as would occur under conditions of internal stability. It is more than a little anomalous to condemn fluctuating exchange rates under conditions which a system of fixed exchanges could not survive. It is doubtful that fluctuating exchanges, under conditions of internal monetary stability, would create an undue discouragement to trade; or that they would be disequilibrating under the same conditions (1945b, p. 193).

As mentioned, Mints's criticism of Nurkse's interpretation of the interwar system foreshadowed Friedman's influential criticism of Nurkse. Friedman (1953, p. 176) wrote:

> Nurkse concludes from the interwar period that speculation can be expected in general to be destabilizing. However, the evidence he cites is by itself inadequate to justify any conclusion …. In general, Nurkse's discussion of the effects of speculation is thoroughly unsatisfactory. At times, he seems to regard any transactions which threaten the existing value of a currency as destabilizing even if the underlying forces would produce a changed value in the absence of speculation …. It is a sorry reflection on the scientific basis for generally held economic beliefs that Nurkse's analysis is so often cited as the "basis" or "proof" of the belief of destabilizing speculation.

4.3 Mints, 1946

In a 1946 symposium on fiscal and monetary policy, published in *The Review of Economics and Statistics*,[23] Mints extended core Chicago ideas.

[23] The other participants in the symposium were Howard Ellis, Alvin Hansen, Michal Kalecki, and Abba Lerner.

What monetary policy can do. Mints believed that monetary policy should aim at to maintain unemployment at a rate consistent with a minimum level of frictional unemployment:

> In a changing economy readjustments are constantly necessary, and frictional unemployment of some minimum amount is therefore unavoidable. This is a problem, however, which cannot be solved by monetary means. It requires … information available to the public, particularly to workers, concerning the regions and industries in which additional workers are in demand, and geographic and occupational mobility… (1946, p. 67).

The argument that monetary policy cannot reduce unemployment below its frictional level was a forerunner of Friedman's (1968) hypothesis of a natural rate of unemployment.[24]

Causes of the business cycle. As mentioned, a core characteristic of the earlier Chicago approach was the view that the business cycle is caused by autonomous shifts of velocity (or shifts in the demand for money). Mints argued that the business cycle could also be caused by changes in the supply of money: "A depression is initiated by a decline in aggregate demand. Whether this decline is caused by a reduction in the quantity of money, or by an increase in liquidity preferences is a matter of secondary importance" (1946, p. 60).

Monetary rules. Mints favored a price-level-stabilization rule, but he thought that two other rules were "equally acceptable:" (a) an "increase [in] the quantity of money at some constant rate, roughly equivalent to the rate of increase in output" and (b) stabilization of "per capita money incomes" (1946, p. 60). He preferred a rule that stabilized the price level because of its "simplicity," its "definiteness," and its feature of offsetting changes in velocity (1946, p. 60).

Monetary transmission. Mints incorporated the possibility of a wealth (or stock) effect into the monetary-transmission mechanism. Specifically, expansionary monetary policy "means an increase in the cash balances of the public" and, via a wealth effect, increases in spending (1946, p. 67).

The Great Depression. Mints was more forceful about the role of the Fed in exacerbating the Great Depression in the 1946 symposium than he had been in his 1945 book. He criticized the Fed for not taking "sufficiently vigorous action … during the early thirties" (p. 62), backing his argument with the data showing that the Fed permitted

[24] Forder (2014) provides a critical assessment of the contribution of Friedman's 1968 paper; Forder argues that the expectations-augmented thesis usually attributed to Friedman and Phelps was well-known in the 1950s.

the supply of money to drop by 25 per cent between 1929 and the summer of 1933, leading to a fall in the wholesale price index from 96 (1926-100) in September 1929 to 63 in May 1933 (pp. 62-63). Mints drew the following conclusion from these data: “We therefore are not justified in asserting that the course of events during those years has proved the inadequacy of conventional central-bank measures” (p. 63).

4.4 Friedman, 1948-51[25]

Friedman joined the University of Chicago faculty as an Associate Professor in 1946. He began his collaboration with Anna Schwartz on *A Monetary History* (1963) in 1948.[26] His thinking at that time was vintage 1930s Chicago: a fractional-reserve banking system exacerbated the business cycle and this could be rectified by a 100 per cent reserves requirement and the deployment of fiscal policy to generate changes in the money supply in a manner that moderated cyclical fluctuations[27], while eliminating discretionary actions (1948, p. 139).

Specifically, in a 1948 paper, “A Monetary and Fiscal Framework For Economic Stability”, Friedman proposed a policy rule under which fiscal policy would be used to generate automatic changes in the money supply with the aim of moderating cyclical fluctuations while eliminating “discretionary action in response to cyclical movements as well as some extraneous or perverse reactions of our present monetary and fiscal structure” (1948, p. 139).[28] Like Mints, Friedman proposed that the volume of government expenditure on goods and services should be kept stable. In addition, Friedman favored a pre-determined schedule for transfer payments; however, the “absolute [level of] outlays will vary automatically over the cycle [because of changes in the level of transfers]” (1948, p.137). In contrast to Mints, Friedman sought to have tax rates pre-determined in such a way as to balance the budget at a “hypothetical level of income underlying [a] stable budget” (1948, p. 139). For example, if employment fell, revenues would decline and the resulting deficit would be financed with newly-created money. Additionally, in contrast to Mints, who favored the use of open-market

[25] Nelson (2017, Chapter 4, pp. 215-16) noted that: “in the years spanning 1948 to 1951, Friedman’s views on monetary economics underwent a dramatic shakeup, from which emerged his familiar monetarist position.”

[26] Lucas (1994) and Bordo and Rockoff (2013) assessed the contributions contained in *A Monetary History*.

[27] Friedman (1948, p. 136) proposed the abolition of open-market and discounting operations.

[28] Apart from Friedman and Mints, I am not aware of any other U.S. economist who, during second half of the 1940s, advocated a rule under which the government’s fiscal position would be used to generate changes in the money supply.

operations to support the changes in the money supply produced through the government's fiscal operations, Friedman (1948, p. 136) proposed that open-market operations and discounting operations be abolished. Like Simons, (and Mints) Friedman believed that the government should issue only consols.[29]

Friedman introduced into the economics literature the notion of "long *and variable* lags" (italics supplied, 1948, p. 144)[30]. He asserted (1948, p. 144) that lags would not only *delay* the effects of money-supply changes but they "could *intensify* rather than mitigate cyclical fluctuations; that is, long and variable lags could convert the fluctuations in the government contribution to the income stream [via the change in the money supply] into the equivalent of an additional random disturbance." Three years later, Friedman (1951a) would provide a formal analysis of the amplifying effects on the business cycle produced by long and variable lags. Friedman also made it clear that domestic stability should be given priority over an external objective. To bring about adjustments in international trade, he favored flexible exchange rates (1948, p. 142). In 1951 he would write what was to become a classic paper in favor of flexible exchange rates.[31]

Monetary transmission. Friedman (1948) believed that policy-induced changes in the money supply had their effects on the economy primarily via the fiscal-multiplier effect of deficit spending, supplemented by two types of wealth effects.[32] First, and consistent with Mints's view in the latter's 1946 paper, Friedman argued that, for a *given* price level, the increase in the stock of money resulting from a fiscal deficit "must further raise the real value of the community's stock of assets and hence the average propensity to consume" (1948, p. 152). Second, Friedman included an additional wealth effect in his analysis. Specifically, in case of a decline in aggregate demand accompanied by a *fall* in the price level, "the real value of the community's stock of money and government bonds" would be raised, lessening the need of additional saving; as a result, this latter wealth effect would also "increase the fraction of any given level

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[29] Friedman continued to advocate this policy framework into the early-1950s while also expounding the virtues of the quantity theory of money.

[30] Nelson (2017, Chapter 4, p. 200) deserves the credit for pointing-out that the use of the term "long and variable lags" originated in Friedman's 1948 paper.

[31] The paper in question was titled "The Case for Flexible Exchange Rates." As pointed-out by Dellas and Tavlas (2009), Friedman had difficulty getting the paper published. He finally published it in his 1953 book, *Essays in Positive Economics.*

[32] Friedman's use of a fiscal multiplier channel in his 1948 paper was previously noted by Nelson (2017, Chapter 4, p. 197). Nelson (p. 198) also noted that, in Friedman's 1948 *AER* paper, Friedman considered that money-financed fiscal deficits had a greater impact on spending than did deficits financed by issuance of longer-team securities. Nelson did not refer to Friedman's presentation of a wealth channel.

of real income that the community will wish to consume" (1948, p. 150).[33] Friedman considered the two wealth effects to be "the same effect" except that the former effect "is brought about by an increase in the stock of money rather than by a decline in prices" (1948, p. 152).

Cost-push inflation. In contrast to Mints, during the early-1950s Friedman (1951b, pp. 227-28) left open "the logical possibility of inflation from the cost side in an economy of strongly organized producer groups." Over the following decade, Friedman (1963, pp. 29-30) would come over to the view that cost-push factor could produce inflation only if accommodated by monetary policy: "it is true that the upward push in wages produced inflation ... because it happened to be the mechanism which forced an increase in the stock of money."

The Great Depression. Again in contrast to Mints, Friedman (1948) did not refer to the Fed's policy stance during the Great Depression. However, during the first conference of the Mont Pelerin Society, which was held in April 1947, Friedman referred to the Fed's policy tightening in the fall of 1931 as follows: "The big error was that of 1931" (quoted from Cherrier, 2011, p. 353). Two years later, in a reply to a comment on his 1948 *AER* paper, he argued: "The Federal Reserve System has operated under highly advantageous circumstances, yet I think it likely that on balance its discretionary action has been destabilizing, the most striking example being the sharp deflationary action it took in the fall of 1931" (1949, p. 950).

The following points merit comment. First, the idea that the Fed had played a role in deepening the Great Depression, as reflected in the writings of Viner in the early-1930s and Mints in the mid-1940s, predated Friedman's discussions of this issue. Moreover, several American economists other than Mints and Viner -- notably Lauchlin Currie in the early-1930s and Clark Warburton in the mid-1940s -- had blamed the Fed for the depth and duration of the Great Depression.[34] Therefore, Friedman may have been influenced by their works. Second, Lothian and Tavlas (2018) provided evidence indicating that Friedman began to investigate (a) the hypothesis that the Fed may have deepened the Great Depression empirically in 1951; and (b) the hypothesis that the Fed may have initiated the Depression empirically in 1954; those authors also show that, by

[33] Friedman noted that his analysis of the real-balance effect followed the presentations of that effect made by Pigou (1943) and Patinkin (1948).

[34] Discussions of the monetary views of Currie have been provided by Humphrey (1973) and Sandilands (1990). On discussions of Warburton's views, see Bordo and Schwartz (1979), Cargill (1979), and Tavlas (2019b).

the mid-1950s, Friedman had statistically verified both bypotheses.[35]

4.5 Mints, 1950

In the Preface to his book, *Monetary Policy for A Competitive Society,* Mints wrote: "I am greatly indebted to Professor Milton Friedman, who has read the penultimate draft of the manuscript. In consequence of his many suggestions several chapters have been rewritten and others have been revised to a greater or lesser extent."

In a departure from earlier Chicago thinking about the passive role played by fluctuations in the money supply in the business cycle, Mints assigned a causal role to money in the cycle. He argued argued that while "the inherent instability of an uncontrolled fractional-reserve banking system" has often accentuated declines in employment during cyclical contractions, and while contractions have "typically been accompanied by a reduction in the circulating medium … it is quite possible that in some instances a decline in the stock of money has been the *initiating* factor in bringing on depression, as well as an aggravating factor after the decline has started" (1950, italics supplied, p. 37).

Inflation and unemployment. Mints believed, that if the central bank attempted to bring unemployment below its frictional level, serious inflation would result and unemployment would increase beyond the frictional level.

> The level of production and of employment are not amenable to control by monetary measures, except in the sense that monetary stability will provide the conditions in which a high average level of output and employment will be maintained. If price rigidities are responsible for a high level of frictional unemployment, conditions could be improved by monetary means, if at all, only at the cost of serious inflation; and before the inflation had gone far it quite likely that this itself would create so great a degree of uncertainty as to make the remedy worse than the disease (1950, pp. 117-18).

This statement seems closely connected to Friedman's argument in his Nobel lecture that, at the natural rate of unemployment, highly expansionary monetary policy that results in high inflation is likely to lead to high inflation variability, raising unemployment (Friedman, 1977, pp. 465-68).

The Great Depression. Mints (1950, pp. 37-39) presented data on the money supply (deposits plus currency), the wholesale price index, and industrial production during five cyclical downtowns: 1920-21, 1923-24, 1926-27, 1929-33, and 1937-38. Pointing

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[35] On the dual nature of the monetary hypothesis of the Great Depression, see Tavlas (2011).

to the “significant decline in the quantity of money and [the] drastic decline industrial production” in four of those episodes -- excluding the 1923-24 episode -- he concluded: “To permit the volume of money to vary in this manner reflects a tragic failure in the management of our monetary affairs” (1950, p. 39).[36] As another measure of the Fed’s performance during the Great Depression, Mints (1950, pp. 44-49, 179-80) assessed (i) the sequence of changes in discount rates and buying rates on bills, and (ii) the variations in the Fed’s holdings of earning assets (*i.e.,* Federal Reserve credit outstanding) in relation to changes in both the wholesale price index and the index of industrial production. With regard to the Fed’s interest-rate policy, Mints (1950, pp. 179-80) also noted that both the discount rate and the buying rate on bills were increased sharply in October 1931 after Great Britain left the gold standard and again in March 1932. Mints pointed-out that during periods of sharp downward movements in prices the Fed should have been increasing its holdings of earning assets. What he found, however, was that between December 1929 and July 1931 wholesale prices and industrial production dropped by 25 per cent and 30 per cent, respectively, while the earning assets of the Federal Reserve banks *declined* by 42 per cent (1950, p. 47).

Mints (1950, p. 45) noted that “defenders of the system” argued that the Fed’s reluctance to expand the volume of credit stemmed from the requirement of maintaining convertibility of the dollar under the gold standard. He argued that the convertibility issue would *not* have emerged had the Fed maintained domestic stability: “had there been in effect, in the autumn of 1929, an adequately implemented policy of monetary stabilization, the occasions for the restrictive measures of the Reserve officials to maintain convertibility would never have arisen” (1950, p. 46). In a criticism of discretionary policy that closely foreshadowed the modern debate concerning rules versus discretion, Mints stated: “I intend that my criticisms of the Reserve System shall be unambiguous and largely adverse; but I do not mean to imply that another group of men, under the same conditions and operating with the same grant of discretionary power, would have done better. It is to discretionary monetary authorities that I object” (1950, p. 46, fn. 5). Mints concluded his assessment of the Fed’s role in the Great Depression with: “Neither the Reserve System nor the Federal government made any significant effort to prevent a drastic decline in quantity of money, to say nothing of a much-needed increase, from 1929 to 1932. This is where we blundered” (1950, p.

[36] Friedman and Schwartz (1963, p. 300) asserted that the Great Depression “is in fact a tragic testimonial to the importance of monetary forces.”

129).[37]

As he had in his earlier works, Mints continued to argue that monetary policy should be conducted through both the government's fiscal position and open-market operations. Where monetary expansion was needed, he recommended running a federal deficit financed by new money and monetizing the public debt. The deficit would arise from a reduction in tax revenues, partly the automatic result of a progressive rate structure and partly from variations in tax rates and exemptions.[38] In his 1950 book, however, Mints had become more sanguine than previously about the stability properties of a free-market system for two main reasons. First, in a major departure from earlier Chicago monetary analysis, Mints no longer considered fractional-reserve banking to a significant factor in magnifying the business cycle: "For the most part the banks have probably been accentuating factors in business fluctuations rather than initiators of disturbances" (p. 7). What caused this about-face by Mints? The answer is that he recognized that the creation of deposit insurance in 1934 had sharply curtailed the possibility of bank panics:

> Prior to 1934 it was inevitable that the banks should vary their lending perversely, and that they should aggravate, and possibly even initiate, periods of disturbance. It is unlikely that deposit insurance has eliminated all of this unfortunate characteristic, since it cannot have eliminated other reasons for this perversity than the withdrawals of cash which the public is likely to make when doubts about the conditions of the banks prevail.... However, we should not exaggerate the shortcomings of the banks (pp. 6-7).

Second, Mints incorporated the price-level-induced real-balance effect, used by Friedman (1948), into his (Mints's) analysis of the dynamics of depressions. Specifically, he argued that declines in prices during depressions "will raise the volume of cash balances in real terms" (p. 34). This increase in real cash balances, he argued, would act as a brake on the downward spiral of velocity during economic contractions.

Flexible exchange rates. Mints devoted two chapters -- Chapter 4, titled "Internal Adjustments to International Disturbances," and Chapter 5, titled "Fixed Versus Flexible Exchange Rates" -- to the exchange-rate-regime issue. As Friedman had done in his 1948 paper, Mints came out in favor of flexible exchange rates. Mints put

[37] Mints criticized the Fed's policy during the period 1929-32 repeatedly in his 1950 book (see pp. 8, 36-39, 44-49, 128-32, 179-80). As mentioned, Mints had been critical of the Fed's policies during the Great Depression in his (Mints's) classroom lectures in the late-1930s.

[38] As mentioned earlier, in his 1946 article Mints had also proposed a general retail sales subsidy. That proposal was not part of the 1950 framework.

forward the following arguments:

(a) High exchange-rate volatility reflected volatility in the underlying macroeconomic fundamentals: "Historical periods of exchange instability have been the product of monetary disorder ... and there is no way of disentangling the influence of internal affairs from that of movements in the exchange rates" (1950, p. 93). As mentioned, Friedman (1953, p. 176) argued similarly in his critique of Nurkse's (1944) study.

(b) In any case, flexible exchange rates would lead to a forward market in foreign exchange in which exchange-rate risk for the major currencies could be hedged: "If there is a well-organized market for forward exchange … the traders themselves can avoid the exchange risk at a cost which will raise the price of the product only slightly.[39] A national monetary standard would undoubtedly lead to the development of such speculative markets for the more important currencies" (1950, p. 93). Friedman (1953, p. 174) stated: "Such future markets in foreign exchange readily develop when exchange rates are flexible."

(c) Speculation in foreign-exchange markets would be stabilizing "in the sense that it would reduce the extent of short-run fluctuations ... [because] speculation serves a highly useful purpose, and the profit of the speculator is the reward of the bona fide service rendered. If a speculator has a disequilibrating influence, he will lose money and be eliminated from the market" (1950, p. 94). Friedman (1953, p. 175) argued: "People who argue that speculation is generally destabilizing seldom realize that this is largely equivalent to saying that speculators lose money, since speculation can be destabilizing in general only if speculators on the average sell when the currency is low in price and buy when it is high."

Several points are noteworthy. First, Mints wrote the Preface of his book in July 1950, an indication that the book manuscript had been finalized by that time. Friedman's (1953) paper was based on a memorandum he wrote in the fall of 1950, and the paper went through several subsequent drafts.[40] Thus, chronologically, Mints's

[39] Mints also claimed that the theoretical and empirical cases that flexible exchange rates hamper international trade are ambiguous: "there is little of a theoretical nature that can be said, and even that little is inconclusive. Furthermore, there is no reason to suppose that statistical evidence would be of much value" (1950, pp. 92-93). Friedman (1953, pp. 173-874) argued that flexible exchange rates do not increase uncertainty and, therefore, do not hamper trade.

[40] See Friedman (1953, p. 157).

book takes precedence over Friedman's article. Second, as mentioned, Friedman made extensive comments on Mints's draft manuscript, resulting in the re-writing of several chapters of that manuscript. Likewise, in the introductory footnote to his 1953 paper, Friedman (1953, p. 157) acknowledged that the ideas in the paper owed "much … to extensive discussion of the general problem with a number of friends," one of whom Friedman singled-out was Mints.[41] Additionally, after Mints retired, and Friedman took over teaching responsibility for the graduate course on money (Econ, 331), the two chapters on the exchange-rate-regime issue in Mints's 1950 book became staple items on Friedman's reading list. As late as 1965, a question on the final exam (Friedman, 1965) required students to provide the central idea in one of four reading assignments, one of which comprised the exchange-rate- regime chapters in Mints's 1950 book. Clearly, there was considerable cross- fertilization between the ideas of Mints and those of Friedman. However, Friedman's (1953) assessment was more comprehensive and broad in terms of subject matter covered-- it introduced into the literature such ideas as exchange-rate overshooting, optimum-currency areas, and the daylight-saving-time argument for flexible exchange rates. This circumstance helps explain the subsequent influence that Friedman's article exerted on the economics profession. Correspondingly, however, Mints's ideas on flexible exchange rates, including his prescient critique of Nurkse's views, do *not* deserve the complete neglect that they have experienced.

Monetary rules. As in his earlier writings, Mints expressed a preference for a rule that stabilizes prices because of its simplicity and its capacity to offset changes in velocity, but he also noted a potential problem with such a rule: "There must necessarily be some lag between the date upon which monetary action would be indicated by the change prices and the time at which the action would become effective in the market" (1950, pp. 138-139). Mints made it clear that it was not so much the *length* of the lag that created a problem, a problem that he had identified in his previous writings, but that the *variability* of the lag created a problem: "In this way it may seem that an attempt to stabilize an index [of prices] would or might actually accentuate variations in the levels of prices" (1950, p. 139). In his discussion on this issue, and Mints gave Friedman credit: "This possibility was suggested by my colleague, Professor Milton Friedman" (1950, p. 138, fn. 8).

[41] The others were Aaron Director, James Meade, and Lionel Robbins.

Mints (1950, pp. 167-72 and 215-19) believed that the main advantage of Friedman's fiscal-based monetary rule was the "nondiscretionary character of its anti-cyclical action" (1950, p. 228). He also believed that the rule suffered from a number of shortcomings. First, as was the case for the price-level rule, Friedman's rule would be subject to the lagged effects of monetary actions (1950, p. 172). Second, for the rule to be effective, the reserve ratio would have to be raised to hundred per cent so that banks would not be able to offset monetary-policy actions through the creation and destruction of demand deposits. Third, there would be no assurance that the automatic changes in reserves produced under the proposal would generate the "right" amount of money needed to stabilize the economy. Fourth, since the proposal relied on the notion of a hypothetical level of income corresponding to a stable budget, it was susceptible to the judgment, and, thus the discretion, of policy makers, who would have to determine that hypothetical level of income. Fifth, the connection between the proposal and key economic variables, especially the price level, "would not be entirely understandable" to the public (1950, p. 172). In his overall assessment, Mints tried not to be too critical: "it would be a reasonably satisfactory alternative to increasing the stock of money at some constant rate or stabilizing the price level, although, to my mind, it is nevertheless somewhat inferior to either of these procedures" (1950, p. 167).

4.6 Mints, 1951

In a 1951 article, "Monetary Policy and Stabilization," Mints turned the earlier Chicago view that the economy is inherently unstable because of autonomous fluctuations in velocity on its head. Mints instead argued that the economy is inherently stable, but discretionary policies have robbed the "competitive economy ... [of] the proper conditions for the functioning of such a system" (1951, p. 189). In particular, Mints expressed the view that discretionary policies destabilized expectations: "[discretion] robs policy of the very thing which is most needed in monetary matters; namely, certainty with respect to monetary conditions" (1951, p. 191). In contrast to discretion, under "a definite and announced policy," he argued, "expectations would become a major stabilizing rather than a destabilizing influence" (1951 p. 191). Mints also extended the argument made in his 1950 book that deposit insurance had reduced "the danger of runs on the banks" (1951, p. 190).[42] He stated that the "relatively larger

[42] The rise in the share of government securities held by banks on their balance sheets reflected the large

amounts of government securities" that banks held on their balance sheets than in the past had "undoubtedly reduce[d] the perverse influence of the banks" (1951, p. 190). Finally, Mints (1951, p. 192) provided further evidence, in the form of movements of Federal Reserve credit and changes in the wholesale price index, on the destabilizing role that the Fed's discretionary policies had played during six "periods of outstanding need for action" (1920-21, 1929-31, 1937-38, 1940-46, 1946-48, and 1948-49).

4.7 Friedman and Mints, 1948, 1951

In January 1948, Friedman, Mints and six other University of Chicago colleagues (including Director and Knight) coauthored a letter titled, "Control of Prices," published in the *New York Times*.[43] The letter made the following points. (1) Variations in the general price level are "in the main determined by variations in the quantity of money." (2) The quantity of money is dependent on the volume of reserves. (3) The Fed and the Treasury "are amply equipped with technical power to control the volume of money and, hence, the general level of prices." (4) The "greatest contribution" that monetary policy can make is "stabilization of the price level." (5) What is needed to control the general price level "is a legislative rule directing the monetary authorities to maintain stability" (Director *et al.,* 1948).

In January 1951, Friedman and Mints coauthored a statement, "The Failure of the Present Monetary Policy," published in the *Congressional Record,* with (apart from H. Gregg Lewis) a different set of Chicago colleagues.[44] The background to the document was the substantial buildup in armament expenditures for the Korean War, combined with the Fed's then-policy of pegging interest rates on government securities. The Chicagoans were concerned about the inflationary impact of the armament expenditures in a situation of interest-rate pegging. The central argument made in the paper was that monetary policy is capable of stabilizing the price level in the face of velocity shocks. However, monetary policy cannot stabilize prices if the Fed tries to peg interest rates.

Friedman and Mints again inter-reacted in 1951 at a conference on "Defense, Controls, and Inflation" sponsored the University of Chicago Law School.[45] The

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purchases of those securities by banks during World War II.

[43] The other signatories were Abram Harris, H. Gregg Lewis, Russell Nichols, and W. Allen Wallis.

[44] Friedman *et al.* (1951). The other signatories were L.A. Metzler, L.A. Harbison. L.W. Johnson, and T.W. Schultz.

[45] The proceedings of the conference were published in 1952 in a book edited by Director. The

participants also included (among others) Alvin Hansen, Roy Harrod, Friedrich Hayek, Ludwig von Mises, Knight and Viner (who was then at Princeton). The first session was on "The Role of Monetary Policy." The session began with a statement by Mints, who argued that the "Federal Reserve System has the power to offset [inflationary] developments if it ... is willing to forsake the bond-support program" (Director, 1952, p. 28). In his summing up of the discussion that followed Mints's presentation, Friedman stated that "two major positions about monetary policy have been expressed." One group, which Friedman associated with Harrod, amongst others, believed that "while tight monetary policy is desirable, it is not enough" to contain inflation, "even in conjunction with a reasonably adequate fiscal policy" (Director, 1952, p. 66).[46] Friedman characterized the other group as follows: "[The other] position, presented by Mr. Mints, and which I may say, I share, is that monetary measures, given a reasonable fiscal policy, could be effective in stabilizing the level of prices, whatever might happen to the rate of use of the existing stock of money" (Director, 1952, p. 48).

Two points merit comment. First, by 1951 Friedman and Mints were in accord about how to contain inflation during potentially inflationary periods. Second, during the 1951 conference Mints referred to data that he had assembled on the Fed's discretionary policies and their effects during critical episodes, including the Great Depression, showing that the Fed had typically acted in a pro-cyclical way. Friedman, who participated in, and summarized, the ensuing discussion, would follow a similar, though much more extensive, research agenda in his work leading up to his and Schwartz's *A Monetary History*.

4.8 Friedman, 1954

In a 1954 lecture, Friedman's view on fractional-reserve banking converged to Mints's 1951 view. He no longer considered a fractional-reserve banking system to be a potent force in the business cycle. Three changes had occurred, he stated, since the early-1930s that strengthened the resilience of the banking system. First, the establishment of deposit insurance in 1934 eliminated "the basic cause for runs on banks of the kind that occurred in 1931 and 1932" (Friedman 1954, p. 60). Second, the share of government obligations on banks' balance sheets, which Friedman estimated to be

conference was held at White Sulphur, West Virginia.

[46] Some adherents of this view supported the use of direct controls on prices to contain inflation.

about fifteen per cent of banks' deposit liabilities in 1929, had risen to more than fifty per cent. Third, the removal of gold from public circulation in 1934 loosened the link "between [gold and] the internal supply of money" (Friedman 1954, p. 61). The combined effect of the three changes was to "eliminate as a practical possibility anything approaching a collapse of the American banking structure" (Friedman 1954, p. 61). As mentioned, the first two of the above effects had earlier been singled out by Mints.

In light of these changes, by the late-1950s and the 1960s, Friedman would come to consider the one-hundred per-cent reserve scheme as less pressing than he had in the late-1940s and the early-1950s. Instead of viewing the scheme as a necessary measure to maintain economic stability, he came to "view it as a step toward reducing government interference with lending and borrowing in order to permit a greater degree of freedom and variety in the arrangement for borrowing or lending" (Friedman, 1967, p. 84).

Friedman's position on the Great Depression had also evolved. First, the evidence that he had been constructing with Schwartz had convinced him that, by the summer of 1931, there had been signs of an economic revival. "But the decline," he argued, "did not come to an end." Fed officials took "strong deflationary measures, putting up the bank rate more sharply and suddenly than at any previous time in their history -- and this after two years of economic contraction" (Friedman 1954, p. 64). Second, Friedman had also begun to assess the Fed's policies beginning in 1929 (but not 1928 as he would do subsequently). While he did not argue that the Fed had initiated the Great Depression in his 1954 lecture, he did argue that the Fed's policies, beginning in 1929, had contributed to a deepening of the Great Depression: "From 1929 to 1931 the Reserve System was largely passive. It allowed the stock of money to decline by about 10 per cent and banks to fail in a steady if not spectacular stream" (Friedman 1954, p. 64).

5. *Warburton and Mints*

During the period covered in this paper (i.e, mid-1940s to early-1950s), Clark Warburton made significant empirical contributions to monetary economics.[47] Several of those contributions may have influenced Mint's thinking. First, as mentioned, in both his 1950 book and in his 1951 article, Mints examined the effects of movements of Federal Reserve credit on wholesale prices and industrial production during specific historical periods, As early as 1946, however, Warburton had emphasized the

[47] On the influence of Warburton on Friedman's monetarist framework, see Tavlas (2019b).

relationship between Federal Reserve credit (or assets) and commercial bank's reserves. In an article published in the University of Chicago's *Journal of Business*, Warburton stated: "The chief limitation upon the expansion of bank assets and deposits is the amount of reserves available to them and the percentage reserve requirements imposed upon them. Since 1917, when reserves were concentrated in the Federal Reserve banks, the reserves available to commercial have depended directly upon the volume of assets held by the Federal Reserve banks" (1946, p. 95).

Second, and related to the first point, whereas Chicago economists (including Mints and Friedman) of the 1930s and 1940s argued that the money supply was endogenous due to the ability of banks to create and destroy deposits, Warburton believed that the Fed's ability to buy or sell assets -- and, thus, affect the reserves of the commercial banks could offset actions taken by banks to create or destroy deposits, rendering the money supply subject to Federal Reserve control. Warburton was cognizant of this key difference about money-stock determination between himself and Chicago economists. Thus, in his 1946 *Journal of Business* paper, Warburton noted that Frank Knight, in a 1941 article, had referred to the central role played in the business cycle by deposit creation and destruction by commercial banks. Warburton remarked: "Knight ... includes the lending or deposit-creating power of the banking system in the total quantity of money but makes no mention of the relation of this deposit-creating power to the [power of the Federal Reserve to create] reserves held by commercial banks" (1946, p. 81, footnote 10).

Third, throughout the 1940s and the early-1950s Warburton provided evidence about the role played by the Federal Reserve in precipitating and deepening the Great Depression. In a 1950 paper he wrote:

> ... the pertinent data shows that the depression was led by a substantial deviation in effective bank reserves below the reasonable rate of growth, that the beginning of this deviation in 1928 and 1929 was the direct result of Federal Reserve policies.... that accentuation in the succeeding year would have been avoided by acquisition through open market operations or otherwise of a suitable volume of assets by the Federal Reserve banks, and that the legal powers of the System were fully ample to permit such acquisition (1950, p. 190).

As mentioned, Mints had criticized the Fed's policies during the Great Depression in his classroom lectures in the late-1930s. In addition, Mints was aware of, and apparently convinced by, Warburton's empirical work on the role of monetary factors in the Great

Depression. In his 1950 book, Mints referred to Warburton's findings as follows:

> Clark Warburton contends that the initiating factor in depressions has been a failure of the stock of money to increase equivalently with the "need" for money, "need" being measured by the growth in transactions and the increase in the demand for liquid resources. This failure of the stock of money to increase sufficiently has brought on a decline in prices, so he contends, and this in turn has ushered in the depression. To me Warburton's evidence seems inconclusive which is equivalent to saying that he may be right (1950, p, 37, footnote 2).

6. Conclusions

We have argued that Lloyd Mints's contributions between the mid-1940s and the early-1950s played a catalytic role in helping to transform the Chicago quantity-theory framework of the 1930s and early-1940s (as reflected in Simons's work during the latter years) to what emerged as Friedman's monetarism in the 1950s. His original contributions included the following. Mints turned the 1930s Chicago core perception of the economic structure -- namely, that the economy is inherently unstable because of sharp, autonomous variations in velocity -- on its head. Instead, he argued that the economy is inherently stable but has been destabilized by monetary shocks originating from discretionary policies. He maintained that there is a frictional rate of unemployment that is invariant to normal monetary policy; expansionary monetary policy at a time of frictional unemployment would come only at the cost of serious inflation. He believed that changes in the money supply would offset the impact of cost-push factors on inflation. Discretionary monetary policies are, he argued, subject to the complicating effects introduced by lags, and the effects of such policies are impeded by forecast inaccuracy. Building on the work of others, he made the following, additional contributions to the Chicago monetary framework. (i) A monetary-policy rule would stabilize private-sector expectations; Mints favoured a price-level rule, with a money-supply rule a close second. (ii) Mints incorporated wealth effects into the monetary transmission mechanism and developed a simple portfolio theory of the demand for money. (iii) He was also a severe critic of the policies followed by the Federal Reserve during the Great Depression, using data to support his view. Each of these views would become essential components of Friedman's monetarist framework.

In the area of exchange-rate regimes, Mints set-forth the idea that exchange-rate volatility is a function of the underlying economic fundamentals rather than any particular regime; capital flows would be destabilizing if the macroeconomic fundamentals are unsound. In the presence of sound fundamentals, he did not believe that the exchange-rate fluctuations that take place under flexible exchange rates hamper international trade; flexible exchange rates would encourage the development of a forward market in foreign exchange so that exchange-rate risk could be hedged. Moreover, he argued that speculation in foreign exchange markets is stabilizing; if a speculator has a disequilibrating influence, the speculator will lose money and be eliminated from the market. Again, Mints's views on these issues would become parts of Friedman's thinking.

As we have shown, there was considerable cross-fertilization between Mints's changing views and those of Friedman: each influenced the other's thinking on various issues. Friedman's research capacity and effectiveness at communicating his views, however, were of a different order from those of Mints. Friedman (1951a) was able to provide statistical analysis to support the argument that long and variable policy lags are destabilizing. He provided econometric evidence to show that the long-run demand for money is stable (Friedman, 1959). In 1948 he embarked on his research with Anna Schwartz on their *A Monetary History* (1963), with its construction and assessment of a voluminous amount of data, and published a paper based on that research in 1952 demonstrating the critical contribution of changes in the money supply to U.S. inflation during three wartime periods (Friedman, 1952). The publication of *A Monetary History* would convince a sizeable part of the profession that both the severity and the *initiation*, of the Great Depression was largely a result of the policies of inept monetary authorities. Friedman's research showed the importance of incorporating permanent income in both the consumption function and the demand-for-money function. His work on monetary rules during the 1950s convinced him of the pernicious consequences of achieving monetary-policy goals through expansionary or contractionary fiscal policies, leading to the conclusion that money-supply changes should be implemented through open-market operations.

In view of the catalytic role that Mints seems to have played in the development of Chicago monetarism, why have his contributions been neglected? Apart from the factors mentioned in the introduction -- namely, Mints's lack of research output up to 1945 and the focus of the literature on the Chicago monetary tradition on the pre-1936 period -- there is another factor that helps explains that neglect. As the volume, depth, and originality of Friedman's research output during the 1950s and 1960s converted a sizeable part of the profession to the view that money matters, Mints's monetary contributions -- and those of others during the 1940s, especially those of Clark Warburton -- were swept aside. Yet, the picture that emerges from this study, as well as from recent work on Warburton, is that Friedman's monetarist economics appears to have owed more to the contributions of some other economists than has been previously recognized.

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