Irving Fisher and His Compensated Dollar Plan

Don Patinkin

This is a story that illustrates the interrelationship between economic history and economic thought: more precisely, between monetary history and monetary thought. So let me begin with a very brief discussion of the relevant history.

In 1879, the United States returned to the gold standard from which it had departed at the time of the Civil War. This took place in a period in which "a combination of events, including a slowing of the rate of increase of the world's stock of gold, the adoption of the gold standard by a widening circle of countries, and a rapid increase in aggregate economic output, produced a secular decline :. in the world price level measured in gold:.." (Friedman and Schwartz 1963, p. 91; for further details, see Friedman 1990, and Laidler 1991, pp. 49–50). The specific situation thus generated in the United States was described by Irving Fisher (1913c, p. 27) in the following words: "For a quarter of a century—from 1873 to 1896—the dollar increased in purchasing power and caused a prolonged depression of trade, culminating in the political upheaval which led to the free silver campaign of 1896, when the remedy proposed was worse than the disease." This was, of course, the campaign which climaxed with William J. Bryan's famous "cross of gold" speech in the presidential election of 1896. Fisher's view of this campaign reflected the fact that it called for the unlimited coinage of silver at a mint price far higher than its market value, a policy that would have led to a tremendous increase in the quantity of money and the consequent generation of strong inflationary pressures.

The author is Professor of Economics Emeritus at the Hebrew University of Jerusalem. The views expressed herein do not necessarily reflect those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

Though Bryan was defeated in the subsequent election, his objective was nevertheless accomplished by the unprecedented increase in the output of gold that began in the 1890s as a result of the discovery of new gold deposits in South Africa and Alaska, as well as the development of more efficient processes for the extraction of gold from the ore. Thus the world output of gold in 1899 was nearly three times the average annual output during the 1880s, and in 1905 it was nearly four times as large (Wright 1941, pp. 825–26). As a result, the U.S. price level increased from 1896 to 1913 by almost 50 percent—a fact duly noted and emphasized by Fisher (1913b, p. 217).[1] It was this 40-year experience of serious economic, political, and social problems generated by significant changes in the price level—in either direction—that led Fisher to formulate his compensated dollar plan for stabilizing it.

Another important fact is that "guilt by association" with the declared objective of the silver campaign to generate a great increase in the quantity of money and hence in prices had caused the quantity theory itself to fall into disrepute. This situation was clearly reflected in Fisher's statement in the preface to his 1911 *Purchasing Power of Money* that "it would seem that even the theorems of Euclid would be challenged and doubted if they should be appealed to by one political party as against another:.. The attempts by promoters of unsound money to make an improper use of the quantity theory—as in the first Bryan campaign—led many sound money men to the utter repudiation of the quantity theory." In fact, that situation was the immediate reason for Fisher's writing the book; namely, that "the quantity theory needs to be reintroduced into general knowledge" (ibid., p. viii).

Note finally that when in 1913 Fisher proposed his compensated dollar plan, the Federal Reserve System had not yet come into existence. Though the Act establishing it was approved toward the end of that year, the role that it might play in stabilizing the price level did not become part of general thinking about monetary policy until the 1920s. This delay was due in part to the fact that in the first years of the Federal Reserve System, its policy was more or less dictated by the exigencies of World War I and, in part, to the time that was naturally needed for the System to gain experience in the workings of monetary policy (see Barger 1964, Chap. 3; Wicker 1966, pp. 57–58).

[1] Fisher's 50 percent figure was based on the wholesale price index which the Bureau of Labor Statistics had begun to publish only in 1890. Consequently, for the period before that, Fisher (in the statement cited in the preceding paragraph) had to suffice with a general statement about the increased purchasing power of the dollar. This is a minor illustration of another important interrelationship: that between economic thought and economic measurement. For a much more significant illustration, see Patinkin (1976) for the interrelationship between macroeconomic theory and measurement in the 1930s.

1. THE PLAN: RATIONALE AND DETAILS

With that as background, let me begin the story with Fisher's already-mentioned classic exposition of the quantity theory in his *The Purchasing Power of Money.* That—or rather its inverse, the price level—is indeed the major concern of the book. The book, however, also has a subtitle—*Its Determination and Relation to Credit Interest and Crises*—and that is an almost equally important concern.

Though most of *The Purchasing Power of Money* (henceforth, *PPM*) is devoted to the long-run proportionality between the quantity of money and the price level, Fisher attached great importance to Chapter 4 of the book on "transition periods," in which this proportionality did not obtain. And lest the term "transition" mislead, let me point out that Fisher emphasizes that "periods of transition are the rule and those of equilibrium the exception, [so that] the mechanism of exchange is almost always in a dynamic rather than a static condition" (ibid., p. 71).

It is accordingly in this chapter that Fisher develops his theory of "crises," or what we now call "cycles." This was based on the fundamental distinction that (with due acknowledgment to Alfred Marshall and even earlier writers) he had already made in his 1896 *Appreciation and Interest* (Chaps. 1–3 and 12), and again in his 1907 *Rate of Interest* (Chap. 5 and its appendix), between nominal and real rates of interest. Fisher begins his analysis of the period of transition by assuming that the economy is in a state of equilibrium which is disturbed, and adds that "any cause which disturbs equilibrium will suffice to set up oscillations. One of the most common of such causes is an increase in the quantity of money" (*PPM,* p. 70). Accordingly, the "chief factor" that he studies for this purpose is a change in the quantity of money (ibid., p. 55).

As a result of, say, an increase in this quantity, there follows an initial increase in the price level, which in turn causes an increase in the velocity of circulation, for "we all hasten to get rid of any commodity which, like ripe fruit, is spoiling on our hands. Money is no exception; when it is depreciating, holders will get rid of it as fast as possible" (ibid., p. 63). This causes a further increase in the price level. As a result of the increasing price level, the nominal rate of interest also increases. But—because of the failure of people to realize "that they are daily gambling in changes in the value of money" (what in later writings Fisher denoted as "money illusion"), as well as of inadequate "knowledge as to prospective price levels" on the part of lenders—"not sufficiently"; that is, the nominal rate does not increase sufficiently to leave the real rate unchanged (*PPM,* pp. 346, 321, and 63, respectively; see also *Rate of Interest,* p. 86).[2]

[2] In his *Theory of Interest* (1930) many years later, Fisher attributed this insufficiency of adjustment to the "almost universal lack of foresight" (ibid., pp. 43–44).

Because of the consequent decline in the real rate of interest, businessmen's "profits increase, loans expand, and the *Q*'s [i.e., outputs] increase" (*PPM,* p. 63). This expansionary process continues until ultimately lending rates of interest rise to correspond to the rate of inflation, which then causes difficulties for the business-borrowers "who have counted on renewing their loans at the former rates," hence to some bankruptcies, hence to "runs on the banks" and a consequent decrease in bank credit and deposits, and hence in the money supply—as a result of which pressure prices begin to decline (ibid., pp. 65–66).

The decline creates the opposite relationship between the nominal and real rates of interest, this time as a result of the lack of knowledge on the part of the borrowers. This increase in the real rate of interest generates a contractional process—which Fisher pedantically describes in the same step-by-step sequence (with the signs reversed) that he had described in the expansionary one (ibid., p. 69). Indeed, Fisher based his whole theory of the business cycle on the miscalculations of the real rate of interest caused by a fluctuating price level: in the picturesque words with which he entitled one of his later articles on the subject, "The Business Cycle Largely a 'Dance of the Dollar' " (1923b). (In a subsequent article on "Our Unstable Dollar and the So-Called Business Cycle" [1925], Fisher also provided what he regarded as statistical verification of his theory.)[3]

From this analysis of the cycle there immediately followed Fisher's prescription for eliminating, or at least greatly mitigating, it: if the source of the problem is the instability of the price level, then the solution to it is to stabilize this level.[4] Accordingly, Fisher devotes the concluding chapter of *Purchasing Power* to a description and criticism of various proposals to accomplish this purpose, and to the presentation of his own proposal. The following year, he expanded on his proposal in an article in the December 1912 issue of the *Economic Journal.* Shortly afterwards, in the February 1913 issue of the *Quarterly Journal of Economics,* he presented a more detailed description in an article entitled "A Compensated Dollar," under which name his proposal has since been known. And the only significant difference between the "new and revised" 1913 edition of *Purchasing Power* (henceforth, *PPM–2*) and the original one is the addition of the appendix "Standardizing the Dollar," in

[3] In the history of econometrics, this article is notable for Fisher's having introduced and applied for this purpose the technique of the distributed lag, the term for which he then also coined (see Alt 1942, p. 114, n. 4; see also Koyck 1954, pp. 30–32).

[4] It is interesting to note that stabilization of the price level was the policy advocated by many quantity theorists at the time (including Keynes of his quantity-theory period), though not all for the same reason and/or by the same means. See Patinkin (1972) and Laidler (1991, Chaps. 3 and 5). See also the brief discussion of Wicksell on pp. 10–11 below.

which Fisher refers to his *QJE* article and spells out his proposal in greater detail than in the original edition.[5,6]

In the appendix, Fisher considers it "easier to explain the principle of the proposal" by considering the case in which all gold coin has been withdrawn from circulation and replaced by gold certificates which can be redeemed upon demand from the government for a certain quantity of gold bullion (*PPM–2*, p. 495). As an example of this aspect of his proposal, as well as to reassure his reader that its like already existed in the world, Fisher referred to the similar situation that existed under the gold exchange standard that was in operation in India, the Philippines and in other countries (*PPM* and *PPM–2*, pp. 337–40; 1913b, pp. 226–27). Another way in which Fisher tried to present his plan in familiar clothing was by relating it to "the ancient custom of seigniorage" and to refer to it alternatively as "the adjustable seigniorage plan" (1913b, pp. 224, 395–96; see also *PPM* and *PPM–2*, pp. 330–1; *PPM–2*, pp. 498–99), in the sense that his plan called for making adjustments in the amount of dollars that one would receive for a given quantity of gold. In an accompanying footnote (1913b, p. 224, n. 1), however, he admitted that for several reasons (including the fact that it would not provide the government with revenue, which was of course the historical purpose of seigniorage) it was a "peculiar sort of seigniorage." (A similar observation was subsequently made by B.M. Anderson [1913, p. 42; see Section 3 below].)

Fisher then proceeds to explain that if an index of the price level should increase by, say, 1 percent, then the purchasing power of a dollar gold-certificate would be restored by increasing the "gold content" of a dollar by 1 percent; and if during the following quarter that should not succeed in restoring the original price level, the gold content would be further increased—and so forth. Here, then, was a rule in the modern sense of the term (Fischer 1990, p. 1168). Now, to increase the gold content of the dollar means to decrease the dollar price of a given quantity of gold, and vice versa. Thus in the back of Fisher's mind when he formulated his proposal (and more or less explicitly in some of his later discussions of it) there may have been the relation:

dollar price of basket of goods and services =
gold price of basket *times* dollar price of gold.

[5] See the list of differences between the two editions on p. xii of the 1913 edition.

[6] For other discussions of Fisher's proposal, see Lawrence (1928, Chap. 7), Reeve (1943, Chap. 11 et passim), and Dorfman (1959, vol. 4, pp. 288–93). It is also briefly discussed in the respective encyclopedia articles on Fisher by Allais (1968, p. 480) and Tobin (1987, p. 373b). See also Fisher's autobiographical account in his *Stable Money* (1934b, pp. 374–89), as well as the chapters on "The Commodity Dollar" and "Money Illusion" in Irving N. Fisher's biography of his father (1956). See also the discussion in the recent biography by R.L. Allen (1993, pp. 162–67 et passim).

It would thus seem that any change in the gold price of the basket can be offset by an appropriate change by the mint in the dollar price of gold, thereby leaving the dollar price of the basket unchanged.

This relation, however, holds only in an economy in which not only dollars, but physical quantities of gold (in, say, the form of blank gold slugs of a fixed weight, the dollar value of which is determined by the mint price of gold) are part of the circulating medium of exchange, so that the gold price of a basket accordingly means the *number* of gold slugs that have to be paid for a basket. For then a, say, decrease in the mint price of gold, in order to offset an increase in the dollar price of a basket, will in the first instance (i.e., before any subsequent change in that dollar price) decrease the dollar value of a gold slug and hence (by "instant arbitrage" between paying in dollars and paying in slugs) cause a proportionate increase in the slug price (i.e., the number of slugs that have to be paid for a basket). But the decrease in the mint price will also decrease the total quantity of money in the economy to an extent determined by the proportion of this quantity that individuals choose to hold in the form of slugs. And after the "first instance," this decrease will ultimately (on crude-quantity-theory assumptions) generate an equiproportionate decline in both the dollar and slug prices of a basket.[7]

On the other hand, the foregoing relation is obviously not relevant for the pure form of Fisher's plan in which only gold certificates are in circulation, the dollar value of which is not affected by the change in the mint price of gold. Nor would the situation be different if gold coins (the dollar value of

[7] The following example illustrates this process. Assume for simplicity that individuals always hold half of their money balances in the form of dollars and half in the form of gold slugs (evaluated at the mint price). Assume further that initially all prices in the foregoing relation are unity. Denote this as Situation I. Let there now be an increase in the output of gold, hence a 10 percent increase in the money supply (which again is equally divided between dollars and slugs), and hence a 10 percent increase in the price level (Situation II). In accordance with Fisher's plan, let the mint price be reduced by 9 percent so as to offset this price increase, but assume that in the first instance the dollar price of a basket remains unchanged; on the other hand, since the dollar value of a slug has decreased, this means that the slug price has increased (Situation III). Since gold slugs (evaluated at the mint price) constitute only half of the money supply, this 9 percent reduction in their mint price causes a reduction of only 4.5 percent in the total money supply, and hence ultimately a 4.5 percent reduction in both the dollar and slug prices of the basket (Situation IV). These developments are described in the following table:

dollar price of basket = gold-slug price of basket *times* dollar price of gold

I	1.00	= 1.00	x 1.00
II	1.10	= 1.10	x 1.00
III	1.10	= 1.21	x 0.91
IV	1.05	= 1.155	x 0.91

Note that the 9 percent reduction in the mint price does not suffice to restore the original dollar price of a basket, but see next section on subsequent changes.

I am indebted to my colleague Tsvi Ophir for the construction of this example.

which would also not be affected) continued to circulate as well. For as Fisher emphasized, the value of the gold actually contained in such coins generally would be less than the nominal value of the coin itself, so that an anticipated, say, decrease in the price index and hence increase in the mint price of gold would not lead to the melting down of coins in order to obtain gold to sell to the mint. In brief, "Gold dollars would, in such a system, be mere tokens—like brass checks—entitling the holder to gold bullion" (1913b, p. 222).[8]

2. THE PLAN: CRITIQUE

Having briefly indicated the nature of Fisher's compensated-dollar proposal, let me go on to say that it is a most puzzling one to have been advanced by the author of *The Purchasing Power of Money.* First of all, this book (as noted above) regards changes in the quantity of money to be the major cause of changes in the price level. We should accordingly expect that in any stabilization proposal that Fisher would present, he would assign a primary role to the quantity of money. I do not mean that we should expect him to have advocated the policy of, say, the Chicago School 20 years later to stabilize the price level by making offsetting changes in this quantity (see Patinkin 1969, pp. 245-46), for there was as yet no institutional framework in the United States that would have enabled using the quantity of money as a policy variable. In particular, there was as yet no central bank; nor was it part of generally accepted thinking at that time to generate peacetime changes in the quantity of money by having the government deliberately incur budgetary deficits or surpluses. But we should at least have expected Fisher to have emphasized and clearly explained the way in which his proposal would generate the necessary offsetting changes in the quantity of money and hence in the price level. Of this, there are only passing remarks in the appendix that Fisher added to the second edition of his book and in his 1913 *QJE* article.

Second, not only did Fisher not associate his plan with the quantity theory of money, but his presentation of it smacks of the commodity theory of money: the theory that claims that the value of money is determined by the value of the gold which it contains or for which it can be redeemed, and accordingly the theory which is the antithesis of the quantity theory that Fisher was forcefully advocating. In the words of B.M. Anderson, one of its leading advocates at the

[8] Fisher was fully aware of the danger that anticipated changes in the price of gold in accordance with his plan could encourage speculative purchases or sales of gold to the mint that would generate losses for the government. In order to prevent such speculation, he stipulated that there be a difference between the mint buying and selling price (which difference he denoted as a "brassage" charge) and that any change in the mint price of gold as a result of a change in the price index be less than this difference (1913b, pp. 227, 385–88).

time, the commodity theory contends "that by putting more bullion behind the coin you can *ipso facto* raise the value of the dollar" (1913, p. 42).[9]

Third, even Fisher's aforementioned passing remarks on the quantity of money refer only to the changing amounts of money (i.e., gold certificates) that miners would receive when they sold new gold to the mint, and that "jewelers and others who desire gold bullion" would have to pay when they bought gold from it (1913b, pp. 222–23; see also *PPM* and *PPM–2*, p. 343). But Fisher's argument in *Purchasing Power* is that it is the *stock* of monetary gold that influences the price level, not the *flows* into or out of it. In fact, he distinguishes sharply between these two concepts, and even illustrates this distinction with one of his ingenious and complicated diagrams (*PPM* and *PPM–2*, p. 105). These flows are, to begin with, small relative to the stock. Furthermore, even they would be affected only to a minor extent; namely, to an extent determined by the elasticity of supply of the gold mines, and the elasticity of demand of the arts, with respect to small percentage changes in the price of gold. Thus changes in that price cannot be expected to exert any significant short-run influence on the price level.

Fourth, in his exposition of the quantity theory in terms of his famous equation of exchange

$$MV + M'V' = PT,$$

it is the total quantity of money, currency (M) *plus* demand deposits (M')—what we today denote as $M1$—that matters. But the compensated dollar plan directly affects only M. Now, it is true that in his *Purchasing Power,* Fisher assumed that "deposits are *normally* a more or less definite multiple" of M (*PPM* and *PPM–2*, p. 50, italics added; see also pp. 53–54). But in periods of transition—which, as we recall, "are the rule," and which surely are the periods for which his plan was designed—the ratio of M' to M changes (ibid., p. 61). It is, however, also true that Fisher assumed that this change reinforces the effect of the change in M: that, say, a price rise generated by an increase in the quantity of money also "increases the ratio of M' to M" (ibid.). Still, it is puzzling that he completely disregarded the role of demand deposits.

Fifth, Fisher does not indicate that, under the gold standard that then prevailed, changing the dollar price of gold in accordance with his proposal meant changing the foreign exchange rate. At the same time, he was in favor of fixed exchange rates in order to avoid "again restoring the uncertainties

[9] Anderson's full statement is cited below. In order to avoid possible misunderstanding, let me emphasize that the long-run implications of the quantity theory, on the one hand, and of the commodity theory, on the other, are the same in the sense that both imply that the marginal cost of producing gold equals its mint price. But whereas the quantity theory explains that this equality is achieved over a period of time during which, say, an increase in the quantity of money raises prices and hence this marginal cost until it equals the mint price of gold (i.e., until equilibrium is achieved), the commodity theory contends that this equality always obtains.

of international exchange" (*PPM* and *PPM–2*, p. 340). And in an amazing statement, he declared in his 1913 *QJE* article that his plan did not involve "abandoning the gold standard" (ibid., p. 221), for "it is the possibility of turning gold dollars or gold certificates into commercial bullion which is the essence of the gold standard" (ibid., p. 223, n. 1)—as if the price at which this was done, and hence the exchange rate thereby determined, was of no consequence. In all fairness, however, I must note that there is one discussion in *Purchasing Power* (pp. 341–43) which might be interpreted as advocating the adoption of the compensated dollar proposal by all gold-standard countries of the world in a way which would leave their exchange rates unchanged. On the other hand, though the numerical illustration of the operation of the plan in Appendix II of the 1913 QJE article (here described as "the adjustable seigniorage plan") is based on the assumption that it is adopted only in the United States (ibid., p. 394), there is no indication in it of the consequent effect on the exchange rate. In Appendix III to the article, however, there is a brief consideration of the case in which all countries adopt the proposal (ibid., p. 396).[10]

There is, however, a simple answer to most of the above puzzles; namely, that the person who is our present concern is not Irving Fisher the author of the scientific work on *The Purchasing Power of Money,* but Irving Fisher the deviser of a plan to be "sold" to the economics profession as well as to the business community and government—and to be "packaged" accordingly. The quantity theory of money was out of favor in some circles, so the plan should not be explicitly associated with it. The commodity theory of money had influential supporters, so the plan should be presented in language that had the sounds of that theory. The gold standard was sacred, so it should be emphasized that the plan did not involve its abandonment.

3. THE RECEPTION BY THE PROFESSION

The foregoing criticisms of Fisher's plan are not new. Indeed, most of them were raised immediately after its publication, though they did not deter Fisher from persisting in advocating the plan for many years to come. Thus in the issue of the *QJE* following the one with Fisher's article, Frank Taussig (1913)—the doyen of American economists—published a critique of Fisher's plan in which he said:

> More stress should be laid, however, than Professor Fisher does, on the fact that the plan can work out its results only through its effects on

[10] I should note that Allais (1968, p. 480) presents a more favorable view of Fisher's plan in a long-run context. He claims that if it had been in operation during the nineteenth century, then "the long-run increases and declines in the price level, which actually occurred and whose drawbacks are evident, could have been avoided." Fisher, however, regarded his plan as one that would deal with short-run problems as well.

> the *quantity* of coined gold :.. The consequences on prices [of an increase in the gold content of the dollar] will be precisely the same as those of diminished production or limited coinage. Professor Fisher seems to expect a closer connection. His analysis implies, almost states in terms, that prices will accommodate themselves at once or very promptly to the bullion equivalent of the coined dollar; that as the bullion required for the dollar increases, prices will fall quasi-automatically in proportion; and that as the bullion equivalent lessens, prices will be correspondingly affected at once. Now, no one has stated more clearly and explicitly than Professor Fisher himself, in his *Purchasing Power of Money,* the grounds for maintaining that the connection between the bullion equivalent in the coined dollar and prices will work out its effects solely through changes in quantity. He has shown that the connection between the quantity of coined money and general prices is by no means a close one. It is not only loose and uncertain, but we are much in the dark concerning the degree of looseness and uncertainty. Economists should be very chary of prediction in such matters, and Professor Fisher makes predictions which the event might greatly falsify. (1913, pp. 402–3; italics in original)

As might be expected from an economist with a primary interest in international trade theory and policy, Taussig (1913, pp. 410–11) also pointed out the effect of Fisher's plan on the exchange rate. He stressed that while that effect would be immediate, the effect on domestic prices would at best take place with a lag. Thus if in the face of an inflationary process the gold content of the dollar were increased—which would mean that the dollar appreciated in the foreign exchanges—the receipts of exporters would immediately be affected adversely, while their domestic costs of production would decline only after a lag. Exporters would then put pressure on Congress and the government to abandon the policy. Furthermore, Taussig left no doubt about his opinion that an "international agreement" for the adoption of the compensated dollar plan–which would have the benefit of obviating the need for changes in the exchange rate–seemed to him "in the highest degree unlikely" (ibid., p. 407).

In light of these as well as other objections, Taussig concluded, "On the whole, I conclude that this proposal for radical change gives better opportunity for ingenious intellectual exercise than for practical efficacy" (ibid., p. 416).

Interestingly enough, Fisher's *Quarterly Journal of Economics* article also evoked a critical reaction from Knut Wicksell. In a note entitled "Another Method of Regulating the Value of Money" which he submitted in 1913 to that journal, Wicksell began with a criticism of Fisher's plan on the grounds that

> although of course the method proposed by professor Fisher always must be regarded as a step in the right direction, it will generally prove to be *too small a step* to have immediately any practical bearing at all on the level of prices. Fisher forgets, it seems to me, that an alteration of the mint price will directly influence only the *new* gold, and as the gold produced every year is only a small fraction of the whole amount of gold and hence of the volume of money,

> the possible alteration of the value of money and of the level of prices will at first only be a *fraction of a fraction* or practically nil. (emphasis in original)

As an alternative to Fisher's plan, Wicksell then went on to spell out the details of the policy that he had advocated in his 1898 *Geldzins und Güterpreise*[11] and in his 1907 *Economic Journal* article on "The Influence of the Rate of Interest on Prices" to stabilize the price level by means of central-bank interest-rate policy. In a very polite and respectful letter of rejection to Wicksell dated January 7, 1914, however, Taussig (then editor of the *QJE*) did not refer to Wicksell's criticism of the plan, but simply explained that since Wicksell's policy proposal was familiar to American economists from his two aforementioned publications, he (Taussig) had reluctantly concluded that the journal could not publish the note.[12]

Fisher also presented his plan at the 1912 Meetings of the American Economic Association. And here the sounds of the commodity theory of money are unmistakable:

> Both on the basis of theory and of facts, we may accept as sound the principle that the lighter the gold dollar the less its purchasing power and the more magnified the scale of prices; and that the heavier the dollar the greater its purchasing power and the more contracted the scale of prices. Evidently if we can find some way to increase the weight of the dollar just fast enough to compensate for the loss in the purchasing power of each grain of gold, we shall have a fully "compensated dollar," that is, a dollar which has constantly restored to it any purchasing power it may lose by gold depreciation. (1913c, pp. 20–21)

Again, the value of a gold coin "would be determined just as the value of a gold certificate or any other paper money is today determined, by the ultimate bullion with which it would be interconvertible" (1913c, p. 24).

In any event, one Albert C. Whitaker (1913, pp. 31–32) began his discussion of the paper with the statement that "at one place in his paper Professor Fisher has followed the instincts of a good propagandist and has invited even

---

[11] See pp. 189–92 of the 1936 translation of this book under the title *Interest and Prices.*

[12] I am indebted to Lars Jonung for providing me with a copy of Wicksell's note, as well as of Taussig's reply, and granting me permission to cite from them here.

In a comment on this paragraph, David Laidler has pointed out to me that the English version of Wicksell's *Lectures on Political Economy,* Vol. II: *Money* (which was translated from the third [1929] edition of the Swedish original) contains a "Note on Irving Fisher's Proposal for the Regulation of the Purchasing Power of Money" (ibid., pp. 225–28). An attached editorial footnote explains that this "Note" was added by Wicksell to the second (1915) Swedish edition, and that Wicksell had indicated in the preface to that edition that it constituted a brief resume of a 1913 paper which he had published in *Ekonomisk Tidskrift.* The title of that paper was similar to the one he submitted to the *QJE,* and so I presume that its contents were also similar. In any event, the "Note" in the English translation contains the same criticism of Fisher's plan cited here–including the same emphasis on "*fraction of a fraction.*"

those who repudiate the quantity theory to join with him in support of the adjustable seigniorage plan"[13] and then went on to emphasize that "it is clear the author of the plan himself conceives it simply as one which will provide for an approximate stability in the purchasing power of the money unit *merely by way of and through its effects upon the quantity of standard coin in circulation"* (italics in original).

At the same time, Whitaker questioned the practicality of the plan because he

> [did] not at all follow Professor Fisher in his assumption that the *amount* of change of seigniorage [i.e., in the gold content of the dollar] required to correct a *given* change in the price level can be clerically or ministerially determined, or even approximately so determined. (ibid., p. 32; italics in original)

And again:

> I may be wrong, but I think the assumed substantial proportionality between seigniorage change and consequent price level change (or correction), would be likely to prove so far away from what we should actually experience as to suggest strongly the abandonment of the ministerial or clerical determination of the seigniorage. (ibid., p. 34)

With these last two comments, another discussant, O.M.W. Sprague (1913, p. 40), who played an important role in the discussions that led up to the Federal Reserve Act (Warburg 1930, vol. 1, pp. 35–6; Friedman and Schwartz 1963, pp. 410–11), expressed his agreement.

Whitaker also pointed out that, in order to avoid fluctuations in the exchange rate,

> the only method to be recommended for putting Professor Fisher's general plan for an adjustable seigniorage into effect, would be to have an international agreement between the leading nations providing for equal and simultaneous alterations of the seigniorage charge in all, determined upon the basis of a world's index number. (ibid., p. 35)

Of particular interest is the comment of a then leading exponent of the commodity theory of money, B.M. Anderson (1913, p. 42), part of which I have cited above:

> Because I am *not* a quantity theorist, I am disposed to believe that Professor Irving Fisher's plan of stabilizing the dollar might be feasible. If he put it on a quantity theory basis, and tried to raise the value of the dollar by charging a real seigniorage, and so checking the increase in the number of dollars, I should be very skeptical. But his plan is not a real seigniorage

[13] No such statement appears in the published version of Fisher's paper. Presumably, however, he did make it in his oral presentation. In any event, he did make it in some of his later writings (see below).

> plan. The coined dollar is *inter*convertible with the gold bullion, and you can always get your bullion back. I believe that by putting more bullion behind the coin you can *ipso facto* raise the value of the dollar, and consequently lower the level of prices. But I do not see how, on the basis of the quantity theory, you could be sure of getting any definite result by Professor Fisher's plan. (ibid., italics in original)

Another discussant was E.W. Kemmerer (1913, p. 45), a staunch advocate of the gold standard, who accordingly opposed the plan on the grounds that "its adoption would demoralize the international exchanges." He also described as "visionary" the "hope of securing a comprehensive international agreement on this scheme" and thereby enabling the plan to operate without causing changes in exchange rates.

In his reply to his critics, Fisher (1913d) agreed with Kemmerer's statement about the effect on the exchange rates, and said that "for this reason I should not advocate the plan for one nation alone, but should advocate it only under international agreement" (ibid., p. 48). But in the paragraph following that statement, Fisher explained to another of his critics that one of the ways in which a reduction in the price of gold would "tend to contract the currency" would be by "diverting gold :. to countries where the price had not been changed"—a diversion which would take place only with respect to countries that were not part of an "international agreement" and with respect to which the dollar would accordingly appreciate.[14] Nor did he address the basic question that had been raised by both Whitaker and Anderson as to the questionable quantitative effect that changing the gold content of the dollar would have on the total stock of money, as distinct from its effect on the inflow and outflow of gold into this stock.

During 1913 there appeared many other articles on Fisher's plan by both American and European economists. In one of them, David Kinley (1913, pp. 9–10, 16–17), an influential monetary economist of the period (see Dorfman 1959, vol. 4, p. 313 n.) in effect pointed out that Fisher's proposal would change only the quantity of currency in circulation, whereas the price level also depended on the quantity of demand deposits as determined by the volume of bank credit—and in this context rejected Fisher's assumption of a constant ratio

---

[14] Further evidence on Fisher's ambivalent treatment of this issue is provided by the following footnote in a 1913 article objecting to his plan by one E.M. Patterson:

> [Fisher's] ready admission of the serious effect on foreign trade is surprising. In reply to the question, "Would not the adoption of the plan by the United States alone play havoc with our foreign trade?" he answers "Yes, most certainly. Foreign exchange would become uncertain and variable. While the plan could be worked if adopted by one nation without the concurrence of others, its benefits would be best secured through its adoption by a number of nations." *The New York Times*, December 22, 1912. (ibid., p. 869, n. 14)

between the two.[15] J.M. Clark (1913) wrote that the plan was an improvement over the gold standard, but pointed out possible complications.

Fisher's reaction to these articles was presented in his "Objections to a Compensated Dollar Answered" (1914), which included a selected bibliography of the literature that had grown up about his plan. In his article Fisher intensified his effort to sell his plan by means of arguments which made it all things to all men (ibid., pp. 820–22).

Thus it was not true that "the plan assumes the truth of the quantity theory of money.... On the contrary, the plan will seem simpler, I think, to those who believe a direct relationship exists between the purchasing power of the dollar and the bullion from which it is made—without any intermediation of the quantity of money—than it will seem to quantity theorists"—and here Fisher cites B.M. Anderson's aforementioned statement at the 1912 meetings of the American Economic Association. On the other hand, it was not true that "it contradicts the quantity theory" for, say, "an increase in the weight of the virtual dollar, i.e., a reduction in the price of gold bullion, would tend to contract the currency, by diverting gold from the mint into the arts :.. A decrease, of course, would have the opposite effect."

There was no reason to fear that "the correction of the price level would be too sudden," for

> all adjustments require time. Changes of the flow of gold into or out of circulation are like changes in a mill pond from the sluice gates. The pond does not jump its level down or up every time the gate is opened or closed. The change of level begins immediately but it is not *completed* immediately. (italics in original)

On the other hand, there was no reason to fear that "the correction of the price level would be too slow":

> How prompt the effect would actually be, we have no exact means of knowing. I should expect *an appreciable effect within a week.* One can scarcely deny that the effect would *begin* at once, for the instant that the price of gold is decreased, even a little, there would be at least *some* tendency to increase the use of gold in the arts and, consequently, an *immediate* reduction in the amount of gold taken to the government for money. *If this be conceded, the plan would surely, under any conceivable circumstances, have a great and quick influence toward stability.* (first and last set of italics in this passage added)

Fisher then proceeded to support his plan with misleading examples. "The closure of the Indian mints in 1893[16] had an almost immediate influence in raising the value of the rupee"—as if a valid inference could be drawn from

[15] Actually, as noted above, Fisher did not maintain this assumption for "periods of transition" (*PPM* and *PPM–2*, p. 55).

[16] For details, see Nambudiripad (1955), pp. 57 ff.

a situation in which there was a complete stoppage of the sales of bullion to the mint in exchange for new coinage, to a situation in which net sales to the mint were slightly reduced as a result of the decrease in the output of gold and increased diversion into the arts caused by a decline of 1 percent in the mint price. "The rate of exchange on London in New York has often changed from the maximum to the minimum inside of a fortnight"—as if the arbitrage that rapidly adjusted exchange rates between those two gold-standard countries by shifting amounts of gold from an *existing* monetary stock of gold from the market for dollars to that for sterling (or vice versa) is of any relevance for the speed of adjustment of the price level involved in the compensated dollar plan—which depends on a *change* in the level of the stock (see p. 8 above).

4. THE HIGH POINT OF THE COMPENSATED DOLLAR

In his 1914 article (p. 818), as well as in the appendix that he had added to the revised edition of *Purchasing Power of Money* (1913a, p. 494), Fisher referred to a book that he hoped shortly to publish about his plan. So let me skip the many additional discussions of his plan in the immediately following years and turn to the book in question. This finally appeared in 1920 under the title *Stabilizing the Dollar* and is the most systematic and detailed presentation of the compensated dollar proposal. Here again we find statements that sound more like those of a commodity theorist than a quantity theorist, such as the following example:

> I do not think that any sane man, whether or not he accepts the theory of money which I accept,* will deny that the weight of gold in a dollar has a great deal to do with its purchasing power. More gold will buy more goods. Therefore, more gold than 23.22 grains will, barring counteracting causes, buy more goods than 23.22 grains will buy. Therefore if the dollar, instead of being 23.22 grains, or about one-twentieth of an ounce of gold, were an ounce or a pound or a ton of gold, it would, other things equal, surely buy more than it does now, which is the same thing as saying that the price level would be lower than it is now.
>
> A Mexican gold dollar weighs about half as much as ours and therefore has less purchasing power. If Mexico should adopt the same dollar that we have, no one could doubt that its purchasing power would rise about twofold, that is, the price level in Mexico would fall about half. Likewise, if we should adopt the Mexican dollar, our prices would about double.
>
> * Thus B.M. Anderson, Jr., probably the ablest writer among the few who still dissent from the "quantity theory" in any form, nevertheless approves of the proposal to stabilize the value of a dollar by adjusting its weight.
>
> (ibid., p. 90)

Note, too, the misleading nature of the argument in the second paragraph: for the changes in the price level there described are not the short-run ones that

Fisher claimed for his plan, but the long-run changes associated with the new equilibrium that would be established after the monetary stock of gold (and hence the quantity of money) had been slowly and fully adjusted to the change in the gold content of the dollar in question—including the adjustment generated by the specie-flow mechanism activated by the change in the exchange rate.

In this book, Fisher (ibid., pp. 87–96) again emphasized that his plan did not involve the abandonment of the gold standard. Under the heading "The Essentials of a Gold Standard," he justified this statement on the grounds that the mint would continue to buy and sell gold in exchange for gold certificates, which he termed "yellowbacks"—presumably to distinguish them from the famous greenbacks, which could not be redeemed for gold. In this context, he also mentioned importers and exporters as buyers and sellers, respectively, of gold. But he did not point out that his plan, based as it was on a varying price of gold, meant (in basic contrast with the gold standard as it then operated) that the exchange rates at which they carried out their international transactions would also vary. This fact was, however, pointed out in an appendix to the book on "Technical Details," but with practically no indication of the difficulties for international trade that this would generate, and only with the expression of the hope and anticipation that the plan would be adopted by other countries as well (ibid., pp. 172–82; see also p. 235, sec. D).

In another appendix to the book (ibid., pp. 214–51), Fisher repeated his presentation of the plan as one that could be supported whether or not one believed in the quantity theory, and also discussed criticisms that had been levied against the plan. Though he did not explicitly refer to the one about the slowness with which the plan would affect prices, he did make a major modification in it which could increase this speed. In particular, Fisher added the possibility of adopting a "definite–reserve system" in which any change in the price of gold also revalued the existing monetary stock of gold with a consequent change in the quantity of gold certificates that could be issued. This was contrasted with the "indefinite-reserve system," which is how he termed the system he had until then advocated. In Fisher's words:

> Under the "indefinite-reserve" system the only inflow and outflow of [gold] certificates would be through the deposit and withdrawal of gold, just as at present; whereas under the "definite-reserve" system there would be, in addition, an inflow and outflow of certificates through special issues or cancellations to keep the total outstanding volume of certificates in tune with the gold reserve :..
>
> The "definite" system would act more promptly to stabilize the price level than would the "indefinite," because, for one reason, the change in the circulation would be more prompt. The instant any change in the dollar's weight is made there is a change in the number of dollars of the reserve, and the volume of certificates is readjusted to this changed reserve immediately. Under the "indefinite" system, on the other hand, the circulation would be affected somewhat more slowly and only as the flow of gold deposits and withdrawals became changed. (ibid., pp. 129–31)

Significantly enough, however, Fisher does not explain the mechanism by which "the volume of certificates [in circulation] is readjusted." Furthermore, in view of the smallness of the flows relative to the stock of gold, surely the term "more slowly" grossly understates the difference in speed at which these two systems would operate.

There are also three minor and somewhat piquant points about the book that I would like to mention. First, Fisher rhetorically asked, "Why did not our civilization improve [i.e., standardize] its monetary units years ago, as it improved all other units? Why was so simple an idea overlooked or ignored?" To this he replied, "because until recently *it lacked the necessary instrument, the index number*" (ibid ., p.113, italics in original)—an allusion (inter alia) to the fact that the United States began publishing such numbers only in 1890 (see n. 1 above), and a nice example of Fisher's concern with the relation between theory and measurement. Correspondingly, he attributed the continued resistance to his plan even after such numbers were available to conservatism, to "resistance to change" (ibid., p. 237). In this context he added:

> And now this obstacle of conservatism—the one great obstacle—has been considerably lessened by the Great War, which has shaken the whole world out of old ruts. Even Great Britain is considering giving up her ancient monetary system—of pounds, shillings, and pence—in favor of a decimal coinage. (ibid., p. 239)

He was one "Great War" too early.

Second, in this book Fisher coined the term "money illusion" to denote "the illusion that money is always fixed in value," and that it is only the prices of goods that change (ibid., pp. 35–39; see also pp. xxxii–xxxiii). (Several years later, he published a book with this title; see below.)

The third point is the dedication of *Stabilizing the Dollar* to "John Rooke, Simon Newcomb, and Alfred Russel Wallace." In another of its appendixes entitled "Precedents," under the rubric "Direct Anticipations," Fisher lists Rooke as the one who (in 1824) had first published a proposal "substantially like that proposed in this book," and after him under that rubric lists Simon Newcomb (ibid., p. 293).[17] What intrigues me, however, is the dedication to Wallace, by many considered the joint discoverer with Charles Darwin of the theory of evolution.

[17] Under this rubric, Fisher also lists Alfred Marshall, as well as three obscure American and English writers of the 1890s. It was, of course, to Newcomb as an anticipator of the equation of exchange that Fisher had also dedicated his *Purchasing Power of Money* (see p. 25, n. 2). In his later book on *Stable Money* (1934b, pp. 26–28), Fisher presents a more detailed account of Rooke's proposal. Fisher lists Marshall on the basis of the second of two plans described in a footnote in the latter's 1887 article on "Remedies for Fluctuations of General Prices" (p. 206, n. 2), which Fisher (1920, p. 294) describes as "in principle, virtually that of this book." Note, however, that as Fisher (ibid, p. 293) himself points out, Marshall states in that footnote that he does not advocate either of the two plans. Note, too, the excerpt from an October 1912 letter which Marshall wrote Fisher in which he expresses some reservations about the plan (reproduced in Pigou, ed. 1925, pp. 477–78).

Wallace is listed in the aforementioned appendix under the rubric "Remote Anticipations of the Plan to Stabilize the Dollar," in the category of those who advocated doing so by printing irredeemable paper money "regulated by an index number of prices" (ibid., pp. 290–91). Thus in the 1898 paper to which Fisher refers, Wallace explains that if the index should show a decline in prices, the "Mint" would "issue fresh money," and that

> This money is sent to the Treasury and is at once brought into circulation by being paid away in salaries, wages, purchase of materials, &c., in the various Government departments :.. On the other hand, when prices are rising, owing to there being rather more money in circulation than is necessary, instructions are sent to the Treasury to cancel a certain amount of the money paid in for taxes, stamps, &c., till the balance is restored. (Wallace, 1898, p. 148).

In this appendix, Fisher (1920, p. 291) explains that the "essential difference" between plans such as those of Wallace and his own "is that between redeemability and irredeemability." But is there really an essential difference between always being able to "redeem" a gold certificate for a possibly *varying* quantity of gold, on the one hand, and always being able to purchase with irredeemable money a given quantity of gold at a possibly *varying* market price, on the other?

So as an outsider to economics, Wallace was free from the attachment to gold and thus advocated a stabilization policy that was more in the spirit of the quantity theory. He was also explicit about what Fisher (in his definite-reserve system) left unspecified; namely, the role of the Treasury in injecting or withdrawing quantities of money from circulation. Here was a true anticipator of the Chicago School of the 1930s. But what remains a puzzle for me is why Fisher chose to dedicate the book to Wallace in preference to the well-known economists he cited in the same category with him—among them Carl Menger and Charles Gide (Fisher 1920, p. 291).[18]

Let me finally turn to that part of the book which in effect constituted a most significant turning point in Fisher's campaign for the compensated dollar, even if he did not at the time recognize it as such. I am referring to the last clause in Fisher's "Tentative Draft of an Act to Stabilize the Dollar" that also appears in the book's appendix on "Technical Details." It reads:

> The Federal Reserve Board could assist in the prompt and efficient operation of the new system by having due regard to the rise and fall of the Index Number, as suggested by Mr. Paul Warburg. This would help [by] its adjustment of the rate of discount and its general loan policy to be such as to keep the volume of individual deposits subject to check approximately proportional both to bank reserves and to the Government gold reserve against gold bullion dollar certificates. (ibid., p. 213)

[18] It is interesting to note that Fisher had already referred to Wallace in his 1914 article (p. 818, n. 1).

Presumably, this clause represented Fisher's response to those who criticized his plan (including Warburg[19]) on the grounds that it dealt only with the currency component of the money supply. But Fisher failed to recognize that far from strengthening the case for the compensated dollar, this clause actually undermines it. For if success of the plan is dependent on the ability of the Federal Reserve to control the volume of demand deposits, then one might as well dispense with the plan and depend solely upon the Federal Reserve to stabilize the price level directly by controlling the *total* money supply!

The high point in Irving Fisher's protracted campaign for the compensated dollar was reached when two years later the House Committee on Banking and Currency held hearings on such an act (subsequently described by Fisher [1934b, p. 152] as "practically in the form" of his aforementioned "Tentative Draft") which had been submitted by Congressman T. Alan Goldsborough (the "First Goldsborough Bill"). Interestingly enough, this bill provided for a modified version of Fisher's definite-reserve system. In particular, it called for maintaining a 50 percent gold reserve against gold certificates and stated that:

> If on any date the reserve falls short of 50 per centum [as it would if the price of gold were reduced—i.e., the gold content of the dollar increased—in order to offset an increase in the price level] it is to be restored by withdrawing from circulation and canceling gold bullion dollar certificates.
>
> If on any date the reserve exceeds said 50 per centum it is to be restored by issuing and putting into circulation the requisite number of new gold bullion dollar certificates.
>
> The Secretary of the Treasury is authorized to make said withdrawals of certificates from circulation by withdrawing from the Government deposits in national banks and to issue certificates and place them in circulation by adding to those deposits. (H.R. 11788, 1922, p. 3)

So the bill was more specific than Fisher had been in *Stabilizing the Dollar* (see above) about the role of the Treasury in the case of the definite-reserve system. But it too did not make explicit the implications of this system for the Treasury's budgetary deficit or surplus. It should also be emphasized that neither the bill nor Fisher's "Tentative Draft" stipulated that the plan should only be adopted as part of an international agreement.

Needless to say, the first witness in the hearings on the bill was Fisher himself (1922, 1923a), who in his book-length testimony (which at times clearly tried the patience of the committee) repeated much of what he had written on the evils of an unstable dollar, the workings of the compensated dollar proposal, and his arguments in favor of it—including (in a more egregious form) his aforementioned misleading argument about Mexico.[20] In his testimony, he

[19] See Warburg (1920, pp. 702–3). Warburg was one of the five members of the original (1914–18) Federal Reserve Board; see Barger (1964, pp. 50–51).

[20] "The Mexican dollar now is half the value of ours. On the other side of us, across the

also stressed the importance of the cooperation of the Federal Reserve for the success of the proposal, and explicitly referred in this context to the aforementioned last clause of the "Tentative Draft" of the bill that he had presented in his *Stabilizing the Dollar* (Fisher 1922, p. 27; see also pp. 46–47).

Kemmerer (who as a result of his having repeatedly preached the virtues of the gold exchange standard to the new countries that had been established after World War I had become known as "the international money doctor"[21]) also presented a statement to the Committee. Though agreeing with the importance of stabilizing the price level, he pointed out that "how long a time would be required for such changes in the size of the bullion dollar, working through the money and deposit currency supply, to reduce the price level, say, 1 percent, is a debatable question" (Kemmerer 1923, p. 158). And in the concluding paragraphs of his statement he stated:

> In the judgment of the writer any plan for stabilizing the monetary unit to be successful should be international in its scope, including at least three or four of the leading commercial nations and more if possible. For one country to adopt the plan alone would throw its exchanges entirely out of adjustment with those of gold-standard countries (and also of silver-standard countries), and would give rise to all the evils of widely fluctuating exchange rates. (ibid., p. 160)

Significantly enough, in his summary many years later of the hearings on the bill, Fisher (1934b, p. 155) said that Kemmerer "wrote (among other things) a strong endorsement of the 'Compensated Dollar' plan," and made no mention whatsoever of the serious reservations that Kemmerer had expressed, which—in view of the absence of any reference in the bill to an international agreement—were tantamount to a recommendation to reject it.

5. THE DECLINE OF THE COMPENSATED DOLLAR

Neither the First Goldsborough Bill, nor the second (1924) slightly revised version,[22] was reported out of Committee. And with the increasing importance of Federal Reserve monetary policy in the years which followed, Fisher slowly came around to accepting the view that the objective of stabilizing the price

---

Canadian border, they have the same dollar as we have. Suppose Mexico :. would say :. 'we are going to have on this continent just one dollar of equal value in Canada, Mexico, and the United States.' *Immediately* prices in Mexico would be cut in two :.. Is there any doubt about that?" (Fisher 1922, pp. 23–24, italics added)

[21] See Groseclose (1965), p. 141. See also Barber (1985), pp. 59–60, and his reference (ibid., p. 209, n. 48) to Kemmerer's presidential address to the American Economic Association (1927), in which the latter described the advice that he had given to many countries in connection with the "establishment of the gold standard" (ibid., p. 4).

[22] The revision consisted of the deletion of the clause that required a 50 percent reserve against gold certificates. See H.R. 494, 68 Cong. 1 Sess., December 5, 1923.

level could be achieved by this policy alone, without the need for a compensated dollar. Thus his 1928 *The Money Illusion* includes a discussion of the Federal Reserve's "duty to control or influence credit" by means of its open market operations, as well as by the fixing of its rediscount rates (ibid., pp. 131–35). Though in this book Fisher again presented his compensated dollar proposal (in its definite-reserve version), he concluded this presentation by saying:

> When my *Stabilizing the Dollar* was written, I relegated credit control to the Appendix, assuming that all banking, even central banking,[23] would still be conducted purely for private profit. My aim was to make the whole plan of stabilization—both gold control and credit control—as "automatic," that is as free from discretion, as possible.[24]
>
> Since that time, however, as has been shown in this book, discretionary credit control has actually come into existence. This, when duly perfected and duly safeguarded, will greatly simplify and improve the technique of stabilization and will make gold control secondary to credit control. (*Money Illusion,* pp. 192–93)

Even though it includes *The Money Illusion* in its list of references, there is no mention of "credit control," and accordingly no indication of this shift in emphasis, in the entry "Compensated Dollar" that Fisher wrote for the 1930 *Encyclopaedia of the Social Sciences.* On the other hand, this shift is expressed in an even more marked way in Fisher's 1932 *Booms and Depressions.* The roughly 20 percent decline in prices that had taken place in the preceding two years had greatly increased the real burden of debt with a resulting wave of bankruptcies, and had led Fisher to assign great importance to this factor as a generator of depressions.[25] Correspondingly, he stressed the desirability of "reflating" the price level to its original level—and then stabilizing it there. Chapter 10 of the 1932 book is accordingly devoted to a description of "Remedies" to accomplish this subsequent stabilization. Most of this chapter is devoted to the role that can be fulfilled by Federal Reserve monetary policy in accomplishing this objective by effecting changes in the quantity of money and hence on the price level. There is only a brief mention of the compensated

[23] This is a most disingenuous statement for Fisher to have made: it is certainly not the view that he expressed in the 1913 Hearings before the Senate Committee on Banking and Currency on the Federal Reserve Act (Fisher 1913e, pp. 1129–59). Nor does it accord with his description of this act in his *Stable Money* (1934b, p. 148).

[24] Another questionable aspect of Fisher's discussion on these pages is his presentation of the compensated dollar plan as being necessarily more "automatic" than a Federal Reserve monetary policy that would also be based on the price index.

[25] See also his "Debt-Deflation Theory of Great Depressions" (1933a). Note that in contrast with his *Purchasing Power of Money* (1911, 1913)—in which a depression was explained as the result of the fact that the price level was *decreasing* (see p. 4 above)—Fisher now emphasized the role played by the fact that it was *low.* That is, his emphasis shifted from the rate of change of prices to their absolute level. See Patinkin (1972, pp. 5–10). This aspect of Fisher's analysis of the depression has been much emphasized by Tobin (1985, p. 36b; 1987, p. 375b).

dollar plan, and even then not as the first choice. In Fisher's words:

> A simple application of the compensated dollar plan would be to rely principally upon credit control, and only at long intervals regulate the weight of the dollar when other means proved inadequate. (ibid., p.139)

But Fisher does not explain why the compensated dollar plan would help in cases where "credit control" proved "inadequate."

Another significant aspect of this chapter is that in it Fisher comes full circle in the sense that (to the best of my knowledge) it is the first time he explicitly discussed stabilization policies within the analytical framework of the equation of exchange that he had developed in his 1911 *Purchasing Power of Money.* Similarly, he does so more explicitly than before in terms of the quantity theory. And since (T given), the equation implies that P is affected by V as well as by M, he also proposed a policy of influencing the price level by what he called "velocity control" (*Booms and Depression,* pp. 140–1). This was to be based on Silvio Gesell's plan of issuing "stamped money," which (Fisher said) "would operate as a stamp tax on hoarding—increasing the velocity as well as the quantity of money" (ibid., pp. 226–28). Fisher's subsequent book on *After Reflation, What?* (1933b) again assigns the major responsibility for stabilizing the price level to Federal Reserve monetary policy, and again does so within the analytical framework of the equation of exchange (ibid., Chap. 7; Chap. 8 of the 1934 edition). Velocity control also earns brief mention (1933b, pp. 95–98; 1934a, pp. 106–9). Fisher spelled out this last proposal in greater detail in a book on *Stamp Scrip* that he also published in 1933.

So that is the anticlimactic denouement of the story of the compensated dollar plan. I should however note that in *After Reflation, What?,* Fisher again mentioned the compensated dollar plan as one that could be brought into operation if a "reasonable credit" policy would not be able to deal adequately with great inflows or outflows of gold (1933b, pp. 93–95; 1934a, pp. 104–5). But Fisher's reference to this as a serious possibility was at variance with the enthusiastic description he had presented in his 1928 *Money Illusion* (pp. 131–35) of how the open market sales of the Federal Reserve in 1922 had prevented the monetary expansion and consequent inflation that otherwise would have taken place as a result of its "huge gold reserves." Furthermore, even if a central bank in a gold-standard country should have to take additional steps in order to deal with undesired gold movements, those steps are usually described as the appreciation or depreciation of the exchange rate, and surely it is misleading to describe them in terms of the compensated dollar plan.

In a section entitled "My Personal Views" in his book *Stable Money* (1934b)—which in many ways can be regarded as Fisher's concluding work on the subject—he wrote:

> As to the problem of stable money in the United States, while a rough stabilization could be obtained by sole reliance on adjusting the price of gold

> according to the compensated dollar plan, I do not think a really accurate stabilization is feasible without also a direct control of the total volume of checking deposits or what may be called checkbook money :.. I would depend for a stable dollar mainly on open market operations and occasional adjustments of rediscount rates :.. (ibid., pp. 396–97)

So even at the end Fisher could not bring himself to giving up his compensated dollar plan entirely. Indeed, only in his 1935 *100% Money*—a book which (as Fisher indicates in its preface [p. ix]) was much influenced by the memoranda on this subject prepared by Henry Simons and his colleagues at the University of Chicago—is there no mention whatsoever of the compensated dollar plan. Here (once the 100 percent system was installed) stabilization of the price level was to be achieved by open market operations and velocity control alone (ibid., pp. 89–91). Fisher, however, might have felt that since 100 percent money would prevent sharp fluctuations in the volume of demand deposits and hence of the quantity of money, there would be no need for any further action.

"On January 15, 1934, President Roosevelt sent a special message to Congress, which was again a confirmation of his intention of '. restoring the price level, and, . arriving eventually at a less variable purchasing power for the dollar:..' " (*Stable Money,* 1934b, p. 369, ellipses in original). That was Fisher's description of Roosevelt's decision to devalue the dollar, a decision that was put into effect at the end of that month, when Roosevelt raised the price of gold from $20.67 to $35.00 an ounce. So the question naturally arises as to the role that Fisher and his compensated dollar plan played in this decision to (in his terms) decrease the gold content of the dollar. In his fascinating paper on "Irving Fisher, F.D.R., and the Great Depression" (1977), William R. Allen cites a letter that Fisher wrote Roosevelt in April 1933 in which he referred to "the compensated dollar plan to which devaluation is the natural introduction" (ibid., p. 570, n. 44). Allen also refers to letters that Fisher subsequently wrote Roosevelt suggesting various levels to which the price of gold should be raised, as well as a letter that Fisher wrote his wife in August 1933 reporting on a conversation that he had had with Roosevelt on the subject. Allen, however, adds that "apparently, Fisher gave the President no hint of what 'the compensated dollar plan' was" (ibid.).[26]

---

[26] In this footnote, Allen also cites a letter that Fisher had written to President Hoover in July 1931, in which Fisher had disingenuously written:

> On thinking over our talk of Wednesday, I wonder if, when you expressed the fear that stabilizing the purchasing power of money would change the basis of contracts, you thought I was pleading for support by you of my old "Compensated Dollar Plan." I was not. It became evident long ago that immediate, practical progress lay along other lines.

It would, however, appear that Fisher's main influence on Roosevelt was exerted at one remove by people who had accepted his policy view. This was particularly true of George F. Warren, who was one of Roosevelt's chief monetary advisers in the last half of 1933 (Dorfman 1959, vol. 5, p. 581 n.). In particular, Warren's book with Frank A. Pearson on *Prices* (1933, pp. 163–66, 168) provides a sympathetic account of the compensated dollar plan. This situation was also reflected in the following passage from a letter that Fisher wrote his son in February 1934:

> :. it was a "proud moment" when the President signed the devaluation bill. I often wonder how much he realizes that his monetary policy goes back to me in large part—through Warren and Rogers and Rand, as well as directly. And the public doesn't know it except here and there. But I take a lot of satisfaction in the mere *adoption* of the policy of course. (emphasis in original letter; cited by W.R. Allen 1977, p. 576, n. 67)

6. CONCLUDING OBSERVATIONS

In his posthumously published *History of Economic Analysis* (1954), Schumpeter wrote that "some future historian may well consider Fisher as the greatest of America's scientific economists up to our own day" (ibid., p. 872). Similarly, Samuelson (1967, p. 17) wrote that from the viewpoint of analytical contributions, "Irving Fisher would emerge as perhaps the greatest single name in the history of American economics." I would, however, associate the compensated dollar plan less with Fisher the scientific and analytical economist (with his notable contributions to capital theory as well as monetary theory) than with Fisher the possessor of two other character traits. The first is Fisher the gadgeteer. This trait manifested itself early in the form of the gadget that he invented in 1884 at the age of 17 to improve the internal mechanism of the piano—what was subsequently described in his son's biography as "the first of a long line of brain-waves with which he bombarded the patent office" (I.N. Fisher 1956, p. 13).[27] In his scientific writings, Fisher also made use of pedagogical gadgets: like the hydraulic mechanism which he depicted on p. 38 of his 1892 doctoral dissertation on *Mathematical Investigations in the Theory of Value and Prices* (and of which he actually constructed a model a year later[28]) to illustrate the utility-maximizing conditions of general-equilibrium analysis. Similarly, there were the diagrams in *The Purchasing Power of Money* (pp. 21,

[27] For details of other inventions, see the page references listed under the entry "inventions" in the index to this biography. See also the references listed under the entry "as inventor" on p. 317 of the index to R.L. Allen's recent biography of Fisher (1993).

[28] See its photograph, as well as that of the second model which he constructed in 1925, at the beginning of the reprint of this dissertation as listed in the References below.

23) which explain the equation of exchange in terms of weights on the two sides of a fulcrum; and the diagrams (on pp. 116–19 and 128) of the flows of gold into, between, and out of interconnected vessels which explain the relation between these flows, on the one hand, and the level of the monetary stock of gold, on the other. Then, of course, there was the gadget which he invented that in the 1920s made him a multi-millionaire; namely, the "visible card index system" (I.N. Fisher 1956, pp. 160–3 et passim; R.L. Allen 1993, pp. 109–10, 136, 185–86). The compensated dollar plan was also in the nature of a gadget: for in the eyes of its deviser, here was an automatic device which, by simply changing one price in the economy, achieved the stabilization of the price level in general.

The second of Fisher's character traits with which I would associate his plan was Fisher the inveterate crusader for different causes during his long life; e.g., healthy living, world peace, and prohibition.[29] In the zeal to advance his cause, a crusader is less concerned than the scientist with the requirements of objectivity, consistency, careful analysis of causal relations, and strict adherence to rules of evidence. Fisher was no exception. Indeed, his recent biographer has observed that

> [Fisher's] devotion to his multiple crusades was so complete that on occasion he used all the tools of science he could muster to support them. He occasionally bent a few facts and twisted logic slightly to make his case. When this occurred, which was not common, it was rhetoric and likely entirely unconscious on Fisher's part. He was incapable of intended dishonesty or deliberate deceit, but he was capable and occasionally guilty of self-delusion. The conflict between his two roles, besides competition for time and energy, was apparent only to others, not to Fisher. (R.L. Allen 1993, p. 6)

And on the basis of the foregoing account of the way in which Fisher repeatedly evaded criticisms of his plan (particularly in its original form) and continued over the years to support it by sometimes questionable arguments, I would cite Fisher's crusade for his compensated dollar plan as an example *par excellence* of Allen's general observation. At the same time, we should not overlook the fact that Fisher's persistent advocacy of this plan played a major role in placing the problem of stabilizing the price level on the agenda of U.S. monetary policy in the interwar period.

POSTSCRIPT

In the extensive literature on price stabilization that has developed since the early 1980s, there are frequent references to Fisher's compensated dollar plan,

[29] See the biographies by I.N. Fisher (1956) and R.L. Allen (1993). It is also instructive to see the large number of items dealing with these and similar subjects among the 2,500-odd entries in the *Bibliography of the Writings of Irving Fisher* that was compiled by I.N. Fisher (1961, 1972).

and to his 1920 *Stabilizing the Dollar* in particular. But sometimes this name is taken in vain. Thus Philip Cagan's 1987 paper on "A Compensated Dollar: Better or More Likely than Gold" suggests (inter alia) preserving the purchasing power of money, not by stabilizing the price level, but by issuing indexed money (i.e., money whose nominal value changes equiproportionately with the price index), which would become "the primary medium of exchange" (ibid., p. 272). As I have, however, shown elsewhere (Patinkin 1993, pp. 122–24), and as illustrated by the Israeli experience of the early 1980s, an economy whose money supply is mostly indexed will generate a frictionless inflationary process, which will accordingly continue indefinitely at indeterminate rates.

In his article on "Explorations in the Gold Standard and Related Policies for Stabilizing the Dollar," Robert Hall (1982) has suggested stabilizing the price level by modifying Fisher's rule for achieving this objective by making offsetting changes in the price of gold to making such changes in the price of a fixed basket of commodities, and thus (presumably by the operation of substitution effects) generating similar changes in the prices of other commodities. The efficacy of such effects for this purpose is itself doubtful. But quite apart from that is the basic problem that arises from the fact that, in contrast with Fisher's proposal that the government buy and sell gold at the price that it fixes in order to make it effective, Hall emphasizes that the government should *not* make purchases or sales of the basket of commodities used to define the value of the dollar (ibid., pp. 120–21). But how else can the government make effective its announced price for the basket? Surely, the announcement per se will not do so. And surely we have had enough experience to demonstrate that administrative price controls break down in the face of pressures created by inflationary policies that generate increases in the money supply.[30]

On the other hand, Fischer Black's proposal in his "A Gold Standard with Double Feedback and Near Zero Reserves" (1981) can rightly be regarded as a generalization of the modified version of Irving Fisher's compensated dollar proposal in its definite-reserve form that was incorporated in the First Goldsborough Bill (see above, p. 19). In particular, whereas that bill required the Secretary of the Treasury to take action after an offsetting change in the price of gold in order to maintain a 50 percent gold reserve against gold certificates in circulation, Fischer Black's plan is a bit different. It leaves the monetary authority free to fix the reserve ratio between gold reserves and the quantity of money in circulation at a level that it chooses and places the responsibility for establishing and maintaining this ratio on open market operations that change the quantity of money. (It also advocates fixing this ratio as close as possible to zero.) I should, however, point out that this affinity with Fisher's plan leaves Fischer Black's plan open to the same criticism leveled above (pp. 8–9 and 16) about the misleading nature of associating with the gold standard (whose

[30] For a detailed critique of Hall's proposal, see McCallum (1985, pp. 26–32).

hallmark is the fixed exchange rate) a plan based on changes in the price of gold and hence in the exchange rate.

I hope on some future occasion to deal at greater length with the issues raised in the aforementioned literature.

A PERSONAL NOTE

In a paper some years ago, I expressed puzzlement that "in its policy discussions, the Chicago school of the 1930s and 1940s did not do justice to Irving Fisher—despite the fact that long before the Chicago school, Fisher had advocated the policy of stabilizing the price level as a means of mitigating—if not avoiding—cyclical fluctuations" (Patinkin 1973, p. 280).[31] My work on the present paper has suggested an answer to that puzzle. Because of his many persistent crusades, as well as his also having persisted in losing a fortune in the 1929 crash and its aftermath, Fisher had by the 1930s come to be regarded as a crank, with his reputation as a scientist suffering accordingly (see Tobin 1987, pp. 370a and 371a–b, and Schumpeter 1954, p. 873; on his persistent losses, see I.N. Fisher 1956, pp. 262–67). Furthermore, his name was still associated with the outmoded compensated dollar plan, which for the Chicago school (with its policy of stabilizing the price level by directly changing the quantity of money through open market operations as well as by the generation of budget deficits) was simply an encumbrance. So in addition to the natural process of the succession of generations, of the young taking over leadership from the old, there was no reason for the Chicago school to have invoked Fisher's name in support of its program. Indeed, in view of his reputation at the time, it would have been counterproductive for it to have done so. In brief, by that time the Chicago school had become a leader on questions of monetary policy, and Fisher a follower—as exemplified by his acknowledgment to Henry Simons and his colleagues in his 1935 book *100% Money.* And perhaps that too was a reason that in this book Fisher did not mention his compensated dollar plan (see p. 23, above).

On one occasion in my life I had the privilege of meeting Irving Fisher personally. It was at the January 1947 meetings of the Econometric Society in Atlantic City, the first scientific conference that I ever attended, at which I also presented a paper. Fisher was chairman of my session, and I remember him as a short, bearded, and wizened old man. Three months later he died at the age of 80.

[31] The emphasis is on "policy discussions": for in both the undergraduate and graduate courses on monetary theory that I attended at the University of Chicago in the early 1940s, Lloyd Mints devoted much attention to Fisher's transactions approach to the quantity theory. To the best of my memory, he also had us read chapters from *The Purchasing Power of Money.* Fisher's equation of exchange also provided the theoretical framework for the policy proposals of the Chicago school. On all this, see Patinkin (1969).

REFERENCES*

Works of Irving Fisher

(1892). *Mathematical Investigations in the Theory of Value and Prices. Transactions of the Connecticut Academy,* vol. 9 (July), reprinted, New Haven: Augustus M. Kelley, 1961, together with Fisher's (1896) *Appreciation and Interest.*

(1896). *Appreciation and Interest. Publications of the American Economic Association,* Third Series, XI (August). New York: Macmillan, for the American Economic Association. Reprinted, New Haven: Augustus M. Kelley, 1961, together with Fisher's preceding work.

(1907). *The Rate of Interest.* New York: Macmillan.

(1911). *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest, and Crises.* New York: Macmillan.

(1912). "A More Stable Gold Standard," *Economic Journal,* vol. 22 (December), pp. 570–76.

(1913a). *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest, and Crises,* rev. ed., New York: Macmillan. Reprinted, New York: Augustus M. Kelley, 1963. (Date of revised edition as given in some copies of the reprint [viz., 1922] is incorrect.)

(1913b). "A Compensated Dollar," *Quarterly Journal of Economics,* vol. 27 (February), pp. 213–35. Appendixes I, II and III: pp. 385–97.

(1913c). "A Remedy for the Rising Cost of Living: Standardizing the Dollar," *American Economic Review, Supplement,* vol. 3 (March), pp. 20–28.

(1913d). ["Standardizing the Dollar—Discussion."] *American Economic Review, Supplement,* vol. 3 (March), pp. 46–51.

(1913e). Testimony before the U.S. Congress, Senate Committee on Banking and Currency. *Banking and Currency,* vol. 2. Hearings on S. 2639, H.R. 7837, 63 Cong. 1 Sess. Washington: Government Printing Office. (Hearings on the Federal Reserve Act.)

(1914). "Objections to a Compensated Dollar Answered," *American Economic Review,* vol. 4 (December), pp. 818–39.

(1920). *Stabilizing the Dollar.* New York: Macmillan.

(1922). Testimony before the U.S. Congress, House of Representatives, Committee on Banking and Currency. *Stabilization of the Purchasing*

*Reprinted and translated works are cited in the text by year of original publication; the page references to such works in the text are, however, to the pages of the reprint or translation in question.

Power of Money. Hearings on H.R. 11788, 67 Cong. 4 Sess. Washington: Government Printing Office. (Hearings on the First Goldsborough Bill.)

(1923a). Testimony before the U.S. Congress, House of Representatives, Committee on Banking and Currency. *Stabilization of the Purchasing Power of Money, Part 2: Opposition and Rebuttal.* Hearings on H.R. 11788, 67 Cong. 4 Sess. Washington: Government Printing Office.

(1923b). "The Business Cycle Largely a 'Dance of the Dollar,'" *Journal of the American Statistical Association,* vol. 18 (December), pp. 1024–28.

(1925). "Our Unstable Dollar and the So-Called Business Cycle," *Journal of the American Statistical Association,* vol. 20 (June), pp. 179–202.

(1928). *The Money Illusion.* New York: Adelphi.

(1930a). "Compensated Dollar," in Edwin R.A. Seligman, ed., *Encyclopaedia of the Social Sciences,* New York: Macmillan, vol. 4, pp. 134–35.

(1930b). *The Theory of Interest.* New York: Macmillan. Reprinted, New York: Kelley and Millman, 1954.

(1932). *Booms and Depressions.* New York: Adelphi.

(1933a). "The Debt-Deflation Theory of Great Depressions," *Econometrica,* vol. 1 (October), pp. 337–57.

(1933b). *After Reflation, What?* New York: Adelphi.

(1933c). *Stamp Scrip.* New York: Adelphi.

(1934a). *After Reflation, What?,* [2d edition.] New York: Adelphi.

(1934b). *Stable Money.* New York: Adelphi.

(1935). *100% Money.* New York: Adelphi.

Other Works Cited

Allais, Maurice. "Irving Fisher," in David L. Sills, ed., *International Encyclopedia of the Social Sciences.* New York: Macmillan and The Free Press, vol. 5 (1968), pp. 475–85.

Allen, Robert Loring. *Irving Fisher: A Biography.* Cambridge, Mass.: Blackwell, 1993.

Allen, William R. "Irving Fisher, F.D.R., and the Great Depression," *History of Political Economy,* vol. 9 (1977), pp. 561–87.

Alt, Franz L. "Distributed Lags," *Econometrica,* vol. 10 (April 1942), pp. 113–28.

Anderson, B. M., Jr. ["Standardizing the Dollar—Discussion,"] *American Economic Review, Supplement,* vol. 3 (March 1913), pp. 41–43.

Barber, William J. *From New Era to New Deal: Herbert Hoover, the Economists, and American Economic Policy, 1921–1933.* Cambridge, England: Cambridge University Press, 1985.

Barger, Harold. *The Management of Money.* Chicago: Rand McNally, 1964.

Black, Fischer. "A Gold Standard with Double Feedback and Near Zero Reserves" (manuscript) 1981, reproduced with some revisions in Black, *Business Cycles and Equilibrium.* Oxford: Basil Blackwell, 1987, pp. 115–20.

Cagan, Phillip. "A Compensated Dollar: Better or More Likely Than Gold?" in James A. Dorn and Anna J. Schwartz, eds., *The Search for Stable Money: Essays on Monetary Reform.* Chicago: University of Chicago Press, 1987, pp. 261–77.

Clark, J. M. "Possible Complications of the Compensated Dollar," *American Economic Review,* vol. 3 (September 1913), pp. 576–88.

Dorfman, Joseph. *The Economic Mind in American Civilization,* vols. 4 and 5, *1918–1933.* New York: Viking Press, 1959.

Fischer, Stanley. "Rules Versus Discretion in Monetary Policy," in Benjamin M. Friedman and Frank H. Hahn, eds., *Handbook of Monetary Economics,* vol. 2. Amsterdam: North Holland, 1990, pp. 1155–84.

Fisher, Irving Norton, comp. *A Bibliography of the Writings of Irving Fisher: Supplement.* New Haven: Yale University Press, 1972.

_____, comp. *A Bibliography of the Writings of Irving Fisher.* New Haven: Yale University Press, 1961.

_____. *My Father, Irving Fisher.* New York: Comet, 1956.

Friedman, Milton. "The Crime of 1873," *Journal of Political Economy,* vol. 98 (December 1990), pp. 1159–94.

_____, and Anna Jacobson Schwartz. *A Monetary History of the United States, 1867–1960.* Princeton: Princeton University Press, for the National Bureau of Economic Research, 1963.

Groseclose, Elgin. *Fifty Years of Managed Money: The Story of the Federal Reserve, 1913–1963.* London: Macmillan, 1965.

Hall, Robert E. "Explorations in the Gold Standard and Related Policies for Stabilizing the Dollar," in Robert E. Hall, ed., *Inflation: Causes and Effects.* Chicago: University of Chicago Press, for the National Bureau of Economic Research, 1982, pp. 111–22.

Kemmerer, E. W. "Economic Advisory Work for Governments," *American Economic Review,* vol. 17 (March 1927), pp. 1–12.

_____. Statement presented to the U.S. Congress, House of Representatives, Committee on Banking and Currency. *Stabilization of the Purchasing Power of Money,* Part 2, *Opposition and Rebuttal.* Hearings on H.R. 11788, 67 Cong. 4 Sess. Washington: Government Printing Office. 1923. (Hearings on the first Goldsborough bill.)

_____. ["Standardizing the Dollar—Discussion,"] *American Economic Review, Supplement,* vol. 3 (March 1913), pp. 44–46.

Kinley, David. "Objections to a Monetary Standard Based on Index Numbers," *American Economic Review,* vol. 3 (March 1913), pp. 1–19.

Koyck, L. M. *Distributed Lags and Investment Analysis,* J. Tinbergen and others, eds. *Contributions to Economic Analysis,* vol. 4. Amsterdam: North Holland, 1954.

Laidler, David. *The Golden Age of the Quantity Theory.* Princeton, N.J.: Princeton University Press, 1991.

Lawrence, Joseph Stagg. *Stabilization of Prices.* New York: Macmillan, 1928.

Marshall, Alfred. "Remedies for Fluctuations of General Prices," *Contemporary Review,* March 1887, reprinted in A.C. Pigou, ed., 1925, pp. 188–211.

McCallum, Bennett T. "Bank Deregulation, Accounting Systems of Exchange, and the Unit of Account: A Critical Review," *Carnegie-Rochester Conference Series on Public Policy,* vol. 23 (1985), pp. 13–46.

Nambudiripad, K. N. S. *A Short History of Indian Currency.* Poona, India: Continental, 1955.

Patinkin, Don. "Israel's Stabilization Program of 1985, Or Some Simple Truths of Monetary Theory," *Journal of Economic Perspectives,* vol. 7 (Spring 1993), pp. 103–28.

_____. *Essays On and In the Chicago Tradition.* Durham, N.C.: Duke University Press, 1981.

_____. "Keynes and Econometrics: On the Interaction between the Macroeconomic Revolutions of the Interwar Period," *Econometrica,* vol. 44 (November 1976), pp. 1091–1123. Reprinted with a postscript in Patinkin, *Anticipations of the General Theory? And Other Essays on Keynes.* Chicago: University of Chicago Press, 1982, pp. 223–69.

_____. "On the Monetary Economics of Chicagoans and Non-Chicagoans: Comment," *Southern Economic Journal,* vol. 39 (January 1973), pp. 454–59. Reprinted with some revisions and extensions in Patinkin, 1981, pp. 277–87.

_____. "On the Short-Run Non-Neutrality of Money in the Quantity Theory," *Banca Nazionale del Lavoro Quarterly Review,* vol. 100 (March 1972), pp. 3–22.

_____. "The Chicago Tradition, the Quantity Theory, and Friedman," *Journal of Money, Credit and Banking,* vol. 1 (February 1969), pp. 46–70. Reprinted with a postscript in Patinkin (1981), pp. 241–74.

Patterson, E. M. "Objections to a Compensated Dollar," *American Economic Review,* vol. 3 (December 1913), pp. 863–74.

Pigou, A. C., ed. *Memorials of Alfred Marshall.* London: Macmillan, 1925, reprinted, New York: Kelley & Millman, 1956.

Reeve, Joseph E. *Monetary Reform Movements.* Washington: American Council on Public Affairs, 1943.

Samuelson, Paul A. "Irving Fisher and the Theory of Capital," in William Fellner and others, eds., *Ten Economic Studies in the Tradition of Irving Fisher.* New York: John Wiley, 1967, pp. 17–37.

Schumpeter, Joseph A. *A History of Economic Analysis.* New York: Oxford University Press, 1954.

Sprague, O. M. W. ["Standardizing the Dollar—Discussion,"] *American Economic Review, Supplement,* vol. 3 (March 1913), pp. 40–41.

Taussig, F. W. "The Plan for a Compensated Dollar," *Quarterly Journal of Economics,* vol. 27 (May 1913), pp. 401–16.

Tobin, James. "Irving Fisher," in John Eatwell, Murray Milgate and Peter Newman, eds., *The New Palgrave: A Dictionary of Economics,* vol. 2. London: Macmillan, 1987, pp. 369–76.

_____. "Neoclassical Theory in America: J. B. Clark and Fisher," *American Economic Review,* vol. 75 (December 1985), pp. 28–38.

U.S. Congress, House of Representatives. *A Bill to Stabilize the Purchasing Power of Money.* H.R. 494, 68 Cong., 1 Sess. Washington: Government Printing Office, 1923. (Text of second Goldsborough bill.)

U.S. Congress, House of Representatives, Committee on Banking and Currency. *Stabilization of the Purchasing Power of Money.* Hearings on H.R. 11788, 67 Cong., 4 Sess. Washington: Government Printing Office, 1922. (Text and hearings on first Goldsborough bill.)

Wallace, Alfred Russel. "Paper Money as a Standard of Value," *The Academy,* vol. 31 (December 1898). Reprinted in *Studies Scientific and Social,* vol. II, London: Macmillan, 1900, pp. 145–49.

Warburg, Paul M. *The Federal Reserve System: Its Origin and Growth,* vols. 1 and 2. New York: Macmillan, 1930.

_____. "Inflation as a World Problem and Our Relation Thereto." Unpublished speech, 1920, in Warburg, vol. 2 (1930), pp. 695–714.

Warren, George F., and Frank A. Pearson. *Prices.* New York: John Wiley & Sons; London: Chapman & Hall, 1933.

Whitaker, Albert C. ["Standardizing the Dollar—Discussion,"] *American Economic Review, Supplement,* vol. 3 (March 1913), pp. 31–35.

Wicker, Elmus R. *Federal Reserve Monetary Policy, 1917–1933.* New York: Random House, 1966.

Wicksell, Knut. "Another Method of Regulating the Value of Money." Unpublished manuscript, 1913.

_____. "The Influence of the Rate of Interest on Prices," *Economic Journal,* vol. 17 (June 1907), pp. 213–20.

_____. *Föreläsningar i nationalekonomi,* häft II, *Om penningar och kredit,* (1906). Stockholm and Lund: Fritzes, Berlingska. 2d ed. 1915; 3d (posthumous) ed. 1929, ed. by E. Sommarin. As translated from the 1929 ed. by E. Classen under the title *Lectures on Political Economy,* vol. 2, *Money,* ed. by Lionel Robbins. London: George Routledge and Sons, 1935.

_____. *Geldzins und Güterpreise: Eine Studie über die den Tauschwert des Geldes bestimmenden Ursachen.* Jena: Gustav Fischer, 1898. Translated by R. F. Kahn under the title *Interest and Prices: A Study of the Causes Regulating the Value of Money.* London: Macmillan, 1936.

Wright, Chester W. *Economic History of the United States.* New York and London: McGraw-Hill, 1941.

ACKNOWLEDGMENTS

This is a much extended and revised version of a paper presented in November 1991 at a seminar of the Federal Reserve Bank of Richmond when I was a visiting scholar there. I am greatly indebted to Robert Graboyes, Robert Hetzel, and Thomas Humphrey of the Research Department of the Bank for their contributions to the discussion at the seminar itself and for the informal discussions with them afterwards during my visit, as well as for their valuable comments and suggestions on an earlier draft of this paper. I owe a special thanks to Hetzel and his assistant Max Reid for providing me with photocopies of the various congressional hearings at which Fisher testified. As usual, I have benefited greatly from David Laidler's comments on an earlier draft. My thanks for their valuable comments and suggestions on that draft are also due to William R. Allen, Stanley Fischer, Zvi Griliches, Herschel Grossman, Tsvi Ophir, and Nathan Sussman.

I am grateful to J.S. Cramer, Jean-Paul Fitoussi, Harry Flam, Lars Jonung, and Thomas Rymes for providing me with material not available in Jerusalem, as well as to Dan Gelvan and Fred Simons for translating some of this material. In the writing of this paper, I have made much use of the excellent library of the Bank of Israel, in which connection I repeatedly benefited from the help of its head, Uzi Pumpian, and his staff. I would also like to thank my secretary Vivian Nadir for her usual most efficient assistance, particularly in connection with the preparation of the bibliography and the checking of the references to it.

I would like finally to express my appreciation to the Latsis Foundation for financial support.