

Ludwig von Mises's Monetary Theory in Light of Modern Monetary Thought

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Ludwig von Mises's contributions to the development of the technical methods and apparatus of monetary theory continue to be neglected today, despite the fact that Mises succeeded exactly eight decades ago, while barely out of his twenties, in a task that still admittedly defies the best efforts of the most eminent of modern monetary theorists, viz., integrating monetary and value theory. Such a unified and truly "general theory" is necessary to satisfactorily explain the functioning of the market economy, because the market economy, or any economy based on social cooperation under the division of labor, cannot exist without monetary exchange and calculation.¹

Mises's work on monetary economics is not only ignored by the roiled mainstream of neo- and "new" Keynesians, monetarists, and new classicists, it is also considered *passé* by many Austrian-oriented economists and policy analysts, especially those whose primary influence is the post-World War II writings of Mises's former student F. A. Hayek. A typical example of this flippant and uncomprehending dismissal of Mises's monetary thought is provided by a review of *The Gold Standard: An Austrian Perspective*, which appeared in the publication of a free-market think tank (review of *The Gold Standard* 1986, pp. 14–15.) In commenting on this edited volume of mainly Misesian papers

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¹The first to make this point was Ludwig von Mises ([1920] 1990) in his classic article demonstrating the impossibility of economic calculation under socialist central planning. For recent reviews and elucidations of the socialist calculation debate from a Misesian perspective which emphasize the same point, see Rothbard (1991); Salerno (1990a, pp. 45–49; 1990b).

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on the gold standard, the anonymous reviewer opined that "large parts of the book are unsatisfactory when considered as contributions to modern economic theory. Many of the essays have a strongly anachronistic flavor and do not succeed in integrating their arguments with the (often relevant) debates in modern monetary theory." *Mirabile dictu*, the reviewer then goes on to endorse as superior to the gold standard bizarre "laissez-faire" schemes such as the issuance of private fiat moneys and the separation of the unit of account from the medium of exchange, which have been resurrected under the rubric of the "New Monetary Economics" but which still emit the unmistakable musk of their association with obscure and long-dead monetary cranks.² Had the reviewer enjoyed even passing familiarity with Mises's regression theorem, he would have instantly realized the untenability of these schemes.³

But the problem goes beyond Hayekian epigones laboring as policy analysts in think tanks. Prominent economists, too, in the wake of the collapse in rapid succession of the Keynesian and then monetarist paradigms, have been recently casting around for non-gold, "laissez-faire" alternatives to central bank manipulations of the money supply. There is, of course, Hayek's proposal for the issue of private fiat currencies; and recently Milton Friedman (1992, pp. 126–56) endorsed bimetallism as superior to a mono-metallic gold standard, while the plan coauthored by Yeager and Greenfield (1983) to dissolve the link between the monetary unit of account and the medium of exchange has recently been endorsed by another former monetarist, Richard Timberlake (1991), himself a former advocate of a parallel gold standard.⁴ Even the supporters of a gold-based free-banking system, such as Lawrence White and George Selgin, who drew their initial inspiration from Mises, who himself advocated such a system because he believed it would severely restrain the issue of fiduciary media, now argue that such a system would give rise to an "invisible-hand" maturation process that eventually culminates in the complete and "spontaneous" withering away of the monetary gold base to yield a fiat bank money.

²For an overview of the forerunners of the New Monetary Economics by two of its proponents, see Cowen and Kroszner (1987).

³A critique of Hayek's scheme for privately issued paper fiat currencies is provided by Rothbard (1992b, pp. 2–5).

⁴For a critique of the Timberlake twist on the Greenfield-Yeager proposal, see Rothbard (1992a); Timberlake's earlier, and much sounder, proposal is evaluated by Salerno (1982, pp. 16–18).

Unfortunately, all such schemes are based on a failure by their authors to perceive money as an outgrowth and driving force of "micro" market processes, a perception that can only be gained from Mises's monetary theory with its unification of real and monetary analysis. What is urgently needed then, and what I will attempt to supply in this paper, is a fresh evaluation of Mises's monetary theory and a clarification of its relationship to modern monetary thought. With this endeavor, I hope to demonstrate to Austrian-oriented and other economists that Misesian theory provides fresh and relevant answers to the seemingly intractable problems still confronting modern monetary economists.

In 1985, James Rolph Edwards (1985) published an insightful and stimulating work in which he attempted a doctrinal assessment of Mises's contributions to monetary theory. As I shall indicate in detail below, while Edwards shed important light on Mises's originality as a monetary theorist and brilliantly defended him against some modern detractors, he failed in his main effort to portray Mises as the prototypical modern monetary economist, with an analytical tool kit that included an asset demand for money, the natural-rate hypothesis, the accelerationist view of lagged adjustment of nominal wages during inflation, a consistent modern monetary approach to the balance of payments and the exchange rate, rational expectations, etc. Nonetheless, Edwards's book does provide a useful framework, which I will employ for comparing Misesian with modern monetary theory. Specifically, I will use Edwards's topical development in organizing my own paper and employ some of his comments on Mises's theory as a point of departure for my own evaluation.

In the next section, "The Nature, Development, and Supply of Money," I address Mises's approach to defining money, classifying its different forms and components, and measuring the money supply. I also briefly discuss Mises's development of a consistent ordinalist approach to value theory as a foundation for his monetary theory. The following section, "The Regression Theorem and the Demand for Money," deals with Mises's formulation of a cash-balance demand for money, a supply-and-demand explanation of the determination of money's purchasing power, and his arguments in favor of the non-neutrality of money. It concludes with a consideration of Mises's regression theorem and its defense against criticism by Don Patinkin and others. In the concluding section "The Monetary Adjustment Process: The Inter-Spatial Equalization of the Value of Money, and the Determination of Exchange Rates," I focus on Mises's approach to the

inter-spatial equalization of the purchasing power of a single money and the determination of the exchange rate between independent but co-existing moneys. In the case of the former, I significantly elaborate on Mises's view that the market's arbitrage processes rapidly re-establish monetary equilibrium after it has been disturbed, while demonstrating the importance to monetary analysis of Mises's methodological devices of the plain and final states of rest. I also draw attention to important methodological contributions by Philip Wicksteed and Arthur Marget which facilitate a better analytical grasp of the monetary adjustment process. In the discussion of exchange-rate determination, I carefully distinguish between the Misesian version of the purchasing-power-parity theory and the Casselian version adopted by modern economists, explaining why the former version is immune to many of the criticisms commonly raised against the latter.

The Nature, Development, and Supply of Money

In chapter two, Edwards (1985, pp. 29–43) reviews Mises's Brobdingnagian, though unhappily neglected, efforts in preparing the conceptual groundwork necessary to a full statement of the theory of money. These include the development of a purely ordinal theory of subjective value and of marginal utility more than two decades before the celebrated "ordinalist revolution" of the 1930s, which ended up totally and erroneously expunging the very concept of marginal utility from economics. As Edwards (*ibid.*, p. 34) points out, compared to the equilibrium condition yielded by the indifference curve analysis embraced by the later Anglo-American ordinalists, which assumes infinitely divisible goods, the equilibrium condition derived from Mises's approach is "more general and correct," because "real trade more often than not [I would say "always"] involves discrete goods." Unfortunately, despite Mises's clear doctrinal priority in formulating a purely and consistently ordinal theory of value and in completely eliminating the notion of measurable utility from economics, "To this day the major historians of economic thought appear unaware of Mises's contributions here."⁵

⁵This oversight is just beginning to be redressed in the mainstream economic literature. See, for example, High and Bloch (1989) for recognition of Mises and other neglected Austrian forerunners of the ordinalist revolution of the 1930s.

As Edwards (1985, pp. 31–32) points out, Mises built on Carl Menger to develop a theory of the nature and origin of money. As the most generally saleable good in society or “the general medium of exchange,” money emerges step by step from an evolutionary market process driven by the actions of individuals consciously striving to obtain the maximum benefit from their cooperation in exchange and the division of labor. All other functions of money, e.g., as a “store of value,” “unit of account,” “standard of deferred payments,” etc., are and must remain subsidiary to money’s primary function as a medium of exchange. As we will see below, Mises’s regression theorem goes beyond Menger in demonstrating that, logically, money can only come into being as a product of voluntary catallactic processes.

Under the rubric of “Definitions and Components of the Money Stock,” Edwards (*ibid.*, pp. 36–38) draws attention to Mises’s original and indispensable taxonomy of money, which yields a statistical definition of money that is consistent with the one employed by modern economists. Before Mises wrote, economists generally distinguished between bank notes and token coins on the one hand and demand deposits or checking account balances on the other.⁶ The former only were included along with specie in the category of money. Mises rejected this distinction as useless for the purposes of economic science. Mises’s repudiation of the older classification accords with his staunchly Mengerian “essentialist” approach to economics, which finds expression in his dictum that “The greatest mistake that can be made in economic investigation is to fix attention on mere appearances, and to fail to perceive the fundamental difference between things whose externals alone are similar, or to discriminate between fundamentally similar things whose externals alone are different” (Mises [1953] 1971, p. 62).

In formulating a new and more useful classificatory framework, Mises draws a distinction between standard money—whether of the “commodity,” “credit,” or “fiat” variety—and

⁶This is true even of such allegedly revolutionary monetary theorists as Irving Fisher, hailed by Milton Friedman as the “greatest economist that America has ever produced.” While Fisher ([1913] 1985, pp. 47, 53) identified bank deposits as an “excellent substitute” for money, he insisted that they “are not money.” Even Edwin Cannan, who was one of the pioneers in formulating the demand for money as an asset or stock demand and whom Mises (1990a, pp. 23, 172) referred to more than once as “the great British economist,” maintained a rigid distinction between bank deposits and money. See, for example, Cannan (1929, pp. 64–85); a good survey of Cannan’s contributions to monetary theory can be found in Gregory (1927).

“money substitutes,” defined as perfectly secure and immediately convertible claims to money, such as bank notes and demand deposits, which substitute for money in individuals’ cash balances. Within the class of money substitutes, Mises further distinguishes between “money certificates,” or notes and deposits fully covered by reserves of the standard money, and “fiduciary media,” which denote uncovered money substitutes. Mises employs the term “money in the narrow sense” to denote the aggregate stock of standard money in the economy, corresponding to what is today called “the monetary base.” “Money in the broad sense” is Mises’s term for the monetary aggregate equal to standard money plus money substitutes minus bank reserves or, alternatively, equal to standard money (including reserves) plus fiduciary media. This latter aggregate is roughly approximated by the current definition of M1.⁷

In noting the similarity between Mises’s broader definition of money and modern M1, Edwards commits minor errors of commission and omission, but they are worth noting because they elucidate Mises’s essentialist approach to theoretically defining money and identifying its empirical counterpart. Respecting the

⁷Lawrence H. White (1986, p. 314 n. 23) criticizes Mises’s use of the term “money substitutes” to designate secure and instantaneously redeemable claims to money, i.e., money certificates plus fiduciary media, as “confusing” because the term suggests “nonmoneyness.” But it is precisely Mises’s point in using such a term to indicate that claims to the standard money, e.g., gold, whether fully backed by gold or not, as long as they are perceived by the issuing institution’s clients as instantaneously redeemable for gold at face value, are *not* money in themselves, because their value is not determined by a valuation process independent of that which determines the value of gold. In contrast, in suggesting as replacements for Mises’s “money substitutes” and “money-in-the-narrower sense” the terms “inside money” and “outside money,” respectively White himself might be charged with sowing confusion for implying that the instantaneously redeemable bank notes and deposits he denotes by “inside money” constitute a separate money whose value is determined independently of the value of the money commodity. But if we look more closely at White’s free banking position, we discover that this is precisely what he intends to imply. For the free bankers, from the very moment of their first issue, bank notes and deposits are considered a fiat money in embryo, whose “invisible-hand process”-driven by evolution to maturity will result in the full and final expulsion of gold from its monetary role. Thus, the contractual suspension of specie payments and option clauses that free banks allegedly will negotiate with their clients, when they are implemented or even if they are widely expected to be, will establish “bank money” (another favored term) as an independently-valued credit money. Eventually, in the “mature free-banking system,” according to White and Selgin ([1987] 1989, p. 235), there would emerge a situation in which, “At the limit, if inter-clearinghouse settlements were made entirely with other assets . . . and if the public were completely weaned from holding commodity money, the active demand for the old-fashioned money commodity would be wholly nonmonetary,” and the public would presumably be finally freed from its shackles of gold to enjoy the virtues of an invisible-hand-generated private fiat money.

first error, Edwards (1985, p. 38) states that "in modern times, money consists of fiat currency, token coins, and *credit money* with fractional reserves." The error here is that checkable deposits, to which the words I emphasized clearly refer, are not considered by Mises to be credit money, but fiduciary media, a subclass of money substitutes. Credit money, on the other hand, as noted above, is one of the three categories of standard money, which also includes fiat and commodity money. Mises ([1953] 1971, pp. 61–62) defines credit money as "a claim against any physical or legal person [which] must not be both payable on demand and absolutely secure. . . . Credit money . . . is a claim falling due in the future that is used as a general medium of exchange." Generally, credit money emerges when an issuer of fiduciary media suspends redemption of these media for a definite or indefinite period of time.

The essential economic distinction between the two resides in the fact that the value of a money substitute, considered as a perfectly secure and instantaneously redeemable claim to money, is completely dependent upon and always equal to the value of the sum of standard money to which it entitles its holder. In contrast, the value of credit money is established by an "independent process of valuation" (Mises *ibid.*, p. 61). For example, Bank of England notes denominated in gold pounds were money substitutes during the periods of their unqualified convertibility prior to 1797 and after 1821, while they circulated as credit money for the duration of suspended specie payments from 1797 to 1821. As we would expect of credit money, during the latter period, the purchasing power of the paper pound fluctuated independently of the purchasing power of the quantity of gold which corresponded to its original definition. The fact that the prospects and timing of future redeemability influenced these fluctuations marked the currently inconvertible notes as credit rather than fiat money.

A proper understanding of the concept of credit money is important, because Mises seems inclined to classify most historical instances of non-commodity money as credit rather than fiat money. For example, in *Theory of Money and Credit*, which was translated from the second German edition published in 1924, after the German hyperinflation had run its course, Mises (*ibid.*, p. 61) writes: "It can hardly be contested that fiat money in the strict sense of the word is theoretically conceivable. . . . Whether fiat money has ever actually existed is, of course, another question, and one that cannot off-hand be answered affirmatively. It

can hardly be doubted that most of those kinds of money that are not commodity money must be classified as credit money. But only detailed historical investigation could clear this matter up." Even as late as 1966 in the third edition of *Human Action*, Mises (1966, p. 429) stops short of categorically affirming the historical existence of fiat money, declaring that "It is not the task of catallactics but of economic history to investigate whether there appeared in the past specimens of fiat money or whether all sorts of money which were not commodity money were credit money."

The omission in Edwards's discussion—partly explained by his narrow focus on *Theory of Money and Credit*—involves a failure to recognize Mises's ambivalent attitude toward the inclusion of saving deposits in his broader definition of money. A strong case can and has been made for the view that saving deposits in the contemporary U. S. economy constitute "perfectly secure and immediately convertible claims to money" and, therefore, according to Mises's own criterion, are to be identified among the components of money in the broad sense.⁸

As early as 1924, Mises ([1953] 1971, p. 270) recognized that institutional developments had led banks "to undertake the obligation to pay out small sums of savings deposits at any time without notice." This circumstance, according to Mises (*ibid.*,

⁸This case has been made by Rothbard (1978) and Salerno (1987), who argue for inclusion in the money supply of all currently spendable dollars in the economy, i.e., those immediately obtainable without penalty or risk of capital loss. As reported by the Federal Reserve Bank of Cleveland (1992, p. 3) recently, Shadow Open Market Committee member William Poole has endorsed a monetary aggregate, MZM (for "money of zero maturity") which seeks to identify and capture those dollars "immediately available without penalty or risk of capital loss" and which comes close to the TMS (for "true money supply") aggregate developed by Rothbard and Salerno. The main difference between the two is that TMS excludes, while MZM includes, all Money Market Mutual Fund shares; both include, in addition to items in M1, savings deposits and Money Market Deposit Accounts, at the same time excluding small time deposits. White (1986), on the other hand, beginning from a Misesian medium-of-exchange definition of what constitutes money, similar to Rothbard and Salerno's, arrives at a much narrower empirical measure of the money supply which excludes non-checkable demand deposits, such as, passbook savings accounts, on the grounds that the passbooks themselves do not literally pass from hand-to-hand in the payments process. Israel M. Kirzner (1976), in a critique of Rothbard, raises the same objection as White to the inclusion of non-checkable deposits in the money supply, and then goes further to express skepticism of any attempts to produce a statistically unweighted aggregate of the nominal stock of money. It is ironic that Kirzner's thoroughgoing commitment to subjectivism should lead to his rediscovery of and support for a Divisia-type monetary aggregate in advance of its modern reintroduction into mainstream monetary economics in the 1980s. For a brief critique of the White-Kirzner position on excluding non-checkable demand deposits from a monetary aggregate based on the medium-of-exchange definition of money, see Salerno (1987, pp. 2-3).

p. 270), induced some people, for example, "small business people and not very well-to-do private individuals," to utilize these deposits as "current accounts" notwithstanding their technical status as "investment deposits." Thus Mises implies that at least some portion of saving deposits function economically as money substitutes and warrant inclusion in his broad concept of money.

During the 1920s and into the 1930s, there was tremendous growth in the volume and economic significance of savings deposits both in the U. S., due to Federal Reserve policies, and throughout the world economy (Phillips, McManus, and Nelson [1937] 1972, pp. 29, 95–103; Rothbard 1975, pp. 92–940). In an important but neglected article written in the early thirties, Mises ([1933] 1990) places much of the blame for the financial and exchange-rate instability of the early 1930s on the pandemic treatment of savings deposits as money substitutes, a development actively sought and encouraged by the banks. As Mises (*ibid.*, pp. 528–29) argues:

The bank which receives [saving deposits] has to lend it to business. A withdrawal of the money entrusted to it by the saver can only take place in the same measure as the bank is able to get back the money it has lent. As the total amount of the saving deposits is working in the country's business, a total withdrawal is not possible. The individual saver can get back his money from the bank, but not all savers at the same time. . . . Since the saver does not need the deposited sum at call or short notice it is not necessary that the savings banks or the other banks which take over such deposits should promise repayment at call or at short notice. Nevertheless, this is what they did. And so they became exposed to the dangers of a panic. They would not have run this danger, if they had accepted the saving deposits only on condition that withdrawal must be notified some months ahead.

Mises also demonstrates that it was the egregiously inflationary and foredoomed attempt made by central banks to insure the instantaneous redeemability of saving deposits promised by the commercial banks, and not the spontaneous and generalized "capital flight" that is usually alleged, which was the root cause of the destructive exchange-rate gyrations of the 1930s. Writes Mises ([1933] 1990, pp. 108–9):

Capital invested in real estate or industrial plants or in shares of companies holding property of this nature cannot fly. You can sell such property and leave the country with the proceeds. But—unless

there is no expansion of credit—the buyer simply replaces you. . . . One person or another can withdraw his capital from a country, but this can never be a mass movement. There is only one apparent exception, *i.e.*, the saving deposit which can be withdrawn from the bank at once or at short notice. When the saving deposits are subject to instant withdrawal and the bank of issue renders the immediate withdrawal possible by advancing credits for these savings to be withdrawn, then credit expansion and inflation cause the exchange ratio to rise [the domestic currency to depreciate]. It is obvious that not the flight of capital but the credit expansion in favor of the savings banks is the root of the evil. . . . If the Central Bank were to leave [the banks] to their fate, their peculiar embarrassment would not have any effect on the foreign exchanges. That the additional issue of great amounts of bank notes for the sake of the repayment of the total amount or of a great portion of a country's saving deposits makes the foreign exchange go up is easy to understand. It is not simply the wish of the capitalists to fly with their capital, but the expansion of the circulation, that imperils monetary stability.

Despite his brilliant and pathbreaking analysis of the causes and effects of the progressive transformation of saving deposits into *de facto* money substitutes, Mises was still unprepared in 1966, in the third edition of *Human Action*, to include these deposits in his broader definition of money. There Mises (1966, p. 460 n. 23) refers to them as “demand deposits not subject to check,” but then inconsistently denies that they are money substitutes. Instead, he identifies saving deposits as foremost among “secondary media of exchange,” a category encompassing highly marketable financial assets, such as government bonds and blue chip stocks, which permit their owners to economize on the holding of cash balances. Unlike money substitutes, secondary media of exchange “must first be exchanged against money or money substitutes if one wants to use them—in a roundabout way—for paying or for increasing cash holdings” (Mises 1966, p. 461). Uncharacteristically, Mises never addresses the momentous institutional fact, clearly recognized in his 1933 article, that, unlike stocks and bonds whose exchange values in terms of money fluctuate according to market forces, saving deposits are “exchanged” on a market in which their money “price” is virtually fixed (at par value) and guaranteed by the practically inexhaustible resources of the central bank.

The Regression Theorem and the Demand for Money

Murray N. Rothbard (1988, p. 179; 1977) has characterized the regression theorem as the "*pons asinorum*" for critics of Mises's monetary theory and as the "keystone of monetary theory" in general. And, as Edwards (1985, p. 49) points out, Mises himself "considered the integration of monetary and value theory by the application of marginal analysis to be the central problem, and his solution to be the most important contribution of [*The Theory of Money and Credit*]." In this spirit, Edwards (*ibid.*, p. 24) refers to the third chapter of his own book, which comprises trenchant defenses against critics of Mises's regression theorem and approach to the demand for money, as "perhaps the heart of the study."

Against the allegation of Patinkin (1965, p. 79) and, later, Laurence S. Moss that Mises confused the marginal utility of holding money with the marginal utility attaching to the goods for which it exchanges, Edwards (1985, p. 53) definitively demonstrates that the confusion is the critics' and that "The entire context of Mises's discussion unequivocally bears on the derivation of the individual and market demands for money to *hold as stock*." While Edwards (*ibid.*, p. 65, n. 35) affirms that Patinkin and Moss are "respectful in their treatment of Mises's contributions," one would surely be hardpressed to identify a single instance in the history of economic thought in which an eminent economist's position was interpreted less sympathetically than in the present case, especially when one considers Patinkin's unsurpassed scholarship in the history of monetary theory.

Edwards also neatly disposes of the absurd charge by "real balance" theorists such as Howard S. Ellis (1934, p. 163) and Moss (1976, p. 32) that Mises conceives the demand for money as a demand for nominal units of money without regard to the purchasing power or exchange value of these units. As Edwards (1985, pp. 53–54) argues, "If a unit of money has a value, then the individual can, for an additional unit of money income, compare the marginal utilities of the additional present or future goods obtainable with that of adding that unit's worth of purchasing power to his/her cash balance, and it is precisely the magnitude of *real* balances that Mises is talking about determining by such a marginal calculation. The individual simply expresses that demand by demanding nominal units of money with a given purchasing power each."

Indeed we may go further than Edwards and turn the tables on those who insist that money demand analysis must proceed via a "real value calculus" and in terms of the utility of "resources held in the form of money." In his outstanding but unduly neglected tome on monetary theory, which includes an encyclopedic review of the development of the cash balance approach to the demand for money, Arthur W. Marget ([1938-42] 1966, 1, pp. 414-83) conducts a remarkable running defense of the Menger-Mises-Canan "money balance" variant against the claims of the Walras-Pigou-Keynes "real balance" variant. First, Marget argues that the real balance approach is unrealistic, because it rests on the assumption that the holders of cash explicitly utilize an index number to "deflate" their money balances. According to Marget (*ibid.*, p. 446 n. 88), "The real issue, so far as the question of realism is concerned, is whether the element of price change enters the 'calculations' of the cash-balance administrator as a matter affecting 'his prospective receipts and payments in monetary units,' as Hawtrey [as well as Mises] holds, or whether it enters as part of a kind of 'deflation' process—in the statistical sense of 'deflation'—represented by the division of a cash balance by a price index. The question . . . is whether, from the standpoint of realism, it is helpful to think of cash-balance administrators as taking 'express account of any index number relating their cash to its equivalent in products.'"

Marget's second objection to the real balance approach stems from the fact that "demand for 'resources in the form of currency' which is held to determine the price level, needs, in order that a given amount of 'money' may be translated into 'real' terms, a 'price-level' which assigns to 'resources in the form of currency' a given 'real' value" (*ibid.*, pp. 450-51 n. 99). Without dated price levels, *à la* Mises's regression theorem, however, exponents of this approach, which was developed as a means of escaping the so-called "Austrian circle," are themselves trapped in a logical circle. Finally, Marget (*ibid.*, p. 451) contends that, in deflating money balances to their "real" equivalent in terms of products, many real balance theorists equate "the utility of a cash balance" to "the utility of the goods that might be purchased by the expenditure of the cash balance." The result is that these theorists are unable to explain why anyone should ever choose to hold cash instead of other forms of wealth, given that equal utilities generate indifference among alternatives.

Edwards successfully counters another criticism advanced both by Ellis (1934, p. 164) and Moss (1976, p. 32). The latter argue that Mises's theory of the demand for money yields a

demand curve that is drawn as a rectangular hyperbola in nominal cash balance space. A demand curve of this shape, they note, is logically inconsistent with Mises's repeated and vigorous denials that an addition to the stock of money—even when this increment is distributed so as to equi-proportionally increase all individual cash balances—causes an equi-proportional increase of all prices. Edwards (1985, p. 55) thoroughly demolishes this criticism by demonstrating that it rests on a clearly erroneous interpretation of Mises's theory "as saying that the individual values units of money only with a view to maintaining a pre-decided and given level of purchasing power, and that utility calculation is not applied to the level of real balances. From this perspective they find his non-proportionality argument contradictory. It does not occur to them that his non-proportionality argument is evidence *against* their interpretation of his theory of the demand for money."

Edwards (1985, p. 56) himself falls into error, however, when he charges Mises with "a failure to step from a non-rectangularly-hyperbolic demand for nominal balances to the rectangularly-hyperbolic market equilibrium curve." Edwards initiates his criticism by concurring with Mises that an equi-proportional addition to cash balances, let us say a doubling, will not lead *initially*, i.e., immediately prior to the first round of spending of the excess balances, to an inversely proportional variation or halving of marginal utilities of money on individual value scales. Thus, as Edwards recognizes, the overall elasticity of Mises's "instantaneous" demand curve for nominal balances, which is derived from instantaneously existing marginal utility schedules for goods and money, may properly take on (absolute) values less than, greater than, or equal to unity. Or, in other words, the instantaneous demand curve for money only fortuitously traces out a rectangular hyperbola.⁹

⁹Rothbard's analysis of the demand for money implies that it tends to be basically inelastic due to the high inelasticity of what he calls the "exchange" or "pre-income" component of monetary demand, which is distinguished from the "reservation," "cash-balance" or "post-income" component. The former is expressed in the exchange for money of the services of the original productive factors, land, and labor, and of existing inventories of capital and consumer goods, for which the reservation demands of their producers are usually highly inelastic. See Rothbard ([1962] 1970, 1, pp. 662–67; 2, pp. 350–56). The inelasticity of the exchange demand for money is similarly accounted for by Herbert J. Davenport ([1913] 1968, pp. 267–73). Davenport (*ibid.*, pp. 301–3, 316–21) also provides a surprisingly modern account of the reservation demand for money, as a short-run, speculative phenomenon, but ultimately fails to integrate the two components into a satisfactory overall theory of the demand for money.

Edwards (*ibid.*, p. 56) proceeds to argue, however, that Mises erred "in assuming that it followed that prices would not rise proportionately with M. This would occur because, as prices increased, real balances would decline, reversing all of the initial wealth effects, until equilibrium was attained at the initial level of real balances, *ceteris paribus*." Edwards is here contending, à la Patinkin, that, notwithstanding the non-unitary elasticity of the "instantaneous" demand curve for money, real balance effects generated by an increase of money will initiate a dynamic adjustment process that culminates in an equi-proportional increase in overall prices. But Patinkin's demonstration that an increase in money accomplished via an equi-proportional increase in everyone's cash balances brings forth an increase of all prices in the same proportion rests either on his arbitrary assumption of the constancy of the real data, i.e., relative prices and real wealth, during the transition from one Walrasian equilibrium position to the next, or on his equivalent simplifying assumption that "prices rise during the *tatonnement* in an equi-proportionate manner" (Patinkin 1965, p. 44).¹⁰

In contrast, the very time-embracing "step-by-step" method which Mises (1978a, p. 59) consistently applies in analyzing monetary phenomena leads inevitably to a denial that the real data of the system could, under any conceivable initial set of circumstances, remain unaltered during a disequilibrium adjustment or *tatonnement* process. For Mises (1966, p. 414), "The process is always uneven and by steps, disproportionate and asymmetrical." In fact, Mises ([1953] 1971, pp. 141–42) rigorously demonstrates the long-run nonneutrality of money even under the most stringent and highly unrealistic assumption that new money is injected into the economic system in a way that does not disturb the pre-existing relative distribution among individuals of total wealth.

Writing in *Human Action*, Mises (1966, pp. 412–13) concludes that

Changes in the supply of money must necessarily alter the disposition of vendible goods as owned by various individuals and firms. . . . We may, if we like, assume that every member gets a share of the additional money right at the moment of its inflow into the system, or shares in the reduction of the quantity of

¹⁰On the key role played by the assumption of the constancy of relative prices for deriving the neutrality of money in Patinkin's system, see Rousseas (1972, pp. 53, 72).

money. But whether we assume this or not, the final result of our demonstration will remain the same. This result will be that changes in the structure of prices brought about by changes in the supply of money available in the economic system never affect the prices of the various commodities and services to the same extent and at the same time.

The main fault of the old quantity theory as well as the mathematical economists' equation of exchange is that they have ignored this fundamental issue. *Changes in the supply of money must bring about changes in other data too.* The market system before and after the inflow or outflow of a quantity of money is not merely changed in that cash holdings of the individuals and prices have increased or decreased. There have been affected also changes in the reciprocal exchange ratios between the various commodities and services which, if one wants to resort to metaphors, are more adequately described by the image of price revolution than by the misleading figure of an elevation or a sinking of a "price level." (Emphasis added)

Thus for Mises, "real balance effects" are inextricably bound together with "distribution effects." The very process by which the market adjusts the (positive or negative) excess demands for money of individuals necessarily "revolutionizes" wealth positions and the price structure. And this is the case even if these (nonzero) individual excess demands sum to zero in the aggregate. Writes Mises (1966, pp. 417–18):

Every change in the money relation alters—apart from the effects on deferred payments—the conditions of the individual members of society. Some become richer, some poorer. It may happen that the effects of a change in the demand for or supply of money encounter the effects of opposite changes occurring by and large at the same time and to the same extent; it may happen that the resultant of the two opposite movements is such that no conspicuous changes in the price structure emerge. But even then the effects on the conditions of the various individuals are not absent. Each change in the money relation takes its own course and produces its own particular effects. If an inflationary movement and a deflationary one occur at the same time or if an inflation is temporally followed by a deflation in such a way that prices finally are not very much changed the social consequences of each of the two movements do not cancel each other. To the social consequences of an inflation those of a deflation are added. There is no

reason to assume that all or even most of those favored by one movement will be hurt by the second one, or vice versa.

Edwards (1985, p. 56) also argues that Mises's "nonproportionality argument" contradicts Mises's own no less vigorously stated position that an increase in the aggregate money stock would leave human welfare unchanged, because "a change in M would result in a proportional change in P." Edwards here implies that Mises derives his proposition that money always yields to society its full utility as a medium of exchange from a "process" analysis of the effects of a change in the quantity of money on a given economic system. For Mises, however, the proposition regarding the welfare effects of additions to the money stock is derived from a purely "comparative static" analysis of two simultaneously existing but unconnected economic systems which are based on identical real data and differ only in the magnitudes of their nominal money stocks. While the discussion by Mises which Edwards cites to support his interpretation is admittedly ambiguous on this point (Mises [1953] 1971, p. 85), elsewhere in the same work Mises (*ibid.*, pp. 142, 145) draws a clearcut distinction between the two forms of analysis:

the level of the total stock of money and of the value of the money unit are matters of complete indifference as far as the utility obtained from the use of the money is concerned. Society is always in enjoyment of the maximum utility obtainable from the use of money. Half of the money at the disposal of the community would yield the same utility as the whole stock, even if the variation in the value of the monetary unit was not proportioned to the variation in the stock of money. But it is important to note that it by no means follows from this that doubling the quantity of money means halving the objective exchange-value of money. . . .

If we compare two static economic systems, which differ in no way from one another except that in one there is twice as much money as in the other, it appears that the purchasing power of the monetary unit in the one system must be equal to half that of the monetary unit in the other. Nevertheless, we may not conclude from this that a doubling of the quantity of money must lead to a halving of the purchasing power of the monetary unit; for every variation in the quantity of money introduces a dynamic factor into the static economic system. The new position of static equilibrium that is established when the effects of the fluctuations thus set in motion are completed cannot be the same as that which

existed before the introduction of the additional quantity of money.

In the course of rebutting Moss's astounding contention that Mises "saw the demand for real balances as constant and given by the state of the world . . . [and] did not apply subjective cost and benefit considerations to the demand for real balances," Edwards (1985, p. 57) himself seriously misconstrues Mises's position on the relationship between the demand for money and the interest rate. Edwards correctly characterizes Mises's overall approach to the problem as "the classic one of long-run interest rate neutrality, based on a view that the rate of interest and the demand for money had essentially different determinants."¹¹ This, Edwards (*ibid.*, p. 57) implies, accounts for the fact that Mises "did not generally regard interest foregone as the cost of holding money." This is incorrect on both exegetical and logical grounds.

First of all, Mises identified three basic categories of opportunity costs which may be incurred in the decision to hold cash balances. These include "interest foregone" as well as the foregoing of "instantaneous consumption" and of "plain saving" i.e., the accumulation of stocks of durable consumers goods.¹² That the foregoing of an interest return is one of the potential "costs" of holding money is logically implied in the very application of marginal utility theory to the explanation of the purchasing power of money. In this approach, the opportunity cost of allocating a sum of money to cash balance is the renunciation of the marginal utility of the most highly valued alternative use of this money, which may or may not be the investment of the sum in interest-bearing securities. The assertion by Edwards (1985, p. 57) to the contrary, this is readily deducible from Mises's analysis in *Theory of Money and Credit* of the manner in which individuals adjust to a disequilibrating influx of newly-created money into their cash balances. Writes Mises ([1953] 1971, pp. 139, 134–35):

For these persons, the ratio between the demand for money and the stock of it is altered; they have a relative superfluity of money and a relative shortage of other economic goods. The immediate consequence of both circumstances is that the marginal utility to

¹¹For a recent, vigorously-argued vindication of this position, see Hans-Hermann Hoppe (1992).

¹²On the nature of plain saving as distinguished from capitalist saving, see Mises (1966, pp. 530–31).

them of the monetary unit diminishes. This necessarily influences their behavior in the market. . . . He who has more money on hand than he thinks he needs, will buy, in order to dispose of the superfluous stock of money that lies useless on his hands. If he is an entrepreneur, he will possibly enlarge his business. If this use of the money is not open to him, he may purchase interest-bearing securities; or possibly he may decide to purchase consumption goods.

If we assume that one of the individuals in Mises's example does in fact allocate his increment of new money to the purchase of interest-bearing securities—assuming that his value rankings of the utilities derived from the various uses of the money have remained constant—it is to be inferred from this purchase that the foregone interest on these securities constituted the opportunity cost of holding an equal-sized unit of money *prior* to the infusion of new money into his cash balance.

Mises (1966, p. 430) is even more explicit on this point in *Human Action*, where he states that:

The keeping of cash holding requires sacrifices. To the extent that a man keeps money in his pockets or in his balance with a bank, he forsakes the instantaneous acquisition of goods he could consume or employ for production. In the market economy these sacrifices can be precisely determined by calculation. They are equal to the amount of ordinary [or pure] interest he would have earned by investing the sum. The fact that a man takes this falling off into account is proof that he prefers the advantages of cash holding to the loss in interest yield.¹³

Not only does Mises conceive the interest rate as a potential cost of holding money, he also recognizes that it is a monetary phenomenon in a real and important sense. That is, in a barter economy, where monetary calculation does not exist, it would be impossible to even conceive the difference in value between present and future goods as a unitary rate. The reason, as Mises (1990b, p. 65) points out, is that "Only within a money economy can this value difference be comprehended in the abstract and separated from changes in the valuation of individual concrete economic goods. In a barter economy, the phenomenon of interest could never be isolated from the evaluation of future price movements of individual goods."

¹³Also see Mises (1966, pp. 404, 463), for similar statements.

Of course, recognizing that the interest rate is an outgrowth of monetary exchange and calculation expressible only in monetary terms and that, as an element determined within the system of interdependent money prices, it functions as an opportunity cost of holding money does not imply that "real balances [are] a function of wealth and the interest rate." That Edwards does not fully comprehend this point is attributable to his failure to appreciate that Mises's methodological approach is worlds apart from the neoclassical methodology of mutual determination that Edwards himself apparently espouses. The analytical framework of Mises's monetary theory is the general interrelationships and interdependencies of the system of market prices. Within this framework, there are multifarious opportunities for money expenditures on consumer goods which, in addition to the opportunity to hold ready cash, compete with opportunities to invest money at interest. Thus it might be argued that a fall in the interest rate, *ceteris paribus*, lowers a given individual's cost of currently consuming, let us say, apples. But it is an impermissible leap of logic from this formally unexceptionable statement to the conclusion that the interest rate is one of the functional determinants of the demand for apples.

Edwards does make an important contribution, however, in his defense of Mises's regression theorem against Patinkin and his demolition of the latter's alternative "Walrasian solution" to the circularity problem in monetary analysis. Employing the methodology of simultaneous mutual determinism, Patinkin is able to formally demonstrate that no specific prior value of money need be assumed in deriving a market demand schedule or "excess demand function" for money. Moreover, Patinkin's demonstration implies that if economic agents form their subjective valuations of cash balances on day two with reference to the unique purchasing power of money prevailing on day one, as Mises assumes, the outcome is not a schedule of quantities demanded of money at varying purchasing powers but a single quantity demanded. Thus Patinkin (1965, pp. 115–16) concludes that writers such as Mises who believe that there is a circularity problem to be addressed in explaining the determination of the purchasing power of money fall victim to a "basic misunderstanding of the theory of price determination" and to an elementary "confusion of 'demand' with 'amount demanded.'"

In defending Mises, Edwards argues that, before Patinkin's "individual-experiment" can proceed, i.e., before each individual can establish his indifference map for goods and (nominal) money

balances, money itself must have utility and therefore a known and pre-existing purchasing power, because the very existence of indifference curves implies that the individual is able to maintain a given level of utility by substituting at the margin determinate quantities of goods for determinate quantities of money. Edwards's insightful argument on this point is worth quoting at length (Edwards 1985, pp. 59–60):

note that [Patinkin's] method of generating a demand curve for money assumes the indifference curves to exist and have the normal properties. Yet, translating into modern terms, the whole essence of the problem, as recognized by all parties to the [circularity] debate at the time, was precisely that without some specific value of money *no* such indifference curves could even *exist*. Consider: we have goods on one axis, with a given intercept (the endowment), and money on the other. But money is only money when it is a medium of exchange, that is, when it has a value (purchasing power) in terms of other goods. Then it can be valued for storage purposes and the utility curves can exist.

We might place pieces of paper with a number on them on the axis, but if they have no nonmonetary utility and no purchasing power they would have no utility. The indifference curves can only exist when we place a budget line on the graph, that is, postulate a goods price of money, and that is precisely Mises's point. . . . Mises would argue that since the indifference curves cannot exist until the budget line does, the latter is logically prior. His interpretation of such a graph would be that the budget used is yesterday's exchange value of money, while the indifference curves embody today's subjective valuations of money.

Presumably, Patinkin would counter this critique by arguing that the temporal and causal approach to explaining the demand for money followed by Mises—referring as it does to a particular value of money—would be incapable of generating more than a single point on a demand curve in nominal money space. Edwards's reply to this objection, although it points us in the right direction, is not completely satisfactory. Thus he argues, somewhat tentatively, that the Patinkinite charge “is not quite correct,” because, while the formation of individuals' subjective valuations for money with reference to “some *particular* prior value of money” yields only a single quantity demanded, “there is an infinite number of such possible prior values, and if their tangencies with individual's [sic] existing indifference curves were plotted,

demand functions of the normal shapes would result" (Edwards 1985, p. 66 n. 47).

But the point that Edwards should have made is that market participants, in deciding upon the size of their cash balances, are interested in the future purchasing power of money. In attempting to forecast the future structure of prices, which is the inverse of the purchasing power of money, they resort to the prices of the immediate past, let us say, yesterday. They do not mechanically project the realized prices of yesterday into the future, but use them as the basis for appraising the structure of prices which will emerge and prevail today as a result of the anticipated changes intervening in yesterday's constellation of the qualitative economic data.

Based on their appraisements of money's prospective purchasing power and their anticipated uses for a general medium of exchange today, market participants rank units of money on their subjective value scales and thus establish the marginal utilities that underlie today's market demand for money. For each individual, the marginal utility of money will decline as successive units of a given purchasing power are added to his cash balance. Consequently, an increase in the total stock of money, *ceteris paribus*, will lead to a decline in individual marginal utilities of money and this will translate into a rightward shift in demand curves in goods markets and higher money prices offered and paid, *i.e.*, a decline in the purchasing power of money. In other words, the instantaneous demand curve for money that emerges from Mises's analysis is multi-valued and negatively-sloped and interacts with the vertical line representing the current stock of money to determine today's purchasing power of money.

Contrary to Patinkin's assertion, then, in Mises's analysis, the demand for money is not logically constrained to a single quantity dependent on a specific realized purchasing power, but describes a schedule of quantities that responds inversely to variations in the current purchasing power of money. To illustrate this, if we assume that the total quantity of money that market participants desire to acquire and hold, based on their forecasts of the future purchasing power of money, is insufficient to completely absorb the current stock of money, then there will result a temporal process involving variations in total money expenditures on goods and services, *i.e.*, "real balance effects," that drive the price structure and therefore the purchasing power of money to the level at which the stock of and demand for money are equated. Abstracting from distribution effects, the inverse response of the

amount of money demanded to the alterations in its purchasing power, which occurs during this adjustment process, will trace out a segment of the instantaneous demand curve.

Summing up the differences between the Misesian and Patinkin methods for solving the circularity problem, Edwards (1985, p. 60) sees a distinct advantage in the Misesian method, because it allows for the possibility of disequilibrium occurring between the actual and desired stock of cash balances and the operation of an adjustment process that eventually restores equilibrium. In contrast, the Walrasian solution offered by Patinkin effectively precludes the emergence of monetary disequilibrium and a dynamic adjustment process. As Edwards (*ibid.*, p. 61) argues: "Where demand and excess demand functions are derived using given preferences and hypothetical alternative values of money, and the value of money determined by the market demand and supply functions determines the actual quantities demanded simultaneously, the individual is always at equilibrium. . . . The solution to a simultaneous equation set *never* yields anything but equilibrium values."

The Monetary Adjustment Process: The Interspatial Equalization of the Value of Money, and the Determination of Exchange Rates

In chapter four, Edwards (1985, p. 69) examines Mises's contributions to international monetary theory, and, in the process, goes a long way towards establishing that Mises anticipated "every major element of the modern monetary approach to international adjustment (MAIA)." Indeed, Edwards (*ibid.*, p. 133) argues that "This is true to such an extent that Mises might justly be designated the founding father of the MAIA in the twentieth century."

The central proposition of the modern monetary approach is that "the balance of payments and currency exchange rate changes are essentially monetary phenomena equilibrating the stock demands for and supplies of national currencies" (*ibid.*, pp. 69–70). Proponents of this approach have traced the roots of the MAIA back to the writings of classical monetary theorists including David Hume and British "bullionist" pamphleteers John Wheatley and David Ricardo. Edwards argues, however, that in their eagerness to identify and credit the classical forebears of the monetary approach, doctrinal historians have given a partly distorted account of its development, which completely overlooks

Mises's unquestioned precedence in formulating important elements of the uniquely "modern" version.

As Edwards (ibid., pp. 77–78) points out, before Mises, proponents of the monetary-oriented classical and neoclassical approaches to balance-of-payments adjustment, including prominent cash-balance theorists such as Alfred Marshall and Knut Wicksell, explained the international distribution of the money commodity using a macro "expenditure flow" concept of the demand for money. According to this conception, each nation's equilibrium share in a given global stock of money is determined, given the payments habits of its population, by the relative volume of business it transacts at the exogenously given level of world prices. Or, in terms of the Fisherian Equation of Exchange, a nation's demand for money is conceived as a demand for a flow of money payments ($M \times V$) needed to support an aggregate expenditure flow ($P \times T$).

Mises, in contrast, builds up his explanation of the distribution of the stock of money among nations from the Mengerian (and modern) conception of the individual's demand to hold a *stock* of the general medium of exchange. For Mises, individuals' subjective value rankings of money and goods hold the ultimate explanation for the allocation of the global stock of money among individual cash holders and thus among nations, obviating any reference to disembodied averages and aggregates such as a nation's velocity of circulation of money or total volume of business transactions. Thus in Mises's view, as in the modern MAIA, "international monetary *flows* (that is, deficits and surpluses in the balance of payments) act to equilibrate the stock demands and supplies of money" and, therefore, assuming a fixed global monetary stock, "only changes in the *demands* for money (resulting in net excess demand, positive or negative) can produce a surplus or deficit" (Edwards 1985, p. 77). Conversely, "If the state of the balance of payments were such that international movements of money were required *independent of any altered estimation of money on the part of those involved* (that is, in the absence of change in the stock demands), operations would be induced to restore equilibrium" (ibid., p. 76).

Unfortunately, in his own eagerness to establish Mises's rightful and preeminent position in the MAIA tradition, Edwards glosses over several significant differences between the Misesian and the rational expectations-based modern approaches. These differences are important enough to warrant critical comment.

Edwards (*ibid.*, pp. 70–71, 73–74) points out that Mises, like the modern proponents of the monetary approach, holds that “the law of one price” applies to money as well as to commodities. In other words, in the case of a single money, the purchasing power of the monetary unit tends to be geographically uniform. For adherents of the modern monetary approach, such as Laffer and Miles (1982, p. 232), this means that, assuming profit maximization and no barriers to trade, “All commodities’ prices should be fully arbitrated in each and every numeraire at each and every moment in time.” This concept of instantaneous arbitrage for an individual good then “can be extended to the overall price indexes of two countries by taking a weighted average of the prices of goods consumed in both countries” (*ibid.*, p. 232).

But the rational expectationist conception of instantaneous arbitrage is inconsistent with the step-by-step method employed by Mises in his analysis of the monetary adjustment process. As Mises (1978a, p. 59) emphasizes, “The step-by-step analysis must consider the lapse of time.” Moreover, Mises ([1953] 1971, pp. 187–94; 1966, pp. 219–23) criticizes and deliberately eschews the use of price indexes to measure changes in the purchasing power of money, except for rough historical estimates.¹⁴ Therefore, when Mises ([1953] 1971, p. 176) states that “The purchasing power of money is the same everywhere,” he is *not* referring to a tendency to equalization of national price indexes, as Edwards (1985, p. 77) seems to imply at one point. For Mises, interspatial equalization of the value of money refers to an equilibration of the vast and unaveraged array of alternative quantities of goods which are purchasable by a unit of money.

Furthermore, from Mises’s perspective, equilibration of money’s purchasing power array cannot necessarily be expected to yield equality between the prices of physically identical goods available in different locations, let alone between the arbitrarily selected and weighted price indexes of different nations or regions. The reason is to be found in Mises’s pathbreaking subjectivist

¹⁴Even the practical usefulness of index numbers for judging day-to-day variations in the purchasing power of money is severely limited. As Mises (1966, pp. 222–23) points out, “A judicious housewife knows much more about price changes as far as they affect her own household than the statistical average can tell. She has little use for computations disregarding changes both in quality and in the amount of goods which she is able or permitted to buy at the prices entering into the computation. If she ‘measures’ the changes for her personal appreciation by taking the prices of only two or three commodities as a yardstick, she is no less ‘scientific’ and no more arbitrary than the sophisticated mathematicians in choosing their methods for the manipulation of the data of the market.”

insight that the situation of a good in space may affect its perceived usefulness and thus its subjective value in satisfying human wants.¹⁵

Edwards (1985, p. 74) properly recognizes the implication of this insight for the case in which a "good has a subjective value as *consumption* good where it is, and a different one as *production* good in those places to which it may be transported." The good available at its place of production, for example, coffee-in-Brazil, is evaluated by coffee drinkers in New York City as a capital good which must be combined with further complementary capital goods, that is, the means of transportation, before it can attain the (higher) subjective value of the consumption good, coffee-in-New York. As Edwards (*ibid.*, p. 74) also notes, Mises distinguishes money from nonmonetary commodities in this respect, because, in the case of the former, the use of money substitutes and clearing systems operate to render its position in space indifferent to economic agents. For Mises, then, stocks of money, wherever they may be situated within the unitary market area, for all practical purposes, comprise a perfectly fungible commodity whose transference between market participants is virtually costless. Thus the Law of One Price fully applies to money, and Edwards (*ibid.*) concurs with Mises's conclusion that "the purchasing power of money is the same everywhere, only the commodities offered are not the same."

Edwards defends Mises against Ellis's criticism that Mises has only proved the international equalization of "utility flows per unit of purchasing power" rather than of the purchasing power of money itself (Ellis 1934, p. 224). However, Edwards's defense itself rests on a failure to comprehend the full scope of Mises's insight regarding the influence of the spatial element on the quality of (nonmonetary) goods. Thus, in response to Ellis's critique, Edwards (1985, p. 74) upholds Mises's proposition that the objective value of money tends to equality and supports this position with the following example: "Consider a good sold in any number of locations in different directions from the factory, and at distances and elevations such that their transportation costs are the same. On Mises's assumptions it is clear that though such physically identical goods are at different locations they are *economically* the same and their prices would not differ in equilibrium."

¹⁵Mises arrived at this insight independently of Nassau Senior, whose work containing the treatment of this problem was not published until 1928. On this point and for a discussion of Senior's contribution, see Wu (1939, pp. 126–28); also see Bowley ([1937] 1967, pp. 205–8).

Edwards's conclusion is not fully consistent with Mises's conception of the spatial quality of goods, because this conception does not merely embrace the pure distance between the location of the consumer and the location of the good, but also the consumer's positive or negative psychic response to the very location of purchase or consumption. For example, the same brand of men's shirt may simultaneously sell for a significantly higher price at a mall boutique than at a downtown clothing store, because, at the margin, consumers are prepared to offer a higher price for the good purchasable at the more accessible and pleasant location. Or consider that alcoholic beverages consumed in a restaurant situated atop one of the towers of the World Trade Center, which offers a breathtaking view of Manhattan and its surroundings, command much higher prices than drinks mixed with the same ingredients and imbibed in a street-level pub located a few blocks away. Surely, we do not expect would-be bar patrons at the World Trade Center to react to knowledge of such price discrepancies by a mad scramble to the elevators in order to take advantage of the higher purchasing power of money at ground level. This is not to deny, of course, that whenever consumers are neutral between stocks of a technologically identical good ready for consumption or purchase at two different locations, the spatial equilibration of the purchasing power of money will imply the complete eradication of inter-local price differences.

The proper response to Ellis's critique is to point out that, for Mises, the equilibration of the purchasing power of money is accomplished within the same process that gives rise to the structure of relative prices. This process culminates in a state in which, barring further change in the data, mutual gains from further exchange between any two market participants are impossible, because the ordinal value rankings of equal units of the various goods and money are identical for all those possessing them. This state also reflects the *absolute* equalization of the objective exchange value of money between any two locations, because it implies both that inter-local differences between prices of technologically identical goods do not exceed their costs of transportation (abstracting from time in transit) between their consumption and production centers, and, more generally, that no individual can achieve a more desirable outcome from the exchange process by diminishing his expenditures on goods available at one location and substituting expenditures on goods, whether physically indistinguishable or not, offered at alternative locations.

Thus, contrary to Ellis, interspatial equalization of the *objective* value of money can only exist when there also exists common *utility* rankings for goods and money on the individual value scales of all market participants or, less accurately, when "utility flows per unit of purchasing power" are equalized.

It is instructive to analyze in more detail the market adjustment process which produces the tendency to the interspatial equilibration of the purchasing power of money, because it elucidates the reasons for Mises's insistence, as against Wieser, that such a tendency strongly and rapidly reasserts itself amid the ceaseless fluctuations of the underlying economic data (Mises [1953] 1971, pp. 173–75). Or, more loosely speaking, it explains why monetary equilibrium is much more quickly established than the final equilibrium position of the real sector of the economy. This analysis also permits us to answer the question of whether the occasional unqualified statements by Mises (*ibid.*, pp. 201, 210) to the effect that "the purchasing power of money is the same everywhere" are intended as merely polemical flourishes or represent what Mises believed to be a close approximation to the actual moment-to-moment situation in the economy, as when we speak of "the" market price for wheat or for oil.

Mises's analysis of the market process is predicated on the indisputable premise that the process has an unavoidable spatial, as well as temporal, dimension, because the individual sellers and buyers whose actions constitute it are spatially diffuse and possess different capacities for forecasting, learning of, and adapting to the ceaseless change that characterizes human life (Mises 1966, p. 328). At each moment in time, the unitary market process produces a structure of money prices which is determined by consumer valuations (including, of leisure and of present versus future goods) and entrepreneurial price appraisements interacting with the currently existing total stocks of goods of various orders. The exchanges which take place as a result of these subjective valuations and appraisements produce a situation in which no individual perceives that he can improve his situation by further exchange at prevailing prices, because the marginal utility of any good he might offer exceeds the marginal utility of the good he will receive in exchange. On every market in the economy, therefore, the situation is the same as it is at the close of Böhm-Bawerk's famed horse market (Böhm-Bawerk 1959, pp. 217–30). This "momentary equilibrium," as Böhm-Bawerk (*ibid.*, p. 231) refers to it, or "plain state of rest" (PSR), as it is designated by Mises (1966, p. 244), will persist only so long as

the prevailing state of valuations of the marginal pairs in each market remain constant. But these valuations are bound to change precisely because, in many cases, they are formulated on the basis of inaccurate forecasts and incomplete information regarding market opportunities. The result is that the actual market prices which we observe are always in disequilibrium in two related but logically distinct senses. First, the array of realized prices embodies inter-local discrepancies in the exchange value of goods and money, which present the opportunity for arbitrage profits, whether in terms of money or of enhanced consumer surplus.¹⁶ Second, for many of the goods exchanged, the prices that clear the market exceed or fall short of their respective monetary costs of production, including an interest return to time preference, thereby generating pure or entrepreneurial profits and losses.

In analyzing adjustment of the first type of disequilibrium, we must abstract from the inevitable changes in production decisions that will be initiated by capitalist-entrepreneurs consequent upon their experience of pure profits and losses. The analytical device which is ready made for our purpose is Wicksteed's country fruit market in which the stocks of the various (perishable) commodities as well as consumer valuations are fixed for the duration of the "market day," during the course of which buyers exercise their demands. This market is, moreover, assumed to be "imperfect" in two senses. First, buyers and sellers are spatially constrained and, hence, neither group is instantaneously and fully informed of current transaction prices at all locations or "stalls." And second, neither buyers nor sellers have perfect knowledge of what Wicksteed calls the "ideal market" or "equilibrating" price for any commodity, which, when once established, will not vary for the remainder of the market day.¹⁷

¹⁶I am using the term "consumer surplus" in a purely psychic sense to denote the ordinal difference in value ranking between a good and its monetary purchase price. This is the sense in which Mises (1966, p. 388) uses the term.

¹⁷The classic discussion of the country fruit market can be found in Wicksteed ([1932] 1967, 1, pp. 219-28). A very good analysis of a pure exchange economy can also be found in Kirzner (1963, pp. 105-35). In contrast to Wicksteed's methodological focus on an isolated "market day" in a full production-and-exchange economy, however, Kirzner (*ibid.*, p. 106) begins his analysis with an "imaginary economy" in which he assumes "no production is possible"; all commodities are obtained costlessly by natural endowment. Unfortunately, Kirzner's methodological construct is inferior to Wicksteed's, because it serves to divert attention from the vitally important point that the analysis applies just as fully to the real-world economy of continuing and costly production, since the market's pricing process always proceeds on the basis of stocks of goods that have already been produced and are therefore fixed or in inventory for the given moment.

In the absence of these imperfections of knowledge about the current and future state of the market, the prices established for the first set of transactions of the market day would invariably result in a PSR characterized by spatial equality in the purchasing power of money: the same commodity would have the same price at different stalls and each and every buyer would allocate his income among the different commodities available at different locations so that, at prevailing prices, no alteration in his spatial pattern of expenditures would result in an increase in his "total utility" or the utility-ranking of the aggregate collection of goods he purchases. Until sellers' stocks are completely exhausted and the market comes to a close, this identical "Wicksteedian state of rest"¹⁸ (WSR) will be repeatedly disrupted and then re-established as each new group of perfectly informed buyers arrive and undertake transactions at the prevailing equilibrium set of prices.

However, the inescapable spatial and temporal constraints on market participants would prevent the initial pricing process from culminating in a WSR. Aware of the deficiencies of their information and foresight, both buyers and sellers arrange the temporal pattern of their exchanges according to speculative anticipations of the course of actual market prices. Buyers seeking psychic arbitrage profits devote time to comparison shopping and forego purchases offering a consumer surplus in one location while speculating on the availability at another location either of a higher-ranked good for an equal monetary expenditure or of the same good for a lower price. On their side, sellers may exercise a speculative reservation demand for their own commodities. Thus, the constellation of actual market prices that emerges at any moment early on in the market day will diverge from the equilibrating constellation as a result of ignorance and speculative errors. During the PSR which succeeds each set of transactions undertaken at "false" prices during the early going, market participants begin to discover spatial inequalities in the purchasing power of money and to exploit these opportunities for arbitrage profits. (For analytical convenience, we are assuming; as Wicksteed did, that trading at false prices does not alter the structure of market demand.) As their experience of the market grows during the course of the day, the continually revised transaction

¹⁸Although this construction of a fully-arbitraged, but not final, state of rest is implicit in much of Mises's monetary theorizing, he never formally analyzes it, as he does the PSR.

plans of buyers and sellers come to reflect more accurate and complete information and eventually give rise to the equilibrium set of prices. The lull or WSR which succeeds this latter set of transactions describes a situation in which the spatial divergences in the purchasing power of money have been completely eradicated and the prices of all goods fully arbitrated. For the rest of the market day, each successive set of transactions takes place at equilibrium prices and thus generates a momentary WSR until the arrival of the next group of buyers on the scene.

Wicksteed's analysis, with its assumptions of given consumer value scales and fixed stocks of goods and money, thus allows us to disentangle the complex phenomena of entrepreneurship and production from those of arbitrage. It also serves to emphasize that the determination of money's purchasing-power array is a pure exchange phenomenon: since everyone is a "dealer" in money and money is always "in inventory," a perfectly adequate explanation of the actual exchange ratio between money and goods may be made without reference to problems of production. In the same way, the Böhm-Bawerkian and Wicksteedian explanation of actual, moment-to-moment market prices of individual nonmonetary goods completely and correctly abstracts from production phenomena, due to the fact that the exchanges taking place at any moment in time are determined exclusively by the stocks of goods in existence and prevailing subjective valuations. As Böhm-Bawerk (1959, p. 229) has written: "I do really believe we have here hit upon the simplest and most natural, and indeed the most productive manner of conceiving exchange and price. I refer to the pricing process as a resultant derived from all the valuations that are present in society. I do not advance this as a metaphorical analogy, but as living reality." And, as Mises (1966, p. 245) himself stresses, "The theorems implied in the notion of the plain state of rest are valid with regard to all transactions without exception. . . . The notion of the plain state of rest is not an imaginary construction but the adequate description of what happens again and again on every market."

Perhaps the most powerful defense of the analysis of momentary positions of rest and of their relevance for monetary analysis was presented by Marget. According to Marget ([1938-42] 1966, 2, pp. 222, 240):

The ultimate goal of any theory of prices [theory of indirect exchange], like that of any part of economics which undertakes to explain economic reality, is to explain why *realized* prices are

what they are. "Quoted prices," the prices which are included in the "*ex ante*" schedule of the general theory of value [theory of direct exchange], "expected" prices, "equilibrium" prices (in most of the senses of the concept of equilibrium), or any kind of prices other than *realized* prices are to be introduced into the argument only insofar as they help to explain why prices actually realized on the market are what they are. . . .

In a fully developed monetary economy, a realized price represents the passage of money for an article sold for money. And the "passage of money for articles sold for money" is precisely what constitutes the subject matter of those aspects of the theory of money and prices which undertake to explain why the dimensions of the stream of money which "passes" for a given commodity or group of commodities is relatively large at one time and relatively small at another. . . .

But it also constitutes the subject matter of that part of the "general" theory of value which is built upon the proposition that any realized price is what it is as a result of the conformation and position of the market demand curve and market supply curve prevailing at the moment the price is realized.

Or, as Marget ([1938–42] 1966, 2, pp. 239–40) summarizes it, "the prices which we must ultimately explain are the prices 'realized' at specific moments in clock time [and] the only demand and supply schedules which are directly relevant to the determination of these 'realized' prices are market demand and supply schedules prevailing at the moment the prices are 'realized.'" The only sense in which Margetian "realized" prices may be characterized as "equilibrium" prices is in the sense of an "equality between demand price and supply price for a given quantity of a commodity *in all cases in which prices are actually realized in the market for this quantity of the commodity*" (ibid., p. 253).

With respect to the "market" demand curves, whose variations account for "changes in realized money prices," Marget (ibid., p. 176) conceives them as instantaneous curves, whose shape and position are influenced by forecasting errors and incomplete knowledge of arbitrage opportunities. Thus, each such curve represents "a set of 'plans' by prospective purchasers of a given commodity at the time that they reach the decision to purchase or refrain from purchasing that commodity at a given price. [And] the mere fact that these plans may themselves change between successive realized decisions to purchase or not

to purchase does not alter the further fact that *the actual purchases themselves may be assumed to be based on calculations whose results are embodied in 'plans' the resultant of which is the decision to purchase a given amount if the price is at one level and another amount if the price is at another level*" (Marget [1934-42] 1966, 2, p. 177).

Analogously, Marget (*ibid.*, pp. 255-56, 553-56) construes the "market" supply curve, which interacts with the market demand curve to yield realized prices, as the momentary, Wicksteedian "curve of reserve prices," which is the reversed portion of the general demand curve representing sellers' reservation demand for the existing stock of the good. As Marget (*ibid.*, pp. 554, 556) points out, the concept of sellers' reserve prices embodies recognition of the element of expectation and of the all-important distinction between "amount supplied" and "amount produced," which is necessary when "accounting for prices *realized and the amount of sales realized* within a given historical ('clock-time') period."

The analytical significance which Marget assigns to momentary (disequilibrium) positions of rest is not intended to belittle the usefulness of equilibrium analysis, nor does it imply a lack of interest in market adjustment processes unfolding over time. To the contrary, it is precisely because the experienced outcomes of the market process do not coincide with expected outcomes that the participants are induced to revise their expectations and plans during each succeeding lull in the market process, thereby precipitating another round of realized transactions. Assuming the underlying data are unchanged, the Wicksteed-Mises-Marget approach yields a coherent explanation of how, as information becomes more complete and speculation more accurate, PSRs succeed one another until the intermediate equilibrium situation represented by a fully-arbitrated state of rest (or WSR) is brought into being. Thus as Marget (*ibid.*, pp. 235-36) argues:

without the use of [instantaneous] market demand and supply curves . . . it is impossible to explain either (1) why, of a given range of *possible* "ex ante" prices, only one is "realized" in a given market situation; or (2) how the *goals* of dealers and consumers, even when these goals are short-period goals, are approached (if they are approached at all) through successive realized market transactions. And without a conception of an "equilibrium" price, even over a period as short as [Marshall's market day], it is in many cases impossible to understand what these goals are, and

therefore why the successive market demand and supply schedules show the direction and the type of change that they do, and therefore lead to the successive realized prices actually registered in successive market transactions.

It should be added that the "short-period" equilibrium implied in Marget's dealer-consumer market is the WSR, which, as I argued above, is appropriate to analyzing the short-period arbitrage processes and nonproduction speculative activities involved in the adjustment of the purchasing-power array of money. The WSR must not be confused with the concept of what Mises (1966, pp. 246–47) calls the "final state of rest" (FSR), which is an imaginary construction of the position of the economy when prices and production have been completely and finally adjusted to a given alteration in the economic data, including a change in the quantity of money. Any account of the economy's approach to the FSR must refer to the specific function of the capitalist-entrepreneur or "promoter" who actively seeks to profit by allocating factors of production among time-consuming, capitalist production processes, a function which is ignored in the pure exchange analysis of the WSR, dealing as it does with fixed stocks of goods. But, as Marget teaches, the analysis of the temporal path to the FSR must also refer to the successive realized price structures that emerge momentarily and then are displaced by a successor as the equilibrating changes occurring in production continually alter the available stocks and marginal utilities of goods until production has been fully adjusted and the structure of "final" prices emerges.

The usefulness of the imaginary construct of the FSR in monetary theorizing and its relationship to the concepts of the PSR and WSR is illustrated when we trace out the consequences of a change in the quantity of money. To fully analyze this adjustment process, we must completely abstract from all other exogenous changes and processes of adjustment, and so we must begin our analysis from an FSR in which not only the distribution of cash balances and the value of money but also relative prices and production have been fully adjusted to the existing economic data. An unanticipated increase in the total stock of money will disrupt the prevailing FSR as the initial recipients of the new money suddenly discover their cash balances to be in excess of their needs. On the very next market day, they begin to disgorge the excess money balances by increasing their demands for various goods and services according to their subjective marginal

utility rankings of additional units of money and goods. If we maintain our assumption that arbitrage processes work themselves out over the course of the Wicksteedian market day, the final set of transactions of the day yields a fully-arbitraged purchasing power of money. Not only will this purchasing-power array be lower than that existing at the end of the previous market day, it will also embody a different relative price structure, which reflects the altered pattern of relative demands caused by money's nonneutrality and which, to the extent that it has not been anticipated, results in entrepreneurial profits and losses.

Thus, while the purchasing power of money has been inter-spatially equalized, it is far from being fully equilibrated by the end of the first market day. The second round recipients of the additional money—those sellers who are the first to be favored by the inflation-fueled increase in the demand for products and services—seeking to rid themselves of their excess cash balances, return to market the next day with their own increased demands for goods and this brings about another revolution in the price structure, with yet a new WSR emerging by the end of the day. Each succeeding market day likewise will dawn with a revised structure of demands for goods and will terminate in a WSR featuring an altered purchasing power of money, until all prices and incomes have been affected to a greater or lesser extent by the injection of the new money. As noted above, however, the permanent redistributions of income and wealth brought about by the sequential nature of the monetary adjustment process, constituting what Mises (1966, pp. 416–19) calls money's "driving force," will result in a permanently altered structure of relative demands for consumer goods as well as permanent alterations in the structure of individual time, liquidity, and leisure preferences. But even after the newly-injected money has percolated throughout the entire economy and exhausted its driving force in a general but uneven increase of prices, the adjustment process will not be complete, because it will take additional time for the production processes and capital structure of the "real" economy to be fully adapted by capitalist-entrepreneurs to the money-induced changes in consumer demands, time preferences, etc. It is only after the complete adaptation of production that the monetary adjustment process comes to an end and the "final" price structure and purchasing power of money emerges.

A Misesian analysis of the monetary adjustment process hence depends upon a number of concepts of rest or equilibrium.

The PSR explains the purchasing power of money prevailing at any moment and embedded in the structure of "realized prices." The WSR is an imaginary construct which serves to isolate and illuminate the arbitrage and speculative forces that are constantly propelling the market to rapid convergence upon a single price for each and every commodity (taking into account differences in spatial quality) and a geographically uniform value of money. While the overall economy is unlikely to ever come to rest in a fully-arbitrated state, historical insight leads to the conclusion that arbitrage processes run their course relatively rapidly in clock time, especially where there exist professional arbitrageurs and commodity speculators, organized commodity and retail markets, sophisticated communications and transportation, and consumer advertising. Thus, the interspatial equalization of the purchasing power of money does not wait upon the culmination of the overall monetary adjustment process, which may take years, but is a powerful tendency exhibiting itself at every step of the process. For Mises ([1953] 1971, p. 174) not only is such a tendency deduced "from the principles of the theory of prices," it is "clearly demonstrated day by day in the market." Therefore, it is an historical judgment and not polemics which prompts Mises (*ibid.*, p. 176) to declare that "the exchange ratios between money and economic goods of completely similar constitution in all parts of a unitary market area . . . are at any time equal to one another." Wicksteed ([1932] 1967, 1, pp. 144), in fact, reaches a similar conclusion, stating that "this ideal state of equilibrium [i.e., the WSR] never exists; but a sense of mutual advantage is perpetually bringing about approximations to it."

However, as I argued above, the monetary adjustment process cannot be completely accounted for without reference to the FSR, because variations in the monetary data inevitably modify relative income and wealth positions and hence bring about an alteration in relative prices. These money-driven changes in the structure of relative prices account for the profits and losses realized in the transactions that establish the PSR at any point in the uncompleted adjustment process. The emergence of profits and losses impels entrepreneurs to immediately begin revising purchase, sale, and production decisions and so to drive the economy through a series of temporary states of rest toward a final position of full adjustment and zero profits. Unlike the geographically uniform value of money of the WSR, which is closely approximated in actually prevailing market conditions, at any point of historical time, the economy is always far from reaching the

FSR. The FSR only indicates the direction of movement of the historical market process at any moment. As Mises (1966, p. 245) writes: "the final state of rest will never be attained. New disturbing factors will emerge before it will be realized. . . . the market at every instant is moving toward a final state of rest. Every later new instant can create new facts altering this final state of rest."

In addition to this pathbreaking analysis of the international adjustment process and formulation of the law of one price under the conditions of a single money, Mises also pioneered in the early twentieth-century revival of the purchasing-power-parity (PPP) theory of exchange rates and in the formulation of what is now known as the "asset market" view of the influence of expectations on the formation of the exchange rate, two key elements of the MAIA when applied to the case of independent but co-existing moneys.

Edwards (1985, p. 73) points out that Mises rediscovered the PPP theorem four years before Cassel published the first of his many statements of it.¹⁹ Edwards, unfortunately, does not perceive the fundamental difference between the Casselian and Misesian formulations of the theorem, which is crucial to explaining why Mises continued to rigorously maintain the "absolute" version of the theorem long after Cassel and almost all other economists abandoned it for the empirically testable "relative" version. Nor does he remark on the fact that Mises never vitiated the explanatory significance of the theorem by restricting it to a situation in which "real shocks" to the economy and therefore alterations in relative prices are assumed absent, as Cassel apparently did (Officer 1982, p. 254).

For Mises, the equilibrium exchange rate, or what he initially called the "static" and later the "final" exchange rate, between two currencies exactly equals the inverse of the ratio between the purchasing powers of the two currencies. In the Misesian version of the theorem, moreover, a given depreciation of the overall purchasing power of currency A relative to currency B effects an increase of the final price of B in terms of A in precisely the same proportion, despite the permanent revolution in relative prices that is invariably produced by the depreciation process.

¹⁹According to Officer (1982, p. 251 n. 1) Cassel devoted at least parts of twenty-five English-language publications to expounding the PPP theorem. Officer (*ibid.*, p. 252) reports that Cassel claims to have perceived the main point of the theorem in 1904 and to have incorporated its main ideas into his classroom lectures as early as 1905.

The differences between Mises and Cassel ultimately stem from Mises's analytical coup in perceiving the artificiality of the distinction long maintained in classical monetary analysis between the case of a parallel standard, i.e., two different moneys circulating side by side in domestic use, and the case in which there is only one kind of money employed in domestic transactions while another kind is in use abroad. According to Mises ([1953] 1971, p. 179), although "prevailing opinion" treats the two cases separately, "there is no theoretical difference between them as far as the determination of the exchange-ratio between the two sorts of money is concerned." Where economic relations exist between a gold-standard country and a silver-standard country, "from the economic point of view, both metals must be regarded as money for each area" (ibid., p. 180). Furthermore, according to Mises (ibid.), whether traders utilize both moneys or the "foreign" money along in carrying out an international transaction, "the only important point is that the existence of international trade relations results in the consequence that the money of each of the single areas concerned is money also for all other areas."

One of the few economists who appreciated Mises's theoretical breakthrough in this area was Lord Robbins (1971, p. 22) who wrote: "As von Mises pointed out years ago, the theory of the foreign exchanges can be viewed simply as a special case of the theory of parallel currencies."²⁰

As simple and compelling as Mises's insight is, it has revolutionary implications for the analysis of exchange-rate determination. Most importantly, the exchange rate between two different national currencies is no longer determined, as it was for Cassel (quoted in Officer 1982, p. 252), by the "quotient between the general levels of prices in the two countries." National price levels, each of which include purely domestic goods, e.g., houses and haircuts, whose spatial quality components render their prices interlocally, and *a fortiori*, internationally incommensurable, are wholly irrelevant to the issue, because there is no longer a reason to distinguish between internationally "tradable" goods and domestically produced and consumed "nontradable" goods. As in the case of domestically co-existing parallel currencies, each and every spatially-differentiated good finds expression in the purchasing-power array of each of the two national currencies.

²⁰Rothbard ([1962] 1970, p. 725) also follows the Misesian approach in theorizing about exchange rates.

The Misesian exchange-rate theorist would thus reject out of hand the claim of modern macro theorists such as Jeffrey D. Sachs and Felipe B. Larrain (1993, pp. 657–58) that the presence of nontradable goods “affects every important feature of an economy, from price determination, to the structure of output, to the effects of macroeconomic policy [and] undermine[s] the case for purchasing power parity.” In fact, all goods can be and are traded internationally, even though many are “immovable” or “nontransportable.” Certainly, one of the lessons learned from the exchange-rate gyrations of the 1980s was that American real estate and consumer services, when rendered sufficiently cheap by a depreciated dollar, are purchasable by foreign speculators and tourists. For the Misesian, the apparent problem presented to the PPP theorem by the existence of goods whose position in space is fixed is easily soluble when the spatial dimension of quality is taken into account.

Thus, for example, if the final or PPP exchange rate between the U.S. dollar and the British pound is two-to-one, then the pound price of a house located in London must be exactly one-half the dollar price of this same house. Of course, due to consumer perceptions of the difference in quality between the two cities as residential locations, the final price in dollars (pounds) of an identically constructed house situated in Manhattan may be triple that of the London house also expressed in dollars (pounds). To maintain purchasing power parity, therefore, it is not necessary that technologically identical but immovable goods available in different locations maintain equal prices in the same currency, but only that the ratio of the prices in two different currencies of an immovable good in the same location equal the inverse of the exchange rate between these two currencies. If the ratio of currency prices for any given commodity diverges from the prevailing exchange rate, then the final state of rest has not yet been attained, and profit opportunities will exist for selling goods for the relatively overvalued currency, purchasing the undervalued currency, and using it to repurchase the original good. These arbitrage operations will drive the exchange rate and the ratio of currency purchasing powers toward a mutual and final adjustment.²¹

Another feature which significantly distinguishes Mises’s formulation of the PPP theorem from Cassel’s involves the question

²¹A good explanation of this arbitrage process is given by Rothbard ([1962] 1970, pp. 725–26).

of whether the exchange rate is exclusively a monetary phenomenon, or whether changes in the nonmonetary data are capable of bringing about a permanent departure of the equilibrium exchange rate from the rate which maintains strict PPP between the two currencies. As alluded to above, especially in his later writings, Cassel himself seems to have hinted at what might be termed an "inclusive" approach to exchange-rate determination, i.e., one which includes references to non-monetary factors as codeterminants of the exchange rate.²²

More recently, proponents of the modern MAIA have been sharply criticized for writing out models of exchange-rate determination that embody an absolute version of the PPP theorem along Casselian lines and that exclude any reference to the influence of real factors on the formation of the exchange rate. Thus, for example, Thomas M. Humphrey ([1980] 1983, pp. 195, 200) has argued that "The main shortcoming of the monetary approach is that it ignores the effect of real relative price changes on the exchange rate. In particular, it ignores the influence of changes in the *real terms of trade* (i.e., the relative price of imports and exports) and *internal relative prices* (i.e., the relative price of exports and domestic nontradeable goods). . . . [R]eal structural changes in tastes, technology, and market structure . . . operating through real relative prices . . . necessitate real equilibrium changes in the exchange rate and thereby produce systematic divergences from purchasing power parity."

Whatever the validity of this criticism of the PPP theorem formulated in terms of relative national price levels, it has no bearing whatever on a theorem relating to the relative purchasing powers of independent currencies coexisting in a unitary market area. The Misesian version of the PPP theorem remains intact in its absolute and exclusively monetary formulation.

To illustrate, let us consider the case of a monopolistically-induced increase in the price of oil, the U.S. import, relative to the U.S. export, wheat. While the "terms of trade" turn against the U.S., *ceteris paribus*, i.e., in the (unlikely) absence of any induced changes in the monetary data, there will be no long-run depreciation of the U.S. dollar against the Saudi riyal, because both currencies experience an equal reduction of their purchasing powers in terms of oil and, assuming the demand for oil is inelastic along the relevant segment of the global demand curve,

²²Officer (1976, p. 9) has argued this, while Paul Samuelson (1966) has denied it. For a brief description of this "milder approach," see Krueger (1983, p. 68).

equal increases of their purchasing powers in terms of wheat. Of course, this is not to deny that short-run and self-reversing fluctuations in the exchange rate may accompany the market's adjustment to the alteration in relative prices. Thus U.S. consumers may initially respond to the increased price of oil by increased expenditures on oil without a corresponding reduction in their spending on wheat, allowing their cash balances to temporarily run down.²³ This will cause an "overabsorption" of output relative to their shrunken real income by U.S. residents, creating an excess demand for riyals in the foreign-exchange market and necessitating a temporary rise in the exchange rate and a depreciation of the dollar. The movement in the exchange rate will thus assist in clearing excess demands in output markets and adjusting the terms of trade to prevent overabsorption and preserve balance of payments equilibrium, but only until U.S. residents' expenditures adjust, cash balances are reestablished at their former equilibrium levels, and the exchange rate floats back down to its unchanged PPP level.

Moreover, other things are not likely to remain equal; in particular, we can expect a change in the relative demands for the two currencies which results from the redistribution of income and wealth from U.S. entrepreneurs and laborers to their Saudi counterparts and leads to a long-run depreciation of the dollar. But it is the relative decline in the cash-balance demand for the dollar and therefore in its purchasing power *vis-à-vis* the riyal, and not the deterioration of the U.S. terms of trade, which is the direct cause of the change in the *final* exchange rate.

There remains to be noted Mises's status as a forerunner of the modern explanation of the effect of expectations on the exchange rate. The modern "asset market view," as it is called, treats foreign exchange markets as efficient asset markets in which current prices and exchange rates adjust promptly to changing expectations regarding the prospective development of the relative purchasing powers of the various currencies. Modern writers in the MAIA tradition, who have been responsible for reviving this view, generally give credit for its origination to such

²³Hayek ([1937] 1971, p. 18) in his earlier incarnation as a Misesian monetary and business-cycle theorist discusses cash balances as cushions permitting market participants to soften and delay the adaptation of their real incomes to their altered money incomes. This function of cash balances has recently been rediscovered in the literature on the "buffer" or "shock-absorption" approach to the demand for money. See, for example, Kanninen and Tarkka (1984), Knoester (n.d.), and Laidler (1984).

writers as Cassel, Keynes, and Dennis Robertson, and to German-speaking writers, including Walter Eucken, Fritz Machlup, and Melchior Palyi (Kreinin and Officer 1978, pp. 28–31; Humphrey [1980] 1983; Edwards, 1985, p. 79).

These economists writing in the 1920s arrived at this view while seeking to explain the significant discrepancy that they observed between the rates of price inflation and exchange-rate depreciation toward the end of the German hyperinflation. While Mises has been recognized as meriting inclusion in the group who pioneered the asset market view, and even as “perhaps its strongest proponent” (Humphrey [1980] 1983, p. 192), Edwards (1985, pp. 80–81) discovers a sophisticated statement of the view presented by Mises in the first German edition of the *Theory of Money and Credit* published in 1912, two years before the inception of the German war inflation. Amazingly, while Mises thus enjoyed a temporal advantage over the other expositors of the asset market view, he suffered the distinct disadvantage *vis-à-vis* those writing in the 1920s of not having had the direct and stark experience of the hyperinflation available to guide his inquiry.

In re-evaluating the main elements of Mises' monetary theory, one thing especially stands out. Mises took great pains to establish his theory of money on the bedrock of value and price theory. However, the value-theoretic concepts that Mises relied upon in pursuing his monetary analysis were not derived from Walras, Pareto, or Marshall but from Menger, Böhm-Bawerk, and Wicksteed. This fact goes a long way toward explaining the lack of comprehension that Mises' monetary theory has generally met with among mainstream monetary economists. While it represents an added burden to those who seek to present the Misesian approach to a wider audience, it also offers an opportunity to acquaint neoclassical economists with the fruitfulness of an alternative, but not unrelated, tradition in value and price theory.

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