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Of Money and Prices: Some Historical Perspectives

Robert E. Keleher

INTRODUCTION

The monetary approach to exchange rates and the balance of payments is a framework for analyzing open economies within a larger world economy. That is, this approach views the world aggregate as a system of smaller integrated open economies. Recent elaborations of this view have established that different models must be employed in analyzing the small, open economy (SOE) as distinct from the larger, closed aggregate. Moreover, different exchange rate regimes call for the use of alternative frameworks for examining individual small, open economies. Thus, in examining the relationship between money and prices, the monetary approach indicates that three fundamental cases exist that must be clearly distinguished from one another. Accordingly, the relationship between money and prices that has been delineated by the monetary approach for these three cases—the closed economy, the SOE under fixed exchange rates, and the SOE under flexible exchange rates—will be briefly outlined.

Relationship between money and prices in the case of the closed economy is well known. In this case, all the familiar propositions of the conventional monetarist-Patinkin position hold. That is, any increase in the nominal money stock such that actual money balances exceed desired money balances will cause prices to rise. Price level changes, then, serve as the adjusting mechanism to equilibrate discrepancies between actual and desired real money balances. Thus, the quantity theory of money—in the sense of causality running from the stock of money to prices—applies to the case of the closed economy. Advocates of the monetary approach contend that the only purely closed economy is the world economy and,

consequently, it is held that the quantity theory applies to the world economy.

In the case of the SOE under a fixed exchange rate regime (where all goods are tradable),* any increase in the nominal money stock such that actual money balances exceed desired money balances cannot increase prices, since tradable good prices are determined in world markets and given exogenously to the SOE. In this case, a balance of payments deficit is created, which, itself, causes the excess supply of money to contract as these excess balances are traded for foreign goods and/or securities. This contraction will continue until actual and desired monetary balances are equated. In this case, then, the quantity theory of money (in the sense described above) does not apply, since prices are invariant with respect to changes in the domestic money supply.

In the case of the SOE under a flexible exchange rate regime, any increase in the nominal money stock such that actual money balances exceed desired money balances will cause an increase in prices via a fall in the exchange rate. This combination of exchange depreciation and price level increase serves as the adjustment mechanism that equilibrates discrepancies between actual and desired real money balances. According to the monetary approach, this depreciation is equivalent to domestic monetary contraction, in that both depreciation and contraction of the money supply bring about temporary real balance effects that operate to bring desired real money balances into equality with actual real money balances. The quantity theory of money, then, applies to this case, since changes in money will precede changes in the price level.

A contribution of the monetary approach is the careful and explicit delineation of these alternative frameworks by which to analyze relations between money and prices. Depending on the relevant circumstances, then, causality may or may not run from money to prices. However, the explicit recognition of these alternative frameworks and their implications for relations between money and prices are by no means revolutionary. Rather, all of the frameworks outlined above and the distinctions among them were well recognized by earlier generations of economists.† The

*The various cases are presented here so as to delineate their fundamental differences. Although the cases are admittedly oversimplified, the basic contentions presented here would apply if complicating factors such as the addition of nontradable goods were added to the discussion.

†A good deal of confusion in interpreting historical monetary controversies relates to the fact that some of the authors failed to spell out explicitly the implicit assumptions and contexts of their theoretical formulations. This relates not only to obscurities relating to convertible versus inconvertible currencies but (as will be indicated below) to small, open economies versus large, closed economies as well.

purpose of this study, then, is to demonstrate that all of the essential elements of the various frameworks set out above, as well as their important implications relating to money and prices, were well recognized by earlier generations of economists.* Of these three frameworks, the convertible currency (fixed exchange rate) model of the SOE frequently has been misrepresented by historical interpreters. Among contemporary economists, it is the least understood of the three models and its historical development, unlike that of the other frameworks, has not been adequately documented. Consequently, in this study, emphasis will be given to the fixed exchange rate model of the SOE. Throughout the study, however, it will be shown that various authors clearly recognized the other frameworks and their important (and differing) implications for relations between money and prices.

THE MONETARY APPROACH: HISTORICAL PERSPECTIVES

In discussing the chronological development of the monetary approach, attention will, in general, be given to major monetary writers in English thought, beginning with David Hume.¹ Although some important contributions to this development were made prior to Hume—notably by Isaac Gervaise—these contributions were either subsequently ignored or considered incomplete because of various inconsistencies or errors.† In addition to Hume, particular attention will be given to Adam Smith, David Ricardo, Thomas Tooke (and the Banking School), J. S. Mill, Knut Wicksell, and J. L. Laughlin.

However, before discussing the models employed by these early contributors, a brief discussion of some technical considerations relevant to the analyses of money and prices by economists in the eighteenth and early nineteenth centuries is in order. First, these early classical writers were intimately familiar with the operational aspects of the working of the gold

*A secondary purpose of the study is to gain an improved understanding of the historical monetary controversies themselves, both by clearly spelling out the specific frameworks employed by the participating authors and by describing the contexts or circumstances in which the authors wrote.

†Although Hume may not have been the first English writer to set out elements of the fixed exchange rate framework, he set out a consistent, complete model and was by far the most well-known (and widely read) writer prior to Smith recognized by subsequent contributors. In emphasizing the chronological development of the fixed exchange rate model, it seems logical to start with Hume, since it is well known that subsequent contributors were familiar with Hume (but not with Gervaise).²

standard. One of these aspects was the fact that under a convertible currency, exchange rates were not absolutely fixed but rather, as *modus operandi*, varied between relatively narrow bands (between gold import and export points). Secondly, there were no reliable general price indices available to the classical economists.* Consequently, in their discussions relating to money and prices, indirect proxies were frequently employed.³ To the classical economists, a convenient proxy involved the price of bullion.† That is, the product of the currency price of gold (a fixed rate of exchange when currency is convertible) and the price of goods in terms of gold (determined in world markets for tradable commodities) was employed, albeit implicitly, as a proxy for the level of commodity prices. During periods when currency was convertible, then, the level of domestic prices could vary for one of two reasons: because of changes in the world price of commodities in terms of gold or because of variations in the exchanges between the gold points. During normal periods and within moderate time frames, changes in the former factor were not observed because of large outstanding world stocks of gold (relative to current production possibilities of gold). The latter, although it could be affected by banking and monetary policies, could vary only within relatively narrow bounds. Consequently, sizable amounts of inflation in any single country were regarded as impossible as long as convertibility was maintained. Nonetheless, because of high price elasticities related both to supplies (demands) of foreign exchange at gold export (import) points and to foreign demand (and supply) of tradable products, slight movements in prices could have large influences on commodity and asset flows and thereby could serve as the *modus operandi* of the system.⁶ These considerations have important implications for the interpretation of the classical economists such as Hume, to which we will now turn.

*As Jacob Viner has ably pointed out:

Hume wrote before the first attempt in England, that of Evelyn in 1798, to measure price levels by means of statistical averages. Even after 1798, the leading economists until the time of Jevons either revealed no acquaintance with the notion of representing, by means of statistical averages, either a level of prices, or changes in such level, or found it unacceptable for various reasons. . . . While a number of crude index numbers were constructed during the first half of the Nineteenth Century, none of the classical economists . . . would have anything to do with them.⁴

†Torrens, for example, explicitly asserted that "an increase in the quantity and fall in the value of gold, in relation to commodities, is the same thing as an increase in the quantity and fall in the value of the currency in relation to commodities—is the same thing as a rise of prices."⁵

David Hume

Most interpretations of Hume recognize his natural distribution of specie hypothesis, in which world money is distributed by means of an automatic mechanism according to the relative demands for money balances. That is, the quantity of specie in any one country is a function of real factors normally associated with the demand for money, such as the volume of transactions, population, income, and productivity. On this point, there is virtual consensus. However, certain important implications of this framework for the individual small, open economy have received emphasis in only a few of these interpretations. First, for example, Hume's natural distribution hypothesis implied that money would be distributed *in proportion* to these real variables. Hume indicated that, in each country, money would automatically seek a natural "level" equal to that in other countries:* "It does not seem that money any more than water can be raised or lowered anywhere much beyond the level it has in places where communication is open, but that it must rise and fall in proportion to the goods and labor contained in each state."⁷ This equality of level, as Viner has shown, related to *prices* and not to absolute quantities of money:

The equality of level which Hume posited was not between absolute quantities of money but between the proportions of quantities of money to quantities of commodities, i.e., prices. . . .⁸

Thus, an implication of the natural distribution hypothesis for the SOE is the natural equalization of prices between it and other countries or, in short, the automatic (and exogenous) determination of prices.¹⁰ Another implication of the natural distribution hypothesis relevant to the SOE is that the quantity of money in such an economy is a *dependent* variable, not subject to discretionary manipulation.¹¹ For this reason, suppositions of large, exogenous changes of the domestic money supply of the SOE are acceptable only for pedagogical purposes and not for practical examinations of the international monetary adjustment mechanism.¹² Most interpreters of Hume would have little difficulty with these propositions.

However, discussions of the adjustment mechanism—the price-specie-flow mechanism—have produced sharp differences in the interpretation of Hume. Specifically, many interpreters of Hume contend that

*Hume indicated that "Wherever I speak of the level of money, I mean always its proportional level to the commodities, labour, industry, and skill, which is in the several states."⁹

the price-specie-flow mechanism works such that monetary adjustment proceeds by divergent movements in national price levels.¹³ That is, it is contended by these interpreters that variations in the price level serve as the adjustment mechanism.¹⁴ If this were the case, the view would contradict the law of one price, except in long-run equilibrium.¹⁵ On rereading Hume, we prefer to adopt an alternative interpretation of the adjustment mechanism.¹⁶

According to this alternative interpretation, Hume endorsed the law of one price. He essentially outlined a model of price equalization, which he explicitly stated would make it impossible for the value of money to vary between provinces of the same kingdom. He states, for example:

How is the balance kept in the provinces of every kingdom among themselves, but by the force of this principle, *which makes it impossible for money to lose its level*, and either to rise or sink beyond the proportion of the labour and commodities which are in each province.¹⁷
[emphasis added]

And further:

What happens in small portions of mankind, must take place in greater. . . any man who travels over Europe at this day, may see, by the price of commodities, that money, in spite of the absurd jealousy of princes and states, has brought itself nearly to a level; and that the difference between one kingdom and another is not greater in this respect, than it is often between different provinces of the same kingdom.¹⁸

Hume repeatedly emphasized the rapid workings of price equalization in his writings.¹⁹ This was particularly apparent after his correspondence with James Oswald (which predated the publication "Of the Balance of Trade"), where he explicitly recognized that prices in an SOE are not necessarily related to changes in the quantity of money but are tied to foreign (world) prices.* Hume, then, held that no important price level differences between countries would in practice be observable.²² This recognition of the law of one price implied that Hume recognized, albeit implicitly, a high degree of price elasticity for tradable commodities and,

*Oswald, after reviewing a preliminary manuscript of Hume's essay, "Of the Balance of Trade," explicitly pointed out that in an SOE, prices were tied to foreign (world) prices rather than to alterations in the quantity of money:

The increased quantity of money would not necessarily increase the price of all labour and commodities; because the increased quantity, not being confined to the home labour and commodities, might, and certainly would, be sent to

hence, that slight price movements were the *modus operandi* of the system.

Since Hume recognized that money in an SOE is a dependent variable and not subject to discretionary manipulation (by virtue of his natural distribution hypothesis), he held that any excessive quantity of money could not long persist in a single country. Hume stressed that internal creation of bank credit in one country would result in offsetting outflows of gold rather than in domestic inflation.²³ That is, a trade deficit rather than single-country inflation would result. Accordingly, Hume's supposition of an enormous and exogenous alteration of the quantity of money in an SOE can only be viewed as a pedagogical device.²⁴

An implication of Hume's position, then, is that the quantity theory of money—in the sense of causality running from money to prices—does not apply to the SOE. Yet Hume recognized its applicability to a closed economy:

If we consider any one Kingdom *by itself* . . . the prices of commodities are always proportioned to the plenty of money. . . .²⁵ [emphasis added]

Hume, then, not only outlined the fundamental model of the SOE under fixed exchange rates but also described the relationship between money and prices in a closed economy. Two of the three cases described above, then, were recognized by Hume.

Adam Smith

Smith was eminently familiar with the writings of Hume and always wrote, as did Hume, in the context of convertible currency.²⁶ Consequently, Smith endorsed most of the positions relevant to the convertible framework that were set out by Hume. For example, Smith clearly viewed money as a dependent variable:

The quantity of money . . . must in every country naturally increase as the value of the annual produce increases. The value of the consumable goods annually circulated within the society being greater will require a greater quantity of money to circulate them. A part of the increased

purchase both from foreign countries, which importation, unless obstructed by arbitrary and absurd laws, would keep down the price of commodities to the level of foreign countries. . . .²⁰

Hume's response indicated that he agreed with Oswald's position and incorporated it into his subsequent analysis of the adjustment mechanism.²¹

produce, therefore, will naturally be employed in purchasing, wherever it is to be had, the additional quantity of gold and silver necessary for circulating the rest. The increase of those metals will in this case be the effect, not the cause, of the public prosperity.²⁷

Moreover, Smith explicitly denied the possibility of overissue. That is, Smith contended in a number of passages that the quantity of convertible paper added to the currency is always offset by an equal and direct outflow of specie; or, in short, that "paper money merely changes the form rather than the total of the money supply."²⁸ The following passage is particularly noteworthy:

The increase of paper money, it has been said, by augmenting the quantity, and consequently diminishing the value of the whole currency, necessarily augments the money price of commodities. But as the quantity of gold and silver, which is taken from the currency, is always equal to the quantity of paper which is added to it, paper money does not necessarily increase the quantity of the whole currency. From the beginning of the last century to the present time, provisions never were cheaper in Scotland than in 1759, though, from the circulation of ten and five shilling bank notes, there was then more paper money in the country than at present. The proportion between the price of provisions in Scotland and that in England is the same now as before the great multiplication of banking companies in Scotland. Corn is, upon most occasions, fully as cheap in England as in France; though there is a great deal of paper money in England, and scarce any in France.²⁹

In this denial of overissue, Smith indicates that an increase in convertible paper money will not affect prices and, consequently, will not alter the value of money. An implication of this position, then, is the endorsement of the law of one price. In discussing this passage, for example, J. W. Angell rightly notes that Smith's doctrine of offsetting specie flows "must necessarily presuppose fixity of prices, for the time being at least. It conceives of the 'channel of circulation' as being confined within rigid price walls. . . ."³⁰ This interpretation is further supported by noting that Smith, in his elaboration of the specie-flow mechanism, clearly placed emphasis on direct specie outflows (or "overflows," as Smith put it) and related import purchases, whereas he never stressed divergent price level movements as an adjustment mechanism in the *Wealth of Nations*.³¹

Another implication of Smith's view of offsetting specie flows is that the quantity theory of money (in the sense of changes in money preceding changes in prices) does not apply to the SOE under a convertible currency regime. This implication was explicitly voiced by Angell, who, in discussing Smith's views on this topic, noted that "Smith adopts what seems to be the exact antithesis of the quantity theory view."³² Smith, of course, in

outlining this position was referring to the open economy. Yet in discussions relating to a closed-world framework, he explicitly adopted a quantity theory view. For example, at one point, in commenting on the world value of the precious metals, he stated that:

The discovery of abundant mines of America seems to have been the sole cause of this diminution (1570–1640) in the value of silver in proportion to that of corn. . . . the increase of the supply had, it seems, so far exceeded that of the demand, that the value of that metal sunk considerably.³³

That Smith recognized the differing relationship between money and prices in the closed, as opposed to the open, framework is particularly evident in his discussion of specie flows. In one passage, for example, Smith was very careful to make a clear distinction between specie inflows in a single country due to increases in its demand for specie as opposed to autonomous increases in world specie supplies (from new world discoveries of gold and silver mines). Smith clearly showed that specie inflows caused by increases in the domestic demand for specie were not inflationary, since they merely represented a redistribution of world specie supplies, whereas inflows due to new gold and silver discoveries were inflationary. Hence, increases in the domestic money supply (world supplies constant) do not affect prices whereas increases in the world money supply do affect prices; the quantity theory applies to the closed world economy but does not apply to the small, open economy.³⁴

Smith, then, like Hume, understood the relationship between money and prices in the context of the SOE under fixed exchange rates, and how this relationship is altered in the closed world framework. Two of the three cases described above, then, were recognized by both Hume and Smith.

David Ricardo

The essentials of the relationship between money and prices in both the case of the SOE on fixed exchange rates and the model of the closed economy, then, were formulated by Hume and Smith. These two authors, it should be noted, wrote during periods when convertible currencies existed and, consequently, had little reason to examine the inconvertible case. The convertible currency model of Hume and Smith was well recognized and endorsed by early bullionist writers. Viner indicates that during the period of early bullionist writings the bullionists “always explained the mode of operation of a metallic standard as if, under given conditions in the world at large, it dictated to a country adhering to it a specific quantity of currency and a specific range of commodity prices.”³⁵

John Wheatley, for example, explicitly endorsed the natural distribution hypothesis and emphasized specie flows as opposed to price movements in describing the adjustment process.³⁶ Moreover, many of these bullionist writers also recognized basic elements of the closed framework. Wheatley, for instance, noted that whereas single country inflation was impossible under a convertible currency, "universally" high prices could be caused by an excessive amount of "world currency."³⁷

The major contribution of the bullionists to the evolution of English monetary thought was the formulation of a model of inconvertible currency. It may be noted here, however, that in view of the fact that they adopted the previously cited convertible and closed models of Hume and Smith, the bullionists were the first group of English economists to recognize all three of the models outlined above (convertible, inconvertible, and closed models). In discussing the bullionists, we will concentrate on the most famous member of the group, David Ricardo.

Although Ricardo may not have been the original architect of the theories he endorsed, they emerged in their most lucid form from his pen.* He presented articulate versions of all three models described above. With regard to the model of the SOE under a convertible currency, Ricardo explicitly endorsed Hume's natural distribution hypothesis:

Gold and silver, having been chosen for the general medium of circulation, they are, by the competition of commerce, distributed in such proportions amongst the different countries of the world as to accommodate themselves to the natural traffic which would take place if no such metals existed and the trade between countries were purely a trade of barter.³⁸

In addition to supporting this central theme, Ricardo also explicitly endorsed its important corollaries. Specifically, he indicated that under convertibility "the circulation could never be overfull," in that any excessive increase of such a currency would result in an offsetting outflow of specie via the balance of payments rather than affecting its purchasing power.³⁹ Moreover, Ricardo clearly indicated that, when convertible, money acted as a dependent variable and always and everywhere maintained equal value with other convertible currencies.⁴⁰ Accordingly, Ricardo supported the law of one price and indicated that the quantity theory of money did not apply to single countries under convertible currency regimes.⁴²

*In concluding his classic essay, "The High Price of Bullion," Ricardo himself explicitly indicated that he was well aware that he had "not added to the stock of information with which the public has been enlightened by many able writers on the same important subject."⁴¹

The quantity theory, however, was strongly supported by Ricardo in the context of an inconvertible currency. Indeed, the examination of the inconvertible currency system in Great Britain during the period 1797 to 1821 constituted the major contribution of the bullionists (who included Ricardo and Henry Thornton). In examining this inconvertible currency system, Ricardo (and the other bullionists) demonstrated that the abandonment of the metallic standard removed the constraint of redemption from domestic monetary expansion. As was not the case with a convertible currency, sudden, exogenous changes in the money supply were possible with an inconvertible currency. (Money was no longer viewed as a dependent variable.) Ricardo and the other bullionists showed that any excessive monetary expansion would necessarily lead to both exchange depreciation and commodity price increases (including the price of bullion). In *The Bullion Report*, for example, it was noted that

a general rise of all prices, a rise in the market price of gold, and a fall in the foreign exchanges, will be the effect of an excessive quantity of circulating medium in a country which has adopted a currency not exportable to other countries, or not convertible at will into a coin which is exportable.⁴³

Causal relations, then, were seen as running from changes in money to changes in prices. As such, the Ricardian bullionist model of an inconvertible currency system was rightly viewed as a restated formulation of the quantity theory of money. Ricardo, therefore, held that the quantity theory applied to the SOE on an inconvertible but not on a convertible currency regime.

In examining the relationship between money and prices in Great Britain, Ricardo was led to distinguish between domestic and external sources of inflation. In so doing, he indicated that he understood well the distinction between the open and the closed economies. His analysis indicated that while a currency was convertible any domestic alteration of the quantity of money in a single, open economy would not be inflationary but rather would involve a redistribution of given quantities of the world stock of precious metals. That is, other things being equal, an increase (decrease) in a country's share of the world stock of specie would result if that country's wealth increased (decreased), whereas a decrease (increase) in that share would result with a substantial increase (decrease) in banknote issue.⁴⁴ Neither of these alternatives would alter the level of domestic prices as long as world conditions remained unchanged.

On the other hand, Ricardo realised that an increase in the quantity of *world* money would lead to an increase in the price level. That is, he recognized the relationship between money and prices—the quantity theory—in the closed (world) framework:

If the quantity of gold and silver *in the world* employed as money were exceedingly small, or abundantly great, it would not in the least affect the proportions in which they would be divided among the different nations—the variation in their quantity would have produced no other effect than to make the commodities for which they were exchanged comparatively dear or cheap.⁴⁵ [emphasis added]

Ricardo indicated his awareness of the workings of the quantity theory in the closed world framework in another way. He showed that even under a convertible currency, if all countries increased their note issue simultaneously (and in proportion) the total world money supply would increase, causing prices to rise in all countries without any single country necessarily experiencing reserve drains:

... if the circulation of England were ten millions, that of France five millions, that of Holland four millions, etc., whilst they kept their proportions, though the currency of each country were doubled or tripled, neither country would be conscious of an excess of currency. The prices of commodities would everywhere rise, on account of the increase of currency, but there would be no exportation of money from either. But if these proportions be destroyed by England alone doubling her currency, while that of France, Holland, etc., continued as before, we should then be conscious of an excess in our currency, and for the same reason the other countries would feel a deficiency in theirs, and part of our excess would be exported until the proportions of ten, five, four, etc., were again established.⁴⁶

In the particular case in which all countries expand their monetary stocks simultaneously, then, convertibility does not serve as a check to either monetary overexpansion or inflation.* Finally, Ricardo was well aware of the significance of taking into account the size of an economy when examining the relationship between money and prices. In one passage, for example, he indicated that if England were a large enough economy, an English note expansion could influence the world money supply and, hence, not be totally offset by specie drains.⁴⁷ In this case, then, a single country's monetary expansion could affect prices, at least to some extent.

In analyzing the relationship between money and prices, then, Ricardo and the other bullionists had a thorough understanding of the distinctions among the alternative monetary frameworks that are essential for such investigations. They demonstrated that, whereas the quantity

*This insight had important implications for the currency-banking school debate; see below. It indicated that banks could affect prices either under inconvertibility or under convertibility if all banks adopted similar policies.

theory did not apply to the SOE under a convertible currency regime, it did apply both to large, closed economies and to the SOE under inconvertible currency arrangements.* Ricardo and the other bullionists, then, were the first English writers to understand all three of the frameworks set out above. Their analysis laid the foundations for later writers, including those of both the currency and the banking schools. It is to these writers that we now turn.

Tooke and the Banking School

The writings of Ricardo and the other bullionists served as the foundation from which the positions of both the currency and the banking schools evolved. The analyses of all three of these groups, for example, "took place within the common assumption of the desirability of metallic convertibility."⁴⁸ Although the currency and banking schools evolved from the same source and both supported convertibility, they adopted many positions that were diametrically opposed to one another.⁵⁰ An important reason that these contrary positions evolved from the same source is related to the fact that these views were based on Ricardian doctrine applicable, albeit implicitly, to differing contexts. An understanding of the currency-banking controversy, then, requires a thorough familiarity with the alternative frameworks employed in Ricardian analysis.

For example, one contention of Ricardo (and the other bullionists) was that convertibility in and of itself was sufficient to prevent any substantial overissuance of bank notes by a single country and, therefore, sufficient to prevent single-country inflation.⁵¹ Convertibility, then, served as a mechanism for monetary (and inflation) control for the SOE. This Ricardian position was endorsed by banking school writers, such as Thomas Tooke, J. Fullarton, James Wilson, and J. W. Gilbart. However, as was shown above, Ricardo also demonstrated that if all countries expanded their note issues simultaneously, overexpansion and inflation would occur despite convertibility. Convertibility, then, was not necessarily a guaranteed safeguard against monetary overexpansion and

**The Bullion Report*, for example, stated that for an inconvertible currency,

An increase in the quantity of the local (inconvertible) currency of a particular country, will raise prices in that country exactly in the same manner as an increase in the general supply of precious metals raises prices all over the world. By means of the increase of quantity, the value of a given portion of that circulating medium, in exchange for other commodities, is lowered; in other words, the money prices of all other commodities are raised, and that of bullion with the rest.⁴⁹

inflation once it was recognized that there is less check to monetary overexpansion by countries or banks when they act in unison than when they act alone.⁵² Ricardo had demonstrated, then, that different principles may apply when an analyst shifts emphasis from the context of the individual unit acting alone to the context of an aggregation of these units acting in unison. Different contexts, therefore, require different analytical frameworks. The currency school writers, such as Robert Torrens, Lord Overstone, and George Norman, concluded that, when viewed from the perspective of an aggregate of countries or banks as opposed to a single unit, some form of control over banking and monetary policy in addition to convertibility was necessary.⁵³ The currency school writers, then, reached their conclusions by carrying out their analysis, albeit implicitly, within the context of a larger, more aggregative framework, whereas the banking school writers were always concerned with the actions of an individual country or bank.* Both schools nonetheless evolved from the Ricardian bullionist framework.

This section will demonstrate that banking school writers recognized all three of the monetary frameworks spelled out above. Moreover, it will be shown that an understanding of these three frameworks easily clarifies various issues of the currency-banking school controversy. Although comparisons between the two positions will be made, emphasis will be given to banking school writers, since these authors not only have been misunderstood but had a broader comprehension of the essentials of all

*This contention is further supported by recognizing a related episode of the period. That is, another reason for alternative positions evolving from Ricardian doctrine relates to the controversy regarding the particular banking institutions responsible for overissue during the period of restriction. Since country bank notes were convertible into more widely circulating Bank of England notes, the quantity of notes issued in the various provinces or regions of the country was viewed as being governed by a natural distribution hypothesis (analogous to specie distribution in various countries). Accordingly, the bullionists contended that regional country banks could not overissue and, hence, were not responsible for the rapid rate of note expansion during the period of restriction.⁵⁴ On the other hand, Bank of England notes were not convertible during this period and as a consequence were overissued. Therefore, bullionists placed responsibility for overissuance on the Bank of England.⁵⁵ However, Ricardo recognized that if all banks, including the Bank of England, expanded notes simultaneously, then convertibility would not serve as a constraint to country bank note issue. Hence, banking and monetary controls were necessary. The view that the Bank of England and the country banks acting together would issue to excess even under convertibility was "adopted by the currency school as one of the elements in their reply to the banking school doctrine that overissue was impossible under convertibility."⁵⁶ Implicitly, then, the currency school was employing the entire banking system as a frame of reference, whereas the banking school was focusing on the individual bank.

three monetary frameworks.* In addition, attention will be focused on the most well-known contributor to banking school doctrine, Thomas Tooke.

Banking school writers, and particularly Tooke, clearly recognized the fixed exchange rate model of the SOE, as well as its important implications. In addition, these writers were, in general, careful to emphasize the context to which their doctrines applied. Normally, their analysis pertained to the small individual country (or the small individual bank).⁵⁷ These writers emphasized that in a small, open environment, the quantity of a convertible currency was determined by (and passively adapted to) the demands or needs of the public.⁵⁸ Any amount in excess of these demands would be immediately traded for other goods or securities. Accordingly, following not only Hume, Smith, and Ricardo but the views of country bankers as well, the banking school writers contended that overissue of a convertible currency was impossible because of offsetting flows of specie (or in the case of the country banks, the offsetting flows of Bank of England notes).† Tooke, for example, indicated that:

in the case both of the Bank of England and of the country banks, if it were conceivable, which it hardly is, that any addition, beyond the amount of notes required for specific purposes, could be forced into the hands of the public, there is an operation constantly going on which would almost instantaneously reduce the amount within the limits of these purposes. . . . The advance by a bank issuing only convertible paper does not . . . cause, necessarily, any increase in the circulation. . . . [An] increase of the outstanding circulation would be the effect of increased transactions and prices and not the cause of them.^{60‡}

Secondly, banking school writers—and especially Tooke—recognized, albeit implicitly, the law of one price (and, consequently, the workings of arbitrage). Tooke, being an empiricist, was familiar with price data for at least the period 1792 to 1856. Most of the data used by Tooke pertained to tradable goods.⁶¹ Tooke analyzed these data and, on the basis of his empirical studies, indicated that prices apparently were independently

*Although the currency school, in general, came to dominate British monetary thought, it never achieved a dominant position on the continent, where the banking school received more support.⁵⁹

†Currency school writers contended that overissuance under convertibility could occur at least in the short run and be of a magnitude large enough to threaten convertibility.⁶² It was implicit in their writings that to bring this about, all banks would act in unison.⁶³

‡Fullarton contends:

What Mr. Tooke, and those who hold similar opinions, contend for is, that, by the very constitution of a convertible currency, it can never be issued in larger quantities than are required for use and, therefore, can never be redundant.⁶⁴

determined in external international markets and not related to changes in the domestic money supply, even in the short run.⁶⁵ This conclusion was in accordance with banker opinion (with which Tooke was familiar) as to the international adjustment mechanism.⁶⁶

The important implication of this, of course, was that the quantity theory of money (in the sense of causality running from changes in money to changes in prices) was not applicable to the individual SOE under a convertible currency. The contention that the quantity theory did not apply to this case was explicitly and repeatedly noted by Tooke:

In point of fact and historically, as far as my researches have gone, in every single instance of a rise or fall in prices, the rise or fall has preceded and, therefore, could not be the effect of an enlargement or contraction of the bank circulation.⁶⁷

I believe that the amount of the circulating medium is the effect and not the cause of variations in prices.⁶⁸

The prices of commodities do not depend upon the quantity of money indicated by the amount of bank notes, nor upon the amount of the whole of the circulating medium, but that, on the contrary, the amount of the circulating medium is the consequence of prices.⁶⁹

In testimony before the Parliamentary Committee on Banks of Issue in 1840 (which he later published in *History of Prices*), Tooke voiced this opinion repeatedly in responses to questions by the committee.* Instead of supporting the quantity theory in the case of the SOE, Tooke (and other banking school writers) endorsed a reverse causation hypothesis. That is, in accordance with their demand-determined view, they inverted the chain of cause and effect of the quantity theorists and argued that increases in the quantity of money were determined by increases in prices and incomes rather than the reverse.⁷⁰ Moreover, "They were extremely careful to

*This is exemplified by Tooke's answers to the following two questions by the committee:

Question 3303 (by committee): "Suppose . . . the quantity of the precious metals in the world to remain constant, and that the number of deposits in bankers' hands available to the purchase and sale of commodities is doubled, trebled, and so on, will the price of commodities vary in proportion to that increase of deposits in bankers' hands?" *Tooke's Response:* "Not in the slightest degree."

Question 3621 (by committee): "Are the Committee, then, to understand, that so long as the paper is convertible into specie, you cannot attribute any effect whatever upon prices to the variations in the amount of the bank notes in circulation?" *Tooke's Response:* "I am perfectly satisfied that no alteration in the prices can be traced in any way to the amount of the circulation."⁷²

confine this proposition to the case of money convertible into specie and, hence, to a case where the arbitrage necessary to preserve the relevant price structure was possible.⁷¹ Furthermore, it is evident in numerous passages that Tooke and other banking school writers emphasized this view to be especially pertinent to small, open economic units.⁷³ Being particularly relevant to such units, the theory was wholeheartedly accepted by bankers who, by their very nature, deal with money in an open economic environment.*

This banking school view was vigorously criticized by writers of the currency school, who supported the quantity theory, even in the context of the small, open economy with a convertible currency. That is, currency school writers contended that monetary overexpansion was possible in the case of the SOE with a convertible currency and, in describing adjustments to such an overexpansion, placed emphasis on changes in relative price levels rather than on monetary flows.⁷⁴ In criticizing writers of the banking school on this issue, currency school writers frequently tried to demonstrate the supposed fallacy of the banking school position by referring to examples of the quantity theory in very large or closed economies. That is, they essentially assumed that an increase in the money supply in a single SOE had an inflationary effect that was analogous to a monetary increase in a large, closed economy.⁷⁶ For example, Torrens, in his criticism of Tooke, essentially argued that large increases in the world gold stock and subsequent European inflation demonstrated the fallacy of the banking school position.⁷⁷

The banking school authors, however, had been careful to indicate that their views were applicable to the SOE but not necessarily to the large or closed economy. They clearly recognized a distinction between the large, closed economy and the SOE. Tooke, Fullarton, and Wilson, for example, carefully distinguished between changes in a country's money supply resulting from domestic sources and changes in the money supply due to increases in the world gold stock and, hence, world money supply.⁷⁸

*The views of the banking school writers were supported by all of the bankers who testified before various parliamentary committees on the subject. These bankers indicated that (in the words of Fullarton) "The amount of their issues is exclusively regulated by the extent of local dealings and expenditure in their respective Districts, fluctuating with the fluctuations of production and price, and that they neither can increase their issues beyond the limits which the range of such deals and expenditure prescribe, without the certainty of having their notes immediately returned to them nor diminish them, but at an almost equal certainty of the vacancy being filled up from some other source."⁷⁵ It is no coincidence, then, that bankers have traditionally been skeptical of the quantity theory of money; they have always operated in the context of an open environment (always constrained from expanding loans and deposits by leakages—as in an open economy).

These authors clearly indicated that increases in the domestic money supply that reflected increases in the world money supply were inflationary whereas increases in the domestic money supply arising from redistribution of the existing world supply (due, for example, to a favorable exchange) would not be inflationary.^{79*} That is, domestic (one country) inflation was impossible so long as the currency remained convertible.

Wilson, for example, after demonstrating that Torrens equated an increase in the domestic money supply (due to domestic sources) to an increase in the world money supply, responded in the following manner:

That this ingenious and accomplished economist should have stated these as two "analogous propositions" is the most striking evidence with which we have yet met of the utter confusion which prevails in men's minds of the very real nature of currency and capital . . . some have an idea that in every case of an influx of bullion, a similar effect should be experienced locally that is produced generally by an increase of metals from the mines. The difference is very essential. In the case of an ordinary influx of gold into this country, caused by a favorable state of the exchanges, the general quantity of gold is not changed, nor its relation in value to other commodities: A new distribution of it is all that takes place. To those who received larger quantities of metal from South America . . . in consequence of the increased productiveness of the mines, the additional quantity . . . would soon increase prices generally in proportion to the new supplies of the metals.

But in the case of an influx of bullion, owing to a favorable exchange, the case is widely different. . . . We find that in practice, neither circulation nor prices increase under such circumstances.⁸¹

After explicitly quoting these comments of Wilson, Tooke clearly voiced his agreement with this view:

I quite agree with Mr. Wilson in his opinion . . . of the difference of the effects on prices between an influx of gold caused by an increase of metals from the mines, and the influx caused by a favorable exchange.⁸²

Moreover, Tooke demonstrated his recognition of the distinction between domestic and world monetary expansion in numerous other passages. In his testimony before the Parliamentary Committee on Banks of Issue in 1840, for example, Tooke made it clear that when referring to the case of the SOE, he was assuming that the world money supply was

*Fullarton, for example, "went out of his way to make it clear that he did not deny the broad effects on prices of changes in the supply of the precious metals."⁸⁰

held constant. That is, he made note of the differences between the effects on prices of world monetary variations and the effects on prices of variations in the domestic currency, world money held constant.⁸³ Subsequent questions by the committee were explicitly prefaced by assuming that world money supplies be held constant.* Banking school writers, then, recognized the distinction between the SOE and the large, closed economy and the important implications of this distinction for analyzing causal relations between money and prices. Moreover, banking school writers presented empirical evidence to substantiate their contentions relating to the SOE, whereas the divergent price level adjustment mechanism endorsed by currency school writers never received empirical support.⁸⁴ These currency school writers, albeit implicitly, took as the premise for their analysis a larger, more aggregative framework. This is evident not only in their discussion of relations between money and prices but, as pointed out above, in their discussion of the possibility of convertible note overissue.⁸⁵

In addition to their recognition of the distinction between the closed model and the case of the SOE on fixed exchange rates, banking school writers were aware of the inconvertible currency framework. Both Tooke and Fullarton, for example, contrasted an inconvertible to a convertible currency, noting that expansion of an inconvertible currency would have an important impact on prices.⁸⁷ Their view of the inconvertible case, then, was essentially a restatement of the bullionist position. Banking school writers, therefore, recognized that the quantity theory would hold in both the case of an inconvertible currency and the case of the closed economy.

In sum, banking school authors recognized all three of the models discussed above. These authors were, in general, practical men who not only were familiar with a good deal of empirical data but understood the views and opinions of bankers. Accordingly, their analysis emphasized the operation of the single, small economic unit in an open environment and indicated that the quantity theory, although valid in other contexts, did not apply to this context. When these alternative theoretical frameworks were not clearly delineated, a good deal of confusion about interpretation resulted.⁸⁸ It is for this very reason that many subsequent economists have denigrated the writings of the banking school.

*At one point in the testimony, Tooke indicated that he recognized the importance of country size. That is, he indicated that if a country's note issue increased to the extent that the single country specie outflow was large enough to affect world specie values, then prices of commodities in that particular country might still be affected. This, however, could not occur if the relevant economy was small.⁸⁶

J. S. Mill

When one discusses the development of these principles of monetary theory, J. S. Mill looms as an important figure, because he was so widely read even if for no other reason. It has been established, for example, that during the latter half of the nineteenth century, Mill's *Principles of Political Economy* was "the undisputed bible of economists. . . . As late as 1900, Mill's work was still the basic textbook in elementary courses in both British and American universities."⁸⁹ This observation, together with the fact that Mill endorsed a good many of the banking school propositions, then, makes Mill important in describing the evolution of these monetary principles.

Mill was familiar with the writings of banking school authors such as Tooke and Fullarton and, in fact, supported the banking school position against the Act of 1844.⁹⁰ He explicitly supported various propositions of the banking school writers. For example, in addition to explicitly recognizing the natural distribution of specie hypothesis, Mill pointed out that in the normal "quiescent state," the overissue of a convertible currency was impossible, since it would lead to the outflow of specie via the balance of payments.⁹¹ Specifically, Mill noted that in normal circumstances alterations in convertible note issue can have no impact on prices, and that

there can be no addition, at the discretion of bankers, to the general circulating medium: Any increase of their issues either comes back to them, or remains idle in the hands of the public, and *no rise takes place in prices.*⁹² [emphasis added]

Mill explicitly quoted passages from both Tooke and Fullarton in which these banking school authors forcefully stated that because the volume of convertible note issue was determined by demand, it could not possibly increase prices in the SOE.⁹³ Mill also noted that the unanimous opinion of country bankers examined before various parliamentary committees was in accord with this view.⁹⁴ After presenting these views of the banking school, Mill stated that this doctrine appeared to him to be "incontrovertible." He went on to say:

I give complete credence to the assertion of the country bankers very clearly and correctly condensed . . . [by] Mr. Fullarton. I am convinced that they cannot possibly increase their issue of notes in any other circumstances than those which are there stated. I believe, also, that the theory, grounded by Mr. Fullarton upon this fact, contains a large

portion of truth, and is far nearer to being the expression of the whole truth than any form whatever of the currency theory.⁹⁵

In endorsing the view that any expansion of convertible note issue could not affect prices in an SOE, Mill supported, albeit implicitly, the law of one price. He explicitly endorsed it in another passage:

As soon as the price of cloth is lower in England than in Germany, it will begin to be exported, and the price of cloth in Germany will fall to what it is in England. . . . By the fall, however, of cloth in England, cloth will fall in Germany also. . . . By the rise of linen in Germany, linen must rise in England also.⁹⁶

In view of these considerations, Mill must be viewed as endorsing the view that, in the case of the SOE with a convertible currency, the quantity theory (in the sense of causality running from money to prices) does not hold. Yet Mill clearly recognized that theory's validity in the case of the large, closed economy. Specifically, Mill described how an increase in the world money supply would have a proportional effect on world prices.⁹⁷ Moreover, Mill discussed at length the working of an inconvertible paper currency. He devoted an entire chapter to that discussion in his *Principles*.⁹⁸ Mill indicated that, although a convertible currency could not be issued to excess, an inconvertible currency could be overissued and would consequently have a definite inflationary impact, an observation supporting the quantity theory.⁹⁹ In short, Mill clearly recognized all three of the fundamental frameworks outlined above. In spite of this recognition, however, in certain passages Mill appeared to lend some support to contrary views, from the currency school.¹⁰⁰ His views with respect to the currency and banking schools, then, were not wholly consistent. Overall, however, his views supported the position of the banking school. Despite these apparent inconsistencies, Mill's support of the banking school principles had important implications. Since Mill's works were so widely read, his endorsement of the banking school served to propagate important elements of that view to make them readily available to later generations of economists.

K. Wicksell

Although Wicksell was not an English economist, he was very familiar with the English authors discussed above. As a consequence, his ideas on monetary theory were, in large part, an extension and propagation of these views. Moreover, Wicksell's writings were available in English in the

twentieth century and have been said to have importantly influenced subsequent British and American economists. Wicksell, therefore, represents an important element in any discussion of the evolution of English monetary thought.

In any examination of Wicksell's writings, it is evident that Wicksell fully recognized the important contributions to monetary theory made by the authors discussed above, particularly Ricardo, the banking school writers, and J. S. Mill. These authors are quoted extensively throughout Wicksell's discussions of monetary theory.¹⁰¹ It is evident, moreover, that from his studies of these earlier authors Wicksell acquired a thorough comprehension of the fundamental frameworks outlined in the present study, as well as an understanding of how the development of these frameworks evolved over time.* As a consequence, he supported the propositions related to the SOE under a convertible currency presented by the authors cited above. His interpretation of these propositions is entirely consistent with the explanations presented in the present study. Moreover, Wicksell stressed that when these considerations pertained specifically to a small, open framework, they should not be applied to other contexts.¹⁰³ Consider one of these propositions: there is no doubt that Wicksell understood the law of one price and its important implications. In Wicksell's writings, lucid and forceful statements of this law are presented in several passages:

No matter how eagerly the products of one country may be demanded by another country . . . no appreciable difference of prices can persist when there is a free interchange of goods.¹⁰⁴

If [the obligation to redeem bank notes in metal] exists, . . . then naturally a powerful brake is applied to the banks, simply because commodity prices in such a country can no longer rise materially above the price level in all other countries having the same metal as a measure of value.¹⁰⁵

Elsewhere, Wicksell contended that if two countries conduct free trade and are divided only by a land boundary, then:

If these countries were both living under a specie regime, there could not

*In addition to understanding the fundamental ideas presented by Ricardo, banking school writers, and Mill, Wicksell also recognized various subtle arguments of these authors. For example, Wicksell recognized the distinction made by Ricardo between the behavior of an individual economic unit and the behavior of a universal set of these units acting in unison. That is, Wicksell had a thorough understanding of the subtle distinctions between an open and a closed economy.¹⁰²

possibly exist different prices of the same commodity on both sides of the frontier; and if we suppose, which of course is not exactly true, that the level of prices in the interior of each country is materially the same as in the boundary districts, there could be no difference of prices at all between them . . . difference(s) of prices in the two countries . . . would be theoretically impossible and practically confined between very narrow limits.¹⁰⁶

In stressing the validity of the law of one price, Wicksell explicitly recognized its implication that divergent relative price levels could *not* serve as an international adjustment mechanism under a convertible currency regime. He indicated that prices were determined exogenously by direct and rapid arbitrage links that were independent of specie movements.¹⁰⁷ These observations regarding the law of one price have the important implication that the quantity theory of money (in the sense of causality) does not apply to the single SOE under a convertible currency regime. Wicksell recognized well this contention when he demonstrated not only that international adjustments could take place without divergent price level movements but also that domestic prices were determined by international factors independent of domestic monetary considerations.¹⁰⁸

The distinction between convertible and inconvertible monetary systems and the important implications of this distinction were also recognized by Wicksell. That is, he stated that whereas overissuance and, therefore, single-country inflation were possible under an inconvertible monetary regime, they were not possible under convertibility.¹⁰⁹ The quantity theory, then, although not applicable to the SOE under convertibility, applied to the SOE under an inconvertible monetary system. Finally, Wicksell clearly understood the importance of recognizing the open vis-à-vis the closed economic framework. He explicitly noted in several passages that the only truly closed economy is the world economy.¹¹⁰ Although he recognized that convertibility ensured the impossibility of single-country inflation, Wicksell restated the Ricardian position that if all countries pursued monetary expansion simultaneously (and, therefore, increased the world money supply), inflation could result despite convertibility.¹¹¹ The quantity theory, then, was viewed as applicable to the closed economy.

J. L. Laughlin

Another author who was an important figure in discussions of the evolution of the above frameworks was Laughlin. Laughlin understood well the fundamentals of all three of the frameworks cited above.¹¹² His understanding of the SOE under a convertible currency was thorough and

comprehensive, and his discussion of that model and its important implications was among the most forceful and lucid to be found in the writings of any of the authors discussed here.

Laughlin indicated that the volume of money in an SOE with a convertible currency was demand-determined (endogenous) and noted that a convertible note issue could not be overissued.¹¹³ Consequently, for such an economy he argued that the money stock could not be treated as an exogenous, controllable variable. Any discussion beginning with the assumption of an exogenous change in the money stock (all other things being equal), therefore, was viewed by Laughlin as a fallacious argument.¹¹⁴

Laughlin explicitly and repeatedly endorsed the law of one price. For example, in one passage, he noted that

the action of the international markets, with telegraphic quotations from every part of the world, precludes the supposition that gold prices could in general remain on a higher level in one country than in another (cost of carriage apart) even for a brief time, because, in order to gain the profit, merchants would seize the opportunity to send goods to the markets where prices are high.¹¹⁵

Moreover, Laughlin explained the implications of that law for relations between money and prices. In particular, he explicitly recognized that for the SOE with a convertible currency, prices are determined exogenously in world markets by the rapid workings of arbitrage and not by the domestic money stock.

A rise in the price of any commodity due to local causes (such as deficient harvests, war, etc.) is *instantly* met by importations from other countries; indeed the actual event is more often discounted by shipments of goods. . . . The competition between trading countries, as between different parts of the same country, being exceedingly keen, merchants in the leading centres would send the goods themselves to the spot where high prices existed, and by a quick increase of the supply of goods they would reduce prices in the country whose level was artificially high. . . . prices would *at once* fall by competition of goods with goods to a normal international level (allowing for differences due to costs of carriage). . . . In fact, it has become clear, by the logic of events, that the shipments of gold between commercial countries have little or nothing to do with the level of prices of merchandise in any one country.¹¹⁶

Accordingly, Laughlin noted that divergent price levels could not be part of the international monetary adjustment mechanism for this type of economy, since such a mechanism would contradict the law of one price.¹¹⁷ In stating these views, Laughlin made it clear that he was essentially

endorsing the view of the banking school writers on this issue and opposing that of the currency school.¹¹⁸ Unlike some other authors holding similar views, Laughlin very explicitly recognized the implications of this position for the quantity theory of money. In particular, Laughlin—following the views of the banking school—stated repeatedly and forcefully that the quantity theory did not apply to the SOE under a convertible monetary regime.¹¹⁹

In addition to examining the relations between money and prices for the SOE with a convertible currency, Laughlin also analyzed those relations for the case of an inconvertible currency. He noted that, in this case, the quantity theory was quite valid.¹²⁰

Laughlin also recognized the distinction between the closed and the open economies and the important implications for money and prices of this distinction. He noted, for example, that for an individual country an inflow of gold reflecting an increase in the world gold stock (and, hence, world money supply) would cause an increase in prices, whereas a gold inflow reflecting a single country's favorable balance of payments (and, hence, manifesting a redistribution of the existing world stock of gold) would not affect the level of prices in that country.¹²¹ Moreover, he explicitly noted that under a convertible monetary regime, an increase in the domestic money supply could affect the domestic price level only if it were large enough to affect world prices.¹²² Hence, the quantity theory was valid in the closed world economy and not applicable to the SOE with a convertible currency.

In sum, Laughlin recognized well all three of the frameworks described above, as he demonstrated in the following noteworthy passage:

If my previous reasoning has been correct, prices would not rise merely from an increase in the media of exchange [of the SOE]; . . . prices could not rise unless there were a serious fall throughout the world in the value of gold—which, owing to its great stock, is quite unlikely to occur in any ordinary period of time. But it is as plain as a pikestaff that a rise of general prices may be brought about by a device that would lower the value of the standard, such as a debasement of the coinage, or any legislative operations which might transfer the standard to a cheaper metal, or which might establish an inconvertible paper as a standard on a depreciating level.¹²³

CONCLUSIONS

A contribution of the modern monetary approach has been the careful delineation of three basic monetary models. In this study, after a brief

outline of the relationship between money and prices for these monetary models, the historical evolution of the models in English monetary thought was described. This description indicated that all three frameworks and the important distinctions among them were well recognized by earlier generations of economists and, in fact, were clearly delineated in the early nineteenth century by the bullionist writers. Prominent English economists, then, understood the three models and their important distinctions from the early 1800s until well into the 1900s. After that, however, the model of the SOE under a convertible currency and its companion principle—the law of one price—apparently either were forgotten or fell into disfavor until their recent revival in the modern monetary approach. While the reason for this lapse is somewhat enigmatic, some suggestions have been offered in the literature.

One reason for the temporary demise of this model was the endorsement of the currency school version of the international adjustment mechanism under a convertible currency regime given by prominent economists, such as Irving Fisher, J. M. Keynes, A. C. Pigou, and Gustav Cassel. In general, the writings of these authors supported the currency school view that divergent movements in general price levels constituted the adjustment mechanism of a fixed exchange rate (or convertible currency) system—a position that directly contradicted the law of one price. Indeed, this view led these writers to argue that fixed exchange rates and price stability were incompatible.¹²⁴

Another reason for the demise of the fixed exchange rate model of the SOE was the emphasis given by various Harvard neoclassicists (such as Taussig, Viner, Beach, and Williams) to exceptions to the law of one price. As J. G. Witte and B. Henneberry have indicated, this emphasis apparently went unchallenged at the time and, consequently, contributed to the disfavor of the model.¹²⁵

A third reason for the model's temporary demise was the emergence of the macroeconomic analysis of closed systems. That is, the development and analysis of closed models such as the Keynesian and later monetarist models directed the attention of the profession away from the analysis of open economic models. Moreover, by the early twentieth century, the U.S. economy had developed to the extent that, as a first approximation, it was treated as a closed economy.

For these (and probably other) reasons, then, the model of the SOE under a convertible currency and its companion principle—the law of one price—were disregarded after the early twentieth century. It was not until recent detailed analyses of currency devaluation and, consequently, the resurrection of the monetary approach that the model has again found support among economists.

NOTES

1. For contributions by non-English writers, see F. J. De Jong, *Development of Monetary Theory in the Netherlands* (Rotterdam: Rotterdam University Press, 1973); Robert V. Eagly, "The Swedish and English Bullionist Controversies," in *Events, Ideology, and Economic Theory*, ed. Robert V. Eagly (Detroit: Wayne State University Press, 1968); Robert V. Eagly, *The Swedish Bullionist Controversy* (Philadelphia: American Philosophical Society, 1971); and Thomas T. Sekine, "The Discovery of International Monetary Equilibrium by Vanderlint, Cantillon, Gervaise, and Hume," *Economia Internazionale* 26, no. 2 (1973).

2. See, for example, Sekine, op. cit.; J. Frenkel and H. G. Johnson, "The Monetary Approach to the Balance of Payments: Essential Concepts and Historical Origins," in *The Monetary Approach to the Balance of Payments*, ed. J. Frenkel and Harry G. Johnson (Toronto: University of Toronto Press, 1976), p. 37; J. W. Angell, *The Theory of International Prices* (New York: Augustus Kelley, 1965), p. 26 fn, p. 32; I. Gervaise, *The System or Theory of the Trade of the World* (Baltimore: Johns Hopkins University Press, 1954); and J. M. Letiche, "Isaac Gervaise on the International Mechanism of Adjustment," *Journal of Political Economy* 60 (1952).

3. See, for example, Jacob Viner, *Studies in the Theory of International Trade* (New York: Augustus Kelley, 1965), p. 127; O. St. Clair, *A Key to Ricardo* (New York: Kelley and Millman, 1957), p. 298; D. P. O'Brien, *The Classical Economists* (Oxford: Clarendon Press, 1975), pp. 148-49; Johan Myhrman, "Experiences of Flexible Exchange Rates in Earlier Periods: Theories, Evidence, and a New View," *Scandinavian Journal of Economics* 78, no. 2 (1976): 171; and Eagly, "The Swedish and English Bullionist Controversies," op. cit., p. 26.

4. Viner, op. cit., pp. 312-13.

5. L. Robbins, *Robert Torrens and the Evolution of Classical Economics* (London: Macmillan, 1958), p. 125. See also J. L. Laughlin, *The Principles of Money* (New York: Scribner's 1903), p. 417.

6. See Viner, op. cit., p. 333; Robert V. Eagly, "Adam Smith and the Specie-Flow Doctrine," *Scottish Journal of Political Economy* 17 (February 1970): 64; L. Girton and D. Roper, "J. Laurence Laughlin and the Quantity Theory of Money," *International Finance Discussion Papers #103*, March 1977, Board of Governors of the Federal Reserve System, p. 14.

7. D. Hume, "Hume to Montesquieu," April 10, 1749, in *Writings on Economics*, ed. Eugene Rotwein (Freeport, N. Y.: Books for Libraries Press, 1955) (reprinted 1972), p. 189.

8. Viner, op. cit., p. 313 fn. See also Charles E. Staley, "Hume and Viner on the International Adjustment Mechanism," *History of Political Economy* 8, no. 2 (Summer 1976): 255.

9. D. Hume, "Of the Balance of Trade," in *Writings*, op. cit., p. 66 fn.

10. Hume was explicit that these considerations were subject to the allowance for transportation costs. See Hume, "Of the Balance of Trade," p. 66 fn. See also Viner, op. cit., p. 314.

11. See Barbara Henneberry and James G. Witte, "Variable Gold Parities from a Classical Viewpoint: Hume Versus the Monetarists," unpublished manuscript, Indiana University, November 1974, p. 1. See also Viner, op. cit., p. 376.

12. See Girton and Roper, op. cit., pp. 21, 23.

13. For a critique of this view, see J. G. Witte and B. Henneberry, "A Monetary-Real Approach to Balance-of-Payments Theory: Old-New Synthesis for Old-New Problems," unpublished manuscript, Indiana University, April 1977, p. 2.

14. See, for example, Arnold Colclery, *International Adjustment, Open Economies, and*

the *Quantity Theory of Money*, Princeton Studies in International Finance no. 28 (June 1971), p. 26; Harry G. Johnson, "The Monetary Approach to Balance of Payments Theory," *Journal of Financial and Quantitative Analysis* (March 1972): 1555; Harry G. Johnson, "Money, Balance of Payments Theory and the International Monetary Problem," *Essays in International Finance*, International Finance Section, Department of Economics, Princeton University, no. 124, November 1977, p. 5. This view is also implicit in the contention of some contemporary monetarists that fixed exchange rates and price level stability are incompatible. (See Henneberry and Witte, op. cit., p. 7.)

15. See Witte and Henneberry, op. cit., p. 2.

16. This view has been given elsewhere. See, for example, Henneberry and Witte, op. cit.

17. D. Hume, "Of the Balance of Trade," in *Writings*, op. cit., p. 65. See also D. Hume, "Of Money," in *Writings*, op. cit., p. 35. It will be remembered that this equality of level related to prices and not to absolute quantities of money. The view that Hume endorsed the law of one price has also been voiced by Viner. See Viner, op. cit., pp. 316, 317, 319.

18. This hypothesis of Hume—that price differences were no greater between countries than within countries—was empirically supported more than 200 years later by both Genberg, and McCloskey and Zecher. See A. H. Genberg, "Aspects of the Monetary Approach to Balance of Payments Theory," in *The Monetary Approach to the Balance of Payments*, op. cit.; and D. N. McCloskey and J. R. Zecher, "How the Gold Standard Worked, 1880–1913," in *The Monetary Approach to the Balance of Payments*, op. cit., p. 63.

19. See, for example, Hume, "Of the Balance of Trade," op. cit., pp. 63, 69, 72; D. Hume, "Hume to Montesquieu," in *Writings*, op. cit., p. 188; and D. Hume, "Hume to Oswald," in *Writings*, op. cit., p. 197.

20. James Oswald, "Oswald to Hume," in *Writings*, op. cit., pp. 191–92.

21. David Hume, "Hume to Oswald," in *Writings*, op. cit., p. 197.

22. Hume repeatedly recognized the existence of transportation costs and, hence, the possibility of price differences for nontradables. See, for example, Hume, "Of the Balance of Trade," op. cit., p. 66 fn.

23. See Henneberry and Witte, op. cit., p. 2. Also see, for example, Hume, "Of the Balance of Trade," op. cit., pp. 68–70, 72; and Hume, "Hume to Oswald," op. cit., p. 198.

24. See Hume, "Of the Balance of Trade," op. cit., pp. 62–63. See also Girton and Roper, op. cit., p. 23.

25. D. Hume, "Of Money," in *Writings*, op. cit., p. 33.

26. Angell, op. cit., p. 38; J. Hollander, "The Development of the Theory of Money from Adam Smith to David Ricardo," *Quarterly Journal of Economics* (1911): 435; and O'Brien, op. cit., p. 151.

27. A. Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (New York: Random House, 1937), pp. 323–24. See also p. 188.

28. Douglas Vickers, "Adam Smith and the Status of the Theory of Money," in *Essays on Adam Smith*, ed. A. Skinner and T. Wilson (Oxford: Clarendon Press, 1975), p. 498.

29. Smith, op. cit., pp. 308–09. See also *ibid.*, pp. 277–78, 284.

30. Angell, op. cit., p. 34. Laughlin also explicitly interpreted Smith in this manner. See, for example, Laughlin, op. cit., p. 238.

31. See, for example, A. I. Bloomfield, "Adam Smith and the Theory of International Trade," in *Essays on Adam Smith*, op. cit., p. 480; O'Brien, op. cit., p. 146; and Vickers, op. cit., p. 484. Although Smith mentioned prices in an earlier description of the adjustment mechanism, he ended that description by emphasizing that prices in different countries will stay in line with one another. See A. Smith, *Lectures on Justice, Police, Revenue and Arms* (New York: Kelley and Millman, 1956), p. 197.

32. Angell, op. cit., p. 34. See also, for example, Laughlin, op. cit., p. 238.
33. Smith, *Wealth of Nations*, op. cit., p. 191.
34. See *ibid.*, p. 188. See also Frank Petrella, "Adam Smith's Rejection of Hume's Price-Specie-Flow Mechanism: A Minor Mystery Resolved," *Southern Economic Journal* (January 1968): 372.
35. Viner, op. cit., p. 205.
36. Hollander, op. cit., p. 465.
37. *Ibid.*, p. 465.
38. David Ricardo, *The Works and Correspondence*, ed. Piero Sraffa (London: Cambridge University Press, 1951), vol. 1, p. 137. See also vol. 3, p. 52.
39. *Ibid.*, vol. 3, pp. 90-92, 57, 64 fn.
40. *Ibid.*, vol. 3, pp. 52, 53, 56.
41. *Ibid.*, vol. 3, p. 99.
42. For evidence that Ricardo supported the law of one price, see Viner, op. cit., p. 315, and Ricardo, op. cit., vol. 9, p. 285. Ricardo recognized that intercountry price differences might exist for some goods, but either he emphasized that these goods were nontradables or the context indicates that this is what he meant. See Viner, op. cit., pp. 315, 323. See, for example, Ricardo, op. cit., vol. 3, pp. 56-57, 64 fn., 90, and vol. 6 (letter to Malthus), p. 90. See also Angell, op. cit., p. 59, where he states, "With respect to metallic currencies, Ricardo emphatically denies that there is any proportional relationship between money and prices."
43. *Report from the Select Committee on the High Price of Bullion*, reprinted in *The Paper Pound of 1797-1821: The Bullion Report*, ed. Edwin Cannan (New York: Augustus Kelley, 1969), p. 17. See also Ricardo, op. cit., vol. 3, pp. 91-92.
44. See, for example, Ricardo, op. cit., vol. 3, pp. 53, 57.
45. Ricardo, op. cit., vol. 3, p. 53.
46. *Ibid.*, pp. 56-57. See also *ibid.*, pp. 218-19. This interpretation of Ricardo was given by K. Wicksell. See, for example, K. Wicksell, *Interest and Prices* (New York: Augustus Kelley, 1965), pp. 81-82; and K. Wicksell, *Lectures on Political Economy*, vol. 2, "Money" (New York: Augustus Kelley, 1971).
47. Ricardo, op. cit., vol. 3, p. 57 fn.
48. Robbins, op. cit., p. 122.
49. *Report from the Select Committee*, op. cit., p. 16.
50. Various analyses of the controversies between the currency and banking schools are given elsewhere. See, for example, Viner, op. cit., and F. W. Fetter, *Development of British Monetary Orthodoxy, 1797-1875* (Cambridge, Mass.: Harvard University Press, 1965).
51. See, for example, Robbins, op. cit., pp. 100, 123; and O'Brien, op. cit., p. 153.
52. Viner, op. cit., p. 240.
53. See, for example, *ibid.*, p. 223.
54. Viner, op. cit., p. 235.
55. Fetter, op. cit., p. 36; and Ricardo, op. cit., vol. 3, pp. 87, 88.
56. Viner, op. cit., p. 240.
57. See, for example, M. Daugherty, "The Currency-Banking Controversy: Parts I and II," *Southern Economic Journal* 9: 151.
58. See, for example, Daugherty, op. cit., p. 150, and D. E. W. Laidler, "Thomas Tooke on Monetary Reform," *Essays on Money and Inflation*, ed. D. E. W. Laidler (Chicago: University of Chicago Press, 1975), p. 214.
59. See D. E. W. Laidler and A. R. Nobay, "International Aspects of Inflation: A Survey," in *Recent Issues in International Monetary Economics*, ed. E. Claassen and P. Salin (New York: North-Holland, 1976), p. 301 fn.

60. Thomas Tooke, *A History of Prices* (New York: Adelphi, 1928), vol. 4, pp. 185, 192, 194.

61. See, for example, T. E. Gregory, "Introduction," Tooke, op. cit., pp. 13-14. It should be noted that the prices employed by Tooke were individual commodity prices and not index numbers.

62. See, for example, Laidler, op. cit., p. 214; Robbins, op. cit., p. 126; and K. Wicksell, *Interest and Prices*, op. cit., p. 83.

63. See Viner, op. cit., p. 240.

64. J. Fullarton, *On the Regulation of Currencies* (1844), p. 58, as quoted in Robbins, op. cit.

65. See, for example, Viner, op. cit., p. 223 fn.; F. Machlup, "Summary of the Discussion on Frenkel," *Recent Issues in International Monetary Economics*, op. cit., p. 50; and Daugherty, op. cit., p. 151.

66. See, for example, Fetter, op. cit., p. 228.

67. Tooke, op. cit., p. 652. From J. S. Mill, *Principles of Political Economy* (London: Longmans, Green, 1926), p. 652. See also Gregory, op. cit., pp. 76, 81.

68. Tooke, op. cit., vol. 4, p. 462. See also *ibid.*, vol. 1, p. 149.

69. Tooke, *An Inquiry into the Currency Principle*, pp. 123-24. From Robbins, op. cit., p. 124. See also O'Brien, op. cit., p. 158, and Daugherty, op. cit., p. 149.

70. See, for example, Gregory, op. cit., p. 81; O'Brien, op. cit., p. 158; and Tooke, op. cit., vol. 4, p. 462.

71. Laidler and Nobay, op. cit., p. 301.

72. Tooke, *History of Prices*, op. cit., vol. 4, pp. 463, 470.

73. See, for example, Tooke, *History of Prices*, vol. 3, p. 191.

74. See, for example, Fetter, op. cit., p. 226, and Daugherty, op. cit., p. 146.

75. Fullarton, op. cit., p. 85, quoted by Mill, op. cit., p. 653. See also Wicksell, op. cit., p. 84; and Tooke, op. cit., vol. 4, p. 232, where he indicates that these bankers also contended that they could not influence prices.

76. See Tooke, *History of Prices*, vol. 4, p. 207.

77. Robert Torrens, *Principles and Practical Operation of Sir Robert Peel's Act of 1844* (3d ed.; London: Longmans, 1858), p. 190, quoted in Robbins, op. cit., p. 124.

78. See Fetter, op. cit., p. 190.

79. See Tooke, *History of Prices*, vol. 4, p. 206.

80. Robbins, op. cit., p. 125.

81. James Wilson, *On Capital, Currency, and Banking*, pp. 85, 87, quoted in Tooke, *History of Prices*, vol. 4, p. 208.

82. Tooke, *History of Prices*, vol. 4, p. 209.

83. *Ibid.*, p. 462.

84. See, for example, Tooke, op. cit., vol. 3, p. 66; Wicksell, *Lectures on Political Economy*, op. cit., vol. 2, p. 173; and Fetter, op. cit., p. 227.

85. See, for example, Viner, op. cit., p. 240.

86. Tooke, op. cit., pp. 462-63.

87. See, for example, Daugherty, op. cit., p. 150; and Tooke, op. cit., vol. 4, p. 463.

88. See, for example, Fetter, op. cit., p. 191; and Wicksell, *Interest and Prices*, op. cit., p. 85.

89. M. Blaug, *Economic Theory in Retrospect* (Homewood, Ill.: Irwin, 1968), p. 180.

90. See, for example, Fetter, op. cit., p. 226.

91. See, for example, Mill, op. cit., Book 3, Chapters 13, 22.

92. Mill, *ibid.*, p. 654. See also Wicksell, *Interest and Prices*, op. cit., p. 86; and Wicksell, *Lectures on Political Economy*, op. cit., vol. 2, p. 174, where Wicksell notes that

"Mill considered that Tooke's view of the innocuousness of the banks as regards price movements was quite correct in normal, tranquil times. . . ."

93. Mill, op. cit., pp. 652-53.

94. Ibid.

95. Ibid., p. 653.

96. Ibid., p. 622 fn.

97. Ibid., p. 630.

98. Ibid., Book 3, Chapter 13.

99. With respect to Mill's analysis of an inconvertible currency, he essentially reproduced the basic arguments of Ricardo. See for example, Blaug, op. cit., p. 200.

100. See, for example, Fetter, op. cit., p. 226. In particular, he mentions price level adjustment as the adjustment mechanism in some passages.

101. See Wicksell's *Interest and Prices*, op. cit., and *Lectures on Political Economy*, op. cit., vol. 2. See also Laidler and Nobay, op. cit., p. 301.

102. See, for example, Wicksell, *Interest and Prices*, op. cit., pp. 81, 82, 85; and Wicksell, *Lectures*, op. cit., p. 171.

103. Wicksell, *Interest and Prices*, op. cit., p. 85.

104. Wicksell, *Lectures on Political Economy*, p. 159.

105. Wicksell, *Lectures on Political Economy*, op. cit., vol. 2, p. 171. See also *ibid.*, p. 177.

106. Wicksell, "International Freights and Prices," *Quarterly Journal of Economics* 32 (1918): 405. See also Laidler and Nobay, op. cit., p. 301.

107. See Wicksell, *Interest and Prices*, op. cit., pp. 157-58. See also Viner, op. cit., p. 305.

108. Wicksell, *Lectures on Political Economy*, op. cit., vol. 2, p. 177; and Wicksell, *Interest and Prices*, op. cit., pp. 157-58.

109. See Wicksell, *Lectures on Political Economy*, op. cit., p. 171.

110. See, for example, Wicksell, *Interest and Prices*, op. cit., pp. 82, 85, 157.

111. Wicksell, op. cit., pp. 81-82; and Wicksell, *Lectures on Political Economy*, op. cit., p. 171.

112. An excellent analysis of Laughlin and his monetary writings was recently presented by Girton and Roper. See Girton and Roper, op. cit. This section does not attempt to expand upon the Girton and Roper paper but rather attempts to place Laughlin among other authors in an evolutionary framework.

113. Laughlin, op. cit., pp. 409, 417; and Girton and Roper, op. cit., p. 15.

114. See, for example, Girton and Roper, op. cit., pp. 13, 15, 23.

115. Laughlin, op. cit., p. 369.

116. Laughlin, op. cit., pp. 380-82. See also, for example, Laughlin, op. cit., pp. 252, 371-72, 375, 377, 379-82, 388, 417.

117. See, for example, *ibid.*, p. 379. See also Girton and Roper, op. cit., p. 24.

118. See, for example, Laughlin, op. cit., pp. 257, 264, 268-69.

119. See, for example, *ibid.*, pp. 247, 263, 371. See also Girton and Roper, op. cit., pp. 13, 21.

120. See, for example, Laughlin, op. cit., pp. 247-48, 285, 314, 400, 407, 510-14, 528-31. See also Girton and Roper, op. cit., pp. 13, 21.

121. See, for example, Laughlin, op. cit., pp. 103, 379, 388-89, 393, 417. See also Girton and Roper, p. 21.

122. See Laughlin, op. cit., pp. 135-37, 388; and Girton and Roper, op. cit., pp. 14, 15.

123. Laughlin, op. cit., p. 393.

124. See, for example, G. Cassel, *Theory of Social Economy* (New York: Augustus

Kelley, 1967), p. 522; I. Fisher, *The Purchasing Power of Money* (New York; Macmillan, 1911), p. 172; J. M. Keynes, *Monetary Reform* (New York: Harcourt Brace, 1924), p. 173; A. C. Pigou, *Industrial Fluctuations*, 2d ed. (New York: Augustus Kelley, 1967), p. 303.

125. See Witte and Henneberry, *op. cit.*, p. 2.

Money, Prices, and Civilization in the Mediterranean World: Fifth to Seventeenth Century. Article. Apr 1957. Under some circumstances, a firm with market power has an incentive and ability to preempt rivals, and the dynamics of innovation competition can make it unprofitable for others to catch up to a firm that is ahead in an innovation race. View. Show abstract. The first, based on the behavior of five countries' price levels and money stocks over much of the twentieth century, provides a perspective over time. The second uses two recent five-year periods for a number of countries for which collecting comparable data covering long periods is not feasible. Monetarism is a school of thought in monetary economics that emphasizes the role of governments in controlling the amount of money in circulation. Monetarist theory asserts that variations in the money supply have major influences on national output in the short run and on price levels over longer periods. Monetarists assert that the objectives of monetary policy are best met by targeting the growth rate of the money supply rather than by engaging in discretionary monetary policy.