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The Classical Monetary Theory: The Outcome of the Discussion

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# The Classical Monetary Theory: The Outcome of the Discussion<sup>1</sup>

GARY S. BECKER and WILLIAM J. BAUMOL

## I. INTRODUCTORY

Recently a number of economists have shown a revived interest in the monetary theory of the classicists and of the members of the Lausanne School and their successors.<sup>2</sup> It has been maintained that all of these authors held basically common views which have been called "the classical system". Moreover, it has been argued that this system suffers from serious formal shortcomings, in particular that either it is inconsistent or it must leave the absolute price level indeterminate.

We believe a summary of the results of the discussion is now appropriate, and that the conflicting views can be evaluated and to some extent reconciled. Moreover, the arguments can be stated rigorously without recourse to the mathematical apparatus which has been employed. A detailed restatement is therefore included in the belief that the discussion will become available to many who did not follow it before.

For our purposes we may consider the attack on the earlier writers to have been opened by Lange [13], although the discussion, as is indicated below, goes back much further. However, the immediate centre of contention is Patinkin's restatement and refinement of the Lange position. We shall therefore describe the Lange-Patinkin version of the classical system and the difficulties which they have shown to be inherent in it. A more satisfactory structure which Patinkin has called "the modified classical system" will then be outlined. Finally, it will be argued through re-examination of some of the classical writings that most of the group probably never held views like those ascribed to

<sup>1</sup> The authors are indebted to Professors Viner and Brunner for their comments and suggestions.

<sup>2</sup> See references [1], [8], [12], [13], [14], [31]-[35], and cf. [17], [18] and [36]. But note Patinkin's reservation: "To minimise this [the problem of textual interpretation] . . . I shall confine myself to the mathematical economists of this ['classical'] school". ([31], p. 4).

them. Indeed, it will appear that "the modified classical system" is a considerably closer approximation to their analysis. No doubt it is true that "the classics", particularly as the term has been used in the discussion, denotes too heterogeneous a group to permit wholesale judgement to be passed on the basis of selections from several members alleged to be representative. Nevertheless, many of the members of that group, among them some of those specifically accused, have passages in their writings which explicitly contradict the charges against them. We do not mean that none of these writers ever expressed himself incorrectly or in a misleading manner on this subject, or that they were all in possession of a full analysis of the logical structure of the problem. It does, however, seem that in most cases where the problem was considered *explicitly*, it was analysed in a manner which is at least formally valid.

## II. THE CLASSICAL SYSTEM ACCORDING TO LANGE AND PATINKIN

Consider an exchange economy using (say) paper money as a medium of exchange. An individual who demands (supplies) a commodity gives up (receives) an equal value of the medium of exchange. If we call paper money a good and sum over all individuals, then by definition the total value of *goods*<sup>1</sup> (including money flow) demanded in this economy is identically equal to the total value of goods (including money flow) supplied. This result, which Lange calls Walras' Law<sup>2</sup>, has nothing whatsoever to do with equilibrium in the various markets, and holds for *all* price configurations.

Suppose that at *any* given set of prices people will supply commodities when and only when they use (and intend to use) the money received to demand other commodities "immediately", i.e., during the period under consideration. Again, by summing over all individuals, we see that at any set of prices the total money demand for *commodities* will be equal to the total money value of the quantity supplied of all *commodities*. It is this which Lange and Patinkin have identified with Say's Law. Because it is taken to hold no matter what the price structure

<sup>1</sup> "Commodities" are also considered "goods". Paper money is "a good" only.

<sup>2</sup> [13], p. 50.

and to distinguish it from other versions of the "Law" we shall refer to it as Say's Identity.

Patinkin in discussing his version of the classical system indicates<sup>1</sup> one particular set of circumstances which involves Say's Identity. He states that the classics, particularly the members of the Lausanne School, believed that money has no utility of its own, taking this to imply that in the static classical world there is no reason for any individual to desire any cash balances. Anyone who receives cash will try to exchange all his (useless) money for goods which have utility, so that, if there is a non-zero money supply, prices will rise indefinitely and the money market will be in equilibrium only with infinite prices.<sup>2</sup> Patinkin concludes that a classical economy can operate only if there are no stocks of money, and presents the paradox that this sort of "monetary" economy must in effect be a barter economy with a non-existent money acting only as a unit of account! Moreover, if people have no money stocks and never add, or want to add, to them, Say's Identity clearly holds, as it must in a barter economy, since commodities will be demanded at once in any exchange.

An immediate implication of Say's Identity, or rather an equivalent way of stating it, is that the quantity of money demanded, considered either as a stock or a flow, is independent of the price structure and is always equal to the quantity of money supplied. For at any set of prices, the value of the total quantity of commodities supplied is equal to the total (non-reservation or flow) demand for money. Likewise the value of the total commodity demand is the quantity of money flow supplied. Thus with Say's Identity the quantity of money flow demanded must always equal the quantity supplied.

Moreover, the quantity of money stock supplied and demanded (cash balances) will be equal when and only when the demand for and supply of cash flows are equal, because

<sup>1</sup> [34], pp. 140-145.

<sup>2</sup> This equilibrium possibility is suggested by Brunner ([1], footnote 20, pp. 167-168). Patinkin ([32], footnote 7, p. 135) has argued that infinite prices are not economically meaningful. But surely they can be interpreted to mean that money is not wanted. For when money is worthless, the money price of any useful good must be infinite. Thus, economically, this is identical with the Phipps solution (see [35]) which requires that the price of money be zero. In this case people will throw money away because it will buy nothing. This alone should already raise doubts as to whether any classic ever meant that money has no utility in this sense. But Knight ([11], p. xxii) does believe that money has no utility in a static economy and anticipates Patinkin in pointing out the consequences of this view. Cf. also, e.g., P. N. Rosenstein-Rodan [39], Part II.

if there is, e.g., an excess supply of cash, people will want to get rid of more money flow than is demanded. Thus, Say's Identity holds if and only if the quantity of money (stock or flow) is always equal to the quantity supplied.<sup>1</sup>

In our Say's Identity economy, let the money price of all commodities double (the quantity of money remaining unchanged or varying in an arbitrary manner). Since the relative prices of all commodities have remained the same we cannot expect buyers or sellers to make any substitutions among commodities. Only a substitution of money for commodities (an excess supply of commodities) is indicated, commodity prices having risen. But Say's Identity clearly precludes this too. Thus nothing will change with the change in price level.

It follows that the quantity demanded of each commodity will depend only on relative commodity prices. This is what is meant by the Leontief ([15])-Lange-Patinkin contention that the classical supply and demand (excess demand) functions are homogeneous of degree zero *in prices alone*. In particular, this functional form requires that the quantity of any commodity demanded or supplied be unaffected by a proportional change in prices no matter what is happening to the stock of cash—even if the stock of cash remains constant. It also requires that quantities demanded or supplied and relative prices of commodities, can never, even momentarily, be affected by the quantity of money.

The condition that equilibrium exists in all commodity markets can be sufficient at most to determine relative commodity prices. To determine absolute prices we must look at the remaining market—the money market. But the money market is *always* in equilibrium, no matter what the levels of the various prices. Hence, the condition that it be in equilibrium cannot be used to *determine* absolute prices. We conclude that in a Say's Identity economy, relative commodity prices are determinate, commodity quantities demanded and supplied depend only on relative commodity prices, and absolute (money) prices are indeterminate. Money is a "veil" since a good can have importance in the determination of equilibrium in the various markets of an economy only if the market for this good can conceivably be *out* of equilibrium.

<sup>1</sup> The sufficiency of this condition was indicated earlier when Say's Identity was first introduced. Note that Say's Identity does not *require* that money have no utility, i.e. that demand (rather than *excess* demand) for money be zero.

In this version of the classical system the analysis of price determination is thus necessarily incomplete as it cannot specify (equilibrium) absolute prices.<sup>1</sup> According to Lange and Patinkin, the classics nevertheless sought to dichotomize the pricing process by determining relative prices in the "real sector" of the economy and absolute prices by introducing an additional relationship—the so-called Cambridge equation or its equivalent in a cash balance or other form of the quantity theory of money. This relates the quantity of money which people wish to hold to the price level by postulating that the quantity of cash the public demands will rise with absolute prices. Thus there would, *ceteris paribus*, be one and only one equilibrium price level corresponding to every level of the supply of cash—that at which people were willing to hold the amount of cash supplied. Clearly this contradicts Say's Identity which, as we have seen, requires that the quantity of cash demanded equal the supply *no matter what the price structure*.<sup>2</sup>

Thus, with the addition of a quantity theory or any other explanation of the absolute price level, this version of the classical system becomes self-contradictory. Without any such addition the system is incomplete in its explanation of the behaviour of the economy.

### III. "THE MODIFIED CLASSICAL SYSTEM"

The system just considered may be modified in a simple manner to eliminate the difficulties discussed. Patinkin<sup>3</sup> has called this revised model "the modified classical system". To accomplish this we need merely drop the obviously unrealistic assumption that the quantity of cash demanded is independent of the price structure. We may assume that

<sup>1</sup> Cf. Neisser [29].

<sup>2</sup> See Lange [13], p. 65, Patinkin [31], pp. 12-16, [32], p. 138. Patinkin's contention goes somewhat further than this, pointing out that with Say's Identity no matter how the stock of cash behaves, the quantity of cash (flow) demanded and supplied must both increase in proportion with prices, i.e. they must both be homogeneous of degree one in absolute prices. This is true since the quantity of money (flow) supplied is the money demand for goods, which is the sum of the demands for the various goods each multiplied by its price. Since the quantity of each good demanded is unaffected by a proportionate change in prices, the sum of these demands each multiplied by its price, i.e. the quantity of money supplied, must change in proportion with the change in prices. The same argument holds for the demand for money, and hence for the excess supply of money. Now the Cambridge equation does not call for the excess supply of cash flows to behave in this manner *irrespective of the level of the stock of cash*. The *form* of the Cambridge relationship is thus in contradiction with the *form* assumed for the money excess supply function. It is this which Patinkin has called "Invalidity I" ([32], p. 138). The next paragraph in this paper summarises his "Invalidity II" (*Ibid.*, p. 141).

<sup>3</sup> [31], pp. 23-26, [32], pp. 143-150 and [33].

the quantity of cash demanded will increase with the money value of transactions.

Suppose then that the prices of all commodities double, and that as a result, the quantity of money demanded doubles. Since the relative prices of commodities have remained unchanged, there will not be any substitution among commodities. People *will*, however, seek to increase their cash holdings by giving up commodities, i.e., by increasing the quantities of commodities (in money terms) they supply or decreasing the quantities they demand. We can conclude that when there is a significant money market, the demand for commodities cannot depend merely on relative commodity prices, but must also depend on absolute money prices. Thus, any attempt to dichotomize the pricing process by determining relative commodity prices in the commodity markets alone, is impossible (except in a very special sense indicated below) once a significant money market exists.<sup>1</sup>

The situation we are now considering is thus clearly inconsistent with Say's Identity—supply of all commodities does not necessarily equal total demand for all commodities. In particular, these will not be equal if the price structure is such as to cause the quantity of cash demanded to differ from the supply. Nevertheless, the present authors would like to point out that the ambiguous proposition called Say's Law can be interpreted in a way which makes it compatible with an economy in which the absolute price level does matter. This form of Say's Law, which we will call Say's Equality, states in effect that "supply will create its own

<sup>1</sup> Thus, if any equilibrium is possible, a Cambridge equation, or anything else implying that the quantities of money demanded and supplied are not equal at all price levels, requires that quantities of commodities supplied and demanded be not homogeneous of degree zero in prices alone. This can also be seen as follows: suppose prices, originally in equilibrium, are doubled, the stock of cash remaining constant, and that the quantities of cash stocks and flows demanded now (say) exceed the supply. By Walras' Law the quantity of some commodity supplied must exceed the demand. The demand for or the supply of that commodity must then have changed as a result of the change in price level alone, in violation of homogeneity. Hence, Hickman's system ([8]) which involves both a Cambridge equation and the assumption that the quantities demanded and supplied of all commodities are homogeneous of degree zero in prices alone, must be in error. What he has done, in effect, is assume that the quantity of cash stock demanded can differ from the supply (the Cambridge equation) whereas at the same time (Say's Identity) the quantity of cash flow demanded is identically equal to its supply, so that there are two separate conditions giving equilibrium in the monetary sector of the economy. Brunner has pointed out to us that this last sentence is not quite accurate—Say's Identity is not directly involved in Hickman's argument. However it comes close enough to the source of his difficulty for present purposes.

The argument of this footnote also indicates that the difficulty in the system attributed by Lange and Patinkin to the classics arises out of the homogeneity assumption, since this precludes inequality in money supply and demand. Say's Identity, since it implies homogeneity, provides a special case of this difficulty. Patinkin seems to have been the first to observe this point.

demand," not despite the behaviour of the price level but because of it. The comparative statics argument is that an excess supply of goods, obtained by disturbing a market equilibrium situation by a cash reduction, will cause the price level to fall to just that point where the excess demand for money is eliminated, since the price level will fall so long as and only so long as there is an excess demand for (insufficient supply of) cash. The foregoing is, in effect, the reasoning behind the cash balance forms of the quantity theory of money and, incidentally, the Pigou effect.

The Cambridge equation implies that for every relative price structure there exists a unique absolute price level at which the money market will be in equilibrium (Say's Equality). This is equivalent to stating that for every set of relative prices there exists a price level which brings about *over-all* equilibrium in the commodity markets, i.e., the total quantity of money offered for commodities is equal to the total value of commodities supplied. Thus it is clear that this version of Say's Law is compatible with determinacy of an absolute price level.

Now assume that we start from a position of equilibrium in all markets. When all commodity prices and every stock of money doubles, the equilibrium is unaffected.<sup>1</sup> No substitutions take place since a proportionate change of commodity prices precludes substitution among commodities, and a substitution between commodities and money is rendered unnecessary, the doubled demand for money being satisfied by the augmented supply. This invariance is to be expected since in the models considered so far a doubling of the stock of money and all prices is strictly equivalent to a change in the unit of account (the "let's call fifty cents a dollar case") and, in effect, involves only a change in the name given the monetary unit.

If we assume that there never exists more than one set of prices compatible with equilibrium (the dangerous uniqueness assumption so often implicitly employed in comparative statics arguments) we arrive at the following comparative statics result: a doubling of the stock of cash *will* double equilibrium prices. Once again money is merely a veil. The phrase is, however, now used in the following compara-

<sup>1</sup> We require that *every* stock of cash doubles, and not just that the total quantity of cash in the system double, since the effects of an injection of cash will obviously vary with the method employed to introduce it. If given to the miser who sews it into a mattress, the effect will evidently be quite different from that of a gift to someone who spends it at once.



tive statics sense: the quantity of money in circulation affects only the equilibrium price level *and has no effect at all on equilibrium relative commodity prices*, and hence involves no inter-commodity substitution once a new equilibrium is attained. Thus the price system can legitimately be dichotomized into a "real" sector and a monetary sector, but only in a discussion of *equilibrium* relative prices.

#### IV. THE ROLE OF NON-MONETARY ASSETS

We already have all the material we need for an examination of the charges against the classics. However, it may be of some interest to digress briefly into a discussion of the role of assets which has played an important part in the models examined by Patinkin and the Keynesian systems.

Hitherto we have explicitly assumed the absence of non-monetary assets and, consequently, of an interest rate. We now drop this assumption to permit the existence of bonds. For the moment we also postulate an exchange economy, thus abstracting from production although, of course, this does not make economic sense if time is not also abstracted from. It may be assumed because of the similarity in function between bond holding and money holding, that the community desires to hold the real value of its bonds constant,<sup>1,2</sup> so that now with a doubling of all cash stocks and all commodity prices<sup>3</sup> from initial equilibrium levels the asset market will not be kept in equilibrium. The quantity of bonds demanded will double (in money terms) without carrying the supply along with it. This yields a comparative statics result for an exchange economy with non-monetary assets: a change in the supply of money cannot merely raise all commodity prices proportionately, leaving relative commodity prices and the interest rate unchanged. Necessarily relative commodity prices, the interest rate, or both of these, will change. Money is no longer a "veil" in any important sense.

Prior to the introduction of non-monetary assets, our results held for a producing as well as for an exchange economy. To indicate one way in which production may affect an economy with real assets let us consider the following

<sup>1</sup> The Cambridge equation assumes that it desires to hold the real value of its money constant.

<sup>2</sup> This assumption is related to that made by Patinkin ([31], p. 18) and Brunner ([1] *passim*).

<sup>3</sup> The interest rate (thus the price of bonds) remaining constant.

situation. Despite a zero net investment there exist capital goods which all wear out at the end of one production period (equal in length to the exchange period), and hence must be replaced. Bonds of one-period duration are issued to finance this gross investment, these being the only bonds in existence. A doubling of cash stocks and prices which were initially in equilibrium will still preclude inter-commodity and commodity-money substitutions. In the asset market, the money value of the bonds issued must double to keep the real value of the capital goods constant.<sup>1</sup> But since the demand for bonds may also be expected to double, equilibrium is everywhere preserved. We may conclude that a change in the supply of money will (again using our uniqueness assumption) change all commodity prices proportionately, and leave relative commodity prices and the interest rate unchanged,<sup>2</sup> so that money will once again be a "veil" in a comparative statics sense.<sup>3</sup>

## V. THE POSITION OF "THE CLASSICS"

We may sum up the allegations which have been made against the classics in the following three charges:

1. that they believed that cash has no utility of its own in the extreme sense that, in the static model which the classics (meaning in particular the members of the Lausanne School [cf. fn. 2, p. 1, of this paper]) are alleged to have employed in their monetary analysis, people should, if consistently pursuing their own desires, seek to get rid of all their money as soon as possible;

2. that the classics believed that supplies of and demands for all commodities are homogeneous of degree zero in prices alone and so cannot be affected even momentarily by the quantity of money, and that they sought thus to dichotomize the pricing process, explaining the movement of (equilibrium and non-equilibrium) relative prices in the "real sector" alone, and the price level in the monetary

<sup>1</sup> Patinkin ([31]) fails to indicate how the bond supply behaves, and seems to conclude (p. 19) that because the demand for bonds will be homogeneous of degree one in prices, so will the excess demand for bonds.

<sup>2</sup> In technical terminology we can say that the demand for and supply of each commodity is homogeneous of degree zero in commodity prices and the quantity of money. The supplies of and demands for bonds and money are homogeneous of degree one in the quantity of money and commodity prices.

<sup>3</sup> Since the supply of money does not affect the interest rate, the explanation of the level of interest must be found in "real" factors. Cf. Patinkin 33].

sector by means of a quantity theory (illegitimately) superimposed on the system ;<sup>1</sup>

3. finally, that by Say's Law they meant Say's Identity which states that the supply of commodities will create its own demand irrespective of the behaviour of the stock of cash and the price level.

Clearly these charges are not unrelated. Yet it may be worth investigating the attitude of "the classics" on each of these points simply because the authors may conceivably have failed to see the connection and illegitimately have accepted one of these and yet rejected one of the others which follows from it.

In the discussion we trust we have avoided reading too much into the classics in concluding that many of them held views more acceptable than those which have been attributed to them. Certainly we do not mean to imply that they always fully understood the perils they thereby avoided. It may be added that we began our investigation expecting considerably weaker results, and were most surprised to find how clearly many of the classics had expressed themselves on these matters.<sup>2</sup>

## VI. THE UTILITY OF CASH

Here we may begin with no less an authority than J. B. Say who recapitulates his views on this question by stating, "I have . . . pointed out the various utility of gold and silver as articles of commerce, wherein originates their value; and considered their fitness to act as money, as part of that utility".<sup>3</sup> He had already noted that "paper (money) has a peculiar and inherent value", and, indeed, gone into this point at length.<sup>4</sup>

Ricardo was, of course, less interested in the question of the relation between utility and value. Nevertheless, Marget<sup>5</sup>

<sup>1</sup> This is what Brunner ([1]) has called "the complementarity property," meaning thereby that a separate money equation is superimposed on the system to complement the real sector.

<sup>2</sup> The authors decidedly do not consider themselves experts in *Dogmengeschichte*, and so are forced to rely heavily on pilfered references coming largely from those extraordinary two volumes ([19]) where, conveniently, Professor Marget subjects closely related allegations to most painstaking examination (see esp. Vol. II, pp. 8-124). No attempt has been made at an exhaustive survey of the literature.

<sup>3</sup> [42], p. 228. He is arguing against Garnier, translator of the *Wealth of Nations*. Locke had said this by implication [16], pp. 578-582.

<sup>4</sup> *Ibid.* p. 227, but cf. p. 133, esp. the footnote. It is noteworthy that in later French editions Say decided paper money was of sufficient importance to warrant a separate chapter (see the 6th edition, p. 256, and Chapter XXVI).

<sup>5</sup> [19], Vol. II, p. 31, footnote 81, where Turgot and Law are cited to the same effect. For the Ricardo references see [37], pp. 9-10.

takes this statement that its employment as money merely adds to the list of uses of bullion to imply that added utility is imparted to metal by its becoming money.

Senior can also be cited to this effect,<sup>1</sup> and Marget<sup>2</sup> points out that Jevons wrote of "the 'utility' of 'that quality of money' which a man 'will desire *not* to exchange'". Wicksteed<sup>3</sup> speaks of the marginal significance of gold being raised by its use as a medium of exchange, as well as its use as a standard of value. And while Marshall, in speaking of the constancy of the marginal utility of money presumably referred to income rather than cash balances, there is at least one point in the *Principles* in which his money unmistakably means cash,<sup>4</sup> and in which he goes into detail on "the marginal utility of ready money".

Surely Patinkin is not justified in citing Walras as one of those to whom money has no utility. His only reference (indeed his only "damning" reference to Walras) is to the statement, "Soit (U) la monnaie que nous considérerons d'abord comme un objet sans utilité propre . . .".<sup>5</sup> This is hardly conclusive, and it may well be meant to indicate no more than the author's intention *at that point* to deal only with monies like paper rather than, for example, gold. In any case, it includes the phrase "d'abord" (to begin with). Indeed it would be most strange for one who has been hailed as a mighty protagonist of the cash balance approach,<sup>6</sup> to find Walras denying utility to cash. But we have better evidence than this. In his *Théorie de la Monnaie* he makes it abundantly clear that he is most pleased that the theory of money provides such a fine and important application of the theory of marginal utility<sup>7</sup> and more than once speaks of the *rareté* of money<sup>8</sup> after having pointed out

<sup>1</sup> [43], p. 23 ff. McCulloch argues that coins "exchange for other things, because they are desirable articles, and are possessed of real intrinsic value" [21], (p. 135), but by this he may mean their value as metal, and is willing, though not without hesitation, to exempt drafts, checks and bills from this conclusion. Indeed, elsewhere (p. 217) he has sellers lend or spend their money immediately upon receipt.

<sup>2</sup> [19], Vol. II, p. 56, footnote 14.

<sup>3</sup> [48], p. 600 (Vol. II).

<sup>4</sup> [24], p. 335 and footnote.

<sup>5</sup> [44], p. 303.

<sup>6</sup> See Marget [17] and esp. [18] for a spirited defence of Walras on these points written some twenty years before the Patinkin articles. After writing this the authors found that Professor Jaffé had, in a paper delivered at a meeting of the Econometric Society, pointed out Patinkin's misinterpretation of Walras on the utility of cash balances. For a summary see [10], pp. 327-8.

<sup>7</sup> [45], esp. the introduction, pp. 65-70.

<sup>8</sup> *Ibid.*, esp. p. 102. He is presumably speaking of the utility of availability of cash which he distinguished from the utility of money *per se*.

that this is the term he had appropriated from his father to designate marginal utility.<sup>1</sup>

Pareto is another of the only five "classics" (Walras, Pareto, Wicksell, Cassel and Divisia) whose work is specifically cited by Patinkin as an example of the mishandling of monetary theory. No doubt Pareto's monetary theory is considerably more superficial than that of Walras. Nevertheless even in his case the charges are questionable. As with Walras, Patinkin provides us with only one specific reference to prove that any of his charges apply to Pareto, and again this reference is intended to show that in the Paretan system money has no utility. But the choice of passage is here even more strange. The only reference to money on the page cited is the following: "La monnaie étant une marchandise doit avoir pour quelques individus une ophélimité propre; mais elle peut ne pas en avoir pour d'autres".<sup>2</sup> Surely this is the contradictory of Patinkin's allegation! Indeed, Pareto goes further—in effect reprimanding those others (?) who maintain that money has no utility:

"La monnaie remplit deux rôles principaux: 1° elle facilite l'échange des marchandises; 2° elle garantit cet échange. . . C'est parce qu'on n'a pris parfois en considération que son premier rôle qu'on n'a vu dans la monnaie qu'un simple signe sans valeur intrinsèque".<sup>3</sup>

The list is by no means exhausted, but there seems little point in going on. "The classics" did not generally believe that the holding of cash balances adds nothing to utility beyond that which will eventually be derived by spending the money.

Of course there are those who might appear in some looser statements to have argued otherwise. J. S. Mill did argue that "money, as money, satisfies no want",<sup>4</sup> but he wanted only to point out that money is valuable only because commodities can be bought for it,<sup>5</sup> a homily that should find few dissenters. Divisia more explicitly<sup>6</sup> and Knight by implication<sup>7</sup> have clearly denied a utility to money. In general, however, it seems rather difficult to find classicists

<sup>1</sup> *Ibid.*, p. 66.

<sup>2</sup> [30], p. 593. It is cited by Patinkin in [34], p. 140, footnote 5.

<sup>3</sup> [30], p. 451.

<sup>4</sup> [28], p. 6 (Preliminary Remarks). See also Hume [9] ("Of Interest"), p. 321 to the effect that money has "chiefly a fictitious value".

<sup>5</sup> Thus compare [27], pp. 69-70.

<sup>6</sup> [5] Chapter XIX and the Appendix.

<sup>7</sup> [11], p. xxii.

taking the extreme form of the position attributed to them by Patinkin.

It may be remarked that the sort of statics which would be required to deprive money of utility in Patinkin's sense would be very special indeed. Transactions demand would be eliminated only if wage payments and all other receipts were staggered in time and amounts so as just to cover the transactions which the recipient desires to make at the moment he desires to make them. This would happen in particular if receipts and payments coincided in a steady stream.<sup>1</sup> Where these requisites do not hold, money derives a "utility" from the goods it can buy, it is true, but because it can buy them at the moment the buyer considers convenient.

#### VIII. HOMOGENEITY OF DEMANDS AND SUPPLIES IN PRICES ALONE

The "Pigou effect"<sup>2</sup> consists of a rise in the quantities of goods and services demanded with a fall in absolute prices, arising from the resulting increase in purchasing power of all cash holdings. This is a complete denial of the homogeneity postulate, for it permits the demands for goods to be affected by a change in the price level alone, relative prices remaining unchanged. If we are not to call the title of Professor Pigou's article misleading, this effect is part and parcel of the classical stationary state, and there is no more to be said upon the subject.

However, the homogeneity (dichotomization) allegation is really at the heart of the charges under examination, and so is worth some further investigation.<sup>3</sup> First it should be

<sup>1</sup> This can to some extent be arranged artificially by investing money the moment it is received with provision for repayment the (perfectly foreseen) moment it will be needed. But this would only be done to the extent necessary to eliminate demand for cash completely if there were no transactions cost of making and then calling in the investment, and if, in addition, no effort were required in carrying out this transaction. Where these are not abstracted from, it will pay to hold at least small quantities of cash for payments planned for a time shortly after the money has been received, "perfectly" static world or no. It is true that if loans were perfectly safe (the outcomes perfectly foreseen) the distinction between cash and securities might disappear, but not the distinction between the "money-securities" and "real assets", and the latter would still have a positive yield because they are not convenient means of payment and so not perfectly liquid.

<sup>2</sup> [36], pp. 349-350. Note the relation to Say's Equality.

<sup>3</sup> Indeed, dichotomization accusations and denials always seem to have flown thick and fast. Locke ([16], p. 582) and Say ([42], p. 226) most emphatically insisted that dichotomization is illegitimate, arguing that, "... money ... is a commodity, whose value is determined by the same general laws, as that of all other commodities". (Say, *op. cit.*, p. 226). Ricardo accuses Malthus and others (not completely specified) of saying that money is a commodity "... subject to the same laws of ... value ... as other commodities", yet reasoning in an erroneous manner which showed "that they really consider money as something peculiar,

noted that even an unqualified statement that the quantity of money may not affect the quantities of the various commodities demanded and supplied need not mean that the author believes in homogeneity of supplies and demands in prices alone. This may merely be the following (comparative statics) assertion which has been argued above (following Patinkin<sup>1</sup>). If all cash stocks are raised in proportion all prices will rise in proportion, and thus there will be no change in quantities demanded or supplied once a new equilibrium is attained, even in the "modified" classical system. This is not the same as the homogeneity assumption which would never have permitted the quantities of the commodity demanded and supplied to vary even temporarily with the changed stock of cash (no matter how it is injected). What we must then disentangle is which of these, if either, approximates the views of the writers in question.

The literature is quite rich on the effect of an injection of cash, going back to Cantillon and Hume, both of whom make it abundantly clear that they are having no truck with "the homogeneity postulate". Thus Cantillon wrote,

"Through whatever hands the money which is introduced may pass it will naturally increase the consumption; but this consumption will be more or less great according to circumstances. It will be directed more or less to certain kinds of products or merchandise according to the idea of those who acquire the money. Market prices will rise more for certain things than for others however abundant the money may be".<sup>2</sup>

Similarly, Hume wrote,

". . . we find, that, in every kingdom, into which money begins to flow in greater abundance than formerly, everything takes a new face: labour and

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varying from causes totally different from those which affect other commodities". ([37], pp. 72-3. See also [38], p. 292, and [37], pp. 9-10). Yet this same charge is brought against Ricardo by Cannan ([2], p. 182) and, in effect, Leontief ([15]). Similarly Senior attacked James Mill on this ([43], pp. 8-9), while J. S. Mill explicitly affirmed that the value of money was determined like that of other commodities ([28], Book III, Chapter VII, Section 3, p. 488). To Walras the theory of money provided ". . . une des premières et des plus décisives applications de mon système d'économie politique pure" (i.e. his marginal utility theory). (See [45], p. 69); while Ohlin has lauded Wicksell for "this 'new approach (!)' to monetary theory", for "Until then, and as a matter of fact for long afterwards, it was regarded as self-evident that . . . a change in the general price level must be due to entirely different circumstances from a change in individual prices". ([46], Ohlin's introduction, p. xiii).

<sup>1</sup> [31], p. 23; [33], p. 53.

<sup>2</sup> [3], p. 179.

industry gain life; the merchant becomes more enterprising, the manufacturer more diligent and skilful, and even the farmer follows his plough with greater alacrity and attention . . .

“ . . . though the high price of commodities be a necessary consequence of the encrease of gold and silver, yet it follows not immediately upon that encrease . . . At first, no alteration is perceived; by degrees the price rises, first of one commodity, then of another; till the whole at last reaches a just proportion with the new quantity of specie . . . ”<sup>1</sup>

Malthus seems to have accepted Hume's analysis, and indeed to have cited it with approbation, but Ricardo's attitude can at best be described as lukewarm.<sup>2</sup> McCulloch felt that Hume had exaggerated the beneficial effects of an influx of money, but nevertheless contested James Mill's out-and-out denial of the validity of Hume's argument.<sup>3</sup> Note, however, that even if McCulloch (like Walras, as Patinkin himself observes<sup>4</sup>) believed in “just a little non-homogeneity”, e.g., believed that prices will rise sufficiently quickly and close to proportionately to render nugatory the impact effects of an influx of cash, he has escaped Patinkin's problems. He has accepted the “modified” classical system, the argument with Hume being only over the time path between the two equilibria which is irrelevant to the present discussion.

J. S. Mill also supported this sort of position,<sup>5</sup> but perhaps the clearest statement is to be found in Marshall's testimony before the Gold and Silver Commission to which the reader is referred.<sup>6</sup>

The case of Wicksell is worth special consideration, especially since he is under particular attack by Patinkin on this point.<sup>7</sup> Wicksell in his writings explicitly employed the device of proceeding from the (over) simple to

<sup>1</sup> [9], p. 313.

<sup>2</sup> [38], pp. 387-388 and the reference to Malthus given there. For a case of non-homogeneity in Ricardo, see [38], p. 179.

<sup>3</sup> [21], pp. 556-557. But note that James Mill did not commit himself to homogeneity but argued rather that if the additional money were used to augment demand, prices would rise at once and rob this money of its value. See [26], pp. 160-161.

<sup>4</sup> [31], p. 12, footnote 5.

<sup>5</sup> [28], Book III, Chapter VIII, Section 2, and the second essay in [27].

<sup>6</sup> [23], esp., pp. 38-52. It is noteworthy that at one point Marshall even included the stock of assets among the determinants of the demand for cash ([22], p. 44, as cited by Hansen [7], p. 2). However, Marshall never seems to have done much with this.

<sup>7</sup> [31], p. 12, footnote 5, and [32], p. 149, footnote 30.



the complex. Hence it is dangerous to attribute lack of sophistication to him on the basis of isolated passages, since these may be preceded by a warning and adequately qualified later. Thus, as Patinkin points out, at several points<sup>1</sup> Wicksell states that the demand functions for commodities will depend solely on relative prices. But on each occasion the assumption provisionally made is that money serves only as a unit of account and a medium of exchange, and its function as a store of value is explicitly abstracted from.

However, he knew well enough how to deal with homogeneity :

“ . . . let us suppose that for some reason or other commodity prices rise while the stock of money remains unchanged, or that the stock of money is diminished while prices remain temporarily unchanged. The cash balances will gradually appear to be *too small* . . . I can rely on a higher level of receipts in the future. But meanwhile I run the risk of being unable to meet my obligations punctually, and at best I may easily be forced by shortage of ready money to forgo some purchase that would otherwise have been profitable. I therefore seek to enlarge my balance . . . through a *reduction* in my *demand* for goods and services, or through an *increase* in the *supply* of my own commodity . . . the universal reduction in demand and increase in supply of commodities will necessarily bring about a continuous fall in all prices. This can only cease when prices have fallen to the level at which the cash balances are regarded as *adequate*.”<sup>2</sup>

It is true that Cassel did commit himself to (the macro-economic parts of) the model which Patinkin has called the classical system, and, indeed, the difficulties in which this involved him have been noted before.<sup>3</sup>

In sum there seems to be considerable ground for doubt about the validity of the attack on the classical system. Yet somehow Patinkin's argument is not completely pointless. Somewhere the impression seems to have arisen (and to have gotten into teaching) that this was indeed the nature of the classical system. Indeed, some of the classics themselves

<sup>1</sup> [46], p. 23, [47], Vol. I, p. 67, and Vol. II, p. 22.

<sup>2</sup> [46], pp. 39-40 (Wicksell's italics).

<sup>3</sup> See the excellent discussion by Marget [19], Vol. II, pp. 338-341, also Wicksell [47], Vol. I, pp. 224-225; Cassel [4], pp. 150-152.

have, as we have seen, represented the contrary views as corrections of errors widely held. Keynes' polemics may have contributed considerably. One important source of confusion is, no doubt, the superficial resemblance between the valid comparative statics assertion that equilibrium relative prices may be unaffected by the quantity of cash (if injected into the system in an appropriate manner), and the position ascribed by Patinkin to the classics that relative prices can never be affected by the quantity of cash (however injected), even temporarily.

The nature of the mathematical notation employed may also partly be responsible. The demand and supply functions were usually written as functions of prices alone with no explicit cognizance taken of the quantity of cash or anything else, including money income, all of these having been held in abeyance via *ceteris paribus*. This may indicate merely that an author using this notation had for the moment not thought explicitly about the role of cash, or considered it unimportant at that point. Nevertheless, confusion about demands and supplies being homogeneous of degree zero in prices alone, may have arisen in this manner.

A particularly apt case in point is that of Lange himself who, as Patinkin shows, has gone wrong on just this point in the mathematical appendix to his book.<sup>1</sup> Yet much of the book itself is devoted to an examination of the effects of changes in the stock of cash and the price level on the quantities of individual commodities demanded and supplied, i.e., to a discussion of the effects of the absence of homogeneity in prices alone!

### IX. SAY'S IDENTITY

This section will necessarily be the most inconclusive in our examination of the "classical views". This is largely because Say's Law seems to have been used ambiguously in most cases, the writers for the most part not having considered the relation between the law and the nature of the money market. Moreover, several different propositions have been referred to as Say's Law. Say himself, besides

<sup>1</sup> See Lange [12], pp. 99-103. The Patinkin discussion of this point is in [31], pp. 18-20. This is not to deny that some recent mathematical theorists have adopted monetary analyses involving dichotomization of the real and monetary systems throughout their works. Indeed Brunner may well be right when he maintains in a letter to the authors that such an approach had recently become well entrenched.

formulating the proposition<sup>1</sup> which has caused so much controversy, confused it with two different, considerably more innocuous, assertions.

The first is the tautological proposition that there will always be a market for all goods produced where we define a good to be something which can be sold at a price covering its costs.<sup>2</sup>

The second is the almost Keynesian view that demand will not exist without production since production creates the income with which goods can be bought.<sup>3</sup>

However, Say has also advocated the more familiar proposition, and at one place he makes it clear that he is thinking of the equality rather than the identity, but in a rather peculiar form.

“Sales cannot be said to be dull because money is scarce, but because other products are so. There is always money enough to conduct the circulation and mutual interchange of other values, when those values really exist. Should the increase of traffic require more money to facilitate it, the want is easily supplied, and is a strong indication of prosperity . . . In such cases, merchants know well enough how to find substitutes for the product serving as the medium of exchange or money [by bills at sight, or after date, bank-notes, running-credits, write-offs, etc. as at London and Amsterdam] and money itself soon pours in, for this reason, that all produce naturally gravitates to that place where it is most in demand ”.<sup>4</sup>

Thus Say is operating with a nearly Wicksellian credit economy in which price level is indeed indeterminate. But this is so not because the quantity of money (and credit) has no influence, but rather because the quantity of circulating medium will vary by just the amount necessary to maintain any price level!

<sup>1</sup> Say's Law has been attributed to James Mill, but this judgement is not universally accepted. Though most of its components can be found there, the first edition of the *Traité* which appeared in 1803 had no well organised discussion of the “Law” (but McCulloch ([20], p. 21), seems not to have noticed this—note also the incorrect date given there). Before the second edition with its extended discussion of the Law appeared in 1814, James Mill had published his *Commerce Defended* ([25]) in which the argument is developed at length.

<sup>2</sup> For references see Lange [13], p. 60, footnote 15, and Neisser [29], p. 385, footnote 4. In particular see Say's last two letters to Malthus (published posthumously) and Malthus' reply to the first of these in [41], pp. 502-515, esp., pp. 504-505, 508 and 513.

<sup>3</sup> This argument is found in many places in Say's discussions of the Law. See [42], pp. 136-137, reproduced in [40], pp. 340-342, and [41], p. 441.

<sup>4</sup> [42], p. 134. The insertion in brackets is Say's footnote.

James Mill, on the other hand, makes a statement typical of many which were to follow, and which might be used to defend the view that most of the classics believed in Say's Identity: "When a man produces a greater quantity of any commodity than he desires for himself, it can only be on one account; namely, that he desires some other commodity".<sup>1</sup> Unless he here means money to be considered a commodity or unless, and this is a possibility we cannot rule out, he is assuming implicitly that the price level is adjusted to the quantity of cash, this would appear to imply acceptance of the identity. It is, of course, also possible that the problem did not occur to him.

If we compare this with McCulloch (who is sometimes considered the least subtle "classic") it becomes clear that it is not entirely far-fetched to argue that James Mill's statement need not mean that he believed in the identity rather than the equation. Thus McCulloch first argues very much like Mill, only more specifically excluding money:

"It is, however, the acquisition of [other commodities] . . . and not of money, that is the end which every man has in view who carries anything to market".<sup>2</sup>

and argues that therefore the redundance of individual produce must occur because production is misdirected and "is independent of the value of money". However, he at once makes it clear (and repeats this point in detail on the following page) that this is only a long-run equilibrium statement and is so *because the value of money has had time to adjust to the quantity*:

"It must, however, be borne in mind, that in the previous statements we have taken for granted that the value of money . . . has been invariable, or that, at all events, it has not been sensibly affected by sudden changes in its quantity and value. These changes may, as already stated, exert a powerful influence; and have frequently, indeed, occasioned the most extensive derangement in the ordinary channels of commercial intercourse . . . any sudden diminution of the quantity, and consequent rise in the value of money . . . may be such as materially to abridge the power of the society to

<sup>1</sup> [26], p. 222.

<sup>2</sup> [21], p. 217.

make their accustomed purchases, and thus to occasion a glut of the market".<sup>1</sup>

Could there be a more forceful rejection of the identity? J. S. Mill, in the *Principles*, speaks similarly of the "under-supply of money" during a commercial crisis,<sup>2</sup> this again in connection with a discussion of Say's Law, and after having just made the statement (quoted by Keynes in the *General Theory*) that "All sellers are inevitably, and by the meaning of the word, buyers" etc.<sup>3</sup> But the clearest statement on this point is that in J. S. Mill's second essay in his *Unsettled Questions*. We shall offer no quotations from there—it must be read *in extenso*. It is all there and explicitly—Walras' Law, Say's Identity which Mill points out holds only for a barter economy, the "utility of money" which consists in permitting purchases to be made when convenient, the possibility of (temporary) oversupply of commodities when money is in excess demand, and Say's Equality which makes this only a temporary possibility.<sup>4</sup> Indeed, in reading it one is led to wonder why so much of the subsequent literature (this paper included) had to be written at all.

It thus appears that the classics may have been taken too literally by Lange and Patinkin. As was the case in other connections, some of the classics may simply not have considered it worth the effort to point out that they were speaking about long-run equilibrium tendencies. Certainly the cases cited lend support to this view, and we have not found a "classic" who was explicit to the contrary.

The case of Wicksell is also particularly interesting in this connection because of Lange's comments. Lange himself points out that Wicksell (in our terminology) was driven to reject Say's Identity in favour of the Equality. After pointing out how Wicksell was forced to abandon the Identity in order to establish any monetary theory at all, he states,

<sup>1</sup> *Ibid.*, pp. 218-219. The unabridged passage is even more forceful. He adds, "It is almost unnecessary to lay any examples of what is, unfortunately, so common before the reader."

<sup>2</sup> [28], Book III, Chapter XIV, Section 4.

<sup>3</sup> *Ibid.*, Sections 2 and 3.

<sup>4</sup> [27], pp. 46-74, esp., pp. 69 ff. Mill remarks (p. 74) "... these well-known facts . . . were equally well known to the authors of the doctrine (Say's Law) who, therefore, can only have adopted from inadvertence any form of expression which could to a candid person appear inconsistent with it".

Note that on p. 71 a general fall in commodity prices decreases the demand for cash not through the transactions demand, but via the expectation that the price fall will not be permanent.

“ He finally appeased his conscience by stating that total demand and total supply must be equal only ‘ ultimately ’ but may differ ‘ in the first place ’. With this observation Wicksell, and with him all monetary theorists, gave up Say’s law by substituting for the identity an equation which holds only in equilibrium. . . . But this tendency toward equilibrium . . . should not be confused with Say’s law.”<sup>1</sup>

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<sup>1</sup> Lange [13], p. 66, Wicksell, [47], Vol. II, pp. 159-160. See also the passage quoted above.

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