MONEY, CREDIT, AND BANKING LECTURE

Classical Monetary Theory, New and Old

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INTRODUCTION

IN THE EARLY 1980s, THE IMPORTANT NEW DEVELOPMENTS in monetary macroeconomics initiated by the pathbreaking contributions of Robert Lucas and Thomas Sargent were widely described as revolutionary, as the "rational expectations revolution" (Begg 1982 offers an example). More exactly, they were regarded as a counterrevolution that finally toppled the revolutionary regime of Keynesian economics, restoring the classical dynasty to the throne of economic science (Sargent 1976, Lucas and Sargent 1979). The doctrinal result of these developments is widely described as "new classical economics" or "new classical macroeconomics" (Stein 1982, Klamer 1984, Laidler 1986). This raises the question whether the new developments are validly described as being in the classical tradition. Is new classical economics really the legitimate heir to the classical throne or is it, from the classical perspective, another usurper? This is the question this paper tries to answer.

In defining the term "classical economics" it is best to follow its creator, Karl Marx. In his "Misery of Philosophy" of 1847 he divided the "fatalistic" school of political economy into two branches, namely, "classical" and "romantic" economics. The intended meaning of the two shopworn literary labels first remained unclear, but in the "Critique of Political Economy" of 1859 Marx was more specific. Classical political economy was now described as beginning with Petty

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and Boisguilbert around 1660 and ending with Ricardo and Sismondi around 1820, and its distinctive achievement was said to be the labor theory of value. In the first volume of "Capital" (1867), finally, Marx described classical economics, which analyzes the real relationships of bourgeois production, as the antithesis of "vulgar" economics, which is content with superficial appearances. To be a classical economist, it seems, means digging below the surface of supply and demand down to the circular flow in terms of labor.

The supposed bridge between old and new classical economics is "neoclassical" economics. It does not seem to be known who introduced this unfortunate term. In 1936 Keynes still used it in a sense that sounds unusual now, for in a letter to Hawtrey (Keynes 1973, p. 24) he proposed to call "neoclassicals" a few recent writers like Hawtrey and Hayek, while all other English economists up to the General Theory were lumped together as classical. Stigler, writing in 1941, already uses the term as a familiar, though "nebulous," label for the body of contemporaneous theory that had become widely accepted since Marshall (Stigler 1941, p. 8). Using the Marxian criterion one might perhaps say that neoclassical economists are digging below supply and demand down to individual optimization. This work began around 1820 with Thünen, Cournot, and Gossen and was largely completed by the time of World War I.

The description of the rational expectations approach as "new classical" is based on the notion that there are certain important propositions which this approach has in common with classical and neoclassical economics. From the writings of leading protagonists of that approach (in particular, Lucas 1975, Sargent 1976, Lucas and Sargent 1979) there emerges a list of six such propositions:

1. Economic behavior is guided by individual optimization.
2. The effect of money on prices is explained by the quantity theory of money.
3. If the rate of interest is used as a policy instrument, prices are indeterminate.
4. Markets clear.
5. Money is neutral.
6. A money supply policy is ineffective except on prices.

It is evident that the image of classical economics that emerges from these propositions is constructed essentially as an antithesis to Keynes. The question is whether this image is historically valid or whether it belongs to doctrinal mythology. It will be answered by considering the six propositions in turn.

1. RATIONAL EXPECTATIONS

At the level of individual optimization, the specific contribution of new classical economics is the postulate of rational expectations.[1] Muth originally hypothesized "that expectations, since they are informed predictions of future events,

[1]The ancestry of the term is surely classical enough inasmuch as Malthus, at the end of "An Essay on the Principle of Population," discusses "our rational expectations respecting the future improvement of society" (1807).

are essentially the same as the predictions of the relevant economic theory," or, more precisely, that expectations "tend to be distributed, for the same information set, about the prediction of the theory" (1961, p. 316).

This hypothesis is indeed in flagrant conflict to Keynes who stressed "psychological" factors and was fond of describing the waves of irrational optimism or pessimism sweeping through the gambling casinos we call stock exchanges (1936, ch. 12). On the other hand, the hypothesis seems to be consistent with the neoclassical program of deriving economic decisions from individual optimization. Muth already found it surprising that rationality, which is assumed in all other aspects of entrepreneurial behavior, had not been used to explain expectations. Protagonists of new classical economics have often since expressed the view that rational expectations are a natural extension of the neoclassical program.

As a matter of historical fact, Keynes was closer to the classical/neoclassical tradition than new classical economics. Neoclassicist Pigou was described by Haberler (1960, p. 142) as the chief representative of psychological theories of the business cycle. He found a dominant cause of industrial fluctuations in the "mutual generation of errors of optimism and errors of pessimism" (Pigou 1967, p. 90f.), which have a tendency to feed on themselves.[2] Similar views were expressed early in the neoclassical era by Juglar (1862, p. 4) and at the time of its peak by Jevons (1878, p. 115f.). Jevons thought that "men of business are like a flock of sheep which follow each other without any clear idea why they do so." In testimony of the fact that the wisest men have been deluded during manias he refers to Isaac Newton, who requested a friend to buy South Sea Company shares for him just when the notorious bubble was about to burst.

Toward the end of the neoclassical period the importance of irrational expectations was stressed by Pareto (1927, p.530f.), Barone (1920, p. 224), Taussig (1912, p. 403f.) and, though with less emphasis, by Cassel (1932, p. 647). Irving Fisher attributed cumulative expansion and contraction not only to inadequate foresight, but more specifically to the superior forecasting ability of borrowers compared to lenders (1913, p. 361f.). In Wicksell's cumulative process (1936), households are continuously "fooled" about their real income, which leads to the unintended cuts in consumption called "forced savings."[3] The Wicksellians later formalized systematic forecasting errors by the comparison between ex ante and ex post values of macroeconomic variables. The stressing of irrational and mistaken expectations, far from being alien to neoclassical economics, was indeed one of the characteristics it had in common with Keynes.

It is no different for classical economics. In the 18th and 19th centuries, prosperity often culminated in a speculative mania, and recessions were aggravated by panics. Cantillon, the founder of classical monetary theory, made him-

[2]It is interesting to note that the confusion between relative prices and the price level, which was given prominence by Phelps (1970), was already mentioned by Pigou (1967, p. 86). The notion that markets are informationally segmented has an ancestor in Cairnes' concept of noncompeting groups (1967).

[3]Hayek (1932) has drawn attention to the classical ancestry of this sort of "irrationality."

self a millionaire by selling the Mississippi shares his debtors had deposited as collateral and buying them back after they had become worthless. Henry Thornton, whose "Paper Credit" of 1802 marks the peak of the classical tradition, steered his bank through a succession of panics, which he regarded as much worse than a suspension of convertibility. Ricardo, though putting more weight on convertibility, held similar views. These views are clearly based on the notion that expectations are sometimes irrational. Cantillon, and to a lesser extent perhaps Ricardo, earned their fortunes precisely by putting this insight to profitable use—another trait they had in common with Keynes.

The *locus classicus*, however, for irrational expectations in classical economics is Adam Smith's famous proposition that "the chance of gain is by every man more or less over-valued," which irrational bias is attributed to the "overweening conceit" which most men have of their own abilities and the "absurd presumption in their own good fortune" (1963, bk. I, ch. X, pt. 1, p. 164). So much for rational expectations according to the gospel of Adam Smith.

Does it follow from these historical observations that the classical/neoclassical tradition was not consistent with the neoclassical optimization program? The answer is no. Classical and neoclassical economists did not visualize human history as an unchanging system disturbed only by random shocks, but rather as a unique process with ever-changing features. It has recently been shown by Day (1982, 1983) that even a perfectly deterministic growth model of "classical" type may produce irregular and seemingly erratic fluctuations which are virtually unpredictable on the basis of past experience. There are good reasons to believe that such models are closer to classical and neoclassical notions than an unchanging system subject to random disturbances. (The strong historical orientation of men like Hume, Smith, Malthus, Menger, and Marshall is one of them.)

From this point of view, individuals, just as they have their own subjective preferences, have their own subjective ways of learning from experience and thus will develop their own forecasts. Though each of these forecasts may be perfectly rational in the light of the individual's experience, they may well look irrational in the light of the particular model of an econometric observer and they will generally differ from each other. In addition, rationality applies to the individual acts of individual human beings; there is no reason why those acts should still look rational after they are aggregated over millions of individuals and many months. Consistent subjectivism, therefore, does not lead to the objective rationality of the Muth hypothesis. To a neoclassical economist, the claim that a specific economic model provides the optimal forecast for everybody would probably have looked presumptuous. He might have derived empirical support for his skepticism from the observation that there seem to be almost as many "optimal" forecasting models as there are theorists and that most of them are in a process of constant revision.

This is no criticism of new classical economics. Actually, after starting from the highly unclassical Muth hypothesis, research has gradually moved closer to the classical tradition. Lucas (1972), following Phelps (1970), assigned an impor-

tant role to the confusion of real and monetary disturbances. Since then, imperfect information, information costs, learning about the "true" model and its parameters, and recognition lags have become increasingly important.[4] In this process, rational expectations may become operationally indistinguishable from irrational expectations, but this is no worse than in the case of utility and profit maximization, which have nevertheless remained powerful tools of analysis.

There might also be special cases of particular simplicity, in which there is indeed a generally accepted theory which individuals, at least on average, can be expected to apply. In such cases even the Muth hypothesis may be quite compatible with the classical/neoclassical tradition. Such a special case seems to be the quantity theory of money, which, for fiat money, is the most widely accepted proposition macroeconomics has yet produced.

2. THE QUANTITY THEORY

According to the quantity theory of prices, an exogenous increase in the money supply, once transitory adjustments have run their course, raises prices in the same proportion compared to what they would have been without this increase. This proposition is widely regarded as the centerpiece of the classical tradition in monetary theory. In fact, it is only a secondary offshoot of somewhat suspect legitimacy.

One first notes that the quantity theory does not separate the classical sheep from the nonclassical goats, because the quantity theory, properly formulated, is accepted by virtually all economists, however their views might otherwise differ. In particular, the quantity theory, as a long-term proposition, was endorsed by Keynes (1936, p. 289). The controversies were all about the short-term adjustments.

Of more significance than the acceptance or rejection of the quantity theory are the views about its relevance. For classical and neoclassical economists, the experiment of an exogenous increase in the money supply had only minor interest. Their primary concern was commodity money, the supply of which is determined by the allocation of resources to gold or silver mining. With constant costs, the value of money is determined simply by its costs of production and, in countries without gold mines, by transportation costs. Value theory and monetary theory are fully integrated, and the quantity of money adjusts passively, through production or foreign trade, to whatever is demanded. From this point of view, classical writers like Cantillon (1931) and Adam Smith were right in denying any strict proportionality of money and prices.

David Hume's case was peculiar. He suggested a mental experiment in which gold coins are treated *as if* they could be miraculously created or annihilated; thus he obtained the proportionality proposition (1875, p. 333f.). At the same

[4]This is illustrated by Taylor 1975, Friedman 1979, Grossman and Stiglitz 1980, Cukierman 1979, Townsend 1983, and Fuhrer 1986.

time, Hume went to great lengths in explaining that, in reality, money is supplied endogenously through gold mining and international specie flows and that prices, in view of commodity arbitrage, cannot vary appreciably. While Adam Smith took pains to correct his friend's confusing exposition, Hume's analysis became the point of departure for the secondary offshoot of the classical tradition.

This offshoot concerns the case of an inconvertible paper currency. Sweden had such a currency around the middle of the 18th century. It is no accident, therefore, that the first coherent analysis of this case, as far as I know, is due to a Swedish professor, Pehr Niclas Christiernin, who was "discovered" by Robert Eagly (1963). For the first time, Christiernin set the gold standard with its endogenous money supply in parallel to a fiat currency with floating exchange rates, with the quantity theory appearing as a property of fiat money (Eagly 1971).[5] The same dichotomy appeared at the time of inconvertible sterling in the writings of Henry Thornton and Ricardo; it became the hallmark of classical monetary theory.

In the course of the 19th century, with commodity money again dominating the scene, the dichotomy became blurred. While the Banking School generally followed the classical gold-standard tradition, adherents of the Currency School sometimes argued as if the quantity theory were relevant even for a convertible currency. Neoclassical writers like Walras (1898), Wicksell (1935), Fisher (1911), and Cassel (1932) were careful in explaining that prices do not change in proportion to the gold stock except in the special case of a unitary elasticity of the demand for nonmonetary gold. They also recognized that the quantity of money adjusts passively to the fixed gold parity, which mechanism was illustrated by Fisher in one of his hydraulic models (1911, ch. VI). Around the turn of the century, the dichotomy of fiat money (with quantity theory) and commodity money (without quantity theory) was vigorously (and polemically) reasserted by Laughlin (1903, p. 247f.), while Fisher provided the lucid analysis of both cases.

The conclusion is that the mainstream of the classical and neoclassical tradition focused on commodity money, to which the quantity theory does not apply. The quantity theory is, so to say, the illegitimate sideline of the classical tradition, the classical theory for unclassical fiat money.

3. INTEREST INDETERMINACY

Monetary policy can be conducted either by controlling the money supply, letting interest rates adjust, or by controlling the interest rate, letting the money supply adjust. The quantity theory relates to the first of these alternatives, but new classical macroeconomics was also concerned with the second. In particular,

[5]Christiernin, it seems, also provided the first statement of the open-economy corollary of the quantity theory, namely, purchasing-power parity. Of course, the Law of One Price had been familiar for centuries. Historians who claim purchasing-power parity for earlier writers, like those of the School of Salamanca (Grice-Hutchinson 1952, 1978; Officer 1982), have usually confused PPP with LOP.

Sargent and Wallace (1975) demonstrated that, under the conditions of their model, an interest policy makes the equilibrium price level indeterminate, while the interest rate is overdetermined. There is apparently an explosive process without an equilibrium.

This proposition is certainly non-Keynesian. In a Keynesian system there is usually an equilibrium for any interest rate at which the central bank may conduct its open-market operations. In a deterministic world, whatever can be achieved by a quantity policy can also be achieved by an appropriate interest policy.

The question is whether the classical tradition is closer to Sargent and Wallace or to Keynes. For the neoclassical period the question has to be decided in the light of Wicksell (1936). He argued that, in a closed economy with fiat money, an effort by the central bank to establish a market rate below the equilibrium rate would indeed result in permanent inflation, and vice versa.[6] Wicksell was perfectly aware, of course, that in the gold standard world of his day this could not really happen, because gold drains, either internal or external, would sooner or later force the central bank to abandon its effort. The relevant question is whether Wicksell's argument was correct for the case of pure fiat money.

On this point, the decisive criticism came from Cassel (1924, 478f.). It relates to the fact that the "forced savings," which an easy-money policy calls forth, must gradually increase the capital stock. As a consequence, the marginal product of capital declines, thus lowering the equilibrium rate of interest. Eventually the equilibrium rate will catch up with the bank rate, thereby bringing the cumulative process to a halt. Cassel, who seems to have been the first to visualize what today is called a neoclassical growth equilibrium (1932, p. 32f.), thus realized that there may be equilibria at different interest rates. Wicksell thought, like Keynes, that the capacity effects of investment take too long to be practically relevant. At the analytical level, however, he conceded Cassel's point. Precisely in the long-term classical perspective, therefore, Wicksell's analysis fails to demonstrate the indeterminacy of interest rates.

Almost a century before Wicksell, but unknown to him when he wrote *Interest and Prices*, the cumulative process had been admirably described by Henry Thornton (1939, p. 255f.) and later in similar terms by Ricardo (1951, I, p. 364f.). It may rightly be called, therefore, a classical piece of analysis. Thornton seemed to believe, Wicksellian fashion, that the process would go on forever; there is no link to capital accumulation. A potential self-braking mechanism is, however, implied in the remainder of Thornton's book. Money is considered, to use the expression of Gurley and Shaw, in a "theory of finance," in which financial assets are imperfect substitutes for each other. Bank notes, in particular, are imperfect substitutes for bills, which is reflected in their higher velocity (Thornton 1939, p. 242). By lowering the discount rate, the Bank of England can thus increase the market's demand for notes against bills by a finite amount. Prices would rise, but not without limit.

[6]From the point of view of rational expectations it is interesting to note that expected inflation plays no essential role in Wicksell's argument.

It thus appears that the extension of the Thornton/Wicksell model to a general equilibrium of capital goods and financial assets makes interest rates determinate. I believe such an extension is at least as much in the classical spirit as the incomplete Thornton/Wicksell model.

4. MARKET CLEARING

The preceding sections were about equilibrium. The present section concerns the path for getting there. It is one of the key postulates of new classical economics that prices and wages are market-clearing (Lucas 1972, Lucas and Sargent 1979). This is seen to be in sharp contrast to Keynes who based his *General Theory* on the assumption of rigid wages and "involuntary" unemployment.

In part, this is a contrast of modeling strategies rather than of economic substance. Any model with non-market-clearing prices can be transformed into a market-clearing model by specifying the mechanism, say, on the basis of queuing theory, which is supposed to ration the excess demand. If a leftward shift in labor demand results in a large decline in employment, it does not make a *fundamental* difference whether this is attributed to a highly elastic short-term supply curve for labor (as in Pigou and Lucas) or to wage rigidity (as in Keynes). The issue, in such cases, turns on the preference for complete models versus incomplete ones. In principle, complete models are clearly preferable, but an incomplete "disequilibrium" model may sometimes be quite effective in making an important point in a simple way.

In part, however, the difference between new classical economics and Keynes concerns indeed a question of substance, namely, the question whether unemployment has something to do with the imperfect flexibility of prices and wages. Keynes believed that it does, and in this respect, as in others, he was entirely in the classical tradition.

The classical tradition is already established in Cantillon (1931) and it is clearly stated by Hume (1875, p. 313f, p. 321). That money may have powerful short-term effects on output and employment, Hume argued, is due to the inertia of prices. He thought that the short run was actually quite long, lasting several years. He also provided some "micro-foundations", inasmuch as price adjustments have to be triggered by inventory fluctuations, whereas wage adjustments are called forth by employment fluctuations. Christiernin attributed the output effects of monetary expansion or contraction specifically to the stickiness of wages compared to asset prices, which he thought was even greater downward than upward.

In Henry Thornton the classical tradition was fully articulated. The sequence of events following a change in monetary policy begins with the instantaneous reaction of asset prices. It then passes through a short-term phase of output effects, because prices have to be pushed up (or down) by the depletion (or accumulation) of inventories while wages react to changes in employment. The sequence ends with the long-term price effects while output reverts to its normal

level. This sequence remains the backbone of monetary macroeconomics to the present day. Keynes's only heresy was that he truncated the sequence after the short run.

Thornton also thought that wages are less flexible than prices because they are typically set for extended periods whereas each price applies to a specific transaction only. Ricardo, though less interested in transitory effects, did not dissent from Thornton's analysis, observing in his "Notes on Bentham" (1951, III, p. 318f.) that production is temporarily stimulated by the lag of wages behind prices (similarly in a letter to James Mill, 1951, VI, p. 16f.). Whereas new classical economists insist that quantities adjust to surprising prices, classical economists were perfectly willing to consider prices adjusting to surprising quantities.

Neoclassical economics continued this tradition. It is true that only the Walrasian auction market was amenable to general-equilibrium analysis, but it was perfectly recognized that, in reality, most markets have a different structure. After all, this was the time of the Historical School, of Institutionalism and of extensive debates about trade-union wage policies. To a neoclassical economist it must have looked like a truism that the severity of employment fluctuations is negatively related to the degree of wage flexibility. Thus Marshall, the paragon of neoclassicism, stressed the pernicious employment effects of "false" wage standards (1961, p. 709f.) and he explained that "fluctuations in wages follow, and do not precede, fluctuations in the selling prices of the goods produced" (1961, p. 576; similarly 1881, p. 155f., and 1925, p. 191). Hicks, in his comprehensive restatement of neoclassical wage theory, offered a rich description of sluggish wage adjustments in different types of imperfect markets (1932, ch. IV).

Pigou is of particular interest in this context because he is the colleague Keynes wanted to knock over in the guise of the straw man he called "classical economics." In the *Economics of Welfare* it is explained that wages cannot be perfectly flexible, that their adjustment takes months (Pigou 1960, p. 625), and that in bad times employment is higher under "plastic" than under rigid wages (1960, p. 622). If wage earners insist on real wages above their "economic level," the inevitable concomitant is abnormal unemployment (1960, p. 704). In *Industrial Fluctuations* Pigou discusses "the part played by rigidity in wage rates," noting a "general tendency for rates of money wages to lag behind price movements" (1967, p. 200), and he derives a positive association of the severity of employment fluctuations with the rigidity of wages (1967, p. 192f.). Finally *The Theory of Unemployment*, published in 1933, identified wages rigidly held above the market-clearing level as the principal cause of long-term unemployment (1968, p. 252f.).

Another pertinent example is Hayek, because Keynes had singled him out as "neoclassical." It turns out that the "lengthening" and "shortening" of the production process, which is supposed to characterize business cycles, is associated with employment fluctuations because wages are not market-clearing (1951, p. 92f.). Indeed Haberler was historically right, as usual, when he stressed "that price rigidity, which is in practice particularly wage rigidity, is an essential prerequisite of any monetary explanation" of business cycles (1960, p. 468).

In the light of the historical evidence it is clear that Keynes, in basing his theory

on rigid wages, did not revolutionize the classical tradition, but accentuated it. New classical economics, if it insists on perfect labor markets, is thus in danger of throwing out the classical baby with the Keynesian bathwater. There is no reason, however, why new classical economics should not broaden its perspective to include a much wider range of contractual arrangements, thus narrowing the gap that initially separated it from the classical tradition.[7]

5. NEUTRALITY

Another basic proposition of new classical economics concerns the neutrality of money, the absence of "real" effects on relative prices and resource allocation. In the 1960s there was a broad consensus that money, though neutral in the long run, has real effects in the short run. Keynes doubted that these effects are always strong enough and Friedman argued that they are too erratic to be successfully controlled, but Keynesians and monetarists agreed that money was far from neutral in the short run.

Recent debates have sometimes given the impression that new classical economics has shattered this consensus by claiming that money is neutral even in the short run. This impression is clearly false. Lucas (1972) made it clear from the beginning that, in his model, unexpected changes in the money supply have, in the short run, real effects, which, following Phelps, he attributed to the difficulty of distinguishing between real and monetary disturbances. The macroeconomic model in Sargent (1976) has similar properties. In subsequent papers, the persistence of the output effects of monetary disturbances indeed became one of the central problems, a part of the solution being found in traditional inventory and investment mechanisms and adjustment costs (Lucas 1975, Lucas and Sargent 1979). Far from being shattered, the consensus about short-term non-neutrality was actually solidified.

Sometimes the short-term output effects of money are called Keynesian. While they are certainly present in Keynes, this description is misleading, because this is another instance in which Keynes simply followed in the tradition of classical economics. At the beginning of this tradition, Cantillon explained that an increase in gold production, through the rising demand of gold miners reinforced by multiplier effects, will result in an expansion of output and employment; more land will be cultivated. As production costs rise, the output incentive will again disappear; stagflation sets in, and in the end the additional gold will just pay for an import surplus. The mercantilists were right in arguing that money stimulates productions, but John Law's fatal error was to forget that the stimulus cannot last. This became the dominant view in classical economics. It is true that Ricardo, emphasizing the long run with its neutrality, tended to downplay the real

[7]Thus, contributions like Phelps and Taylor (1977) and Fischer (1977), which emphasize the role of forward-looking price and wage setting, though sometimes described as Keynesian, actually belong to the neoclassical mainstream.

effects, but James Mill (1821, p. 121f.) seems to be the only well-known classical economist who believed that money is neutral even in the short run.[8]

With respect to the long-term neutrality of money, the historical picture is more complex. In the case of commodity money the neutrality question did not arise in the first place, for the value of commodity money is a relative price and gold mining affects the allocation of resources. Cantillon and Adam Smith, therefore, had nothing to say on this question.

Hume took the analysis one step further. For the sake of the theoretical argument he abstracted temporarily from the commodity aspects of money, which led him to the conclusion that in the long run money is neutral. After inconvertible paper money had become a reality, Christiernin and Ricardo reaffirmed the neutrality proposition for this case. In the neoclassical period it became formalized in mathematical models as an expression of the "neoclassical dichotomy."

Thornton's analysis adds still another dimension. For him, money was not supplied by an imaginary transfer mechanism (like dropping bank notes from the air), but by asset transformation of the central bank. Since money creation involves the substitution of one asset against a different asset, it cannot be strictly neutral.[9]

In the last analysis, therefore, the conclusion is the same for both commodity and fiat money: Whenever money is supplied by an actual economic process, it is not strictly neutral even in the long run. Neutrality always relates to a theoretical experiment only, but under an inconvertible paper currency reality is close to this experiment. I believe that this is really the spirit of the classical tradition. The "neoclassical dichotomy" with its neutral money is a very useful and, despite Lange (1942) and Patinkin (1948), a perfectly valid construction, but truly classical money always has real effects.

6. POLICY INEFFECTIVENESS

The most provocative part of new classical macroeconomics is the proposition that monetary policy, despite its short-term nonneutrality, is ineffective. More precisely, rules of monetary policy may be quite effective in controlling prices, but not in influencing the average level of output and the amplitude of its fluctuations. Measured by the expected value of output, monetary restraint is costless

[8]Ricardo and Thornton differed considerably in their perspective inasmuch as Ricardo was interested in the long run while Thornton emphasized the short run. Within each perspective, however, their views did not differ substantially except on two minor points. Ricardo (wrongly) denied that bad harvests, as Thornton had maintained, might conceivably depress the exchanges, and he (rightly) objected to Thornton's argument that monetary restraint might well worsen the balance of trade.

[9]For classical economists, neutrality also required the absence of government debt. The belief that money, in view of the discounting of future tax liabilities, is neutral even in the presence of government debt is often described as Ricardian (Buchanan 1976). In fact, as O'Driscoll (1977) pointed out, Ricardo explicitly rejected the assumption of complete discounting. Thornton might have added that a tax liability and a security of the same present value, since they represent different types of claims, do not necessarily cancel each other out.

and monetary expansion is useless. This leads to the presumption that monetary policy might just as well concentrate on the task of keeping the price level stable.

That the objective of long-term price stability is indeed in the spirit of classical and neoclassical economics requires no documentation. Ricardo, Marshall, and Fisher are representative for the mainstream view. It was recognized, of course, that under a gold standard the objective was unattainable, and Fisher wasted much missionary zeal on his plan to correct this basic defect of commodity money by a "crawling peg" for gold. With fiat money, the objective could, in principle, be attained, but classical and neoclassical economists were inclined to mistrust the will and political ability of the central bank to implement the required policies.

With respect to output fluctuations the classical position was less simple. There was indeed no question of using monetary policy to counteract disturbances originating in the "real sector"; this notion was born in the twenties. Nevertheless, classical economists would hardly have subscribed to the ineffectiveness proposition for at least two reasons.

First, they were seriously concerned that monetary expansion, associated with inappropriately low interest rates, would unduly stimulate the economy, while monetary contraction might precipitate a recession. In fact, money played a dominant role in most explanations of investment cycles, which means that it was regarded as quite capable of influencing output and employment. Price fluctuations were regarded as undesirable precisely because, in view of wage rigidity, they tended to be accompanied by output fluctuations (Marshall 1925, p. 191; Wicksell 1935, p. 6; the position of Irving Fisher is well known), and nobody doubted that money could cause prices to fluctuate. With respect to disinflation, Thornton and Ricardo were "gradualists" for the very reason that they regarded the temporary output costs as a serious problem.

Second, classical economists were highly conscious of the often volatile nature of what was later called the "money multiplier." Thornton envisaged a three-tiered fractional-reserve banking system with highly variable reserve ratios. As a consequence, any loss of confidence could, in his view, result in an abrupt contraction of the bank money supply. The banking system, he thought, was potentially unstable. As a stabilizer it needed a "lender of last resort" (1939, p. 116). In the course of a century-long debate, the demand for an "elastic" currency would finally lead to the general establishment of central banks. It is true that the last fifty years were virtually free from pervasive liquidity crises, but a classical economist, remembering the 19th century, would probably argue that this is mainly because monetary policy was successful in eliminating them.

The conclusion is that the policy ineffectiveness proposition is in flagrant conflict with the classical/neoclassical tradition. The reason is not that fully anticipated policy measures were supposed to have real effects; the reason is rather that monetary policy was not supposed to be predictable. The ineffectiveness proposition relates to monetary feedback rules in an unchanging economic system subject to random disturbances. The classical/neoclassical tradition, however, relates to discretionary decisions in a unique historical process. Since in such a

process every new day poses new problems, central bank behavior is no more predictable than other human behavior. Wicksell indeed expressed a classical view when he said that continuing inflation, since it can be anticipated, will lose its stimulating effect, but he continued by saying that it must be unforeseen rises in prices which are contemplated (1935, p. 129).

As the complex debate between the Currency School and the Banking School shows, classical economists were certainly concerned with monetary rules. For most of them, however, these rules would have to be supplemented by discretionary action, not only because sensible rules leave room for discretion, but also because the rules themselves are subject to change, which again requires discretion. In Ricardo's opinion, paper currency needs "judicious management" (1951, IV, p. 57f.), and Bagehot asked for "good sense, good judgement, and good care" (1874, p. 334). This points to the conclusion that new classical macroeconomics, to the extent that it opposes any sort of discretionary monetary policy (Sargent and Wallace 1976, p. 169), is not in the classical tradition.

CONCLUDING REMARKS

It has been shown on the preceding pages that the more distinctive and provocative propositions of the rational expectations approach are not in the mainstream of the classical tradition. New classical macroeconomics is a misnomer. Its connotations are unfair to both sides; to the classical economists because they did not subscribe to those propositions, and to the rational expectations economists because their claim to pathbreaking originality is unduly reduced.

How could this self-misinterpretation occur? It chiefly occurred because the rational expectations economists, though claiming to eradicate the last vestiges of Keynes, still accepted his idiosyncratic interpretation of the history of economics. According to this historiography, the *General Theory* appeared as the revolutionary antithesis to the classical theory as Keynes conceived it. By creating, in turn, an antithesis to Keynes, so the rational expectations economists seem to have thought, they would automatically become classical economists.

As a matter of historical fact, Keynes was very much in the classical/neoclassical tradition, which is much richer, more catholic and more varied than either Keynes or the new classical economists want to make us believe. Keynes' main deviation from this tradition was the neglect of the long run. At this price, high as it was, he was able to reduce Pigou's cumbersome dynamics to a manageable static theory. While this, with all its limitations, was a valuable addition to the economist's toolbox, it was, in substance, perfectly compatible with the classical tradition. By creating an antithesis to Keynes, the rational expectations economists thus moved farther away from the classical tradition than Keynes himself.

It may be conjectured, however, that the rational expectations approach will gradually lose its nonclassical edges, absorbing progressively more of the substance of mainstream economics. It will accommodate more and more irrationality in foresight, it will incorporate market imperfections and institutional ar-

rangements, and it will again accord monetary policy an important role. New classical economics will cease to be regarded as a distinct school of macroeconomics.

The scientific significance of rational expectations will not thereby be diminished. Schools and isms, revolutions and counterrevolutions belong to what Marx called the "ideological superstructure." At this level, we find ambitious men competing for jobs, research grants, power, and fame in the intellectual market place. At the level of true economic science, however, there are few dramatic revolutions. The most important innovations remain often ignored for years—just like Muth's rational expectations hypothesis. Great economists rarely founded schools, and the schools rarely produced great economists.

The future historian of science will probably find the scientific significance of rational expectations not at the level of substantive economic insights, but at the level of econometric techniques. There is no new classical economics to change our view of the world, but rational expectations are changing the way we are looking at it. By developing the first explicit macro models of information processing and expectations formation, the creators of this approach added a brilliant chapter to economic science.

LITERATURE CITED

Bagehot, Walter. *Lombard Street: A Description of the Money Market.* New York: Scribner, Armstrong, 1874.

Barone, Enrico. *Principi di economia politica* (1908), 5th ed. Roma: Athenaeum, 1920.

Begg, David K. H. *The Rational Expectations Revolution in Macroeconomics.* Oxford: Philip Allan, 1982.

Buchanan, James M. "Barro on the Ricardian Equivalence Theorem." *Journal of Political Economy* 84 (April 1976), 337–42.

Cairnes, John E. *Some Leading Principles of Political Economy Newly Expounded* (1874). Reprints of Economic Classics. New York: Kelley, 1967.

Cantillon, Richard. *Essai sur la nature du commerce en général* (1755), edited by H. Higgs (with translation). London: Macmillan, 1931.

Cassel, Gustav. *The Theory of Social Economy*, translated by J. McCabe. New York: Harcourt, Brace, 1924.

_____. *The Theory of Social Economy*, revised ed., translated by S. L. Barron. New York: Harcourt, Brace, 1932.

Cukierman, Alex. "Rational Expectations and the Role of Monetary Policy: A Generalization." *Journal of Monetary Economics* 5 (April 1979), 213–29.

Day, Richard H. "Irregular Growth Cycles." *American Economic Review* 72 (June 1982), 406–14.

_____. "The Emergence of Chaos from Classical Economic Growth." *Quarterly Journal of Economics* 98 (May 1983), 201–13.

Eagly, Robert V. "Money, Employment and Prices: A Swedish View, 1761." *Quarterly Journal of Economics* 77 (November 1963), 626–36.

_____ (ed.). *The Swedish Bullionist Controversy: P. N. Christiernin's "Lectures on the High Price of Foreign Exchange in Sweden" (1761).* Philadelphia: American Philosophical Society, 1971.

Fischer, Stanley. "Long-Term Contracts, Rational Expectations, and the Optimal Money Supply Rule." *Journal of Political Economy* 85 (February 1977), 191–205.

Fisher, Irving. *The Purchasing Power of Money*. New York: Macmillan, 1911.

———. *Elementary Principles of Economics*. New York: Macmillan, 1913.

Friedman, Benjamin M. "Optimal Expectations and the Extreme Information Assumptions of 'Rational Expectations' Macromodels." *Journal of Monetary Economics* 5 (January 1979), 23–41.

Fuhrer, Jeffrey C. "Information Gathering and Expectation Formation under Model Uncertainty". *Special Studies Papers*, No. 192, Federal Reserve Board, 1986.

Grice-Hutchinson, Marjorie. *The School of Salamanca: Readings in Spanish Monetary Theory, 1544–1605*. Oxford: Clarendon, 1952.

———. *Early Economic Thought in Spain, 1177–1740*. London: Allen and Unwin, 1978.

Grossman, Sanford J., and Joseph E. Stiglitz. "On the Impossibility of Informationally Efficient Markets." *American Economic Review* 70 (June 1980), 393–408.

Haberler, Gottfried. *Prosperity and Depression: A Theoretical Analysis of Cyclical Movements*, new ed. Cambridge, Mass.: Harvard University Press, 1960.

Hayek, Friedrich A. "A Note on the Development of the Doctrine of 'Forced Saving'." *Quarterly Journal of Economics* 47 (November 1932), 123–33.

———. *Prices and Production* (1931). London: Routledge and Kegan Paul, 1951.

Hicks, John R. *The Theory of Wages*. London: Macmillan, 1932.

Hume, David. *Essays, Moral, Political, and Literary*, edited by T. H. Green and T. H. Grose, Vol. I. London: Longmans, Green, 1875.

Jevons, W. Stanley. *Political Economy*. New York: American Book Co., 1878.

Juglar, Clément. *Des crises commerciales et de leur retour périodique en France, en Angleterre et aux Etats-Unis*. Paris: Guillaumin, 1862.

Keynes, John M. *The General Theory of Employment, Interest and Money*. London: Macmillan, 1936.

———. *The Collected Writings of John Maynard Keynes*, Vol. XIV, edited by Donald Moggridge. London: Macmillan, 1973.

Klamer, Arjo. *The New Classical Macroeconomics: Conversations with the New Classical Economists and their Opponents*. Brighton: Harvester, 1984.

Laidler, David. "The New-Classical Contribution to Macroeconomics." *Banca Nazionale del Lavoro Quarterly Review* 156 (March 1986), 27–55.

Lange, Oscar. "Say's Law: A Restatement and Criticism." In *Studies in Mathematical Economics and Econometrics*, edited by Oscar Lange et al. Chicago: University of Chicago Press, 1942.

Laughlin, J. Laurence. *The Principles of Money*. New York: Scribner's, 1903.

Lucas, Robert E. "Expectations and the Neutrality of Money." *Journal of Economic Theory* 4 (April 1972), 103–24.

———. "An Equilibrium Model of the Business Cycle." *Journal of Political Economy* 83 (December 1975), 1113–44.

Lucas, Robert E., and Thomas J. Sargent. "After Keynesian Macroeconomics." In *After the Phillips Curve: Persistence of High Inflation and High Unemployment*, pp. 49–72. Boston: Federal Reserve Bank of Boston, 1979.

Malthus, T. Robert. *An Essay on the Principle of Population*, 4th ed., 2 vols. London: Johnson, 1807.

Marshall, Alfred. *Memorials of Alfred Marshall*, edited by A. C. Pigou. London: Macmillan, 1925.

———. *Principles of Economics* (1890), 9th ed., Vol. I. London: Macmillan, 1961.

Marshall, Alfred, and Mary P. Marshall. *The Economics of Industry*. London: Macmillan, 1881.

Mill, James. *Elements of Political Economy*. London: Baldwin, Cradock, and Joy, 1821.

Muth, John F. "Rational Expectations and the Theory of Price Movements". *Econometrica* 29 (July 1961), 315–35.

O'Driscoll, Gerald P. "The Ricardian Nonequivalence Theorem." *Journal of Political Economy* 85 (February 1977), 207–10.

Officer, Lawrence H. *Purchasing Power Parity and Exchange Rates: Theory, Evidence and Relevance*. Greenwich, Conn.: JAI, 1982.

Pareto, Vilfredo. *Manuel d'économie politique*, 2nd ed. Paris: Giard, 1927.

Patinkin, Don. "Relative Prices, Say's Law, and the Demand for Money." *Econometrica* 16 (April 1948), 135–54.

Phelps, Edmund S. (ed.) *Microeconomic Foundations of Employment and Inflation Theory*. New York: Norton, 1970.

Phelps, Edmund S., and John B. Taylor. "Stabilizing Powers of Monetary Policy under Rational Expectations." *Journal of Political Economy* 85 (February 1977), 163–90.

Pigou, Arthur C. *The Economics of Welfare* (1920), 4th ed., reprint. London: Macmillan, 1960.

———. *Industrial Fluctuations* (1927), 2nd ed., reprint. New York: Kelley, 1967.

———. *The Theory of Unemployment* (1933). London: Cass, 1968.

Ricardo, David. *The Works and Correspondence of David Ricardo*, edited by Piero Sraffa, 10 vols. Cambridge: Cambridge University Press, 1951–55.

Sargent, Thomas J. "A Classical Macroeconometric Model for the United States," *Journal of Political Economy* 84 (April 1976), 207–37.

Sargent, Thomas J., and Neil Wallace. " 'Rational' Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule." *Journal of Political Economy* 83 (April 1975), 241–54.

———. "Rational Expectations and the Theory of Economic Policy." *Journal of Monetary Economics* 2 (April 1976), 169–83.

Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations: The Works of Adam Smith (1811–12)*, Vol. II. Aalen: Zeller, 1963.

Stein, Jerome L. *Monetarist, Keynesian, and New Classical Economics*. New York: New York University Press, 1982.

Stigler, George J. *Production and Distribution Theories—The Formative Period*. New York: Macmillan, 1941.

Taylor, John B. "Monetary Policy during a Transition to Rational Expectations." *Journal of Political Economy* 83 (October 1975), 1009–21.

Townsend, Robert M. "Forecasting the Forecasts of Others." *Journal of Political Economy* 91 (August 1983), 546–88.

Taussig, Frank W. *Principles of Economics*, Vol. I. New York: Macmillan, 1912.

Thornton, Henry. *An Enquiry Into the Nature and Effects of the Paper Credit of Great Britain* (1802), edited by F. A. Hayek. London: Allen and Unwin, 1939.

Walras, Léon. *Etudes d'économie politique appliquée*. Lausanne: Rouge, 1898.

Wicksell, Knut. *Lectures on Political Economy*, Vol. 2 (1906), edited by L. Robbins. London: Routledge and Kegan Paul, 1935.

———. *Interest and Prices* (1898), translated by R. F. Kahn. London: Macmillan, 1936.