



OXFORD JOURNALS
OXFORD UNIVERSITY PRESS

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Source: *The Review of Economic Studies*, Oct., 1933, Vol. 1, No. 1 (Oct., 1933), pp. 22-26

Published by: Oxford University Press

Stable URL: <https://www.jstor.org/stable/2967434>

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The Theory of Money and the Analysis of Output

By JOAN ROBINSON

THE plain man has always found the Theory of Money a bewildering subject, but at the present time many academic economists are as much bewildered by it as the plain man. The reason for this state of affairs is that the Theory of Money has recently undergone a violent revolution. It has ceased to be the Theory of Money, and become the Analysis of Output.

The conclusions and methods of economic analysis are naturally much influenced by the technique of thought employed by the economists, and in almost every case where a divergence between "schools of thought" is to be found in economics the difference between one "school" and another arises from a difference in the mental tools which their members employ. Now the orthodox Theory of Money may be generally described as an attempt to apply the supply-and-demand tool to the analysis of the purchasing power of money. Just as, in the Theory of Value, the supply-and-demand mechanism is used to analyse the forces determining the value of a single commodity, so in the traditional Theory of Money the supply-and-demand mechanism, with some necessary modifications, is used to analyse the forces determining the value of money. The entity with which this analysis is mainly concerned is therefore the price level.

It has always been admitted that the chief justification for a study of the price level lies in the fact that changes in the price level may affect the volume of output, that is to say they may affect the amount of employment and the wealth of the community. But until recently no economist appears to have considered the possibility of tackling this problem directly, and setting the supply-and-demand apparatus to work on the question in which he was really interested—the forces determining the volume of output.

The apparatus used to analyse the determination of the price level were tautological statements known as Quantity Equations. The "Cambridge" equation was consciously designed to deal with the value of money in terms of supply and demand. In its simplest form the "Cambridge" equation was as follows:

$$\pi = \frac{kR}{M}$$

where π is the purchasing power of money, R the real national income, k the proportion of real income held in the form of money (cash and bank balances), and M the quantity of money. kR then represents the demand for money in terms of real wealth, and M the supply of money. The equation leads naturally to the simple argument that the greater the supply

of money (M) the smaller is its value (π), and the greater the demand for money (kR) the greater is its value.

The Fisher equation was not cast in so definitely supply-and-demand a form, but it was essentially of the same nature. $MV = PT$ or $P = \frac{MV}{T}$, where P is the price level, M the quantity of money, V its velocity of circulation (V varies roughly inversely with k), and T the volume of transaction. MV represents the effective supply of money, and PT the amount of work that money is required to do. The price level, P (which is roughly equivalent to $\frac{1}{\pi}$) is then regarded as the resultant of T , which without straining our terms too much may be regarded as the demand for money, and MV the supply of it. An increase in M or V is equivalent to an increase in the supply of money, and leads to a fall in its value, that is, to a rise in P ; while an increase in T is equivalent to a rise in the demand for money, and leads to a rise in its value, that is, to a fall in P .

An imposing theoretical structure was built up on these simple tautologies. The exponents of the Theory of Money were never satisfied with their apparatus, and were always finding themselves led into paradoxical positions. The necessity to adapt the equations to the analysis of observed events led to greater and greater refinements and complications, but in essence the apparatus of thought remained the same.

The nature of the equations, the fact that they were tautologies, devoid of causal significance, was recognised by the experts. But in the hands of the inexpert they were very misleading. Any student of economics who was set the beginner's question—"Describe the manner in which the price level is determined upon an island in which the currency consists of shell picked up on the beach," would glibly reply, "The price level on this island is determined by the number of shells and their velocity of circulation," and nine times out of ten would omit to mention that it was equally true to say that the number of shells in circulation was determined by the price level. And economists who had ceased to be students were prone to say that the rise of prices in Germany in the great inflation was caused by the increase in the note issue and aggravated by the increase in the velocity of circulation due to the "flight into real values" induced by the rise of prices.

It was in protest against this naïve view of the theory of money that Mr. Kahn set out the Quantity Equation for hairpins. Let P be the proportion of women with long hair, and T the total number of women.

Let $\frac{I}{V}$ be the daily loss of hairpins by each woman with long hair, and

M the daily output of hairpins. Then $M = \frac{PT}{V}$, and $MV = PT$. Now

suppose that the Pope, regarding bobbed hair as contrary to good morals, wishes to increase the proportion of long-haired women in the population, and asks a student of economics what he had best do. The student sets out Mr. Kahn's equation, and explains it to the Pope. "All you need

do," he says, "is to increase M , the daily output of hairpins (for instance you might give a subsidy to the factories) and the number of long-haired women is bound to increase." The Pope is not quite convinced. "Or, of course," the student adds, "if you could persuade the long-haired women to be less careless, V would increase, and the effect would be the same as though the output of hairpins had increased."

Now the experts in the Theory of Money certainly avoided these crude errors, but when they recognised that their equations were tautologies without causal significance they were beset by an uneasy feeling that their theory only provided them with wisdom after the event. Anything that had happened could always be explained in terms of their truisms, but they were never very confident in predicting what would happen next. Moreover their methods condemned them to discuss the price level, when what they had really at heart was the volume of employment.

Now, once Mr. Keynes has shown us how to crack the egg, it appears the most natural thing in the world to attack the interesting part of the problem directly, instead of through the devious route of the Quantity Theory of Money. If we are interested in the volume of output, why should we not try what progress can be made by thinking in terms of the demand for output as a whole, and its cost of production, just as we have been taught to think of the demand and cost of a single commodity? But though the altered line of approach appears, once it has been seen, to be the obvious one to adopt, the sudden change of angle has caused a great deal of bewilderment. The new analysis still masquerades under the name of the Theory of Money; Mr. Keynes published his book on the subject under the title of a *Treatise on Money*. Moreover Mr. Keynes, when he published the *Treatise* had no very clear perception of the fact that the subject with which he was dealing was the Analysis of Output. This can be illustrated from several of the conceptions in the *Treatise*. For instance, consider the Widow's Cruse of profits.¹ Mr. Keynes' analysis may be summarised thus: When prices are in excess of costs windfall profits are earned by entrepreneurs, and however much of these profits the entrepreneurs spend the total of profits remains unchanged, since spending by one entrepreneur only serves to increase the windfall profits of others. This argument is valid upon the assumption that an increase in demand for consumption goods leads to no increase in their supply. Now to assume that the supply of goods is perfectly inelastic is a natural simplification to make, at the first step in the argument, if we are primarily interested in the price-level, but to make such an assumption when we are primarily interested in the volume of output is to assume away the whole point of the argument.

A second example of Mr. Keynes' failure to realise the nature of the revolution that he was carrying through is to be found in the emphasis which he lays upon relationship of the quantity of investment to the quantity of saving.² He points out that if savings exceed investment

¹ *Treatise on Money*, p. 139.

² Using "saving" as it is defined in the *Treatise on Money*.

consumption goods can only be sold at a loss. Their output will consequently decline until the real income of the population is reduced to such a low level that savings are perforce reduced to equality with investment.³ But he completely overlooks the significance of this discovery, and throws it out in the most casual way without pausing to remark that he has proved that output may be in equilibrium at any number of different levels, and that while there is a natural tendency towards equilibrium between savings and investment (in a very long run) there is no natural tendency towards full employment of the factors of production. The mechanism of thought involved in the equations of saving and investment compels its exponent to talk only of short-period disequilibrium positions. And it was only with disequilibrium positions that Mr. Keynes was consciously concerned when he wrote the *Treatise*. He failed to notice that he had incidentally evolved a new theory of the long-period analysis of output.

Moreover, Mr. Keynes, like the exponents of the Quantity Theory of Money, was apt to fall into the hairpins fallacy, and attribute a causal significance to his tautologies. The price level will only be in equilibrium when savings are equal to investment. Well and good. But suppose that over a certain range the supply of goods is perfectly elastic? Then whatever happens prices cannot rise or fall. Since Mr. Keynes' truisms must be true, a rise or fall in demand for goods, which will be met by an increase or decrease of output without any change in prices, must necessarily be accompanied by changes in savings and investment which keep the two in equality. When an increase in output is brought about by an increase in investment, if prices do not alter, the increase in output must bring about an increase in savings (as defined by Mr. Keynes) equal to the initial increase in investment, for Mr. Keynes' truisms must be true. Or, as Mr. Hawtrey⁴ points out, in face of a very-short-period decline in demand the supply of goods is perfectly elastic because shopkeepers do not immediately lower prices, but allow stocks to accumulate on their shelves. This also can be explained in terms of Mr. Keynes' equations. The demand for consumption goods falls off, say, because of an increase in savings. This leads to an accumulation of stocks, that is to say an increase in investment, exactly equal to the increase in saving, and prices do not fall. But to say that prices do not fall *because* investment has increased is merely to argue that women bob their hair because the output of the hairpin factories has fallen off.

The case of a perfectly elastic supply of output as a whole presents an interesting analogy with the traditional Theory of Value. Marshall's analysis is described by him as showing how the price of a commodity is determined by utility and by cost of production. He himself shows that when cost of production is constant for all amounts of output the price of a commodity will not be altered by a change in demand, but he complains that it is idle to argue that price is determined more by cost than by demand. This violent contradiction can be resolved by

³ *Op. cit.*, p. 178.

⁴ *Art of Central Banking*, p. 341.

substituting the word "output" for the word "price." It is true that the output of single commodities is determined by the interaction of supply and demand even when the price is uniquely determined by cost. It was this earlier misapprehension of the subject-matter of the so-called Theory of Value which misled the economists into supposing that the proper subject-matter of the so-called Theory of Money was the level of prices, and not the volume of output.

A further example of Mr. Keynes' initial failure to understand the significance of his new analysis is to be found in the emphasis which he lays upon profits as the "mainspring of action" determining output. Here again there is an analogy with the traditional Theory of Value. When profits are more than normal in a certain industry, we are taught, new firms will enter the industry, and output will expand. Now it is sufficiently obvious that entrepreneurs who are deciding whether to set up in a certain industry are not guided merely, or even mainly, by the level of profits being earned by existing firms. They will take a general view of the conditions in the market, and of future prospects, and make their choice accordingly. It is idle to say that the abnormal profits *cause* the new investment. At the same time, it is true that if the new entrepreneur decides to set up in the industry then (if he expects that his cost will be about the same as those of existing firms) it must be the case that abnormal profits are being earned by the existing firms, for unless the price of the commodity is greater than their costs (including normal profits) it will not be worth while for additional entrepreneurs to enter the trade. Thus the abnormal profits are a symptom of a situation in which new investment in the industry will take place. But to speak of them as a cause of new investment is only legitimate as an artificial device adopted to simplify the exposition of what is happening. In the same way profits as defined by Mr. Keynes are a symptom of a situation in which output will tend to increase. Output tends to increase when the price of commodities exceeds their cost of production because, in that situation, it is profitable for entrepreneurs to increase their sales. To regard the profits as a direct cause of the increase in output is apt to be misleading, and since in long-period equilibrium there are no profits in Mr. Keynes' sense, a theory which regards profits as the mainspring of action is incapable of dealing with long-period analysis.

When Mr. Keynes himself overlooked the fact that he was writing the analysis of output, as these examples show, it is small wonder that the change in the Theory of Money should have caused bewilderment. But once it becomes clear what has happened the confusion disappears. The Theory of Money, relieved of its too-heavy task, can be confined to its proper sphere, and become indeed a theory of money, while the Analysis of Output can continue to develop an analysis of output.