

## Keynes's Influence on Modern Economics: Some Overlooked Contributions of Keynes's Theory of Finance and Economic Policy

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### Introduction

It is often argued that Keynes's *General Theory* dealt with macroeconomic aggregates of the real economy in conditions of depression. As a result, many argued that the theory was not general and required the addition of discussions of the economy in "normal conditions" as well as a discussion of the determinants of the nominal price level. In the postwar period, this was achieved through the discussion of the individual or "microeconomic" decisions that produced the economic aggregates in terms of the addition of classical individual optimization theory—what came to be called the "micro" foundations of macroeconomics. The problem of nominal prices was addressed through the addition of the short-run Phillips curve. The result was what came to be called the "Neoclassical Synthesis" and the "monetarist counterrevolution," which paved the way for the rational expectations revolution and the revival of pre-Keynesian classical economics.

Keynes's policy proposals were eviscerated in a similar way, in what has come to be known as "hydraulic" Keynesianism—the use of government tax and expenditure policies to ensure that the level of aggregate expenditure is sufficient to produce full employment. The emergence of stagflation—the simultaneous occurrence of rising unemployment and rising prices—in the 1950s and high levels of inflation in the 1970s created a policy paradox in which fiscal policy could not be simultaneously expansive to support full employment levels of demand and restrictive to reduce excess demand and fight inflation. This brought a return to monetary policy as the instrument seen as most appropriate to fight inflation and produce price stability, supported by supply-side tax incentives as

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the instrument most appropriate to sustain employment and economic growth. Thus, Keynes's approach to monetary policy by influencing expectations of long-term interest rates was replaced by control of the growth of monetary aggregates, and Keynesian fiscal policy ceased to have a macroeconomic objective but was instead directed toward increasing private incentives through the reduction of the role of government in the economy and the reduction of marginal tax rates to increase investment incentives. The overall level of fiscal stimulus and interest rates thus became residuals, completely reversing Keynes's approach.

The failure of monetarist money growth targeting eventually forced recognition of the endogeneity of money and a return to policy focus on interest rates and expectations. However, this focus was not on expectations of long-term rates but rather on expectations of future inflation rates in the form of "inflation targeting." The failure of supply-side tax reductions and reductions in government activities to provide fiscal balance led to ad hoc budgetary rules to ensure that any new fiscal expenditures were matched with new funding measures.

However, the sharp declines in activity and asset prices during the collapse of the dot-com bubble, the post-September 11 downturn, and the current subprime crisis have created frequent breaches of these principles in favor of a naive type of pre-Keynesian policy in which direct income transfers to support private expenditure and direct liquidity injections to support financial institutions have become the rule rather than the exception. Policymakers appear to have returned to the hydraulic form of Keynesian policy but have lost the theoretical basis that supports it. The reason stems from the initial belief mentioned above, that Keynes's theory was based on the ability to forecast the reaction of economic aggregates expressed in real terms to expenditure policy measures. However, a review of the body of Keynes's work shows that this emphasis on the behavior of real economic aggregates does not represent his contribution to economic theory or policy. This chapter will review the innovative contribution of Keynes's major works and show how they were unified in his *General Theory* (CWK 7) in a policy that is radically different from that normally presented, criticized, and currently employed as Keynesian theory.<sup>1</sup>

The financial building blocks of the *General Theory*

*The Tract and interest rate parity*

The theory that emerges in the *General Theory* contains essential elements of Keynes's contribution to finance theory that were developed in

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his earlier work, starting with the *Tract on Monetary Reform* (CWK 4). In this book, Keynes addresses the practical problem of what shape monetary policy should take in a world that has abandoned the gold standard. He follows Cassel's proposal that stabilization of the international purchasing power parity of the national monetary unit should replace stabilization of the purchasing power of gold as the principal aim of monetary policy. This was a straightforward attempt to replicate the essential features of the gold standard. Under the gold standard, the free movement of gold would lead profit-maximizing agents to exchange gold for the goods of countries where gold was overvalued due to low domestic prices. This would bring an increase in imports of gold to exchange for commodities in countries where prices were lower than average (and an increase in the export of their products) and a decrease in prices (and an increase in imports) in countries where they were above average. Equilibrium would be achieved when gold and goods stopped moving because the purchasing power of gold was the same in all countries; changes in domestic gold supplies brought gold prices of internationally traded goods into equality, adjusting for transactions costs.

The idea was to design a monetary policy for the domestic currency that would produce the same results. This could be done by linking the domestic creation of money to the relative international purchasing power of money. The link to the quantity of money is obvious, simply representing a shift from controlling the money supply to produce domestic price stability to producing stability in the international purchasing power of money—purchasing power parity. Indeed, Keynes, following Marshall, endorses the general validity of the quantity theory. However, he notes that the expositors of the quantity theory usually have failed to present it in the appropriate form, and he provides a version that moves well beyond the traditional representation. He also provides what are now the traditional provisos concerning the general applicability of purchasing power parity.

More important, he notes a major difference between the new approach and that operating under the gold standard. Under the gold standard, despite large seasonal variations,

the daily balance was adjusted by the movement of bankers' funds. . . . But now it is no longer a purely bankers' business, suitably and sufficiently rewarded by arbitrage profit. If the banker moves credits temporarily from one country to another, he cannot be certain at what rate of exchange he will be able to bring them back again later on. . . . [H]e has learned from experience that unforeseen movements of the exchange may involve him in heavy loss. . . . In fact, the seasonal adjustment of credit requirements has ceased to be arbitrage banking business, and demands the service of speculative

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finance. Under present conditions, therefore, a large fluctuation of the exchange may be necessary before the daily account can be balanced, even though the annual account is level. (CWK 4, pp. 109–110)

This is because there was implicit protection against exchange rate risk given by the automatic arbitrage within the gold points, and private short-term arbitrage flows had generally ensured that the movement of exchange rates would be well within the gold points precisely because of the limit on fluctuations given by the possibility of physical movements of gold. This assurance would not be present under a managed currency standard since there would be no limit to fluctuations in the event a central bank was not able to operate according to the new operating standard of stabilizing purchasing power parity.

To remedy this deficiency, Keynes recommended the use of forward foreign exchange markets to provide exporters with a means of hedging the increased risk of fluctuating exchange rates on trade flows. In explaining how the operation of the forward market would provide cover against exchange rate risk, Keynes develops the interest rate parity theorem, according to which the forward discount or premium to the spot exchange rate will be determined by the interest rate differential between the currencies.<sup>2</sup>

The method that Keynes uses is similar to the concept of portfolio replication that has been the basis of the advances in financial engineering since the introduction of floating exchange rates in the 1970s. Keynes notes that a commitment to provide foreign currency against domestic currency at a future date at a rate to be determined today can be made with certainty only by borrowing the domestic currency today, converting it into foreign currency at the current spot rate, and investing it at the foreign interest rate until the future date at which it has to be delivered in order to meet the obligation. The cost is thus the spot cost of buying the currency, plus the difference between the interest earned on the deposit of the foreign currency and the interest paid to borrow the domestic currency. Keynes notes that the forward premium derived in this way “indicates a *preference* by the market, on balance, in favour of holding funds” in one market rather than another (CWK 4, p. 123), and that “The difference between the spot and forward rates is, therefore, precisely and exactly the measure of the *preference* of the money and exchange market for holding funds in one international centre rather than another” (ibid., p. 124; emphasis added).

The important point to note here is the formulation of the problem in terms of spot versus forward prices representing the preference for holding one asset rather than another, and the idea that a change in interest rates will create an incentive to take action that brings the relation back

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into equality. Thus, if a change in the domestic interest rates causes the interest rate differentials to change, it will be profitable to act in the forward market to arbitrage the discrepancy between the forward market and the loan markets in the two countries. If there is a decline in domestic interest rates, the cost of providing forward cover falls, so the existing quote for the forward rate is overvalued, and profit can be made by selling foreign currency in the forward market and by borrowing domestic currency and selling it at the spot rate for foreign currency, investing it at the foreign interest rate, and delivering it forward. Doing so will increase the supply of forward foreign exchange, driving down the forward rate, and increase the demand for spot foreign exchange, pushing up the spot rate. At the same time it increases the demand for domestic borrowing and the supply of foreign loans, increasing the interest rate on the former and decreasing it on the latter. This combination of actions corrects the mispricing of forward foreign currency. If the domestic borrowing rate is fixed, then it is the foreign rate and the spot and forward prices that adjust. In the period in which Keynes was writing, sterling was the global currency, so it could be assumed that the sterling bank rate was fixed by the Bank of England, and the rates of interest on other currencies and their spot rates would be the factors of adjustment.

*The Treatise and the theory of futures prices: normal backwardation*

In the *Treatise on Money*, Keynes (1930) continues his investigation of the relation between spot and forward prices (as well as his concern for the reform of the international financial system). However, he rejects the quantity theory as the basis for the impact of money on prices, instead formulating fundamental price equations for available and nonavailable outputs, and makes a strong recommendation against returning to the gold standard. In particular, he shifts the focal point of his analysis from the impact of the demand for money on prices to the effective economic decisions in the economy, and in particular on the “effort of producers and the expenditure of consumers” (CWK 5, p. 120).

However, of major interest is Keynes’s emphasis on the relation between money and prices. While the fundamental equation for available outputs looks very much like a cost plus (windfall) profits (normal profits were included in costs) pricing model, with prices given by efficiency wages and the divergence between investment and saving determining windfall profits, of greater interest is the neglected theory of short-period prices outlined in the discussion (in CWK 6, pp. 140ff.) of the behavior of prices in commodity markets.

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Here Keynes notes the important influence of how the market eliminates excess stocks on the behavior of prices and on decisions to engage in new production. Again, working from the point of view of today's spot price and a future price, he notes that markets for excess stocks of commodities do not operate in the same way as markets for flow supplies. Instead of falling prices reducing production and increasing demand to restore equilibrium, just the opposite may occur. If the price in the future is expected to be lower than the current spot price, then it will be profitable to sell stocks today to avoid further loss; even if they are needed for production, it would be profitable to sell since it is expected that they can be repurchased at a lower price in the future. This will create additional downward pressure on current market prices, further depressing expected future prices and increasing the incentive to sell existing stocks. The question is thus how the market reverses this declining spiral of prices in order to allow prices to return to normal and provide incentives for new production.

As a solution to this problem, Keynes proposed what he called "neglected" theory of short period prices expressed in the reduced form equation  $pq = xy$ .<sup>3</sup> The implication of the equation is as follows: the higher is  $x$ , the carrying costs as a share of the normal price, and the higher is  $y$ , the time to recovery, the larger the required fall in price to bring the decline in prices to a halt. The implication is that if you want a more rapid return to normal, you reduce carrying costs as much as possible—i.e., you reduce interest rates. The higher is the fall in production or rise in consumption produced by a fall in price, both expressed in  $q$ , the lower the required fall in price before recovery. Here the implication is to take measures to reduce the excess stocks as rapidly as possible—by the creation of buffer stock schemes, measures to reduce the increase in production, or other types of government expenditures to decrease the time to recovery and increase the responsiveness of consumption to a fall in price.

Keynes then goes on to "restate the argument in terms of the 'forward market'" (1930, vol. 2, p. 142). Keynes notes that in organized commodity markets there are always two prices, one for current delivery and another for delivery at some future date, and that it is the latter that is of importance to the producer. If the producer can earn his normal profit on his costs of production at this price, "then he can go full steam ahead, selling his product forward and running no risk." However, this relation may be disturbed by the impact of existing stocks on prices for current delivery. If there are no redundant stocks, then "the spot price may exceed the forward price (i.e. in the language of the market there is a 'backward-

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ation').” This means that there is excess demand for current output that can only be met by increasing output. The spot price will then rise until it becomes advantageous to buy for future delivery rather than trying to access the increasingly deficient current supply. This drives up demand for future output, at the same time as it creates an incentive for producers to go full steam ahead and produce output for future sale.

However, Keynes points out that it is not necessary to have abnormal shortages of current stocks for backwardation to exist. He notes that in conditions of balanced supply and demand, there should be no difference between spot and future prices; however, there will normally be an imbalance between producers seeking to sell forward relative to those seeking to hedge against price increases. This will create an excess supply of contracts to deliver the commodity in the future, driving the future price below the spot and creating what has come to be called “normal” backwardation. As long as the price for future delivery remains above existing supply prices, production will continue to take place.

It is in this context that the existence of surplus stocks impedes current production, for it makes backwardation impossible; if backwardation existed along with excess stocks, it would always be profitable to sell today for future delivery, rather than hold the stocks and incur the costs of warehousing, insurance, and so forth. Indeed, Keynes argues, the existence of surplus stocks must cause the forward price to rise above the spot price, i.e., to establish, “in the language of the market, a ‘contango’; and this contango must be equal to the cost of the warehouse, depreciation and interest charges of carrying the stocks.” That is, the cost of selling spot and buying back for future delivery must be equal to the costs borne by the speculator who buys the stocks and holds them until the future delivery date. As a corollary, the textbook explanation of futures prices emerges as the spot price plus carrying costs for the term of the contract.

However, the important point is the negative impact of redundant stocks on new production and Keynes’s observation that “efforts to get rid of surplus stocks aggravate the slump, and the success of those efforts retards the recovery” (CWK 6, p. 145) because of “the additional element of uncertainty introduced by the existence of stocks and the additional supply of risk bearing which they require. . . . In other words, the quoted forward price, though above the present spot price, must fall below the anticipated future spot price by at least the amount of normal backwardation; and the present spot price, since it is lower than the quoted forward price, must be much lower than the anticipated future spot price” (p. 144). Thus, there is no incentive to engage in current

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production for future sale, and the short-period price analysis gives the conditions required to return to normal production and normal price as given by the fundamental price equation for available goods.<sup>4</sup>

*The monetary theory of production*

In the interval between the *Treatise* and the *General Theory* (CWK 7), Keynes took a major step toward using these financial concepts to represent the way investment decisions determine the behavior of the economy. Keynes defines the “efforts of producers” as the decision “whether it is expected to pay a firm in possession of capital equipment to spend money on incurring variable costs, i.e. whether the result of spending money on employment and of selling the output is expected to result in a larger net sum of money the end of the accounting period than if the money have been retained” (CWK 29, p. 66). He also notes with approval Marx’s assertion that decisions in a capitalist economy are determined by the relation  $M-C-M'$ , that is, by spending money today to produce commodities to sell for a larger net sum of money in the future, irrespective of the impact on  $C$ , which might be higher or lower. This emphasis on present expenditure compared with future receipts fits quite naturally with the prior analysis of the relation between spot and future prices necessary to ensure profitable production.

Keynes points out to his readers that one of the major changes between the *Treatise* and the *General Theory* is the shift from a theory of a given level of output with well-anchored expectations of normal prices given by the fundamental equations to a theory of changes in the level of output with uncertainty over the level of future prices. Thus, in the *Treatise*, departures from normal positions are represented by unforeseen windfall profits or losses that produce a departure of current prices from the fundamental price equation for available goods. However, windfall profits or losses should bring about changes in normal values, just as the  $q$  and  $c$  factors in the short-period theory of prices bring about temporary changes in output and consumption. In the *General Theory*, Keynes thus gives up the theory of normal prices with well-anchored expectations of normal values and natural interest rates and investigates how divergence from equilibrium determines adjustment and uncertainty in the system.

He also tells us that splitting up the determination of the rate of interest and the return on investment is an important step in his thinking. However, the form of both these concepts conforms to his prior analysis of relations between spot and forward rates. The differentiation is in

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terms of the explanation given for liquidity preference and the marginal efficiency of capital. For the former, there is no analysis of the supply-side; for the latter, Keynes introduces the idea of user costs.

#### References in the *General Theory* to prior financial building blocks

In the *General Theory*, Keynes makes direct and indirect reference to his prior work on financial analysis. This is particularly evident in chapters 16 and 17, where Keynes undertakes his analysis in terms of spot and forward markets. For example, the definition on the first page of chapter 17 of the “[t]he money-rate of interest—we may remind the reader—is nothing more than the percentage excess of a sum of money contracted for forward delivery, e.g. a year hence, over what we may call the ‘spot’ or cash price of the sum thus contracted for forward delivery” (CWK 7, p. 222). Keynes also notes that every commodity can be expressed in this fashion and that “for every kind of capital-asset there must be an analogue of the rate of interest on money” (ibid., pp. 222–223).

Keynes then uses his analysis of different currencies in the *Tract* as a template for the analysis of the different own rates on the individual efforts of investors. Indeed, he alerts the reader that he is doing this by pointing out that “It may be added that, just as there are differing commodity-rates of interest at any time, so also exchange dealers are familiar with the fact that the rate of interest is not even the same in terms of two different moneys, e.g. sterling and dollars. For here also the difference between the ‘spot’ and ‘future’ contracts for a foreign money in terms of sterling are not, as a rule, the same for different foreign moneys” (ibid., p. 224).

In precisely the same way as he had analyzed interest parity, Keynes notes that just as the forward discount or premium on sterling brings the return on investment in currencies with different national rates of interest into equality, there will be an expected appreciation or depreciation in terms of the standard of account that brings the individual own rates of return into equality when evaluated in terms of the standard. This is the *a* factor that Keynes introduces in chapter 17. In difference from the foreign currency markets, where the only factor is interest differentials, in the analysis of the whole economy, investors will have a range of investment choices that provide different returns that will be characterized by other factors.

For example, Keynes’s analysis of future prices made very clear the important role of carrying costs in determining the relation between spot and forward prices for stocks of commodities. Keynes thus introduces

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this factor as  $c$  in determining the returns of such commodities. Keynes also notes that the investment efforts of entrepreneurs can be represented as the difference between the money spent on producing output and employment and the money return, identified as  $q$ , the net return. However, this net return differs from the returns considered in comparing currencies in that there is no single forward or future price but rather a series of future returns. This means that the future stream of returns has to be reduced to a single “price” to preserve the formal relation with interest parity. Keynes does this by proposing to use the net present value of stream of yields, with the expectation of the future yields in each future period representing the impact of the future on the present.

However, he notes that the spot price of an investment must also be corrected for the impact of the future on the present. This Keynes defines as “user cost.” Understanding user costs has been difficult for most interpreters of Keynes, and the concept has all but disappeared from macroeconomics. However, it can be quite easily understood with reference to Keynes’s work on future prices, described above. Indeed, Keynes again directs his readers to this effect: “The calculation [of user costs] is exhibited in its simplest and most intelligible form . . . in the case of a redundant stock of a raw material such as copper, on the lines which I have worked out in my *Treatise on Money*, vol. II. chap. 29” (1936a, p. 70). However, there is a difference, and Keynes notes that

In the case of raw materials the necessity of allowing for user cost is obvious;—if a ton of copper is used up to-day it cannot be used to-morrow, and the value which the copper would have for the purposes of to-morrow must clearly be reckoned as a part of the marginal cost. But the fact has been overlooked that copper is only an extreme case of what occurs whenever capital equipment is used to produce. . . . It is an advantage of the concepts of user cost and supplementary cost that they are as applicable to working and liquid capital as to fixed capital. The essential difference between raw materials and fixed capital lies . . . in the fact that the return to liquid capital consists of a single term; whereas in the case of fixed capital, which is durable and used up gradually, the return consists of a series of user costs and profits earned in successive periods. (ibid., p. 73)

Thus, “User cost constitutes one of the links between the present and the future. For in deciding his scale of production an entrepreneur has to exercise a choice between using up his equipment now and preserving it to be used later on. It is the expected sacrifice of future benefit involved in present use which determines the amount of the user cost, and it is the marginal amount of this sacrifice which, together with the marginal factor cost and the expectation of the marginal proceeds, determines his scale of production” (ibid., pp. 68–70).

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User cost can thus be “arrived at . . . by calculating the discounted value of the additional prospective yield which would be obtained at some later date if it were not used now” (ibid., pp. 69–70). With user cost built on the analysis of futures prices, the calculation of the net return  $q$ , or the marginal efficiency of an investment decision, will require an adjustment to costs that incorporates expectations of the future just as the calculation of the sales proceeds will require expectations of future market conditions. Indeed, Keynes considered the addition of user costs as his only original contribution to the theory of investment. And it comes in the definition of the supply price of capital, rather than the demand price.

Finally, Keynes introduces liquidity preference in the form of a “premium” that attaches to assets as determined by a preference to hold them rather than other similar assets. As noted above, the interest rate that measures the premium for possessing money is already specified in terms of spot and forward prices. Note that Keynes frequently refers to the liquidity premium as the marginal efficiency of money. This is because the analysis of chapter 17 deals with the decisions that bring the own returns of all assets into equality; and because the return on money can also be analyzed in terms of user costs. Here the difference from the analysis of futures prices is not that money has a multiperiod return but rather that it has no carrying costs. However, if money is to be lent, the future price will be above the spot price—i.e., since this contango cannot be explained by the traditional carrying costs of the theory of future prices, which Keynes assumes to be zero on money, it must be determined by some other factor that Keynes defines as its liquidity. Just as Keynes noted that normal backwardation did not require a shortage of stocks, contango in the market need not be caused by an excess supply of money, but it could be caused instead by an imbalance between those seeking to become liquid (to borrow—i.e., to supply forward money) relative to those willing to become illiquid (to lend—i.e., to demand forward money). The difference between selling money today against future receipt of money produced both a price risk, given by the possible change in the capital value of the security received, and the risk of being unable to meet contractual commitments. Alternatively, user cost can be measured as the forgone income that is the result of lending today rather than waiting to lend at high future interest rates.<sup>5</sup>

Thus, Keynes provides a full specification of the returns that will attach in some degree to all investments as given by the difference between spot and forward prices in terms of the three attributes,  $q$ ,  $c$ , and  $l$ , all of which are themselves expressions of the impact of the future on the present. The adjustment to equilibrium comes via an analysis of the movement of the  $a$  factor. Keynes thus provides a system in which the own rate

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of own return for every investment possibility,  $r$ , is adjusted by  $a$ , the discount or premium, and will be determined by the relative importance of  $q$ ,  $c$ , and  $l$ . Keynes describes this process as follows:

To determine the relationships between the expected returns on different types of assets which are consistent with equilibrium, we must also know what the changes in relative values during the year are expected to be. Taking money (which need only be a money of account for this purpose, and we could equally well take wheat) as our standard of measurement, let the expected percentage appreciation (or depreciation) of houses be  $a_1$  and of wheat  $a_2$ . . . . [I]n equilibrium the demand-prices of houses and wheat in terms of money will be such that there is nothing to choose in the way of advantage between the alternatives;—i.e.  $a_1 + q_1$ ,  $a_2 - c_2$  and  $l_3$  will be equal. The choice of the standard of value will make no difference to this result because a shift from one standard to another will change all the terms equally, i.e. by an amount equal to the expected rate of appreciation (or depreciation) of the new standard in terms of the old. . . .

. . . Now those assets of which the normal supply-price [read “production” price] is less than the demand-price [read “forward” price] will be newly produced; and these will be those assets of which the marginal efficiency would be greater (on the basis of their normal supply-price) than the rate of interest (both being measured in the same standard of value whatever it is). As the stock of the assets, which begin by having a marginal efficiency at least equal to the rate of interest, is increased, their marginal efficiency . . . tends to fall. Thus a point will come at which it no longer pays to produce them, unless the rate of interest falls *pari passu*. When there is no asset of which the marginal efficiency reaches the rate of interest, the further production of capital-assets will come to a standstill.

Let us suppose (as a mere hypothesis at this stage of the argument) that there is some asset (e.g. money) of which the rate of interest is fixed (or declines more slowly as output increases than does any other commodity’s rate of interest); how is the position adjusted? Since  $a_1 + q_1$ ,  $a_2 - c_2$  and  $l_3$  are necessarily equal, and since  $l_3$  by hypothesis is either fixed or falling more slowly than  $q_1$  or  $-c_2$ , it follows that  $a_1$  and  $a_2$  must be rising. In other words, the present money-price of every commodity other than money tends to fall relatively to its expected future price. Hence, if  $q_1$  and  $-c_2$  continue to fall, a point comes at which it is not profitable to produce any of the commodities, unless the cost of production at some future date is expected to rise above the present cost by an amount which will cover the cost of carrying a stock produced now to the date of the prospective higher price. (1936a, pp. 227–228)

Note here that Keynes is just describing the conditions in which producers can go “full speed ahead” because the spot prices of production are below forward prices, and if producers do so, they will create changes in their forward prices that reduce the gap between production prices

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and future prices and thus their returns, shifting production and investment to sectors where money returns are higher.

Keynes notes that rather than the money rate of interest setting “a limit to the rate of output, . . . it is that asset’s rate of interest which declines most slowly as the stock of assets in general increases . . . ]. As output increases, own-rates of interest decline to levels at which one asset after another falls below the standard of profitable production;—until, finally, one or more own-rates of interest remain at a level which is above that of the marginal efficiency of any asset whatever” (ibid., p. 229).

This gives Keynes his formal definition of a monetary economy—i.e., one in which expectations of the future determine present decisions, as one in which there is an asset whose rate of return declines more slowly than all others in the presence of an increase in demand (or, alternatively, the definition of a nonmonetary economy as one in which there is no asset whose liquidity premium is greater than its carrying costs). In such an economy, there is no guarantee that all rates of return will come into equality at a level of investment that produces full employment. Conversely, where this conditions is not met, investment will continue until all resources have been employed—which might require an increase in the employment of labor to produce money. Indeed, Hayek (1943) had argued that this might be the case, and the various composite commodity currency proposals were designed in order to ensure that a demand for money produced an increase in income and employment.

What is money in the monetary production economy?

As Keynes notes, the definition of a monetary economy leaves open the definition of what serves as money—it could be any nonreproducible durable good, but he notes that in modern economies it comes closest to what he defined as “representative” money in the *Treatise* (1930, vol. 1, pp. 9–11). Representative money will have some particular characteristics that cause its return to fall less rapidly or not at all when there is an increase in demand for it. These characteristics he defines in terms of the low or negligible elasticity of production and substitution. Note that this should not be interpreted as an acceptance that money is exogenous—Keynes clearly believed that money was a debt-credit relation and thus was endogenously determined. What was important was that an increase in the demand for money, even if this caused an increase in its supply, would not bring about a decline in its liquidity return or provide a demand for more employment to produce it.

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This is a radical departure from the traditional analysis of the value of money that relies on the intrinsic value of the money commodity or the backing that is provided for fiduciary money. It is interesting that the year in which Keynes announced his “Monetary Theory of Production” (Keynes 1933) was also the year that gold ceased to play the role of money and thus no longer performed the role of the real backing for fiduciary money. If money is considered as a debt-credit relation, this raises the question of how debts are going to be settled if there is no ultimate real external asset—or Hy Minsky’s question of why he could not get anyone to accept his personal IOUs in the settlement of his debts. The answer to this question is found in recognizing that it is necessary not for there to be an ultimate real asset that will settle all debt relations but rather for there to be some entity that can issue a liability that can be used in settlement of its own debts.

Keynes dealt with the question in his early work on money, and the answer is to be found more explicitly in what is better known as the “state” or “chartalist” theory of money associated with the names of Friedrich Knapp (1924) and Mitchell Innes (1913, 1914). In this approach, money is not a real asset but results from the ability of the state to unilaterally impose a liability on its citizens in the form of a tax that can be liquidated only with the promises to pay that are issued by the state. This meets the contention noted by Innes that the very nature of credit throughout the world lies in the right of the creditor to hand back to the debtor the latter’s acknowledgment or obligation.

It thus follows that the creation and destruction of money depends on the goods and services that the state seeks to buy from its citizens, relative to the tax liabilities imposed by the state on them. If the state runs a balanced budget, citizens as a whole can just meet their tax liabilities (although some individuals may not be able to do so). Conversely, if the state spends less than it taxes in an attempt to run a surplus, citizens as a whole will not be able to meet their tax liabilities (although some individuals may be able to do so) unless there are accumulated money balances held over from prior periods in which the state ran a deficit. Here the circuit analysis is important for determining the viability of the system; by tracing the process by which the state employs the national bank or national treasury to create the money that it uses to acquire goods and services from its citizens and, likewise, the way that its citizens employ the money they receive in these transactions to meet their tax obligations. This analysis makes the important point that if the economy is to grow, the state must be running a budget deficit. However, it cannot determine the amount of money that will be held in individuals’ money

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reserve balances. There are a number of reasons why individuals may choose to hold money balances. The example of a government surplus is one of them, for reserve balances allow the system to meet its tax liabilities. But what is clear is that an increase in the demand for money cannot bring about an increase in its supply unless it brings about an increase in the government budget deficit. This approach thus joins monetary policy and fiscal policy as part of the same policy decision.

It also allows an understanding both of why monetary production economies have unemployment and of the role of liquidity preference and fiscal policy. If the public wants hold of more money than the state is willing to create through its budget deficits, individuals will cut expenditures and lower effective demand, causing a reduction in private sector activity and creating unemployment. There is a contango on money, and an increase in the demand for money does not bring about an increase in its supply nor does it increase employment. A monetary economy is thus defined as one in which unemployment may be an equilibrium position. Conversely, it also shows that in the absence of money, or if there is only asset money on the wing that is never held, money can never be in contango, and the economy will automatically produce the level of effective demand compatible with full utilization of resources.

#### Notes

1. To add a personal note similar to that provided by Marcello de Cecco: in January 1966, I had not yet read the *General Theory*, but upon starting graduate school at Rutgers rather than Chicago, Paul Davidson quickly introduced me to the *Treatise* and the *General Theory*. My interest in Keynes's financial contributions started when Davidson challenged his students to explain the four types of speculative markets in chapter 15 of the *Treatise* (1930, vol. 1, pp. 252–253). This led me to the pricing equation in vol. 2 and then to the own-rates discussion in the *General Theory*. I arrived in Cambridge in 1968, eager to employ these tools, only to find that the discussion had moved on to long-period growth and distribution theory. My first attempt to use the tools of chapter 17 was in an endeavor to link Keynes and Sraffa (Kregel 1976), a suggestion that I continued to pursue for some time (e.g., Kregel 1983) without much success. The discussion herein is a summary of a number of papers (e.g., Kregel 1988b, 1993, 1998a, and 1998b) that have tried to show the cohesiveness of Keynes's work through his contributions to financial analysis. I have also tried to show the similarity of the work of Keynes and Fisher (with diametrically opposed results) in this regard (Kregel 1988a, 1999a).
2. The interest rate parity theorem was originally proposed in a 1922 supplement on *European Reconstruction* to the *Manchester Guardian* that Keynes was editing (Keynes 1922a, 1922b).

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3. The full derivation is given in Kregel 1993.
4. Indeed, the point Keynes is analyzing is whether an excess of saving over investment could be offset by the decline in the prices of available goods causing an increase in demand to hold them as liquid capital investments.
5. Note that the “carry cost” on money can most easily be thought of as the user cost of money and can be measured by an option premium—e.g., if money is “used” by selling (lending) it today for future delivery, a put option is bought at today’s strike price; then if future prices rise, the option can be exercised at the higher price even though a sale has been made for future delivery at a lower price. The option premium would then measure the user cost of money, the cost of being illiquid.

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