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## Money, financial markets, and the coherence of a market economy

HYMAN P. MINSKY

Arrow and Hahn (1971, pp. vi, vii) rightly emphasized that mainstream economists from Adam Smith to the present "have sought to show that a decentralized economy motivated by self-interest and guided by price signals would be compatible with a coherent disposition of economic resources." Smith's insight of genius was to associate processes that yield a coherent result in a decentralized market economy with the trading that takes place in a village's market square. To this day, formal economic theory makes this demonstration by investigating the characteristics of an abstract trading process. But its validity depends on showing that the "coherence" property demonstrated for the abstract trading process can be preserved when the model is altered to allow for the formalized concepts of production, labor, capital assets, monopoly, and money.

As Arrow and Hahn noted in chapter 14, the proposition that a decentralized market yields a coherent result has not yet been shown to hold for an economy where money is represented by contracts created through banking processes, and capitalist financial practices are required to support the purchase of expensive, long-lived capital assets. This is not surprising, since a Keynesian analysis of the interactions among money creation, asset pricing, and investment in the development of the economy through time indicates that the behavior of profit-seeking firms, banks, and households that own wealth would tend to disrupt coherence. Thus, formal economic theory must go beyond Smith and investigate the relations in production which utilizes capital assets and in capitalist techniques of financing ownership and production of capital assets, that from time to time disrupt coherence. The question of incoherence is the important question for capitalist economies.

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Only post Keynesian economists even address this question.<sup>1</sup>

For such conditions, an analytical perspective derived from Marshallian partial equilibrium, which emphasizes time-dependent linkages among markets, is more powerful and more useful than the Walrasian analytical perspective, which focuses on the existence of a simultaneous equilibrium in a multimarket system and uses highly artificial recontracting assumptions in explaining how the equilibrium is attained. Keynes' remark that it is "in the transition that we actually have our being" (1936, p. 343) makes sense within a Marshallian framework; it is meaningless within a Walrasian framework.

Arrow and Hahn's formulation of the essential results of standard economic theory includes the proposition that "price signals would operate in a way to establish . . . coherence" (p. vii). Keynes' theory of effective demand—which can be seen as an adaptation of the Marshallian analytical technique to new problems—shows that the endogenous workings of the price system in an economy with the institutional characteristics of a modern capitalist state does not always operate to achieve and sustain a coherent result; that the financial structure and interrelations determine whether the price system's signals are coherence augmenting; and that, in well-defined situations with observable correlatives, the price system will not work so as to diminish the degree of incoherence.

Arrow and Hahn acknowledge that the formal result that a decentralized economy yields coherence may not be robust, and they ask for an analysis of "the features of the world" that make it "impossible to substantiate the claims [for standard theory]" (p. vii).

What is required is to specify the institutions that make a theory of effective demand necessary and that permit effective demand failures to occur. This is so because any reasonable definition of a "coherent disposition of economic resources" must hold that the existence and persistence of large-scale unemployment is "incoherent." Furthermore, any meaningful definition of "coherent" cannot consider accelerating inflations or cumulative debt deflations as coherent. If the "price signals" are always such as to yield a coherent result, then the normal functioning of a market economy cannot transform reasonable full employment into large-

<sup>1</sup> Among the key works in the emerging post Keynesian synthesis that deal with these aspects are Robinson (1971); Davidson (1972); Kregel (1973); Weintraub (1966); and Chick (1973). My own contributions to this movement include Minsky (1975; 1978).

scale unemployment (i.e., the normal functioning of the price system cannot be disequilibrating) and cannot allow the "normal" reactions of prices to an excess supply of labor (unemployment) to be ineffective in setting into play market adjustments that will tend to eliminate the excess supply. If it can be shown that normal market processes tend to yield either of these results, then standard theory cannot be relevant to those aspects of the economy to which these processes apply.

Arrow and Hahn's first chapter is a historical introduction. It is of interest to note that Marshall is omitted from the main portion of the historical survey of the discipline. The Marshallian analysis of how a short-run "equilibrium" may generate a long-run "disequilibrium" triggering investment or disinvestment is not related by Arrow and Hahn to Keynes' arguments that short-run (profit) expectations lead to the current employment of labor even as longer run (profit) expectations generate investment demand. If Keynes' Marshallian heritage is recognized, then it is clear that Keynes was concerned largely with the signals that prices, wage bills, and profits send back and forth through time, rather than with signals at a given "moment" in which a full Walrasian equilibrium is achieved. If Keynes were placed in a "general interdependence through time" framework, then it would be readily recognized that Keynes was addressing the very question of how coherence is sometimes sustained and sometimes disrupted by the role of institutions in market processes.

It seems obvious that to an inquiring and virile cohort which had been brought up on Marshall, the behavior of the economy during 1929-33 would lead to questions regarding the aptness of the market signals generated by the current behavior of the economy for eliminating the incoherence so evident at that time in both financial markets and the markets determining output and employment. In particular, the virtual collapse of asset prices and investment in the United States during 1930 would focus their attention on how current views of the future combine with current performance of the economy to generate investment demand.

Thus Keynes' division of expectations into shorter run and longer run expectations—with the shorter run expectations affecting the extent to which current production facilities are utilized, and therefore determining the volume of employment that will be offered, and the longer run expectations affecting investment decisions—is a natural extension of the Marshallian short run and long run. But whereas, in Marshall's analysis, the reaction in the invest-

ment-determining longer run market was always such as to eliminate deviations from equilibrium, Keynes argued that the impact on longer run expectations of current developments in product, labor, and financial markets can be ineffective in correcting an incoherence or can make the incoherence worse.

A critical difference between Keynes and the "classical" economists of the tradition, stretching from Smith through Marshall and on to the current generation of price-theoretic economists represented by Arrow and Hahn, is that the analysis of the economy begins from quite different questions and perspectives. The classical analysis from Smith down to today's price theorists is directed toward questions of how particular prices and allocation are determined. The underlying paradigm is that of a "village market." Keynes, writing in the aftermath of a great financial debacle of capitalism, was concerned about the overall behavior of the economy; the perspective is that of an entrepreneur who must "negotiate" with "bankers." Under this altered viewpoint, the initial concerns of economic theory pertain to the decisions to acquire and finance positions or holdings of capital assets. The difference between Keynesian and standard economics is there at the beginning. Although Keynes "borrowed" time-dependent relations from Marshall, he applied such constructs to a quite different formulation of the "basic problem" economics must attack.

It is not enough, however, to assert that Keynes viewed the "economic problem" from a different perspective than Arrow and Hahn, and that Keynesian ideas of equilibrium owe more to Marshall than to Walras.

A good part of the considerable literature on the interpretation and true meaning of Keynes that has appeared in recent years interprets "Keynesian economics" as dealing with a "disequilibrium state" within the framework provided by static Walrasian general equilibrium theory (Malinvaud, 1977). In this analysis, assumptions about market behavior, in the form of sticky prices, are introduced so that "short-side" sales or "rationing" takes place. The constrained "short-side" or "rationing" outcome yields unemployment as a "coherent" state. Wage, price, or interest rate rigidities constrain the working of the economy so that a "pseudo" incoherence in the form of unemployment results; if the constraints were to be removed, however, then market signals would lead to the complete coherence of full employment.

But not only is this disequilibrium approach an insufficient re-

sponse to Arrow and Hahn, it misses the central problem Keynes identified, which is that in a capitalist economy the variables and markets affecting investment demand are different from the variables and markets determining the extent to which employment is offered to produce current output. Current output, in the absence of government, consists of consumption and investment. The variables and markets that are relevant to consumption demand are not the same as those that influence investment. Keynes structured reality in terms of:

(1) the sources of the financing of demand; thus, consumption demand is financed mainly by current and near-term wage income, and investment demand is financed by a combination of profits and the issuance of debt;

(2) the sources of the cash flows that validate debt; thus, the fulfillment of household debt contracts depends on the flow of wages, whereas the fulfillment of business debt contracts depends on either the sale of assets or the flow of profits in the future; and

(3) two sets of nominal prices: (a) those that become the source of cash to cover mainly wage income, i.e., current output prices; and (b) those that reflect current evaluation of future profits. The proximate determinants of the prices of current output are money wages, and the proximate determinants of the prices of capital assets are current expectations of future profits and current views about the assuredness of the market value of different assets.

Keynes' analysis was not concerned solely with explaining the market failures that lead to persistent large-scale unemployment. True, the massive and continuing unemployment of the 1930s was a "critical experiment" thrown up by history, which forced a re-consideration of the validity of inherited economic theory. The incoherence exhibited by the world financial order over 1929-33 was another "critical experiment." Keynes' special theory holds that in a particular conjunction of events, following the incoherence of a financial crisis and a debt deflation process, endogenous market signals are both inefficient and quite likely perverse in eliminating unemployment and stabilizing the prices of capital assets and financial instruments. In these circumstances, the appropriate course would be for fiscal policy signals to override market signals.

The concept of "effective" or aggregate demand and the market processes that determine each transitory equilibrium of effective demand and supply are central to Keynesian theory. They are also central to an understanding of the dynamic processes determining

the behavior of a capitalist economy. Significant incoherence occurs because market processes do not assure that effective demand always will be sufficient to yield profit flows large enough to enable “bankers” and “businessmen” to fulfill their commitments on debts, and the market reaction to such shortfalls of cash flows tends to markedly depress asset values. In addition, when effective demand is sufficient to achieve and sustain full employment, the easy fulfillment of obligations on debt instruments yields market signals that lead to a rise in capital asset prices, an increase in debts, a rise in investment, and a rise in profits, employment, and income. Market processes transform a coherent full employment into the incoherence of an investment and financial boom.

In a closed system without government, effective demand determines realized consumption and investment expenditures. Businesses offer employment and thus produce output on the basis of the profits expected from using labor and existing capital assets to produce and distribute consumption and investment output. These expected profits depend upon what Keynes identified as “short-run expectations.” In determining the supply price at which they will offer their product, producers need to estimate their labor and material costs over the near future. The distributors’ estimates will reflect expectations of income, employment, and price-level developments. Similar considerations over short time horizons that reflect investment projects under way, business authorizations to spend on investment, and financing arrangements being made, influence the employment and output decisions of the producers of investment goods. Employment offered in the construction industry, where projects are undertaken on the basis of “orders in hand,” is also related to short-run profit expectations. Thus, it is short-run expectations that lead to current employment in the production of both consumer and investment goods.

In addition to deciding how to use existing capacity, business has to decide whether, and how, to expand capacity. Whereas the utilization of existing capacity is determined by price, cost, and therefore profit expectations over a relatively short run (six months, one or two years), the decision to expand capacity is determined by profit expectations over a much longer time horizon (ten, twenty, or even forty years). This long time horizon means that uncertainty—in the sense that action must be based on conjectures about future economic and political situations that can in no way be encompassed by probability calculations—enters in an essen-

tial way into the determination of the part of today's effective demand that is derived from investment behavior.

Investment demand is financed in a different manner than consumption demand. Of course, in a world with consumer credit, banks and financial relations affect consumption demand; but the amount of consumer demand financed by debt depends mainly on expected employment, while the demand for investment depends on the terms on which short- and long-term external finance is available as well as the expected profits from using capital assets in production. Thus, the demand for investment output is affected by the long-run profit expectations of both businessmen and the financial community. Finance and financial markets enter in an essential way in generating the effective demand for investment output.

The distinction between the external financing of household demand and the external financing of investment demand and capital asset ownership by business, centers around the time horizon of the credits and the expected source of the funds that will fulfill the debt obligations. Aside from the financing of housing, consumer debt is typically short run. While the banking system does provide business with short-term financing, traditionally for activity based upon short-run expectations, the financing of investment and of capital asset ownership involves longer term equity and debt instruments. Cash required to fulfill consumer debt and housing finance obligations normally is received as wages and other household incomes. Cash required to validate the instruments used to finance capital asset ownership are generated by profits and the way in which longer run profit expectations are transformed into the prices at which assets can be sold or pledged. The role of debt financing and the considerations "bankers" and financial officers take into account are different for households and for businesses.

In a closed system, investment demand ultimately determines whether the short-run profit expectations of businessmen who made decisions to offer employment in order to utilize existing production capacity are validated. If investment demand is at an appropriate level, then the various outputs produced with existing productive capacity will generate the expected flow of profits. If this occurs, then business will continue to offer the same employment to produce the same output, provided that the intervals between the first and subsequent production decisions are so small that ongoing investments do not significantly affect production

possibilities and that the liabilities issued to finance investment do not significantly affect cash payment commitments.

Inasmuch as aggregate profits are generated by the way demand affects the utilization of existing capacity, the validation of short-run profit expectations by realized profit depends upon investment activity. Financed investment demand forces aggregate effective demand, by means of the multiplier, to the level at which savings equal investment. If investment is stabilized, then the aggregate flow of profits is determined. Eventually, by a process of market adjustments, employment will settle at the level determined by correct anticipation of the volume of profits that follows from hypothetically stabilized investment. To each state of long-run expectations there will correspond a level of investment and, if short-run expectations adjust to the profits implicit in that investment level, a level of employment to which the economy will settle. This level of employment, which is consistent with the state of long-term expectations, is a "virtual" equilibrium of the system.<sup>2</sup> It is an implicit rather than an achieved equilibrium. The effects of investment and financing on productive capacity and payment commitments that were placed in the *ceteris paribus* bag will be taking place. These cumulated effects change the implicit equilibrium of the system. Furthermore, if the short-run equilibrium implicit in the state of long-run expectations is attained and then sustained, "stable" or "tranquil" behavior of the economy will result. Such a stable or tranquil state, if sustained for a while, will feed back and affect long-term expectations as to the size and security of profits. This, in turn, will influence views of the uncertainties involved in holding capital assets and financial instruments, which will affect asset values and permissible liability structures.

For the economy to sustain an "equilibrium of employment" in which short-run profit expectations are consistent with financed investment, the profit flows must be sufficient to validate debts, i.e., businesses must be able to fulfill the cash payment commitments embodied in their liability structure. But such fulfillment of debt commitments affects the willingness of bankers and their customers to debt finance. The value of the insurance implicit in holding money decreases as the economy operates, so that current profits are more than adequate to fulfill debts. A stable, tranquil,

<sup>2</sup> Compare the definition of Keynes' meaning of equilibrium given in Kregel (1976).

or coherent mode of performance of the economy implies the comfortable fulfillment of commitments on debts. Such a situation suggests that there are opportunities for businessmen and bankers to profit by increasing debts.

If the particular price and employment configuration that reflects existing short-run expectations differs from full employment, then the question is whether labor, product, and financial market reactions will affect either short- or long-run expectations in such a way that a movement toward full employment takes place. Short-run expectations reflect existing consumption and investment demand. Consumption demand is dependent upon current and expected employment and wealth. Consumption demand is determined largely by employment and expected employment. Investment demand depends on long-run expectations. The question is whether the market adjustments induced by less than full employment will always affect long-run expectations so that the demand for investment increases. Framing the question in this way demonstrates the impossibility of a definitive answer. Falling money wages, interest rates, and markups in the production of investment goods *may* improve longer run profit expectations so that investment demand increases, or they may be accompanied by such a fall in the current market price of capital assets and current profit flows that longer run profit expectations deteriorate. Unless we can predict how expectations will be affected, there can be no a priori answer.

In the years of the great contraction of 1929-33, it seems clear that responses in labor, product, and financial markets to unemployment, excess supply, and difficulty in meeting financial commitments did not combine to improve expectations. Falling wages and product prices, by increasing the burden of cash payment commitments due to existing debts relative to profit flows—which depend on current prices, outputs, and wages—lowered the long-run profit expectations of businessmen and bankers, thus making the profit flows/financial commitments relation less, not more, favorable to ordering investment output.

Thus, there are factors influencing effective demand in a capitalist economy that cannot be linked unequivocally to wage, price, or interest rate rigidities. These factors, however, are only a problem in an investing capitalist economy that has developed sophisticated financial institutions in response to the uncertainty inherent in long-term financial commitments. In such an economy, employ-

ment is offered on the basis of short-run profit expectations, whereas investment demand—which depends upon long-run profit expectations—determines the profits that in fact are realized. Only if market reactions to unemployment change long-run expectations so that investment increases, and if market reactions to excess aggregate demand alter long-run expectations so that investment decreases, can the system be considered as self-equilibrating with its “equilibrium” in the neighborhood of full employment.

Once we have specified the way investment demand is generated by a combination of the economic valuation of the stock of assets (given the institutional framework that determines the financing available from internal funds and financial markets) and the supply price of investment output, then it can be shown how a collapse of asset values, which occurs because of position-making problems of units that use short-run liabilities to finance positions in capital assets, can lead to a collapse of investment. Such a collapse will decrease the profit flows generated by capital assets used in producing output, which in turn makes the fulfillment of some additional business financial commitments more difficult. Financial institutions and financial interrelations are the structures in a capitalist economy that make the development of those long-term expectations leading to a collapse of investment an endogenous phenomenon under the particular circumstances that arise in the aftermath of a sustained expansion. “Incoherence,” but not necessarily chaos, is a normal process result in an economy with private debts that are used to finance positions in capital assets and whose validation depends on the flow of business profits.

This article is an attempt to respond to the model specification of the Keynesian real world sought by Arrow and Hahn. Yet, the problem of specification is not the only point of difference. In chapter 14 Arrow and Hahn introduce money into the model by stating: “Let the subscript ‘*m*’ stand for money that we now regard as the non-interest paying debt of some agency outside our formal system” (p. 349). I suggest that the general equilibrium theorists introduce money into their analyses as follows:

There is a multitude of real assets in the world which constitute our capital wealth—buildings, stocks of commodities, goods in course of manufacture and of transport and so forth. The nominal owners of these assets, however, have not infrequently borrowed *money* in order to become possessed of them. To a corresponding extent the actual owners of wealth have claims, not on real assets, but on money. A considerable part

of this "financing" takes place through the banking system, which imposes its guarantee between its depositors who lend it money and its borrowing customers to whom it loans money with which to finance the purchase of real assets. The interposition of this veil of money between the real asset and the wealth owner is a specially marked characteristic of the modern world. (Keynes, 1931, p. 151)

If economic theory is to aid in explaining the behavior of capitalist economies, then money must be treated not as a "veil" in a bartering transaction, but as a "veil" in a money contract representing a financing relation. If the formal theorists are to be useful, they must first recognize that financial institution relations are endogenous properties of an economic system in which money is "a Keynesian veil."

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