

MACROECONOMICS: A HISTORICAL PERSPECTIVE

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Summary

The present essay is an attempt to organize the historical evolution of macroeconomic theory starting from Keynes. Unemployment being a central problem in macroeconomics, the major ideas in this subject developed around it. While other problems are important, theories concerning them are essentially extensions of theories related to employment. The historical sequence of theories concerning unemployment began with Keynes. Keynesian thought was criticized by Friedman and the monetarists who in turn led to the next stage: that of rational expectations and the new classical school.

The “real business cycle” school has questioned the latter and at the same time there have been attempts to go back to possible micro-theoretic roots of Keynesian economics to build a new Keynesian economics that is free of the criticisms leveled by Friedman and his followers.

1. Scope of Macroeconomics

As with many other disciplines, in macroeconomics one of the hardest tasks for a teacher is to delineate the scope of her subject. Since “micro” connotes “smallness” and “macro” its opposite, it is often thought that microeconomics deals with problems concerning small or disaggregated economic units and objects (such as an individual housewife allocating a limited budget over various commodities), whereas macroeconomics is concerned with large aggregates (such as the size of employment and the value of output for an entire economy). To some extent this distinction is valid, but not entirely so. To appreciate the point, consider the housewife’s problem. The commodities she is dealing with may represent two easily identifiable objects, such as two specific brands of cheese and wine. But more often than not, the textbook housewife is visualized as solving a far more complex problem, such as the optimal allocation of her budget over food and drinks, which by their very nature are aggregative concepts. “Food” stands for *all* eatables while “drinks” denotes *anything* drinkable. Similarly, the economic unit may be an individual housewife (as above), an entire household, a cooperative or, as in Trade Theory, a *whole* economy. How these aggregates of objects or economic units should be constructed is a matter that need not detain us here. The important point is that the allocation problem described above is a partial equilibrium *micro* exercise carried out by a single agent, even if aggregative, in isolation from other agents and institutions in an economy. The example clarifies by default, as it were, that macroeconomics *does not* address partial equilibrium situations. It deals, in fact, with economic problems arising out of interactions between different agents in an economy. The recognition of this fact, however, leads to a new question. Traditionally, interactive situations fall within the domain of General Equilibrium Theory, and the latter is itself an extension of microeconomic reasoning. Indeed, general equilibrium theory deals, by definition, with economic interactions among a large number of agents (including in principle all agents in an economy) and studies the allocation of resources that results from the process. Given this, how do the interactions of macroeconomics differ from those of general equilibrium theory?

The answer to this question lies in the issues with which macroeconomics deals. As J. M. Keynes, the founding father of analytical macroeconomics, visualized the matter, the subject is less concerned with the exact details of allocation of resources among the agents comprising an economy than with the *aggregate* volume of resources that are employable. For example, a recurring theme in macroeconomics is the search for a theory of aggregate employment of labor in an economy. Clearly, the size of this aggregate is more favorably affected when labor-intensive industries produce relatively more than others. And this is possible only to the extent that the products of the different industries are demanded in the right proportion. A given aggregate value of demand will lead to the maximum possible size of aggregate employment provided it is spread judiciously over the industries according to the labor intensity of their technologies. Nevertheless, if the assumed *aggregate* value of demand is small, the best possible level of total employment associated with it will also be small. On the other hand, if the aggregate demand is large, the total employment will be large. This will certainly be true when individual components of demand conform to the maximum employment generating capability of the industries. But it will generally be true even when the exact optimal proportions are not maintained.

The size of aggregate demand or expenditure is therefore a primary determinant of aggregate employment. The composition of demand is of secondary importance, since a negligible aggregate, even if rightly composed, creates a negligibly small employment. This fact is best illustrated in a world where similar classes of agents (say, households, firms etc.) have uniform characteristics. All firms are identical; all households are identical and so on. Needless to say, no actual economy satisfies this description. It is an abstraction at best, intended to study the aggregate impact of agents' interactions by de-emphasizing agent heterogeneity, and hence fine points of allocation problems. By construction, all households demand the same quantity and all firms produce the same quantity of an identical commodity in this economy. The interactions between agents, therefore, determine the allocation of resources in a trivial sense. More significantly, it determines the aggregate size of output and employment.

Seen from this perspective, macroeconomics is a special branch of general equilibrium theory, which is concerned exclusively with explaining the effects of agent interactions on aggregate variables characterizing an economy. It achieves this objective by employing a method of abstraction consisting of assuming away dissimilarities between households and firms. The only interactions of importance that macroeconomics takes cognizance of are those between households and firms (rather than inter-household or inter-firm interactions), the former demanding commodities from the latter and the latter demanding services of labor and capital from the former. For all practical purposes, it is adequate to study the interaction between a single household and a single firm to understand the interactions between firms as a whole and households as a whole. Consequently, the typical macroeconomic model consists of two basic agents, a firm (representing the entire business sector) and a household (representing the entire household sector). They are usually referred to as the Representative Household and the Representative Firm. This does not imply that there are literally two agents in the economy. In fact there are many agents, but their behavior is a replication of the behavior of the Representative Agents. More complex models add other agents to this structure, such as the Government and the Foreign Sector. Yet more models allow for broad dissimilarities within the class of households (such as rich and poor), or the class of firms (such as industry and agriculture). However, each such subgroup within the broader group is once again treated as homogeneous in order to highlight the total effects of interactions.

The pattern of aggregate employment over time is not the only problem that macroeconomics studies. The path of capital accumulation is yet another central issue for macroeconomics. Open economy macroeconomics studies exchange rate fluctuations and their impact on real aggregate variables. However, it is no exaggeration to say that of all these issues, employment fluctuations have probably occupied the central place in macroeconomic thought. Unemployment of labor is a serious problem for any economy, industrially advanced or backward, developing or developed. Governments work in tandem with economists to design policies to remove unemployment, since it is one of the most explosive sources of social discontent anywhere in the world. In rich nations, where workers are accustomed to a high standard of living, unemployment causes loss of welfare. In poor countries, characterized by large masses of unemployed poor, a minimal test for any development program lies in its job creation potential. Keeping this fact in mind, the discussion to

follow will concentrate on macro theories of aggregate employment generation for both advanced as well as developing nations. The discussion will be restricted to closed economies without a foreign sector. This is not to de-emphasize the role of international trade in macro theory. Rather, given the limited scope of an article such as this, it will help to focus attention on one of the central themes of macroeconomics, instead of spreading it thin over a multiplicity of problems.

2. The Keynesian View of Unemployment

Any discussion of a macro theory of unemployment must begin with Keynes, who was the first to weave a comprehensive theory of the subject from a general equilibrium point of view. At the time Keynes was writing, the entire industrial world was reeling under the Great Depression of the thirties. The partial equilibrium theories of employment prevailing at the time were unable to throw much light on the causes underlying the massive unemployment of the 1930s. Keynes argued that the level of unemployment could not be explained by the functioning of the labor market in isolation. One needed an integrated theory of markets linking the labor market to the commodity as well as financial markets to understand the nature of unemployment that plagued the industrial economies. In effect, Keynes was arguing that sustained unemployment is a signal of a general market failure, that is, the inability of market forces to lead the economic system to a full equilibrium. The bare essentials of the Keynesian idea can be presented by means of a model of a closed economy without a Government or a financial sector.

2.2 A Simple Keynesian Model

The economy consists of a Representative Household and a Representative Firm. The Firm produces the single good for the economy by means of labor and capital. The technology of production is summarized by

$$y = F(L, \bar{K}) \quad (1)$$

where y stands for the flow of the commodity produced during a chosen period of time, say a year, L and \bar{K} stand respectively for the services of labor and capital used for the purpose and F is the production function. The bar over K indicates that capital services as well as the stock of capital that generates these services are fixed during the time interval under consideration. In other words, the analysis is restricted to the short run, during which labor is the only variable factor of production. Given that K is fixed, y may be viewed as a function of L alone and written

$$y = f(L) \quad (2)$$

where f is a strictly concave function denoting diminishing returns with respect to L as of fixed K . The Firm is supposed to maximize profit in a perfectly competitive market. The wage rate of labor (w) and the price (p) of y are expressed in an abstract unit of account called money. They are respectively designated as the nominal wage rate and the nominal price level. In the present subsection, money serves no purpose other than

that of a unit of account. Subsequently however, it will have other important roles to perform. The bar underneath w indicates that nominal wages are assumed to be rigid downwards. This assumption implies that in the real world (i.e., a world in which money plays more important roles than a pure unit of account), nominal wage cuts are difficult to implement. As opposed to the nominal wage rate, \underline{w}/p is the real wage rate, or the quantity of y that \underline{w} commands at the given value of p .

The assumption of profit maximization by the Firm yields the familiar first order condition

$$f'(L) = \frac{\underline{w}}{p}, \quad (3)$$

—which is the equation for the competitive demand curve for labor. As \underline{w}/p falls, the profit maximizing demand for labor rises, a fact that follows from the strict concavity of f . The labor demand curve may alternatively be denoted by

$$D_L = D_L(\omega), \quad (4)$$

where ω represents the real wage rate \underline{w}/p .

Equilibrium in the labor market occurs when demand matches supply. To complete the picture therefore, a supply curve must supplement the demand curve in the labor market. This is a relatively simple idea; labor supply is an upward rising function of the real wage rate:

$$S_L = S_L(\omega) \quad (5)$$

The intersection of D_L and S_L determines equilibrium employment L_f in the labor market along with the equilibrium real wage rate ω_f . Plugging the value of L_f in (2), one obtains a corresponding level of output y_f . The economy is in full equilibrium only if this level of output is actually demanded in the market. Put differently, demand puts a bound on what can be produced and sold. Keynes's major contribution was to point out that there is a reverse implication also, from output sold to the amount demanded.

The reverse argument proceeds as follows. If any level of y is produced and sold, then the sales proceeds must accrue as income to the Representative Household. The latter supplies labor services to the Representative Firm. Being the ultimate owner of all capital stock, it is the sole supplier of capital services also. As a supplier of labor it earns ωL , the aggregate value of real wages, where (y, L) is assumed to satisfy (2). As a supplier of capital services, it earns the residual $y - \omega L$, which, for simplicity, one may call aggregate real profit. Thus, the logical implication of y being sold is that the Household earns a sum of real profits and wages equal to y . This is called the real income of the Household. For the time being, the exact form in which the income is paid out will remain vague. Keynes noted that the real value of the demand for the

Firm's output falls into two parts. The first of these is the Household's demand for the Firm's produce. This will normally be a consumption demand induced by the Household's real income, the higher the income the higher the demand. The consumption demand is strictly less than the real income because the Household will typically be inclined to save a part of its income. The Household's consumption demand as a function of its income may be represented by

$$\bar{C} = \bar{C}(y), \quad 0 < \bar{C}'(y) < 1, \quad (6)$$

where \bar{C} is the level of real consumption and $\bar{C}(y)$, an increasing function of y , shows the dependence of consumption on y . Also it is assumed that a marginal rise in y induces a less than proportionate rise in \bar{C} . The extra real consumption caused by a marginal rise in y is called the marginal propensity to consume. Following Keynes, it is standard practice to refer to $\bar{C}(y)$ as the consumption function. By assumption, the real saving of the Household is given by a parallel savings function

$$\bar{S} = \bar{S}(y) = y - \bar{C}(y), \quad 0 < \bar{S}'(y) < 1 \quad (7)$$

which is positive by definition. As with the consumption function, the extra savings from extra income is a positive fraction called the marginal propensity to save. The important point to note about \bar{S} is that it stands simultaneously for Household saving and the part of the Firm's output that remains unsold to the Household.

The second part of the demand for the Firm's output consists of all demand that is independent of the level of current real income. To emphasize the independence from y , such demand will be called autonomous demand. A part of the demand may emanate from the Household itself. However, a large part of it may be a non-Household demand and the nature of this demand will be brought up shortly. It is assumed without any loss of generality that the autonomous demand is entirely a non-Household demand. This real autonomous demand will be denoted by \bar{I} . Given these two categories of demand, autonomous and induced, the total demand for y may be represented by the function

$$\bar{E}(y) = \bar{I} + \bar{C}(y) \quad (8)$$

The function $\bar{E}(y)$ will often be referred to as effective demand following Keynes. Equation (8) captures the reverse implication that Keynes spoke about, demand as a function of real income. Thus, just as the size of demand limits the size of the real output and income, the size of real income limits the size of demand also. A given level of real income and output will then constitute an equilibrium for the commodity market if the effective demand it generates via (8) is equal to itself, i.e., if

$$\bar{E}(y) = y. \quad (9)$$

Plugging (7) and (8) in (9), the commodity market equilibrium condition can also be written

$$\bar{I} = \bar{S}(y) \quad (10)$$

Equation (10) has a simple interpretation. Since $\bar{S}(y)$ represents the part of y that remains unsold to the Household, it must be demanded in order for y to qualify as equilibrium output. Since \bar{I} is the only other source of demand for y , (10) simply says that demand equals supply.

Given the assumptions on the consumption function, there will be a unique y , say y^* , satisfying (9) [equivalently (10)] which will be entirely determined by the parameters of the consumption function (equivalently savings function) and the size of \bar{I} . On the other hand, the value of $y = y_f$ associated with full employment of labor depends on the parameters of the production function and the function describing the Household's labor-leisure choice. The labor required to produce y^* is denoted L^* . In order for L^* to be demanded by the profit maximizing Firm, L^* and the associated real wage rate ω^* must satisfy equation (3), i.e., $L^* = D_L(\omega^*)$. When $y^* < y_f$, the assumptions made about the labor demand and supply functions imply that labor demand falls short of labor supply at ω^* , or $D_L(\omega^*) < S_L(\omega^*)$ and $\omega^* > \omega_f$. Yet the economy is in a state of pseudo-general equilibrium as it were, with the commodity market in equilibrium at the same time that the labor market is characterized by excess supply, i.e., unemployment. Keynes referred to this phenomenon as involuntary unemployment of labor. Involuntary unemployment occurs when a fall in the real wage rate would bring down the extent of unemployment (by increasing the demand for labor and reducing supply). However, the real wage rate cannot be reduced without violating the equilibrium prevailing in the commodity market.

Keynes argued that a lower real wage rate is only a necessary condition for the Firm to provide higher employment. Since higher employment leads to a higher output through equation (2), a set of sufficient conditions for the Firm to employ more is (i) a lower real wage rate and (ii) profits are maximized through *actual* sale of the higher output in the commodity market. In this sense, the employment question cannot be studied by considering the labor market in isolation. The commodity market equilibrium is a fundamentally related issue. Unless equilibrium output rises, unemployment may persist. Keynes took the position therefore that the real wage rate is determined not through bargaining between the Firm and the Household, but by the level of equilibrium output, the corresponding level of employment [equation (2)] and finally the profit maximization condition (3).

According to equation (10), equilibrium output is determined entirely by \bar{I} , given the form of $\bar{S}(\cdot)$. As already pointed out, \bar{I} is non-consumption expenditure. In the absence of a Government and a Foreign Sector, it consists largely of investment demand by the Firm itself to expand the size of its capital equipment. (The addition to capital equipment is an expansion of \bar{K} . While \bar{K} is fixed in the short run, additions to it will be available for production in the future.) Expansion of capital is carried out provided the Entrepreneur running the Firm expects the level of future demand in the commodity market to rise. There is clearly no connection between a fall in the current real wage and

such expectations. There is no reason therefore for \bar{I} to rise in response to a cut in the real wage rate. Hence, y^* could continue to be the equilibrium output in spite of unemployment in the labor market.

When the state of expectations prevents private entrepreneurs from investing, a Government might intervene and raise autonomous expenditure beyond \bar{I} to, say, $\bar{A} = \bar{I} + \bar{G}$. To accommodate for this fact, \bar{A} must replace \bar{I} in (8) and (10). Starting from the equilibrium y^* , a rise in autonomous \bar{A} to \bar{A} leads to an equal rise in $\bar{S}(y)$ for equilibrium to be restored. This in turn requires a rise in y^* itself to (say) y^{**} . However, the value of the marginal propensity to save being strictly less than unity, the change $(y^{**} - y^*)$ must necessarily be larger than the rise in \bar{A} . The factor $[(y^{**} - y^*) / (\bar{A} - \bar{A})]$ measuring the magnified response of y^* to a rise in \bar{A} is called the *multiplier*. The multiplier must exceed unity because $(y^{**} - y^*)$ induces a demand for itself in the form of extra consumption expenditure equal to $C(y^{**}) - C(y^*)$. Hence, for commodity market equilibrium, $y^{**} - y^* = [C(y^{**}) - C(y^*)] + (\bar{A} - \bar{A}) > \bar{A} - \bar{A}$.

The important Keynesian policy message for an economy caught in a low level depressionary trap (low output, low employment) is that some means be found to increase effective demand by raising autonomous expenditure. If private parties do not invest, the Government should create autonomous demand for output. This will boost both output (through the multiplier) as well as employment. The policy should apply to both developed as well as developing economies, but particularly to the latter where private enterprise is in an incipient stage. The Government has an important role to play in raising demand with a view to removing large-scale unemployment and poverty. It will achieve the twin roles of raising output and reducing unemployment through a fall in the real wage rate. Many economists have found the multiplier story appealing. However, there has been disagreement regarding the effect of higher output on real wages. The Keynesian logic implies that the real wage rate moves counter-cyclically. It rises during a depression and falls during economic recovery. Some economists feel that there is inadequate empirical support for this phenomenon.

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Biographical Sketch

Dipankar Dasgupta is Professor of Economics at the Indian Statistical Institute, Calcutta. He began his study of Economics at Presidency College, Calcutta University and received a B.A. in 1963 and M.A. in 1966. He completed his Ph.D. in economics at the University of Rochester in 1972.