Subject – History of Economic Thought - II

Notes Unit 2 Part B

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Components of the neoclassical, or marginalist, theory -

The basic idea in neoclassical distribution theory is that incomes are earned in the production of goods and services and that the value of the productive factor reflects its contribution to the total product. Though this fundamental truth was already recognized at the beginning of the 19th century (by the French economist J.B. Say, for instance), its development was impeded by the difficulty of separating the contributions of the various inputs. To a degree they are all necessary for the final result: without labour there will be no product at all, and without capital total output will be minimal. This difficulty was solved by J.B. Clark (*c.* 1900) with his theory of marginal products. The marginal product of an input, say labour, is defined as the extra output that results from adding one unit of the input to the existing combination of productive factors. Clark pointed out that in an optimum situation the wage rate would equal the marginal product of labour, while the rate of interest would equal the marginal product of capital. The mechanism tending to produce this optimum begins with the profit-maximizing businessman, who will hire more labour when the wage rate is less than the marginal product of additional workers and who will employ more capital when the rate of interest is lower than the marginal product of capital. In this view, the value of the final output is separated (imputed) by the marginal products, which can also be interpreted as the productive contributions of the various inputs. The prices of the factors of production are determined by supply and demand, while the demand for a factor is derived from the demand of the final good it helps to produce. The word derived has a special

significance since in mathematics the term refers to the curvature of a function, and indeed the marginal product is the (partial) derivative of the production function.

One of the great advantages of the neoclassical, or marginalist, theory of distribution is that it treats wages, interest, and land rents in the same way, unlike the older theories that gave diverging explanations. (Profits, however, do not fit so smoothly into the neoclassical system.) A second advantage of the neoclassical theory is its integration with the theory of production. A third advantage lies in its elegance: the neoclassical theory of distributive shares lends itself to a relatively simple mathematical statement.

An illustration of the mathematics is as follows. Suppose that the production function (the relation between all hypothetical combinations of land, labour, and capital on the one hand and total output on the other) is given as $Q = f(L,K)$ in which Q stands for total output, L for the amount of labour employed, and K for the stock of capital goods. Land is subsumed under capital, to keep things as simple as possible. According to the marginal productivity theory, the wage rate is equal to the partial derivative of the production function, or $\partial Q/\partial L$. The total wage bill is $(\partial Q/\partial L) \cdot L$. The distributive share of wages equals $(L/Q) \cdot (\partial Q/\partial L)$. In the same way the share of capital equals $(K/Q) \cdot (\partial Q/\partial K)$. Thus, the distribution of the national income among labour and capital is fully determined by three sets of data: the amount of capital, the amount of labour, and the production function. On closer inspection the magnitude $(L/Q) \cdot (\partial Q/\partial L)$, which can also be written $(\partial Q/Q)/(\partial L/L)$, reflects the percentage increase in production resulting from the addition of 1 percent to the amount of labour employed. This magnitude is called the elasticity of production with respect to labour. In the same way the share of capital equals the elasticity of production with respect to capital. Distributive shares are, in this view, uniquely determined by technical data. If an additional 1 percent of labour adds 0.75 percent to total output, labour's share will be 75 percent of the national income. This proposition is very challenging, if only because it looks upon income distribution as independent of trade union action, labour legislation, collective bargaining, and the social system in general. Obviously, such a theory cannot explain all of the real economic world. Yet its logical structure is admirable. What remains to be seen is the degree to which it can be used as an instrument for understanding the real economic world.

Criticisms of the neoclassical theory -

Returns to scale -

Neoclassical theory assumes that the total product Q is exactly exhausted when the factors of production have received their marginal products; this is written symbolically as $Q = (\partial Q/\partial L) \cdot L + (\partial Q/\partial K) \cdot K$. This relationship is only true if the production function satisfies the condition that when L and K are multiplied by a given constant then Q will increase correspondingly. In economics this is known as constant returns to scale. If an increase in the scale of production were to increase overall productivity, there would be too little product to remunerate all factors according to their marginal productivities; likewise, under diminishing returns to scale, the product would be more than enough to remunerate all factors according to their marginal productivities.

Research has indicated that for countries as a whole the assumption of constant returns to scale is not unrealistic. For particular industries, however, it does not hold; in some cases, increasing returns can be expected, and in others decreasing returns. This situation means that the neoclassical theory furnishes at best only a rough explanation of reality.

One difficulty in assessing the realism of the neoclassical theory lies in the definition and measurement of labour, capital, and land, more specifically in the problem of assessing differences in quality. In macroeconomic reasoning one usually deals with the labour force as a whole, irrespective of the skills of the workers, and to do so leaves enormous statistical discrepancies. The ideal solution is to take every kind and quality of labour as a separate productive factor, and likewise with capital. When the historical development of production is analyzed, it must be concluded that by far the greater part of the growth in output is attributable not to the growth of labour and capital as such but to improvements in their quality. The stock of capital goods is now often seen as consisting, like wine, of vintages, each with its own productivity. The fact that a good deal of production growth stems from improvements in the quality of the productive inputs leads to considerable flexibility in the distribution of the national income. It also helps to explain the existence of profits.

Substitution problems

Another difficulty arises from the fact that marginal productivity assumes that the factors of production can be added to each other in small quantities. If one must choose between adding one big machine or none at all to production, the concept of the marginal product becomes unworkable. This "lumpiness" creates an indeterminacy in the distribution of income. From the viewpoint of the individual firm, this objection to neoclassical theory is more serious than from the macroeconomic viewpoint since in terms of the national economy almost all additions to labour and capital are very small. A related problem is that of substitution among factors. The production function implies that land, labour, and capital can be combined in varying proportions, that every conceivable input mix is possible. But in some cases, the input mix is fixed (e.g., one operator at one machine), and in that situation the neoclassical theory breaks down completely because the marginal product for every factor is zero. These cases of fixed proportions are scarce, however, and from a macroeconomic viewpoint it is safe to say that a flexible input mix is the rule.

This is not to say that substitution between labour and capital is so flexible in the national economy that it can be assumed that a 1 percent increase in the wage rate will reduce employment by a corresponding 1 percent. That would follow from the neoclassical theory described above. It is not impossible, but it requires a very special form of the production function known as the Cobb-Douglas function. The pioneering research of Paul H. Douglas and Charles W. Cobb in the 1930s seemed to confirm the rough equality between production elasticities and distributive shares, but that conclusion was later questioned; in particular the assumption of easy substitution of labour and capital seems unrealistic in the light of research by Robert M. Solow and others. These investigators employ a production function in which labour and capital can replace each other but not as readily as in the Cobb-Douglas function, a change that has two very important consequences. First, the effect of a wage increase on the share of labour is not completely offset by changes in the input mix, so that an increase in wage rates does not lead to a proportionate reduction in total employment; and second, the factor of production that grows fastest will see its share in the national income diminished. The latter discovery, made by J.R. Hicks (1932), is extremely significant. It explains why the remuneration of capital (interest, not profits) has shrunk from 20 percent or more a century ago to less than 10

percent of the national income in modern times. In a society where more and more capital is employed in production, a continually smaller proportion of the income goes to the owners of capital. The share of labour has gone up; the share of land has gone down dramatically; the share of capital has gradually declined; and the share of profits has remained about the same. This picture of the historical development of income distribution fits roughly into the frame of neoclassical theory, although one must also make allowance for the short-run effects of inflation and the long-run effects of technological progress.

Returns to the factors of production -

The demand side of the markets for productive factors is explained in large degree by the theory of marginal productivity, but the supply side requires a separate explanation, which differs for land, labour, and capital.

Rent

The supply of land is unique in being rather inelastic; that is, an increase in rent does not necessarily increase the amount of available land. Landowners as a group receive what is left over after the other factors of production are paid. In this sense, rent is a residual, and a good deal of the history of the theory of distribution is concerned with the issue whether rent should be regarded as part of the cost of production or not (as in Ricardo's famous dictum that the price of corn is not high because of the rent of land but that land has a rent because the price of corn is high). But inelasticity of supply is not characteristic only of land; special kinds of labour and the size of the total labour force also tend to be unresponsive to variations in wages. The Ricardian issue, moreover, was important in the context of an agrarian society; it lacks significance now, when land has so many different uses.

Wages -

In analyzing the earnings of labour, it is necessary to take account of the imperfections of the labour market and the actions of trade unions. Imperfections in the market make for a certain

amount of indeterminacy in which considerations of fairness, equity, and tradition play a part. These affect the structure of wages—i.e., the relationships between wages for various kinds of labour and various skills. Therefore, one cannot say that the income difference between a carpenter and a physician, or between a bank clerk and a truck driver, is completely determined by marginal productivity, although it is true that in the long run the wage structure is influenced by supply and demand.

The role of the trade unions has been a subject of much debate. The naive view that unions can raise wages by their efforts irrespective of market forces is, of course, incorrect. In any particular industry, exaggerated wage claims may lead to a loss of employment; this is generally recognized by union leaders. The opposite view, that trade unions cannot influence wages at all (unless they alter the basic relationship between supply and demand for labour), is held by a number of economists with respect to the real wage level of the economy as a whole. They agree that unions may push up the money wage level, especially in a tight labour market, but argue that this will lead to higher prices and so the real wage rate for the economy as a whole will not be increased accordingly. These economists also point out that high wages tend to encourage substitution of capital for labour (the cornerstone of neoclassical theory). These factors do indeed operate to check the power of trade unions, although the extreme position that the unions have no power at all against the iron laws of the market system is untenable. It is safe to say that basic economic forces do far more to determine labour's share than do the policies of the unions. The main function of the unions lies rather in modifying the wage structure; they are able to raise the bargaining power of weak groups of workers and prevent them from lagging behind the others.

Interest and profit -

The earnings of capital are determined by various factors. Capital stems from two sources: from saving (by households, financial institutions, and businesses) and from the creation of money by the banks. The creation of money depresses the rate of interest below what may be called its natural rate. At this lower rate, businessmen will invest more, the capital stock will increase, and the marginal productivity of capital will decline. Although this chain of reactions has drawn the attention of monetary theorists, its impact on income distribution is probably not very important, at least not in the long run. There are also other factors, such as government borrowing, that may

affect the distribution of income; it is difficult to say in what direction. The basic and predominant determinant is marginal productivity: the continuous accumulation of capital depresses the rate of interest.

One type of earning that is not explained by the neoclassical theory of distribution is profit, a circumstance that is especially awkward because profits form a substantial part of national income (20–25 percent); they are an important incentive to production and risk taking as well as being an important source of funds for investment. The reason for the failure to explain profit lies in the essentially static character of the neoclassical theory and in its preoccupation with perfect competition. Under such assumptions, profit tends to disappear. In the real world, which is not static and where competition does not conform to the theoretical assumptions, profit may be explained by five causes. One is uncertainty. An essential characteristic of business enterprise is that not all future developments can be foreseen or insured against. Frank H. Knight (1921) introduced the distinction between risk, which can be insured for and thus treated as a regular cost of production, and uncertainty, which cannot. In a free enterprise economy, the willingness to cope with the uninsurable has to be remunerated, and thus it is a factor of production. A second way of accounting for profits is to explain them as a premium for introducing new technology or for producing more efficiently than one's competitors. This dynamic element in profits was stressed by Joseph Schumpeter (1911). In this view, prices are determined by the level of costs in the least progressive firms; the firm that introduces a new product or a new method will benefit from lower costs than its competitors. A third source of profits is monopoly and related forms of market power, whether deliberate as with cartels and other restrictive practices or arising from the industrial structure itself. Some economists have developed theories in which the main influence determining distributive shares is the relative "degree of monopoly" exerted by various factors of production, but this seems a bit one-sided. A fourth source of profits is sudden shifts in demand for a given product—so-called windfall profits, which may be accompanied by losses elsewhere. Finally, there are profits arising from general increases in total demand caused by a certain kind of inflationary process when costs, especially wages, lag behind rising prices. Such is not always the case in modern inflations.

Dynamic influences on distribution

Prices -

Neoclassical theory throws light upon the long-run changes in distribution of income. It fails to take account of the short-run impact of business fluctuations, of inflation and deflation, of rapidly rising prices. This failure is an omission, though it is true that distributive shares do not fluctuate as much as employment, prices, and the state of business generally. This lagging in the behaviour of shares can be understood by remembering that they are determined by the quotient of the real remuneration of the factor and its productivity; both variables move, according to marginal productivity theory, in the same direction. Yet inflation and deflation do have a certain impact upon distribution: if purchasing power shrinks, profits are the first income category to suffer; next come wages, particularly through the effects of unemployment. In a depression, the recipients of fixed money incomes (such as interest and pensions) gain from lower prices. In an inflation the opposite happens.

The traditional inflationary sequence was that as prices rose, profits would increase, with wages lagging behind; this would tend to diminish the share of labour in the national income. Experience since World War II, however, has been different; in many countries wage levels tended to run ahead in the inflationary spiral and profits lagged behind, although most entrepreneurs eventually succeeded in shifting the burden of wage inflation onto the consumers. The result of the postwar inflation was a slight acceleration of the increase in the share of labour, while the shares of capital and land decreased faster than they would have in the absence of inflation. Profits as a whole held their own. The struggle among the various participants in the economic process no doubt added fuel to the inflationary fires.

Technology

Another dynamic influence is technological progress. The concept of the production function assumes a constant technology. But in reality, the growth of production is much less the consequence of increased quantities of labour and capital than of improvements in their quality. This element in increased production is distributed in a way not fully explained by neoclassical theory. Part of the change in distribution that is caused by technological progress can be analyzed

as resulting from changes in the elasticities of production. If $\dfrac{K}{Q} \cdot \dfrac{\partial Q}{\partial K}$ goes up, technological change is said to be "capital-using," and the share of capital will increase. This is what, in fact, may have happened; the change in technology has offset, though it has not neutralized, the decline in the share of capital caused by the employment of a higher amount of capital per worker. But another part of the fruits of technological progress is garnered by profit receivers, probably quite a substantial part. Businessmen who are quick innovators make high profits; in a rapidly changing society, profits tend to be high, a circumstance that is fortunate because profits are the mainspring of economic change. The high rate of growth experienced by the post-World War I Western world stemmed from this profit-innovation-profit nexus.

Personal income and neoclassical theory -

The neoclassical theory endeavours to explain the prices of productive factors and the distributive shares received by them. It does not come to grips with a third category of distribution, that of personal income, which is much more affected by institutional arrangements and by characteristics of the social structure. Profits in particular may be shared in various ways: they may accrue to stockholders, to workers, to management, or to the government; or they may be retained in the corporation. What happens depends on dividend policy, tax policy, and the existence of profit-sharing arrangements with workers. Neoclassical theory has little to say on these matters or on the fact that in present-day capitalist society the managers of big business are virtually in a position to fix their own personal incomes. Managers have so much power vis-à-vis the stockholders and their total share of profits is so relatively little that their ability to pay themselves high salaries is limited only by the conventions of the business world. These high incomes cannot be explained by the categories of the neoclassical theory, and they do not constitute an argument against the theory. They may well argue for changes in society's institutions, but that is a matter on which the neoclassical theory of distribution does not pontificate. A great deal of change could occur in the legal and social order without any disturbance to the theory.

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