

Reflections on the Centenary of John Bates Clark

- 'The distribution of wealth' (1899)

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1999 marks the centenary of J.B. Clark's most important book, *The Distribution of Wealth*, subtitled, 'A Theory of Wages, Interest and Profits'. It set out in treatise form the details of the marginal productivity theory, which he is often said to have independently discovered almost a decade or so previously in an article published in the *Quarterly Journal of Economics*, 1890-91, simultaneously with a similar contribution by J.A. Hobson, in which the theory is presented as a 'generalisation of the law of rent'.¹ In addition, as Stigler (1941, p. 297) has remarked, Clark has the distinction of introducing a 'naive productivity ethics', a perspective particularly strongly presented in his *The Distribution of Wealth*. Thirdly, the capital theory contained in that work represented an enduring approach to the subject, resuscitated during the capital controversies by Samuelson (1962) in his defence of received, neo-classical doctrine, a defence decried and demolished in some of the later literature this controversy inspired. Clark's work, therefore, gives plenty of scope for reflection. In what follows, the three issues raised by Clark's book will be briefly revisited. Before that, it may be useful to give a reader's guide to the work.

I

Clark's *The Distribution of Wealth* comprises 26 chapters in all, preceded by a preface in which Clark indicated that the book contained material first published in article form in papers which had been published from 1882 onwards. The preface (p. vii) also drew attention to the fact that the theory of distribution presented in the book resembled, but also differed from, that put forward by the Austrian economists, Carl Menger and Friedrich von Wieser, but that it differed 'most strikingly' from that more recently published by Böhm-Bawerk. Moreover, the preface presented Clark's regrets that the work did not give adequate space to discussing other recently published writings on the subject of distribution by Marshall, Walker, Hadley, Taussig, Smart, Hobson, Macfarlane, Wood and Thompson while it acknowledged as major influences on Clark's thinking the work of Karl Knies (his teacher in Germany), and that of the American economists, Giddings and Patten. Last but not least, the preface drew attention to Clark's major contribution presented within its pages – the principle of 'final productivity' (cf with Jevon's 'final utility') as the basis for distribution theory – and to the specific analysis of capital its application to the theory of interest required. This provides the key to the book and explains its organisation and structure.

The last topic is also explicitly addressed in the preface. Rather than treating the preliminaries first and only at the end enunciating the main proposition, Clark chose to present the main proposition first as a general statement of the basic principle. Only then did he fully explore issues of distribution economics in general, commencing with the proposition that distribution, or the sharing of the product between labour and capital, is 'controlled by natural law' and concluding with an analysis of the impact of social

organisation on actual distribution. The last raised issues of statics and dynamics. For Clark, a dynamic distribution theory was essential, in sharp contrast to what he depicted as the static tradition in distribution theory established by Ricardo. The dynamics of social progress and its effects are, therefore, explored in chapter VI. Two chapters (VII and VIII) then discuss the product of wages and how it may be identified, followed by two chapters (IX and X) on capital as distinguished from capital goods. Chapter XI brings out the dependence of labour productivity on capital and chapter XII establishes the proposition that final productivity is the regulator of both wages and interest. This is subsequently (chapter XIII) presented as a generalisation of the law of rent. A number of broad inferences are drawn from this statement in subsequent chapters before the book concludes with a discussion of further problems raised for the theory from statics and dynamics.

II

The treatment of distribution in Clark's book is totally marginal productivity oriented and, as Stigler (1941, p. 297) noted, even then, 'many continental economists consider Clark to be *the* marginal productivity theory'. Clark's work on the subject, interestingly enough, was inspired by 'the claim advanced by Mr. Henry George, that wages are fixed by the product which a man can create by tilling rentless land' (Clark, 1899, p. viii. cf. pp. 85-88), because this suggested that the product of labour everywhere 'could be disentangled from the product of co-operating agents and separately identified' (*ibid.*).

Distribution for Clark depended on 'organisation', and at the present time (that is, the late nineteenth century) distribution resulted from the fact that for each particular industry, there are employers paying wages to labour and interest to those who supply them with capital (Clark, 1899, p. 27).

The method of identifying the product of labour which determines wages, and the product of capital which determines interest is analogous to the theory of valuing commodities in terms of their marginal utility. As Clark (1899, p. 181) put it :

'In presenting the law of final utility, it is customary to arrange the units of a commodity in an imaginary series, to present them one at a time and to ascertain how important each one is to the consumer. Yet commodities never come to the market in such an order. The whole present supply of a commodity is offering in the market; but the price that it is bringing is fixed by the importance that would attach to the final unit, *if the supply were offered in such a series of units.*

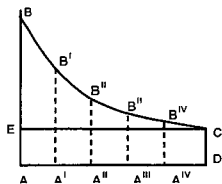
In like manner, you may find it useful, in presenting the law by which wages are fixed, to go through an imaginary operation of setting men at work, one man at a time or one company of men at a time, and thus to find what importance the market places on the last one. This reveals the operation of a law of diminishing productivity; and whether we take a single man or a body of men as the unit of labour, *any unit can get, as pay, what the last one would produce, if the force were set working in this way.*

This proposition can easily be illustrated diagrammatically in a manner which, as Clark also argued, can equally be used to determine interest. This is simply done by reversing the process of what is to be treated as the constant, and what is to be treated as the variable in the analysis.

Let the number of units of labour be measured, in the following figure, along the line AD. Let them be set working in a series, in connection with a fixed amount of capital. The product of the first unit of labour, as aided by all the capital, is measured by the line AB. What the second unit of labour adds to this product is the amount expressed by A'B'. The third unit enlarges the output by the amount A''B'', the next by A'''B''' and the last by DC. DC measures the

effective productivity of any unit of labour in the series and fixes the general rate of pay. If the first unit of labour claims more than the amount DC, employers will let it withdraw, and will substitute for it the last unit. What they lose by the withdrawal of any one unit in the entire force is the amount DC.

A fact of great importance now appears. We may reverse the application of this law, and by so doing get a law of interest. Let the labour be the element that is unchanged in amount, and let capital be the one that is supplied in a succession of increments (Clark, 1899, pp. 181-2).



Clark's analysis explicitly assumed perfect competition and static conditions. Under perfect competition, Clark (1899, pp. 290-1) argued, entrepreneurial profits of necessity are zero. This only left rent to be determined, a problem in principle already solved according to Clark (1899, pp. 191-2), because 'ground rent we shall study as the earnings of one kind of capital goods - as merely a part of interest'. In addition, this demonstrated 'that wages and interest, though they are determined by the law of final productivity, are also capable of being measured exactly as ground rent has been measured.' The Ricardian theory of rent first explained the determination of ground rent. It was easily shown, Clark argued, that the method of Ricardian theory can equally be used for determining the earnings of labour and of capital. 'It is one of the most striking of economic facts that the income of all labour, on the one hand, and that of all capital, on the other, should be thus entirely akin to ground rent.' (Clark, 1899, p. 191). The final, or marginal, productivity principle provides the solution to the problem of distribution in a general manner, according to Clark.

III

Clark's introductory chapter associates his distribution theory with a natural law, the function of which 'is to separate the gross earnings of society into three generic shares that are unlike in kind..... general wages, general interest and aggregate profits' (Clark, 1899, p.2). More strongly, Clark advanced 'the general thesis that, *where natural laws have their way, the share of income that attaches to any productive function is gauged by the actual product of it.* In other words, free competition tends to give to labour what labour creates, to capitalists what capital creates, and to *entrepreneurs* what the coordinating function creates' (Clark, 1899, p.3). Marginal productivity distribution in this way was part of natural law, or, more strongly, of natural justice. It is interesting to note that rent is excluded from this distributive perspective, presumably because it is the free gift of nature.

The justice implications of the problem are more fully explored by Clark subsequently in the chapter. The paragraph quoted below is a good example :

We might, indeed, go into a further and purely ethical inquiry. We might raise the question, whether a rule that gives to each man his product is, in the highest sense, just. Certain socialists have, indeed, contended that such a rule cannot attain justice. Work according to ability and pay according to need, is a familiar formula, which expresses a certain ideal of equity in distribution. This rule would require the taking from some men of a part of their product, in order to bestow it on others who might be more necessitous. It would violate what is ordinarily regarded as a property right. The entire question whether this is just or not lies outside of our inquiry, for it is a matter of pure ethics. Before us, on the other hand, is a problem of economic fact. Does natural distribution identify men's products and their gains? Is that which we get and which the civil law enables us to keep really our own property by right of creation? Do our actual estates rest, from their very beginnings, on production? (Clark, 1899, p.8).

Hence, the proper solution to the problem of distribution serves also in practice as a safeguard for the law of property. If wages and interest and profits are paid according to what is actually produced by their recipients (labour, capital and entrepreneurs respectively), no robbery or theft is perpetrated on the sources of all wealth, that is, income. As Clark (1899, p. 9) put it, 'Property is protected at the point of its origin, if actual wages are the whole product of labour, if interest is the product of capital, and if profit is the product of the coordinating act'.

The prices produced by this distribution are, therefore, natural prices, the prices which enable an economic organisation to persist (Clark, 1899, p. 16). Moreover, an actual distribution conforming to the principle of 'final productivity' cannot be exploitative in any way. After all, it awards each productive agent precisely with its productive contribution, that is, with what it has itself produced. Clark proudly claimed for his theory of distribution that it was ethically sound and socially just. As Stigler (1941, p. 297) sadly remarked, Clark's attitude 'afforded some grounds for the popular and superficial allegation that neo-classical economics was essentially an apologetic for the existing economic order a made-to-order foil for the diatribes of Veblen'.

IV

As part of the distribution theory, Clark developed a distinction between what he called 'true capital' and 'capital goods'. The latter consisted of what is productively used in industry, such as instruments and machines utilised for specific productive purposes in the manufacture of commodities. The former was more difficult to define. At one stage, Clark depicted it as a giant fund, 'sixty-five billion dollars', not tied up in specific appliances, 'but free to invest themselves in other things.....' (Clark, 1899, p. 113). Elsewhere, Clark (1899, pp. 272-3 and n.) described such capital as tending 'everywhere to be equally productive', in sharp contrast to capital goods, which can vary in productivity and therefore do not share this attribute.

However, Clark (1899, p. 273 n.) explicitly warned that this capital fund did not consist of a stock of consumption goods or wage goods, free to be employed in the hiring of labour for the purpose of constructing any type of equipment or machine. Such a notion had no empirical validity ('there is no such store in existence') and, more importantly, goods devoted to consumption purposes, or, more simply, food stocks for labourers, could never be described as capital goods, being essentially the very opposite of such goods. Furthermore, and likewise critical of the Austrian capital theory perspective of Bohm-Bawerk and Wicksell, Clark (1899, pp. 129-31) vigorously attacked the notion of capital as pure 'time', that is, as reflecting the productivity inherent in more lengthy production periods.

Clark's productive-fund-of-true-capital concept received further discussion in chapter XX of his book. The essential notion expressed in that chapter is, that provided capital goods are fully maintained and replaced, the capital value they embody can be seen as a permanent and constant fund. This is the thrust of Clark's (1899, pp. 312-14) famous analogies of water flowing into a pond and of the conservation strategy for a forest designed to keep the supply of firewood for a family at a permanent level geared to their needs. As the title of this chapter ('Production and Consumption synchronised by rightly apportioned capital') proclaims, this basically amounts to a mechanism for the coordination of production and consumption over time in order to produce a continuously maintained outcome stream.

The subsequent chapter (XXI) introduced the notion of flexibility to this fund with respect to the productive needs of a variable labour supply. A famous passage (Clark, 1899, pp. 331-2) describes this principle, indicating it as basic to Clark's analysis of distribution presented in the book. It can therefore be quoted at length:

As we have, throughout this study, kept constantly before our eyes the fact that, whenever one man comes into the force, the capital changes its forms and adapts itself to the number of men who are to use it, so we have to keep as constantly in mind the fact that the modes of labour itself have to change in a parallel way. A working force may be built up, unit by unit, so that the enlargement of the force seems to be quantitative; but the change in labour, abstractly regarded, is mainly qualitative. More effort is expended, as the force enlarges; but it shows itself, not so much in doing things that were formerly left entirely undone, as it does in doing nearly everything in a more perfect manner. If the work is agricultural, the ground will be more evenly fertilized, the seed more uniformly distributed, etc. This is one type of change that labour, as a process, undergoes when workers become more numerous. Another type of change is that which is caused by the altered character of the tools and other appliances that a labourer has to use, as the force becomes larger, while the amount of the capital remains the same. Every change in the instruments with which men work changes the mechanical movements in which work consists. Labour, however, is capable of being measured in units, as though it were homogeneous; and there is a practical method of measuring the product of all of it (Clark, 1899, pp. 331-2).

It is almost immediately conceded by Clark (1899, p. 334) that distribution studies based on this permanent true capital fund need to be supplemented by studies of specific capital and their concrete products (or rents). As definite quantities of wealth, rents can be attributed to all capital goods (from the humble axe or spade to boats, houses and complicated machines). As product of the capital good, rents can be expressed as a percentage rate of return, simply by relating it in percentage terms to the value of the capital good which created them (Clark, 1899, p. 336). This is the form which interest takes for capital goods, and under conditions of perfectly free competition, such interest rates are equalised to each other and to the pure interest on the permanent, 'true capital' fund. The last, therefore, under perfect competition, can act as a first class proxy for the interest rates on capital goods in specific, concrete forms (Clark, 1899, chapter XXII).

It was this Clarkian view of the capital problem which Samuelson (1962) adopted in his famous presentation of the surrogate production function, constructed as if it embodied a full-fledged model of heterogeneous capital goods. Samuelson's (1962) position drew important criticism (e.g. Robinson, 1970; Garegnani, 1970). The debate ended with Samuelson's frank admission that the simple capital goods story as told by him, following Clark (1899), was not 'universally valid'. Its honest conclusion is worth quoting: 'if all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy

existence. We must respect and appraise the facts of life' (Samuelson, 1966, p. 250). Clark's capital theory was therefore given the death blow, two-thirds into that century of its existence being here commemorated.

V

Clark's book, nevertheless, is a book worth commemorating even if its contents have not stood the test of time with respect to validity and usefulness. It was a major text which pioneered the marginal productivity theory of distribution. Another aspect of these contents, only briefly mentioned as part of the readers' guide, is worthy of further treatment. This contains Clark's attempt to deal with issues of statics and dynamics, on the sound presumption that dynamic results are worth more than conclusions based on statics. Unfortunately, the dynamics of distribution achieved by Clark in this book are as illusory as the static conclusions about the validity of which the author was more hopeful. This gives a special twist to the final sentence of the final paragraph of the book which can be quoted in full, thereby also giving Clark the last word in these centenary reflections on his famous book.

But the task of developing this branch of science is so large that the execution of it will occupy generations of workers. As limitless as any other scientific field is the domain of economic dynamics; and, though early results may be modest, the value of any of them will be great enough to reward the hardest labour, while the unreached areas that will open before the explorer's eye, at every step in advance, will lure him to work that for difficulty and for fruitfulness will surpass any which has thus far been undertaken. Yet, whatever movements the dynamic division of economic science may discover and explain, static laws will never cease to be dominant. All real knowledge of the laws of movement depends upon an adequate knowledge of the laws of rest (Clark, 1899, p. 442).

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Notes

¹ The 'independently' is an important qualification, given the many other discoveries of the theory well before 1890-91 in various parts of Europe. It may be noted here that J.B. Clark also claimed independently discovery of the marginal utility principle in his *The Philosophy of Wealth* (1885) which was apparently based on articles first published between 1877 and 1882.

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