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Abstract

David Ricardo (1772-1823) and Thomas Tooke (1774-1858) were contemporaries in the 'golden era' of English classical economics, along with Malthus, Torrens and McCulloch. The central figure in that era was undoubtedly Ricardo with his vital contributions to the 'core' analysis of value and distribution. By contrast, Tooke's vital contributions were mainly to the empirical analysis of prices as well as to the theory of money and prices, the latter made well after Ricardo's premature death in 1823. Whereas Ricardo can be characterized as the 'Logician', the supreme deductive thinker among classical economists; Tooke can be characterized as the 'Empiricist', the supreme inductive thinker among classical contemporaries. The purpose of this paper is to explore the relationship between these two economists with their very different approaches to economics and to compare their different but vital contributions to the development of classical economics. We first consider and show the path-making nature of Ricardo's contribution to the development of the 'core' theory of value and distribution. The paper then considers Tooke's banking school monetary theory, showing it to represent an outright rejection of Ricardo's well established monetary theory. It is argued that Tooke's monetary theory provides a more valuable and lasting contribution than Ricardo's quantity theory of money to the modern development of classical economics. In the brief conclusion we reconcile the different contributions of these two economists to modern classical economics.

1. Introduction

David Ricardo (1772-1823) and Thomas Tooke (1774-1858) were contemporaries in the 'golden era' of classical economics, along with Malthus, Torrens and McCulloch. The central figure in that era was undoubtedly Ricardo with his important contributions to the 'core' theory of value and distribution and it can be claimed that the 'golden era' essentially came to a close with Ricardo's premature death. By contrast, Tooke's important contributions to the theory of money and prices in classical economics came well after Ricardo's demise and they represented an outright rejection of Ricardo's well established monetary theory. In the golden era, when Tooke first became acquainted with Ricardo, apparently after giving evidence to the parliamentary committees on the resumption of cash payments in 1819, he had not yet published any economic writings. It is evident though that Ricardo was much impressed with Tooke's grasp of factual economic and financial information as well as his wide knowledge of the workings of the commercial world, which he displayed in evidence to various parliamentary committees and, especially in evidence to the Commons Select Committee on Agricultural Distress in 1821. Indeed, as Tooke (1857, V: 66-7) later recounted, Ricardo was instrumental as a member of the latter committee in summoning him to give evidence before it. In this respect, Tooke not only supported Ricardo on resumption of the gold standard but was a strong supporter of free trade and the abolition of the Corn Laws. Much of the evidence Tooke gave to the 1821 Committee on Agricultural Distress against the operation of the Corn Laws so impressed Ricardo that he cited it heavily in his 1822 pamphlet 'On Protection of Agriculture' (see 1951-73, IV: 221, 228, 231, 259). It was advocacy of free trade which in fact became the basis for the inception of the Political Economy Club. As its historian has documented, the Political Economy Club was established in April 1821 with the initial purpose of advancing the principles of the 'Merchants Petition' written by Tooke and signed by most economic writers, including Ricardo (see Higgs 1921:x-xi).

Whereas Ricardo was considered by his classical contemporaries to be the 'logician', a 'deductive thinker' *par excellence*, Tooke was considered to be an 'empiricist', and, indeed, can be rightfully considered to be the supreme 'inductive thinker' of the English classical economists. A symbiotic relationship of this very sort seems to have been perceived by Ricardo when he encouraged Tooke in his work on prices to write his first publication *Thoughts and Details of High and Low Prices of the last Thirty Years* published in 1823. In a letter to Malthus dated 16 December 1822 Ricardo wrote: 'I saw Tooke for a few minutes, and was glad to hear from him that he had been writing, and was nearly ready for press. I have a very good opinion of his judgement and of the soundness of his view – he will, I think, from his practical knowledge, throw much light on the question of the influence of an over supply or an increased demand, without a corresponding supply, on price' (1951-73, IX: 250). In Ricardo's system the theoretical counterpart of actual prices is 'market prices' determined by a complexity of factors to be explained from empirical evidence by reference to the interaction between quantity demanded and supply brought to market. Who better then to study price fluctuations than an empirically minded intellect like Tooke. This fundamental difference in their methodological approach was well reflected by Ricardo's tendency to interpret factual events consistent *a priori* with his theory which contrasted with Tooke's approach of establishing the concrete facts in all their complexity by empirical analysis in order to construct a theory. Hence, while Ricardo did not change his monetary theory after 1811 when he had largely worked it out, Tooke progressively altered his position over some thirty years until he had developed his banking school theory by the 1840s.

The purpose of this paper is to explore the relationship between these two economists with their very different approaches to economics and to compare their different but vital contributions to the development of classical economics. In section 2 we consider Ricardo's vital contribution to the development of the 'core' theory of value and distribution in classical economics. Then in section 3 we consider Tooke's vital contribution to the development of monetary theory in classical economics. A brief conclusion is provided in section 4.

2. Ricardo's Vital Contributions to the 'Core' Theory of Value and Distribution

Like all great thinkers Ricardo was a system builder. The starting point for Ricardo was Adam Smith's 'system' of political economy in the *Wealth of Nations* (1776). In developing his own system, Ricardo focussed on correcting the errors and omissions of

Smith's political economy.[1] For Ricardo most of the errors in Smith's political economy with respect to tax incidence, rent theory, monetary theory and the effects of wages on prices derived from what he called the 'original error' in the theory of value and distribution. This original error, as Sraffa (1951, I: xxxiv-xxxvi) showed, emanated from an *adding-up theory* of value and distribution in Smith (1776 [1979]: 65-72) in which natural price is conceived to be determined by the sum of its cost components, consisting of the natural wages of labour, the natural profits of capital and the natural rent of land employed in the production of commodities according to the given technique of production. A distinctive feature of this theory is that the distributive variables are explained as if they are determined independently of each other for a given technique. In particular, Smith's adding-up theory supposed that other things given an increase in natural wages led to a general increase in natural prices without any definite effect on distribution (see Ricardo 1951-73, I: 46). The problem that Ricardo perceived was that a theory of value needed to account for the interdependency between the distributive variables. Hence, Ricardo rejected Smith's adding-up theory on the grounds that for a given technique any increase in wages must involve a reduction in non-wage income (Aspromourgos 2014: 10-12). He recognized that the theory of value was intricately connected to distribution in which the income shares are interdependent. As Ricardo famously wrote in the preface to the *Principles*:

> To determine the law which regulates this distribution, is the principle problem in Political Economy: much as the science has been improved by the writings of Turgot, Stuart, Smith, Say, Sismondi, and others, they afford very little satisfactory information respecting the natural course of rent, profit, and wages (1951-73, I: 5).[2]

As is well known Ricardo originally articulated his theory of distribution in the pamphlet *An Essay on the Low Price of Corn on the Profits of Stock* published in 1815. In this essay Ricardo provided the first deterministic theory of the rate of profit in classical economic thought, whereby the natural rate of profit was functionally determined on the basis of the causally prior determined natural real wage rate and the technique of production employed. Consistent with the 'surplus approach' of earlier classical economists, profits and rent are determined in Ricardo's theory as a residual of the social product after deducting the means of production, consisting of the necessary consumption of workers.

A potential complication to developing a theory determining the *rate of profit* is how to treat the rent on land. In fact Ricardo appears to have initially developed his theory independently of any theory of rent (see De Vivo 1987: 191-2). It is a measure of Ricardo's genius as a logician that he adopted a theory of rent along the same lines as

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[1] In the preface to the *Principles* Ricardo wrote:

> The writer, in combatting received opinions, has found it necessary to advert more particularly to those passages in the writings of Adam Smith from which he has reason to differ; but he hopes it will not, in that account, be suspected that he does not, in common with all those who acknowledge the importance of the science of Political Economy, participate in the admiration which the profound work [i.e. *Wealth of Nations*] of this celebrated so justly excites (1951-73, I: 6)

[2] Also see Ricardo (1951-73, VI: 315-16).

Malthus which was entirely consistent with his own theory of distribution.[3] According to this theory rent accrues to landlords on the basis of the difference in the productivity of superior quality lands to that of the least productive land brought into use upon which the rent is zero.[4] Hence, given a uniform rate of wages, the rate of profits on lands of higher productivity will be greater than the rate of profit on the least productive lands, the difference equal to the rate of differential rent. In this conception competition will tend to bring about a uniform rate of profit in agricultural production on all lands whatever their productivity equal to that on the no-rent (marginal) land. In this way Ricardo essentially got rid of rent in the analysis of distribution: 'By getting rid of rent … the distribution between capitalist and labour becomes a much more simple consideration' (1951-73, VIII: 194). The rate of profit for farming on all lands was thereby determined by that on the no rent land. This meant that rent on land was determined sequentially on the basis of the prior determined rate of profit.

In Ricardo's theory the rate of profit is determined as the ratio of the profits of stock and the capital used in production as consisting of the wages advanced to labour (i.e. necessary consumption of the workers). The profits of stock is determined as a surplus of the social product after deducting the capital used in its production. This theory fundamentally proposed that for a given technique there was an inverse relationship between the rate of profits and wages in which the rate of profit depended on the wage rate such that 'profits would be high or low in proportion as wages were low or high' (Ricardo 1951-73, I: 111). Hence, the general rate of profit was explained by reference to the prior causal determination of the natural wage.

In the *Essay on Profits* Ricardo had essentially articulated this theory in a simple corn model in which the datum – the corn output and the capital as wages advanced to labour – was measured in terms of one commodity, corn.[5] To apply the theory more generally to an economic system Ricardo ingeniously supposed that the general rate of profit for the manufacturing sector was determined by that in the agricultural sector according to the ratio between the physical quantities of corn produced (i.e. output) and the corn making up the wages of labour (i.e. capital). This is what Sraffa (1951, I: xxxiii) called Ricardo's 'corn-ratio' theory of profits. However, as Malthus showed, this theory supposed implausibly that manufacturing products did not enter into agricultural production directly, as a separate input to labour or, indirectly, as part of the wages of labour. Once this was allowed for then the rate of profit determined in the agricultural sector would be dependent on and be affected by changes in the relative price of manufacturing products to agricultural products (i.e. corn). On recognising this Ricardo abandoned the corn-ratio

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[3] In the *Essay on Profits* Ricardo wrote:

> In all that I have said concerning the origin and progress of rent, I have briefly repeated, and endeavoured to elucidate the principles which Mr. Malthus has so ably laid down, on the same subject, in his 'Inquiry into the Nature and Progress of Rent' (1951-73, IV: 15 n).

[4] The implicit assumption here is that there is no scarcity of no-rent land for productive use.

[5] As Sraffa wrote:

> The advantage of Ricardo's method of approach is that, at the cost of considerable simplification, it makes possible an understanding of how the rate of profit is determined without the need of a method for reducing to a common standard a heterogeneous collection of commodities (1951: xxxii).

theory and sought to develop a more general theory of the rate of profit which accounted for prices (see De Vivo 1987: 189-90).

In *On the Principles of Political Economy, and Taxation* Ricardo articulated the same theory of distribution but now based it on a theory of value in which through competition the net rate of profit is conceived to be determined uniformly across all sectors. As is well known Ricardo employed the labour theory of value, whereby the value of commodities is conceived to be equal to the quantity of labour directly and indirectly necessary for their production. The rate of profits remains determined by ‘the proportion of production to the consumption necessary to such production’ (Ricardo 1951-73, VI: 108) in which these magnitudes are measured in value by the amount of labour they embody. This proportion itself depends on the technique of production and the real wage. For Ricardo the crucial point was that for a given technique of production the relative prices of commodities were fixed according to the proportional labour embodied in their production such as to suppose an inverse relationship between the rate of profit and the real wage. Of course Ricardo came to realize that there was a logical problem because changes in distribution caused relative prices of commodities to vary from the relative quantities of labour embodied in their production which, in turn, undermined the determination of the profit rate by reference to labour value. Indeed, to his credit Ricardo endeavoured to account for the difficulties by way of ‘modifications’ to his theory of value. In vain he searched for an ‘absolute’ measure of value which was independent of changes in distribution (see De Vivo 1987: 192-4).

Notwithstanding that Ricardo did not resolve the problem that the prices of commodities are dependent on, and determined interdependently of, distribution, he made a huge contribution to the development of the classical theory of value and distribution. Importantly Ricardo showed that natural prices must be determined for a given technique of production on the basis of the interdependence between the distributive variables which he was able to do by adopting the labour theory of value and rejecting Adam Smith’s labour-commanded theory. In this way he restored consistency to the classical theory of value and distribution (see Garegnani 1984: 299-304). Indeed, on either the assumption that the economic system only employs labour as an input to production or that all commodities are produced using the same technique (i.e. uniform proportions of capital to labour), Ricardo’s functional theory of distribution is valid. Moreover, by identifying problems with the labour theory of value, Ricardo contributed greatly toward the later development of the classical theory of value and distribution by notably, Marx and, then Sraffa (1960). In no small way was Sraffa (1960) assisted in resolving the logical problems in the determination of natural prices and distribution in classical theory by being the editor of Ricardo’s *Works*.

3. Tooke’s Vital Contributions to Monetary Theory

As has been well recognized by economists and economic historians alike, Tooke’s six-volume *History of Prices* (1838-1857) provides an invaluable empirical study of the British economy over the period from 1792 to 1856. The main purpose of Tooke’s empirical study was to explain the movement of prices over this period which involved a an analysis of many aspects of economic activity: cyclical variations in output, monetary behaviour, political events and the role of central bank policy and British government policies, especially on trade protection. As Ricardo had hoped in 1822 Tooke provided in this work an exhaustive analysis of market prices in classical economics. In conducting this empirical analysis Tooke's approach was entirely consistent with the long-period method in the theory of prices developed by Adam Smith and then followed by the classical economists: identify the *general* and *persistent* factors determining the average costs of production and trend prices of commodities and then go to the *specific* and *fitful* factors influencing the interaction between demand and supply to explain market prices (see Smith 2011: 28-31). Indeed, Tooke's empirical-based analysis of short-run price fluctuations by reference to temporary and specific factors affecting the interaction between demand and supply represents a most important contribution. Moreover, Tooke's empirical study, which included considerable analysis of monetary behaviour and policy, was the concrete foundation upon which he developed his banking school monetary theory. It is this monetary theory which is Tooke's most vital contribution to classical economics.

The Ricardo and Tooke connection is in fact best known for their opposing monetary theories. As is well known, Ricardo developed his monetary theory in the bullionist controversies which raged over the causes of the depreciation of the pound sterling against the pre-1797 mint gold standard during the restriction period of 1797-1821 when the Bank of England was not required to convert its bank notes into gold on demand. Importantly, these controversies took place against the background of the long-running French Wars of 1793-1815 with the English economy experiencing high and unstable price inflation. Ricardo was a leading proponent of the bullionists who argued that the depreciation of the pound and the high inflation was predominantly attributable to the excess of paper money in circulation caused by the Bank of England's over issue of bank notes under the inconvertible currency system of restriction. They argued for the restoration of convertibility and the gold standard which they believed would prevent the Bank of England from over issuing bank notes. While Tooke was also a bullionist who argued for an immediate return to convertibility in 1819 he did not agree with Ricardo's monetary theory.

Among English classical economists Ricardo was an exponent of a rigid version of the quantity theory of money. According to Ricardo (1951-73, III: 311) causation ran systematically from the quantity of money (consisting of Bank of England notes and coin) to the price level. In Ricardo's (1951-73, III: 88-90, 276-7, 301; V: 436-8) theory the velocity of circulation was an institutional datum, essentially fixed by the banking habits of the public, and national income was fixed at full-capacity utilization by Says Law. On this basis, the quantity of money is conceived to be under the exogenous control of the Bank of England as the central banking authority, so that if it increased (decreased) its issue of notes then, given velocity and income, it would tend to increase (reduce) the price level. An important element in Ricardo's (I: 363-4) theory is that in the event of an increase in the quantity of money the rate of interest would decline in relation to the rate of profit to ensure that the excess of money would be absorbed through borrowing to circulate commodities at higher prices. Only in an inconvertible monetary system, which was the case in Britain during the restriction period 1797-1821, did Ricardo's quantity theory apply both to the short and long run. In a gold (or silver) convertible system of currency, Ricardo's quantity theory was confined to the short-run because the 'price-specie-flow' mechanism operated to effect changes in gold (or silver) reserves to compel the Bank of England to adjust its issues in order to remove any excess (or shortage of) money in circulation. Hence, under a system of gold (or silver) convertibility, the discretionary power of the Bank of England to persistently influence the quantity of money was neutered.

Ricardo's quantity theory of money became the basis for the Currency School's position in the 1840s which Tooke opposed as the leader of the Banking School. By this time Tooke had developed his banking school theory of money and prices as an alternative to the classical economist's quantity theory of money which he rejected on both theoretical as well as empirical grounds. The central proposition of Tooke's (1840, III: 200; 1844: 123) banking school theory was that the quantity of money is determined endogenously by demand so that causation ran from activity and prices to the quantity of money in circulation. An implication of this was that the Bank of England, as the central banking authority, did not have the discretionary power to autonomously regulate the quantity of money in conflict with the requirements of trade. Any attempt by the Bank of England (or the banking sector as a whole) to autonomously expand its banknotes in circulation which was not justified by public demand would be returned to the banking system by way of 'reflux'; while, alternatively, effective measures to withdraw banknotes and coin from active circulation in relation to public demand would result in their substitution by other less convenient monetary instruments (i.e. credit). In this regard Tooke maintained that there was considerable elasticity in the English financial system to accommodate by way of credit finance variations in economic activity and the price level as contingent on the prevailing state of market confidence. Tooke (1844: 19-20, 71-2; 1848, IV: 173-218) argued that the power to autonomously enlarge the quantity of money could only be systematically exercised by a government issuing compulsory fiat money in an inconvertible monetary system to finance its expenditures and, thereby, force it directly into circulation. Otherwise, the power of the Bank of England to influence money in circulation depended on how its temporary influence over interest rates affected activity and prices. However, on this point, Tooke denied a systematic and predictable causal influence of the rate of interest on the inducement to spend. In particular, he denied that the facility to borrow at a low rate of interest on its own provided sufficient inducement to an increase in expenditure on commodities, arguing that the 'error is in supposing the disposition or will to be con-extensive with the power [to purchase]' (1844: 79). Hence, Tooke's argument that the banks, in particular the Bank of England, did not have the power to autonomously expand or contract the whole quantity of money in circulation at its discretion is premised on a rejection of any systematic causal influence of the rate of interest on spending.

Another original proposition of Tooke's banking school theory is that the long-run average money rate of interest constitutes a normal cost of production of commodities so that permanent changes in this rate exert a positive causal influence on the long run general price level. Hence, Tooke (1844: 81, 123-4) argued that a persistent reduction (increase) in the rate of interest would reduce (increase) the cost of production and, through competition, bring about a lasting reduction (increase) in the general price level. It is evident Tooke (1838, II; 346-7) developed this conception from empirical evidence showing a strong correlation between long-run movements of the rate of interest and the general level of prices. Whereas a temporary change in the money rate of interest had no distinct effect on prices, Tooke maintained that a permanent change had a lasting effect on prices 'directly opposite to those which are commonly supposed' (1840, III: 166). This conception of money interest as a normal cost of production was essentially the basis of Tooke's unorthodox notion adopted at least from 1838 that the money rate of interest systematically governs the normal rate of profit, the latter determined by the sum of the average money rate of interest plus the remuneration for risk and trouble on the employment of capital in production. In this connection Tooke (1826: 5-31; 1838, II: 355-64) conceived that in the long run the average rate of interest was determined autonomously and causally prior to the profit rate, by politico-institutional and conventional factors in the financial market which, in conjunction with the process of accumulation, governed the supply of and demand for loan capital (see Smith 2011: 145-53). This conception by Tooke of the money rate of interest as being determined by forces in the financial system independent of and causally prior to the profit rate was subsequently adopted by J.S. Mill (1874 [1844]: 108-117), Marx (1894: 361-5) and, indeed, Keynes (1936: 203-4; 1937: 123).

The banking school Tooke showed that a major problem with the classical economists' quantity theory of money, which Ricardo did much to establish, was that it lacked a plausible transmission mechanism by which a central banking authority could exogenously control the quantity of money. He did this by showing that in classical economics there was no basis for supposing a systematic and predictable causal influence of a change in the money rate of interest in relation to the rate of profit on the inducement to spend. From the standpoint of classical economics, not only is Tooke's banking school theory, with its central conception of endogenous money, as coherent as Ricardo's quantity theory of money but provides a more valuable and lasting contribution to its modern development following the revival of its theoretical approach by Sraffa (1960) (see Smith 2011: 197-204, 218-31). Perhaps it is ironic that Tooke developed his alternative banking school theory of money and prices on the basis of the empirical work published in Volumes I-III of his *History of Prices* (1838; 1840) which Ricardo had encouraged from the beginning.

4. Conclusion

The main argument of this paper is that Ricardo, as the 'logician', and Tooke, as the 'empiricist', both made different but vital contributions to the development of classical economics in the modern form it is today. By modern we mean the form classical economics has taken with its reconstruction following the revival of its theoretical approach chiefly by Sraffa's *Production of Commodities by Means of Commodities* (1960). There is no doubt that Ricardo is the most important contributor, after Adam

Smith and before Marx, in the development of the *core* theory of value and distribution in classical economics. By establishing the inverse relationship between the real wage and profit rate for a given technique, by developing the differential theory of rent to get 'rid of rent' in the determination of natural price and to show that relative prices were dependent on distribution, Ricardo contributed greatly to the scientific advancement of classical economics.

Interestingly, while Ricardo's theory of distribution was sound, the explanation he proposed on the basis of his theory for the re-distributive effect of employing marginal (or no-rent) land of worsening quality in agricultural production to meet a growing demand for food was not very plausible. During Ricardo's time instead of the resulting higher rent which went to English landlords causing the rate of profit to decline for a given real wage, the evidence is that it was the real wage of workers which declined. It is paradoxical then that Tooke's explanation, based on the inferior adding-up theory with labour-commanded value (i.e. money wage numeraire), was more empirically plausible in contending that higher rent was associated with a lower real wage for a given rate of profit (Smith 2011: 41-3). This paradox is explicable by the logical possibility in Ricardo's theory of distribution of reversing the sequence of determination to that running from the rate of profit to the real wage. Indeed, providing theoretical support for Tooke's explanation, Sraffa (1960: 33) showed that by taking the rate of profit as the exogenous distributive variable the real wage can be determined as a residual along with relative prices for a given technique of production, based on the assumption that the real wage is determined at levels normally above a subsistence wage (also see Pivetti 1991). This alternative resolution of distribution by Sraffa is entirely consistent with a labour-commanded measure of value in which the wage is treated as the numeraire for the determination of relative prices. The point is that Sraffa was only able to demonstrate such an alternative explanation of distribution having solved the fundamental problem arising from prices depending on distribution which Ricardo had first encountered. In this connection, the revival of classical economics is closely related to Ricardo's contribution, or rather to their re-discovery by Sraffa as editor of *The Works and Correspondence of David Ricardo* (1951-73).

There is also no doubt that Tooke is the most important contributor to the development of monetary theory in classical economics though this has not been fully appreciated until after its modern revival. With its reconstruction there have been two major lines of theoretical development that has an important bearing on the formulation of monetary theory. The first consists of explaining the level of social output and its growth by way of the Keynesian demand-led theory compatible with the classical theory of prices and distribution. The second consists of explaining distribution by taking the rate of profit rather than the real wage as the independent distributive variable, as discussed above. Based on a strict interpretation of Says Law, Ricardo's quantity theory of money approach is not at all compatible with the theoretical framework of modern classical economics. By contrast, Tooke's banking school theory with its conception of endogenous money is, as shown in Smith (2011: 218-26), largely compatible with modern classical economics. In this connection, Tooke's conception that the long-term money rate of interest constitutes a normal cost of production on the basis that the rate of interest governs the normal profit rate, as discussed in Section 3 above, contributes toward what is called the 'monetary explanation of distribution' in which the rate of profit is treated as the exogenous distributive variable so that the real wage is residually determined (see Pivetti 1991: 20- 32). Together with the highly plausible conception, initially proposed by Tooke, that the long-term rate of interest is determined entirely by monetary forces in the financial system, this explanation of distribution implies that contrary to long-run money neutrality that is characteristic of tradition theory, monetary forces can exert a persistent influence on real economic variables such as the real wage and aggregate output. Indeed, Tooke's banking school theory has contributed toward opening up the possibility in modern classical economics of supposing that monetary forces, in particular monetary policy, exert a lasting influence on the real economy, permanently affecting growth and distribution, as well as the rate of money price inflation (see Smith 2011: 227-31). Just as Ricardo the 'Logician' has made an important contribution to the development of the classical theory of value and distribution, Tooke the 'Empiricist' has made an important contribution to the development of the theory of money and distribution in the formation of modern classical economics.

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