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**The Monetary Thought of
Thomas Tooke**

by

Matthew Smith

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Abstract

The leading theorist of the Banking School and author of the monumental six volume *History of Prices* (1838-1857) and the brilliant pamphlet, *An Inquiry into the Currency Principle* (1844), Thomas Tooke (1774-1858) is one of the most prominent figures in nineteenth century monetary thought. This paper aims to expound the central features of Tooke's monetary analysis. The paper first examines his early pre-banking school views on monetary questions which led him to reject the classical quantity theory. It then examines Tooke's banking school principles on the relation between money, interest and the price level. By way of conclusion, the logical consistency of Tooke's monetary thought within the theoretical framework of classical economics is examined critically in order to evaluate its relevance to contemporary monetary economics.

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THE MONETARY THOUGHT OF THOMAS TOOKE

CONTENTS

	Page
1. Introduction	1
2. Tooke's Pre-Banking School Views	3
3. On Money, Interest and Prices: Banking School Principles	13
3.1 Endogenous Money	13
3.2 Interest and Prices	21
3.3 Interest and Profits	25
3.4 Causality	31
4. Tooke and Classical Economics: A Critical Assessment	33
References	40
Addendum	64

1. Introduction

The leading banking school theorist and author (with William Newmarch) of the monumental *History of Prices*, Thomas Tooke (1774-1858) is a prominent figure in the history of monetary economics. Well known for his role in the Currency School versus Banking School debates in England during the mid-nineteenth century, on monetary questions, Tooke wrote prolifically and gave evidence before many parliamentary committees. Underscoring his intellectual standing, Tooke was an elected Fellow of the Royal Society, and, along with Ricardo, Malthus, James Mill and others, played a key role in the foundation of the Political Economy Club in 1821, of which he took a prominent part in its discussions until late in his life.¹ Major contemporary economists thought highly of Tooke's writings which spanned nearly thirty-five years from 1823 to 1857 and which dealt with a range of monetary issues which arose during a period of considerable development in money and banking in England.² Many of these issues, in particular, the relation between interest and prices, the exogeneity versus endogeneity of money, the role and importance of credit in the monetary process and central bank rules versus discretion in the conduct of monetary policy, have re-surfaced time and again in economic debate and remain of relevance today.

In consideration of Tooke's contribution there is general agreement among commentators in the history of economic thought that there are two main phases in the evolution of his monetary thought: the pre-

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banking school phase and the banking school phase.³ The pre-banking school phase covers Tooke's writings and committee evidence from 1819 to 1838 - from his appearance before the Commons and Lords committees for resumption of cash payments in 1819 to the first two volumes of *History of Prices* (1838)⁴ - when his views on monetary questions remained within the bounds of orthodoxy. In this phase Tooke's work consists mainly of a methodical account of the determination of price fluctuations in England over the period, 1793-1838, deduced from an exhaustive collection and analysis of historical information and statistical evidence. The banking school phase involves a decided transformation in Tooke's monetary thought in which he develops some significant general principles more consonant with his observation of the facts in outright opposition to monetary orthodoxy. These principles relate to the connection between money, interest and prices, and constitute the theoretical foundation of the banking school position. This second phase of Tooke's contribution cover his writings and committee evidence from 1840 to 1857; comprising among his writings, Vols.III-VI of the *History of Prices* (1840; 1848; 1857) and the *Inquiry into the Currency Principle* (1844).⁵

The purpose of this paper is to clarify the central features of Tooke's monetary thought in relation to the classical theoretical framework. Section 2 outlines Tooke's views on monetary issues during his pre-banking school phase. It shows how Tooke eventually came to reject orthodox monetary doctrine and develop, as an alternative, his novel banking school principles. Section 3 examines Tooke's banking school principles on the connection between money, interest and prices (and the price level), most systematically presented in his *Inquiry into the Currency Principle* (1844) and further elaborated upon in volume IV of the *History of Prices* (1848). Section 4 critically evaluates Tooke's monetary thought from the perspective of classical economics and considers its constructive relevance to contemporary monetary economics.

2. Tooke's Pre-Banking School Views

The overwhelming focus of Tooke's pre-banking school writings was to explain the fluctuation in prices in England by a thorough analysis of the facts. This began with his first publication, *Thoughts and Details on High and Low Prices* (1823 [1824]), consisting of a large scale empirical study of price movements over the tumultuous thirty year period, 1792-1822. This work was subsequently incorporated into volumes I and II of *History of Prices* (1838), which provided an enlarged empirical analysis of prices covering the period, 1792-1837. Naturally, monetary issues occupy an important part of Tooke's analysis. In this regard Tooke was intent on formulating from his findings recommendations on the conduct of monetary policy by the Bank of England and on institutional modifications to the banking system. He derives from his empirical analysis views on the operation of the monetary system in relation to price movements and commercial fluctuations. Some original conceptions were developed by Tooke in the *Considerations on the State of the Currency* (1826) and then subsequently incorporated into *History* (1838, I and II). These notions would later take on greater analytical significance within Tooke's banking school doctrine. However, for the most part, Tooke's pre-banking school monetary thought represents a reconciliation between his empirical findings and the prevailing quantity approach to money. The key to understanding Tooke's early and not yet matured monetary analysis lies in his increasingly uneasy attempt to reconcile his empirically derived explanation of price fluctuations with prevailing monetary theory.

The method of analysis employed by Tooke in explaining price movements is entirely consistent with the classical approach to prices, especially as developed by Adam Smith in the *Wealth of Nations* (1776, I.vii., pp.72-81; also see I.xi, e-p, pp.193-264). In Tooke's analysis a clear

distinction is made between short run and long run price movements. Whereas short run price changes are seen to be the result of disparities between the demand for and supply of commodities brought to market, long run secular price movements are attributable to changes in the 'average' cost of producing and bringing to market an 'average' supply of commodities. The 'average' supply corresponds to the 'average' technical conditions in which commodities are produced in their tendency toward (if not actual) equality with 'average' demand. Consistent with the classical approach to prices, Tooke's empirical analysis proceeds on the basis that long run secular prices are to be explained by reference to *persistent* (and *general*) factors influencing the 'average' costs of supplying commodities and that short run price fluctuations are explained by *also* taking account of the *temporary* (and more *specific*) factors which cause imbalance between market demands and supplies.

In his price analysis Tooke follows the classical approach, largely developed by Smith (1776, I.vii., pp.73-81), that commodity outputs tend to adjust to their 'effectual' demands. Hence, the main focus of Tooke's inquiry is on locating those causes of disruption to the actual processes of adjustment of supply to demand which give rise to price fluctuations. While 'effectual' demands are liable to change in the longer run with technical change and substitution effects, Tooke finds demand conditions to be more stable in the short run than supply conditions. Tooke does not rule out the influence of short run variations in demand which are attributed to monetary factors and credit conditions. Nevertheless, it is supply conditions which are seen to be the main originating cause of short run price fluctuations in his analysis. Even heavy speculative purchases in commodity markets which are facilitated by easy credit availability are mainly explained by reference to anticipated supply shortages by traders. Tooke identifies 'natural and political' factors as the main causes of disruption to market supply: firstly, 'natural' variations in seasonal conditions affecting agricultural outputs; and secondly, 'political'

circumstances affecting commercial access to and the naval transport of imported commodities from overseas sources. In his empirical analysis Tooke ascertains the temporary influence of these factors on market supply as the main cause of short run price fluctuations. The systematic influence of 'natural and political' factors on 'average' costs of supply is also factually ascertained by Tooke in his explanation of long run secular price movements.

So in his large scale historical study of prices in the period, 1793-1837, Tooke attributes the movement in the price level predominantly to circumstances that alter supply conditions of commodities and affect their costs of supply rather than to alterations in the system of currency which occurred with the suspension of specie payments by the Bank of England in 1797 and then resumption of convertibility at the pre-1797 official gold price in 1821. The upward phase in prices - which Tooke dates from 1793 to 1814 - is mainly attributed to 'natural and political' circumstances tending to restrict the supply of commodities and raise their costs of supply: to "the frequent recurrence of seasons of an unfavourable character" which reduced on average agricultural output and raised corn prices; to the higher costs of imported commodities (including substitutes for domestic goods in shortage), especially freight and insurance costs of shipping, in the context of the various "obstructions and prohibitions of export from the Continent of Europe" imposed by revolution and the French Wars; to the depreciation in the sterling exchange "which in the last five years of the war averaged 20 per cent, thus adding so much to the cost of all imported productions"; and to a "higher rate of interest, in consequence of the absorption by the war loans of a considerable proportion of the savings of individuals...constituting an increased cost of production" (1838, II, pp.346-7). In Tooke's historical analysis the secular rise in prices over this period is accompanied by greater short run price fluctuations connected to frequent disturbances to market supplies. While Tooke stresses the adverse impact of unfavourable seasons, his

explanation of price movements during this period is clearly dominated by the 'political' circumstances of Britain's war with France. According to Tooke not only did the French wars - by adversely interrupting Britain's commercial access to foreign markets - restrict the supply of overseas commodities but were also ultimately responsible for the country's financial instability, and, in particular, the severe depreciations in the sterling exchange rate. Tooke (1838,I, pp.156-9, 207-9, 352-3; II, pp.29-30, 52-3) in fact argues that along with large corn imports, foreign remittances abroad by the government for the purpose of financing military operations on the European Continent was the primary cause of the most severe depreciations of sterling. The downward phase in the price level from 1814 to 1837 is mainly attributed by Tooke to a reversal in these 'natural and political' factors affecting supply conditions: to a "succession of more favourable seasons"; to a reduction in the cost of imports following the cessation of war and a "rise of the foreign exchanges"; to "[I]mprovements in machinery, in chemistry, and in the arts and sciences generally, all tending to reduce the cost of production of numerous articles, or to provide cheaper substitutes"; and to a "reduction of the general rate of interest, and a more extensive application of individual accumulations [of savings] to reproduction at a diminished cost" (*ibid*, pp.348-9).

Tooke's empirically informed explanation of price movements as depending mainly on 'real' factors did not accord with the prevailing view among economists of the early part of the nineteenth century. The commonly held view was that the upward phase in prices was predominantly due to the suspension of cash payments in 1797 which facilitated an excess circulation of inconvertible banknotes and a depreciation in the value of the currency; and conversely, that the downward phase in prices was due to the curtailment on the amount of circulating medium by the resumption (and process of resumption) of cash payments in 1821. Despite Tooke's discordant view he does not abandon

monetary orthodoxy. As a strong supporter of resumption and the gold standard, Tooke clearly sides with the bullionists, though his views conformed more closely to those of the moderate bullionists such as Thornton and Malthus than to those of Ricardo.⁶ As suggested above he was also considerably influenced by Adam Smith in relation to monetary processes and in the explanation of price movements, which was the overwhelming focus of his early work.⁷ Tooke's moderate position is reflected in the reservations he held about the practical operation of the Ricardian price-specie-flow mechanism under a system of full-convertibility: that 'real' factors such as harvest failures and foreign remittances abroad could have a direct and regular influence on trade and specie flows so causing sharp depreciations in the foreign exchanges independent of the amount of paper money in circulation;⁸ that the restoration of external balance and the exchanges effected through a relative fall in domestic prices to foreign prices would work slowly and heavily depend on the elasticity of demand for exportable commodities supplied by a country (1819, Qs.13-17, p.170), on the purchasing power of trading countries and on the extent of prevailing trade prohibitions; and that in a paper currency system with full convertibility, internal monetary circulation could vary considerably in relation to specie holdings of the Bank of England.⁹ In these reservations lie the seeds of Tooke's progressive dissatisfaction with the Ricardian quantity approach to money, and they would later form the basis of the many arguments he would advance against the Currency School in the 1840s. However, within his early, not yet developed monetary analysis, Tooke does not conceive these objections as undermining the theoretical pre-eminence of Ricardo's international monetary adjustment process but as practical difficulties that should be taken into account when explaining monetary phenomena and in the formulation of banking policy (more on this below).

A crucial premise in monetary orthodoxy that Tooke does not dispute in his pre-banking school writings - though there is evidence of his

increasing uneasiness as to its validity - is the power of the Bank of England and other note-issuing banks to *autonomously* alter the quantity of money in circulation. However, Tooke determines from his empirical study that variations in the quantity of money associated with the fundamental change in the system of currency that accompanied the restriction of specie payments on demand in England to be only a secondary cause of actual fluctuations in the price level. He contended that part of the price inflation in England during the restriction period *which induced a premium on the paper sterling price of gold over its mint price* was attributable to an excess issue of inconvertible notes (see Tooke, 1824, pp.16-18, 144; 1826, pp.2-3, n.; 1838, I, pp.1-6, 128-173). The greater part of inflation, that is *indicated by a rise in the paper price of commodities over the paper price of gold (i.e. a rise in the gold price of commodities)*, was attributable to circumstances of a persistent nature affecting the supply conditions of commodities (*ibid.*). Since there was little scope for the sterling price of gold to deviate from its official price under a convertible currency system, Tooke upheld that the relative decline in the price level after resumption was associated with alterations in the gold price of commodities attributable to factors affecting the cost of bringing commodities to market. In this manner Tooke reconciled his explanation of price fluctuations with monetary orthodoxy; albeit, a reconciliation that disguised a substantial difference between his explanation and the dominant theoretical opinion which would later confront him in policy debate.

Connected to the role of money in price fluctuations, a distinctive aspect of Tooke's early analysis, which set him apart from the Ricardian position, was that the amount of paper currency in circulation could vary considerably in relation to Bank of England notes (as well as in relation to coin and gold reserves) in correspondence with variations in prices. From his observation of the facts Tooke had discovered that the stock of Bank of England notes was relatively low at times of high prices and high at times

of low prices (see Tooke, 1824, pp.88-120; 1826, pp.86-7, n.; 1838, I, p.367; II, pp.123-6).¹⁰ Tooke argued that rising prices were normally associated with speculative activity in commodity markets, the extent of which would aggravate the range of fluctuation because the eventual turnaround and collapse in prices would be more severe as speculators extricated themselves from a declining market in a commercial atmosphere of 'stagnation and despondency'. As mentioned above, consistent with his view of the 'originating cause' of price fluctuations, Tooke contended that the main stimulus of speculative activity was natural or political events adversely affecting the supply conditions of commodities;¹¹ and, in the case of stock and share speculation, by the overestimation of prospective returns connected to the 'opening up of new fields of investment' (cf. 1824, pp.63-9). Similar to Thornton (1802, pp.96-100) and before him, Smith (1776, II, ii., pp.292-4), Tooke maintained that the velocity of circulation (of Bank of England notes) alternated according to market 'confidence': rising in a 'spirit of speculation' with rising prices; and falling in a state of 'stagnation and despondency' with falling prices (Tooke, 1824, *ibid.*; 1838, I, pp.148-152). At least in the short run, variations in prices and economic activity are seen by Tooke to occur somewhat independently of variations in the volume of money under the direct control of the Bank of England and involves variations in the velocity of circulation of Bank of England notes.¹²

The permissive role of credit in price fluctuations (of both commodities and securities) was clearly thought by Tooke during his pre-banking school phase to be an important aspect of the operation of the monetary system. This informs his views on banking policy. Tooke advocated that while the Bank of England should be ultimately guided by the state of exchanges in regulating its issues, it should primarily use discount policy to moderate credit expansion that would otherwise facilitate speculatively-driven price fluctuations. According to Tooke the primary mechanism by which the Bank could influence the monetary

situation (as well as shore up its specie reserves) was through adjustments in its 'official' discount rate relative to the short-term 'market' rate. In Tooke's view the 'average' market rate of interest is determined by the supply of and demand for loans "when the amount of currency has become settled, for any length of time, at a particular level" such that "every alteration in the amount of currency produces a temporary effect upon the the rate of interest" (1826, pp.23-4, n.). It is clear from his writings that Tooke saw *temporary* variations in the 'market' rate of interest to reflect liquidity pressures, not only in terms of the rate vis-a-vis foreign rates, but also in terms of internal demands for Bank of England notes and/or gold as a precaution against discredit of paper currency holdings. Thus, in times of low confidence, most assuredly in a state of 'stagnation and despondency', Tooke regards a rising 'market' rate as an indicator of an oncoming drain of gold reserves that may, in a serious financial crisis, threaten the ability of the Bank of England to meet payments on demand. In order to stave off serious financial pressure on the Bank, which will inevitably follow a speculative 'boom', Tooke argues that the Bank must take a non-accommodating stand by raising the level of its discount rate above the 'market' rate at any signs of speculative activity in the commodity and security markets. Tooke argues that this course of action - which today is referred to as 'leaning against the wind' - will not only moderate speculative activity by restricting credit but also bolster gold reserves and maintain confidence in the currency in the event of an 'extraordinary' demand. He believed that the main public responsibility of the Bank of England was to safeguard currency convertibility by maintaining a high 'average' reserve of gold as a check against an 'extraordinary' demand caused by natural and political events (not least a large importation of corn to meet domestic shortfalls following a bad harvest) (cf. Tooke, 1826, pp.86-100). It is for this reason that Tooke argued that the Bank of England needed scope for discretionary action. Notwithstanding Tooke's skepticism of the Bank's role as a 'lender of last resort', his emphasis on the role of discount policy and his appreciation of

the difficulties faced by the Bank of England in managing the currency, would strike a familiar chord with the modern 'central banker'.

The acquiescence by Tooke to the classical quantity approach to money extended only to its relevance to the long run maintenance of the gold standard. Tooke's strong adherence to currency convertibility was based on the notion that specie flows would regulate paper money issues to the extent of limiting price movements associated with variations in the exchange price of gold around its mint price (Tooke, 1838, I, pp.153-5). However, as we have seen, Tooke held considerable reservations about the practical operation of Ricardo's international adjustment mechanism, which he regarded as a long run process. For Tooke, the *actual* maintenance of currency conversion in a paper money system was regularly threatened by exogenous disturbances that demanded *active* management on the part of the Bank of England.

This brings us to the question of the viability of Tooke's reconciliation with monetary orthodoxy. Crucial to this reconciliation is that a paper money system with full convertibility would not suppress price fluctuations in the short run, nor persistent price inflation in the long run, of the kind attributed by him to 'real' factors during the period of restriction. The substance of Tooke's argument is that under whatever monetary system, price movements and associated fluctuations in economic activity can be accommodated by variations in credit. As a matter of fact this reconciliation by Tooke is ultimately found to be inconsistent with Ricardo's monetary analysis which contends that under a fully convertible currency system, wherein the mint price of gold is the undisputed monetary standard, all commodity prices in terms of the gold standard vary inversely to changes in the amount of paper money in circulation as regulated by specie flows. Thus according to Ricardo, a hardline bullionist, irrespective of whether the initial cause of price inflation and an unfavourable balance of payments is attributable to 'real'

factors such as a bad harvest, under a system of full currency conversion, the price-specie-flow mechanism would ensure a sufficient contraction of banknotes to suppress the prices of commodities in terms of the gold standard and restore external balance.¹³ So whatever the initial disturbance, the persistence of inflation was ultimately ascribed by Ricardo to an excess issue of notes (Ricardo, 1811, pp.58-64). This doctrine which formed the basis of the currency principle was therefore antithetical to Tooke's 'real' explanation of price movements derived from a thorough examination of the facts. It is with the rise of the Currency School and its advocacy of banking policies which had the *intent* of giving *practical* effect to this doctrine that Tooke seriously questioned his acquiescence to orthodoxy.

What is apparent in Tooke's pre-banking school writings is the view that the Bank of England's power to suppress price fluctuations was limited; it could only moderate them by restricting credit expansion that would otherwise facilitate speculative activity. In this task, Tooke thought the Bank required scope for flexibility in the conduct of its operations, chiefly attained by holding a larger gold reserve, to cope with 'extraordinary' financial demands that would inevitably arise from natural and political events in the reality of the commercial world. The proposal of the Currency School theorists to separate the banking and note-issuing functions of the Bank of England with the aim of compelling the Bank to regulate its issues strictly in line with specie flows was therefore seen by Tooke to considerably restrict its room for manoeuvre, and hence, its ability to deal effectively with financial pressures as they arose. It was in light of the growing debate over the Currency School's plan for the separation of the Bank of England that Tooke began to focus on critical issues in monetary theory, and, in particular, the validity of the currency principle. By the early 1840's when the debate reached its height, Tooke had finally abandoned any reconciliation with orthodoxy, developing principles that he was convinced could be derived from his

empirical analysis and which represented a clear departure from the classical quantity approach to money.

3. On Money, Interest and Prices: Banking School Principles

The formation by Tooke of general principles on the relation between money, interest and prices as a constructive alternative to the monetary analysis of the classical quantity theorists was begun in volume III of *History of Prices* (1840). In this work Tooke outlined in nascent form a number of propositions which would become the basis of his banking school analysis. This analysis was given its most coherent presentation in the *Inquiry into the Currency Principle* (1844). In volume IV of *History of Prices* (1848), Tooke makes use of the contributions by Fullarton (1844), J.S. Mill (1844) and Wilson (1847) to further develop and refine various aspects of his monetary theory. The *History* (1848) is in this sense an important adjunct to the *Inquiry* (1844) in fully composing Tooke's banking school monetary thought. In volumes V and VI of the *History of Prices* (1857) Tooke clarifies some aspects of his thinking without making any substantial advance upon his monetary analysis. The main focus of Tooke's later writings were on defending his views and exposing the adverse practical consequences of the operation of the 1844 Bank Charter Act.

3.1 Endogeneous Money

The central proposition of Tooke's banking school analysis is that the quantity of money in circulation is an endogeneous and not an exogeneous variable, such that a change in the quantity of money has no prior causal influence on prices but is instead dependent on a prior causal change in prices. By money, Tooke means not only coin and banknotes (paper currency), but also cheques, bills of exchange and any other credit

instruments used as a means of payment in the monetary economy.¹⁴ To quote Tooke:

“...the prices of commodities do not depend upon the quantity indicated by the amount of bank notes, nor upon the amount of the whole circulating medium; but that; on the contrary, the amount of circulating medium is the consequence of prices” (1844, p.123).

This view is of course consistent with Tooke's empirically informed argument that price movements are mainly dependent on non-monetary factors affecting the supply conditions of commodities and their costs of production. The proposition was basically founded on the argument that the banking system did not have the capacity to alter monetary circulation without recourse to those independent circumstances affecting economic activity and/or prices (*ibid.*, p.66). In the context of the Currency School versus Banking School debates of the 1840's this proposition held that, in particular, the banking system cannot influence the quantity of banknotes because they, like other media of exchange, are demand-determined. According to Tooke's *law of reflux*, should the banks through competition expand their issue of convertible notes, in absence of a corresponding demand by the public, the notes will simply return to the banks (*ibid.*, pp.60-62). The banks, including the Bank of England, did not possess the power to control the amount of banknotes in circulation; their note issues were effectively regulated by public demand. Even if through regulation, the amount of banknotes in circulation could be successfully withdrawn in relation to the requirements of trade, their monetary function would be performed, with some inconvenience, by other substitute monetary instruments (*ibid.*, pp.21-3).

To fully understand Tooke's conception of endogeneous money it is necessary to consider the dual circulation framework that underlies it. The dual circulation framework is of great importance to Tooke's

conceptual distinction between currency and capital in connection with the operation of the banking system and monetary processes. This framework was derived directly from Smith (1776, II.ii., pp.322-3), whereupon final expenditures between “consumers and dealers” predominantly carried out with the use of notes and coin ultimately determine and limit “the total amount of [capital] transactions between dealers and dealers” predominantly carried out with the use of credit. So on the one hand there is monetary circulation between dealers and dealers that relate to “intermediate processes of manufacture” which are “resolvable into movements or transfers of capital” (Tooke, 1844, p.36). In taking deposits and advancing loans (i.e. discounting bills) the banks effectively facilitate the collection, distribution and employment of capital associated with the expedition of large scale transactions normally associated with intermediate processes of production (*ibid.*, pp.34-5). This is by far the greatest part of monetary circulation in terms of the volume of money flows but not the number of transactions. This circulation therefore involves a relatively small circulation of notes and coin because transactions are mainly facilitated by credit instruments. On the other hand, notes and coin, which for his purpose Tooke defined as ‘currency’, are used in monetary circulation associated with a large number of small sized transactions between ‘dealers and consumers’. These transactions relate to final expenditures and wage payments. By holding currency reserves banks facilitate these transactions by receiving deposits and making cash payments on demand (see *ibid.*, pp.36-7).

In this conceptual framework Tooke maintained that at given supply prices, the total quantity of circulating medium is determined by ‘effectual’ demand which ultimately depends on the “aggregate of money incomes devoted by expenditure for consumption” (*ibid.*, p.123). Tooke arrives at this view by applying Smith's principle of limitation which he explicitly quotes:

“The value of the goods circulated between the different dealers never can exceed the value of those circulated between the dealers and the consumers; whatever is bought by the dealers being ultimately destined to be sold to the consumers” (*ibid.*, p.71; quoted from Smith, *ibid.*, p.322)

Following Smith’s approach of vertical integration, Tooke imputes the cost of intermediate stages of production into the prices of commodities destined for final consumption. Immediately after citing Smith’s principle of limitation, Tooke states that “the prices at which commodities have gone into consumption, *the result of them constituting the return for the capital expended in the production*, may be considered with greater propriety than any other description as general prices” (*ibid.*; emphasis added). This means that the supply prices of all commodities destined for final consumption include the costs of capital (including commodities used only as inputs in intermediate production) in their production. In this way Tooke, like Smith, conflates gross (money) income with net (money) income such that final expenditures determine the aggregate value of gross output. ¹⁵

Upon this conceptual framework Tooke was able to argue that if there was, say, an increase in the demand for circulating medium due to an exogenous rise in prices and money income, there was sufficient elasticity in the monetary system in the short run to allow for variations in the velocity of currency (banknotes and coin) in circulation associated with its substitution by credit instruments predominantly by manufacturers and merchants. This would leave sufficient banknotes and coin to meet the additional demand required for final expenditures between dealers and consumers at higher levels of money income. It underlies Tooke’s view of the secondary importance of bank notes in the operation of the monetary and banking system. Moreover, it is significant that Tooke seems to be arguing in terms of an *income* velocity of

circulation rather than the usual *transaction* velocity of circulation used by classical economists. This logically follows from Tooke’s view that the quantity of banknotes and coin depend largely upon final expenditures out of money income. Thus, according to Tooke, if there is an increase in prices, due ultimately to an alteration in production conditions, and, heightened by commodity speculation among ‘dealers’, this would be facilitated by an expansion of credit and an increase in the velocity of currency rather than any significant increase in banknotes and coin. In this respect Tooke believed that the demand for money was not simply dependent on money income but was also highly dependent on ‘confidence’ to extend credit, whereupon a ‘spirit of speculation’ would be accompanied by a rise in velocity; and, ‘stagnation and despondency’ associated with lower prices, would be accompanied by a fall in velocity and tighter liquidity conditions.

A further aspect of Tooke’s analysis is that bouts of commodity speculation and rising prices ultimately collapse because of the lack of ‘effectual’ demand due to the inadequate purchasing power of consumers. This is the main significance of the principle of limitation: whereby money income (especially wages) and aggregate consumption demand is the ultimate check on rising prices. On this point Tooke says “the eventual fall of prices will not be from deficiency of the quantity of currency in the country to sustain the advance...but from the inability or unwillingness of the consumer to pay the advanced price, and from restoration, actual or expected, of the usual or greater supply” (*ibid.*, p.75). It is underconsumption which eventually brings the escalation of prices to an end, and is an important causal factor in the financial crisis which results from intense speculative activity and overtrading.

In Tooke’s picture the principle of limitation is an expression of the correspondence between the adjustment of circulating medium to public demand in the monetary system with the tendency for commodity outputs

to adjust to their effectual demands. This link emerges with greater clarity in Tooke's distinction between changes in long run prices, involving permanent changes in supply conditions and costs of production, and changes in short run prices, involving a temporary inequality between the demand for and supply of commodities. This distinction is made by Tooke in the following way:

"If prices of one or more articles of consumption fall from diminished demand, and continue for any length of time below the *cost of production*, the supplies will fall off until, in consequence of the diminution in supply, the price rises, so as again to cover the cost. Or if the cost of production is raised by *permanent* causes, the means of the consumers being limited, if the article is not necessary of life, and if the supply fall off so as to raise the price, there will be a permanent falling off of the demand, and less of the article will be produced and consumed. But, *given the cost of production*, and barring the effect of vicissitudes of the seasons, and other casualties affecting the supply, the quantity consumed, at certain prices, which is the test of effectual demand, will, as I have said, depend upon the portion of the incomes of the different orders of the community which may be destined for the expenditure in immediate objects of consumption" (*ibid.*, p.72; emphasis added).

Tooke's reasoning is entirely consistent with classical price theory (see also Panico, 1988, pp.32-3). Given supply conditions and the cost of production - the latter equivalent to the 'normal' price associated with persistent conditions of production at which there is a balance between supply and demand - an autonomous increase in effectual demand would induce an increase in prices above the cost of production, that would only persist as long as demand persists at its higher level and supply fails to adjust to this additional demand. Alternatively, an autonomous reduction in supply which is only temporary and therefore does not permanently

alter costs of production, but gives rise to speculative activity and high prices (above 'average' prices), will eventually be brought to an end by a lack of consumer demand. In this way Tooke distinguishes between inflation (deflation) of a temporary nature which is attributable to an inequality between the demand for and supply of commodities and persistent inflation (deflation) which is attributable to permanent changes in conditions of production effecting the cost of supply of commodities (and accompanied by a permanent change in the level and composition of demand).

Tooke's conception of price movements and monetary processes is altogether consistent with the above mentioned classical distinction between the short run and long run. In Tooke's analysis the long run quantity of money is demand-determined on the basis of permanent conditions of production at which 'average' (or normal) supply prices and equilibrium outputs prevail, and given the institutional structure of the monetary and banking system.¹⁶ As discussed above, Tooke conceives that in the short run the endogenous determination of the quantity of money in response to price fluctuations is usually accompanied by variations in the velocity of circulation of liquid money (i.e. Bank of England notes and issued coin). In association with the cyclical movement in trade activity, market 'confidence' can have an influence on credit provision and velocity in the short run. Tooke also takes account of the institutional state of the monetary system in his short run analysis. Whereas in the long run the quantity of money is demand-determined so that monetary institutions are denied any *persistent* influence on prices and trade, Tooke qualifies this view in the short run, conceding that they may be able to exert a *temporary* influence depending on the nature of the given monetary system. In this regard Tooke's conception of 'endogenous money' is qualified by what he calls the *mode of issue* of money. In the first place, all gold convertible paper monies, for whatever purpose they are issued, are regulated by the law of reflux and are therefore

determined by demand. However, inconvertible paper monies are seen not to be strictly subject to reflux and can therefore influence prices depending on their mode of issue. Thus, the government issue of compulsory paper such as French Assignats for the purpose of financing additional current expenditures, would, by directly creating a fresh demand for commodities at a given supply, raise prices in the short run (*ibid.*, pp.70-1). On the other hand, should such issued money be used to purchase government debt or to underwrite short run advances, then, because it does not directly induce a short run increase in demand, it would have a minor effect on prices (Tooke, 1848, pp.197-8). According to Tooke, these monetary operations would rather tend to lower interest rates, stimulate capital outflows and a net outflow of precious metals which may indirectly raise prices in the short run should the foreign exchanges decline (*ibid.*). Hence, in the case of an inconvertible monetary system, Tooke admits a temporary influence of banknote issues on prices only if its mode of issue is such to directly affect the demand for commodities in relation to their supply.

It should be evident from the discussion above that Tooke's conception of endogeneous money does not depend on a gold convertible monetary system with the prominent role played in it by precious metals. His fundamental argument is that banks do not have the power to regulate at will the amount of circulating medium because it is determined by money demand on the basis of prices and trade activity. This is the essential basis for his rejection of the notion that the inflow and outflow of precious metals cause a rise and fall in prices independent of the supply conditions and cost of production of commodities. Hence, for Tooke the accumulation or decumulation of gold reserves at the Bank of England has no systematic implication for prices. In the same way, Tooke rejects the view that the discovery of a gold mine within the premises of the Bank of England - Ricardo's famous hypothesis in his pamphlet, *The High Price of Bullion* (1811) - must lead to higher prices (see also Pivetti,

1991, pp.78-9). He argues that an additional issue of coin or cash payments in specie from an augmented supply of gold by the Bank of England may have a temporary effect on prices depending on its mode of issue analogous to the case of inconvertible paper discussed above (Tooke, 1848, pp.199-209). The quantity of precious metals in international monetary circulation is according to Tooke, like other circulating mediums (or produced commodities), demand-determined. Tooke maintains that a country's procurement of precious metals from worldwide production depends on its balance of payments performance; that is, via foreign trade and/or capital inflow, on its international purchasing power (cf. Tooke and Newmarch, 1857, VI, pp.205-13). An increased worldwide production of gold by itself will not in Tooke's view lead to a rise in the prices of commodities on world markets measured in gold. Only if the increased production of gold is associated with improved techniques which cause a reduction in its relative cost of production vis-a-vis other commodities will there be a permanent rise in prices.¹⁷

"...the general effect on prices in the markets of the world by an increased production of the precious metals, in consequence either of the discovery of new and more fertile mines, or of improved methods of working existing ones" (*ibid.*, p.207).

This view is entirely consistent with classical price theory, as developed by Ricardo and Marx, when expressing commodity prices in gold (the numeraire), to correspond with a monetary system in which the unit of account for monetary values is given by the official mint price of gold.¹⁸

3.2 Interest and Prices

In the *Inquiry* (1844) Tooke notes that "[T]he commonly received opinion is, that a low rate of interest is calculated to raise prices, and a high rate to depress them" (p.77). Tooke clearly recognised that in

orthodox monetary thinking the power of the banks (including the Bank of England) to alter the quantity of money in circulation essentially rested on the influence ascribed to variations in the rate of interest, relative to the general rate of profit, on the inducement to spend.¹⁹ In fact Thornton (1811, pp.335-9) and Ricardo (1811, pp.91-2; 1821, pp.363-4) had earlier used this argument during the bullionist debates to substantiate their proposition that an excess issue of inconvertible banknotes initiated by the banks would be absorbed in the process of price inflation. By contrast, Tooke denied that the facility to borrow at a low rate of interest provided a sufficient inducement to the purchase of commodities. To quote Tooke: "the error is in supposing the disposition or will to be co-extensive with the power" (1844, p.79).²⁰ The necessary motive for additional spending was the prospect of profit which, in turn, depended on the future advancement of prices and ultimately the supply conditions of commodities (*ibid.*, pp.82-3). Tooke contended that during periods of speculative price rises, when there was the prospect of high profits, a considerable demand for credit would be forthcoming, but this would occur incidental to the level of interest.²¹ In other words, though a low rate of interest could play a facilitating role, it was not the *moving* cause of additional borrowing and monetary expenditure. Moreover, as is shown below, Tooke's view of the causal relation between interest and profits suggests that he believed the general rate of profit would in fact move in sympathy with prior permanent changes in the rate of interest so eliminating over time any profitable advantage of borrowing at a low interest rate.

What is of central importance is that Tooke's proposition that the banks did not have the power to initiate an undue expansion or contraction in the quantity of money in circulation is premised on a rejection of any systematic causal influence of the rate of interest on spending. For this reason Tooke (1840, p.166) concluded that "the prices of commodities are little, if at all, affected by *temporary* alterations in the rate of interest" (my emphasis). However, with reference to permanent

alterations in the rate of interest Tooke contended that it did have a systematic influence on prices "directly opposite to those which are commonly supposed" (*ibid.*). Contrary to the prevailing view he maintained, for example, that a persistent reduction in the rate of interest constitutes a diminished cost of production which, through competition, would induce a decline in prices:

"A general reduction in the rate of interest is equivalent to or rather constitutes a diminution of the cost of production. This is more especially and very obviously a necessary effect where much fixed capital is employed, as in the case of manufactures, but it likewise operates in all cases where an outlay of capital is required, according to the length of time ordinarily occupied in bringing the commodities, whether raw materials or finished goods, to market; the diminished cost of production hence arising would, by the competition of the producers, inevitably cause a fall of prices of all articles into the cost of which the interest of money entered as an ingredient" (1844, p.81).

In a similar manner a persistently high rate of interest would produce higher prices (see *ibid.*, pp.123-4; Tooke, 1840, pp.166-7).²² Tooke supported this proposition by evidence of a strong positive correlation between long run movements in prices and the rate of interest. The phenomena of a strong correlation between the rate of interest and price level has since been widely accepted in economic thought, in particular, by seminal theorists such as Wicksell, Marshall and Keynes, the latter having named it the 'Gibson Paradox'.²³

In Tooke's concept of price determination a positive interest-price relation is not paradoxical. Like most nineteenth century English classical economists, Tooke adopted a theory of prices derivative from Smith's 'adding-up' approach to value and distribution rather than

Ricardo's approach to value and distribution. After Ricardo, the major modification made by classical economists to Smith's approach to price determination was the treatment of rent as a sub-component of profit, so that the formation of natural prices or cost of production basically consisted of the separate determination of the wage and profit rate (see O'Brien, 1975, p.91). This meant that a permanent rise in any one of the distributive components, say, the rate of profit, implied an increase in prices, providing there was no coincidental reduction in the other components. Although Tooke does not explicitly outline the theory of prices he is using in any of his writings, this modified version of Smith's 'adding up' approach nevertheless pervades his price analysis.²⁴

Adopting Smith's notion of gold-commanded prices Tooke expresses commodity prices in monetary terms. In reference to the permanent level of money prices Tooke defers to the position held by Senior²⁵ and states:

“...that it is the cost of production of the precious metals, and not their quantity, which constitutes their values, and determines the prices of commodities with reference to the cost of production of the latter measured in metallic value” (1844, p.136).

Elsewhere Tooke had maintained that just “[A]s the cost of production is the limiting principle of supply, so the aggregate of money income devoted to expenditures for consumption is the limiting principle of demand for commodities” (1840, p.246). As has been discussed above Tooke's price analysis follows the traditional approach of classical economists in explaining fluctuations in prices by the interaction between the supply of and demand for commodities. When supply and demand are fully adjusted prices conform to their cost of production, which is representative of 'normal' price. Although Tooke does not provide a precise concept of 'cost of production', it is clear within his analytical framework that when they prevail for the economy as whole aggregate costs are equal to

revenues, wherupon “revenues, valued in gold [come] under the head of rents, profits, salaries, and wages” (1844, p.71). Those factors of a permanent nature affecting the supply conditions of commodities are seen by Tooke to influence these constituent revenues and therefore costs of production. In this respect he explicitly mentions technological developments relating to improvements in machinery, in cultivation, in science, in transport and communications, variations in 'average' seasonal conditions, and of most relevance here, permanent variations in the rate of interest (see Tooke, 1838,II, p.353).

3.3 Interest and Profits

Most classical economists, including those supporters of the Currency School, ascribed to the view held by Smith (1776, I.ix.h., pp.105-6) and Ricardo (1821, pp.363-4) that the general rate of profit was determined by 'real' factors which, in turn, regulated the 'average' rate of interest. In Smith it is the competition of capitals which determines the rate of profit, while in Ricardo's approach to distribution it is the real wage in conjunction with the technique of production. This conception of the causal relation between interest and profits in classical economics underlies the above mentioned view that the fluctuation of the interest rate around the 'normal' rate of profit would induce an inverse variation in spending and the price level. In contrast, Tooke's conception of interest on money as a constituent of the cost of production of commodities implies that it is the rate of profit which adapts to the level of the rate of interest.

In his analysis of interest and profits in Section I of the *Considerations of the State of the Currency* (1826), the pre-banking school Tooke challenged 'commonly received opinion' that the 'average' rate of interest is regulated by the rate of profit.²⁶ He argued that contrary to the view 'generally adopted by political economists' the rate of interest is determined independently of and could vary for significant periods of time

in relation to the rate of profit. There was therefore no need according to Tooke to account for changes in the 'average' rate of interest by 'resorting' to explanations of changes in the rate of profit.

In accordance with the conventional approach of classical economists Tooke conceives the rate of profit on capital to consist of two parts: the rate of interest (on 'securities involving no risk or trouble') and a remuneration for 'risk and trouble'.²⁷ The remuneration for risk and trouble was treated by Smith and Ricardo as an autonomous stable magnitude such that any permanent change in the rate of profit would cause a proportionate change in the rate of interest on money in the same direction.²⁸ In this way they treated interest as the residuum of profits consistent with a straightforward causality running from the rate of profit to the rate of interest. Tooke (1826, pp.8-9) disputed this view on the grounds that it was based on 'unsound premises' about the institutional workings of the money market (see also Panico, 1988, pp.23-4). A major 'source of error' that he identified was "the unqualified assumption, that money is borrowed with a view only to reproduction, or in other words, for profitable employment" (Tooke, 1826, p.10). In his analysis of the operation of the money market Tooke considered the amount of money borrowed for unproductive purposes as a significant factor in the determination of the level of interest. The other major 'source of error' which Tooke identifies "consists in overlooking the consideration, that monied capitals may increase in a greater ratio than the means of employing them" (*ibid.*, pp.10-11). According to Tooke a change in the proportion "of the supply of monied capital seeking secure investment, compared with the demand for the use of such capital, by persons having good security to offer" (*ibid.*, p.10) will have a determining influence on interest independent of the profit rate. For these reasons Tooke denied that the rate of interest is regulated by the rate of profit. Nevertheless, Tooke acknowledged that in the long run the rate of interest must bear some relation to the rate of profit because "the rate of interest, at any

time, indicates the degree of expectation of profit" and "that the expectations of those who borrow money, with a view to profitable employment, are likely, on an average, or in the long run, to be realized, the average rate of interest may be supposed to bear some proportion to the rate of profit." (*ibid.*, p.7) The 'long run' according to Tooke (*ibid.*) extends over "some indefinite number of years" which are "sufficient to equalize the effects of seasons, political and commercial changes, alterations in the value of money, and every source of miscalculation." In the 'short run', "in a period so short as three or four, or even ten years", however, Tooke regards this 'rule' to be of "little practical utility." (*ibid.*) Thus while the two rates will tend to move *proportionately* in the same direction over the long run, this is not so over the short run when in some circumstances Tooke (*ibid.*, pp.10-11) maintains that the rates can even move in opposite directions. The main point here is that Tooke believed the 'average' rate of interest was determined independently of the rate of profit and could vary in relation to the latter. While nowhere in his pre-banking school writings does Tooke provide a satisfactory theory of the rate of profit, it is clear enough that he believed it was determined by factors independent of the rate of interest associated with the determination of the remuneration for risk and trouble.²⁹ Hence, unlike Smith and Ricardo, Tooke tended to regard the remuneration for risk and trouble as the residuum of profits determined as the difference of the two rates. However, in absence of a theory of the normal rate of profit, Tooke's insistence that the rate of interest is determined independently of the former rate leaves open to question his precise conception of the long-run causal relation between these two rates. In his later banking school writings Tooke clarifies this causal relationship.

The absence of a theory of the rate of profit in Tooke's pre-banking school writings reflects at the time the lack of consensus among classical economists over the theory of value and distribution. Following a series of debates among major English economists over the theory of value and

distribution in the 1820's, Ricardo's surplus approach to explaining profits (value and distribution) went into progressive decline, leaving a theoretical vacuum in classical economics.³⁰ The most prominent non-Ricardian explanations of profit by J.B. Say (1821, pp.354-7), Malthus (1836, pp.262-91) and Senior (1836, pp. 188-194) were crudely formulated along the lines of the supply and demand for 'real capital' and lacked general theoretical application. In the context of this 'vacuum' in classical economics Tooke implicitly proposed as a key part of his banking school principles that the rate of profit was regulated by an independently determined interest rate. As indicated above, Tooke's conception of the 'average' rate of interest as a money cost of production of commodities strongly suggests that he had in mind a causal relation going from it to the normal rate of profit on capital.³¹ In proposing this notion Tooke however neglected the distinctive nature of the two rates by adopting the practice common among English economists of the mid-nineteenth century of treating the rate of interest as a nomenclature for the rate of profit (see Panico, 1988, pp.34-7). By doing so Tooke failed to articulate the adjustment process of the the rate of profit to a prior causal change in the level of interest.³² This lack of distinction between the determination of the rate of profit in relation to the rate of interest essentially underlied Tooke's inability to distinguish between the concepts of money capital (credit) and real capital in his analysis (see *ibid.*, p.31). Nevertheless, under the guise of the 'interest-profit' nomenclature, Tooke's conception is entirely consistent with his 'adding-up' approach to price determination. The conception clearly brings to the forefront Tooke's explanation of interest rate determination.

Though developed early in his pre-banking school phase, the banking school Tooke largely adhered to the analysis of the determination of the rate of interest presented in 1826 and reprinted in 1838.³³ In Tooke's monetary analysis the *permanent* 'average' rate of interest is "governed entirely by the supply of, and demand for, [monied] capital as

resulting from circumstances independent of the currency" (Tooke, 1826, n. p.23, or 1838, II, p.361). According to Tooke (1826, pp.14-29; also see Panico, 1988, pp.23-9) the supply of and demand for monied capital depends heavily on the attitude toward risk taken by different classes of lenders and borrowers. An alteration in the attitude of lenders toward risk, who possess money capital, by affecting the *willingness* of lenders to provide funds, influences the 'average' rate of interest in the loan market. Should money capital flow predominantly to borrowers who commit funds to industrial activities with prospects of solid returns and low risk, the 'average' level of interest will tend to be lower. However, should there be a greater willingness by lenders to make money capital available to borrowers engaged in more risky ventures, especially speculative activities, then the 'average' rate of interest is likely to be higher, associated with a greater allocation of capital toward non-productive investments. In particular, the interest rate can be permanently influenced by variations in government borrowing, especially in relation to war finance, because it reallocates money capital away from more productive enterprises in the national economy. Thus, in Tooke's analysis, the 'average' rate of interest which brings equality between the demand for and supply of monied capital depends essentially on the 'productiveness' and riskiness of proposed investment projects and the degree of risk lenders are willing to accept in search of higher returns. The average level of interest therefore tends to rise as a greater proportion of available monied capital is allocated toward non-productive and risky investments by lenders willing to accept a higher risk in exchange for higher returns.

Tooke regarded the banks as simply intermediaries in the loan market, who, whilst playing a central role in the deployment of money capital, could not materially influence the riskiness of investment projects which lenders were willing to finance, and could therefore not exert a *persistent* influence on the rate of interest. Nevertheless, as discussed in

section 2 above, they could *temporarily* influence the interest rate by affecting the amount of liquid means of payment in circulation (see also Tooke and Newmarch, 1857, V, pp.556-7). An increased accommodation by banks in relation to monetary requirements could therefore temporarily depress the interest rate. But because it would not induce a permanent increase in the availability of money capital, the 'average' rate would re-assert itself (Tooke, 1826, n., pp.22-3). Tooke believed that a major constraint on the power of the banking system to persistently influence the average level of interest on money was the international financial market. Any variation in the rate of interest, attributable to the relative scarcity or availability of 'disposable capital', would induce international transfers of money capital into and out of the country, in the form of precious metals, which would re-establish the 'average' rate. In a somewhat contradictory manner, Tooke also maintained that "by a forcible action on their securities", the Bank of England could "influence the exchanges, so as to arrest a drain, or to resist an excessive influx" (1844, pp.102-3). Tooke outlines the nature of such Bank intervention in the following way:

"By a forcible action on securities is meant a great advance in the rate of interest on the one hand, or a great reduction of it on the other hand. And the rationale of such operation on the rate of interest is, that it renders *disposable capital* in the one case scarce, and in the other abundant; forcing it *from* foreign countries in the former, and to them in the latter case. The effect of the *pumping in* or *forcing out* of bullion by this means is infallible; and the only practical question is of the moral, or commercial, or political considerations, which may interfere with the full exertion of the power" (*ibid.*, p.103).

These forcible operations are seen by Tooke to confer only *temporary* power on the Bank of England to influence the money capital market and

the rate of interest in line with the international financial market.³⁴ The 'average' rate of interest is then ultimately determined in the international capital market, whereupon the banks will inevitably have to act to ensure the rate conforms to this 'average', given the state of the balance of payments and the country's political and economic position in the world.

In relation to Tooke's overall banking school monetary thought his explanation of the determination of the interest rate is not completely worked out. In particular, the idea that the rate of interest acts in the money market to ensure equality between the demand for and supply of loan capital does not sit well with Tooke's concept of endogenous money which implies that the quantity of loans provided is determined by the demand for credit on the basis of a *prior* determined rate of interest and money prices (see section 4 below, pp. 37-8 and n.44). Nevertheless, despite its incompleteness, Tooke's analysis is suggestive of a *monetary* determined rate of interest, which would be later taken up by J.S.Mill (1874 [1829-30], pp.90-119; 1871, pp.405-10, 637-50) and with yet greater analytical clarity by Marx (1894, pp.338-442, 593-612).³⁵

3.4 Causality

As we have shown above Tooke's monetary analysis complies with the distinction between the short run and long run in classical economics. It follows from Tooke's arguments that in the long run, when permanent forces take effect and the economy is in competitive monetary equilibrium, given that velocity is determined by the institutional structure of the financial system, the quantity of money in circulation is demand-determined on the basis of 'normal' supply prices (given by costs of production of commodities) and the level of 'real' income (at aggregate production). With aggregate monetary requirements determined by nominal income, the institutional structure of the financial system will, by

determining the demand for money, jointly determine the quantity of money however defined, and, its velocity of circulation. Tooke's view on long run monetary causality is meant to apply to any kind of monetary system. For a monetary system in which the paper currency is fully convertible into a produced-commodity such as gold (at an official mint price) his view is in fact compatible with that of the classical economists who "treated money as a *real commodity*" (Green, 1987, p.449).³⁶ This causality runs unambiguously from changes in the production costs of commodities (or the money commodity, gold) and prices to the quantity of money (gold) in circulation. Where Tooke clearly departs from the classical quantity theorists is in postulating the permanent rate of interest among those factors which influence the normal money costs of production of commodities. In Tooke's picture of the systematic connection between money, interest and prices (the price level) causality *runs* from the level of interest to prices and then to the whole quantity of the circulating medium.

Contrary to the quantity approach to money of classical economists, Tooke also maintains that in the short run the quantity of money is demand-determined so that it causally responds to price fluctuations usually connected with variations in the velocity of circulation.³⁷ While Tooke concedes that the Bank of England can have a temporary influence on the rate of interest and thereby monetary conditions, he denies that there is any systematic connection between temporary alterations in the rate of interest and prices. The latter follows from Tooke's denial of any systematic inverse causal relation between the rate of interest and spending.

Upon this alternative viewpoint Tooke based his central criticism of the classical quantity theory and the Currency Principle. It consists, on the one hand, of his denial of the power of the banks to freely regulate the total amount of circulating medium; and on the other hand, of his

exposition of the circumstances affecting the supply conditions of commodities. This underpins his argument against the notion that an influx and efflux of precious metals cause a systematic rise and fall in prices independent of those circumstances acting on the supply costs of commodities.

4. Tooke and Classical Economics: A Critical Assessment

The main theme in the commentary on Tooke is that he was a competent empirical analyst adept at exposing weaknesses in the arguments of opponents and that he possessed a highly pragmatic view on policy issues. On a number of monetary policy issues that were at dispute in the controversies surrounding the Bank Charter Act of 1844 and were at the forefront of the Banking-Currency School debates, there has been more agreement by the body of commentators with the views of Tooke than those of the Currency School (see Fetter, 1965, pp.172-3; Morgan, 1965, pp.120-43; Laidler, 1975, pp.210-23). However, on the constructive dimension of Tooke's monetary analysis, the commentary has in the main been highly critical.³⁸ Most commentators have in fact found no coherent monetary analysis in Tooke's writings. This view is best summarised by Wicksell:

"His [Tooke's] monetary contributions - no matter how highly one may regard them in other respects - are on the theoretical side purely critical in general outlook and negative in concept. It is quite impossible, I think, to construct out of them a positive theory of money" (1898, pp.43-4).

The unfavourable assessment of Tooke's *positive* contribution to monetary economics in the literature is largely attributable to a marginalist perspective which has misunderstood the *distinct* theoretical

structure of nineteenth century classical economics from which his monetary thought naturally sprang. As a nineteenth century classical economist, Tooke's ideas should be understood in the context of the analytical standpoint of classical economics. This approach is now taken in evaluating Tooke's ideas for their *constructive* contribution to contemporary monetary theory. It is shown below that the constructive relevance of Tooke's ideas are in fact found to lie with the development of monetary analysis in classical economics along very different lines to the traditional approach.

The first aspect of Tooke's monetary thought to be examined critically, concerns his conception of endogeneous money. In proposing the notion that the quantity of circulating medium is determined by the demand for money of the non-bank public on the basis of aggregate money income and given institutional factors, Tooke implicitly invokes Say's Law to fix 'real' aggregate income (aggregate output) in his analysis. This approach is adopted by Tooke for lack of a saving-investment analysis and theory of output. As a result of the absence of such an analysis Tooke is unable to provide a robust account of the interaction between financial and expenditure flows consistent with his conception of endogeneous money. This shortcoming should however be seen in light of the fact that there was no adequate saving-investment analysis and coherent theory of output in classical economics when he was writing (see Garegnani, 1983, pp.23-8; Milgate, 1982, pp.46-57). Hence, the very same shortcoming is present in the analysis of the quantity theorists in classical economics who also adopted Say's Law. Indeed, it was not until the ascendancy of marginalist economics in the late nineteenth century and the development of a saving-investment analysis by Marshall and Wicksell, that the quantity theory could be formulated in relation to expenditure flows and the determination of output.

In view of the emphasis which he placed on factors influencing the demand for money and the important role he ascribed to the rate of interest in the Bank of England's capacity to *temporarily* influence monetary conditions, Tooke showed a greater appreciation of the monetary transmission process than supporters of the Currency School. It was the absence of a solid transmission mechanism in the quantity approach to money of the Currency School which Tooke highlighted in denying the banks could freely regulate the quantity of money in circulation. The Currency School and most contemporary economists did not even comprehend the need to provide such a transmission process and took for granted the banks exogeneous control of the quantity of money in circulation. For this reason, apart from fellow Banking School supporters, Tooke's classical contemporaries could not conceive of his notion that the quantity of money was *contingent* on and not the *cause* of trade and prices. On this issue, as Pivetti (1991, p.77) has remarked, "Tooke had the great merit of managing to go to the heart of the matter: the question of the effects of changes in the rate of interest on the inducement to purchase commodities." As discussed in section 3.2 above, Tooke repudiated any *systematic* causal influence of variations in the rate of interest on the demand for commodities, thereby disputing the most logical transmission mechanism available to the classical quantity theorists. On this important point Tooke in fact stood on firm theoretical ground. Unlike in marginalist economics, there is no compelling theoretical basis in classical economics to sustain such a connection between interest and the demand for commodities.³⁹

Altogether Tooke's conception that the quantity of money in circulation is demand-determined is entirely compatible with classical economics. Indeed, Marx's monetary analysis is based on a similiar conception (see Panico, 1988, pp.61-80). However, as suggested above, this conception can only be properly formulated in connection with a saving-investment analysis and theory of output that provides a

congruent framework for expositing the interaction between financial and expenditure stock-flow relationships in a monetary economy. The more recent progress in marrying the Keynesian saving-investment analysis and theory of output with the classical approach to prices and distribution offers a promising way forward in this regard.⁴⁰ The Keynesian principle of effective demand, with its postulate that the volume of saving is determined by investment demand, and the corollary, that output and income is determined by effective demand (on the basis of a given propensity to consume and exogenous investment), is in fact consistent with the view that the overall quantity of money and its composition is (given the institutional structure of the financial system) endogeneously determined by a demand-driven monetary process.⁴¹

Another contentious aspect of Tooke's thought arises in connection with his proposition, that as a constituent element of the money cost of production of commodities, the rate of interest exerts a positive causal influence on the price level in the long run. A problem arises in a monetary system in which the currency is convertible into gold so that the 'normal' money prices of commodities are measured in gold at its official fixed money price. In such a monetary system a permanent increase (or reduction) in the rate of interest will only raise (or lower) the price level if the methods of production are of such a *specific* configuration that the costs of production of commodities rise (or fall) in terms of gold.⁴² Otherwise the change in the rate of interest will only result in a change in *relative* prices. The *generality* of Tooke's proposition can therefore only be sustained in such a monetary system if it can be supposed that the money prices of commodities do not reflect the ratios of their cost of production to that of gold (see Pivetti, 1991, pp.79, 82-3). In a monetary system in which the value of money is not fixed in gold or any other produced commodity no such difficulties arise. As Pivetti (*ibid.*, pp.20-38) has shown, given money wages (such that money prices are normalised in terms of a single money wage) and *any* given configuration of production

techniques, Tooke's view of the systematic positive influence of the permanent level of the rate of interest on the *general* level of money prices can be upheld within classical economics.

A major shortcoming in Tooke's analysis arises from his adoption of an 'adding up' approach to price determination. Aside from the logical defects of this approach to prices,⁴³ it blinded Tooke to the implications for distribution of his notion of the influence of the rate of interest on prices. As pointed out in section 3.3 above, implicit in Tooke's notion is that the rate of interest on money causally governs the rate of profit. In the classical approach to distribution as developed from Ricardo to Marx to Sraffa, there is on the basis of given production techniques a strict inverse relation between the profit rate and the real wage. Hence, Tooke's notion implies charging the rate of interest with the main role in determining distribution through the determination of the rate of profit and thereby the real wage as a residual. There is no difficulty in accommodating Tooke's notion within this classical approach to prices and distribution: whereby distribution is explained by reference to an *exogenous* rate of interest which - as a component of normal money costs of production - governs the ratio of the price level (money prices) to the (exogenous) money wage and hence the normal rate of profit (see Pivetti, *ibid.*).

The final aspect of Tooke's constructive analysis which bears critical consideration concerns his conception of the rate of interest as a magnitude 'governed entirely by the supply of and demand for loan capital'. This conception actually leads to an unstable determination of the rate of interest and prices in Tooke's monetary thought. As Wicksell first noticed in his critical examination of Tooke:

"A persistent low discount rate on the part of the banks would ... lead to a reduction, and not an increase, in the demand for loans by business people ... and cause a further reduction of interest rates,

and so on, until the rate fell to nil. On the other hand, if interest rates which are too high remained long in operation, they would, by increasing the cost of production and commodity prices create a continuously increasing demand for money, and ... force up rates of interest ever higher. In other words, the money rate of interest would be in a state of unstable equilibrium, every move away from the proper rate would be accelerated in a perpetual vicious circle" (1906, p.187).

The above conclusion does not follow, as Wicksell has argued, from Tooke's reasoning of the influence of the rate of interest on prices but rather from his theory of interest.⁴⁴ In proposing that the rate of interest entered into the normal money costs of production of commodities, Tooke clearly conceived that it was an *exogeneous* variable determined causally prior to prices. The most plausible way to give effect to this conception and overcome the inconsistency in Tooke's analysis compatible with classical economics, is to treat the rate of interest as an independent variable ultimately determined by the monetary authorities (Caminati, 1981, p.101; Pivetti, 1991, pp.8-19, 86). This means, contrary to Tooke's own view, conferring on the Bank of England the authority to not only exercise a temporary influence but *also* a persistent influence over the rate of interest.

From the standpoint of nineteenth century classical economics Tooke's monetary analysis is more coherent than has been widely appreciated in the literature. Most of the shortcomings in Tooke's analysis were shared by his contemporaries and, with the revival and development of classical economics, can be overcome in the manner explained above. More important though is that Tooke's ideas do have a constructive relevance to the modern development of monetary theory. His central conception that in the systematic relationship between money, interest and prices, causality runs from the rate of interest to prices and

then (given real output) to the quantity of money in circulation has been given a theoretically robust and factually plausible formulation in classical economics (see Panico, 1988, pp.37-8, 181-91; Pivetti, 1991, pp.8-46, 74-7, 128-36). This formulation offers a promising alternative to the traditional quantity of money approach in contemporary monetary economics. In this light Tooke's legacy to monetary theory should be seen to go well beyond the 'purely critical' contribution claimed by Wicksell to one of a significant 'positive' contribution yet to be fully explored.

Endnotes

1. As Higgs (1921) makes clear Tooke in fact played the main organising role in the establishment of the Political Economy Club. According to its own recorded history: "The Political Economy Club was founded in London in the year 1821, chiefly by the exertions of the late Thomas Tooke, F.R.S., to support the principles of Free Trade set forth in the well known London Merchants Petition of 1820, originated and written by Mr. Tooke (as quoted in Higgs, 1821, p.viii, from the *Political Economy Club*, Vol. III, 1881, *Questions 1872-80*)". But "[A]lthough Tooke was the prime mover it is highly probable that the idea of a Club sprang from the eagerness of David Ricardo to enjoy the society of the economists of his time (*ibid.*, p.viii-ix)" This view is verified by James Mill's biographer, A. Bain, who states: "[T]he projector of the Club was Thomas Tooke; the same who drafted the Petition to Parliament, of 8th May last year [1820], from the Merchants of London, in favour of Free Trade. The nucleus of the Society was a small knot of Political Economists (Mill included) who had for some time held evening meetings at Ricardo's house, for the discussion of Economical questions. The furthering of the Free Trade movement, inaugurated by the Merchants Petition, was the foremost object in the view of the projectors of the Club (Bain, 1882, p.198)".
2. J.S. Mill said of Tooke: "Mr. Tooke is known to all who are conversant with the discussions of the last twenty-five years on commercial topics, as an authority, on all such subjects, of the highest order. Beyond, perhaps, any other man, he brings to the consideration of mercantile phenomena an intimate practical knowledge of the elements upon which they depend, combined with

habits of reflecting, or, to give the operation its proper name, of theorizing, which qualify him to discriminate and analyse the influence of those various elements (1844, p.579)".

J.R. McCulloch considered Tooke's *Inquiry into the Currency Principle* (1844), "[D]ecidedly the ablest tract in opposition to the recent measures (1845, p.184)"; and says, with respect to volumes I-III of *History of Prices* (1838; 1840): "Mr. Tooke's great experience as a merchant, and his intimate acquaintance with the principles of economical science, have enabled him to disentangle and clear up some very complicated phenomena, and to throw a great deal of light on most of the subjects within the range of his inquiries (*ibid.*, p.196)".

Acknowledging his debt to Tooke, Marx, in a letter to Engels written (5 March 1858) a few days after Tooke's death refers to him as "the last English economist of any value (Marx, 1858 [1983], p.284)".

3. See Gregory (1928, pp.16-17), Arnon (1991, pp.2-3) and Pivetti (1991, p.75).
4. Tooke's early writings include his first work, *Thoughts and Details of High and Low Prices in the Last Thirty Years* (1823 [1824]), *Considerations on the State of the Currency* (1826) and two *Letters to Lord Grenville* (Tooke, 1829a; 1829b). As well as the resumption committees of 1819, Tooke appeared before numerous parliamentary committees including the *Committee of Secrecy on the Expediency of Renewing the Charter of the Bank of England* in 1832.
5. Including the pamphlet, *On the Bank Charter Act of 1844* (1856), re-published as *Part V of History of Prices* (1857, V).

6. The distinction between moderate and hardline bullionists has been well articulated by Viner (1937, pp.138-142). It essentially rests on the extent to which real factors could play a role in explaining variations in the foreign exchange value of sterling. Whereas moderate bullionists such as Thornton, Huskisson and Malthus allowed for the possibility of real factors such as harvest failures, large foreign remittances abroad and balance of trade problems adversely affecting the exchanges and contributing to a depreciation in the mint price of paper money, hardline bullionists, consisting of Ricardo and Wheatley, rejected this view and attributed the depreciation wholly to an excess issue of inconvertible paper money.
7. Smith's influence on Tooke is most evident in the former's 'Digression concerning the Variations in the Value of Silver during the Course of the Four last Centuries' in the *Wealth of Nations* (1776, I. xi.e-p). In this long digression Smith endeavours to establish the main causes of the historical movement in prices. There are numerous references to Smith (1776) by Tooke (1824, pp.22-3, 225, 231, 237, 249-50; 1826, pp.25-6; 1838, I, pp.22, 27, 31-2, 45 n., 54; II, pp.362-4).
8. In the *Considerations* (1826) Tooke states his position as follows: "I am ready to admit to the fullest extent that can be desired, that the reduced prices in this country consequent upon the contraction of the paper, will eventually diminish the importation and increase the exportation. There is, in fact, no difference between the advocates of a paper currency and myself, as to the principles by which international exchanges are ultimately balanced. The only question between us is as to the extent of the disturbing causes, for which they make little or no allowance, while it is my opinion that these may occasionally be of considerable extent and duration (p.101)." Also see Tooke (1838, I, pp. 153-9).

9. Tooke (1826, pp.88-91) argues that because of the variations in velocity, banking policy cannot rely on the slow operation of the specie-flow adjustment process to prevent internal price fluctuations. While the Bank of England must be ultimately guided by the state of exchanges in regulating its banknote issues, the practical stabilisation of price movements depends on the discretionary use of discount policy to moderate speculative activity accommodated by an extension of credit by the banking system (*ibid.*, pp.96-9).
10. In evidence to the Committee on the Renewal of the Bank Charter (1832) Tooke stated: "I have only observed, as far as my researches have gone, that in point of fact, and historically, in every single instance of a rise of prices or a fall of prices, the rise or fall has preceded, and therefore could not be the effect of an enlargement or a contraction of the Bank circulation (Q 5449, p.441)"; that moreover, "I have known instances of extraordinary speculations taking place in very extensive classes of commodities without any increase whatever in the circulation of the Bank of England, and when, from all received tests, the circulation might have been considered to be in an extremely contracted state (Q 3842, p.273)".
11. The fluctuations in prices says Tooke "are inseparable from the course of commercial affairs" since the "business of production, or supply, proceeds wholly upon anticipation; it is dependent on the seasons, and on an endless variety of casualties; while consumption, or demand, may be influenced by changes of habit, fashion, legislative enactments, and by political events"; hence the "contingencies which may excite a spirit of speculation and enterprise on the one hand, and disappoint expectation and defeat calculation on the other, are therefore almost innumerable (1826, p.65)".

12. Tooke clearly saw that along with credit in general, the amount of notes issued by the country banks could vary considerably in relation to Bank of England notes under either a convertible or inconvertible currency system: "although the amount of Bank of England notes controlled and limited, in the long run, the other parts of the circulating medium, there might be, as indeed there has been, intervals of great divergence, which might equally occur for limited periods in a convertible state of the paper (1838, I, p.155)". According to Tooke these expansions and contractions of credit "have, in the majority of instances, not been preceded by any corresponding variations of the Bank issues (*ibid*, p.148)", being "the consequence[s] and not the cause[s], of a rise and fall of prices (*ibid*, p.149)". With respect solely to country issues Tooke saw them as rising with bad harvests and proportionately higher corn prices, associated with a redistribution of income in favour of 'agricultural interests'; and, vice-versa, with abundant harvests and lower corn prices (cf. Tooke, 1824, pp.286-300; 1838, I, pp.172, 203; 1838, II, pp.111-14).
13. According to Ricardo then, "the temptation to export money in exchange for goods, or what is termed an unfavourable balance of trade, never arises but from a redundant currency (1811, p.59)". He criticises Thornton (1802, pp.151-3) for supposing "that a very unfavourable balance of trade may be occasioned to this country by a bad harvest, and the consequent importation of corn; and there may be at the same time an unwillingness in the country, to which we are indebted, to receive our goods in payment; the balance due to the foreign country must therefore be paid out of that part of our currency, consisting of coin, and that hence arises the demand for gold bullion and its increased price. (*ibid.*, pp.59-60)" Even in times of war "when our enemy endeavours to interdict all commerce with

- us" Ricardo maintains the view that "[T]he exportation of the coin is caused by its cheapness, and is not the effect, but the cause of an unfavourable balance" which under a fully convertible currency system would be automatically resolved by the "limitation of paper currency. (*ibid*, pp.60-1)"
14. As well known Tooke was highly critical of the Currency School's narrow definition of money - which included only banknotes and coin - as the source of price fluctuations and the *object* of policy control under the 1844 Bank Charter Act. In effecting deposit transfers Tooke says cheques "perform the functions of money not only as perfectly as bank notes, but in the description of transactions to which they are applicable, they are more convenient than bank notes" (1844, p.23). And summarising his view on what constitutes money states: "Sufficient grounds have, as I venture to think, been stated for establishing the claim on behalf of cheques on bankers, and of bills of exchange, to be considered as performing, concurrently with bank notes, the functions of money for the purposes for which they are respectively used" (*ibid*, p. 32).
15. The lack of distinction made by classical economists between gross and net income, stems, as Marx clearly recognised, from the pervasive use of Adam Smith's 'adding up' approach to prices, whereby the value of intermediate commodities used in production is resolved into wages, profits and rent such that capital is ultimately resolved into these constituent revenues. In a criticism of this approach Marx (1894, p.842) commented that "as constant capital may be resolved into wages, profits, rent, but the commodity-values in which wages, profit and rent appear, are determined in their turn by wages, profit and rent, and so forth *ad infinitum*" which leads to the erroneous "proposition that the consumer must ultimately pay for the total value of the total

product; or also that the monetary circulation between producers and consumers must ultimately be equal to the money circulation between the producers themselves (Tooke)".

16. For Tooke institutional factors are important in determining the long run composition of money demand. Among those institutional factors which Tooke (1844, pp.28-9) identified as influencing the demand for bills of exchange compared to promissory notes was the difference in stamp duties charged on their issue. He also recognised that institutional developments in banking during his day, which made deposit-banking more convenient to users, was resulting in an "increasing tendency to the employment of cheques in preference to bank notes in pecuniary transactions of the metropolis and of the metropolitan district" because "of the greater convenience which is found to attach to the use of cheques instead of bank notes, by persons in the habit of employing bankers (*ibid.*, p.24)."
17. Also see the passage in Tooke (1844, pp.135-6) quoted in the text below (p.24) and the discussion in Tooke and Newmarch (1857, VI, pp.224-9).
18. For a clear exposition of this approach see Marx (1959, pp.169-74). However, there is a contradiction between Ricardo's labour theory of money (see n.36 below) and his insistence on the persistent and not just temporary influence of variations in the quantity of gold on money prices, most evident in his price-specie-flow analysis of international monetary adjustment. On this line of criticism see Marx (*ibid.*, pp.174-80) and De Vivo (1987, pp.194-5).
19. To quote Tooke: "The commonly received opinion is, that a low, and especially a declining rate of interest operates necessarily as a

stimulus to speculation, not only in government stocks and in shares both at home and abroad, that is in both Britain and foreign public and private securities, but also in the markets for produce" (1840, III, p.151).

20. Earlier Tooke (1840, III, p.153) had maintained that "[I]t is not the mere facility of borrowing, or the difference between being able to discount at 3 or 6 per cent., that supplies the motive for purchasing, or even for selling."
21. In answer to the view "that a facility of borrowing at a low rate of interest not only confers the power of purchasing, but affords the inducement - applies *the stimulus* to speculation in commodities (1844, pp.81-2)", Tooke argues:

"If by facility of borrowing...meant a laxity of regard to security for repayment on the part of the lender, there is every probability that money so borrowed will be hazardously, if not recklessly employed; and whether in the purchase of shares, or of foreign securities, or of merchandize, or in any other mode of adventure or enterprise, or in mere personal expenditure, is a matter of chance, depending on the disposition of the borrower; such borrowers are not *stimulated* to purchase commodities speculatively, merely because they can borrow on low terms; they are but happy if they can borrow at all.... [Speculations] are seldom if ever entered into with borrowed capital, except with a view to so great an advance of price, and to be realized within so moderate a space of time, as to render the rate of interest or discount a matter of comparatively trifling consideration (*ibid.*, p.82)."

It follows from the above that Tooke believed that the only way in which speculative borrowing could be limited by banking operations

was through the provision of credit on “reasonable security of repayment (*ibid.*, p.81)”.

22. Tooke is aware that a low rate of interest is associated with a “high price of securities” such that “the phenomena (of low rates) of the last three years have exhibited a rise in the prices of public funds, and of shares and of securities generally (1844, p.86).” Elsewhere Tooke writes that “a low rate and especially declining rate of interest operates necessarily as a stimulus to ... speculations in securities and in shares” but “with reference to the influence of the rate of interest and of the operations of the Bank on speculations in produce ... I am more especially disposed to question the prevailing opinion (1848, p. 165).”
23. *Keynes named this phenomena after A.H.Gibson, who had published a series of articles in the Bankers Magazine between January 1923 and November 1926, showing an “extraordinary close correlation over a period of more than a hundred years between the rate of interest, as measured by the yield of consols, and the level of prices, as measured by the Wholesale Index-Number. (1930, p.198)”* The ‘Gibson Paradox’, Keynes says “is one of the most completely established empirical facts within the whole field of quantitative economics. (*ibid.*)” Tooke was the first economist to discover this statistical relationship of which Wicksell wrote “[T]he correctness of this observation is beyond dispute; later statistics have frequently fully confirmed this fact. (1901, p.182)” In a more cautious vindication, Marshall said “I myself go with those who hold that statistics bear out the *a priori* probability that firstly, the rates of discount would be generally higher when prices are rising than when they are falling ... and secondly, that they would be higher during periods of high prices, than in periods of low prices (1926, p.274).”

24. This view is also shared by Caminati (1981, p.100), Panico (1988, p.37) and Pivetti (1990, p.444 n.23). A contrary interpretation is put forward by Arnon (1991, p.71) who claims that Tooke rejected Smith’s ‘adding up’ theory of prices, and yet provides not one citation to support his claim. The revelation by Arnon (1991, pp.89-93) that Tooke gave qualified support to the influential criticism of the labour theory of value and Ricardo’s explanation of prices by Samuel Bailey (1825) is entirely consistent with our view. It in fact goes some way to explaining why most classical nineteenth century English economists did adopt an ‘adding up’ approach to prices rather than Ricardo’s approach. Following Ricardo and until Marx the question of value in classical economics was left very much in limbo. Tooke seems to avoid the question in his analysis by always expressing prices in monetary terms. An even more puzzling claim made by Arnon (1991, pp.70-1) is that Tooke did not possess, nor thought it necessary to possess, a theory of the determination of long run prices. In view of the fact that the overwhelming focus of Tooke’s work was on explaining the long term trend in actual prices, it is difficult to imagine how he could have carried out his empirical analysis without some firm concept of price determination in the ‘back of his mind’. Indeed, it is in this very analysis that Tooke’s adoption of an ‘adding up’ approach to prices is revealed. Our interpretation of Tooke’s approach to price determination is reinforced by his treatment of interest as a constituent cost of production of commodities, to which, inexplicably, Arnon (1991) attaches little significance.
25. On the possible influence of Senior on Tooke’s approach to price determination see Panico (1988, pp.34-6).

26. "My only purpose, at present, is to inquire in what respect the rate of interest is an index of the rate of profits, and how far the former depends upon the latter (Tooke, 1826, p.6)."
27. The distinction between interest and profits is made by Tooke in the following way:
 "I should define the rate of interest to be that proportional sum which the lender is content to receive, and the borrower to pay, annually, or for any longer or shorter period, for the use of a certain amount of monied capital, without any consideration for *trouble* in the collection of the income, or for *risk* as to the punctual repayment of the interest or principal at the stipulated periods..All returns beyond this, on the employment of capital, are resolvable into *compensations* under distinct heads, for risk, trouble, or skill, or for advantages of situation or connexion (1826, pp.11-12; my emphasis)."
28. It should be noted that Smith (1776, I.ix, pp.105-6) and Ricardo (1821, pp.90-1) seem to have had different conceptions of how the remuneration for risk and trouble is expressed as an *autonomous* magnitude in relation to profits which has implications for the magnitude of movement of the rate of interest in sympathy with a prior causal movement in the rate of profit. See Pivetti (1991, pp.61-6).
29. Tooke (1826, p.11) does refer at one point to an increase in the "sources of production" and the "degree of productiveness" of capital employed in production as being the cause of a rise in the "returns to mercantile, or other professional skill".

30. For a comprehensive account of these debates see De Vivo (1984). On the 'Disintegration of the Ricardian School' also see Marx (1968, III, pp.69 *et seq.*).
31. In particular, note that this conception is consistent with Tooke's argument that a low rate of interest induces higher equity prices implying lower prospective rates of return from profit revenue generated in the ordinary course of business on higher capital valuations (see n.22 above).
32. The only reference by Tooke to an adjustment process comes with his emphasis on the 'competition of producers' in bringing about an adjustment of money prices 'of all articles into the cost of which the interest of money entered as an ingredient' following an initial permanent change in the rate of interest (see quote in text above, p.25). Tooke here seems to treat profits and interest as the same magnitude entering as money costs of production of commodities. On the basis of Tooke's earlier recognition of the distinction between interest and profits in his pre-banking school *Considerations* (1826), it is evident that his banking school conception of the causality which runs between the two rates, requires the remuneration for 'risk and trouble' to be an autonomously determined magnitude with respect to interest so that any permanent change in the rate of interest on money will induce a comparable change in the normal rate of profit on capital. On this latter issue see Pivetti (1991, pp.20-32).
33. An extract of Tooke's analysis of the determination of the rate of interest from Section 1 of the *Considerations* (1826) appears as Appendix A in volume II of the *History* (1838, pp.355-64).

34. Panico (1988, pp.43-4) is critical of Tooke's conception here because it is inconsistent with his view that government borrowing and risk-return attitudes in the loan capital market can have a permanent affect on the 'average' interest rate. This criticism seems somewhat unfair. I am inclined to a more generous interpretation of Tooke's position - in that he thought of the above internal factors as being persistent determinants of the interest rate as constrained by the state of the international capital market, over which England, given its dominant position in world trade and finance, exerted a considerable influence in his day.
35. For an account of J.S. Mill's and Marx's theory of interest and the causal relationship which they proposed between its determination and the determination of the normal rate of profit see Panico (1988, pp.21-9, 47-100) and Pivetti (1991, pp.8-10, 66-72).
36. Consistent with his labour theory of value, Ricardo stressed that "[G]old and silver, like all other commodities, are valuable only in proportion to the quantity of labour necessary to produce them, and bring them to market (1821, p.352; also see pp.85-7)." The value of commodities therefore plays a determining role in the amount of money (gold and silver) in circulation: "The quantity of money that can be employed in a country must depend on its value. (*ibid.*)" Similarly, Marx (1959) argues that if "the value of gold and silver, like the value of all other commodities, [is determined] by the quantity of labour-time materialised in them...the value of gold is given, [and] the amount of money in circulation is determined by the prices of commodities (pp.170-1)". The incompatibility between this approach to prices and Ricardo's quantity of money approach has been noted above (*viz.* n. 18).

37. The charge by Green (1987, pp.449-50) that classical 'opponents of the quantity theory' sacrificed logical consistency by placing the onus of adjustment on velocity rather than prices following an exogeneous change in the quantity of money, misses the point. The central criticism of the quantity theory by Tooke and the Banking School was that an exogeneous change in the quantity of money was not possible in the first place.
38. This view is most typically represented by Fetter (1968, p.104) who thought Tooke "had little ability to develop an organized monetary theory"; while Rist (1940, p.191), though generally sympathetic to his views, nevertheless, considered that "Tooke was no theorist".
39. The theoretical basis for the traditional view of a systematic (short run) influence of the rate of interest on monetary expenditure is the interest-elastic investment demand function derived in the marginalist analysis of distribution and production (specifically from the marginal productivity premises underlying the demand function for capital). In classical economics there is a separability between the analysis of distribution and that of output determination which rules out any *functional* connection between the rate of return on capital and investment-related expenditures (see Garegnani, 1983, pp.28-9; 1990, esp.pp.123-33). On the *non-functional* connection between the interest rate and spending in classical economics see Caminati (1981) and Pivetti (1990, pp.444-7; 1991, pp.41-51).
40. On this marriage see variously Garegnani (1983), Vianello (1985), Ciccone (1986) and Kurz (1985).
41. Keynes (1937, pp.206-11) himself pointed in this direction with his 'revolving fund' doctrine: entailing the concept that positive levels of

net investment would be financed by newly created bank credit that would increase the size of net debt, ultimately serviced over time, via the expenditure-multiplier process, by an increased level of income bringing forth the necessary net additional saving associated with ongoing capital formation. It is largely on the basis of Keynes's saving-investment analysis that some Keynesian economists, led notably by Kaldor (1970; 1982), have in more recent times shown a renewed interest in the notion of endogeneous money (see for example, Moore, 1990; Wray, 1990; Dow and Saville, 1988).

42. The view by Laidler (1975, p.226, n.14) that Tooke's proposition would "be true only were gold production less capital-intensive than that of some representative bundle of other goods" can not be accepted. Derived from marginal productivity theory, the notion that there is a continuous and systematic inverse relation between factor returns (rate of interest) and factor intensity (capital-intensive techniques) has long been discredited by the capital debates of the 1960's (see Harcourt, 1972; and specifically, Garegnani, 1970).
43. As mentioned above (*viz.* n.24) most nineteenth century classical economists of Tooke's era followed Smith's 'adding up' approach to prices. Most notably they included the influential economists, Malthus (1836), J.B.Say (1821), and Senior (1836). This approach, as highlighted by Marx (1968, II, pp.217-35; III, variously, pp.69-189) in his criticism of classical economists, submerged the inverse relation between the real wage and rate of profit in distribution which Ricardo had proposed as a necessary constraint in value theory. The omission of this constraint by classical economists adopting the 'adding up' approach led to circular reasoning in the determination of natural prices: since the separately determined values of wages and profits (and rents)

requires the prior determination of the prices of commodities entering into the determination of the values of the component parts (i.e. distributive shares) of natural price and so on again. On this issue see Garegnani (1984, pp.299-304).

44. This conclusion is reached by Wicksell on the basis of an interpretation of Tooke's conception of interest rate determination which supposes an upward sloping supply *function* of loan capital and a downward sloping demand *function* for loan capital with respect to the interest rate as founded on the marginalist approach to distribution and production. There is in fact nothing in Tooke's conception nor in classical economics that would support such an interpretation. It will be recalled above that in Tooke's conception, the 'average' rate of interest, which is associated with the balance between the supply of and demand for monied capital, is dependent on the productiveness (and hence riskiness) of investment projects which lenders in the market are willing to finance. The role of the rate of interest in bringing about equilibrium between the demand for and supply of monied capital is however unclear in Tooke's analysis given his notion of endogeneous money which would imply that the amount of loan funds is determined by the demand for credit independent of the level of interest. This confusion arises in Tooke's analysis because of his unsatisfactory conceptual treatment of capital that fails to distinguish between 'real' capital and loan capital (or credit). Notwithstanding this confusion, to the extent that the rate of interest is seen to be determined by demand and supply conditions in the loan market, Wicksell's charge that the interest rate is subject to indeterminacy in Tooke's monetary analysis remains true.

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