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ALFRED MARSHALL AND THE DEVELOPMENT OF MONETARY ECONOMICS*

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This paper has been prepared for the 'Royal Economic Society' Volume, to be edited by Professor John Whitaker to commemorate the centenary of the publication of Marshall's 'Principles'.

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INTRODUCTION

Alfred Marshall's status as a contributor to the development of the theories of value and distribution is completely secure. His standing as a monetary economist is more problematic. The "Cambridge cash–balance approach" to monetary theory is well known, but it *is* usually called the "Cambridge" not the "Marshallian" approach after all, and the student eager to learn about it is more often referred to Pigou (1917) or Keynes (1923) than to any of Marshall's writings. *Money, Credit and Commerce* (1923) is interesting, but cannot stand comparison with the *Principles. . .* .It gathers together, in an orderly enough way, Marshall's thoughts on monetary topics, but almost all of those thoughts, and sometimes the very words in which they are expressed, date from the last three decades of the 19th century. *Money, Credit and Commerce* is, in the main, an old man's record of past contributions, not an account of new ones.

Nevertheless, if *Money, Credit and Commerce* is of little historical significance, the ideas it contains, considered as the product of the 1870s and 1880s, certainly are; and they had been disseminated much earlier, albeit unsystematically, in lectures, evidence to committees of enquiry and royal commissions, occasional articles, not to mention passages in *The Economics of Industry* (Marshall and Marshall 1879) and the *Principles. . .* itself.[1] Their importance for the development of monetary economics at Cambridge is attested to by Keynes (1924) (reprinted in M), and more recently by Eshag (1963) and the fact that they were known to others, outside of Marshall's immediate circle, is easily documented. For example: Fisher (1896, p. 71 and 1911 pp. 71–2) quotes the *Principles. . .* (3rd ed. 1895 and 5th ed 1907

respectively) on the distinction between real and nominal interest rates, and was aware (evidently through Edgeworth (1895) see (1911) p. 328)) of Marshall's "symmetallism" proposals which I shall discuss below; and Wicksell (1898, pp. 76–77, 158) was familiar with Marshall's evidence to the Gold and Silver Commission of 1887–88. Marshall's is thus not the case of a monetary economist whose original contributions remained hidden from view until the time at which they would have been important had passed. He was read and understood by other contributors to the field early enough to matter; I shall discuss how much he did, in fact, matter later.

The lack of a systematic and timely monograph is not the only obstacle faced by the modern reader who seeks to appreciate Marshall's monetary economics. Much of it was first published in the form of responses to contemporary policy problems, and these problems were very different from those which currently concern us. Inflation and real fluctuations in a world of flexible exchange rates are today's issues. That is why Henry Thornton (1802) and David Ricardo (eg. 1809), or the Keynes of the *Tract. . .* (1923), who wrote about the same questions, can command an interested audience among modern monetary economists not otherwise interested in the history of their discipline. The last three decades of the 19th century were dominated by secularly falling prices associated with the spread of the gold standard, and cyclical fluctuations were relatively mild. The major policy issue of Marshall's day was the desirability of giving a role to silver in the domestic and international monetary

systems in order to relieve deflationary pressures. It is easy to be misled by the apparent irrelevance to our own immediate concerns of such problems into underestimating the durability and originality of the analytic tools Marshall brought to bear on them.

In this essay, I shall stress this last point, and argue that Marshall's monetary theory is of much more general importance than the problems to which he applied it. There was, by the 1870s, a well established orthodoxy in British monetary economics, but an orthodoxy whose central doctrines were not logically complete. Marshall's contributions to monetary economics built upon the doctrines he inherited, and are much better understood as efforts to eliminate their internal inadequacies than as *ad hoc* responses to current policy issues. Monetary (or macro–) economics is sometimes said to lack that essential characteristic of a mature science, namely an internal dynamic whereby the problems which engage its practitioners are generated by anomalies within the existing corpus of ideas that make up the discipline, rather than by external circumstances.[2] That charge is only too well formulated in some instances, but not always, as the case of Marshall shows. He claimed continuity for his economics with that of his Classical predecessors in general and John Stuart Mill in particular. Provided we allow continuity to amount to more than mere repetition, he was right to make this claim, at least about his monetary economics.

In the following pages, I shall first of all sketch out the Classical Monetary Economics on which Marshall built. I shall then discuss in turn the Classical elements in his own thought, his innovations as a monetary theorist,

and his views on policy. I shall then say something about his influence on others, and the unresolved problems which he bequeathed to Neoclassical Monetary Economics.

THE CLASSICAL INHERITANCE

The Classical monetary economics of the 1870s which Marshall inherited dealt with a number of inter–related issues: the purchasing power of money, the cycle, the balance of payments, the choice of a monetary standard, and within the constraints imposed by the standard selected, the conduct of discretionary monetary policy.[3] In the case of a commodity standard, a much elaborated version of the Hume price–specie flow mechanism formed the basis of balance of payments theory, and the price level was, in the long run, said to be determined by the cost of production of the money commodity. This straightforward application of the classical theory of natural value was supplemented by a "productivity and thrift" theory of the long run equilibrium value of the rate of interest which had that variable determined, like any other relative price, independently of monetary factors. In Classical economics, money was neutral in the long run and monetary theory had to do only with the determination of the price level.

In the short run, matters were more complex, and money was not neutral. Here the Classical economists took a Quantity Theory approach to explaining price level behaviour; and shifts in velocity, particularly those associated with the activities of the banking system, played at least as important a role as variations in the supply of money. Just as the price level could deviate from its natural value in the short run, so too could the rate of interest in response to monetary disturbances, though the short–run was, in the case of the

interest rate, understood to be a good deal shorter than in the case of the price level. Monetary expansion was associated with the market interest rate falling below its natural level, and vice versa. Closely related, the "credit cycle" was treated as mainly a matter of price fluctuations in financial and commodity markets. The task of discretionary monetary policy was not so much to stabilise this cycle, as it was to ensure that its upper turning point did not precipitate a financial panic and a collapse of the banking system. As to a purely paper currency system, this lacked an anchor for the price level in the form of the natural price of gold (or silver), and though its mechanisms both domestic and international were understood to be technically viable, this lack was regarded as a fatal drawback by Classical orthodoxy.

Coherent though the above sketch may make it seem, there were crucial gaps and tensions in Classical monetary theory. To begin with, the cost of production theory of value and the Quantity Theory co–existed uneasily as explanations of price level behaviour within its framework. Earlier in the 19th century some Banking School economists, notably Tooke (eg. 1844), had gone so far as to treat them, under gold convertibility at least, as alternatives, and in opting for the former had ended up denying any role in determining prices to the quantity of money and its velocity of circulation.[4] Later Classical writers treated them as complementary hypotheses for the long and short run respectively. For these writers, the proximate influence of variations in the quantity of money and its velocity on prices was the crucial mechanism whereby changes in the cost of production of the precious metals were translated into changes in the purchasing power of money. Even so, the details of this mechanism were left obscure, both because the roles of bank credit and

the circulating liabilities it generated in affecting the velocity of what we nowadays call currency were not properly understood, and because, being a transactions velocity concept, it was extremely difficult to apply in an economy where goods passed through many hands on their way from their producers to their ultimate consumers.

Classical analysis of interest rate behaviour too was often unclear. Its exponents usually took a constant price level for granted as a characteristic of the long run, and hence treated the "natural value" of the market rate of interest as what we would now call a "real" variable. They did not have a sharp notion of the distinction between real and nominal interest rates and so their discussions of the behaviour of interest rates within the credit cycle, when credit expansion tended to push rates one way, and associated price level effects the other, often lacked sharpness. Nor was its treatment of interest rate behaviour the only weak point in classical analysis of the cycle. That analysis also displayed a certain tension between theory and empirical evidence. By the 1870s it was clear that the cycle involved not just price level and interest rate fluctuations, but also systematic variations in real output and employment too. Though these had been noted and discussed long before the 1870s, the theory of the "credit cycle" had not been expanded to deal with them in any systematic way.[5] Marshall, as we shall now see, made major contributions to the clarification of all of these issues.

THE CLASSICAL ELEMENT IN MARSHALL'S THOUGHT

Nothing could illustrate the Classical basis of Marshall's monetary economics more vividly than his unequivocal endorsement of the Classical dichotomy between the real and monetary economy in response to the following enquiry from Mr. D. M. Barbour, a member of the Gold and Silver Commission of 1887–88.

> "I do not know whether you go so far as some of the older economists, who say that all trade tends to be conducted as a system of barter, and that money is only a mechanism by which that gigantic system of barter is carried out?" – "So far as permanent effects go I accept that doctrine without any qualification." (OP, p. 115).

Marshall was equally Classical in the views he expressed to the Commission about the determination of the rate of interest. He told them that, in the long run, ". . .the supply of gold excercises no permanent influence over the rate of discount." (OP. p. 41). But he also told them that, in the short run, monetary factors could affect the interest rate, arguing specifically that, in an open economy, an influx of gold from abroad would ". . . make a sort of ripple on the surface of the water." (OP. p.41)

Marshall's account of the role of this "ripple" as an integral part of the transmission mechanism whereby a gold inflow would ultimately raise the price level while leaving interest rates to be determined ". . .by the extent and the richness of the field for the investment of capital on the one hand, and on the other by the amount of capital seeking investment" (OP. p. 51) is essentially the same as that given by Mill in the (1865) and subsequent editions of his *Principles of Political Economy*. . . There, writing under the influence of

Cairnes, who had made a careful study of the mechanisms whereby the price level effects of the 1851 Australian gold discoveries had been transmitted through the world economy, Mill had discussed the consequences of a gold inflow into Britain.[6] Marshall followed Cairnes and Mill in noting that the gold inflow would initially be concentrated in the City. Like them, he argued that though

> "This does not increase the amount of capital, in the strictest sense of the word . . . it does increase the amount of command over capital which is in the hands of those whose business it is to lend to speculative enterprise. . . . [L]enders lower . . . the rate which they charge for loans . . . till a point is reached at which the demand will carry off the larger supply. When this has been done there is more capital in the hands of speculative investors, who come to the market for goods as buyers and so raise prices." (OP. p. 52.)

Just as Mill had allowed for an upward influence on the discount rate arising from expectations of rising prices to influence this process, so too did Marshall ". . .it must be remembered that the influx of bullion would have caused people to expect a rise of prices, and, therefore, to be more inclined to borrow for speculative investments" so that ". . .it might not be necessary to lower the rate of discount very much" (OP. p. 52). Even so, the process would come to an end with a higher equilibrium level of prices being ". . . held up by the fact that there was currency to sustain [them]". (OP.p 50)[7]

The origins of this analysis of interest rate behaviour can be traced all the way back to David Hume's (1752) essay "Of Interest", and the thoroughly Classical analysis of exchange rates and the balance of payments which

Marshall presented to the Gold and Silver Commission of 1887–88 also has Humean roots, this time in the essay "Of the Balance of Trade". Marshall dealt with international monetary issues in two written memoranda submitted to the Commission, the first of which was partially reprinted as a section of Appendix G to *Money Credit and Commerce*. These memoranda, particularly the second, are far more notable for their succinctness than for their originality, (except perhaps for some discussion of the consequences of money wage stickiness for the international adjustment mechanism (c.f. OP, pp. 193–194)); nor did Marshall claim any originality for them. The first of them begins by invoking the authority of Ricardo, Mill, Goschen, Giffen and Bastable, (cf. OP. p.170) and refers to the analysis upon which it is based as "old, and I had thought well established" (OP. p. 177).[8] Indeed, the main purpose of the memorandum in question was, according to Marshall, to defend Classical theory against "the new doctrine which has been put forward in opposition to it . . ." (OP. p. 178), a doctrine which he characterised as arguing that a fall in silver prices gave Indian manufacturers a long run advantage over their British competitors because of their willingness to accept unvarying silver prices for their own output, both at home and abroad, regardless of silver's purchasing power.

The essential characteristics of Marshall's version of Classical doctrine may be set out in the words with which he began the second of his two memoranda:

> "Let two countries *A* and *B* trade with one another. Let *A* have throughout a gold currency.

I. Let *B* also have a gold currency. Then trade tends so to adjust the supplies of gold relatively to the demands for gold in the two countries as to bring gold prices at the sea–boards of the two countries to equality (allowance being made for the carriage). . . .

II. Let *B* have an inconvertible paper currency (say roubles). . . . The gold price of the rouble will be fixed by the course of trade just at the ratio which gold prices in *A* bear to rouble prices in *B* (allowing for cost of carriage). . . .

III. Let *B* have a silver currency. This case differs from the preceding one only in consequence of the fact that silver is, and roubles are not, an exportable commodity. Trade tends so to adjust the supplies of gold and silver in the two countries relatively to the demands, as to bring gold prices in *A* to bear to silver prices in *B* (after allowing for carriage) a ratio equal to the gold price of silver."

(OP. pp. 191–192)

The mechanisms which will bring about these equilibria are described with similarly concise vigour, and are equally conventionally Classical in character. Net trade imbalances generate pressures on the commercial bill market which, in turn, lead to gold (and/or silver) flows, or exchange rate changes, till the imbalance is removed. There is nothing here that would have puzzled Mill, unless it be that the version of the purchasing–power–parity doctrine (as we would now call it) employed by Marshall is less subtle than Mill's, which makes careful and explicit allowance for the influence of taste and technology changes on the equilibrium "real exchange rate" (to use a modern phrase).[9] Productivity changes are discussed by Marshall, but in the context of

how a depreciation of the home currency due to monetary factors might mislead exporters who have simultaneously obtained some cost advantage in production into believing that their greater success in foreign markets is due to that depreciation. (cf. OP. pp. 192–193). The potential independent influence of productivity changes on the real (and hence *ceteris paribus* nominal) exchange rate is not discussed.

The long run independence of the real economy from the monetary sector, of which a productivity and thrift theory of the long run value of the interest rate is an important corollary, and the Humean analysis of the international distribution of the precious metals, not to mention its extension to the determination of exchange rates between inconvertible currencies and currencies convertible into different metals, are doctrines utterly central to the Classical tradition. Marshall upheld them, and in so doing demonstrated how deeply were the roots of his monetary theory embedded in that tradition. Nevertheless, as we shall see, that same monetary theory bore fruit which his Classical predecessors would have had difficulty recognising.

INNOVATIONS IN MONETARY THEORY

I have already noted the uneasy relationship which existed within Classical theory between the cost of production theory of the "natural" value of a commodity based money and the Quantity Theory. Later Classical writers, notably Mill, treated the former as relevant to the long run and the latter as relevant to the short run, but this approach was not altogether satisfactory, not least because they treated mining as an activity, like agriculture, subject to diminishing returns. Given diminishing returns, marginal production cost could

not be determined until the scale of output was also determined, and hence could not, as Classical writers claimed, be the "ultimate regulator" (Mill 1871, p. 517) of the purchasing power of money. Moreover, the Classical short run theory of the price level relied on a transactions velocity of circulation concept, which, as its exponents were well aware, was hopelessly complex when applied in an economy in which much trading took place on credit, and in which there were many intermediate transactions involved in moving goods between their producers and ultimate consumers.

Marshall's earliest known writings on monetary economics, his notes on "Money" and their complementary mathematical fragments, which date from about 1871, address just these problems. The writings in question clearly establish that the "Cambridge cash–balance approach" was indeed Marshall's creation, and though they remained unpublished until 1975, they were not unknown. Keynes (1924, M., pp. 29–30) quotes extensively from them, and remarks that "When I attended [Marshall's] lectures in 1906 he used to illustrate this theory with some very elegant diagrams" (p. 29, fn. 1) It is perhaps not stretching the probabilities too far to suppose that the diagram from 1871 (see EEW. vol. 2. p. 278) which includes the rectangular hyperbola demand for nominal balances function more often associated with Pigou (1917), is representative of these.[10] Though the supply and demand theory of the value of money, applied to both the short and long run, which these writings expound occurs in various forms throughout Marshall's published work, this, his first account of it is a piece of purely theoretical exposition which clearly represents a response to a problem posed by the internal logic of the body of economic analysis he had inherited, rather than to some contemporary policy issue. Thus,

though applications to policy issues abound in Marshall's later writings, they are applications of analysis whose essential properties had been worked out before the policy problems in question presented themselves.

I have referred here to Marshall's theory of the *value* of money, rather than to his theory of the *demand* for money quite deliberately. The problem he inherited from Mill was to provide a general theory of the price level, and that was the problem he sought to solve. To lose sight of this is to lose sight of the essential element in the continuity between Marshall's thought and that of his Classical predecessors. Marshall did, to be sure, jettison a key component of their monetary theory, namely the concept of the transactions velocity of circulation. He did so because "The fact that in general goods pass through a great but varying number of hands on their way from the producer to the consumer . . . introduces grave complications" into any attempt to ". . . establish a connection between 'the rapidity of circulation' and the value of money." As he notes, "Mr. Mill is aware of the evil, but he has not pointed out the remedy." (EEW. p. 169). Marshall did not find in Classical monetary theory, and therefore sought to provide, ". . . a clear statement of the balancing of advantages which in the ultimate analysis must be found to determine the magnitude of every quantity that rests upon the will of man." In the case of money the "quantity" to be determined was ". . .its [money's] value. . .". (EEW. p. 165)

For Marshall, the place to look for the relevant "balancing of advantages" was in the individual's decision ". . .to retain in his possession a supply of money". (EEW. p.167) The advantage gained by so doing lay ". . .in being able readily to satisfy such of his wants as he cannot easily make

provision for a long time beforehand. . .", but it was gained at the cost of the income foregone by applying his wealth to some other use – the alternative asset actually cited as an example is an horse – so that, in general

> "If he retains but a very small ready command over commodities he is likely to be put occasionally to a considerable inconvenience; if he retains a very large one he receives no adequate compensation for the inaction to which his wealth is doomed. He has then to settle what is the exact amount which on the average it will answer his purpose to keep in this ready form." (EEW. pp. 167–168)

Note that Marshall here explicitly treats the decision about how much cash to hold as involving the allocation of a stock of *wealth*. However, he went on to express the amount of cash chosen in units of *real income* (thus creating the basis for a stock–flow confusion that was to plague monetary economics till the early 1930s).[11] He took this extra step because, as I have already emphasised, he was interested in the theory of portfolio choice in general, and the theory of the demand for money in particular, not for their own sakes, but as components of a theory of the price level. Thus, the model economy in which he develops his analysis uses as its means of exchange "the shells of a certain extinct fish" and produces corn. The decision to hold money is characterised as a decision to hold purchasing power over corn in the form of shells, and Marshall shows that "If . . . there be a million such shells, and the income of the country be sixty million bushels of corn . . ." then if the average individual wishes to hold purchasing power equal to one tenth of income in the form of money ". . . a shell will be worth . . . six bushels", and that if desired money

holdings then fall to one twentieth of income ". . . the value of each shell will diminish . . . until [it] is only worth three bushels." (EEW. p. 168)

Here we have a special exogenous nominal money stock case of a general supply and demand theory of the purchasing power of money over current output, but Marshall immediately and successively generalised it, first to the case in which the stock of shells, rather than being given, can be increased by dredging, second to the case in which the shells ". . .are used for ornament and for other purposes. . ." (EEW. p.172) and finally to the case in which ". . . other things beside shells are used as money, paper or whatnot . . ." (EEW. p. 173), in the process bringing his model closer and closer to the complex commodity based monetary system of the late 19th century world. In the first case he notes that a downward shift in the economy's demand for money might leave the value of shells ". . . permanently below their cost of production . . ." but that an upward shift would make it ". . . profitable to dredge in deeper and deeper water." (EEW. p. 171); in the second he remarks that the influence of the demand for shells as a commodity would break (except in a very special case) the proportionality relationship between the quantity of shells and their value; and in the third he notes that

> ". . . the effect of these contrivances [paper money and whatnot] is to cause other modes of exchange to be substituted for those into which money enters. . . They cause the amount of commodities over which persons choose to keep a command in the form of money to diminish: they thus diminish the value of shells or (as we may now say) of gold and silver: thereby setting free more of them to be used as commodities and at the same time diminishing the labour spent in working mines to

> obtain the means of doing what can in many cases be better done by the avoidance of than by the use of gold and silver." (EEW. pp. 173–4)

Now the idea that paper money economised on real resources had been understood and taken seriously by Classical economists since Adam Smith, but before Marshall, their analysis had emphasised the alternative uses to which an existing stock of specie could be devoted.[12] They had paid little attention to the possibility that its introduction, or extension, might influence the amount of "labour spent working in the mines". If they had, perhaps they would have realised, as did Marshall, that the marginal production cost of specie, which they treated as exogenously determining the long run value of the price level, was in fact an endogenous variable whose value depended upon the nature of monetary institutions. Only in a stationary economy in which the purchasing power of money was just equal to the cost ruling on the margin of production in the most fruitful mines, and hence in which output was equal to zero, could the price level be thought of as determined solely by technical factors. Marshall derived precisely this latter result in his mathematical notes with the aid of both a differential equation and a discrete time diagramatic approximation to the model yielding that equation.[13]

The full implications of this analysis were not lost on Marshall. In 1887 he told readers of the *Contemporary Review*, in an essay which he also submitted as part of his evidence to the Gold and Silver Commission (M. ch.8), that

> ". . .as things are, gold and silver have no natural value. They are so durable that the year's supply is never more than a small part of the total stock, and therefore their values do not conform closely to their

> costs of production. and, insofar as their values are regulated by the relations between the demands for them and existing stocks of them, their value is artificial, because the demand for them as currency is itself artificial." (M. p.200)

He returned to this same theme in his 1899 evidence to the Indian Currency Committee, telling the Committee that

> "I think it is also agreed that there is something fiduciary in the value of gold and silver; that is, that part of their value depends upon the confidence with which people generally look forward to the maintenance and extension of the monetary demand for them. Of course, their value is, in the long run, controlled by cost of production; but that influence is remote, and new supplies are always small relatively to the existing stock. And so fluctuations of their value are mainly governed at any time by currency legislation, actual and prospective." (OP. p. 269)

Indeed, as late as 1923, he referred, in a letter quoted by Keynes (1924) p. 33, fn. 2), to ". . .the—in itself foolish—superstition that gold is the 'natural' representative of value..."

Thus, as with his general approach to value theory, so in his specific application of it to the value of money, which appears to be the first case for which he worked it out, Marshall's "correction" of Classical economics' overemphasis on costs of production resulted in a radical revision of doctrine.[14] Even so, as I have remarked above, so long as continuity is not confused with mere repetition, Marshall's own view of his work as growing out of Classical

economics rather than standing in opposition to it is easily sustained in this instance.

Marshall claimed that, by basing monetary analysis on the notion of a demand for money, he rendered it more practically useful than the alternative transactions velocity approach. Certainly as I have pointed out elsewhere (Laidler 1988), this latter way of going about things led Mill into considerable confusion about the role of credit and credit instruments as influences on the price level. Sometimes he argued that, because transactions financed by credit could affect prices, it was the existence of credit itself, rather than any instruments to which it might give rise, that undermined the simplicity of the Quantity Theory; and at others he attributed a causative influence on prices to the fact that credit instruments themselves formed part of the "circulating medium". Marshall's supply and demand analysis enabled him to be much more sure–footed in dealing with these matters in the course of his evidence to the Gold and Silver Commission. Mill thought, as an empirical matter, that changes in velocity were at least as important as changes in the quantity of money in affecting the price level, and Marshall's view was similar. In his "Preliminary Memorandum" to the Commission he stated:

> "While accepting the doctrine that, "*other things being equal*, prices rise or fall proportionately to every increase or diminution in the metal or metals which are used as the standard of value," I consider that the conditioning clause, "other things being equal," is of overwhelming importance and requires careful attention." (OP. p. 21. Marshall's italics).

He clarified his concerns here, both in that memorandum and in the subsequent oral evidence from which the following quotations are drawn, demonstrating in the process the capacity of his supply and demand apparatus to cut through many complexities. Marshall's reasons for taking the "other things equal" clause seriously may be summarised, in his own words, as follows:

> ". . . without any change in the amount of currency the average level of prices might be altered, not only by a change in the proportion of credit to other means of purchasing, but also by any other change in the methods of business. . ." (OP. p. 38)

He did not regard the question of where to draw the line between other assets and "currency" as crucial here, provided that consistency was observed, and used the term himself (as we nowadays would) to include coin and banknotes. That being the case, the role of what he called "bank money" – deposits – in the monetary system was of crucial importance, and Marshall presented to the Commission a sketch of what we would now call money multiplier analysis to show how their quantity was linked to the banking system's reserves. This sketch was not quite the first of this process to appear in the history of monetary economics—The essential point is to be found, for example, in Pennington (1829)—but it did, as Humphrey (1986) has noted, represent an important step forward in the development of the doctrine. Marshall put things as follows:

> "I should consider what part of its deposits a bank could lend, and then I should consider what part of its loans would be redeposited with it and with other banks and, *vice versa*, what part of the loans made by other banks would be received by it as deposits. Thus I should get a geometrical progression; the effect being that if each bank could lend two–thirds of its deposits, the total amount of loaning power got by the

> banks would amount to three times what it otherwise would be. If it could lend four–fifths, it will then be five times; and so on."
> (OP. p. 37)

An influx of gold reserves to the banking system would thus ". . . enable people to increase their speculation on borrowed capital; it would therefore, increase the demand for commodities and so raise prices." (OP. p. 380).[15] However,

> ". . .it would have the ultimate effect of adding to the volume of the currency required for circulation . . . because, prices having risen, a person who had found it answer his purpose to have on the average 17 *l*. in currency in his pocket would now require 18 *l*, or 19 *l*.; and so on for others." (OP. p 38)

Now the notion of a demand for a stock of money was not completely absent from Classical economics. References to agents keeping a certain amount of cash on hand "to meet occasional demands" occur frequently from Adam Smith onwards, while Marshall himself (MCC p. 47) gave credit to Sir William Petty as an originator of the idea. Even so, with one important exception, the notion played no essential role in Classical analysis, the exception in question concerning the crisis phase of the credit cycle, particularly as it appears in the work of Mill, not only his *Principles of Political Economy* . . ., but also, and indeed most conspicuously, his "Of the Influence of Consumption upon Production" first published in (1844). For Mill, a crucial factor in precipitating and amplifying the downturn of a speculative boom was a loss of confidence on the part of agents which drove them to attempt to build up cash balances at the expense of their demand for inventories of goods.

The Classical theory of the cycle was, to modern eyes, incomplete in at least two respects. First, its account of speculative activity during the upswing of the cycle was more descriptive than analytic; second, as I have already noted above, fluctuations in real variables such as output and employment were not integrated into it. Marshall made important advances in cycle theory, once again responding to inadequacies of Classical analysis. That this was his starting point is easily confirmed by inspecting pp.152–154 of *The Economics of Industry* (Marshall and Marshall 1879). The account of the characteristics of the cycle which appears there is, in essence, a paraphrase of Mill's analysis as it appears on pp. 542 et seq. of his *Principles of Political Economy* . . ., and is aptly summarised in what the Marshalls refer to as "the famous words of Lord Overstone ": "First we find. . . a state of quiescence,– next, improvement,– growing confidence,– prosperity,– excitement,– over–trading,– convulsion,– pressure,– stagnation,– distress,– ending again in quiescence." (EI. p. 153)[16] Quoting Mill to the effect that "What constitutes the means of payment for commodities is simply commodities", the Marshalls take pains to deny that the crisis and downswing phases of the cycle are marked by general over–production. Nevertheless, they concede, as once again had Mill, that ". . . though men have the power to purchase they may not choose to use it", attributing this "evil" to "a want of confidence". The result is a "state of commercial disorganisation" for which the remedy is "a restoration of confidence". (EI. p. 154)

All this is conventional Classical analysis, but what comes next sets the Marshalls' analysis of the cycle apart from that of Mill : namely their realisation that "The connexion (sic) between a fall of prices and a *suspension of industry*

requires to be further worked out" (EI. p 155 my italics) and their explanation of that connection.

> "It. . .very seldom happens. . . that the expenses which a manufacturer has to pay out fall as much in proportion as the price which he gets for his goods. For when prices are rising, the rise in the price of the finished commodity is *generally* more rapid than that in the price of the raw material, *always* more rapid than that in the price of labour; and when prices are falling, the fall in the price of the finished commodity is *generally* more rapid than that in the price of the raw material, *always* more rapid than that in the price of labour." (EI. p 156) (my italics)

Here, we have an explanation of fluctuations in real income and employment based on the postulate of money wage stickiness.[17] This postulate was, of course, to become the maintstay of attempts to explain unemployment before the publication of the *General Theory*, and, Keynes's denials of its importance notwithstanding, of "Keynesian economics" too.

This extension of Classical theory to encompass real variables is not Marshall's only contribution to cycle theory. The *Economics of Industry* does not refer explicitly to the behaviour of the demand for money over the course of the cycle, but Marshall's already cited *Contemporary Review* essay of eight years later does take up this other element of Mill's analysis. In this essay Marshall first notes that

> "We often talk of borrowing or lending on good security at, say, 5 per cent. . . [but] Suppose, for instance, a man borrows £100 under contract to pay back £105 at the end of the year. If the purchasing power of money has meanwhile risen 10 per cent . . . he cannot get the £105 which he has to pay back without selling one–tenth more commodities than would have been sufficient for the purpose at the beginning of the year. . . while *nominally* paying 5 per cent. . . he has *really* been paying at 15 1/2 per cent. . . . if prices had risen so much that the purchasing power of money had fallen 10 per cent . . .he would *really* be paid 5 1/2 per cent. . ." (M. p. 190 my italics)

He then goes on to argue that

> ". . .when prices are likely to rise, people rush to borrow money and buy goods, and thus help the prices to rise . . .those working on borrowed capital pay back less real value than they borrowed, and enrich themselves at the expense of the community"

and that "[w]hen afterwards credit is shaken and prices begins to fall, everyone wants to get rid of commodities and get hold of money which is rapidly rising in value. . ." (M. p. 191)

The mechanism driving what we would now call aggregate demand here is a real balance effect, caused by changes in the quantity of money demanded which themselves arise from perceived changes in the relative returns to be had from holding cash and goods, supplemented by the credit–market effects of a lag in the real interest rate behind the nominal rates. The latter factor receives more explicit emphasis in Marshall's brief discussion of the cycle in his *Principles* . . . where the (1887) passages just quoted is repeated essentially verbatim, but with the following addition:

> "When we come to discuss the causes of alternating periods of inflation and depression of commercial activity, we shall find that they are intimitely connected with those variations in the real rate of interest which are caused by changes in the purchasing power of money" (*Principles* . . . 1st ed. Book VII, Ch. VII, p 627; all other eds. Book VI, Ch. VI, various pages).

By 1890 then, Marshall had clarified the analysis of the behaviour of demand over the course of the cycle with which, in 1887 he had supplemented that of wage stickiness developed in the *Economics of Industry*, and had produced what amounts to a prototype for any number of pre–Keynesian analyses of the business cycle, not least that of Irving Fisher (1911).[18]

Now I am not here suggesting (as did Keynes 1924, M., p. 30 fn. 3) that Marshall has priority over Fisher in all aspects of the analysis of nominal and real interest rates. In (1896) Fisher used the distinction in an elaborate statistical analysis intended to show that the paradoxical empirical association between high prices and high interest rates, and low prices and low interest rates could be explained in terms of the lagged effect of previous rates of change of prices on inflation expectations, and hence on nominal interest rates. Marshall cited this work of Fisher's in considerable detail in his evidence to the 1899 Indian Currency Committee, and there is no sign in his earlier work of his having seen this particular implication of the real–nominal interest rate distinction. Finally, it should be noted explicitly that though his analysis of monetary mechanisms has much in common with that of Fisher, one should not attribute to Marshall a "monetary" theory of the cycle in the sense of treating exogenous fluctuations in the quantity of money as key impulses initiating cyclical fluctuations. He

analysed monetary fluctuations as propagation mechanisms, but followed the predominant Classical tradition in not attempting to single out any single factor as a dominant impulse initiating the cycle.

MONETARY POLICY PROPOSALS

The account which I have given so far of Marshall's monetary economics has concentrated on the relationship of his theoretical work to the ideas which he inherited from the Classical tradition. That it has been possible to get so far without mentioning the policy concerns of his own day is surely in and of itself convincing evidence that, in Marshall's hands, Monetary economics took on the characteristics of a mature branch of economic science. Even so, no account of his monetary thought would be complete without some discussion of his responses to current policy problems. Here too, we shall find that same mixture of respect for inherited wisdom, combined with great originality, which marks his more abstract innovations. In particular, Marshall took for granted the Classical view that monetary policy was best directed to a price level goal. Nothing illustrates this better than his choice of title for the 1887 *Contemporary Review* article in which he set out his major monetary policy proposals: it is "Remedies for Fluctuations of General Prices".

Marshall's reasons for thinking price level fluctuations to be socially important reflect Classical concerns too, particularly those of Mill, about the welfare of the working classes.[19] To be sure, one would have to look far and wide in Classical economics to find any systematic discussion of a connection between price level behaviour and working class welfare; but for Marshall, the connection arose from his belief in the stickiness of money wages even as a

secular phenomenon. This belief led him to make redistributive consequences the acid test of the importance of any long run pattern of price level behaviour. The first substantive passage of his "Preliminary Memorandum" to the Gold and Silver Commission (dated November 9 1887) begins as follows:

> "I think that the general interests of the country are best promoted by stationary prices; but that the benefits resulting from a rise in prices and the evils resulting from a fall of prices are commonly over–rated; and I think that it is not clearly established that a rise of prices is . . . to be preferred to a fall. . . . I doubt whether the influence exerted in this direction [ie. irregularities of employment and discouragement of enterprise] by a slow and gradual fall is very great. On the other hand, during such a fall a powerful friction tends to prevent money wages in most trades falling as fast as prices; and this tends almost imperceptibly to establish a higher standard of living among the working classes, and to diminish the inequalities of wealth." (OP. pp. 19–20)

In his oral evidence he returned to this theme:

> "Supposing that it [falling prices] does not diminish considerably the total productiveness of industry, then its effect is . . . on the whole good; because it tends to cause a distribution of wealth better than that which we should otherwise have. . . . some rich lenders of money. . . get their incomes increased . . which I regret; but the greater part of the redistribution is in the direction of. . .employees, and that, I think, is a gain." (OP p.91)

In 1899, Marshall was still arguing in the same vein before the Indian Currency Committee:

> ". . .for ten or fifteen years after I began to study political economy, I held the common doctrine, that a rise of prices was generally beneficial to businessmen directly, and indirectly to the working classes. But after that time I changed my views . . . The assertions that a rise of prices increased the real wages of the worker were so consonant with the common opinion of people who had not specially studied the matter, that it was accepted almost as an axiom; but within the last ten years, the statistics of wages have been carried so far in certain countries . . .that we are able to bring it to the test. . .the rise of real wages after 1873 when prices were falling was greater than before 1873 when prices were rising." (OP. p. 286)

Marshall thus read a cause and effect relationship into the association between falling prices and rising real wages, but his judgement that rising real wages had a negligible influence on employment was confined to secular effects. We have already seen above (pp. 21–22) that a key mechanism in his positive analysis of the business cycle involved the consequences for employment of the interaction of short run variations of the price level with more slowly moving money wages. As one would expect in light of the criteria which Marshall applied in judging the desirability of secular price level movements, the consequences of those fluctuations of employment for the welfare of their victims made stabilising the cycle an important policy goal for Marshall.[20]

> "The fluctuations in the value of what we use as our standard are ever either flurrying up business activity into unwholesome fever, or else closing factories and workshops by the thousand in businesses that have nothing radically wrong with them . . . Perhaps the bad habits of mind and temper engendered by periods of business fever do more real harm than periods of idleness; but it is less conspicuous. . . In time of stagnation he who runs may read in waste and gaunt faces a degredation of physique and a weakening of energy, which often tells its tale throughout the whole of the rest of the lives of the men, women, and children who have suffered from it." (M. p. 192)

Stabilising the price level in the short run, or failing that, preventing price level fluctuations having real consequences, provided, in Marshall's eyes, two means whereby the stability of real variables could be attained.

The 1887 *Contemporary Review* article to which I have already referred above, and from which the foregoing quotation is taken, contained a proposal for what Marshall termed a "Stable Bimetallism", (but which has come to be called, following Edgeworth (1895), symmetallism). This was conceived at least as much with an eye to promoting short term price level stability as it was to pursuing any longer term goals. Marshall shared the beliefs of most of his contemporaries that, in the circumstances of the 1880s, increasing industrial use of gold along with its growing adoption as an international currency was causing, and was likely to continue to cause, secular deflation of gold prices, but, as we have seen, he did not share the fears of many of them that this deflation would have serious real consequences. Nor did he find very attractive the most widely touted cure for this problem, namely the monetisation of silver alongside gold at a fixed relative price set by the monetary authorities. Such a

scheme could only be implemented by international agreement, and was likely to degenerate quickly into silver monometallism as a result of the well understood operation of Gresham's Law, particularly if the fixed relative mint price of the metals overvalued silver, as Marshall feared it would.[21]

Instead of conventional bimetallism, Marshall proposed a scheme which, as he said, differed from Ricardo's 1816 *Proposals for an Economical and Secure Currency*

> ". . .only by being bimetallic instead of monometallic. I propose that currency should be exchangeable at the Mint or Issue Department not for gold, but for gold and silver, at the rate of . . .£1 for 56 1/2 grains of gold, together with, say, twenty times as many grains of silver. . . . There would, as now, be token coins of silver and bronze, but none of gold. . ." (M. pp. 204–5)

so that, although

> "[t]o insure convertibility the currency would not be allowed to exceed, say, three times the bullion in the Issue Department[, t]he country would save so much on the cost of its currency that it could well afford to keep, as a normal reserve, bullion worth, say £30,000,000 in excess of this limit. . ." (M. p. 205)

Marshall listed a number of advantages for this scheme, which, as Bordo and Schwartz (1987) have pointed out, amounted to making sterling convertible into a basket of (two) international currencies. – "(1) It would be economical and secure; (2) Though economical, the largeness of its reserve would obviate the sharp twinges that now frequently occur in the money market." (OP. p. 206) He also claimed that it: would tend to stabilise sterling by making its purchasing

power vary with the mean value of gold and silver, rather than with one of them alone; did not require any attempt to peg the relative price of the metals; could be adopted by one country in isolation; could constitute the basis of an international monetary system if and as other countries adopted it; and represented a step towards adopting a "tabular standard" for deferred payments (surely this claim is rather forced). The first two reasons he listed, though, and particularly the second of them, were the really important ones, if we may judge by the attention he paid to the general issue of the size of the Bank of England's specie reserves in his oral evidence to the Gold and Silver Commission.[22]

In that oral evidence, starting from ". . . the arguments at the end of Bagehot's *Lombard Street*, and pushing them rather further than it does" (OP p. 111), Marshall expressed concern about the slenderness of the Bank of England's gold reserve and the "extreme sensitiveness" (OP. 110) which that created for the banking system as a whole. Without referring explicitly to his "stable bimetallism" scheme, he argued the desirability of introducing a fiduciary issue of one pound notes (five pounds was the smallest note then in circulation) and of using the bulk of the gold thus released from the coinage to strengthen the Bank of England's specie reserve so that ". . . the bank could afford to lose 5,000,000 *l*, or 6,000,000 *l*, or more gold without feeling bound to act at all violently on the money market." (OP. p 110) Moreover, to give the Bank extra room for manoeuvre, he suggested a merging of its Issue and Banking Departments, and hence an abandonment of the organisational principles laid down in the 1844 Bank Charter Act. (O.P p. 112, p. 164). The avowed purpose of all this was to give to the directors of Bank more room to exercise ". . .their discretion, . . .acting on their knowledge of the special

circumstances of each case" (OP. p.112) in insulating the domestic monetary sector from balance of payments shocks.

Now Marshall did not propose relying on increased discretionary powers vested in the Bank of England, whether under gold or gold–and–silver convertibility, as the sole means of ensuring greater cyclical stability in the British economy. Central to the "Remedies for Fluctuations of General Prices" which he proposed in 1887, was indexation, or, as Jevons (1875) had earlier called it a "tabular standard of value" (see M. pp. 197–99). Once an index number measuring a "suitable standard of purchasing power" to be called "the unit" had been chosen, information about variations in its value in terms of cash should be published regularly by the government. The use of the unit to denominate credit transactions, and, "where not determined by special sliding scales", wages and salaries too, was to be encouraged, though not legally required; but Marshall clearly thought that the scheme was sufficiently attractive that nothing more would be needed to get it widely adopted. Its advantages were, of course, twofold. The real rate of interest on indexed loan contracts would not vary with the rate of inflation, and nor would the real value of indexed money wages. Hence the main mechanism driving speculative activity over the course of the cycle would be disconnected, as would the link between price level variations and fluctuations in output and employment.

Keynes (1924, M., p.33) tells us that "The *Economist* mocked at Symmetallism and the optional Tabular Standard; and Marshall, always a little over–afraid of being thought unpractical or above the head of the "business man" (that legendary monster), did not persevere." Symmetallism (or rather bimetallism) receives but one passing reference in Marshall's 1899 evidence to

the Indian Currency Committee, indexation none at all, and it was left to others, notably Edgeworth (1895), to keep Marshall's ideas on monetary reform alive.[23]

Marshall's 1899 evidence is strongly marked by a general concern with smoothing out short term price level fluctuations in order to mitigate the cycle, and by a belief that the key to curing the ills of the downswing is to be found in avoiding the preceding speculative boom. In the last respect, Marshall's ideas harked back to those of Overstone and other members of the Currency School, but only to a degree. The latter had hoped to avoid inflationary booms by the automatic device of subjecting the Bank of England's note issue to a 100 per cent marginal specie reserve requirement. This mechanism, embodied in the 1844 Bank Charter Act, had of course failed to achieve its desired end, and in proposing that it be pursued by discetionary policy, Marshall moved beyond orthodox classical views on this issue. Bagehot's principles of activist central banking were aimed not so much at eliminating the cycle, as they were at ensuring that its crisis phase did not degenerate into a financial panic. For Marshall, addressing the Indian Currency Committee in 1899, the "sudden fall of prices" which accompanies the downswing

> ". . .is an almost unmixed injury to the employé (sic) as it is to the employer; but a fall of prices of this kind is seldom or never the product of natural causes. It is nearly always, if not always, the result of a previous inflation of prices and launching of frail enterprises by fraudulent or incompetent people who have floated into prosperity at the cost of others on the top of a wave of rising prices. To attribute this

> social *malaise* to the fall of prices, instead of to the previous morbid inflation which caused it, is as reasonable as to attribute the headaches which follow a night of feasting and rioting to want of a sufficiently nourishing breakfast, instead of to the bad condition of the digestive organs that took away the appetite for the breakfast. This is perhaps, the chief centre of difference between those bimetallists who, like myself, wish for bimetallism only as a means of diminishing fluctuations; and those who wish for it also, and, perhaps, mainly, as a means of raising prices. (OP. pp. 285–286)

This 1899 evidence of Marshall's leaves the impression that he had, by then, become rather satisfied with the resilience of the British monetary system, and perhaps it is this fact, as much as any fear of being thought impractical, that accounts for the absence of radical reform proposals from the evidence in question. The Baring crisis of 1890 had occurred since Marshall's previous pronouncements on monetary policy, and this crisis, unlike its many predecessors had been managed without any major failures in the financial community. It had also, in Presnell's (1968 p. 168) words,

> ". . .accelerated the amalgamation and strengthening of banks and . . .encouraged the keeping of higher and more stable cash ratios; . . . emphasised . . . the primacy of the Bank of England, and encouraged grudging bankers to recognise their own and the national interest in co–operation with the Bank".

Marshall noted these same developments with satisfaction, and indeed gave them as reasons for his opinion that the British model was not a good one to adopt in reforming the less sophisticated Indian monetary system whose operations were the main subject of the 1899 Committee's enquiries. In India, banking, and particularly branch banking was less developed, and currency played a much bigger role. In Marshall's view, the main threat to financial stability there came not from external drains of bullion, but internal drains of currency. Moreover, India was poor, and could not afford the luxury of a large bullion reserve, so that, for her case ". . . it seems better to adopt the more economic provision of a moderate reserve stock of bullion and coin, combined with a limited and automatic elasticity of fiduciary paper currency." (OP. p. 324).

Marshall recommended that any reform of India's monetary system should ". . . go on the lines of the 1844 [Bank Charter] Act, somewhat modified as in the Reichsbank Act". (OP p. 284). The particular provisions of this latter document that attracted him were those ". . . enabling the Reichsbank to increase its issues to meet any emergency, whether due to variations from one part of the year to another, or to a variation in one particular year of the general course of business." (OP. p. 283), provisions which, he thought, did not in fact violate the spirit of the Bank Charter Act itself, and which certainly had been *de facto* adopted in operating it before the 1870s.[24] Thus, though Marshall had abandoned his 1887 proposals for monetary reform by 1899, the underlying thrust of his views on the conduct of monetary policy was nevertheless the same then as it had been in 1887. In particular he still stressed the desirability of avoiding rapid short term oscillations in prices; and he still attached great importance to designing monetary institutions so as grant, to a central bank (or

some similar entity), scope for discretionary action to forestall or iron out such fluctuations. This latter concern underlay both his approval of the way in which the British monetary system had evolved by 1899, and his proposals for improving the operation of an Indian system that was at a different, earlier, stage of evolution.

As will be apparent from the foregoing discussion, this 1899 evidence of Marshall's shows that his monetary thought had changed only a little on the policy front and not at all on theoretical issues, over the previous decade. Nothing more was to appear from him in this area till *Money, Credit and Commerce*. His important monetary ideas were thus products of the 1870s and 1880s, even though they did not become readily accessible until 1923. It remains now to assess the influence of those ideas and their significance for the development of monetary economics. The next two sections of this essay are devoted to these questions.

MARSHALL'S INFLUENCE

In the introduction to this essay, I claimed that Marshall's contributions to monetary economics were both original and important, and I noted that, his unusual publication practices notwithstanding, his work from the 1880s was read and cited by other important contributors to monetary economics. The fact that the work was cited, though, does not automatically establish that it was also influential, and so something needs to be said explicitly about this matter.[25] To begin with, it hardly needs arguing that Marshall was influential at Cambridge. Pigou's classic (1917) paper on "The Value of Money" is thoroughly Marshallian, as is the monetary theory underlying Lavington's (1921)

English Capital Market and Keynes (1923) *Tract* . . .. Moreover, though as Patinkin (1974) and Laidler (1986) have both stressed, the Keynesian theory of liquidity preference is much more than a mere repetition of Marshall's ideas about the demand for money, there can be no denying Eshag's (1963) view that the latter doctrine grew out of the Marshallian tradition. Even so, it is worth explicitly remarking that Cambridge Monetary Economics was not synonymous with Marshallian Economics. Thus Dennis Robertson's cycle theories (e.g. 1926) owe little to Marshall and his celebrated discussion of "money on the wing" and "money sitting" as two approaches (Quantity Theory and cash–balance) to the same problem of price level determination does not appear in the first edition of his *Money* (1922). It is only with the revised (1928) edition of this influential textbook that the cash–balance approach makes an explicit appearance. Furthermore, though Ralph Hawtrey's (e.g. 1913) business cycle theory looks very Marshallian, not least in the critical role played therein by the "unspent margin" (firms' cash balance holdings), Hawtrey himself is on record as denying a direct influence of Marshall on his work.[26]

Cambridge was not, in any event, the only centre in which important advances were made in monetary economics at the turn of the 19th century, and the transformation of Classical into Neoclassical Monetary Theory was the work of many others besides Alfred Marshall. *Interest and Prices* (Wicksell 1898) and *The Purchasing Power of Money* (Fisher 1911) are two key works here; and though both contain references to Marshall, they are far from being essays in Marshallian economics. There is nothing in Marshall's work on monetary problems to match Wicksell's careful analysis of the microeconomic factors determining the "natural" rate of interest and no anticipation of anything resembling his explicitly dynamic analysis of inflation as a "cumulative

process"; while Fisher's exposition of the Quantity Theory is remarkable precisely because it is based on the older transactions velocity tradition which Marshall discarded. And yet Marshall's work did antedate that of Wicksell and Fisher, they had read some of it, and in each instance, a case may be made for a Marshallian influence on the details of their analysis.

As Patinkin (1965 Supplementary Note E) has noted, key elements in Wicksell's cumulative process are the influence of gold inflows on the interest rates at which banks are willing to lend and the subsequent influence of an internal drain of currency from the banks brought about by rising prices on those same interest rates. We have seen above (pp. 8, 19–20) that Marshall dealt with just these points in his evidence to the Gold and Silver Commission, and Wicksell (1898 p. 76) referred to this evidence as "By far the most valuable contribution towards a solution of this question..." namely "...how it was possible for the quantity of gold in the banks...to exert an influence on prices" among the Commission's documents. Wicksell, then, whose analysis of inflation was far richer than anything Marshall offered, nevertheless acknowledged Marshall's contribution in a context and manner that at least suggests an influence on his own thought. A similar point may be made with regard to Fisher. Marshall's discussion of the role of real and nominal interest rates in the mechanics of the business cycle is a mere sketch, when compared to Fisher's (1911 chapter 4) treatment of "transition periods", but Fisher quoted the passage from the *Principles...* dealing with this very issue (see above pp. 23–25) not only here, but also in Part 2 section #13 (p. 79) of the much earlier (1896) *Appreciation and Interest*, when his monetary approach to cycle theory was still

in an embryonic state. Once again it appears that Marshall did perhaps influence the work of one of his younger contemporaries.

UNRESOLVED PROBLEMS IN MARSHALL'S MONETARY ECONOMICS

Be all this as it may, Marshall's indisputable influence on Pigou and Keynes is quite enough in itself to make him a figure of the first importance in the development of Monetary Economics, but it would be to miss the significance of his contribution to regard him as having simply participated in the completion an edifice known as Classical monetary economics. Rather, in the process of coping with some of the logical difficulties that Classical economics had left open, he helped transform it into something else – namely Neoclassical monetary economics – a body of doctrine which was replete with tensions and unresolved problems of its own to which a later generation of monetary economists, not least at Cambridge, could and did respond.

Nowhere are these tensions more evident than in the policy positions which Marshall espoused in relation to the theory which informed them. His supply and demand theory of the price level undermined, once and for all, the powerful idea that, in the long run, a commodity based currency would provide the means of determining the price level independently of the human arrangements involved in the operation of the monetary system. Moreover, he did not believe, as a matter of fact, that a commodity based currency could, or would, provide the price stability which he regarded as so important to economic and social welfare; and he understood perfectly the principles upon which a managed currency might be made to perform better than any commodity based system could. A footnote in his 1887 *Remedies. . .* paper, quoted with great approval by Keynes (1924, M., pp. 32–33), who was, of

course then engaged in a campaign to put Britain once and for all on a managed paper currency and a flexible exchange rate, read in part as follows:

> "I will indicate briefly two such plans, though I do not advocate either of them. On the first plan the currency would be inconvertible. An automatic Government Department would buy Consols for currency whenever £1 was worth more than a unit, and would sell Consols for currency whenever it was worth less. . . . Those who had to pay balances to foreign countries would buy gold or silver in the open market; they would be certain of getting in exchange for this money gold and silver that had a fixed purchasing power in England. . . The other plan is that of a convertible currency, each £1 note giving the right to demand at a Government Office as much gold as at that time had the value of half a unit, together with as much silver as had the value of half a unit. . ." (M. pp. 206–7, fn.)

The first of these plans is a scheme for fine tuning the price level by managing the quantity in circulation of a paper currency, and essentially the same as that advocated by Wicksell (1898 p. 189). The second amounts to a blend of Irving Fisher's "compensated dollar" idea (see Fisher (1911, pp. 337 et seq.) with Marshall's symmetallism.[27] Either of these plans seemed to offer a better chance of achieving Marshall's own stated policy goals than the measures he actually did suggest. He stopped short of advocating either of these alternatives, because "Every plan for regulating the supply of the currency, so that its value shall be constant, must, I think, be national and not international"; and the adoption of either of them ". . . would hinder rather than help the

adoption of an international currency" (M. pp. 206–7, fn.) something which Marshall hoped would eventually evolve.

In Classical Economics, there had been no tension between a commitment to price stability and an international money, since specie convertibility was regarded as a *sine qua non* for both goals. Advocates of inconvertible national monetary systems were regarded, usually with good reason, as inflationists. It was because Marshall did not believe that specie convertibility would guarantee price stability, a belief in turn stemming from his theoretical doubts about the relevance of the idea of a "natural" value for gold and/or silver, that he was unable to embrace the Classical position. This tension between the desirability of price stability, something that could only be achieved with a managed, and hence (in the absence of supranational institutions which Marshall did not envisage) national currency, and the attractions of an international money, which first appeared in Marshall's work more than a century ago, ran through Keynes' work, both academic and practical, and still remains unresolved in modern policy debates on these issues.

Marshall's most obviously enduring contribution as far as modern monetary economics is concerned was, as I have already argued, his modelling of the demand for money decision, but his work here nevertheless left some important loose ends for his successors to take up. The 1871 notes, upon which my own account of Marshall's treatment of this relationship is based, were in fact more carefully put together than any of his later expositions of it. In particular, the notion that money holding involves a wealth allocation decision, which is utterly clear in 1871, was not explicitly developed in later accounts. This ambiguity found its way into Pigou's (1917) definitive account

of the "Cambridge" theory of the price level, which followed Marshall's own later practice of using the imprecise word "resources" in contexts where it could only mean "wealth", where it could only mean "income", and where it could mean either. It took Keynes (1930, 1936) and Hicks (1935) finally to clarify this matter in the course of their development of liquidity preference theory.

But even in his 1871 account, Marshall stopped far short of developing a complete portfolio choice theory of the demand for money. Like the Classical economists before him Marshall believed that "The chief functions of money fall under two heads. Money is, first of all a *medium of exchange* . . . The second function of money is to act as a *standard of value* or *standard of deferred payments* . . ." (M. p. 189, Marshall's italics). He did not think of money as a store of value *per se*, and hence did not analyse with any care the relationship between holding money as an asset and the foregone return on alternative assets. The closest that Marshall ever came to treating the money holding decision as one involving a demand for a store of value is in *Money Credit and Commerce* (p. 44), when he speaks of ". . . The inhabitants of a country . . . keep[ing] by them on the average ready purchasing power to the extent of a tenth part of their annual income, *together with a fiftieth part of their property*" (my italics), and (p. 38) when he includes "stock exchange securities" among the alternatives to money.[28] By then, though, Lavington (1921) had already progressed much further in the direction of anticipating Liquidity Preference Theory.

Futhermore, Marshall never formulated the demand for money as involving a smooth functional relationship between desired cash holdings and either the rate of interest, or the expected inflation rate. He told the Indian Currency Committee that

> ". . .it seems specially important, with reference to the Indian currency problem, to note that the level of prices which a given volume of currency will sustain, is liable to be affected by any lack of trust and confidence in the currency itself . . . The lower is the credit of the currency, the lower will be the share of their resources which people keep in the form of currency; . . . I think it is agreed that, if the credit of the currency falls, its value falls relatively to commodities, even when there is no change in its volume." (OP. p. 269)

This argument recurs in Pigou's (1917) paper, underlies Cannan's (1921) argument that repeated increases in the supply of money will raise prices more than proportionally, and it also informs Keynes (1923) pp. 42 et seq. treatment of inflation as a tax on cash balances. It was not until the (1956) publication of Friedman's *Studies in the Quantity Theory of Money*, however, that the inflation rate was formally and explicitly incorporated as an argument into the type of equation which Marshall first wrote down in 1871.[29]

Marshall's analysis of the cycle also left his successors with work to do. His treatment of the upswing was, as we have seen, centered on the postulate that the rate of profit expected by businessmen ran ahead of the real rate of interest at which they could borrow. Marshall could have considered the possibility that systematic changes in the composition of output might stem from this relative price distortion, and hence have been led into an Austrian

style analysis of "forced saving" and its destructive consequences.[30] However, he did not. Instead he treated the cycle's upswing, or at least its later stages after previously unemployed resources had been put to work, as predominantly a matter of rising prices with no real consequences stemming from relative price distortions. It was left to the followers of Wicksell (1898) to take up this line of enquiry. During the downswing and slump, Marshall argued, as we have seen, that sticky wages would cause unemployment. Moreover, because ". . . a stoppage of work in any one trade diminishes the demand for the work of others. . ." (M. p. 191), Marshall believed that spillover effects would spread unemployment throughout the economy, particularly to investment goods industries. However, he offered no guide as to what factors would actually determine the level of output and its time path in "the resulting state of commercial disorganisation" (EI p. 155). Formal treatments of the potentially equilibrating role of output changes, and associated analyses of multiplier and accelerator processes were not to come until after 1936.

CONCLUDING COMMENT

Now I have not drawn attention to the fact that economists other than Marshall also contributed to the development of monetary economics during his lifetime, nor to the fact that his work has its shortcomings, to denigrate his achievements; quite the contrary. As I noted earlier, it is sometimes claimed that Monetary Economics lacks that strong internal dynamic which which is the hallmark of a well defined discipline. Certainly, the development of the area in the first seven decades of the 19th century was, as for example Fetter (1965) has shown, intimately linked to the challenges offered by the period's monetary history. Britain's suspension of gold convertibility between 1797 and 1821, the

cyclical instability of her monetary system in subsequent decades, and the monetary consequences of the gold discoveries of 1849–51, all had a profound influence on the evolution of Classical monetary economics. On the other hand, Marshall's major contributions to the area were not, by and large, prompted by the policy problems of his time. He discussed policy issues, but used a theoretical apparatus created in response to the analytic problems which his forerunners, and Mill in particular, had left unsolved. So too did his younger contempories, notably (but not only) Fisher and Wicksell, address questions left open by their predecessors; and like Marshall, they too left behind unsolved theoretical problems of their own, and helped ensure that monetary economics would continue to grow independently of the accidents of the monetary history of the early 20th century. As I have tried to document in this essay, Alfred Marshall thus made a crucial and early contribution to the transformation of monetary economics into a mature branch of Economic Science. One could hardly pay him a greater compliment than that.

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Footnotes

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[1]The materials not conventionally published during Marshall's lifetime are to be found in three posthumus volumes: *Memorials of Alfred Marshall* (ed. A. C. Pigou) 1925, *Official Papers by Alfred Marshall* (ed. J. M. Keynes) 1926, and *The Early Economic Writings of Alfred Marshall* (2 Vols., ed. J. Whitaker) 1975, referred to below respectively as M., OP., and EEW. Some of Marshall's most important contributions to Monetary Economics turn up in OP in the form of transcripts of oral evidence given to the Gold and Silver Commission in 1887–88 and the Indian Currency Committee in 1899. Readers should note that such committees habitually granted considerable leeway to their witnesses in correcting their comments prior to publication, and Marshall appears to have availed himself of it. His recorded responses are inevitably carefully punctuated and well organised, in at least one place (cf. fn 18 below) contain an extensive and essentially verbatim quotation from the *Principles. . .*, and sometimes contain carefully organised statistical material. This evidence of careful editing gives one confidence that the transcripts in question faithfully reflect Marshall's views.

[2]Stigler (1983 p.534) is one of those who criticises macroeconomics for being overly responsive to current policy problems.

[3]The evolution of this orthodoxy over the preceding century is the topic of Fetter's (1965) classic study. Laidler (1988) surveys its principal features, and the following four paragraphs are based on that account. Note that, in the terminology of this paper, Jevons and Bagehot are exponents of "Classical" monetary economics.

[4]The Banking School had opposed the passage of the 1844 Bank Charter Act. On the debate between the Banking School and their Currency School opponents, see Fetter (1965 ch. 6), or Anna J. Schwartz (1987).

[5]Notable here is the work of John Mills of Ashton–under–Lyne, a banker and member of the Manchester Statistical Society, cited by Jevons in his 1875 textbook *Money and the Mechanism of Exchange*.

[6]For an accessible account of Cairnes' work on this issue, see Bordo (1975), and see Hollander (1985 Vol. 2 pp. 540–541) for a discussion of Cairnes' influence on Mill. Note that Keynes (1924. M. p.30) quite erroneously credits Marshall with having originated the analysis of the role of the interest rate in the transmission mechanism. Marshall's work here differed marginally from Classical orthodoxy in granting a bigger role to inflation expectations prompted by a fall in the production costs of gold than did his predecessors, and, as I shall show below, more significantly in incorporating into it an essentially correct account of the bank–credit multiplier.

[7]cf. Mill's (1871) p.656 comment that monetary expansion '. . . [c]onsidered as an addition to loans tends to lower interest, more than in its character of depreciation it tends to raise it. . .". Henry Thornton had discussed inflation expectations in a speech on the Bullion Report in 1811, (printed in the (1939) Hayek edition of . . . *Paper Credit*. . .) and Irving Fisher (1896) p. 4 quotes an anonymous tract published in Boston in 1740 as providing an early discussion of what we now term the "Fisher effect". Even so, this effect was never a central part of Classical Monetary Economics.

[8]It is worth noting that Goschen, to whose (1861) . . .*Foreign Exchanges* Marshall is presumably here referring, was the Chancellor of the Exchequer who set up the Gold and Silver Commission, and that Giffen also gave evidence to the Commission (though he was not a member as Milgate (1987) asserts). Charles Bastaple, a rather younger contemporary of Marshall, for a long time occupied a chair at Trinity College Dublin, and is now remembered mainly as an expositor of international economics "firmly in the English classical tradition" (Bristow 1987 p. 203). His *Theory of International Trade* which was to go through four editions, first appeared in 1887.

[9]cf. Mill's discussion of these issues in his *Principles of Political Economy* . . . (1871 pp. 604 et seq.) and particularly p.621 for the qualification to simple purchasing power parity ideas referred to in the text. Keynes (1924, M., pp.30–31) attributes far more originality to Marshall's treatment of purchasing power parity than is justified. In addition to Mill, Goschen (1861) had much to say about this doctrine.

[10]Patinkin (1965) has argued that this rectangular hyperbola would be better termed a "market equilibrium curve". Certainly it is a curve compensated for variations in real wealth induced by price level changes, a qualification which Marshall never explicitly discussed. This curve also appears in the "Diagramatic Note on a Metallic Currency" printed as Appendix c to *Money Credit and Commerce*. This appendix deals with the determination of prices under a metallic currency when there is an alternative non–monetary demand for the metal, essentially the most general case of the analysis developed in the 1871 unpublished note (see below p. 12–16). Its style is terse and rigourous, and in it Marshall is very careful about the stock–flow distinction. These characteristics lead me to presume that its composition long antedated its 1923 publication.

[11]On the failure of later Cambridge economics to be careful about the income–wealth distinction and the implications of this fact for our interpretation of the significance of Liquidity Preference theory in the development of Monetary Economics, see Patinkin (1974) and Laidler (1986).

[12]The most notable discussions of this issue occur in the . . .*Wealth of Nations* (Smith 1776, Book 2, ch.2) and Ricardo's (1816) *Proposals for an Economical and Secure Currency* of which Marshall was, as we shall see below (p. 28–30), a careful reader.

[13]In discussing these mathematical fragments, Whitaker (EEW. Vol. 2, p. 177) explicitly draws attention to the way in which ". . .the quantity–theory and cost–of–production approaches are synthesised" in the analysis they present.

[14]Marshall did not of course mean that the cost of production had no influence on the value of a commodity money, as should be clear from reading the preceding quotation, but only to deny that it ever was, for practical purposes, its sole or even predominant determinant.

[15]Eshag (1963, pp 9–10) records that the geometric progression referred to in the above quotation is explicitly worked out in a marginal note found in Marshall's personal copy of Giffen's 1877 *Stock Exchange Securities.*

[16]Parts of this 1879 account of the cycle were incorporated verbatim into Marshall's 1887 *Contemporary Review* paper, and later still into *Money Credit and Commerce* pp. 249 et. seq. The quotation from Overstone is also repeated in *Money Credit and Commerce* p. 246.

[17]Henry Thornton discussed money wage stickiness in . . . *Paper Credit* . . . (1802), but unlike so much else in that work, this idea did not enter the mainstream of Classical Economics. Thornton's work was almost completely forgotten by the 1870s, and seems to have been quite unknown to Marshall, at least until much later in his life. Jacob Hollander (1911) discussed . . .*Paper Credit*. . . in an essay cited in *Money Credit and Commerce*, but followed McCullogh's (1845) example of confusing Henry with his brother Samuel Thornton, a one–time Governor of the Bank of England. Hence he downgraded . . .*Paper Credit*. . . as a piece of special pleading on the part of the Bank. I suspect that a careless reading of this paper of Hollander's is the source of Marshall's extraordinary error (MCC pp. 41–42) of numbering Ricardo among the authors of the *Bullion Report*.

[18]This numerical example of the effects of inflation on real interest quoted earlier also appears in the *Principles* . . ., as it does (with Pounds changed to Rupees and Anas) in Marshall's oral evidence to the Indian Currency Committee (OP. p. 271) not to mention in *Money, Credit and Commerce* (p. 74).

[19]In particular I have in mind here Mill's discussion of the problem of low wages in the *Principles of Political Economy*. . .. Note also that Marshall's early (1873) essay on "The Future of the Working Classes" (M. Ch. 2) begins with a reference to Mill's *Autobiography*.

[20]There is considerable discussion of unemployment and related issues in the *Official Papers*, some of the themes of which found their way into *Money Credit and Commerce*. Marshall's views on the topic may be summarised as follows: cyclical unemployment was no more serious a problem in the late 19th century than it had been earlier, but was more visible as a result of

industrialisation (OP pp.92–3); technical change and its associated structural disruption of the economy was a particularly important source of unemployment in the 1880s (OP. pp. 100–01); minimum wages negotiated by trade unions might contribute to unemployment among the aged (OP. pp. 97–8); and secularly falling prices, even though they increased real wages, made no significant contribution to unemployment (OP pp. 91, 98).

[21]There is not space here to go into either the analytic details of bimetallism, or the historical and political details of attempts to establish it in the late 19th century. Bordo (1987) provides a brief and readable account of the essentials of the matter.

[22]It will be recalled that the 1887 *Contemporary Review* piece was submitted by Marshall to the Commission as part of his written evidence.

[23]The *Economist* had ridiculed Jevons' proposal for a "tabular standard" in an 1875 review of *Money and the Mechanism of Exchange*, unsigned, but written by Bagehot. In the second (1892) volume of the *Economic Journal*, a certain Aneurin Williams, whose affiliation is given as "Linethorpe Ironworks, Middlesborough", and to whom Leon Walras (1886, p. v) refers as ". . . un de mes correspondents anglais. . ." published a proposal for an indexed currency very much along the lines of Fisher's later "compensated dollar" scheme (Williams 1892). This article referred to Marshall's *Contemporary Review* essay (though not to the footnote in which Marshall had himself described, though not endorsed, a similar scheme – see below pp. 38–40). Williams' proposal, surely impractical to the extent that it envisaged the daily adjustment of the rate at which the pound was convertible into specie, prompted a scornful reply from no less a personage than Sir Robert Giffen, who also

prevailed upon the editors of the *Economic Journal* to reprint Bagehot's 1875 review of Jevons. (Giffen 1892, Bagehot 1892). Giffen, (who had been assistant editor of the *Economist* under Bagehot in 1875) was vehemently opposed to any sort of indexation, not just Williams' proposal, though his attack on Jevons and Williams avoided explicit mention of Marshall. In his attack, Giffen's famous common sense and practicality dominated his skills as an economic analyst; but Marshall, whose paper defending his treatment of economic history in the *Principles* . . . appeared in the same issue of the *Economic Journal* as Giffen's and Bagehot's critiques of indexation, did not, to the best of my knowledge, ever take public issue with Giffen on this matter.

[24]Marshall's conception of the "spirit" of the Bank Charter Act derived from his reading of a then recently published evidence about the views of Sir Robert Peel, to the effect that he had ". . . not supposed that the Act could be maintained under all circumstances" (OP. p 283). Since the evidence in question stemmed from Parliamentary hearings held in wake of the Act's suspension during the financial crisis of 1847, a consequence which the Act's opponents had foreseen and predicted before its enactment, Marshall was probably rather ingenuous to accept it at face value. Note that Marshall's concern with providing an "elastic" currency for India has many parallels with arguments advanced in the subsequent decade in the United States in the course of the debates that led up to the founding of the Federal Reserve System.

[25]I am grateful to George Stigler for drawing my attention to this all important point.

[26]Rather he claimed to have built on the then prevailing conventional wisdom of the City. This, of course does not rule out an indirect Marshallian influence by way of that conventional wisdom, though Hawtrey claimed Bagehot as its true originator. I am grateful to John Whitaker for providing me with a copy of the letter from Hawtrey to Claude Guillebaud dated October 22, 1963, in which Hawtrey makes these points. Note that Hawtrey was educated at Cambridge, but learned his Economics from Sir John Clapham and G.P. Moriarty. On this see Bigg (1987).

[27]Neither Wicksell nor Fisher cite Marshall as having anticipated them.

[28]Marshall's examples of alternative assets to money were typically highly indivisible durables, including an horse (EEW, p. 167), a coat or a piano (MCC. p. 38), furniture, machinery or cattle (OP, p. 267, MCC p.44). It might be noted that Walras, whose 1886 *Théorie de la Monnaie* gives him an undoubted claim to be regarded as one of the originators of the "cash balance approach" came no closer than did Marshall to formulating the money holding decision as one involving a portfolio choice in which rates of return on alternative assets might have a systematic influence on money holding. Indeed Walras' algebraic formulation relating the demand for cash to money income is distinctly inferior to Marshall's 1871 equation relating it to wealth. It might further be noted that there is essentially no evidence of Walras' work on this topic infuencing any important monetary economist before Marget (1931) drew attention to it.

[29]On all this, see Patinkin (1974).

[30]And of course the forced saving idea, which underlies Austrian analysis, was well understood by Classical economists, as Hayek (1932) showed. Moreover, in a popular textbook of the late 19th century, Francis Walker (1878)

p.472 et seq. attributes an important, though not unique, causative role in panics to a distortion in the ratio of fixed to circulating capital in the economy brought about by speculative activity; Walker hence anticipates to a degree the Austrian idea of a distorted time structure of production. This general line of enquiry was thus available for Marshall to develop had he wished. As it was, among Cambridge economists, it was Dennis Robertson (eg.1926) who took up the forced saving idea as an important building block of cycle theory.