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J. LAURENCE LAUGHLIN AND THE QUANTITY THEORY OF MONEY

by

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J. Laurence Laughlin and the Quantity Theory of Money

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In this paper the issues raised in the turn of the century American debate over the quantity theory of money are examined. J. Laurence Laughlin of Chicago, the leading anti-quantity theorist, provoked the controversy with his theoretical and empirical criticism of the quantity theory, while Irving Fisher emerged as the chief defender of the monetary orthodoxy. Laughlin attacked the quantity theory position that a change in the quantity of money would cause a proportional change in prices. He argued that issues of convertible paper money in any single open economy would not raise prices, but would instead lead to losses of gold through the balance of payments. The separation of the neutrality of money proposition into its two components, the neutrality proposition per se and the exogeneity of money, is used to identify the essential features of the two sides of the debate.

J. LAURENCE LAUGHLIN AND THE QUANTITY THEORY OF MONEY

Lance Girton and Don Roper\*

In coining money, the government can regulate the value thereof only in the sense that it may select the metal, and determine what weight and fineness shall be used in the unit of its monetary system, and by what name that unit shall be called. (Laughlin, 1903, p. 32)

J. Laurence Laughlin, the founder of the JPE and the first chairman of the Department of Political Economy at the University of Chicago,<sup>1</sup> was the leading American critic of the quantity theory of money in the pre-World-War I period. He established a money workshop at Chicago and he and his students did theoretical and empirical studies attacking the quantity theory. Their publications initiated a debate between the anti-quantity theory forces, led by Chicago, and quantity theorists who dominated the mainstream of the profession in the United States.<sup>2</sup> The debate lasted for about two decades and resulted in Irving Fisher's classic restatement of the quantity theory.

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<sup>1</sup>Laughlin was born in 1850. He entered Harvard College in 1869, and completed a Ph.D. in history under Henry Adams in 1876. In 1878 he was made an instructor and then the first assistant professor in political economy at Harvard. After resigning from Harvard in 1888, he spent brief periods as the President of an insurance company and as a professor at Cornell. Laughlin was one of the first head professors recruited by William Rainey Harper at the University of Chicago in 1892. Laughlin's role in the early development of the University is discussed by Richard Storr (1966).

<sup>2</sup>James Magee (1913, p. 681) referred to the debate as a "controversy as keen as any ever waged." Approximately 30 per cent of the articles published in the JPE during its first decade of existence were concerned with monetary problems.

Only a few works by economists have focused on Laughlin.<sup>1</sup> John Nef (1934) has a brief description of Laughlin's role in developing and chairing the Economics Department at Chicago. A short biography of Laughlin has been written by Alfred Bornemann (1940). Bornemann emphasizes Laughlin's role in banking reform, his involvement in the public controversy over the silver question, and his associations at Chicago. In his review of Bornemann's book, Wesley Clair Mitchell (1941) has added further interesting observations concerning Laughlin's career. Joseph Dorfman (1949) reviewed Laughlin's contributions in the context of American economics at the turn of the century. More recently, Abraham Hirsch (1967) presented a detailed analysis of Laughlin's advocacy of induction and empirical verification in addressing economic problems. Hirsch explained how Laughlin's methodological views, as opposed to his economic theories, influenced the subsequent research of Mitchell. Thomas Humphrey (1973) surveyed the early empirical work on the quantity theory in the United States and described the role that Laughlin played in provoking and initiating empirical tests of the quantity theory.

All the above studies are either unconcerned with Laughlin's monetary theory (viz., Nef, Hirsch, and Humphrey), or they rank his other contributions far above his theoretical work. Laughlin's major theoretical study, Principles of Money (1903), for instance, was not given serious attention in the studies by Bornemann, Mitchell, and Dorfman. Although we are indebted to each of the above authors and make use of their findings where appropriate, our study focuses on Laughlin's monetary theory. Our purpose is to reconsider the major elements of Laughlin's theory in the context of the turn-of-the-century American debate in monetary economics.

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<sup>1</sup>Since Laughlin was active in the public debate over free silver and banking reform, especially the legislation establishing the Federal Reserve, he has received more attention from American historians than from economists. See, for example, Charles Beard (1939), Harold Faulkner (1959), and Gabriel Kolko (1967).

The paper will be organized as follows: the first section contains a review of the salient features of the historical setting in which Laughlin wrote and a summary of Irving Fisher's contributions to the QT (quantity theory) made in response to the criticisms levied by Chicago. In section II the neutrality-of-money theorem is divided into two subpropositions to help separate the issues on which there was fundamental differences of opinion from those issues over which there was no real disagreement. In section III further attention is given to the assertions of the quantity theorists that money is the exogenous or causative variable in their comparative static and dynamic propositions. Laughlin's objections to the Humean adjustment mechanism are examined in section IV and the similarity between Laughlin's views and those of Adam Smith are noted. Section V provides an explanation of the role the commercial loan theory of banking played in Laughlin's monetary doctrine. Some concluding remarks are presented in section VI.

I. The American Debate--Historical Setting and Empirical Issues

The secular price deflation from 1865 to 1896 led to agitation for such remedies as the issuance of greenbacks, the repeal of the tax on state bank notes, and, especially, for the unlimited coinage of silver, or bimetallism at 16 to 1. The economic distress and the intensity of the political controversy reached a climax with the banking panic of 1893, the severe depression of 1894-95, and the presidential campaign of 1896.

Laughlin was a very well known and influential "sound money man."<sup>1</sup> His first major professional publication in monetary economics (1886) was a history of and an attack against, bimetallism.<sup>2</sup> In his next professional writing (1887) he argued against the view that the gold standard was responsible for the secular deflation. Although the QT had long been used by cheap money advocates,<sup>3</sup> Laughlin did not come out against the QT until 1895 during the pitch of the battle against the silverites. The first publications in which he showed a break with the quantity theory were written in 1895 for the general public in response to the threat of the growing popular demand for free silver. Once committed, he never withdrew his basic objections to the quantity theory.

Laughlin's student, Sarah Hardy, began the professional debate with an empirical study published in the JPE (1895).<sup>4</sup> This led to a counterattack in the QJE by the

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<sup>1</sup>It is striking that Laughlin is relatively unknown today given the work on the QT that he stimulated and his eminence at the time. Lloyd Mints (1945) states that Laughlin "was looked upon as one of the authorities of his time" (p. 206) in money and banking. Beard argued that the idea of laissez-faire achieved "a circulation almost as wide as the silver dollar bearing the motto 'In God We Trust'" (1939, p. 514) primarily as the result of the influence of William Graham Sumner at Yale and Laughlin at Chicago. Although Warren Goldstein (1970) has pointed out that Laughlin (1933) gave himself too much credit for the formulation and passage of the Federal Reserve Act, Kolko (1967) has acknowledged that

If one regards the Federal Reserve Act as part of the longer history of the banking reform movement, then certainly Laughlin's claim for the major responsibility for the Act is fairly well substantiated . . . (p. 243)

Much of Laughlin's correspondence associated with his activities in campaigning for legislation during a two-year leave of absence from Chicago is found in the Laughlin papers at the Library of Congress.

<sup>2</sup>Laughlin's monetary writings are listed chronologically in the references. His more popular and policy oriented publications will be given less attention than his theoretical work in money. His writings in other fields such as labor will not be considered here. A more extensive bibliography of Laughlin's publications is given by Bornemann (1940),

<sup>3</sup>According to Irving Fisher:  
the quantity theory has, unfortunately, been made the basis of arguments for unsound currency schemes. It has been invoked in behalf of irredeemable paper money [the Greenback movement of the 1870's] and of national free coinage of silver at the ratio of 16 to 1. (1911, p. 15)

<sup>4</sup>According to Mitchell (1941), Laughlin "enlisted his students in a campaign against what he thought to be the fundamental fallacy underlying the demand for 'free silver.'" (p. 877)

leading American quantity theorist, Francis Walker (1895).<sup>1</sup> Mitchell, then an undergraduate at Chicago, published another empirical study (1896) in the JPE that included a rebuttal to Walker.<sup>2</sup> Laughlin's Facts About Money (1895) received a harsh review by Willard Fisher (1896) to which there was an acrimonious reply by Laughlin (1896) and a counter reply (W. Fisher, 1896c). Laughlin's more sophisticated and professional criticism of the quantity theory did not appear until after the turn-of-the-century. He spent much of his time in the mid and later 1890's engaged in the public debate<sup>3</sup> over the "battle of the standards" and serving on a commission to study monetary reform.<sup>4</sup>

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<sup>1</sup>Francis A. Walker, sometimes known as General Walker from his career in the Civil War, was president of MIT at the time. Until the publication of Fisher's 1911 work, Walker's Money (1878) was regarded as the most authoritative statement of the QT by an American economist. Walker participated only in the initial stages of the debate since he died in 1897.

<sup>2</sup>Both the Hardy and Mitchell studies reflected the influence of Laughlin, who insisted that theories should be subjected to empirical test. Hirsch (1967) presents a useful summary of the Hardy-Walker-Mitchell exchange which includes an interesting contrast between the "Chicago" demand for empirical verification and Walker's insistence that, since the QT is a particular expression of the general law of demand and supply, "It is not, therefore, for those who hold this theory, to prove their case" (Walker, 1895, p. 372).

Three other articles to which there was no direct reply were by Laughlin's students, H. Parker Willis (1896, 1896b) and John Cummings (1894).

<sup>3</sup>In addition to other activities in defense of the gold standard, Laughlin was well known for his public debate with W.H. ("Coin") Harvey in May, 1895. Harvey had suddenly become famous in 1894-95 when his pamphlet, Coin's Financial School, a popular statement for free silver, became a best seller and was widely discussed throughout the country. Reports of the Chicago debate between Laughlin and Harvey were carried not only in the U.S. press, but also in parts of Europe. Laughlin's Facts About Money (1895) contains their debate as well as reprints of newspaper articles written as an answer to Harvey's pamphlet. The debate, as part of American politics in the 1890's, is discussed by Faulkner (1959).

<sup>4</sup>Following the banking panic of 1893 and the fright experienced by hard-money groups during the Bryan campaign of 1896, the Indianapolis Board of Trade initiated several conferences in 1896-97 for the purpose of engaging commercial interests of the country to support a study and draft legislation for a monetary system "the fundamental basis of which should be ... that the present gold standard should be maintained." (Laughlin 1897b, p. 308) Laughlin was one of the eleven members elected to the Indianapolis Monetary Commission and he was responsible for the Commission's report (Laughlin, 1898), parts of which were incorporated in the Gold Standard Act of 1900. Laughlin (1900b) nevertheless criticized the act for failing to safeguard the gold standard in the thorough-going manner that he had advocated.

Most of the major professional works in book form did not appear until after 1900.<sup>1</sup> The most important of these include Laughlin (1903), William Scott (1903), Mitchell (1903), Edwin Kemmerer (1906), and Irving Fisher (1911).<sup>2</sup> Mitchell's 1903 work grew out of a dissertation at the University of Chicago, supervised by Laughlin. Although Mitchell stressed the difficulties of using the quantity of money to explain prices during the greenback era, he subsequently disassociated himself from Laughlin.<sup>3</sup>

Initially, the debate centered around the role of the demand for money in price determination. The primary thrust of Hardy's criticism was that the frequent movements of money and prices in opposite directions in the United States from 1860 to 1891 constituted evidence against the QT. This followed from her view that the QT implied that money and prices should move together and proportionately. Walker replied that this supposed discrepancy could be explained by the growth in

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<sup>1</sup>Writing in 1896, Willard Fisher stated that "it is noticeable that among the recent American books on money there are very few by professional economists." (1896b, p. 335)

<sup>2</sup>Less well-known books include David Kinley (1904), J.F. Johnson (1905), C.M. Walsh (1903), and Horace White (1903). Scott was the most widely read anti-theorist other than Laughlin.

<sup>3</sup>In 1904, Mitchell repudiated his 1896 article written under Laughlin's influence. Mitchell's feelings towards Laughlin's scholarship are apparent in his sarcastic and anonymous 1919 review of Laughlin's Money and Prices (1919). In his 1941 article, however, Mitchell showed more respect for Laughlin, especially as a teacher.

Unlike most of the other studies in monetary economics published by Chicago authors, Mitchell's 1903 study was accepted in the mainstream of the profession.

the demand for money.<sup>1</sup> Mitchell countered by arguing that when the growth in demand deposits and other instruments for effecting transactions are taken into account, the growth in the demand for money was not sufficient to account for the difference between the fall in prices and the increase in the quantity of money.

Kemmerer's interest was stimulated by the ongoing controversy. The purpose of his 1906 study was to give demand factors a role comparable to the supply of money in the determination of money prices.<sup>2</sup> Recognizing that adherents to the QT had often failed to carefully specify the variables that must be included in the "other things being equal" clause, his study was devoted to a comprehensive specification of the determinants of demand.<sup>3</sup> Although published earlier than Kemmerer's study, Laughlin's major work, Principles of Money (1903), was written during the same time period as Kemmerer's book.<sup>4</sup> For empirical evidence, Laughlin chiefly reiterated the earlier evidence that had been advanced by Hardy and Mitchell.

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<sup>1</sup>According to Walker's view of the QT:

... prices are determined by the relation between the demand for, and the supply of, money. (1895, p. 244)

Although this appears consistent with the modern QT, Walker's concept of the "demand for money" was the value of all goods and securities offered for money over a given time period.

<sup>2</sup>Kemmerer had been an undergraduate at Wesleyan and studied economics under Willard Fisher, an admirer of Francis Walker. Kemmerer reported that when he initially found himself persuaded by Hardy's argument, W. Fisher suggested that he consider the role of the demand side.

<sup>3</sup>As an example of the use of this clause, Kemmerer (1906, p. 2) cited Alfred Marshall's (1899) statement: "I hold that prices vary directly with the volume of currency, if other things are equal." (1920, p. 267)

<sup>4</sup>After writing his senior thesis in 1898 on the role of demand factors in the QT, Kemmerer completed his Ph.D. on the subject at Cornell in 1903. The publication of his book was delayed until 1906 by a trip to the Phillipines. (Bornemann, 1940, pp. 71-72)

Irving Fisher's work, The Purchasing Power of Money (1911), was a restatement of the QT prompted by the debate.<sup>1</sup> Like Kemmerer, Fisher made it clear that other factors can influence prices:

We must distinctly recognize that the quantity of money is only one of three factors, all equally important in determining the price level. (1911, p. 21)

Fisher presented two further arguments in his restatement of the QT. One argument was that the quantity equation,  $MV = PT$ , is true by definition.<sup>2</sup> This implied that empirical evidence could not be used to demonstrate any lack of equality between the demand and supply of money.<sup>3</sup>

A second theoretical contribution by Fisher was to state the QT in a manner that eliminated the necessity of the ceteris paribus assumption that accompanied previous statements of the QT. The ceteris paribus assumption arose from the following problem faced by previous quantity theorists: If money affected prices in such a short time period that other factors, like V and T, were likely to be unchanged, then it could be argued that M would affect P proportionately. But if

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<sup>1</sup>At the 1910 AEA meetings, Fisher responded to Laughlin in the following manner: I find myself unable to agree with most of the positions taken by Professor Laughlin in his able paper. In my opinion the old quantity theory is in essence correct. What it needs is to be restated not rejected. I have attempted to make what I believe to be the needed re-statement in a forthcoming book on The Purchasing Power of Money ... . (1911b, p. 37)

See, also, Fisher's comments on Laughlin's paper, "A Theory of Prices" at the 1904 meetings.

<sup>2</sup>Fisher's quantity equation,  $MV + M'V' = \sum pQ$ , will be written in the abbreviated form,  $MV = PT$ , for expositional convenience.

<sup>3</sup>Fisher, as well as Kemmerer and Walker, followed the older tradition that identified MV as the "supply of money" and PT as the "demand for money." The cash-balance or stock concept of the demand for money is associated with Cambridge monetary economics, and especially, the work by Edwin Cannon (1921). The two approaches to the demand for money are contrasted by Milton Friedman (1968).

one thought, as most quantity theorists did, that the full impact of M on P usually occurred after a significant time lag, then other factors would likely change in the interim. And if real factors changed in the interim, then the change in P would not be proportional to the change in M. To get around this difficulty, the QT was stated in a manner that assumed other factors remained unchanged.<sup>1</sup> But when real variables such as V and T were included in the set of factors assumed constant, the proportionality argument became trivial. The problem of stating the neutrality-of-money in a non-trivial manner was solved by Fisher. He eliminated the usual ceteris paribus assumption by arguing that real variables were independent of nominal variables after a transition period. The absence of the ceteris paribus assumption is seen in the following argument for the neutrality-of-money by Fisher:

... when we take into account conditions known quite apart from that equation  $[MV + M'V' = \Sigma pQ]$ , viz., that a change in M produces a proportional change in M', and no changes in V, V', or the Q's, there is no possible escape from the conclusion that a change in the quantity of money (M) must normally cause a proportional change in the price level (the p's). (1911, pp. 156-7)<sup>2</sup>

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<sup>1</sup>One of the most often cited statements of the QT came from John Stuart Mill: That an increase of the quantity of money raises prices; and a diminution lowers them, is the most elementary proposition in the theory of currency, ... the proposition is only true, other things being the same. (1868, p. 33)

<sup>2</sup>Fisher used the word "normal" or "normally" to mean after any transitional effects. (1911, p. 151)

As the above quote shows, Fisher argued for the proportional impact of M on P on the grounds that M was utterly impotent, after a transition period, in its impact on real variables.<sup>1</sup> By restating the QT without the ceteris paribus assumptions, Fisher made it clear that the absence of a close correspondence between movements in money and prices over time could not be used as prima facie evidence to reject the QT. As we shall see in the next section, Laughlin agreed that real variables were independent of nominal magnitudes, but he objected to the statement of neutrality that assumed the supply of money was the exogenous and controllable nominal variable.

## II. Comparative Statics and the Neutrality-of-Money

To understand the debate between Laughlin and the quantity theorists, it is useful to decompose the standard neutrality-of-money theorem into two separate propositions.<sup>2</sup> One proposition is that all aggregate functions are homogeneous of degree zero in nominal magnitudes and that the number of exogenous nominal variables is one or less.<sup>3</sup> The second proposition is that the quantity of money is

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<sup>1</sup>Fisher stressed that the real variables in the quantity equation are independent of M. For the neutrality argument to hold, V and T must also be independent of the price level. We found only one passage (1911, p. 153) where Fisher explicitly stated that "turnover" (V) was independent of P and could find no place where he explicitly argued that T was independent of P.

<sup>2</sup>The QT will be defined throughout the paper as the neutrality-of-money.

<sup>3</sup>A homogeneous model with no exogenous nominal variables is neutral. In such a model the nominal variables would be determined only up to a multiplicative relation which means--as neutrality requires--that the nominal variables are related proportionately. Making one nominal variable exogenous is the most severe constraint a homogeneous model can absorb and still remain neutral.

exogenous.<sup>1</sup> We will refer to these two propositions as neutrality (or the neutrality proposition) and the exogeneity of money, respectively.

Fisher took considerable care to develop arguments demonstrating that  $V$  and  $T$  are determined by technical conditions independent of monetary variables. In our terminology this is an argument for neutrality. But concerning the exogeneity of money, he was not as careful. He recognized that "... the equation of exchange, of itself, assigned no causal relationship between the quantity of money and price

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<sup>1</sup>In his study of the development of the QT, Hugo Hegeland (1951) gives the distinction between proportionality and causality a major role. However, his notion of causality is stronger than the concept of exogeneity. Hegeland is interested in the transmission mechanism; how the quantity of money causes changes in prices. It is possible to have a model in which the quantity of money is the only exogenous nominal variable, but the money supply is not a direct argument in the functions that ultimately cause prices to change. In such a model money would not be "causative" in Hegeland's sense.

Some economists around the turn of the century, who were mostly concerned with how changes in money drive expenditures and cause changes in prices, regarded the definition of "money" as a crucial question (see, e.g., A. Piatt Andrew (1899) and Richmond Mayo-Smith (1900)). This question, however, was not the center of the debate.

level, ...." (1911, p. 156) Yet he insisted, in what amounts to an unsupported assertion, that

The price level is normally the one absolutely passive element in the equation of exchange. It is controlled solely by the other elements and the causes antecedent to them, but exerts no control over them. (1911, p. 172)<sup>1</sup>

Fisher's insistence that M is exogenous and P is passive is inconsistent with his analogy between the QT and Boyle's Law:

... the really important matter is that students of economics should appreciate the existence of a law of direct proportion between the quantity of money and price level--a law as real, as important, and as fundamental in the economic theory of money, as Boyle's Law of direct proportion between density and pressure is real, is important, and is fundamental in the physical theory of gases. (1911, pp. 296-97)

Boyle's Law is a statement of proportional association between density, pressure, and temperature--it says nothing about which factor is exogenous or causative.

The fact that Fisher did not argue for the exogeneity of M is in keeping with a long tradition in monetary economics that has given questions like "What happens when the quantity of money is changed?" considerable attention. This sort of question has, of course, been addressed at least since the time David Hume pondered the consequences of an overnight annihilation of money. But the act of addressing such a question builds an exogenous M into one's analysis.<sup>2</sup> Laughlin objected to

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<sup>1</sup>Ostensibly, Fisher (1911) did provide argument in support of his view that P is passive and M is causal. In chapter VIII which is largely a synthesis of arguments in earlier chapters, he devotes section 4 to considerations of an exogenous change in M; section 5 to an exogenous change in V (and V'); section 6 to an exogenous change in T (or in "the Q's"); and section 7 to an exogenous change in P (or in "the p's"). But he uses different standards in judging sections 4 and 7. In section 7 he considers a doubling of P for the United States and then he notes that M will fall (rather than rise) as the result of a balance of payments deficit. But when he considers an increase in M in section 4, he reasons in terms of a closed economy.

<sup>2</sup>Some reasons for the tradition of addressing this question will be explored in the next section.

the traditional analysis that took as the starting point an exogenous quantity of money.<sup>1</sup>

It is impossible to start with the assumption that the quantity of the circulation is capable of monopoly. And yet this is the Ricardian hypothesis. If there were limited sorts of media of exchange, and if these were wholly under control as regards the quantity outstanding, the conclusion which follows might be hypothetically correct, but it would be quite aside from the facts to-day ... . In the United States, for instance, should gold be required as a medium, there is free coinage ... in a real sense gold is an elastic currency which can be freely imported and exported. (1905, p. 78)

The "Ricardian hypothesis" to which Laughlin refers is the idea that M can be controlled as was the case during the period from 1797 to 1821 when the pound sterling was inconvertible.<sup>2</sup> Laughlin argued that "the quantity theory can logically be applied only to an inconvertible paper" (1903, p. 247)<sup>3</sup> and that "it does not hold as a theory of prices in regard to any metal whose coinage is free" (1903, p. 285). Laughlin accepted the exogeneity of M for a country with inconvertible currency but rejected the exogeneity of M for a country with convertible money.<sup>4</sup>

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<sup>1</sup>A similar statement is found in (1903, p. 314).

<sup>2</sup>"By his [Ricardo's] supposition, only the state supplies the money, and there is no free coinage." (1903, p. 247)

<sup>3</sup>Note that Laughlin said the QT can be "logically" applied only to inconvertible paper and, in the longer quote cited earlier in the paragraph, he said that the QT might be "hypothetically" correct for inconvertible paper. These modifiers reflect his view that, for an inconvertible currency, the QT would continue to be inconsistent with the facts although it could not be refuted on grounds that the money supply was predetermined.

<sup>4</sup>Although Laughlin explicitly argued that M could not be exogenously changed for a country with a fixed parity, Fisher interpreted Laughlin as having argued that an exogenous change in M cannot affect P and, therefore, must have its full impact on V:

For aught the equation of exchange itself tells us, the quantities of money and deposits might even vary inversely as their respective velocities of circulation. Were this true, an increase in the quantity of money would exhaust all its effects in reducing the velocity of circulation, and could not produce any effect on prices. If the opponents of the "quantity theory" could establish such a relationship, they would have proven their case ... . But they have not even attempted to prove such a proposition. (1911, p. 152)

Laughlin's "True Theory of Prices" (1903, ch. IX)<sup>1</sup> was written for a convertible currency and organized around the determination of the relative price (R) of goods in terms of gold.<sup>2</sup> The domestic price level (P) must equal the product of the fixed parity (currency price of gold) and R. Laughlin explained P by focusing on R since he regarded it as more useful to think of R as clearing the world gold-and-goods market than to think in terms of P as clearing the domestic money-and-goods market.

Laughlin analyzed the determinants of R under the headings of the demands and supplies of gold and goods in the world. He emphasized the role of such determinates of R as monopolistic combinations and technical advances. While he recognized that the supply of gold would affect R, he argued that for analysis of monetary problems over a period as long as a few years the role of new production of gold was normally limited because of the large accumulated stock relative to new supply. Only in the very long-run did the relative cost of production of gold become an important determinate of R. (See, e.g., 1903, p. 337 and 1886, p. 41.)

It is within this framework that Laughlin considered the effect of a change in the quantity of fiduciary money. Changes in the amount of fiduciary money were among the factors affecting the demand for the world gold stock and thereby R:

The influence upon prices of the quantity of the ...media of exchange, therefore, is referable to the class of forces affecting the demand for the standard commodity. (1905, p. 68-69)

If banknotes are introduced, they may, to some extent, economize the use of gold. Only as they diminish the demand for gold in the world would they thereby affect the world value of gold. (1898, p. 131)<sup>3</sup>

But he emphasized that the size of the effect on prices was limited by the magnitude

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<sup>1</sup>See also Laughlin's "A Theory of Prices" (1905).

<sup>2</sup>Laughlin also considered, but only briefly, the determination of the price level for an inconvertible currency. He argued that inconvertible currency can have value only if the public believes that it will be redeemable into a commodity such as gold some time in the future. The quantity of such inconvertible money could influence prices only indirectly through changing the public's expectations about the likelihood and timing of future convertibility. (1903, pp. 530-31, and 400). After the widespread experience with inconvertible money during and after World War I, Laughlin appeared to withdraw from his earlier position. (1924, p. 226)

<sup>3</sup>See also (1903, pp. 135-37, 388, and 1905, p. 72).

of the change in demand compared to the large accumulated stock of gold in the world:

...prices would not rise unless there were a serious fall throughout the world in the value of gold--which owing to its great stock, is quite unlikely to occur in any ordinary period of time. (1903, p. 393)<sup>1</sup>

A unilateral increase in fiduciary money in any single country, in particular, would be unlikely to affect the level of prices:

Unless changes in the volume of the "circulation" in any one country are such as to produce an effect on the world's value of the metal in which prices in the great trading nations are expressed, it is inconceivable that the level of prices in any one country should be changed. (1903, p. 389)

In modern terminology, Laughlin had a recursive model in which R and P were determined independently of the supply of non-standard money in any single country.<sup>2</sup>

Given the demand for money in the domestic economy and the predetermined value of P, the quantity of money was endogenously determined. In contrast to the quantity theorists who began their theoretical reasoning with an exogenous quantity of money, Laughlin began with a fixed parity and argued that the quantity of money in a country was not only endogenous but incapable of influencing the price level.<sup>3</sup>

Laughlin's view that M is endogenous is contrary to the quantity theorists' neutrality-of-money theorem. As a counterpart to the exogenous M in the QT, Laughlin treated the value of a country's parity as exogenous in his analysis. The parity, or price at which a country's currency is convertible into gold, was the one nominal or monetary variable that Laughlin recognized as susceptible to change by policy action.

Although Laughlin rejected the exogeneity of money, he did accept the other part of the QT, viz., the neutrality proposition. Starting with an exogenous change

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<sup>1</sup>See also (1903, p. 103 and 1905, p. 70).

<sup>2</sup>The notion of "recursivity" used here is an interpretation of Laughlin's "antecedent price event" within a comparative statics framework. An interpretation of Laughlin's "antecedent price event" within a dynamic context is given in section IV.

<sup>3</sup>The view that the quantity of money cannot influence its value is consistent with the doctrine of metalism. According to metalism, fiduciary or paper money is intrinsically worthless such that people would not hold it unless its value were predetermined through convertibility into a standard commodity. Harold Reed (1942) suggested that there is a similarity between Laughlin's views and metalism.

in a country's parity, Laughlin presented a thorough discussion of the effects of the parity change and argued for its (long-run) neutrality (1903, pp. 392-407). Beginning with a change in the value of the currency in terms of gold (p. 393), he considered the possible short-run, non-neutral effects (pp. 392-94) and discussed the temporary distributional effects of the resultant change in prices (pp. 394-406). But he insisted that after a transition period a depreciation of the currency will leave the real situation unchanged:

Of course, after high or low prices are once reached, every one on the new level is in the same relative position to others . . . . (1903, p. 401)

From the foregoing discussion there emerges the conviction that the sometime popular belief that rising prices permanently quicken industry, and that the more money a country has the better off it is, is wholly wrong. (1903, p. 406)<sup>1</sup>

Laughlin's neutrality assumption,<sup>2</sup> when combined with an exogenous parity or (given foreign parities) an exogenous exchange rate, yields (in modern terminology) the neutrality-of-the-exchange rate.<sup>3</sup> This result of Laughlin's monetary theory, the neutrality-of-the-exchange rate, provides a sharp contrast between his view and the quantity theorists' neutrality-of-money proposition, a contrast that helps identify their agreement (over neutrality) as well as their disagreement (concerning exogeneity).

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<sup>1</sup>In a popular statement of his view (1898), he was contemptuous of any contrary opinion:

... as every tyro knows, after the new level of prices has been reached, every article bears the same relative value to other articles as before. The only change is the number of the price units in which goods are counted. (p. 133)

And for anyone who would mistake his position concerning the effects of a depreciation of the monetary standard, he used the analogy that:

If we should lighten the avoirdupois pound by one-half, then a bag of flour which with the old measures weighed one hundred pounds, would mark off two hundred pounds under the depreciated standard. (1898, p. 132)

<sup>2</sup>More precisely, Laughlin regarded the impact of a parity change as neutral on such real variables as relative prices, but not on creditor-debtor relationships. In fact, it is the transfer of wealth following a parity change that may have been his primary aversion to a devaluation. (See, for instance, 1919, ch. VII.)

<sup>3</sup>In principle, there are an infinity of counterparts to the neutrality-of-money theorem. If, for instance, money wages ( $W$ ) were the one exogenous nominal variable and an aggregate model were homogeneous (of degree zero in all nominal variables), the model would yield the neutrality-of- $W$  theorem.

### III. The Causal Role of Money

In the previous section it was argued that there was implicit agreement between Laughlin and the quantity theorists concerning the neutrality proposition--that part of the QT that remains when the neutrality-of-money is stripped of its exogenous-money assumption. It was also argued that the disagreement concerned the appropriateness of using the quantity of money (versus the parity) as an exogenous variable. In mathematical models, of course, the term "exogenous variable" is unambiguous, but the dispute did not center around formal models and the disputants used terms like "causal" and "antecedent" variable. It will prove useful, therefore, to explore the nature of the disagreement in greater detail. Our first task will be to determine exactly what the quantity theorists, particularly Irving Fisher, meant when they argued that causation runs from M to P.

It will be argued that Fisher had two separate propositions embodied in his view that P is a passive variable and M is a causal variable.<sup>1</sup> The fundamental difference between these two propositions can be portrayed most clearly by a brief consideration of Fisher's famous proposal to stabilize the commodity value of the dollar.<sup>2</sup> According to his plan, the U.S. price level could and should be controlled by frequent changes in the U.S. gold parity. If domestic prices were to rise, they could be reduced to their former level (at which debts in the previous period were contracted) by lowering the dollar value of gold.

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<sup>1</sup>It is instructive to note that the title of Fisher's book, The Purchasing Power of Money, is the name of the endogenous variable that is to be explained in the book.

<sup>2</sup>Fisher's plan became widely discussed in 1912 after it was criticized by the Commercial and Financial Chronicle (Oct. 5, 1912) in response to a report that Fisher made to the Congress of Chambers of Commerce in September, 1912. A session of the AEA meetings in December, 1912, was devoted to Fisher's plan. Attention to the plan was revived with the inflation of 1919-20 and the deflation of 1920-21. The Goldsborough bill, introduced in Congress in 1923, was inspired by Fisher's plan.

Fisher's plan to stabilize the purchasing power of the dollar was made with few references to the quantity of money. The first statement of his proposal is found in the last chapter of The Purchasing Power of Money (1911). In this chapter, the only role for money is the implicitly passive one, viz., that the quantity of money will accommodate changes in trade, since the price level is determined by the gold parity.

One could, of course, just attribute the apparent inconsistency between the last chapter and the rest of Fisher's book to an oversight and drop the matter. But Fisher's plan can be interpreted as consistent with his assertions that M causes P if we use the notion of causation advanced by Fisher in the following passage:

The price level outside of New York City, for instance, affects the price level in New York City only via changes in the money in New York City. Within New York City it is the money which influences the price level, and not the price level which influences the money. The price level is effect and not cause. (1911, p. 172)

In the above quote Fisher implicitly accepted the idea (that he also accepted in his price stabilization plan) that money adjusts to foreign prices, but he insisted that money must lead domestic prices in the adjustment process. The view that M must lead P in a dynamic adjustment process is consistent with his price stabilization scheme and constitutes a particular meaning of the idea that "causation" is from M to P.<sup>1</sup>

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<sup>1</sup>Laughlin agreed with Fisher that an essential feature of the QT was that M leads, P in the adjustment process. According to Laughlin, a quantity theorist regarded prices as being determined by the "actual exchange of 'money' against goods." (1903, p. 314) The quantity theorist, e.g., Mill, Walker, and Fisher, argued that an increase in the supply of money would lead to an increase in the demand for goods, as more money was offered for goods, and thereby cause an increase in the price of goods in terms of money. Thus, Fisher had M leading P because he needed the change in M to induce a change in the market demand for goods to alter P. As explained above, Laughlin had a different view of the price determination process. According to Laughlin, prices of goods in terms of the standard metal were determined before the actual exchange of the media for goods. First, the value of goods in terms of the standard metal was determined by the relative supplies and demands for goods and gold in world markets, then the media of exchange needed to facilitate the transfer of goods was supplied automatically from the various sources. (See 1903, pp. 286, 314-15, 361-63, and 392-93.)

Most of Fisher's analysis, however, is not concerned with this dynamic meaning of causation. In most of the book, Fisher engages in comparative static analysis, asserting that P must adjust to an exogenous change in M. The dynamic proposition that M leads P is an analogue to his use of an exogenous M in his comparative static analysis, but, it is only the dynamic argument (that M leads P) that he used when referring to an actual economy like the United States or New York City. Whenever Fisher performed a comparative static experiment (with money as the exogenous nominal variable) he was invariably engaged in an abstract exercise involving a "hypothetical community".<sup>1</sup> Whenever he argued that P was dependent on M while addressing the problem of price determination of an existing economy, he introduced either implicitly or explicitly, a time dimension. In doing so he shifted from a static argument concerning a "hypothetical community" to a dynamic argument about M leading P.

The shift from an exogenous M to an endogenous M is also found in the writings of Walker and Kemmerer as they move from purely theoretical arguments to an analysis of monetary problems for the United States.<sup>2</sup> Fisher, Walker, and Kemmerer were all aware that comparative static exercises with an exogenous M were not applicable to a country with a convertible currency.

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<sup>1</sup>Fisher's "hypothetical community" is equivalent to the concept of a "closed economy" used in modern theory:

We shall also ignore foreign trade and restrict ourselves to trade within a hypothetical community. (1911, p. 16)

<sup>2</sup>Walker (1878) explicitly argued that limited coinage of silver by the United States would not affect the price level but only displace an equal amount of gold from the internal circulating media. He recognized, therefore, that the U.S. money supply could not be altered by policy actions while the U.S. currency was convertible into gold.

When discussing the 1933 devaluation of the U.S. dollar, Kemmerer argued as follows:

With the broad assumption that, in a gold standard country, variations in the price level express changes in the value of gold and value of goods, and that the value of gold in terms of goods is the resultant of the interaction of the forces of demand and supply on gold and on goods, I am in full agreement. (1934, p. 13)

In this passage Kemmerer omitted the quantity of money as a determinant of the U.S. price level as long as gold convertibility was in effect.

It is interesting to ask, therefore, why they were predisposed to develop comparative-static theories not relevant to existing economies. At one level we can answer this problem by noting that they were addressing traditional questions like "What happens to ... when the quantity of money is changed?"--questions that incorporate an exogenous M as an initial condition. This immediately leads to the larger problem of determining why, historically, so much attention has been given to questions that take a given change in M as the point of departure. It is outside the scope of this paper to attempt any comprehensive examination of the sources behind the long tradition of addressing questions in monetary economics that presuppose an exogenous M. We should, though, note that the reasons given by Laughlin and his student, Willis, in their discussions of the development of the QT.

Laughlin and Willis argued that Ricardo espoused two theories of price.<sup>1,2</sup> In the case of convertible currency, they argued that Ricardo held a cost of production theory--that the commodity value of gold (and, therefore, the price level) is governed by the relative costs of producing commodities versus gold. But for inconvertible paper currency (e.g., the currency circulating in Britain during the

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<sup>1</sup>The importance of Ricardo's views to American quantity theorists was indicated by the remarks of Francis Walker (1878) who wrote that we should

... follow Mr. Ricardo without deviation, believing that he was the economist who most fully and justly apprehended the relations of money to price: and that departure from the principles laid down by the great thinker leads to confusion, misconceptions, and needless controversy. (p. 197)

And, according to Fisher (1911, p. 226), "Ricardo probably deserves chief credit for launching the [quantity] theory."

<sup>2</sup>That Ricardo held two distinct theories of price has been argued by Oswald St. Clair (1957). Whether or not he used only one theory for inconvertible currency and only the other theory for convertible currency--as Laughlin and Willis contend--has been a debated issue. Hegeland (1951, pp. 59-60) argues that Ricardo used the QT for both convertible and inconvertible currencies.

restriction period from 1797 to 1821), Ricardo stated that the value of money must depend "wholly upon its quantity." (1951, p. 223) Laughlin's view of this quantity theory of prices was that<sup>1</sup>

Since prices expressed in coin cannot be explained by this theory of Ricardo, and since convertible paper must have the same value as the coin by which it is redeemed, we are finally led to suppose that the quantity theory can logically be applied only to inconvertible paper ... (1903, p. 247)

According to Willis (1896b):

Thus, the price theory of Ricardo was not intended to apply, even in the remotest way, to a regime of free coinage of the metals. Under such a regime his doctrine was purely that of comparative cost of production. ... The Ricardian doctrine ... was at once seized upon by contemporaries and freed from the careful limitations and restrictions which had been imposed upon it by its author. (p. 429)

The idea that the erroneous development of the QT was, in part, due to a misapplication of Ricardo's theory of the value of irredeemable paper currency was also the point of Laughlin's (1903, pp. 240-252) lengthy assessment of Ricardo's contribution.

This tradition of taking the quantity of money as exogenous has proceeded, of course, up through modern economics.<sup>2</sup> Although Keynes, for instance, was writing in

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<sup>1</sup> Similar remarks can be found on pp. 285, 314, 510-14, and 528-31 of Laughlin (1903). As an exception, Laughlin acknowledged the sharp increase in European prices in the sixteenth century resulted from the importation of precious metals from the New World.

Out of the general beliefs thus current the idea that an increased quantity of money led to a higher level of prices was natural and just. (1903, pp. 225-6)

<sup>2</sup> The endogeneity of P (and, implicitly, the exogeneity of M) is emphasized in the lecture notes that Patinkin (1969) reported from a course under Lloyd Mints on "Money" in 1944. According to Patinkin's notes:

But quantity theory says that P is the dependent variable. ... P is the dependent variable (in the long run) of the equation  $MV = PT$ . (p. 55)

a small economy with a history of fixed exchange rates, the neo-Keynesian paradigm takes the quantity of money as exogenous. Similarly, Patinkin's (1965) well-known model represents a closed economy. Such models must then be "opened up" to accommodate the external sector.<sup>1</sup> Since so much of the world has historically consisted of open economies with fixed rates, it is notable that the theoretical paradigms in monetary theory and macro-economics have not had as their centerpiece an exogenous foreign price level with the gold parity (rather than a monetary aggregate) as the basic control variable. It is only in the post-World War II era that one country with a fixed exchange rate, viz., the U.S., has become sufficiently "large" that closed economy analysis has found an important application. The theoretical literature that endogenizes the money supply and that is being accepted into the mainstream of economic analysis is, paradoxically, also a recent phenomenon.<sup>2</sup>

The purpose of this section has been to determine the meaning(s) of the argument that M causes P in order to identify the exact problems over which Laughlin and the quantity theorists disagreed. We can conclude that there were two problems, one concerning comparative-statics and the other concerning dynamics.

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<sup>1</sup>When an external sector with a fixed exchange rate is added to an income-expenditure model, the model yields an endogenous money supply unless sufficient argument is given to justify a sterilization assumption. This reversal from an exogenous to an endogenous M in a static model is analogous to the reversals in thinking of Kemmerer and Walker, as they went from their static, theoretical models to the real world.

<sup>2</sup>Robert Mundell (1961) specified an open-economy version of the income-expenditure model which, unlike the earlier but more complicated analysis by James Meade (1951), became widely accepted by international monetary economists. While the endogeneity of money was emphasized in Mundell's original article, many subsequent users assumed sterilization, thereby allowing money to remain exogenous. Acceptance of the notion of an endogenous money supply is perhaps becoming more widespread with the realization that effective sterilization is difficult.

On the problem of whether  $M$  can be taken as exogenous in a comparative-static analysis, the debate was not joined because two separate issues were not distinguished. On the matter-of-fact issue of whether the choice of parity or the quantity of money determined the price level for a gold-standard country, there was no disagreement. Fisher, Walker, and Kemmerer, in effect, agreed with Laughlin that  $M$  had little or nothing to do with determining the price level in the United States. The underlying but unrecognized issue was over the legitimacy of engaging in theoretical exercises in which  $M$  was taken as exogenous. Laughlin objected to addressing questions concerning the consequences of an exogenous change in  $M$  when, in fact,  $M$  could not (with a convertible currency) be changed at the discretion of monetary authorities. Kemmerer and Fisher did nothing to address this issue such that debate on this problem was never joined.

On the problem of the adjustment process, of whether changes in  $M$  must precede changes in  $P$ , the disagreement was explicit and the debate was joined.<sup>1</sup> Laughlin stressed that prices of the same goods in different countries were closely linked (i.e., tended to equality except for transportation costs and tariffs) such that domestic prices would adjust quickly to changes in foreign prices. As a consequence, changes in domestic prices could precede changes in the domestic quantity of money. His views on this problem will be developed in more detail and contrasted with the classical adjustment mechanism in the next section.

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<sup>1</sup>Magee (1913) interpreted the debate as being over the issue of whether money moved before or after (bond) prices. His empirical tests on U.S. data were inconclusive although he regarded Fisher's view as more consistent with the data.

#### IV. The "Antecedent" Determination of Prices and the Classical Adjustment Mechanism

Laughlin's view of the turn-of-the-century conditions of international and inter-regional trade led him to reject any adjustment mechanism that relied on the existence of differential price levels. In his view the classical adjustment mechanism associated with the quantity theory embodied the argument that price levels between regions had to differ in order to induce a redistribution of money between the regions. He not only rejected the classical adjustment mechanism, but he offered an alternative mechanism similar to that advanced by Adam Smith.

Laughlin's objection to the traditional specie-flow mechanism of international adjustment was developed in the following passages:

There are evident difficulties in using the classical theory whenever we try to explain modern conditions. In the first place, the action of the international markets, with telegraphic quotations from every part of the world, precludes the supposition that gold prices could in general remain on a higher level in one country than another (cost of carriage apart) even for a brief time, because, in order to gain the profit, merchants would seize the opportunity to send goods to the markets where prices were high. (1903, p. 369)

The whole business world on both continents is always and actively at work to prevent any appreciable difference in the level of gold prices between commercial nations. A rise of price of any commodity due to local causes (such as deficient harvests, wars, etc.) is instantly met by importations from other countries; indeed, the actual event is more often discounted by shipments of goods. (1903, p. 380)

Laughlin acknowledged that the adjustment mechanism might have been applicable in the past:

A century or so ago, or even now among existing countries having no rapid communications with commercial nations--if there are any such--perhaps prices might, unknown to traders, remain at different levels in different countries. (1903, p. 380)

But with modern developments in communications, markets were closely tied across countries:

These gains have been accompanied by the commercial use of the telegraph and telephone, which, giving instant knowledge of quotations in markets all over the globe, have revolutionized the conduct of trade. (1903, p. 387)

Laughlin's view is contrary to the position taken by Fisher that "The price level outside of New York City, for instance, affects the price level in New York City only via changes in the money in New York City." (1911, p. 172) When the logic of Fisher's position is carried out for small economic units, certainly for a city, neighborhood, or a family, Fisher's position is clearly untenable.

Jacob Viner (1937) argued that both sides of the debate were less sophisticated than they should have been in their discussion of the Humean adjustment mechanism.<sup>1</sup>

The classical school and its important followers all held the same views on this point: after allowance for transportation costs, the market prices of identical transportable commodities must everywhere be equal or tend to be equal when expressed or converted to a common currency. When, therefore, critics of the classical theory have taken it to task on the ground that it explained the adjustment of international balances by the influence on the course of trade of divergent market prices in different markets of identical transportable commodities, or when followers [viz., A.C. Whitaker in his criticism (1904) of Laughlin] of the classical theory have attempted to defend it although themselves giving it such an interpretation, they have misinterpreted the classical doctrine. (pp. 316-7)

The "critics" cited by Viner for this misinterpretation were Laughlin, J.S. Nicholson, and Knut Wicksell. Viner's criticism of Laughlin--who objected, according to Viner, to a naive version of the classical adjustment mechanism for the right reasons--would have been more appropriately directed toward Fisher's statement of the (naive) version of the classical adjustment mechanism.

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<sup>1</sup>Viner believed that the adjustment mechanism as envisaged by classical writers relied on "relative changes in the actual sales prices of different commodities." (1937, p. 318) The different commodities that Viner had in mind were traded versus non-traded goods or exportables versus importables. (pp. 305, 323-25)

Viner (1937) argued that "insofar as the classical theory of the mechanism of international trade had one definite originator, it was David Hume." (p. 292)

A long article by A.C. Whitaker (1904) was written for the purpose of answering Laughlin's criticism of the classical adjustment mechanism. It is interesting to note that Whitaker took Laughlin's rejection of the classical mechanism as implying that Laughlin disagreed with Ricardo's proposition concerning the "normal" distribution of specie in the world. Although Laughlin did not emphasize his agreement with a theorem so closely associated with Ricardo and the QT, he did state that, in equilibrium:

each country has that part of the money metal in the world which is in the proportion of its transactions to those of other countries ... . (1903, p. 368)

Throughout chapter X, (1903)<sup>1</sup> Laughlin emphasized the distinction between relative prices and the general price level as indicated in the following characteristic passage:

... it is the relative expenses of production, and comparative prices of goods within a country, and not the general level of prices, which causes international trade. (1903, p. 307)

This is an example of the distinction between real and monetary phenomena that Laughlin consistently adopted. And on the particular issue of the adjustment mechanism, he was able to criticize the classical theorem for embodying a (quantity-theory à la Fisher) argument that prices cannot move without a prior movement in money, without rejecting the neutrality principle which implies that the distribution of specie (a real variable) is invariant to monetary phenomena.

Although it is not the purpose of this paper to identify all the antecedents to Laughlin's view of the adjustment mechanism, mention should be made of the affinity between his view and Adam Smith's.<sup>2</sup> This is revealed in his attitude towards Smith's critique of Hume:

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<sup>1</sup>Most of Laughlin's views on the subject are found in chapter X (1903) which is a reprint of his article, "Prices and the International Movement of Specie" (1902).

<sup>2</sup>Laughlin's views are also similar to Tooke's, a leading figure in the banking school. During an extensive investigation of money and price data in the early part of the nineteenth century, Tooke concluded that money was the result and not the cause of prices. See pages 81-85 of Gregory's "Introduction" to Tooke and Newmarch (1928) and Schumpeter (1954, p. 709).

In his treatment of metallic and paper money Smith explained that an addition of convertible paper would not raise prices, because it would drive out an equal quantity of coin; and the exchange of goods which had been formerly performed solely by coin, would now be affected by the same quantity of mixed circulation of paper and coin. ... This is an immense progress beyond previous writers; and he neatly gave the coup de grâce to Hume in the following characteristic passage, combining reasoning and fact:

"The increases of paper money, it has been said, by augmenting the quantity, and consequently diminishing the value of the whole currency, necessarily augments the money price of commodities. But as the quantity of gold and silver which is taken from the currency is always equal to the quantity of paper which is added to it, paper money does not necessarily increase the quantity of the whole currency ..." (1903, p. 238)

In addition to the fact that Laughlin minimized, like Smith and Tooke before him, the degree that price levels could get out of line between countries, he postulated an adjustment mechanism that could serve as an alternative to the role of price levels in the classical adjustment mechanism. Laughlin argued that if the demand for money was greater than the supply, money would have to be created against the purchases of gold in order for the country to maintain convertibility. Stated another way, the domestic quantity of money was demand rather than supply determined:

The quantity of its media of exchange ... will automatically adjust itself, without any interference by the state, to the amount of exchanging to be done. (1903, p. 409)

... any one country through its international trade will automatically receive as much gold as the proportion of its needs to those of other countries' demands. If it requires gold, it will instantly be imported. (1903, p. 417)

This position is very similar to Smith's which was paraphrased by Viner:<sup>1</sup>

When a country has more money than it needs to circulate its trade, the "channels of circulation" will overflow, and the surplus money will be sent abroad "to seek that profitable employment which it cannot find at home." (1937, p. 87)

The exposition of this alternative adjustment mechanism by Laughlin and Smith advanced ideas similar to the modern view of the monetary approach to the balance of payments.<sup>2</sup>

#### V. The Real-Bills Doctrine, Abnormal Credit, and Convertibility

In the previous sections Laughlin's monetary theory has been shown to be much closer to modern monetary theory than had been previously supposed. But as the following passage indicates, Laughlin was an advocate of the commercial loan theory of banking:

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<sup>1</sup>Viner regards Smith's failure to accept Hume's adjustment mechanism as "One of the mysteries of the history of economic thought." (1937, p. 87) But it is not mysterious if one recognizes the alternative mechanism postulated that did not rely on relative (or absolute) price differentials. In his 1924 book, Viner failed to recognize any adjustment mechanism that did not require a price differential. In his 1937 study he acknowledged, following the work of Ohlin, the direct income effect on the trade balance of a continuous transfer and acknowledged the deficiency in his previous work. (1937, pp. 294 and 306) But, he did not recognize the possibility of a direct effect of an excess supply of money on the overall balance of payments and so could not recognize that Smith and Laughlin had any adjustment mechanism at all. (1937, pp. 292-325)

<sup>2</sup>The difference between the Humean and the monetary approach to the balance of payments has been summarized by Harry Johnson:

... the new (monetary) approach to balance-of-payments theory, while basically Humean in spirit, places the emphasis not on relative price changes but on the direct influence of excess demand of or supply of money on the balance between income and expenditure, or more generally between total acquisition and disposal of funds whether through production and consumption or through borrowing and lending, and therefore on the overall balance of payments. (1972, p. 1556)

See Frenkel and Johnson (1976) for a collection of many of the recent studies on the monetary approach to the balance of payments.

It [deposit currency] is a medium which arises out of the transactions in goods; it grows as fast and no faster (in normal credit) than the exchanges to be performed; it is a machine which expands exactly in proportion to the work to be done, and contracts as transactions fall off. This is a medium of exchange, or currency, based alone on commercial assets, with that modicum of cash reserves needed to protect the normal operations from distrust, or to provide that amount of cash needed in cases of fright or misjudgment. (1903, p. 120)

Today, macroeconomists in general and modern quantity theorists in particular have renounced this doctrine as fallacious. Within the context of Laughlin's theoretical framework, however, his advocacy of the real-bills test is not subject to the usual criticism.<sup>1</sup>

In previous sections it was shown that Laughlin held that the quantity of money or circulating media within a country was endogenously determined by the price level and the demand for money. Consequently, the nature of the securities against which commercial banks made loans had nothing to do with the total supply of circulating media within a country. Unlike many members of the English banking school who did not clearly specify whether convertibility or the short-term, self-liquidating feature of commercial bank loans was most important for assuring that banks would not over-issue, Laughlin was unambiguous on the point:

On their side, the directors of the Bank of England held that there could be no excess in notes if the issues arose from discounts for short periods based on actual transactions. Their error existed in not realizing the necessity [emphasis added] of testing the solvency of the deposit currency in coin itself on demand. Assuming a system of immediate redemption, then, if notes were outstanding in excess of the needs of the community for a medium of exchange, it was inevitable that they must come in to be redeemed. Such a system would automatically test how much the country needed; because no more than that could possibly be kept out. If the notes were immediately convertible, discounts could not be increased "so as thereby to produce an excess of their paper in circulation, without quickly finding that the surplus returned upon themselves in demand for specie." (1903, p. 255)

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<sup>1</sup>A comprehensive treatment and critique of the real-bills doctrine is given by Lloyd Mints (1944). A theoretical analysis of the real-bills doctrine and its fallacy is found in Girton (1974).

The usual criticism of the real-bills doctrine--that it leaves the price level indeterminant since the nominal value of bank loans and deposits is based on the nominal value of loan demand--is not applicable to Laughlin since the domestic price level was determined "antecedently" by the world value of gold.<sup>1</sup>

If the banking system was imprudent and created liabilities in excess of the amount indicated by the real-bills test, Laughlin believed "abnormal" credit would result. This would produce an excess supply of the medium of exchange from domestic sources and lead to gold losses and, if continued, to convertibility problems. Hence, "the real function of a specie test is to force an elimination of the abnormal from the normal credit." (1903, p. 35)

Laughlin never intended the real-bills test as a determinant of the total quantity of the circulating media. But, at the time Laughlin was writing, the domestic source of money was largely determined by the private market--the commercial banking system--with little explicit control by government. He used the real-bills doctrine as an explanation of changes in the supply of bank deposits, as a way of endogenizing the domestic source of money.

Even in this role, however, the real-bills test is inadequate since it fails to specify the interest rate at which loans are made. Making sound, self-liquidating, commercial loans at the going market interest rate might be a reasonable guide for an individual bank, but without further development, it is an inadequate explanation for the output of the banking industry as a whole.

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<sup>1</sup>Frank Fetter (1965) has also pointed out, in reference to the role of real-bills in Adam Smith's monetary theory, the importance of the underlying assumption of convertibility: "Smith's analysis was all within the framework of convertibility, so that the question of whether occasional misjudgment might lead to temporary overexpansion of a convertible money supply was really of little significance ... ." (p. 10) Other authors have not always recognized this distinction. J.H. Hollander (1911), for example, refers to "The absence of any adequate discussion by Adam Smith ... of the test of redundancy." (pp. 437-38)

## VI. Concluding Remarks

In this paper we have critically examined the major elements in Laughlin's monetary theory. The preceding sections demonstrate that his theory, while not without problems, had a reasonable degree of internal consistency and was more relevant than the QT to the problem of price determination for a gold-standard country. Consequently, it is appropriate to ask why his theory was so severely criticized and sometimes dismissed by his contemporaries.

Laughlin was "one of the most ardent defenders of the gold standard" (Hofstadter 1958, p. 162) and he "continuously and furiously attacked the silverites" (Dorfman 1949, p. 273).<sup>1</sup> Some critics argued that Laughlin's theory was "invented" (Johnson 1903, p. 45) and "devised" (Clow 1903, p. 594) to defend the gold standard against the silver movement. Similarly, Irving Fisher stated that Laughlin "was what we would now call 'rationalizing' on economic theory."<sup>2</sup> Laughlin was aware of such criticism but he scoffed at the idea that he would discard the QT "merely because it was connected with a passing phase of monetary agitation." (1903b, p. 621)

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<sup>1</sup>Laughlin's intense involvement in the struggle against silver is more understandable when we note that Laughlin (1898) believed that the 1893 banking panic was caused by the Sherman Silver Purchase Act of 1890. The banking panic was widely regarded as the cause of the severe depression of 1894-95, during which the Pullman Strike of 1894 raised fears of open industrial warfare. In this setting the sound-money groups became severely frightened when the silver forces captured control of the Democratic Party in 1896. As a result, the Republican Party was able to raise ten times as large a campaign fund in 1896 as in the campaign of 1892.

<sup>2</sup>This is a quote from a letter from Irving Fisher to Bornemann cited by Bornemann (1940, p. 79).

The loss in credibility that Laughlin suffered and the failure of the profession to treat his monetary theory more seriously was, at least in part, due to the intemperance of his own statements. In "Socialism and the Price Question", for instance, Laughlin argued that:

... if the quantity theory is sound, if it is possible to regulate by government control of the quantity of money--we have socialism pure and simple. (1898, p. 134)

In his most provocative language, Laughlin asserted that the silver movement was a "fraudulent", "vicious", and "deceitful" "conspiracy" and "burglary" to redistribute property from the "provident" and "industrious" to the "idle" and "shiftless".<sup>1</sup>

Bornemann quotes Harold Moulton as saying that Laughlin's

... real shortcoming, both as a writer and a teacher lay in the fact that he employed debating tactics which were unfair to those whose theories he was attacking. He never stated the other fellow's case in a genuinely sympathetic way... . He usually stated it at its worst and then attacked its logic. (1940, p. 19)

Willard Fisher (1896c) went so far as to say that in Laughlin (1896b):

... there is a carelessness of statement which (to a) point of sinfulness, approximates to a willful misrepresentation, ... (p. 47)

Our own reading of Laughlin's publications in monetary economics even his major work, Principles of Money, is consistent with Moulton's if not W. Fisher's view. It is regrettable that Laughlin's debating tactics and extreme remarks caused the profession to give less credibility to his monetary theory than it deserves.

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<sup>1</sup>Laughlin's most extreme statements are in (1884), (1885), (1895), (1895b), (1896), (1897), and (1898). Although these would be considered popular writings, they distracted from his professional reputation.

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