

## Marshall's vs Wicksell's Theory of the Cumulative Process

---

Michael J. Gootzeit\*

---

*It has generally not been emphasized that both Marshall and Wicksell used an identical mechanism based on the "cumulative process" to explain how inflation would occur during an expansionary cycle in the relatively short period. The differences between their versions of the cumulative process will be emphasized, including their respective interest mechanisms. Then, it will be shown that although Wicksell put the assumption of full employment and inflation on center stage, Marshall, in analyzing how an economy could escape a troubling depression, described how new employment, as well as a moderate inflation would occur during the upward cycle. Marshall's analysis of cycles was much more realistic than Wicksell's.*

### Introduction

The two giants of neoclassicism: A. Marshall and K. Wicksell were responsible for developing the foundations of both micro and macro-economics. In the development of macroeconomics, specifically monetary theory and fluctuations in economic activity, Marshall's ideas were neglected in the late 19th century and only described in great detail recently<sup>1</sup>, probably because he waited until his last years to publish them formally<sup>2</sup>, even though his basic ideas on money demand and its role in the economy were developed in unpublished form as early as (Marshall, 1871). Many of Wicksell's ideas in this area, on the other hand, were well known and his influence on Keynes, and other more modern writers who criticized Keynes and Keynesianism, has been documented extensively<sup>3</sup>. Yet, especially with relation to economic fluctuations, even though it has generally been known that both Marshall's and Wicksell's writings on cycles used a similar theoretical apparatus, namely the description of the "cumulative process" (CP) in the credit market, the exact nature of the similarity and the differences between their versions of the CP has not been carefully described.<sup>4</sup>

Older twentieth century commentators such as Rist (1940; see p. 298 and ff.) and Marget (1938; see pp. 195-205), for example, put much greater emphasis than newer ones on comparing Marshall's and Wicksell's CP theory. They showed that there was a close theoretical relation between Marshall as the earlier and Wicksell as the later progenitor of the CP as an explanation of an expansionary cycle: "...Wicksell took up Marshall's theory and developed it to its final consequences in a book...." (Rist 1940, p. 298). Rist was referring to (Wicksell 1898), and his treatment of how inflation would take place during the CP. Modern commentators' on Marshall's contributions to the history of economic thought generally do not discuss in detail the relation between Marshall and Wicksell.<sup>5</sup> But, even if

they do, they do not emphasize that both Marshall and Wicksell had a very similar short run theory of cyclic expansion based on the now famous CP, where a positive differential between the so-called "natural rate" and the loan rate of interest would cause the expected profit rate of the economy to rise and businesses to attempt to expand by borrowing and making new investments. Moreover, all this would take place while the price level was rising.

The Wicksellian upward CP by itself has been copiously described by the literature and uniformly regarded as an inflationary process.<sup>6</sup> But, the Marshallian version of the upward CP, and its relation to Wicksell's, has been neglected. An exception to this statement in a relatively new book is Staley (1989, pp. 190-91), which admits that Marshall, earlier than Wicksell, had described an expansionary CP where an "influx of money...[causes] the money rate of interest [to] fall(s) below the real return on capital...raising the price of goods and starting the upturn of a credit cycle." Hints were also made of this process in Gronewegen (1995, pp. 348-49), who described Marshall's testimony to the government's Gold and Silver Commission in Jan. 1888: "The specific effects exerted by trade in the precious metals via the money market were likewise probed. This enabled consideration of the impact of changes in the discount rate on prices, during which Marshall explained the influence of both monetary and real factors on that rate." But, note that even here no specific mention is made of how Marshall's discussion of changes in the discount rate would lead to a "cumulative" bout of price variation. As will be shown, although this version of the upward CP was similar, it did not exactly parallel Wicksell's, because Marshall was not particularly interested in emphasizing inflation. Marshall's CP was a way for an economy to rescue itself from a depressionary deflation. Staley calls this the "Great Depression of the 1880's" (*ibid.*, p. 191).<sup>7</sup>

Another new book by Ekelund and Hebert (1997, p. 494) states: "Thus both Fisher and Marshall accepted the quantity theory as a fundamental truth, and both concentrated on the medium-of-exchange function of money while *neglecting the interest rate*" (emphasis mine), the implication being that the supply of money and not the interest rate for Marshall was responsible for inflation; I will show that this interpretation is misguided. Whitaker (1987, p. 361), in the *New Palgrave*, stated that "Marshall had interesting, if fragmentary, insights into business fluctuations and general unemployment, which he viewed as temporary disequilibrium consequences of credit market dislocations." No mention, however, is made of how Marshall analyzed such "fluctuations." Instead, Whitaker placed much more emphasis on Marshall's micro analysis, neglecting his evidence before the Royal Commissions of 1887 and 1899 where much of his analysis of the upward CP, with inflation, was put forth; this omission will be corrected here. For Marshall's theory of inflation, Whitaker instead emphasized the "demand for money in the context of individual choices as to the fraction of one's wealth to keep on hand as ready cash," eventually developed by Pigou and Lavington "into what is termed the 'Cambridge k' approach."<sup>8</sup> In the earlier *Palgrave's Dictionary of Political Economy* (1925), ("H.H.," pp. 920-22), spent much time extolling Marshall for his "synthesis" of the theory of value and "his application of this theory of value to cover the whole field of distribution," calling this contribution, along with "marginal utility" and the "distinction between long and short periods," "luminous and convincing." But, nothing of the macro-theory on expansion contributed by Marshall in his testimony to the Royal Commissions was mentioned other than the fact that he testified.

Blaug (1997, ch. 9 & 10), on Marshall, contains nothing on Marshall's short term cycle theory that I can find, even though it stretches to nearly 100 pages.

It will be the task of this paper to illustrate that even though both these writers used the theory inherent in the CP to rationalize an economic expansion, Marshall was the one who illustrated it more realistically because he specifically considered how it could be used to fix a recessionary or a depressionary economy, with a significant level of unemployment. Even though Wicksell also treated inflation with real expansion, his analysis of change was more of a long term description devoted to economic growth with technical improvement over time, it did not seek to solve the short term problems of unemployment. Instead, his short term study of attempted, but unsuccessful real expansion, under the impetus of the CP turned out to be purely inflationary, without even a description of how changes in relative prices could cause a reallocation in the production mechanism which remained at full employment.

### Marshall's vs. Wicksell's Version of the Cumulative Process

When the CP has been discussed in the recent literature, it has nearly always been given in the Wicksellian version where most writers have illustrated the expansion phase of a short run cycle to be dominated by inflation, the so-called "cumulative inflationary process" (CIP). A sample of such a process described in Wicksellian terms is the following:

...the natural rate increases...while the money rate as fixed by the banks stays the same...[entrepreneurs] have a surplus profit, ...[and they] attempt to expand production. An expansion in real quantities is ruled out since *full employment* is assumed. (Wicksell's analysis was concerned with changes in the price level and not with changes in quantities.)... the entrepreneurs will try to increase their demands for inputs and these prices will rise.... The owners of inputs, in their turn, will increase their demand for consumer goods and the price level will rise proportionately (Hansson 1987, p. 736).

Note the emphasis on the assumption of full employment, supposedly one of the touchstones of 19th century macroeconomics.<sup>9</sup> Because of this, plus the implied assumption of a short enough period so that growth may not take place and full employment may not reestablish itself at a higher level, the real upward movement of the economy would be frustrated and inflation, pure and simple, would dominate.

Wicksell's explicit use of the assumption of full employment to justify the CIP was blatant in the main body of *Interest and Prices*:

If entrepreneurs continue, year after year perhaps, to reach some surplus profit of this kind, the result can only be to set up a tendency for an expansion of their activities. I emphasize once again that so far it is purely a question of a *tendency*. An *actual* expansion of production is quite impossible, for it would necessitate an increase in the supply of real factors of production ... so that the original factors of production could be employed in a larger, and therefore more productive, process. Such changes require time to be effected, and we need not consider them at this point" (Wicksell 1898, ch.9, p. 143; emphasis Wicksell's).

Later on the same page Wicksell tells us that under the "normal conditions" of the late 1890's "a general expansion of production "is impossible because the average unemployment rate is "about 1 percent." Clearly, Wicksell was not concerned in this work

with real cycles; he was mainly concerned with the "inflationary credit cycle" (See Gootzeit 1993). Analyzing the real cycle would also require a perspective with more of an emphasis on downward movements in the economy, where unemployment could increase if businesses expected their near term profit rate to be reduced. Real movements in the economy could also be analyzed from a secular viewpoint. Wicksell's statement that we "need not consider" longer productive changes "at this point" indicated that he was simply leaving the analysis of the real movements to other writings. If some of these other works are examined, however, one will notice a much more sophisticated view by Wicksell of the so-called "trade-cycle," a longer term real cycle supplemented by credit variation, but also involving changes in capital formation, production and potential variations in employment.

The literature is vague and contradictory when it describes Marshall's theory of how an expansionary macro cycle, with inflation, would occur in the economy. If the expansion occurred in an environment during which "an influx of gold" (Eshag 1963, p. 10) has taken place, if full employment may be assumed,<sup>10</sup> then the transmission mechanism of the increase in money will work its way through the economy by causing a generalized inflation. The problem here is that Marshall did not always assume that full employment would be a "natural" equilibrium position for the economy, even though he did assume that at least a moderate inflation would occur as the economy expanded. He was nearly always concerned, however, to illustrate how an environment favorable to an expansion of credit caused by a gold inflow could be inflationary: "[During] an improvement of credit...producers find that the demand for their goods are increasing; they expect to sell at a profit, and are willing to pay good prices for the prompt delivery of what they want. Employers compete with one another for labour; wages rise; and the employed in spending their wages increase their demand for all kinds of commodities" (Marshall 1923, p. 249; also quoted in Eshag, p. 79). The section title is, *The ordinary course of a fluctuation of commercial credit*, and the assumption of close to full or at least temporarily fixed employment was clearly implied. Marshall was illustrating that in the relatively short period, employers, in desiring "prompt delivery" would be anxious to bid for labor, but given short period inertia together with a tight market, labor would be temporarily scarce, thus driving up wages. Workers, increasing suddenly their demand for goods, would also, temporarily at least, drive up their prices. In the course of this description, a contraction must also inevitably occur foreshadowed by "the exportation of the precious metals" and characterized by "a fall in prices" (ibid., p. 251), a reduction in employment was implied.

Furthermore, this analysis of how commercial credit could vary during a short run cycle was mainly based on Marshall's view of the exogenous effects of a change in the money supply, an aspect of his view of the quantity theory. It was not regarded by him, especially in *Money, Credit and Commerce*, as part of his version of the CP. Yet, Marshall did describe a "cumulative process of expansion of credit, rise of prices, profits and wages..." (Eshag 1963, p. 79). The problem is how did the interest rate mechanism Marshall used compare to Wicksell's, where exactly was this process described, and how important were increases in nominal "prices, profits and wages" compared to potential increases in real output in Marshall's analysis of the CP.

## Marshall's Interest Mechanism<sup>11</sup>

There is a problem of interpretation in the "2-rate differential" interest mechanism, which Marshall used to describe the cumulative inflationary process (CIP). For Wicksell, "monetary equilibrium" (See Myrdal 1939.) would be described by the "natural" ( $i_N$ ) equal to the "loan" interest rate ( $i_L$ ), and a positive 2-rate differential, with ( $i_N - i_L > 0$ ) would cause an inflationary disequilibrium for the macro economy. For Marshall, macro disequilibrium was somehow related to business speculation. As Laidler has pointed out, Marshall followed "the mainstream classical tradition, epitomized by Mill, of stressing the speculative element in business behavior during the upswing ... grounding the analysis of speculation in the distinction between the *nominal* and *real* rates of interest" (Laidler 1991, p. 90; emphasis mine).<sup>12</sup> This was part of the "classical monetary approach to cycle theory" (*ibid.*, p. 89). The "distinction" between these two rates, made famous by (Fisher 1913), was not the same as Wicksell's positive 2-rate "differential," although both led to a CIP. One interpretation of Wicksell's natural rate was the rate which is approximately equal to "the real profit of business enterprise" (Marget 1938, p. 202)<sup>13</sup>. If we may interpret the "money" or loan rate as the rate in real terms at which banks lend in the current period, then the 2-rate differential ( $i_N - i_L$ ) implied a positive expected net profit rate and provided an incentive to increased investment for Wicksell's system. For Marshall, the "distinction" between the nominal/real loan rates provided an incentive for "speculative price rises"<sup>14</sup> because borrowers would have to pay back less in real terms over time than they borrowed when the rate of inflation was positive and the real rate fell in relation to the nominal rate. His analysis on this point also seemed to be related to the simple fact that money was not a good "standard of value" and so it could easily depreciate. It may not have been related, as was Wicksell's analysis of the 2-rate differential, to the real nature of the business investment process.

Although Laidler and Wolfe have interpreted Marshall's 2-rate differential concept in this way as a difference between a nominal and real rate, à la Fisher, other writers have interpreted it as the difference between the "natural" and "loan" or "bank" rates, à la Wicksell, which he regarded as a measure of the net profit rate. For example, Marget (1938, p. 173; emphasis mine) regarded Marshall's treatment of the cycle to focus on "the rate of interest as the link by which changes in M, and therefore in prices are brought about. No one familiar with the discussion of the effect of variations in *bank-rate* upon the amount of bank borrowing, from Thornton and Ricardo through the Currency and Banking School controversy down to Marshall, could have argued that emphasis upon these variations as the crucial step in the mechanism of price-change should be regarded as a novelty...." According to Marget, Marshall did express both parts of the 2-rate differential in comparable (what appears to be real) terms and their difference, as in Wicksell, as a net profit rate: "Marshall emphasized... the importance of the relation between the rate of discount and what he called 'the profitability of business'" [the natural rate] (*ibid.*, p. 184, n. 74)<sup>15</sup> when he described how a rise in prices would be set in motion during a cyclic upswing. Rist was even more clear that Marshall's version of the 2-rate differential was similar to Wicksell's and that the latter's idea was a later step in its evolution: "A rise in prices may be initiated, he [Wicksell] says, by a wide enough gap between the bank's discount rate and what he calls the 'normal' or 'natural' or 'real' long term rate of interest. He [Wicksell] does not consider that this rate is identical with Marshall's 'equilibrium' rate, but the two conceptions are very close to one another" (Rist 1940, p. 298). This passage suggests that Wicksell's description of how a 2-

rate differential would cause a CIP was a direct descendant of Marshall's ideas, not only in its description of cyclic expansion, but also in its use of an identical interest mechanism as the main causal factor.

The problem in understanding Marshall's cyclic analysis as a version of what has been called the CP is that he employed a definition of what Wicksell called the "natural rate" without formally defining it or even using the name in his 1887-88 parliamentary testimony to the Gold and Silver commission, although it appears to be absent in the *Principles*.<sup>16</sup> In this testimony, Marshall chose as a proxy for the natural rate: "the average level of interest." As in Wicksell, this rate was determined by the expected "profitableness of business:" "The average rate of discount permanently is defined by the *profitableness of business*.... The average rate of discount is determined by the *average level of interest*... and that is determined exclusively by the *profitableness of business*..." (Keynes 1926, p. 41, question 9651; emphasis mine).<sup>17</sup> In long run equilibrium ("permanently"), "the average rate of discount," what Wicksell called the "loan rate," will adjust itself, so that it would be equal to "the average level of interest" (the natural rate) which was determined by the "profitableness of business." But, what of disequilibrium when the natural became greater than the loan rate and an upward cycle would occur? Here, it will be shown that Marshall used the mechanism of the CP to show how at least a partly real expansion may take place in the relatively short period, while Wicksell confined his analysis of a real CP to the longer period; in the short period inflation predominated. Hence, Marshall's version of the upward CP is more relevant to the cycles prevalent in modern economies.

### The Role of Full Employment

Both Marshall and Wicksell described how an inflationary upward cycle could be caused by a positive differential between the natural and market loan rates in the economy. This was essentially a short run description and it illustrated a disequilibrium process in which businesses were adjusting to a potential increase in the net profit rate by attempting to expand. In so doing, they increased their demand for credit and the volume of credit increased. Because of the strong assumption of full employment in much of Wicksell's system, this would lead to inflation, not to any real income increase<sup>18</sup>. In some of Marshall's writings and in some of his Parliamentary testimony full employment was also assumed; this has been the standard for modern interpreters of Marshall's views on employment. For example, in analyzing an 1899 quote from Marshall's testimony to the Indian Currency Committee, reprinted in Keynes (1926, p. 274), Eshag stated that: "...while variations in the supply of money [gold] can produce changes in the rate of interest and cause a divergence between the actual market and the real equilibrium rate of interest, such changes will only be of *short* duration; the *cumulative* movements in prices and demand for loans will bring about a return of the rate of interest to its original level.... It can be seen that in this instance Marshall again assumes a state of *full employment*. A lowering in the rate of interest, due to an influx of gold, would, according to him, lead *only* to a rise in prices. He makes no allowance for a possible rise in the volume of production ..." (Eshag 1963, p. 55; emphasis mine). Eshag was clearly describing a purely inflationary short run CP in Marshall's writings.

There is a controversy in the literature, however, as to whether or not Marshall always assumed full employment when analyzing inflation. It will be shown that Marshall's

assumption of full employment was much weaker than Wicksell's, so that inflation was not such a predominant factor and that when it occurred, real output as well as prices would rise. Which would rise relatively the most was left unspecified. In fact, as will presently be justified from parts of his Parliamentary testimony, his textbook writings, plus the views of other commentators, he did not always assume full employment in the relatively short period. I would also add that in other parts of his testimony or even in his *Principles*, this was not true. When Marshall took a less sophisticated view of the quantity theory, one in which a nearly proportional rise in prices would follow from an increase in the money supply, because he did not significantly theorize about an increase in velocity, only a constant level of real output would be consistent with this view, which implied that employment would at least stay constant, if not be unable to increase because of temporary full capacity. This strict interpretation of Marshall's view of the quantity theory was exclusively valid in the long run, however, where the fluctuations of output and employment associated with a short run real business cycle would be irrelevant: "The use of the quantity theory of money is reserved by Marshall for a discussion of those *long-run* movements in prices which are not associated with the business cycle" (Wolfe 1956, p. 91; emphasis mine). When this view was present in Marshall, it may even be traced back to his "classical" heritage, where a long run model of smooth growth was being emphasized and changes in the money stock were regarded as neutral: "...classical monetary theory argues that increases in the money supply may increase real output and employment in the short run but would raise *only the price level* in the long run, an argument that underlies the 'forced saving' doctrine" (Ahiakpor 1997, p. 68; emphasis mine). It will also be shown that in addition to studying an upward inflationary cycle, even Wicksell, but certainly Marshall, put forth a view which allowed real income to increase in a less inflationary environment; this may be called a "trade" cycle, rather than an inflationary "credit" cycle,<sup>19</sup> and it would lead to a "comprehensive" rather than a purely inflationary CP.

### Marshall's Case for a Trade Cycle

There were two major cases in Marshall's writings and testimony where he abandoned the description of a long run smoothly expanding growth oriented macro-economy, à la the model of classical economists such as Ricardo and Mill where deviations from full employment were extremely brief and "the notion of 'effective demand,' and the possibility of a deficiency in it to absorb the total output, at the full employment level, appears to be totally ignored" (Eshag 1963, p. 85). The first anti-mainstream-classical version of straight-ahead growth initially appeared in the *Economics of Industry* (1879) and was "reprinted in all editions of his *Principles*" (ibid.). In it, the Marshalls' recognized the possibility of a deficiency in short run effective demand which could, at least briefly, lead to unemployment after which a real expansionary CP would cause temporary expansion: "But though men have the power to purchase they may not choose to use it. For when confidence has been shaken by failure, capital cannot be got to start new companies or extend old ones" (Marshall 1920, p. 710). However, The Marshalls' may have regarded this potential downward cycle as a mere "exception" to the discipline of Say's law which would occur only in "certain rare conditions" (Eshag 1963, p.87).<sup>20</sup>

Looking at this analysis more closely, however, one gets the impression that it formed the beginning of a more realistic version of how a short run business expansion could

take place. The Marshalls' described how a "crisis of confidence in commodity and financial markets" (Laidler 1991, p. 96)<sup>21</sup> could cause at least temporary unemployment. They also included a labor market mechanism by which real income could increase during the upward cycle: "money wage stickiness."<sup>22</sup> Thus, during the price increases characteristic of the real upward CP, the real wage would decrease, increase the quantity demanded of labor, and possibly the level of employment. Note, once again, that the key assumption for this mechanism to work was that at least some inflation during an upward CP would still occur in the short period even though less than full employment prevailed; although this assumption was never made specific, it was implied by the description of the upward CP and the admission that such an upward cycle could correct a less than fully employed economy.

The second version of how an upward cycle could occur was directly based on the development of a mechanism that Marshall believed would help the economy recover from the depression of the 1880's.<sup>23</sup> The recommendation of gold imports during his testimony before the Royal Commission on the Values of Gold and Silver (1887-88) was meant to cause a real upward cycle:

"...the influx of a little extra gold...causes...the rate of discount [to] fall below its equilibrium level...and therefore stimulates speculation."

"...this new [lower] rate effects the equilibrium by causing capital to go into the hands of speculators...and whatever form their speculation may take, it is almost sure...to raise prices. This is the main issue...." (Keynes 1926, pp. 130-31, question 9981; emphasis mine).<sup>24</sup>

This testimony appeared to give rising prices a high priority in the upward movement of the economy. But, the background of Marshall's argument should be carefully noted. Rist (1940, ch. 7, sec. 2: "Marshall's Evidence Before the Currency Commission," pp. 291-97) interpreted this testimony in great detail. His evidence was given in 1888, at the end of a 15 year period during which prices had steadily fallen (*ibid.*, pp. 291-93).<sup>25</sup> Furthermore, there had been a "depression in trade and agriculture" during the period which "was a source of great anxiety to the government" (*ibid.*, p. 291). The substance of Marshall's testimony was then to recommend a policy of gold imports which would stop prices from falling and perhaps cause a *mild inflation*, while simultaneously helping to pull the economy out of its depressed state. This meant an increase in real income and employment for an economy already saturated with excess capacity and unemployment. "Marshall...made the discount rate exclusively instrumental in bringing about" (*ibid.*) the desired "reversal of the price movement" (*ibid.*, p. 294). When the influx of "foreign gold" occurred, the amount of bank reserves would increase, also increasing the supply of bank credit and lowering the discount or loan rate which would increase the quantity demanded of business loans for new investment and "act as a stimulus to the production of goods, to the demand for raw materials, the services of labor, etc." and gradually to "a general rise in prices" (*ibid.*, p. 292).<sup>26</sup> As Rist said, the *reversal of the price movement*, from falling to rising, which will last as long as the influx of precious metals, (*ibid.*, p. 294) was the key for the economy to escape its chronic depressionary trend<sup>27</sup> and soon lead to an increase in employment and real income.<sup>28</sup>



## Wicksell's Case for a Trade Cycle

Wicksell, especially in his description of the pure-cash economy in *Interest and Prices*, ch. 11, did not regard independent increases in the money supply (gold, coin, and convertible notes) as an important cause of an upward CP; he "acknowledge[d] the logical possibility of independent changes in the quantity of money having an effect on prices, but his subsequent interpretation of the history of price level behavior in the nineteenth century accorded them little practical significance... the dominant factor driving prices ... was not variations in the quantity of money (i.e. currency). It was variations in the natural rate of interest; and price level movements were *accommodated*...by fortuitous variations in the quantity of money" (Laidler 1991, pp. 141-142; emphasis Laidler's). Wicksell thus treated increases in the money supply as endogenous to price level rises during the upward CP.<sup>29</sup> Thus, at least in *Interest and Prices*,<sup>30</sup> the idea that money did not initiate the inflationary cycle, but helped support it, was important to Wicksell. This was similar to Marshall's treatment of near-money credit expansion during the upward cycle initiated by an influx of gold which lowered the bank loan rate. Such a credit expansion occurred after prices had already started rising and served to help them continue to rise. For Wicksell was discussing endogenous increases in the actual money supply for the pure-cash economy, while Marshall was describing increases in near or credit-money. Yet, both these arguments serve to diminish the appeal to a strict interpretation of money as an independent variable so often associated with the 19th century quantity equation. Of course, for the more sophisticated pure-credit economy, money was absent and the supply of credit increased during the upward CP causing what Wicksell called "virtual velocity" to increase and to accommodate the increase in the price level. For both these cases, the money supply had little to do with causing the upward cycle; it merely adapted the price level to the inflationary environment. As in Marshall, an increase in the actual money supply was not a necessary condition for the upward CP, for there was no money in the pure credit system; an increase in "monetary elements," however, was a necessary condition for the CP, if for the pure-credit economy, virtual velocity increasing could be regarded as a "monetary element."

Wicksell's cycle theory was supplemented by his analysis of a "trade" cycle, which was quite different from his description of the purely inflationary "credit" cycle discussed above. The trade cycle may be defined as a change "in the volume of output and employment" rather than "the short-period price changes produced as a result of fluctuations in the volume of credit" (Eshag 1963, p.101). The description of the trade cycle was longer run than that of the credit cycle because not only was the level of output allowed to fluctuate during the "alternation between 'good' and 'bad' times," but "also and crucially ... the proportion of output devoted to fixed capital formation" (Laidler 1991, p. 144; see also Wicksell 1928, p. 209) was allowed to vary; there was time enough for the capital stock to change, one would also presume to technically improve, even if the total stock of real output did not increase very much.

Wicksell provided this real cycle analysis at the end of *Lectures (2)*; it was based on a lecture (Wicksell, 1907) to the Political Economy Club of Oslo. He described the correction of unemployment during an upward CP in a manner similar to Marshall, but without the labor market mechanism whereby the real wage rate decreased in the presence of inflation. Instead, he regarded "the general rise in prices...as an incentive to increased business activity and thus to conversion on a large scale of liquid capital to fixed capital," the movement to

"good times" (Wicksell 1928, p. 209). The impression one gets, as in Marshall, was that prices may rise even if less than full employment initially prevailed in the short period. But, in addition to this, there was more of an emphasis on the growth or welfare effects of increases in the stock of capital in the longer period, caused by an improvement in the quality of goods through technical advancement: "... people seek to exploit the favorable situation as quickly as possible, and since the new discoveries, inventions, and other improvements nearly always require various forms of preparatory work for their realization, there occurs the conversion of large masses of liquid into fixed capital which is an inevitable preliminary to every boom..." (ibid., p. 212). Thus, Wicksell's analysis, even if an aside, was at least as modern as Marshall's, but it was expressed in a longer run framework.

Additionally, Wicksell anticipated ideas later used by the Austrians, by more closely looking at the "structure of relative prices and composition of output alone, rather than also in their levels" (Laidler 1991, p. 145; emphasis Laidler's). Here, at last, his emphasis on a generalized inflation was finally gone. In fact, Wicksell spoke about "an even fluctuation between periods in which the newly formed capital would assume...other forms," and he called this the elimination of "the real element of the [cycle]" (Wicksell 1928, p. 212; emphasis mine; also see Laidler 1991, p. 146). The "other forms" of capital described were evidently more technically advanced, so Wicksell was referring to a steady improvement in the quality of goods which could be produced during the upward and downward movements of the CP driven by the banking system's varying the volume of credit. This may be referred to as a quantitatively "neutral," though qualitatively "real" long term movement of the economy, during which the level of output and employment would stay nearly constant, but the quality of goods would improve, presumably increasing the level of social welfare.

Mises made use of a similar description of a neutral, but real upward cycle, but instead of technical improvement in the long period driving changes in the economy, when the upward CP occurred the relative price of consumers' compared to producers' goods rose, causing a distortion which contributed to the end of the boom because most producers attempted to produce more of these higher value finished goods and neglected complementary factors.<sup>31</sup> Mises recognized that the attempted reallocation of production which would occur during this upward movement would cause real changes as the economy gradually contracted. He called this real upward CP "an artificially stimulated boom" (Mises 1931, p. 184). This was similar to the description by Wicksell of "an even fluctuation between periods" during the trade cycle, but Wicksell did not place such a strong emphasis on the relative price distortion during the CP which was so important to Mises analysis.<sup>32</sup>

## Conclusion

It has been shown that both Marshall's and Wicksell's macroeconomics contained a mechanism to explain the role of money in both price variations and real cyclic movements of the economy. Marshall's mechanism was somewhat more informal than Wicksell's because it was partially stated in parliamentary testimony. Furthermore, it was somewhat neglected because even though the testimony was eventually published (Keynes 1926), Marshall's analysis of cycles was not contained in the *Principles*, his most popular work. Instead, its initial formal appearance was put off until *Money, Credit and Commerce* (1923), the year before Marshall's death and some of his work in this area written as far back as the 1870's, was not published until 1975 (See Whitaker). The full impact of Marshall's work in

the area of money, interest rates and their role in cycles has therefore not been studied with much detail until recently (See Laidler 1991).

The concept of the upward cumulative process (CP) that both Marshall and Wicksell analyzed in their writings showed a relation between money (gold and convertible bank-notes), near money (bank-credit) and nominal income. When gold bullion was imported, this would lower the bank loan rate in relation to the natural rate (the average profit rate of business) and cause business to expand its demand for new loans to take advantage of the higher expected net profit rate. It has been shown that Marshall believed this lowering of the relative loan rate by an excess supply of money would cause interest rates to fluctuate in such a way that an expansionary and mildly inflationary cycle would be caused. The fact that only "mild" or "moderate" inflation was described by Marshall during the CP should be carefully noted, because this idea contrasted sharply with Wicksell's CP during which a strong and generalized short run inflation would continue as long as the disequilibrium of the economy persisted.

This difference in forecasts for inflation was related to the fact that Marshall described his CP as the way for the economy to climb out of the depression of the 1880's, while Wicksell's short run analysis concentrated on describing how a fully employed in equilibrium economy would adjust to the expected net profit rate (the 2-rate interest differential) rising when gold was imported, a much more "classical" or old-fashioned analysis. It should be noted, however, that there has been some difference of opinion on whether Marshall's CP depended on a different type of 2-rate interest differential than did Wicksell's; one that relied on the difference between the nominal/real rates, à la Fisher, rather than on the difference between the natural/loan rates, à la Wicksell.

Both Marshall's and Wicksell's writings also contained descriptions of a real cycle, when the economy may expand by increasing production and employment. Such a description illustrated a much more "comprehensive" and realistic CP. For Marshall's version, the assumption that moderate inflation would take place even under conditions of less than full employment was crucial. Thus, during the short period inflationary environment of the CP, when the supply of credit (near-money) expanded endogenously because businesses increased their borrowing from banks at the relatively reduced loan rate, this would reinforce the excess demand for factors that prevailed in the anticipation of higher business profits. As the Marshalls' described in the *Economics of Industry* and Marshall alone described in his Parliamentary testimony, real growth could also occur during this process if unemployment was high to begin with (as it was in the 1880's) while the price level was rising (moderately) and money wage stickiness caused the real wage rate to fall, increasing the quantity demanded of labor and ultimately, the level of employment.

Wicksell discussed in *Lectures (2)* (pp. 209-14) an upward inflationary cycle that was also real. He called it part of the "trade cycle" in order to distinguish it from the discussion of the purely inflationary CP which may be called the pure "credit" cycle. This cycle was described in a more detailed manner than Marshall's and it also contained more long run elements. For example, it emphasized changes in the formation of fixed capital, especially its quality, as the economy became more capital intensive as it grew. Therefore, even if total output did not increase very much, the larger capital/output ratio and the improved quality of capital resources would lead to real growth because of technical improvements. Wicksell even spoke somewhat vaguely about what I have called a "neutral," but real, upward CP, in which only relative prices changed and the quality of output improved, but its aggregate did

not necessarily vary. It was this discussion of the upward CP as a real cycle that was taken up by later writers, especially Mises and Hayek, when they formulated the characteristic descriptions of the Austrian theory that illustrated the destructive distortions of inflation endemic to an upward cycle. (See Gootzeit 1996b, 1994, 1992).

---

\* Professor of Economics, University of Memphis, Memphis, TN 38152, U.S.A.; FAX: 901/678-2685; Phone: 901/678-4625; E-mail: [Mgoot@memphis.edu](mailto:Mgoot@memphis.edu); Home Page: <http://www.people.memphis.edu/~mgoot/>

## Notes

<sup>1</sup> See Laidler (1990 and 1991, esp. chapters 3 & 4.)

<sup>2</sup> Marshall (1923) is the best example of his late publication of his ideas on money and credit.

<sup>3</sup> See Marget (1938, ch. 7) for a detailed description of the influence of Wicksell on Keynes and his critics.

<sup>4</sup> The term "cumulative" was initially used by Wicksell to refer to continuous price increases caused by a positive differential between the economy's natural and loan rate in the presence of an increased volume of credit (Wicksell 1898, pp. 94-97). Wicksell did not actually use the term "cumulative process," however. This term's use in the modern literature came from Shackle's (1954) and Patinkin's (1952 and 1965) writings. Shackle's version of the CP seems more comprehensive or sophisticated than Patinkin's because he hinted that the upward movement of the economy would be subject to a real business expansion, not simply to an inflation caused by an attempted, but failed, increase in net capital formation: "... the peculiar properties of bank-created money can work through the interest rate and the inducement to expand an enterprise to generate a self-propelling cumulative process..." (Shackle 1954, p. 12).

<sup>5</sup> See Gootzeit (1994 and 1993). The first describes Mises' version of the short run CP and its relation to Wicksell's in some detail and the second describes Wicksell's version of an inflationary CP.

<sup>6</sup> For a typical description of Wicksell's CP, see Hansson (1987, pp. 736-38). Also, see Gardlund (1958, ch. 11, pp. 268-81), for a very useful summary of the money and credit theory that Wicksell developed in both *Interest and Prices and Lectures* (2). This summary emphasizes Wicksell's use of the CP mechanism to predict price variation.

<sup>7</sup> Gronewegen (1995, p. 344) referred to "the enduring depression which followed the crisis of 1882-83."

<sup>8</sup> The relation between Marshall's and Wicksell's views on the demand for money in the context of the quantity theory will be the subject of a subsequent paper. It will be shown that each author departed from the orthodox or classical version of the quantity theory and that these differences were also partly responsible for their respective theories of inflation.

<sup>9</sup> Ahiakpor (1997, p. 57) makes the case that "classical" economics, did not believe that "all available labor is always employed." Whether both Marshall and Wicksell may be regarded as classical is not clear, but it will be shown that at least for Marshall, the assumption of full employment was not part of his macro analysis of how an expansionary cycle might occur in the late 19<sup>th</sup> century, while Wicksell's analysis of a slightly later period emphasized instead that inflation was endemic to any short term expansion and that full employment or near full employment was the given equilibrium state for the economy.

<sup>10</sup> Eshag's is representative of the general assumption made in the literature: "It can be seen that the implicit assumption made by Marshall ... is the existence of full employment conditions. No mention is made of the possibility of an increase in the volume of production and in transactions as a result of an influx of gold ..." (Eshag 1963, p. 11). It will be subsequently shown that Marshall, in discussing real cycles, generally did not make the assumption of full employment; this conclusion is consistent with (Ahiakpor 1997).

<sup>11</sup> Much of this section, plus some additional material, will also appear in a note to be published by the *Marshall Studies Bulletin*.

<sup>12</sup> Wolfe, like Laidler, referred to how Marshall used the "real rate of interest as an element in his trade cycle theory" (1956, p. 94). This appeared to be the deflated version of the nominal interest rate, not the same as the  $i_w$  of Wicksell.

<sup>13</sup> Marget gave 6 definitions, closely related to this definition on (ibid., pp. 202-03), all from Wicksell (1898). For this one, see Wicksell (1898, p. XXV).

<sup>14</sup> Inflation in Marshall, caused by *speculation* based on the difference between the nominal and real interest rates, has a high priority for Professor Laidler. See Marshall (1887), quoted in Laidler (1991, p. 90), which Laidler called "the first appearance in the writings of Marshall (and indeed in the literature of neoclassical economics)" of a "theoretical insight which was to become central to the analysis of monetary elements in cycle theory." That inflation in Marshall could also be caused by an increase in the expected net profit differential, rather than speculation, will be an argument put forth below.

<sup>15</sup> Marget refers here to Keynes 1926, answers to questions 9651, 9675, 9676, 9678-9686, pp. 41, 48ff. See also Eshag 1963, p. 53, for a similar reference.

<sup>16</sup> The term "natural rate" is impossible to find, at least in the index to the 9<sup>th</sup> (variorum) ed. of Marshall's *Principles*.

<sup>17</sup> See also Marget (1938, p. 184, n. 74) which is drawn from the answer to this question. The terms "average" and "permanent" indicated that Marshall still couched his essentially short run analysis of cycles in long run terminology. This was similar to what Wicksell did when he described the CP. See Gootzeit (1993) on this point.

<sup>18</sup> Both relative prices would change and absolute prices would increase during the inflation that Wicksell was describing. This was made clear by the Austrian economists, especially Mises and Hayek. This could therefore be called a "real inflation." See Gootzeit (1992, 1994, 1996b).

<sup>19</sup> On Marshall's concept of the credit cycle, see Eshag (1963, pp. 94-95): One of "the main propositions on which Marshall's analysis of the credit cycle was based" was "the dominant part played by credit expansion and contraction, as distinct from currency fluctuations...." Wicksell's description of the credit cycle was dominant when he described the upward CP for a "pure credit" economy, with zero money balances. This is the standard Wicksellian CP in the literature; e.g., see Patinkin (1965).

<sup>20</sup> Eshag, (pp. 100-01) felt that "Marshall's own work ... was centered largely on the explanation of the phenomenon of the 'credit cycle'" rather than on the 'trade cycle,' where only absolute, rather than relative prices, output and employment may change. This idea will be questioned below.

<sup>21</sup> "... the Marshalls placed the question of fluctuations in output and employment on the agenda of cycle theory in a way in which the classical economists did not ..." (ibid.)

<sup>22</sup> See (ibid., pp. 95-100) for the implication of this assumption on Marshall's and Pigou's theory of the real cycle. The idea that Marshall emphasized fluctuations in output and employment as part of his theory of cycles has been questioned: "[Marshall's] analysis dealt primarily with the short-period price changes produced as a result of fluctuations in the volume of credit...the subjects of changes in the volume of output and employment are [only] occasionally mentioned..." (Eshag 1963, p. 101).

<sup>23</sup> This second version of Marshall's real "trade" cyclic analysis has already been explicitly noticed: "Marshall's observations on the trade cycle are scattered throughout his work, and hidden in the minutes of evidence of several Royal Commissions" (Wolfe 1956, p. 90). There was probably also a third version of Marshall describing a short run real cycle, but this was a contraction of the real economy. See (ibid., pp. 95-6) for a description from Marshall (1923, pp. 250-51) of such a downturn. Wolfe devoted much more detail to this description than the alternative discussion of an expansion which would be caused by the importation of gold. But, Wolfe also discussed the latter case, using references from Marshall's Parliamentary testimony. See (ibid., p. 93).

<sup>24</sup> This note was also used in an expanded form in Rist (1940, pp. 294-95, n. 1). An increase in "speculation" may be interpreted as an increase in investment demand. See also Wolfe (1956, p. 93) where Marshall's answer to the Gold and Silver Commission's question 9686 (Keynes 1926, pp. 51-2) is quoted at length. The analysis Marshall makes here is of "the result of a new disturbance, viz. The influx of a good deal of bullion into the City." The result of this influx is much the same as already described: to "raise prices."

<sup>25</sup> This emphasis that Marshall gave to eliminating recession and deflation in his Gold and Silver Commission testimony, not to describing how inflation would predominate in the expansionary cycle, was missing in Eshag (1963, p. 54), where much more emphasis was given to how the inflation that does occur will restore the equilibrium of the CP, a zero 2-rate differential.

<sup>26</sup> During this real upward cycle, the control of real purchasing power would be transferred from lower income consumers who generally earn temporarily fixed incomes to businesses who can initially take advantage of favorable market loan rates for new investment. I would like to thank James Athiakpor for this clarification and his emphasis on the fact that the upward movement of Marshall's short run CP therefore relied on the classical

"forced saving" doctrine. As employment continued to increase, an employment multiplier occurred, and purchasing power was gradually transferred back from businesses to newly employed consumers. During this process, the loan rate would rise both nominally and in real terms and the upward CP would gradually come to an end.

<sup>27</sup> Rist's analysis on this point came from the answer: (Keynes 1926, p. 41, question 9651). This was the famous "ripple of the surface of the water" question in which Marshall told us the change in the direction of interest rates caused by an influx of precious metals will also reverse the price movement.

<sup>28</sup> Marshall's analysis of a short term macroeconomic expansion has also been noticed in Schumpeter (1954, p. 894, n. 4).

<sup>29</sup> For the pure-credit economy, rather than the money supply being endogenous to increases in the price level: "...changes in velocity associated with the failure of the banking system immediately and completely to adapt its lending rates" would be responsible for accommodating increases in the price level (*ibid.*, p. 142).

<sup>30</sup> For *Lectures (2)*, Wicksell gave independent increases in cash a much more important role in initiating the upward CP, and thus gave more weight to an orthodox view of the quantity theory which was quite a bit different from the sophisticated Marshallian view described earlier in this section.

<sup>31</sup> See Gootzeit (1996b, p. 312; Mises 1966, p. 559)

<sup>32</sup> Hayek also regarded the relative price distortion of the upward CP to be critically important to describing how the economy changed during a cycle, but rather than describing an "artificial" upward cycle, he described how the level of income could actually increase because excess capacity could exist from previous downward movements; also, the inflationary process of the upward CP did not occupy such a central position as it did for Wicksell, because Hayek believed that it was possible to eliminate it with proper monetary policy. (See Gootzeit 1992, pp. 89-90; Hayek 1935, pp. 25-27)

## References

- Ahiakpor, J. 1997. "Full Employment: A Classical Assumption or Keynes's Rhetorical Device?," *Southern E.J.*, (64:1; July), 56-74.
- Boianovsky, M. 1995. "Wicksell's Business Cycle," *European J. of the History of Economic Thought*, (2:2; Autumn), 375-411.
- Eshag, E. 1963. *From Marshall to Keynes*, Oxford, Blackwell. Reprinted: A. Kelley, 1965.
- Fisher, I. 1913. *The Purchasing Power of Money*, N.Y., Macmillan, new and rev. ed.
- Gardlund, T. 1958. *The Life of Knut Wicksell*, Stockholm, Almqvist and Wiksell.
- Gootzeit, M. 1998. Marshall vs. Wicksell on the Quantity Theory, unpublished manuscript.
- 1998 (a). "Marshall's Version of the Cumulative Process Used a Natural Rate Concept," *Marshall Studies Bulletin*, (6), 17/24.
- 1996 (b). "Mises on Government Sponsored Easy-Credit as a Cause of Cycles," *Cultural Dynamics*, (8:3), November, 309-22.
- 1994. "Mises on Cyclic Relative Price Changes During the Cumulative Process," *Economies et Societes, Serie Economica, Histoire de la Pensee Economique, P.E.*, (19:4), 93-109.
- 1993. "Wicksell's Inflationary Credit Cycle," *Metroeconomica*, (44:2), June, 147-67.
- 1992. "Davidson and Hayek on the Role of Effective Money in Transforming the Cumulative Process into a Real Theory of Growth," *Economie Appliquee*, (45:2), July, 87-104.
- Groenewegen, P. 1995. *A Soaring Eagle: Alfred Marshall, 1842-1924*, Elgar.
- Hansson, B. 1987. "Cumulative Processes," in J. Eatwell, M. Milgate, P. Newman (eds), *The New Palgrave: A Dictionary of Economics*, v. 1, London, Macmillan, 736-38.
- Hayek, F. 1935. *Prices and Production*, 2<sup>nd</sup> ed. Reprinted: A. Kelley, 1967.

- Keynes, J. 1926. *Official Papers by Alfred Marshall*, published for the Royal Economic Society by Macmillan, London, edited by J. M. Keynes.
- Laidler, D. 1991. *The Golden Age of the Quantity Theory*, Princeton U. Press.
- 1990. "Alfred Marshall and the Development of Monetary Economics," in *Centenary Essays on Alfred Marshall*, ed. by J. Whitaker, Royal Economic Society, Cambridge, 44-78.
- Marget, A. 1938. *The Theory of Prices, v. 1. (A Re-Examination of the Central Problems of Monetary Theory)*, Prentice-Hall.
- Marshall, A. 1923. *Money, Credit and Commerce*, Macmillan, London. Reprinted: A. Kelley, 1965.
- 1920. *Principles of Economics*, 8th ed., Macmillan, London.
- and M. Marshall. 1879. *Economics of Industry*, Macmillan, London.
- 1887. "Remedies for Fluctuations in General Prices," *Contemporary Review*, March, reprinted in (Pigou 1925, 188-211).
- 1871. 'Money' in (Whitaker 1975, 164-77).
- Mises, L. 1966. *Human Action*, orig. pub. 1949, 3rd rev ed, Chicago, H. Regnery.
- 1931. *The Causes of the Economic Crisis*, English translation in (Mises 1978, 173-204).
- Myrdal, G. 1939. *Monetary Equilibrium*. Reprinted by A. Kelley, N.Y., 1965.
- Ohlin, B. 1936. Introduction to (Wicksell 1898).
- Patinkin, D. 1952. "Wicksell's Cumulative Process," *E.J.*, (62: Dec), 835-47.
- 1965. *Money, Interest, and Prices*, N.Y., Harper & Row, 2nd ed. Note E: "Wicksell's Monetary Theory," (581-97).
- Pigou, A. 1925. Editor of *Memorials of Alfred Marshall*, Macmillan, London.
- 1917. "The Value of Money," *Q.J.E.*
- Rist, C. 1940. *History of Money and Credit Theory*, reprinted by A. Kelley, New York, 1966.
- Shackle, G. 1954. Foreword to K. Wicksell's *Value, Capital and Rent*, English version, London, Allen & Unwin. Reprinted: A. Kelley, 1970.
- Whitaker, J. 1987. in J. Eatwell, M. Milgate, P. Newman (eds), *The New Palgrave: A Dictionary of Economics*, v. 3, Macmillan, London, 1987, 350-63.
- 1975. *The Early Economic Writings of Alfred Marshall, 1867-90, Edited and Introduced*, v. 1, Macmillan for the Royal Economic Society.
- Wicksell, K. 1928. *Lectures on Political Economy, v. 2: Money*. Swedish editions: 1st (1906), 2nd (1915), 3rd (1928). English translation, from the 3rd Swedish edition, by E. Classen: 1934 (v. 1) & 1935 (v. 2). Reprinted: A. Kelley, 1967.
- 1898. *Interest and Prices*, in German, Jena, 1898. English version translated and edited by R. F. Kahn, Royal Economic Society, 1936. Reprinted: A. Kelley, 1962.
- 1898a. "The Influence of the Rate of Interest on Commodity Prices," lecture to the Stockholm Economic Association. English translation in: *Selected Papers on Economic Theory*, ed. by E. Lindahl, Allen and Unwin, London, 1958, 67-89.
- 1907. "The Influence of the Rate of Interest on Prices," *E.J.*, (17: June), 213-20. Amundsen states, see (Shackle 1954, p. 170), that this article is a "summary" of *Lectures (2)*, but if so, it is an extremely brief and selective one.
- Wolfe, J. 1956. "Marshall and the Trade Cycle," *Oxford Economic Papers*, (8: Feb), 90-101.