Keynes' Critique of the Classical and Neoclassical Theories of the Rate of Interest

A Crítica de Keynes a Teoria da Taxa de Juros dos Clássicos e Neoclássicos

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Abstract: The classical theory of the rate of interest is the theory that mainstream economists inherited chiefly from Marshall, Ricardo and Wicksell, and is also this same theory that John Maynard Keynes criticizes in his General Theory for presenting an explanation centered solely on the special case of full employment. Despite the difficulties, Keynes offered a scathing critique of the theory of the rate of interest from both classical and neoclassical economists. This was only made possible because the traditional rationale of these economists remained imprisoned by the trap set by Say's Law. Therefore, within this context, the main objective of this paper is to undertake a critical analysis of Keynes regarding the classical general theory of the rate of interest, through which we may then demonstrate the points on which he was in disagreement with the neoclassical school. The main conclusion is that Keynes considered that traditional analysis is defective because it was unable to identify the independent variables of the system. Indeed, savings and investment are determined variables and not the determinants of the dynamics of the capitalist economic system. Such determined variables are the twin product of the true determinants, i.e., from the propensity to consume, from the scale of the marginal efficiency of capital and from the interest rates, and this is why the flow of investments tends to expand until the marginal efficiency of capital remains at the rate of interest.

Keywords: Interest rate. General theory. Classical. Neoclassical.

Resumo: A teoria clássica da taxa de juros é a teoria que os economistas do mainstream herdaram de Marshall, Ricardo e Wicksell, principalmente. É, também, a mesma teoria da taxa de juros que John Maynard Keynes crítica na sua Teoria Geral por apresentar uma explicação centrada apenas para o caso especial do pleno emprego. Apesar das dificuldades, Keynes direcionou uma crítica contundente à teoria da taxa de juros dos economistas clássicos e neoclássicos. Isso só foi possível porque o raciocínio tradicional desses economistas continuou prisioneiro da armadilha da Lei de Say. Neste contexto, o objetivo fundamental do presente artigo é realizar uma leitura crítica de Keynes sobre a tradicional teoria especial da taxa de juros dos clássicos para demonstrar, desta forma, os pontos de discordância dele para com a escola neoclássica, também. A principal conclusão

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DOI: dx.doi.org/10.22456/2176-5456.73001

é que para Keynes a análise tradicional é defeituosa porque não conseguiu identificar as variáveis independentes do sistema. De fato, a poupança e o investimento são variáveis determinadas e não os determinantes da dinâmica do sistema econômico capitalista. Tais variáveis determinadas são o produto gêmeo dos verdadeiros determinantes, isto é, da propensão a consumir, da escala da eficiência marginal do capital e da taxa de juros, por isso o fluxo do montante do investimento tende a se expandir até que a eficiência marginal do capital fique ao nível da taxa de juros.

Palavras-chave: Taxa de juros. Teoria geral. Clássicos. Neoclássicos.

JEL Classification: E00; E12; E43.

1 Introduction

The classical theory of the rate of interest is the theory that mainstream economists inherited, chiefly from Alfred Marshall, David Ricardo and Johan Gustaf Knut Wicksell. It is the same theory inherited by Marshall from Ricardo, and which served as the basis for the formation of John Maynard Keynes and of all generations of Anglo-Saxon economists, essentially because until recently, it had been accepted almost unreservedly.

It is also this same theory that Keynes criticizes in his best known work, The General Theory of Employment, Interest and Currency, or simply The General Theory, for presenting an explanation focused solely on the special case of full employment. Nevertheless, Keynes encountered difficulties in explaining it precisely or in discovering its explicit enunciation in the main treatises by the classical and neoclassical schools.

Nevertheless, this did not prevent Keynes from forming a critique of the theory of the rate of interest adopted by classical and neoclassical economists. In truth, this was possible because the traditional rationale embraced by these economists remained trapped within Say's Law, i.e., treating the economic problems of a monetary economy of production by assuming that there is no involuntary unemployment, and that people would work at an equilibrium level of full-employment, due to the self-sufficiency of the market.

In general terms, the point where classical and neoclassical economists converge is where everyone regards the rate of interest as the balancing factor for investment as well as savings. Keynes' [1935] critique of the classical theory of the rate of interest is contained in Chapter 14 and in the Appendix to Chapter 14 of his work. In the latter, Keynes offers a brief retrospective analysis of versions of the theory of the rate of interest put forward by Alfred Marshall, David Ricardo, Arthur Cecil Pigou, Ludwig Heinrich Edler von Mises and Friedrich August von Hayek.

Within these terms, the main objective of this article is to construct a critical analysis of Keynes with regard to the classical general theory of the rate of interest, through which we may demonstrate the points on which he was in disagreement

with the neoclassical school, as well as the errors committed by the classical school itself. For this, the present article has been organized into four sections, in addition to this introductory section and the closing section with the final considerations.

In the second section, Keynes' critical position is discussed against the idea that investment and savings are determined by the real interest rate. The third section presents certain points of conceptual concordance and in particular, the mistakes committed by the classical school. In the fourth section we provide a brief critical summary of John Maynard Keynes on the treatment given to the rate of interest by Wicksell from the Austrian school.

2 John Maynard Keynes Critique on the Classical Theory of the Rate of Interest

It has been recognized that there is a difficult relationship between Keynes' modern general theory of the rate of interest and the traditional special theory of the rate of interest of the classical economists. The main difficulty regarding the classical economists lies in their explanation for determining the level of a product and of macroeconomic employment in a monetary economy of production. This is because the world of the classical economists is considered in terms of a real economy where money is neutral, from the viewpoint of the decisions taken by the economic agents.

This pre-keynesian conception is extended to the theory of the rate of interest. Indeed, the classical economists considered the rate of interest, which establishes equality between investment and savings, as being a real phenomenon. In modern neoclassical versions, the foundations of the relationship that exists between supply (savings) and demand (investment) – for the theories of "capital", "waiting" or "loanable funds" –, are based on the old doctrine of classical economics from a decline in the marginal productivity of investment and the marginal disutility of savings, as referred to by Lawlor (1997).

In the world of the classical economists, the rate of interest is the factor that establishes the equilibrium between the demand for investment and the supply of savings: whereby the investment represents the demand for resources to invest, the savings represents the supply and the real rate of interest is the "price" of resources traded on the capital market.

While this rationale is not encountered in Marshall (1983), this is his theory as may be observed from the following extract taken from the General Theory, in which Keynes ([1935], p. 119) states that:

> Interest, being the price paid for the use of capital in any market, tends towards an equilibrium level such that the aggregate demand for capital in that market, at that rate of interest, is equal to the aggregate stock

> forthcoming there at that rate. If the market, which we are considering, is a small one — say a single town, or a single trade in a progressive country — an increased demand for capital in it will be promptly met by an increased supply drawn from surrounding districts or trades. But if we are considering the whole world, or even the whole of a large country, as one market for capital, we cannot regard the aggregate supply of it as altered quickly and to a considerable extent by a change in the rate of interest. For the general fund of capital is the product of labour and waiting; and the extra work, and the extra waiting, to which a rise in the rate of interest would act as an incentive, would not quickly amount to much, as compared with the work and waiting, of which the total existing stock of capital is the result. An extensive increase in the demand for capital in general will therefore be met for a time not so much by an increase of supply, as by a rise in the rate of interest; which will cause capital to withdraw itself partially from those uses in which its marginal utility is lowest. It is only slowly and gradually that the rise in the rate of interest will increase the total stock of capital.

For Marshall (1983, p. 203-204): "[…] high interest rates will only increase the total capital stock slowly and gradually, […]" i.e., Marshall treats his equilibrium real interest rate as if it were determined by capital market forces - exactly at the point where the amount of investment equals the amount of savings - just as he treats the equilibrium price of a commodity on the market for goods and services, at the level where demand equals supply.

Similar to Marshall, Keynes ([1935], p. 112), in his General Theory, highlights the contribution of Kart Gustav Cassel by explaining that: "[…] investment constitutes the 'demand for waiting', and saving the 'supply of waiting', whilst interest is a 'price' which serves, it is implied, to equate the two, [...]". Moreover, other economists, most notably Marie-Ésprit-Léon Walras, Frank William Taussig, Frank Hyneman Knight and even Arthur Cecil Pigou, had the same understanding of the theory of the rate of interest based on the idea of the equilibrium of waiting between savings and investment. In the words of Keynes ([1935], p. 113):

> Certainly the ordinary man—banker, civil servant or politician—brought up on the traditional theory, and the trained economist also, has carried away with him the idea that whenever an individual performs an act of saving he has done something which automatically brings down the rate of interest, that this automatically stimulates the output of capital, and that the fall in the rate of interest is just so much as is necessary to stimulate the output of capital to an extent which is equal to the increment of saving; […] and, further, that this is a self-regulatory process of adjustment which takes place without the necessity for any special intervention or grandmotherly care on the part of the monetary authority.

Keynes ([1935], p. 123) registers two observations on the above-mentioned quote from Marshall: the first refers to the use of the word "capital" and not "money"; and the second on the use of the word "stock" and not "loans". This is becau-

se "[…] interest is a payment for borrowing money, and 'demand for capital' in this context should mean 'demand for loans of money to buy a stock of capital goods […]".

Under these conditions, the equality between the stock of capital goods offered and the volume of flow demanded will be created by the price of capital goods rather than the interest rate. For Keynes [1935], the rate of interest should equal the demand and supply of effective loans in money, i.e., of debts.

Marshall's capital fund is made up of the savings that result from both the part of the non-consumed income and from the savings that result from the application in interest-bearing deposits due to the attraction of high interest rates. While this signifies that income is not constant, the way in which high interest rates cause "extra work" is not clearly stated.

In this respect, Keynes ([1935], p. 123) asks: "Is the suggestion that a rise in the rate of interest, by reason of its increasing the attractiveness of working in order to save, as a constituting a sort of increase in real wages, which will induce the factors of production to work for a lower wage?"

It is certainly reckless, not to say absurd, wishing to explain the effective fluctuations of investment on the basis that a rise in the rate of interest would eventually force workers to accept a lower wage. On this point, Keynes ([1935], p. 123) states that:

> My rewriting of the latter half of this sentence would be: "and if an extensive increase in the demand for capital in general, due to an increase in the schedule of the marginal efficiency of capital, is not offset by a rise in the rate of interest, the extra employment and the higher level of income, which will ensue as a result of the increased production of capital-goods, will lead to an amount of extra waiting which in terms of money will be exactly equal to the value of the current increment of capital goods and will, therefore, precisely provide for it".

Unlike the neoclassical school, which believes that inequality between savings and investment is possible, the classical school has always admitted the principle of equality between these two items. The classical theory of the rate of interest that prevailed until 1914 viewed the rate of interest as a factor that ensured equality between savings and investment, in other words, it had never been suggested that savings and investment could be unequal.

After World War I, however, this idea emerged and became influential due to the approaches of Hawtrey and Robertson, which attempted to bridge the theory of value with the quantity theory of money, as argued by Lawlor (1997). Ricardo and Marshall, however, upheld the idea of equilibrium being maintained by the rate of interest between savings and investment.

Keynes ([1935], p. 121) reveals the essence of the theory of the real rate of interest inherited from Ricardo in the following quotation:

> The interest of money is not regulated by the rate at which the Bank will lend, whether it be 5, 3 or 2 per cent., but by the rate of profit which can be made by the employment of capital, and which is totally independent of the quantity or of the value of money. […] The applications to the Bank for money, then, depend on the comparison between the rate of profits that may be made by the employment of it, and the rate at which they are willing to lend it. If they charge less than the market rate of interest, there is no amount of money which they might not lend;—if they charge more than that rate, none but spendthrifts and prodigals would be found to borrow of them.

Keynes acknowledges that Ricardo offered an important starting point for a discussion with the neoclassicists. Indeed, Ricardo's theory of the rate of interest is only applicable, assuming that there is no change in the supply curve of labor in terms of product, in a balanced economy with long-period full employment.

Within this hypothesis of an ergodic world, and with the usual condition of ceteris paribus, i.e., that no changes are expected, and no other change except a change in the quantity of money, Ricardo's theory of the rate of interest is valid in the sense that, on the basis of these hypotheses, only one interest rate compatible with the level of long-period employment would remain.

Nevertheless, Ricardo's theory of the rate of interest is limited not only by admitting a single equilibrium of long-period full employment, supported by the famous Say's Law, but also because it does not address the various positions of long-period equilibrium, and even less in the short-period, as a result of insufficient effective demand. On this particular point, Keynes ([1935], p. 121) criticizes Ricardo's theory of the rate of interest, together with his followers in the following terms:

> Ricardo and his successors overlook the fact that even in the long period the volume of employment is not necessarily full but is capable of varying, and that to every banking policy there corresponds a different long--period level of employment; so that there are a number of positions of long-period equilibrium corresponding to different conceivable interest policies on the part of the monetary authority.

Keynes [1935] noted that David Ricardo – a prisoner of the quantity theory of money - had overlooked the fact that monetary policy not only signifies the power of the central bank to change (increasing or decreasing) the quantity of money, but also the terms in which this monetary authority will vary the money supply, i.e., the rate of interest at which, either through a change in the volume of discounts or through open market operations, it will increase or reduce its assets - thus demonstrating that it is incorrect to uphold that monetary policy is ineffective.

It should be noted that the contrast between Keynes's general theory of the rate of interest and the classical general theory of the rate of interest is analogous between his general theory of employment and the classical special theory. Both

distinctions between the general theory and the special theory arise from the difference between on the one hand, the various fluctuating levels of employment and income, as opposed to a single fixed level of full employment and income.

By neglecting the variations of income and employment levels below full employment, the classical school persisted in the error of taking the interest rate as the factor responsible for the equality between investment and savings, i.e., the equality between the demand for loanable funds for investment and the supply of savings.

Another interesting aspect contained in Chapter 14 of the General Theory (Keynes, [1935]), and its Appendix, concerns the disparity between the neoclassical school, which deems inequality possible between savings and investment, and the classical school, which recognizes its equality. Marshall, for example, believed that aggregate savings and aggregate investment are the same, but the classical economists, prisoners of Say's Market Law, took this belief the extreme by arguing that any individual act of increasing savings entailed the corresponding individual act of investment.

Within this context, Keynes [1935] indicates that there is no substantial difference between his concept of the rate of the marginal efficiency of capital, or the rate of demand for investment, and the capital demand curve of classical economics, except when the classical economists highlight the effect of the rate of interest on the marginal propensity to save.

In this particular case, Keynes ([1935], p. 113) imagines that classical economists:

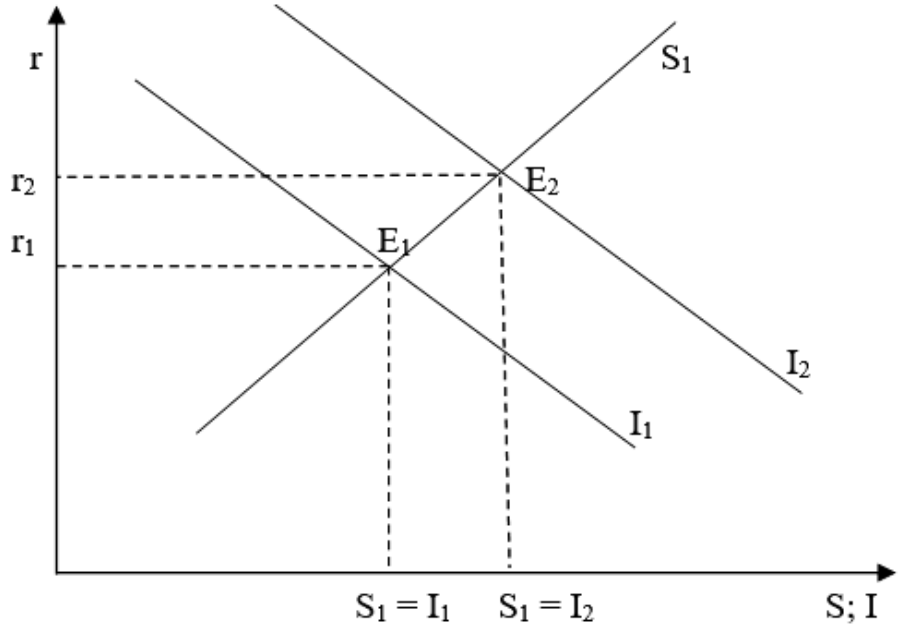
> […] would, presumably, not wish to deny that the level of income has an important influence on the amount saved; whilst I, for my part, would not deny that the rate of interest may perhaps have an influence (though perhaps not of the kind which they suppose) on the amount saved out of a given income, but in a different way from that of the classics.

Nevertheless, this is exactly the point on which Keynes diverges from and opposes the position of the classical economists given the face of the decisive error that appears in the classic theory of the rate of interest, as will be observed below.

3 The Equivocal Nature of the Classical Theory of the Rate of Interest

The difference between Keynes's general theory of the rate of interest and the special theory of the rate of interest from the classical school is analogous to the contrast that exists between his general theory of employment and the special theory of full employment from the classical school. Classical economists, by neglecting the variations in the level of aggregate income, made the mistake of deducing the rate of interest as the only regulating factor of the a posteriori equality between investment and savings. This error may be visualized through Figure 1.

Figure 1 – The classical theory of the rate of interest with a level of fixed income



Source: Carvalho (2014).

In Figure 1, the real interest rate (r) is represented on the vertical axis and savings (S) and investment (I) on the horizontal axis. The real interest rate is thus determined by the point of intersection between the investment demand curve (which represents the marginal efficiency of capital curve) and the savings curve (representing the loanable funds) of a given level of aggregate income.

Keynes goes so far as to agree on equality between ex post savings and ex post investment, but not in the terms of the classical economists. Keynes [1935], however, diverges from classical economists when they argue that when the investment curve shifts (from I_1 para I_2), the level of savings is maintained, the new intersection of savings and investment curves will cause the rate of interest to rise.

Under these conditions, the error of the classical economists is to assume that the investment demand curve may vary without affecting the level of aggregate income. Indeed, such a conclusion is confirmed by Keynes ([1935], p. 113) when he states:

> But this is the point at which definite error creeps into the classical theory. If the classical school merely inferred from the above proposition that, given the demand curve for capital and the influence of changes in the rate of interest on the readiness to save out of given incomes, the level of income and the rate of interest must be uniquely correlated, there would be nothing to quarrel with. Moreover, this proposition would lead naturally

> to another proposition which embodies an important truth; namely, that, if the rate of interest is given as well as the demand curve for capital and the influence of the rate of interest on the readiness to save out of given levels of income, the level of income must be the factor which brings the amount saved to equality with the amount invested.[1]

Keynes (1996) and Dillard (1993) both emphasize that the classical theory of the rate of interest, therefore, not only ignores the influence from variations in the level of aggregate income, but also commits a formal fallacy when it supposes that if either the investment demand curve shifts, or the one that associates the interest rate with the savings supply curve shifts, or indeed if both shift, then the new rate of interest is determined by the intersection point of the new positions of the two curves.

In other words, Keynes considered this is an absurd theory, since the hypothesis that the level of income is constant is incompatible with the idea that the two curves can shift independently of one another. This is because when any of the curves in Figure 1 shift, then generally the aggregate income will also shift, and therefore the classical theory of the rate of interest disintegrates.

With regard to this absurdly illogical position by the classical economists, Keynes ([1935], p. 114) states:

> But this is a nonsense theory. For the assumption that income is constant is inconsistent with the assumption that these two curves can shift independently of one another. If either of them shift, then, in general, income will change; with the result that the whole schematism based on the assumption of a given income breaks down. The position could only be saved by some complicated assumption providing for an automatic change in the wage-unit of an amount just sufficient in its effect on liquidity-preference to establish a rate of interest which would just offset the supposed shift, so as to leave output at the same level as before.

Keynes' theory, in addition to the fact that it had not been suggested by the classical economists, would theoretically only be possible in a situation of full employment in the long period, but could not serve as a basis for a short-period theory. In fact, there is no reason for this theory to be valid in the long period in a monetary economy of production.

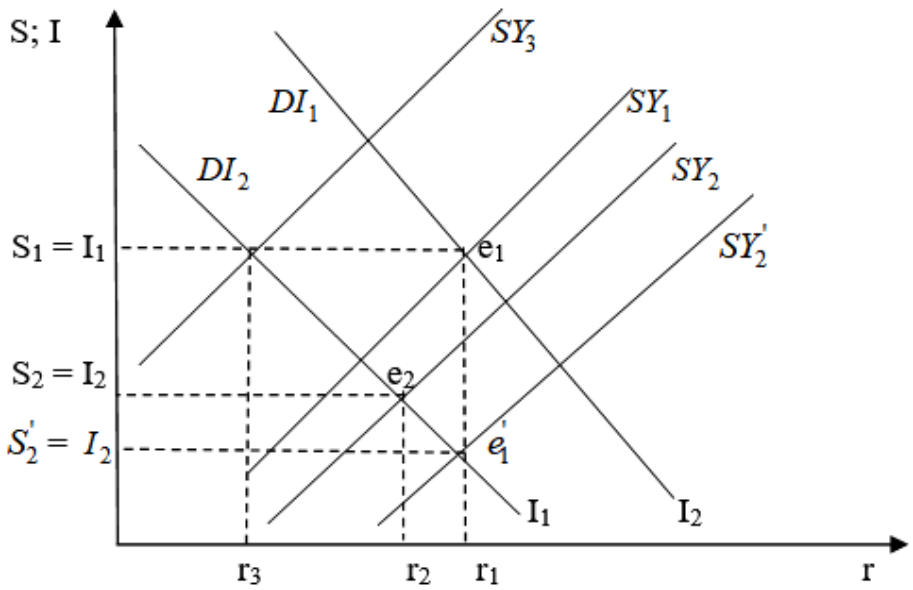
The above arguments may be illustrated by Figure 2. In this diagram, the amount of investment (I) or savings (S) is measured on the vertical axis, and the interest rate (r) on the horizontal axis. Each investment demand curve relates the amount of investment to the interest rate, such that: D_1 is the position of the first investment demand curve; D_2 is the position of the second investment demand curve.

1 Perhaps the first part of the paragraph inspired Hicks when constructing his IS-LM model, as it was later termed by Hansen (1987).

In the conception of both Keynes (1996) and Dillard (1993), each curve of savings supply (SY) relates the saved amount of income to the rate of interest, such that: the supply curve of savings SY_1 relates the amounts saved from income Y_1 to the various rates of interest (r), which are SY_2, SY_3, and so on, and the corresponding supply curves of savings to the income levels Y_2, Y_3, and so on.

Under these conditions, we will initially assume that the SY_1 curve is compatible with the rate of interest r_1 and the curve of investment demand ID_1, at point e_1, in such a manner that the amount of savings is equal to that of the investment. If we assume that the curve of the investment demand shifts from ID_1 to ID_2, then generally the income level will also shift. In Figure 2, however, there is insufficient data to obtain the new income figure.

Figure 2 – Classical rate of interest with varying levels of incomes



Source: Carvalho (2014).

Only in the specific case of continuous full employment, with no change in the liquidity and supply of money, so there is no change in the rate of interest either, then the supply curve of savings from income (SY'_2) – which cuts through the second curve of investment demand (ID_2) below the point where the previous curve of savings from income (SY_1) intersects the first curve of investment demand (ID_1) –, will be the appropriate curve of the supply of savings from income and is exactly the point at which equality between saving and investment is compatible with the new level of income, as Keynes [1935] argues.

In point of fact, by assuming continuous full employment, the classical theory only occupies the savings curve (SY), and thus rules out the need to discover a general theory of the rate of interest. On the other hand, assuming that the curve of investment demand (ID) may shift without affecting the level of income and, therefore, the curve of savings from income (SY), the classical theory thus made the *error* of considering the rate of interest as the price that equates the investment demand with the supply of savings.

In short, classical economists have made the grave mistake of not understanding that the rate of interest is a liquidity-premium by accepting the risk or uncertainty of the future, where money is also a reserve of value, as Keynes ([1935], p. 115) clarifies in the following passage:

> The mistake originates from regarding interest as the reward for waiting as such, instead of as the reward for not-hoarding; just as the rates of return on loans or investments involving different degrees of risk, are quite properly regarded as the reward, not of waiting as such, but of running the risk. There is, in truth, no sharp line between these and the so-called 'pure' rate of interest, all of them being the reward for running the risk of uncertainty of one kind or another. Only in the event of money being used solely for transactions and never as a store of value, would a different theory become appropriate.

It is clear, therefore, that the classical economists could never have formulated a general theory of the rate of interest that was suitable for full employment and for all situations under full employment. There are two points that could have warned classical economists that something was wrong. First, the classical theory of the rate of interest accepted that the saved part of a given income necessarily increases when the rate of interest rises, and secondly, there is no doubt that the investment demand curve falls when the rate of interest rises.

As demonstrated in Figure 2, if the SY and ID curves were to fall as the rate of interest rose, nothing could ensure that a determined curve SY would intercept the other ID curve at any point on the graph. This suggests, therefore, that it cannot be the SY and ID curves, as such, that determine the interest rate.

In this situation, the classical economists, by assuming the functions of the investment and the savings out of a given income at full employment, subjected the variations in the amounts invested and the amounts saved only to changes in the interest rate, such that $S = S(r)$ and $I = I(r)$. It follows that these functions used by the classical theory do not provide sufficient elements for a general theory of the rate of interest.

These functions could be used to determine the amount of income if the rate of interest was given at full employment, or, alternatively, to determine the rate of interest if the level of income was given at full employment. In fact, according to Keynes ([1935], p. 115), if we assume that the state of liquidity-preference and the

quantity of money offered in the money market are known, and with this the new interest rate r_2, then the position of the supply curve of savings (SY_2) that cuts the investment demand curve (ID_2) is determined, as demonstrated in Figure 2.

Therefore, the SY and ID curves, in themselves, do not tell us anything about the interest rate, but only suggest what the level of income will be as long as the interest rate is known by other means. For Keynes ([1935], p. 116):

> In the second place, it has been usual to suppose that an increase in the quantity of money has a tendency to reduce the rate of interest, at any rate in the first instance and in the short period. Yet no reason has been given why a change in the quantity of money should affect either the investment demand-schedule or the readiness to save out of a given income.

It is clear that the classical school eventually adopted two completely different theories of the rate of interest - one which is microeconomic, and deals with the theory of value, and another that is macroeconomic and deals with the quantity theory of money - without realizing the contradiction, and therefore perhaps because of this, made no theoretical effort to build a bridge between the two theories. But unlike the classical school, it was the various attempts of the neoclassical school to construct a theoretical bridge that would bring an end to this contradiction.

Nonetheless, in due course, the neoclassical school came to the conclusion that there were two sources of supply to reach the investment demand curve, namely, the actual savings of the classical school plus the sum that becomes available as a consequence of any increase in the quantity of money on the money market.

4 Keynes' Critique of the Neoclassical Theory of the Two Rates of Interest

Wicksell (1986) extended his quantity theory of money from a pure money economy to a mixed credit-money economy. This cumulative process considered both the mechanism of direct monetary transmission that generates the so-called effects on real balances - the increase in the demand for goods and services that causes prices to rise as a consequence of the increase in the money supply - and the mechanism of indirect monetary transmission, which results from the relationship between the demand for money and the interest rate, such that, for example, an increase in the money supply first reduces the interest rate, which in turn then raises the demand for goods and services, thus causing an increase in prices.

Another important aspect is that Wicksell (1986) attributed the divergences between the natural rate of interest and the loan interest rate of the credit market to price level movements. In this situation, the natural rate of interest is that which equals the amount of savings desired (S) with the amount of planned investment (I) at full employment.

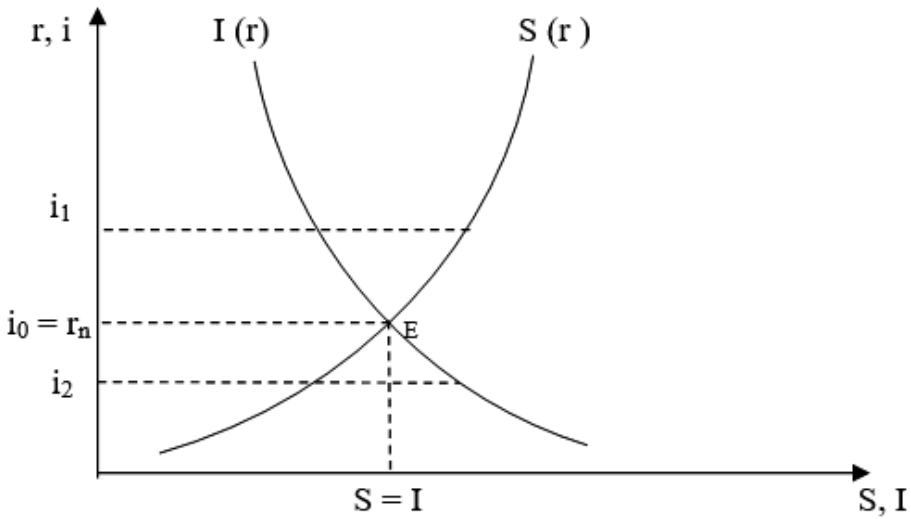
On the other hand, the natural rate of interest rate (r_n) corresponds to the expected marginal return or internal rate of return on the new units of physical capital determined by the demand for capital and the volume of savings.

When the money market interest rate falls below the natural rate of interest - such that the cost of borrowed capital is less than the expected rate of return on capital - then the planned investment will exceed the desired savings because investors will seek to finance their new investment projects by borrowing from banks at a higher rate than the public has deposited in the banks. Banks are able to accommodate the expanded demand for credit by expanding the volume of deposits.

The loan interest rate (i) is that charged by banks that offer credit on the banking market. In Figure 3, Wicksell (1986, p. 261) and Blaug (1997, p. 427) illustrate the working mechanism for determining savings and investment as follows. Thus, as long as the differential between the two interest rates lasts, as presented in Figure 3, the expansion of deposits will produce a persistent, cumulative increase in the price of goods and services, i.e., inflation will persist until the differential rate of interest is annulled, as observed by Wicksell (1997).

Similarly, banks could bring about a drop in the price of goods and services as long as they maintain the rate of interest on loans above the natural rate of interest.

Figure 3 – The equilibrium rate of interest of savings and investments



Source: Carvalho (2014).

Indeed, when the loan interest rate is above the natural equilibrium interest rate - such that the cost of borrowed capital is greater than the expected rate of return on capital - then the desired savings will exceed the planned investment, as illustrated in Figure 3. In effect, there will be a reduction in the demand for goods

and services, which will lead to a fall in the price of goods and services as a consequence of the greater incentive to save rather than to invest.

Keynes [1935] refers to Wicksell's explanations as one of the attempts of the neoclassical school to build a theoretical bridge, between the theory of value and the quantity theory of money, which led to the worst of confusions. In fact, it should be remembered that Keynes was influenced by Wicksell when he wrote his *Treatise on money*. In this work, Keynes defined the natural rate of interest rate, which purported to be a single interest rate, as if it maintained the equality between the amount of savings and the amount of investment.

Keynes sought to develop and clarify Wicksell's concept of the natural rate of interest which, according to Wicksell, was to preserve the stability of a certain level of prices. In the *Treatise on money*, Keynes ignored the fact that in each society a different interest rate exists for every assumed volume of hypothetical employment.

On the other hand, the natural rate of interest is unique in the sense that the economic system will be in equilibrium with this level of natural interest rate and this volume of hypothetical employment of full employment, as upheld by Wicksell (1986). Keynes ([1935], p. 152) acknowledges his error when dealing with this subject in *Treatise on money* in the following terms:

> Thus it was a mistake to speak of *the* natural rate of interest or to suggest that the above definition would yield a unique value for the rate of interest irrespective of the level of employment. I had not then understood that, in certain conditions, the system could be in equilibrium with less than full employment. I am now no longer of the opinion that the concept of a 'natural' rate of interest, which previously seemed to me a most promising idea, has anything very useful or significant to contribute to our analysis. It is merely the rate of interest which will preserve the status quo; and, in general, we have no predominant interest in the status quo as such.

In the General Theory, however, there is a clear rejection of the neoclassical quantity theory of money, into which Wicksell may be inserted, not only because he did not consider expectations in its cumulative process, but also because he developed his theory by allowing for an economy in full employment and ignoring the case of an economy below full employment.

In Keynes's [1935] view, Wicksell deduced that there should be two sources of money supply to arrive at the investment demand curve: the actual savings of the classical economists, plus the sum of money that becomes available to banks as a consequence of any increase in the amount of money.

Such a premise leads to the idea that there is a natural or equilibrium rate of interest that equals the investment with the effective savings, without any addition by means of the forced saving mechanism, provided that the amount of money may be kept constant by the banks or by a central bank, because the ills that are

attributed to a supposed excess of investments over effective savings would no longer be possible.

Keynes ([1935], p. 116) in his General Theory rejected the neoclassical idea of neutral money, especially those of Wicksell and Hayek, using the metaphor of Ibsen's "Wild Duck" entering deep waters: "The wild duck has dived down to the bottom—as deep as she can get—and bitten fast hold of the weed and tangle and all the rubbish that is down there, and it would need an extraordinarily clever dog to dive after and fish her up again.".

4 Final Considerations

It may be perceived, therefore, that Keynes viewed traditional analysis as being defective because it was unable to identify the independent variables of the system. Indeed, savings and investment are determined variables and not the determinants of the dynamics of the economic system. Such determined variables are the twin product of the real determinants, that is, of the propensity to consume, of the marginal efficiency of capital and the rate of interest.

These determinant variables are, as such, complex, and each may be affected by variations of the others, while remaining independent in the sense that their values are not derived from one another. Classical analysis understood that savings depend on income, but neglected the fact that it depends on investments in a relationship so that when investment varies, income also varies in the necessary proportion so as to make savings equal to the investment ex post.

Similarly, classical theories did not succeed by attempting to make interest rates dependent on the marginal efficiency of capital. In fact, the marginal efficiency of capital depends, in part, on the tidal volume of investment, and to calculate this volume it is first necessary to know the interest rate. Therefore, the important conclusion is that the flow of the amount of investment tends to expand until the marginal efficiency of capital is at the level of the rate of interest.

Therefore, the scale of the marginal efficiency of capital does not indicate the rate of interest, but rather the points to which the flow of new investments tend to reach when the interest rate has a determined value. In this context, the macroeconomic policy recommended by the classical economists is based, to date, on the theory that, ceteris paribus, an increase in savings tends to lower the rate of interest and an increase in investment will induce it to rise.

However, if these two variables do not determine the interest rate, but the volume of aggregate employment, then our view on how a market economy functions should be profoundly modified. Indeed, since it is the principle of effective demand, and not Say's law, which actually explains the dynamics of how a monetary economy of production functions, then a greater propensity to spend, rather than a

greater propensity to save, should be seen as a positive factor that, ceteris paribus, increases the level of employment.

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Recebido em: 29/04/2017.
Aceito em: 15/06/2017.