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Monetary Production Economy

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**THE STRUGGLE OVER THE REAL WAGE  
IN THE MONETARY PRODUCTION ECONOMY**

**Hernando Matallana, Bogotá, January 2009<sup>1</sup>**

Abstract

Keynes contents in *General Theory* that the monetary market logic of the aggregate real wage in the monetary production economy conveys: (i) the determination of the average real wage rate, the level of employment, and the possibility of involuntary unemployment through the interaction of the monetary markets and the goods markets; and (ii) the determination of the money wage rate through the bargains of the firms and the workers as a market-theoretical stability condition of the economic system. Accordingly, (iii) the money wage claims of labour (in conformity with changes of the average labour productivity) do not alter the distribution of income between capital and labour; and (iv) the struggle about the money wages by different groups of workers is actually a zero-sum game over the distribution of the aggregate real wage between the different fractions of the working class. The paper discusses Keynes's contention in the context of the monetary-keynesian theory of the endogenous-money monetary production economy.

**Key Words:** income distribution, monetary production economy, monetary keynesianism, real aggregate wage, wage labour, wage differentials

**JEL Classification:** B22, E12, E24, E25, J31

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## LA LUCHA POR EL SALARIO REAL EN LA ECONOMÍA MONETARIA DE PRODUCCIÓN

### Resumen

Keynes sostiene en la Teoría General que la lógica monetaria del salario real agregado en la economía monetaria de producción conlleva: (i) la determinación de la tasa promedio del real, el nivel empleo y la posibilidad del desempleo involuntario a través de la interacción de los mercados monetarios y los mercados de bienes, y, (ii) la determinación de la tasa del salario monetario a través de las negociaciones entre las firmas y los trabajadores es una condición de estabilidad del sistema económico. Por tanto, (iii) las exigencias sobre el salario nominal de los trabajadores (de conformidad con los cambios en la productividad promedio del trabajo) no alteran la distribución del ingreso entre el capital y el trabajo, y, (iv) la lucha sobre el salario monetario entre diferentes grupos de trabajadores es en realidad un juego de suma cero en torno a la distribución del salario real agregado entre las distintas fracciones de la clase trabajadora. El artículo desarrolla la tesis de Keynes en el contexto de la teoría keynesiano-monetaria de la economía monetaria de producción con dinero exógeno.

**Palabras clave:** distribución del ingreso, economía monetaria de producción, keynesianismo monetario, salario real agregado, salarios diferenciales, trabajo asalariado

**Clasificación JEL :** B22, E12, E24, E25, J31

# THE STRUGGLE OVER THE REAL WAGE IN THE MONETARY PRODUCTION ECONOMY

## 1 Introduction

This paper discusses the following theoretical proposition stated by Keynes in section III of chapter 2 of the *General Theory*:

Though the struggle over money-wages between individuals and groups is often believed to determine the general level of real wages, it is in fact, concerned with a different object. ... In other words, the struggle about money-wages primarily affects the *distribution* of the aggregate real wage between different labour-groups, and not its average amount per unit of employment, which depends, as we will see, on a different set of forces. The effect of combination on the part of a group of workers is to protect their *relative* real wage. The *general* level of the real wages depends on other forces of the economic system. [Keynes (1936): 13-14](emphasis in original)

Keynes's proposition contains two parts: (i) the determination of the aggregate real wage; and (ii) the distribution of the aggregate real wage between different groups of wage workers. It is Keynes's contention in the *General Theory* that this twofold proposition can be substantiated in the context of the theory of the *monetary production economy*.<sup>2</sup>

In an economy in which "money enters into the economic scheme in an essential and peculiar manner"[Keynes (1936): v], the average real wage and the demand of labour are determined by the decisions of the economic agents (central bank, commercial banks, and wealth-owners) in the monetary markets and the effective demand decisions of the consumers and the entrepreneurs in the goods markets. The distribution of the so-determined aggregate real wage between the different labour-groups, hence the level of the relative real wages, is the outcome of the struggle over the money-wages, the bargains between the firms and the wage workers over the money wage being the institutional setting that facilitates this struggle.

Negatively, the contention that in the monetary production economy the aggregate real wage is not determined by the interaction of the supply and the demand of labour also implies the rejection altogether of neoclassical/mainstream

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<sup>2</sup>The theoretical notion of the *monetary production economy* was introduced by Keynes in his contribution to the *Festschrift* in honour of Arthur Spiethoff in 1933. The theoretical foundation of the monetary production economy refers to the heterodox scientific research program developed by Keynes, Kalecki, and post-Keynes-Kalecki economists. The main trait shared by these authors is that the theory of the monetary production economy is the true scientific concept of the capitalist economy. This scientific position is taken for granted here. Economic theory being normative, the epistemic substantiation of the scientific position of the paper would require the dialectical development of the economic categories. See on this particular point Samuels (1988) and Feyerabend (1989).

non-monetary real wage labour market economics. The monetary determination of the supply real wage conveys the rejection of the neoclassical conception of the labour market in the sense that the real wage-labour demand solution in the monetary production economy is not the result of the neoclassical-like interaction of the labour demand of the firms and the labour supply of the workers. This is Keynes's main contention in section II of chapter 2 of the *General Theory*.<sup>3</sup>

However, Keynes's positive and negative contention holds only provided the endogeneity of money is warranted. Under this substantial market-theoretical condition the wage workers (and the involuntarily unemployed) are devoid of any market device that would allow them to elicit the full-employment equality of the real wage and the marginal disutility of labour. Contrarywise, i.e. with money being exogenously given, the operation of the Pigou-Keynes effects prompted by the reduction of the money wages would eventually bring the economy to a full-employment position. Hence in the exogenous-money case the workers might be able to determine the full-employment aggregate real wage as suggested by neoclassical market theory and mainstream supply-side macroeconomics.<sup>4</sup>

In the endogenous-money monetary production economy not all potential wage workers willing to work at the current real wage rate will/must be effectively employed, neither in the short-run (disequilibrium) nor in the long-run (equilibrium), simply because there is no neoclassical-like "labour market" in this economy. Accordingly, the labour supply function reflecting the real wage-labour supply decision of both the effectually employed and the potential wage workers serves only to determine the level of (long-run) involuntary unemployment of the economy. It is in this sense that Keynes's proposition conveys the rejection of the classical-neoclassical real wage theories of the labour market, and more generally of the non-monetary supply-side market theories which he calls "classical economics". Ironically, although the endogeneity of money is an essential market-theoretical condition for the foundation of the theory of the monetary production economy, Keynes did not substantiate the endogenisation of money in the *General Theory*.

The fact that the market logic of the monetary production economy conveys the theoretical possibility of involuntary unemployment implies the determination of wage labour as a non-scarce, yet commodified, non-produced factor of production. Labour being a 'free' good, its price would have to be equal to zero (or to fall indefinitely), if the monetary logic of wage labour in the monetary production economy happened to be the market logic of the non-monetary real labour market theories according to which the firms and the workers determine

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<sup>3</sup>"The traditional theory maintains, in short, *that the wage bargains between the entrepreneurs and the workers determine the real wage*; so that, assuming free competition amongst employers and no restrictive combination amongst workers, the latter can, if they wish, bring their real wages into conformity with the marginal disutility of the amount of employment offered by the employers at that wage. If this is not true, then there is no longer any reason to expect a tendency towards equality between the real wage and the marginal productivity of labour." [Keynes (1936): 11] (emphasis in original)

<sup>4</sup>See Keynes (1936), chap. 19, Kalecki (1944), Cassens (1997), Betz (2001).

the general level of the real wages, which is not the case. In the monetary production economy the money wages are fixed through the bargains between the firms and the wage workers, while the (average) real wage rate and the level of demand of labour are determined through the interaction of the monetary markets and the goods markets by the decisions of the different functional agents that constitute the capitalist class.

*Prima facie*, i.e. from the point of view of the conventional non-monetary real wage labour market theories, the 'givenness' of the positive money wage in book I of the *General Theory* seems to be an arbitrary assumption, the consideration of which introduces a "labour market rigidity" that hinders the full-employment clearing of the labour market. However, as Keynes argued in book V, (i) the 'givenness' of the money wages is a crucial market-theoretical stability condition of the full market system of the monetary production economy; and (ii) it is not an arbitrary assumption introducing a "labour market rigidity" as suggested by the non-monetary supply-side real-wage labour market theories.<sup>5</sup>

This provides the market-theoretical foundation of the struggle about the money-wages in the monetary production economy. Yet, as noted above, Keynes's argument depends essentially on the endogeneity of money, a theoretical tenet Keynes did not fulfill in the *General Theory*, but which has been fulfilled by post-Keynes-Kalecki economists of sorts.

Amongst post-Keynes-Kalecki economists *grosso modo* three main schools might be distinguished: the Anglo-American PostKeynesianism, the Italo-French Circuitism, and the German Monetary-Keynesianism. The critical consideration of the theoretical and methodological differences between these three heterodox schools is beyond the purpose of the paper.

The conception of the monetary production economy considered in the paper is based mainly on the theoretical work of the German monetary-keynesians. In particular, it extends the conceptual framework developed by Riese (1986, 2001) and the endogenous-money macroeconomic model developed by Betz/Westphal (1991) and Betz (2001,1993) *vis-à-vis* Keynes proposition on the struggle about the money-wages.<sup>6</sup>

A thorough discussion of the monetary-keynesian macroeconomics of the monetary production economy would require the market-theoretical determination of the complete system of markets. This is beyond the reach of the paper

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<sup>5</sup>"In the light of these considerations I am now of the opinion that the maintenance of a stable general level of money-wages is, on a balance of considerations, the most advisable policy for a closed system" [Keynes (1936):270] "Thus it is fortunate that the workers, though unconsciously, are instinctively more reasonable economists than the classical school [i.e. non-monetary real wage labour market theories], inasmuch as they resist reductions of the money wages, which are seldom or never of an all-around character, even though the existing real equivalent for these wages exceeds the marginal disutility of the existing unemployment" [Keynes (1936): 14] (square brackets added) Hahn and Solow (1995) come up to a similar conclusion in their critical essay on modern macroeconomic theory.

<sup>6</sup>Hajo Riese is known in Germany as the founder of the monetary-keynesian "Berliner Schule". The theoretical work of the monetary-keynesian authors being available mainly in German, the paper is an opportunity to put in English the main traits of the monetary-keynesian concept of capitalism. Riese's work has been partially edited in English by Hölscher/Tomann (2004).

In particular, the determination of the level of the money rates of interests and the real stock of money, credit and capital is not discussed at all. This implies to assume these variables as ‘given’ in the sense that they not are intended to be explained here. However, the analysis of the issues raised up in the paper is not affected in a substantial way.<sup>7</sup>

For simplicity, Keynes’s theoretical proposition is discussed in the context of a long-run stationary state equilibrium characterized by the conformity of the *ex ante* supply and the *ex ante* demand decisions of the economic agents with investment equal to zero. Accordingly, the prices and the quantities do not change.

The article is organized in six sections. Section 2 discusses the market logic of the production of commodities in the money wage economy. Section 3 examines the general conditions of production and supply, in particular the market logic of the mark-up applied by the firms in the goods markets. Section 4 discusses the monetary determination of the real wage in the monetary production economy. Section 5 considers Keynes’s proposition on the struggle about the money wages. Final remarks are contained in section 6.

## 2 The production of commodities in the money wage economy

The production-investment decision of the capitalist firm is (assumed to be) driven by the expectation of the prospective yield of the investment or capital asset. In the monetary production economy the production-investment decision is conditioned to the contracting of the factors of production against the promise of the deferred payment of the money income to the latter.

Labour and capital being the factors of production, it follows that the payment of the income of the factors of production conveys its distribution between the wage of labour and the profit upon stock. The functional division of the capitalist class into different economic agents conveys the distribution of the profit between the business banks, the wealth-owners and the firms in the form of interests, dividends, monopoly gains, depreciation of fixed capital, and planned undistributed profits.

The individual firm is obliged to the payment of the money wage and the interest on borrowed money since these are monetary obligations *vis-à-vis* functional agents other than the firm itself. This is generally not the case of the dividends, monopoly gains, the depreciation of fixed capital and the planned

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<sup>7</sup>The monetary-keynesian economics of the interaction of the money, credit and assets markets of the monetary production economy is discussed in Betz/Westphal (1989) and Betz (2001, 1993).

undistributed profits, these being monetary commitments set by the firm against itself.<sup>8</sup>

The capitalist firms considered both individually and as a whole do not produce the medium of deferred payments of the economy, this being the economic function of the banking system. Hence they will be able to pay the money income of the factors of production provided they obtain the money from the sale of their produced commodities. Alternatively, the firms might borrow the money from the banking system in order to be able to pay the money income before having sold their commodities. However, they are obliged to pay back the borrowed money and the interest on money to the banking system. In this case the firms will be able to pay their debts with the commercial banks provided they do obtain the money from the sale of their commodities.

In either case the production-investment decision of the individual firm conveys the expectation of the realization of the produced commodity at a market price high enough for it (i.e. the firm) to be able to finance the payment of the money income of the factors of production. This money price might be called the money supply price or price of production.

In the monetary production economy, (i) the bargains of the firms and the workers do determine the money wage, and (ii) the (competitive) credit money interest rate is established through the interaction of demand and supply at the credit market, either being fixed *ante festum*, i.e. before the production process takes place.

Under competitive conditions the money wage rate and the credit-money rate of interest are 'given' to the individual firm. In this particular sense the competitive firms are price-takers. However, they are price-makers in that they apply a pricing policy such that the money supply price is high enough to allow for the financing of the payment of the money wage and the *ex ante* profit.<sup>9</sup> This requires the expected (long-run equilibrium) rate of profits not to fall short of the money rate of interest.

The money rate of interest conveys the determination of money as (i) *medium of deferred payments*, i.e. the debts must be paid through the transfer of money from the debtor to the creditor, and as (ii) *capital*, i.e. the money lent by the creditor to the borrower must yield a moneyed surplus value, i.e. the interest on money, which the latter must pay to the former in due time. The market logic of *money-capital* implies a system of debts where money is the content of

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<sup>8</sup>Though under competitive conditions, the long-run (stationary state) equilibrium requires the consideration of the depreciation of fixed capital. See Sraffa (1960), part II, on this particular point.

<sup>9</sup>The *ex ante* profit is defined here as the expected money income of capital "which, if they [i.e. the firms] were open to make new bargains with all the factors of production at the currently prevailing rates of earnings, would leave them under no motive either to increase or to decrease their scale of operations." [Keynes (1930): 112] (square brackets added) This definition differs from Keynes's definition in chapter 9 of *A Treatise on Money* (1930), upon which the former is based, in that the latter only comprises the "normal remuneration of entrepreneurs", while the former also comprises the interest on capital, regular monopoly gains, rents, etc. It should be noted that, although either definition implies the (long-run) optimal/equilibrium position of the individual firm, neither implies the full-employment of wage labour.

the creditor-debtor relation and in this sense the social bond of the monetary production economy. Also, the money-time structure of the money rate of interest implies the determination of time as an economic relation, i.e. as a scarce, exhaustible, non-reproducible resource consumed by the mere passing of time *within the creditor-debtor relation*.<sup>10</sup>

*Pacta sunt servanda*, money is the content of debt contracts, and time is money. Alas! Money rules the world in the monetary production economy. The promise of fulfillment of the contractual obligation of the payment of the interest on money compels the individual firms to produce efficiently. This is done by way of the optimization of the production process as a whole for a ‘given’ *ex ante* rate of profits (Keynes’s marginal efficiency of capital) and a ‘given’ money wage, such the commodities are offered at a marketable money price at the goods markets. Accordingly, the individual firms do apply a mark-up pricing policy reflecting their *ex ante* profit optimizing policy. Under competitive conditions the money supply price is exactly the long-run equilibrium price of production or normal price.<sup>11</sup>

The individual firms produce under uncertainty *vis-à-vis* the effectual demand for their commodities. Hence, the mark-up pricing policy of the firms conveys the expectation of the effective market demand for the commodity produced by the firm to be strong enough for it (i.e. the effective demand) to elicit the realisation of the money price that allows to finance the payment of the *ex ante* (or normal) profit.

The market price of the commodities is the result of the interaction of the supply of the firms and the effective demand of the firms and the households in the goods markets. The actual market price might exceed, be equal, or fall short of the money supply price of the individual firm. Which of the three possibilities happens to be the actual case ultimately depends on the market strength of the effective demand. Accordingly, the individual firms will adjust their supply such that the market price of their commodities do not to fall short of the money supply price, i.e. they will (have to) keep their capital scarce enough for the money rate of profits not to fall short of the money rate of interest.<sup>12</sup>

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<sup>10</sup>The reader familiar with the Marx’s (and Hegel’s) work will already have noted that the triade money, capital, and money-capital constitute the three moments of the dialectical development of the system of economic categories of bourgeois society as it is the case of the inner structure of Marx’s *Capital*. In this context, it might be argued that the negation of money as the social bond of the capitalist society by non-monetary economic theories is at the root of the deep discontent amongst critical economists and social scientists *vis-à-vis* mainstream/orthodox economics. It might also explain the inversion of the substance-form relation in non-monetary economic theories in the sense that the mathematical form becomes the scientific substance while the void economic substance (sic) becomes a mere formality. Though this inversion of the substance-form relation has an ideological function insofar it serves to mystify/reify the inversion of the deeper subject-object money-capital-wage-labour relation in the capitalist society.

<sup>11</sup>The ‘given’ rate of earnings of the factors of production, together with the method/technique of production (chosen from the technology set) and the scale of operation, determine the unit/marginal cost of production, the optimal scale of operation being determined by the (game-theoretically founded) relation between the expected/conjectural individual/market effective demand schedule of the firm and its cost of production function.

<sup>12</sup>This is the substance of Keynes’s monetary theory of capital in chapter 16 of the *General*

A fallacy of composition must be avoided at this place. If the market price falls short of the money supply price, the individual firm might regard the money wage rate to be "too high" for it to allow for the realisation of the *ex ante* profit. However, at the aggregate level the money wage rate cannot be "too high" since the realisation of the *ex ante* profit depends ultimately on the strength of the monetary logic of effective demand of the capitalist class, as implied by the principle of effective demand.<sup>13</sup> Hence, although macroeconomically the effectual *ex post* market price might be "too low" for the realisation of the *ex ante* profit to come through, this will be mainly due to the weakness of the effective demand of the capitalist class, not to a "too high" money wage rate.

At the aggregate level, the *ex ante* profit of the firms conveys (unconsciously) the expectation of the effective demand of the capitalist class to be strong enough for it to elicit the realisation of the money supply price that allows to finance the payment of the (*ex ante*) money income of capital. In the long-run equilibrium, the *ex ante* effective demand of the capitalist class matches exactly the *ex ante* profit of the firms such that the *ex post* profit and the *ex ante* profit are in conformity, or alternatively the market price and the money supply price are equal.

Because in the monetary production economy the firms have to sale their commodities against the general medium of deferred payments in order to be able to pay the interest on money, it follows that the workers have to pay the market price of the commodities in terms of money in order to be able to access to the product of their alienated labour. Hence, money being the general social relation (imposed by the State and the capitalist class by way of the introduction of money taxes and the interest of money<sup>14</sup>), the workers are both systemically and systematically compelled to bargain the wage in terms of money, irrespective of whether they are under the effect of the so-called 'money illusion', which they are practically not.

The 'given' money wage rate bargained between the firms and the workers plays a central part in the determination of the level of the money supply price or

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*Theory:* "It is much preferable to speak of capital as having a yield over the course of its life in excess of its original cost, than as being *productive*. For the only reason why an asset offers a prospect of yielding during its life services having an aggregate value greater than its initial supply price is because it is *scarce*; and it is kept scarce because of the competition of the rate of interest on money. If capital becomes less scarce, the excess yield will diminish, without its having become less productive—at least in a physical sense." [Keynes (1936): 213]

<sup>13</sup>Heterodox authors Marx, Keynes and Kalecki argued out this point in a precise manner. As stated by Kalecki: "The conclusion that the increase in capitalist consumption in turn increases their profits contradicts the common conviction that the more is consumed the less is saved. This approach, which is correct with regard to a single capitalist, does not apply to the capitalist class as a whole. If some capitalists spend money, either on investment or on consumer goods, their money passes to other capitalists in the form of profits. Investment or consumption of some capitalists creates profits for others. Capitalists as a class gain exactly as much as they invest or consume, and if—in a close system—they ceased to construct and consume they could not make any money at all. Thus capitalists as a whole, determine their own profits by the extent of their investment and personal consumption. In a way they are the masters of their fate" [Kalecki (1990, 1933), part 3: 81] Summarily, the capitalists earn what they spend, while the workers spend what they earn. See also Keynes (1930), book III.

<sup>14</sup>See Keynes (1930), chap. I; Wray (1998),

price of production of the commodities. In this sense, from a market-theoretical point of view, the money wage rate serves as the unit of account or numeraire of the economy. However, in the monetary production economy the money wage rate does not by itself determine the supply real wage, the latter being defined as the quotient of the money wage rate and the money supply price. Actually, the level of the supply real wage is determined by the mark-up relation set by the firms in conformity with the ‘given’ *ex ante* rate of profits, the latter "susceptible of being determined from outside the system of production, in particular by the level of the money rates of interest"[Sraffa (1960): 33].

In the monetary production economy both the money rate of interest and the real stock of capital are determined in the markets for money, credit and real assets. Together they determine the (supply) real wage and the level of employment.

The discussion is now formalized in the following sections.

### 3 Production and the money supply price

#### 3.1 The money supply price

The money of income of the economy is

$$\begin{aligned} Y^S &= W + Q^S \\ &= w^n \cdot L + r \cdot K \end{aligned} \tag{1}$$

where  $Y^S$  is the money income of the economy,  $W$  the sum total of money wages paid to the workers,  $w^n$  the money wage rate,  $L$  the quantity of (homogeneous) employed labour,  $Q^S$  the expected or *ex ante* money profit,  $K$  the money value of the stock of capital, and  $r = Q^S/K$  the *ex ante* rate of profits (Keynes’s marginal efficiency of capital).

Under competitive conditions, the money wage rate is ‘given’ to the firms before the production process as the result of the bargains between the firms and the workers:

$$w^n = \bar{w}^n \tag{2}$$

and the *ex ante* rate of profits is not smaller than the money rate of interest (Keynes 1936, chaps. 11 and 17):

$$r = \bar{r}(i^n) \geq i^n \tag{3}$$

where  $\bar{w}^n$  is the ‘given’ money wage rate,  $i^n$  the ‘given’ money rate of interest, and  $\bar{r}$  the ‘given’ *ex ante* rate of profits.

Replacing these ‘given’ variables into the money income equation yields:

$$Y^S = \bar{w}^n \cdot L + \bar{r} \cdot K \quad (4)$$

Let  $y$  be the real (national) income of the economy and  $P^S$  the supply price set by the firms (Keynes 1936, Riese 1986). Accordingly, the aggregate supply price will be equal to the money income of the factors of production:

$$P^S \cdot y = Y^S \quad (5)$$

Factorisation by  $W$  yields:

$$P^S \cdot y = W \cdot \left(1 + \frac{Q^S}{W}\right) \quad (6)$$

Dividing by  $y$ ,

$$P^S = \frac{W}{y} \cdot \left(1 + \frac{Q^S}{W}\right) \quad (7)$$

where  $W/y$  is the unit labour cost of production of  $y$ . Since  $W = \bar{w}^n \cdot L$  it follows that

$$\begin{aligned} \frac{W}{y} &= \frac{\bar{w}^n \cdot L}{y} \\ &= \frac{\bar{w}^n}{y/L} \\ &= \frac{\bar{w}^n}{a_0^{-1}} \end{aligned} \quad (8)$$

where  $a_0^{-1} = y/L$  is the (average) physical productivity of labour. The inverse of  $a_0^{-1}$  is the labour-output technical coefficient of production  $a_0$ .

In general, for a given set of blue prints, the physical productivity of labour depends on the technique of production, the choice of the technique being a function of the rate of profits (Sraffa 1960, part III; Pasinetti 1977):

$$a_0^{-1} = a_0^{-1}(\bar{r}) \quad (9)$$

The (equilibrium) money supply price is given by

$$P^S = \frac{\bar{w}^n}{a_0^{-1}(\bar{r})} \cdot (1 + m) \quad (10)$$

where  $m = Q^S/W$  is the *mark-up* set by the firms on the goods market.

### 3.2 The market logic of the mark-up

The mark-up reflects the mark-up pricing policy of the firms. Accordingly, a positive mark-up conveys a positive *ex ante* profit:

$$P^S > \bar{w}^n / a_0^{-1} \iff m > 0$$

The mark-up can be shown to be positively related to the *ex ante* rate of profits (Riese 1986, part A). By definition,

$$m = 1 + \frac{Q^S}{W} \quad (11)$$

Since  $Y^S = W + Q^S$ , hence,  $W = Y^S - Q^S$ , it can be written

$$\begin{aligned} m &= \frac{Y^S}{Y^S - Q^S} & (12) \\ &= \frac{1}{1 - \frac{Q^S}{Y^S}} \\ &= \frac{1}{1 - \frac{Q^S/K}{Y^S/K}} \\ &= \frac{1}{1 - \frac{v}{\bar{r}}} & (13) \end{aligned}$$

where  $v = Y^S / K$  is the *value productivity of capital* defined as the ratio of the money income of the economy and the money value of the stock of capital.

The notion of value productivity of capital expresses two things (Riese 1986): (i) *capital* is conceived as a stock of value (measured in money units) that yields a flow of value (measured in money units per unit of time); and (ii) the *flow of value* yield by the stock of capital must allow to finance the payment of the income of the factors of production. The value productivity of capital is an *ex ante* notion that expresses the choice-theoretical production-investment decision of the individual firm under uncertainty.

The value productivity of capital can be proven to be a positive function of the *ex ante* rate of profits. Whether it is a positive, invariant or negative function depends on the character of the technique of production chosen for a particular level of the rate of profits. However, it can be shown that in general the quotient of the rate of profits and the value productivity of capital, i.e. the share of profits in the aggregate income, is a positive function of the rate of profits.<sup>15</sup>

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<sup>15</sup>Sraffa (1960), Dorfman/Samuelson/Solow (1958), Pasinetti (1977), Riese (2000), Matalana (2008).

Accordingly,

$$v(\bar{r}) = \frac{Y^S}{K} > 0 \Leftrightarrow Y^S = v(\bar{r}) \cdot K \quad (14)$$

and

$$\frac{\partial(\bar{r}/v(\bar{r}))}{\bar{r}} > 0 \quad (15)$$

Replacing equation (14) into equation (12) yields the *mark-up* as a positive function of the *ex ante* rate of profits:

$$m(\bar{r}) = \frac{1}{1 - \frac{\bar{r}}{v(\bar{r})}} \quad (16)$$

such that

$$\frac{\partial}{\partial \bar{r}} m(\bar{r}) > 0 \quad (17)$$

The supply price is thus given by:

$$P^S = \frac{\bar{w}^n}{a_0^{-1}(\bar{r})} \cdot \left( \frac{1}{1 - \frac{\bar{r}}{v(\bar{r})}} \right) \quad (18)$$

$$= \frac{\bar{w}^n}{a_0^{-1}(\bar{r})} \cdot [1 + m(\bar{r})] \quad (19)$$

$$= P^S(\bar{w}^n, \bar{r}) \quad (20)$$

such that

$$\frac{\partial P^S}{\partial w^n} > 0, \frac{\partial P^S}{\partial \bar{r}} > 0, \frac{\partial P^S}{\partial a_0^{-1}(\bar{r})} < 0, \text{ and } \frac{\partial P^S}{\partial v(\bar{r})} < 0 \quad (21)$$

*Ceteris paribus*, a higher level of the productivity of labour reduces the labour unit cost and allows the firms to offer their product at lower supply price without affecting their *mark-up*. By the same token, an increase of the money wage rate equal to the increase of the productivity of labour leaves unchanged the supply price. This allows for a higher equilibrium real wage rate without altering the *mark-up policy* of the firms. On the other hand, a higher rate of profits conveys a higher supply price and a lower real wage.

In the long-run equilibrium the market price of the flow of the newly produced goods equal to the market price of the real assets, either being equal to the money supply price or the price of production (Keynes 1930, Robinson 1933):

$$P = P^S \quad (22)$$

where  $P$  is the (long-run equilibrium) market price.<sup>16</sup>

## 4 The monetary real wage

### 4.1 The real wage rate

The equilibrium or supply real wage rate is defined as the quotient of the ‘given’ money wage rate and the ‘given’ money supply price:

$$w^R = \frac{\bar{w}^n}{P^S} \quad (23)$$

where  $w^R$  is the real wage rate.

Replacing the supply price equation (18) into the denominator of equation (23) yields the long-run equilibrium real wage as a negative function of the rate of profits and a positive function of the physical productivity of labour (Riese 2000):

$$w^R(\bar{r}) = a_0^{-1}(\bar{r}) \cdot \left(1 - \frac{\bar{r}}{v(\bar{r})}\right) \quad (24)$$

It follows from equation (24) that in the monetary production economy the supply real wage rate (i) is a function of the ‘given’ rate of profits, and (ii) does not depend on the money wage rate.<sup>17</sup>

A higher rate of profits reduces the real wage rate:

$$\frac{\partial w^R}{\partial \bar{r}} < 0 \quad (25)$$

and a higher physical productivity of labour increases the real wage rate:

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<sup>16</sup>The long-run equilibrium conveys that the *ex ante* aggregate demand and the *ex ante* supply income are equal, i.e.  $Y^D = Y^S$ , or, alternatively, the *ex post* profit and the *ex ante* profit are equal,  $Q = Q^S$ . See (Keynes 1936, Riese 1986)

<sup>17</sup>The right-hand side of the real wage equation (24) is the denominator of the supply price equation (18). Replacing the real wage equation into the supply price equation yields the level of the money supply price as a function of the ‘given’ money wage and the real wage for a ‘given’ rate of profits (Betz and Lüken-Klaßen 1989):

$$P^S = \frac{\bar{w}^n}{w^R(\bar{r})}$$

This is exactly the money supply price as stated in equation (20) above. Since both the money wage and the equilibrium rate of profits are ‘given’ from outside the system of production, it follows that the equilibrium money supply price is determined outside the goods market.

$$\frac{\partial w^R}{\partial a_0^{-1}(\bar{r})} > 0 \quad (26)$$

Division of the the real wage rate in equation (24) by  $a_0^{-1}(\bar{r})$ , and considering that  $w^R = w^n / P^S$  and  $a_0^{-1} = y / L$  yields the share of wages in the income of the economy as the residual variable of distribution:

$$\begin{aligned} \frac{W}{Y^S}(\bar{r}) &= \frac{w^n / P^S}{a_0^{-1}(\bar{r})} \\ &= 1 - \frac{r}{v(\bar{r})} \end{aligned} \quad (27)$$

The share of wages is determined by ‘given’ rate of profits. In general,

$$\frac{\partial (W / Y^S)}{\partial \bar{r}} < 0 \quad (28)$$

It follows from equation (27) that, for a ‘given’ rate of profits the share of the wages in the income of the economy will keep provided the real wage changes *pari passu* with the physical productivity of labour. This will be the case whenever the rate of change of the (average) money wage rate corresponds to the rate of change of the physical productivity of labour, while the money supply price remains unchanged.

The last proposition implies that the true economic content of the bargains about the money wage rate between the firms and the workers is about the struggle for the appropriation/distribution of the increases of the physical productivity of labour between capital and labour *for a ‘given’ rate of profits*.<sup>18</sup>

## 4.2 The aggregate real wage rate

The aggregate real wage rate is given by:

$$W^R = w^R L \quad (29)$$

Since  $L = y / a_0^{-1}$ ,  $y = Y^S / P^S$  and  $v = Y^S / K$ , it follows that the level of employment is given by (Betz 1993):

$$L = \frac{v(\bar{r})}{a_0^{-1}(\bar{r})} \cdot \frac{K}{P^S} \quad (30)$$

$$= L(\bar{r}, K / P^S) \quad (31)$$

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<sup>18</sup>Fernandez et al. report that United for a Fair Economy reports in 2006 that in the United States "Between 1980 and 2004 the real average hourly wage (in 2004 dollars) hardly changed from its 1980 level of \$15.68/hour (\$15.67/hour in 2004). However, worker productivity has increased by 68% over the same period." [Fernandez et al. (2008: 8)]

where  $K/P^S$  is the (equilibrium) real stock of capital.

In the monetary production economy, the rate of profits, the value productivity of capital and the real stock of capital are determined by the interaction of the monetary markets and the goods markets. The market-theoretical determination of the money rate of interest and the real stock of capital being beyond the scope of this paper, their level is assumed to be ‘given’.<sup>19</sup>

In particular, the ‘given’ value of the real stock implies that:

$$K/P^S = \overline{K/P^S}$$

where  $\overline{K/P^S}$  is the ‘given’ stock of capital.

Since the real wage rate depends on the rate of profits, it follows that the aggregate real wage depends on the rate of profits, the value productivity of capital and the real stock of capital:

$$\begin{aligned} W^R &= \left[ a_0^{-1}(\bar{r}) \cdot \left( 1 - \frac{\bar{r}}{v(\bar{r})} \right) \right] \cdot \left[ \frac{v(\bar{r})}{a_0^{-1}(\bar{r})} \cdot \overline{K/P^S} \right] \\ &= [v(\bar{r}) - \bar{r}] \cdot \overline{K/P^S} \end{aligned} \tag{32}$$

$$= W^R(\bar{r}, \overline{K/P^S}) \tag{33}$$

Replacing  $Y^S = v(\bar{r})K$  and  $Q^S = \bar{r}K$  into equation (32) yields the residual aggregate real wage:

$$W^R = \frac{Y^S}{P^S} - \frac{Q^S}{P^S} \tag{34}$$

## 5 The struggle over the money-wages

The previous discussion allows to substantiate Keynes’s proposition in section III of chapter 2 quoted at the beginning of the article.

Let assume qualitatively different labour-groups earning different money wage rates. The change of the relative money wages alters both the money supply price level and the relative real wage rates. In the monetary production economy this conveys the redistribution of the ‘given’ aggregate real wage rate between the heterogeneous groups of workers without altering the *ex ante* rate of profits and the share of profits in the income of the economy. Keynes’s proposition is formalized for two heterogeneous groups of labour earning different money wage rates.

The sum total of money wages paid by the firms is given by:

<sup>19</sup>See Riese (1986, 2000), Betz/Westphal (1991), and Betz (1993, 2001) on this point.

$$\begin{aligned}
W &= W_1 + W_2 \\
&= \bar{w}_1^n L_1 + \bar{w}_2^n L_2
\end{aligned} \tag{35}$$

where  $W_j$  is the sum total of wages paid,  $\bar{w}_j^n$  the money wage rate of the labour of the  $j$ -th kind, and  $L_j$  the quantity of labour of the  $j$ -th labour-group, with  $j = 1, 2$ .

Division on both sides of equation (35) by the real (national) income of the economy yields the average labour unit cost:

$$\frac{W}{y} = \frac{\bar{w}_1^n}{y/L_1} + \frac{\bar{w}_2^n}{y/L_2} \tag{36}$$

$$= \frac{\bar{w}_1^n}{a_{0,1}^{-1}} + \frac{\bar{w}_2^n}{a_{0,2}^{-1}} \tag{37}$$

where  $a_{0,j}^{-1}$  is the physical productivity of the  $j$ -th labour-group.<sup>20</sup>

Replacing equation (36) into equation (7) yields the aggregate money supply price:

$$PS = \left( \frac{\bar{w}_1^n}{a_{0,1}^{-1}} + \frac{\bar{w}_2^n}{a_{0,2}^{-1}} \right) \left( \frac{1}{1 - \bar{r}/v(\bar{r})} \right) \tag{38}$$

such that:

$$\frac{\partial PS}{\partial w_j^n} > 0 \tag{39}$$

The real wage rate of the first group of workers is:

$$\begin{aligned}
w_1^R &= \frac{w_1^n}{PS} \\
&= \frac{w_1^n}{\left( \frac{\bar{w}_1^n}{\lambda_1} + \frac{\bar{w}_2^n}{\lambda_2} \right) \left( \frac{1}{1 - \bar{r}/v(\bar{r})} \right)}
\end{aligned} \tag{40}$$

After some manipulation it can be written:

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<sup>20</sup> Alternatively,

$$\begin{aligned}
\frac{W}{y} &= \bar{w}_1^n \frac{L_1}{L} \frac{L}{y} + \bar{w}_2^n \frac{L_2}{L} \frac{L}{y} \\
&= \frac{\bar{w}_1^n \theta_1}{a_0^{-1}} + \frac{\bar{w}_2^n \theta_2}{a_0^{-1}}
\end{aligned}$$

where  $\theta_j$  is the relative weight of the  $j$ -th labour-group with respect to the sum total of labour employed in the economy.

$$w_1^R = \frac{1}{\left(\frac{1}{a_{0,1}^{-1}} + \frac{\bar{w}_2^n / \bar{w}_1^n}{a_{0,2}^{-1}}\right) \left(\frac{1}{1 - \bar{r} / v(\bar{r})}\right)} \quad (41)$$

It follows that

$$\frac{\partial w_1^R(\bar{r})}{\partial w_1^n} > 0 \quad (42)$$

and

$$\frac{\partial w_1^R(\bar{r})}{\partial w_2^n} < 0 \quad (43)$$

The two derivatives show that, for a 'given' money rate of interest, an increase of the money wage of the first group of workers (e.g. white collar workers) increases the real wage rate of this group, while at the same time it reduces the real wage rate of the second group of workers (e.g. blue collar workers).

In section 3 it was shown that the aggregate real wage rate depends on the rate of profits and the real stock of capital as stated in equation (32). Accordingly, the sum total of the real wage appropriated by the two groups of workers is:

$$W^R(\bar{r}, \bar{K}/\bar{P}) = W_1^R + W_2^R \quad (44)$$

For a 'given' aggregate real wage and a given level of employment of the two groups of workers:

$$dW^R = L_1 dw_1^R + L_2 dw_2^R = 0 \quad (45)$$

Hence

$$-dw_1^R = dw_2^R \quad (46)$$

In general,

$$-dW_1^R = dW_2^R \quad (47)$$

The aggregate real wage being 'given' to the wage workers, it follows that the struggle about the money wages affects only the distribution of the monetary aggregate real wage between the wage workers. Keynes's proposition might be generalized for many different heterogeneous labour-groups earning different money wage rates. Q.E.D.<sup>21</sup>

<sup>21</sup>McDonough, at the time the president of the Federal Reserve Bank of New York, reports that: "By any measure—whether blue-collar worker versus white-collar worker, production worker versus supervisory worker—low-skilled employees have clearly fallen behind high-skilled employees during a decade when the United States experienced substantial overall growth. We also cannot console ourselves with the argument that increased benefits compensated the low-skilled workers for their relative wage decline. Even including benefits, the compensation earned by low-skilled workers fell by roughly 10 percent relative to high-skilled workers—and stagnated in real terms—during the 1980s." [McDonough (1995): 1]

## 6 Final remarks

The monetary market logic of the aggregate real wage in the endogenous-money monetary production economy conveys: (i) the determination of the average real wage rate, the level of employment, and the possibility of involuntary unemployment through the interaction of the monetary markets and the goods markets; and (ii) the determination of the money wage rate through the bargains of the firms and the workers as a market-theoretical stability condition of the economic system. Accordingly, (iii) the money wage claims of labour (in conformity with changes of the average labour productivity) do not alter the share of profits appropriated by the capitalist class; and (iv) the struggle about the money wages by different groups of workers is actually a zero-sum game over the distribution of the aggregate real wage between the different fractions of the working class.

The struggle about the relative real wages in the monetary production economy is not a struggle about the distribution of the aggregate real income of the economy between labour and capital. Yet, the theoretical confusion on the true character of the struggle about the money wage by non-monetary/mainstream economists, and the mystification/reification of this struggle as a substantial element of the class struggle between capital and labour by both the capitalists and the working class constitutes a particular moment of the practical and ideological production and reproduction of the money interest-wage labour relation in the monetary production economy. As pointed out by French sociologist Bourdieu:

It is one of the generic properties of fields that the struggle for specific stakes masks the objective collusion concerning the principles underlying the game. More precisely, the struggle tends constantly to produce and reproduce the game and its stakes by reproducing, primarily in those who are directly involved, but not in them alone, the practical commitment to the value of the game and its stakes which defines the recognition of legitimacy." [Bourdieu (1991)]

The money-interest-wage-labour relation is instrumental to the particular interest of the capitalist wealth-owners, i.e. to keep their right to private property, but also to keep their private right to property. Money-capital, not labour, determines the general working and living conditions of both the working class and the 'industrial reservation army' as an inner/particular moment of the reproduction of the money-capital-wage-labour relation. Accordingly, the vicarious function of the firms is to direct efficiently the process of production of capital in the market-mediated system of exploitation of labour, while the instrumental function of the working class is to produce the wealth appropriated, accumulated and consumed privately by the capitalist class. Such is the political economy of money-capital in the endogenous-money monetary production economy *alias* capitalism.

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