

## KEYNES AND THE MONETARY THEORY OF PRODUCTION

The aim of this paper is threefold. First, it sets out to provide a critical reconstruction of the basic schema of the monetary theory of production (MTP) as formulated by Graziani (2003), emphasising the existence of ‘open issues’ relating to internal and external inconsistencies. Second, it seeks to verify the elements of affinity of this schema with Keynes’s thought. Third, it aims at expanding the basic schema of the MTP by explicitly considering Keynesian elements, mainly deriving from the *General Theory*. In so doing, a simple macroeconomic model is presented, where two key issues of the Keynesian theoretical framework as stated in the GT are considered (i.e. the idea that the level of employment depends on aggregate demand and the crucial role played by expectations), preserving the fundamental assumptions of the MTP, namely that money supply is endogenous and credit serves above all to finance production. It is shown that the Keynesian version of the MTP establishes a causal link where unemployment depends on a lack of aggregate demand, and where low levels of aggregate demand, in turn, depend on low credit supply (i.e. credit rationing) and/or low credit demand on the part of firms.

by **Guglielmo Forges Davanzati\***, **Andrea Pacella\*\*** and **Rosario Patalano\*\*\***

Keyword: Keynes, monetary theory of production, labour market

JEL: B22; E12; J20

*Preliminary draft – April 2013*

### 1 - Introduction

The monetary theory of production or monetary *circuit* approach (hereafter MTP) is a line of research which started with a series of seminal contributions coming, in particular, in Italy from Augusto Graziani. Graziani constructed a basic schema of the working of a monetary economy (see below – section 2), based on the idea that money supply is endogenous and demand-driven. This schema has been subjected to a number of extensions and revisions, by scholars working within the theoretical frameworks of Marxism (cf. Bellofiore, 2005), Institutionalism and evolutionary Political Economy (cf. Fumagalli and Lucarelli, 2008; Forges Davanzati and Realfonzo, 2009; Forges Davanzati and Pacella, 2013) and Keynesianism.

Graziani’s point of departure rests on his own particular interpretation of Keynes’s thought. He focuses on Keynes’s short article entitled “A Monetary Theory of Production” (published in *Essay in honor of Arthur Spiethoff*, 1933), which, as we know, was also the title he gave to his lectures at the time. In this work, Keynes stressed that the “classical” economic theory of exchange was the picture of the working of a barter economy. Although it was understood that money was employed in all market transactions, money was nonetheless conceived “as being in some sense *neutral*.” It was not supposed to affect “the essential nature of the transaction” as “one between real things.” In radical opposition, Keynes proposed a monetary theory of production, assuming that it is impossible to analyze the dynamics of a capitalist system without explicitly considering its monetary and financial aspects.

---

\* University of Salento – Department of Social Sciences. Email: [guglielmo.forges@unisalento.it](mailto:guglielmo.forges@unisalento.it). Section 2.3 of this paper presents arguments taken from chapter I of my book *Credito, produzione, occupazione: Marx e l’istituzionalismo* (*Credit, production and employment: Marx and Institutionalism*), Rome, Carocci, 2011. We thank Giorgio Colacchio and Antonio Luigi Paolilli for their useful suggestions. The usual disclaimer applies.

\*\* University of Sannio – Department of Economics. Email: [andrea.pacella@unisannio.it](mailto:andrea.pacella@unisannio.it).

\*\*\* University of Naples “Federico II” – Department of Law. Email: [rpatalan@unina.it](mailto:rpatalan@unina.it).

The aim of this paper is threefold. First, it sets out to provide a critical reconstruction of the basic MTP schema as formulated by Graziani (2003), emphasising the existence of ‘open issues’ relating to internal and external inconsistencies. Second, it seeks to verify the elements of affinity of this schema with Keynes’s thought. Third, it aims at expanding the basic schema of the MTP by explicitly considering Keynesian elements, mainly deriving from the *General Theory*.

The exposition is organized as follows. Section 2 deals with the description of the basic schema of the MTP and the analytical problems deriving from it, in order to find the points of affinity and divergence between the MTP and Keynes’s thought. Section 2 deals with Graziani’s model, conceived here as the seminal work at the beginning of this line of research. In section 3 a simple macroeconomic model is provided in order to expand the basic schema of the MTP by superimposing some fundamental Keynesian topics (i.e. the role of aggregate demand and uncertainty). Section 4 concludes.

## 2 – The monetary theory of production

### 2.1 – The basic schema

The MTP describes the functioning of a sequential economy which involves three macro-agents: banks, firms and workers. The banking system creates money *ex nihilo*, in accordance with the idea that loans make deposits; firms advance the money wage bill and produce commodities; workers supply labour power. The circular process of the monetary economy starts with bargaining in the money market between banks and firms. Banks supply firms with initial finance; firms need money in order to pay workers and to start production. For a given bargained money wage, they advance the money wage bill. After the production process has taken place, the price level is determined, so that real wages are known *ex-post*. Income distribution among banks, firms and workers does not reflect the marginalist rules, depending on the relative market and socio-political power of the agents. The monetary circuit closes with the repayment of the initial finance to banks – the so-called “destruction of money” (see Graziani, 2003 and below, section 2).

The basic schema of the MTP, as presented by Graziani (2003, pp.100 ff.), aims at finding the mechanisms which determine income distribution among three macro-agents: the banking system, firms and workers. It can be formalized as follows<sup>1</sup>.

The symbols used here are listed below.

$X$  is output

$a$  is labour productivity

$N$  is employment

$C$  is the demand for consumption goods

$c$  is workers’ propensity to consume

$w$  is the unitary money wage

$I$  is investment

$F$  is firms’ initial finance

$b$  is the fraction of aggregate product that firms acquire for their own use (i.e. real investments)

$s$  is the propensity to save

$p$  is the market price

Aggregate supply is equal to:

$$X = paN \quad [2.1]$$

---

<sup>1</sup> Graziani’s model considers the equities issued by firms. For the sake of simplicity, this variable will not be considered below. This will not alter the conclusions of the model.

Aggregate demand in the commodities market equals consumption plus investment. Workers' consumption is equal to:

$$C = cwN \quad [2.2]$$

Investment expenditure in monetary terms is:

$$I = baNp \quad [2.3]$$

And the equilibrium price level results from the equality between aggregate supply and aggregate demand:

$$paN = cwN + pbaN$$

$$paN - pbaN = cwN = p(aN - baN) = cwN$$

$$p = \frac{cwN}{aN - baN} = \frac{w}{a} \left( \frac{1-s}{1-b} \right) \quad [2.4]$$

Equation [2.4] shows that – for a given unitary money wage and labour productivity – the price level rises with the increase in *i*) workers' propensity to consume and *ii*) firms' propensity to invest. The unitary real wage is:

$$\frac{w}{p} = \frac{w}{w} \left[ a \frac{(1-b)}{(1-s)} \right] = a \frac{(1-b)}{(1-s)} \quad [2.5]$$

Equation [2.5] establishes that “Average real consumption of wage earners depends not only on the average productivity of labour but also on the share *b* of total product that firms decide to buy for investments in order to use in further production” (Graziani, 2003, p.102).

The rate of profits is defined as the ratio between the value of net aggregate product and the monetary cost of production, i.e.  $r = \frac{paN - wN}{wN} = \frac{pa}{w} - 1$ .

In Graziani's formulation, aggregate gross money profit derives from the rate of profits which firms can obtain from the monetary value of capital invested, i.e.:

$$\pi = r(wN) = \left[ \frac{pa}{w} - 1 \right] (wN) = paN - wN \quad [2.6]$$

Equation [2.6] emphasizes that firms as a whole are in the position to obtain money profits only on condition that they can sell the whole amount of the goods they have produced. Moreover, since firms are indebted towards the banking system, their net monetary profits are:

$$\pi_n = r(wN) - iwN \quad [2.7]$$

As regards the profit rate, Graziani stresses that it goes up as public expenditure rises, since “an increase of public expenditure [generated by a deficit spending policy] will produce an increase in money profits” (Graziani, 2003, p.109 – see below, section 3).

However, in the absence of external influxes of liquidity (such as public expenditure), equation [2.7] suggests that aggregate net money profits are lower than zero. This occurs for the following reason. The money wage bill is, at the same time, a source of revenue for firms and a monetary cost, and there are no other costs deriving from the use of other inputs<sup>2</sup>. In this situation, the amount of money firms spend on paying workers equals the amount of money they receive when workers spend their money incomes, provided that workers' propensity to consume is unitary. Therefore, in the most favourable condition for firms (i.e.  $c=1$ ), they are in a position to gain zero gross money profits. Note that this occurs for whatever price level: since it is assumed that a single consumption good is produced, workers, not being able to choose among different goods, can only choose between consumption and savings. Moreover, firms act as a consolidated macro-agent, setting the scale and the composition of output in a non-competitive environment<sup>3</sup>. Moreover, since the money interest rate is higher than zero, aggregate net money profits are lower than zero. Thus, equation [2.7] can be re-written as:

$$paN = wN \text{ and } i > 0 \Rightarrow \pi_n = paN - wN - iF < 0 \quad [2.7'].$$

Equation [2.7'] expresses the so-called paradox of profits, i.e. the impossibility for firms as a whole to make money profits. Graziani concludes that two solutions are in order: *i*) firms remain indebted towards banks according to a "normal" degree of indebtedness; *ii*) firms reimburse their debt in kind. This question will be discussed below (section 2.3).

## 2.2 – The Keynesian features of the basic schema of the MTP

Most supporters of the MTP maintain that this theory derives from a long tradition which goes from Knut Wicksell, Joseph Alois Schumpeter, Dennis Robertson to John Maynard Keynes (cf. Fontana and Realfonzo, eds., 2005). It is maintained that these scholars agreed on the endogenous money theory and, apart from minor differences, they all provided theoretical schemas designed to analyze the functioning of a credit economy as distinct from a barter economy<sup>4</sup>. This section sets out to delve more deeply into this issue by tracing the Keynesian features of the basic schema of the MTP. To do so, it is helpful to distinguish its links with Keynes's TM and GT.

A) *The MTP and the TM*. Circuit scholars give an interpretation of Keynes's thought where the TM is conceived as the work describing the "general case" and the GT as the book describing the "special case" of mass unemployment and crises. Accordingly, they support a "continuist" reading of Keynes's thought. The TM has been interpreted as a work within the Neoclassical tradition and containing significant differences compared to the GT, according to what can be called a "discontinuist" reading of Keynes's thought. In particular, it has been stressed that Keynes's works before the GT are aligned with the neoclassical-Marshallian tradition; it was only with the GT that Keynes developed his idea of revolutionising economic theory essentially by overturning Say's law (it was now aggregate demand that determined aggregate supply). Well-known examples of this interpretation are Blaug (1968) and Patinkin (1956, 1987, 1990). By contrast, other scholars interpret the links between the TM and the GT in a radically different way. Seccareccia (2004, p.302), among others, stresses that:

<sup>2</sup> In the basic schema of the MTP, it is assumed that – since firms act as a consolidated macro-agent – buying and selling amongst themselves does not produce additional inflows of money (cf. Graziani, 2003).

<sup>3</sup> This does not mean that firms can fix the price level at whatever value. As shown, in particular, by Bellofiore, Forges Davanzati and Realfonzo (2000), if workers' expected real wage is significantly higher than the current real wage, social conflict is likely to occur, thus pushing firms to reduce prices.

<sup>4</sup> Lunghini and Bianchi (in Arena and Salvadori, eds. 2004, ch.10, p.152) stress that the basic schema of the MTP is "neither a theory nor a model, it is a scheme as Quesnay's *Tableau économique* [...], Marx's reproduction schema, and Sraffa's equations in *Production of commodities*".

“In carefully examining the two works, one acquires the obvious impression that, with some inevitable modifications, the *General Theory* could be incorporated into the *Treatise*, perhaps, as an additional volume on the workings of a particular phase of the Credit Cycle [...]. In the presentation of the Credit Cycle, the *Treatise* takes us through a logical process covering a complete cycle. Conversely, in the *General Theory*, he limits himself to the notional space  $\tau_i$ , representing an interval of logical time within which the level of investment, the capital stock and the state of long-term expectations are all given”.

Tily (2011, p.55) stresses that “while [the TM] was a clear departure from the existing theories, especially with the macroeconomic approach to the ‘fundamental equation’ it remained underpinned by classical doctrine”. Smithin (2003, p.250, italics added) convincingly argues that the differences between Keynes’s TM and the GT were mainly motivated by the fact that “Keynes [...] wanted to couch his arguments very much in terms of Marshallian microeconomics. This therefore meant using marginalist mathematics, at least to the limits of his own personal technical range. Even more importantly – in fact, crucially – it also required the assumption of perfect competition prevailing in all markets. These dubious features were presumably included to prove his *bona fides* to the rest of the economics profession in this important work. Why, though, was it felt necessary to do this? I suppose that everyone who has spent any time at all studying economics, or taught in a university, will be familiar with the sort of *peer pressure* that might lead someone to go down this route”.

Moving along this line of interpretation, Forges Davanzati and Pacella (2013b) show that the TM departs from the Neoclassical tradition in at least the following basic respects:

- i) Keynes describes the working of a *monetary economy*, where the banking system does not act as a pure intermediary, being in the position to create credit-money without a previous collection of savings, and to fix the *nominal* interest rate<sup>5</sup>. The assumption that the banking system can create money *ex-nihilo* is a cornerstone of the MTP, reflecting the Keynesian monetary theory as expressed, in particular, in his *Treatise on money* (see Graziani, 2003), and – as will be argued - it is the principal element of affinity between the MTP and Keynes’s thought<sup>6</sup>. It is well known that in the TM, Keynes (1971 [1930], p.23) points out that “it is evident that there is no limit to the amount of bank money which the banks can safely create *provided that they move forward in step*”<sup>7</sup>;
- ii) In the TM, Keynes emphasises the existence of endogenous mechanisms which generate structural *disequilibrium* involving a dynamic process where vicious circles cannot be stopped except by means of external intervention<sup>8</sup>. These features of the TM are underlined by Keynes himself in the “Preface” (Keynes, 1971, p.xviii, italics added):

“... I propose a *novel* means of approach to the fundamental problems of *monetary theory*. My object has been to find a method which is useful in describing, not merely the characteristics of static equilibrium, but also those of *disequilibrium*, and to discover the *dynamic laws* governing the passage of a monetary system from one position of equilibrium to another”

<sup>5</sup> Keynes (1971, pp.17 ff.) also explicitly considers the case where money is used as a “store of value”, which is – as we know – a key analytical category expanded in the GT. He adds (ibid., p.18) that the same phenomenon can refer to “the hoarded ingots and ornaments held as a store of value by the nobles and the people of the country”.

<sup>6</sup> Cardim de Carvalho (2012, p.203, italics in original) stresses that “the classical approach contained a fundamental *normative* view of what should be the ‘correct’ role of banks: in order to minimize the imbalances in the economy, they should act essentially as mere *intermediaries* between savers and investors”.

<sup>7</sup> in the *General Theory* (Keynes, 1973 [1936], p.230), Keynes emphasizes that: “money has, both in the long and in the short period, a zero, or at any rate a very small, elasticity of production”, adding that he will assume that “the supply [of money] is fixed”.

<sup>8</sup> Forges Davanzati and Realfonzo (2008) provides a reconstruction of the different interpretations of the TM.

iii) By contrast to the interpretations which imputed an implicit assumption of full employment to Keynes's TM, it should be recalled that – in writing his work – Keynes was aware that “In Great Britain, Germany and the United States at least 10 million workers stand unemployed” and that – insofar as they were involuntarily unemployed - this was a “catastrophe” (Keynes, 1971, p.338).

iv) Keynes considers State intervention necessary in order to reduce unemployment. In his view, recessive phases can be stopped only through external intervention, namely by means of expansionary fiscal policy. Keynes (1971, p.337, italics added) points out that, in cases of “severe unemployment”, “the Government must itself promote a programme of domestic investments”. Moreover: “the desired result [i.e. the reduction of unemployment] can only be obtained through some method by which, in effect, the Government subsidises approved types of domestic investment or *itself directs domestic schemes of capital development*”.

These theoretical elements enter the basic schema of the MTP, with particular reference to the view of endogenous money supply. More in detail, the basic schema of the MTP establishes that:

a) The level of production is autonomously decided by firms, as is the aggregate level of employment and its distribution between the sector producing wage goods and that producing investment goods. Real wages increase as firms decide to employ more workers in the sector producing consumer goods, reducing the number of workers employed in the sector producing investment goods. This conclusion can be interpreted as an extension of Keynes's argument – as stated in the TM - that *producer's sovereignty* is a typical feature of a capitalist economy: “the entrepreneurs have been deciding quite independently in what proportions they shall produce the two categories of output [consumption goods or investment goods]” (Keynes, 1971, p.123).

b) The conclusion reached in equation [2.4] is similar to that reached by Keynes in the TM. According to his “fundamental equation”, the price level of consumer goods is determined by the sum of the average cost of labour ( $W/e$ ) - i.e. the ratio between money wages and productivity - and the difference between the cost of production of capital goods and savings divided by the total amount of consumer goods –  $(I'-S)/R$  (Keynes, 1971, p.124), i.e.

$$P = \frac{1}{e}W + \frac{I'-S}{R} \quad [2.4']$$

and, in line with Keynes (1971), profits are nil in the event of savings equals investments (Graziani, 2003, p.105). As in the TM, in this theoretical framework, aggregate demand affects the price level, not the level of employment<sup>9</sup>. According to Graziani (2003, p.21), this does not mean that money is neutral. On the contrary, he maintains that – in the MTP – “the theorem of the neutrality of money is clearly rejected in point of principle, since any creation of money increases the spending ability of a well-defined group of agents, which means that the effects it exerts on the price level cannot be neutral”.

B) *The MTP and the GT*. Keynes's theoretical framework, as stated in the GT, can be reduced to four fundamental propositions (cf. King, ed., 2012): *i*) management of the money supply produces real effects, impacting on the level of activity and employment; *ii*) the path of aggregate demand plays a crucial role in determining the level of employment and the growth rate both in the short and the long run; *iii*) agents behave in a context of “fundamental uncertainty”<sup>10</sup>; *iv*) a deficit spending policy is required in order to increase the employment rate.

As has been shown, Graziani's research project consists of posing a theoretical nexus between Marx and Keynes's TM, in the belief that Keynes's most accurate description of the working of a monetary economy can be found in this work, while the *General Theory* focuses on the “special case” of mass unemployment and crises (cf. Graziani, 1984). However, Graziani (and other

<sup>9</sup> Graziani (2003, p.20) maintains that, in the theoretical framework of the MTP, “the market does not guarantee full employment”, although he does not provide a clear explanation of why this should happen.

<sup>10</sup> This issue, connected with the MTP approach, is extensively analysed, among others, by Fontana (2009).

circuitist scholars) point out that the basic assumptions of the GT can be integrated into the theoretical framework of the MTP, in view of the following arguments.

1. It is maintained that uncertainty – conceived as a crucial variable in the GT – can play a significant role in the basic schema of the MTP. According to Graziani, the function of money as a reserve of value cannot to be neglected: in fact, denying this role means admitting the non-existence of uncertainty and returning to a model of barter economy, where money paradoxically does not play any role.

“In a hypothetical world free from uncertainty and from frictions, [...] money is created, passed on from one agent to the next, and destroyed in the same instant. If this is the case, money is no longer an observable magnitude and the paradoxical result emerges of a monetary economy being defined as an economy in which money [...] escapes any observation and any possible measurement. [...] As a paradoxical consequence, the image would emerge of a monetary economy [...] in which money did not exist (Graziani, 2003, p. 11-12)”. And “In order for money to be an observable variable, not only does money have to be the regular intermediary of exchanges, but a second condition has to be met, namely that agents constantly keep a fraction of their money incomes in the form of liquid balances” (Graziani, 1996, p. 146).

The monetary economy is by its very nature characterized by uncertainty and by the presence of money serving as a reserve of value against the uncertainty of future events. This conclusion has important implications for the equilibrium concept in Graziani’s circuit approach.

It is only when wage earners spend their incomes entirely and the banks spend all their net profits that firms are able to completely recover the total amount of the initial finance received from banks and to close the circuit with the destruction of money. If instead wage earners decide to keep a portion of their savings in the form of liquid balances, the circuit does not close and the firms are unable to repay their bank debt. This is the *normal* conclusion of the production cycle: in the final position the money is kept in the form of liquid balances, like a reserve of value, and a certain amount of firms’ debt is accumulated from one production cycle to another (Graziani, 1994, pp. 126-127).

“As a consequence, at the end of the production cycle the money initially created will not be entirely destroyed. If banks are now intending to finance a new production cycle equal to the preceding one by granting the same finance, the total money stock will be increased: precisely, it will be equal to the wage bill plus the new liquid balances set aside by wage earners at the end of the previous cycle” (Graziani, 2003, pp. 30-31).

In the condition of uncertainty, which is a typical feature of the monetary economy, the final situation of the circuit is characterised by indebtedness of firms towards the banking system.

This is a questionable issue, insofar as Graziani’s interpretation does not seem in line with Keynes’s view on the role of uncertainty. Schematically, Keynes stresses that uncertainty affects the demand for money for a precautionary reason. The existence of money as a reserve of value has a negative effect on aggregate demand and as a result on the level of employment. Graziani conceives the existence of uncertainty (and, thus, of liquid balances) as a possible cause of monetary disequilibrium, i.e. a situation where firms are unable to realize profits in money and to reimburse their debt to banks in money terms.

2. Keynes’s monetary theory is supposed to be consistent with the circuit approach. The link between the monetary circuit theory and Keynesian monetary theory is based on the endogeneity of money. Basil J. Moore has proposed a different view of the characteristics of the *General Theory*,

overturning the conventional interpretation. According to Moore: “in the *General Theory* there are passages which reflect Keynes’s earlier recognition of the endogeneity of money supply [and] it is possible to find evidence in the *General Theory* of his awareness of the endogeneity of the supply” (Moore, 1984, p. 58, p. 60).

Graziani adds that *i*) Keynes was fully persuaded that money has a nature of credit and that money is created by banks, which grant loans, without any previous collection of deposits (Keynes, 1930, I, ch. 2 (i), p. 25; Graziani, 1996, p. 145) and that *ii*) Keynes considered the banking sector as clearly distinct from the firms sector, in the *Treatise on Money* and in some later essays. Even though in the *General Theory* this distinction is missing, the problem of the presence of the banking sector in Keynes’s analysis coincides with the role to attribute to the *Treatise* in Keynesian thought (Graziani, 1988, p. 99)<sup>11</sup>. More specifically, Graziani (1991, p.29) maintains that in the GT:

“Keynes adopts the hypothesis that the amount of money in existence is given. It is however well known that not everyone today agrees that this idea applies to the whole of the GT [Moore 1984]. Keynes himself stated that he certainly did not mean to give constant value to the amount of money [Keynes 1938, 321 n. CW, XV, 232 n]. What’s more, Keynes had good analytical reasons to consider the amount of money as equivalent to a parameter. As will be recalled from the earlier description of money circulation, money is created when banks give firms credit to start the production process, and it is destroyed when those receiving money incomes spend their income on consumer goods or on buying securities issued by firms. Therefore if the amount of money in existence is presumed to stay constant, this also means presuming that the total of the money incomes generated in each production cycle is spent, no matter whether on buying goods or financial securities, and that nothing is used to increase liquid reserves. Such a hypothesis is the same as supposing that at the end of each period firms pay off all the debts contracted with banks at the beginning of that period; this equates to stating that the repayment of bank debts is a condition of equilibrium. Now we know that in order to fulfill this condition, the yield on the securities placed on the financial market by firms must be high enough to attract the whole amount of the money savings formed during the period. This in turn means that if there is a great preference for liquidity, the interest rate on the securities may become so high that investments will be discouraged and unemployment will result. So here we see that the idea of a constant amount of money, which may look like a mere simplification of the reasoning, is in fact invaluable in showing what was very important for Keynes, namely that the monetary economy normally produces unemployment”.

In our interpretation, Keynes - in the GT – is unclear on this point. The basic framework of the GT is based on the assumption that “the quantity of money is virtually fixed” and that “the old-fashioned view that saving always involves investment, thought incomplete and misleading, is formally sounder than the new-fangled view that there can be saving without investment or investment without ‘genuine’ saving” (Keynes, 1973 [1936], pp.82-83). However, he also considers the case where “the quantity of money is itself a function of wage- and price-level” (Keynes, 1973 [1936], p.266). As we know, Keynes (1973 [1936], p.82) also explicitly considers the expansionary effects of “credit creation by the banking system [to] which ‘no genuine saving’ corresponds”, which is made possible by the fact that “money has, both in the long and in the short period, a zero, or at any rate a very small elasticity of production” (Keynes [1973 [1936], p.230).

---

<sup>11</sup> Graziani (2003, p.24) also maintains that “A point of convergence between circuit theory and the post Keynesian school can be found in the analysis of income distribution. Here circuitist theorists follow the post Keynesian school in the analysis of income distribution”. He also explicitly clarifies that circuitist scholars “assign a clear preference to the *Treatise on money* over the *General Theory*” (Graziani, 2003, p.23).

In view of these considerations, one reaches the conclusion that the basic schema of the MTP reflects some basic ideas presented by Keynes in his TM. Some assumptions put forward in the GT (namely the existence of uncertainty) are also considered, although the basic element of the GT (namely, the role played by aggregate demand) does not explicitly enter the model<sup>12</sup>. As a general observation, it can be said that the basic schema of the MTP mainly contains Marxian features. This conclusion appears to be confirmed by Graziani's comment on Keynes's paper on the "Monetary Theory of Production", where Graziani (1984, pp.4-5) finds a strong theoretical link existing between Marx's and Keynes's analyses, establishing that for Keynes, too, the condition for capitalist reproduction in monetary terms is encapsulated in the Marxian sequence *M-C-M'*. As a matter of fact, Keynes distinguished between what he called a "co-operative economy" (essentially a barter system) and an "entrepreneur economy," where monetary transactions entered into the determination of "real-exchange" relations<sup>13</sup>. Graziani stresses that, in the *M-C-M'* economy, it is not only individual behaviour that is motivated by monetary objectives, but, as a fundamental difference with the *C-M-C* economy, conflict among macro-agents – banks, firms and workers - is a structural feature (cf. Fontana, 2009, pp.64 ff.)

Otherwise, the main policy prescription derived from the basic schema of the MTP concerns the fact that workers can obtain a rise in real wages only by means of conflict in the socio-political arena, by modifying the scale and composition of output. Insofar as money wage rises are nullified by the firm's price rises, it follows that: "If the government wants to alter the distribution of real income against profits and in favour of wages, it is no use working by means of monetary taxes and subsidies. The government should instead provide goods and services in real terms and make them available to social groups whose real income it seems desirable to increase" (Graziani, 2003).

### 2.3 – The basic schema of the MTP: some unsettled questions

The recent developments of research within the MTP approach have emphasized some unsettled questions present in the basic schema. For the sake of the arguments presented in this paper, the focus will be on two aspects.

1. *Bank behaviour*. In the basic schema of the MTP, the objective function of banks is not clearly specified. As a matter of fact, banks are assumed to be purely "passive" agents, which finance production without taking expected returns into account. Graziani (2003, p.95) maintains that, while the credit potential of the *individual* bank depends on the deposits collected, banks as a whole are in the position to *create* credit. This is because the individual bank borrows the required reserves from the central bank. The central bank, in turn, does not face *technical* limits in producing money: accordingly, money is not a scarce resource and it can be produced without employing workers. In

---

<sup>12</sup> French circuitists propose this interpretation of the links between the MTP and the GT. The source of the circuitist approach can be found, according to Schmitt (1960), in the equations in Chapter VI of the GT:  $\text{Income} = \text{Consumption} + \text{Investment}$ ; b.  $\text{Saving} = \text{Income} - \text{Consumption}$ . The first equation defines the creation of money income, through the investments made by firms using the money created by banks. At this stage money and purchasing power are separate and they will become the same thing only when the production process is finished. The payment of the factors, i.e. distributed money income, is the basis of purchasing power ("investment of money") (Schmitt, 1966, p. 19). The second equation represents the destruction of purchasing power. The money income available at time  $t$  is spent in time  $t+1$  on buying the goods produced, or it is saved ("disinvestment of money") (Schmitt, 1966, pp. 65-69). Moreover, they maintain that it is aggregate demand which determines the level of activity and the level of employment. (Cencini, 2008, p.220).

<sup>13</sup> "[This distinction] bears some relation to a pregnant observation made by Karl Marx [...]. He pointed out that the nature of production in the actual world is not, as economists seem often to suppose, a case of *C-M-C'*, i.e., of exchanging commodity (or effort) for money in order to obtain another commodity (or effort). That may be the standpoint of the private consumer. But it is not the attitude of *business*, which is a case of *M-C-M'*, i.e., of parting with money for commodity (or effort) in order to obtain more money [...]. An entrepreneur is interested, not in the amount of product, but in the amount of *money* which will fall to his share. He will increase his output if by so doing he expects to increase his money profit (Keynes, 1973-83, vol. XXIX, pp. 81-82)".

particular, he stresses that: “collecting deposits increases in more than one way the credit potential of the single bank. At the same time, the same idea is clearly wrong if applied to the banking system as a whole”. This occurs because the credit potential of the individual bank depends positively both on savings and on the required reserves obtained from the Central Bank (Graziani, 2003, p.95).

This argument can be extended as follows. Savings collection allows commercial banks to create monetary reserves without having to ask the Central Bank for credit, thus reducing the costs of liquidity collection (cf. Fontana, 2009). As we know, the MTP states that money is not *discretionally managed* by the Central Bank but it is endogenously produced within the system. Money supply is the consequence of the demand for money, where the demand for money depends on the demand for credit expressed by firms. Money creation therefore follows a logical chain unlike that involved in the exogenous money theory. Specifically, in the exogenous money theory the logical chain is that *reserves make deposits and deposits make loans*. So if the Central Bank does not produce monetary reserves, commercial banks cannot produce deposits and then loans, since loans are a part of the free deposits. In this theoretical context, in fact, the money in circulation is a multiple of high powered money or money base or reserve money. While in the exogenous money theory credit is a multiple of money, in the MTP money is a multiple of credit. So the traditional logical chain is reversed: *loans make deposits and deposits make monetary reserves*. This is because the economy is a monetary economy and not a pure credit economy. The system therefore needs liquidity when someone asks for it and commercial banks need liquidity only if firms need liquidity. When commercial banks finance firms they create a deposit (‘a sign’) in their favor. Since these deposits are expressed in monetary terms, the commercial bank then has to provide the required money<sup>14</sup>.

2. *The paradox of profits*. The failure to realize a monetary surplus is conceived as a logical puzzle or the verification of the problem connected with capitalist reproduction in monetary terms<sup>15</sup>. This latter interpretation is mainly supported by Marxist scholars. They maintain that the MTP reflects Marx’s sequence *M-C-M’* and that, in this sense, the ‘paradox of profits’ focuses on a key problem of the capitalist system, namely the problem of the realization of a monetary surplus<sup>16</sup>. They argue that, depending on the historical and social conditions, capitalism solves the problem in different ways, and these ways – not being a mere ‘outside factor’ used as an *ad hoc* assumption in circuitist models – are, as a matter of fact, social devices serving for the reproduction of the system. In this sense, the MTP approach provides an ‘open’ model, where the closure of the circuit depends on ‘outside factors’ which are historically, institutionally and socially determined, as well as empirically/factually significant. It should be added that – by its very nature - the problem of the realization of a monetary surplus is a macroeconomic problem, closely linked to Kalecki’s view that *capitalist reproduction needs low wages with high consumption* (Kalecki, 1971)<sup>17</sup>.

While the Marxist interpretation of the profits puzzle implies that only *external* influxes of money (such as public expenditure, consumer credit, surplus of the balance of payments) can allow

---

<sup>14</sup> Proponents of the MTP stress that the commercial bank adopts the interest rate fixed by Central Banks as the cost for its loans and follows the mark-up rule in order to fix its own interest rate:  $r_{cb} = r_{CB} (1 + m)$ , where  $r_{cb}$  is the interest rate fixed by the commercial bank,  $r_{CB}$  is the interest rate fixed by the Central Bank and  $m$  is the commercial bank’s mark-up.

<sup>15</sup> Forges Davanzati and Patalano (2011) provides a reconstruction of the different analytical solutions of the “paradox of profits” in the recent developments of the MTP.

<sup>16</sup> Forges Davanzati (2011) finds an analytical problem in the Marxian interpretation of the MTP. If one can admit that the real wage is set by firms at the level corresponding to its subsistence level *in a theoretical context where real wages are advanced*, in a credit economy – where firms advance the *money wages* – the price level is set at the end of the circuit, implying that *the equality between the subsistence wage and the actual real wage can occur only by chance*.

<sup>17</sup> In this theoretical context, capitalist reproduction requires low (or declining) wages at the same time as high (or increasing) total demand. This occurs because while it is profitable for firms – on the microeconomic plane – to cut wages and to oppose public intervention, for firms as a whole high total demand allows the realization of money profits (see Kalecki, 1971).

capitalist reproduction in monetary terms, different interpretations and solutions of the “paradox of profits” have been provided, in order to show that it is a puzzle which can be solved without external intervention. First, it has been observed that the paradox of profits can be solved *i)* by assuming that the speed of money circulation is higher than 1 (since  $V > I$  implies  $\pi > I$ ) and/or *ii)* that multiplicative effects of investments on income are in operation (cf. Trigg, 2006). Second, Messori and Zazzaro (2004) show that monetary profits can be generated by the bankruptcy of the less efficient firms, and Zazzaro (in Rochon and Rossi, eds., 2003) emphasises that this solution leads to abandoning “any concept of subjective and/or objective *equilibrium* ... in favour of a systemic concept of *order*”. Zezza (2012), in a stock-flow consistent model, demonstrates that the “closure” of the circuit is made possible by considering banker income arising from interest payments as a source of demand. Chapman and Keen (2006) show that aggregate money profits can arise in a dynamic context where a continuous time function is considered in overlapping circuits. Febrero (2008) maintains that firms as a whole can obtain money profits – within one single circuit - by means of long-term debt with the banking system. These are “internal” solutions, insofar as they do not require an external influx of money in order to allow (some) firms to obtain money profits (see Dupont and Reus, 1989; Parguez, in Arena and Salvadori, eds. 2004).

Note also that Graziani’s solution that firms reimburse their debt in kind is questionable on two grounds. First, finding that the monetary value of investments is equal to the interest firms have to pay banks can occur only by chance. Second, it appears puzzling that a schema designed to describe the functioning of a *monetary* economy should end with firms repaying their debt to banks in kind. Moreover, this solution implies that banks and firms tend to become a single macro-agent, in contrast to the view that firms and banks are two *distinct* macro-agents, as emphasised in particular by Seccareccia (2003) and by Messori and Zazzaro (2005)<sup>18</sup>.

It can be seen that these open questions derive from the fact that the basic schema of the MTP sets out to describe the working of a credit economy starting solely with credit creation, in the absence of initial (monetary or real) endowments. Note that this does not only pertain to the lack of realism of the basic schema, but also to its internal consistency, for two main reasons.

*i)* In the basic schema of the MTP, it is assumed that firms advance money wages without knowing labour productivity and that workers obtain their real wages once the production process has finished. These assumptions are very questionable both on the factual and logical plane. First, one can question why firms advance the money wage bill in a situation where they will know labour productivity only *ex-post*. Quite evidently, this behaviour cannot be justified either on rational or on reasonable grounds. A possible answer lies in the fact that firms employ workers whose productivity is known, because, for instance, they were employed in the previous production process. Moreover, since the production process involves time, this implies that, in the period between the payment of money wages and the end of the production process, workers cannot consume. In order to avoid this counterfactual assumption, one must assume that workers have *already* consumed when the current production process starts. In both cases, it cannot be admitted that the monetary circuit starts *ex-nihilo*

*ii)* As Graziani emphasises, banks finance capitalists, not workers<sup>19</sup>. Quite evidently, this presupposes that – at the beginning of the monetary circuit – some individuals are capitalists in the sense that they are owners of the means of production. It follows that a given stock of capital (or monetary wealth) must exist in order to justify Graziani’s assumption on bank behaviour. Accordingly, *the monetary circuit can start only if past variables are taken into account*<sup>20</sup>.

<sup>18</sup> Moreover, in the basic schema, it is unclear which criterion which firms adopt in order to decide how much consumption goods and how much investment goods to produce.

<sup>19</sup> “Credit [...] is not granted to anyone presumably able to repay his debt, but only to selected agents, usually being productive firms [...]. A similar assumption clearly echoes the Marxian distinction between a class of property owners and a class of propertyless workers” (Graziani, 2003, pp.20-21).

<sup>20</sup> Apart from Graziani’s view, it can be admitted that banks finance only on the basis of the expected returns of investments, independently of real collateral, allowing full social mobility. In this case, some individuals *become* capitalists because banks finance them. However, even though this can happen in the real world, this assumption may

### 3 - Towards a Keynesian version of the MTP

The current developments of the MTP are seeking a closer link between this approach and Keynes's work, with particular reference to the consideration of the role played by aggregate demand and expectations (cf. Arena and Salvadori, ed. 2004). In particular, it is stressed that *i*) the so-called paradox of profits holds only on condition that the economic process starts with money creation in the absence of an accumulated stock of wealth; *ii*) a monetary economy with a deregulated labour market does not automatically generate a full employment equilibrium<sup>21</sup>; *iii*) expansionary fiscal policies are required in order to increase the employment rate and to stop deflationary processes. These questions will be addressed by considering two key issues of the Keynesian theoretical framework as stated in the GT (i.e. the idea that the level of employment depends on aggregate demand and the crucial role played by expectations), preserving the fundamental assumptions of the MTP, namely that money supply is endogenous and credit serves above all to finance production.

The following assumptions are made:

- a. The economy is formed by two sectors, one producing consumer goods (sector 1), the other producing investment goods (sector 2). For the sake of simplicity, it is assumed that a single consumer good is produced, and it is acquired by both workers and capitalists. The economy considered is a closed economy, without external trade;
- b. At the beginning of the production process, capitalists own a disposable income deriving from the net profits made in the previous production process. Capitalists can use this stock of wealth either to consume or save, and, as regards savings, it can be used to finance production and investments. This occurs in every production period (cf. Trezza, in Arena and Salvadori eds. 2003, pp.75-86).
- c. It is assumed that firms finance the production of consumer and investment goods both by means of their internal funds and of bank finance. The order of the financing channels is given, based on their cost for firms: firms *first* finance production and investments via their internal retention and *after* that they contract debts. Firms' indebtedness is assumed to depend on the expected rate of profits and on the interest rate<sup>22</sup>. The level of employment is determined by the expected aggregate demand<sup>23</sup>. Public expenditure has a positive effect on firms' aggregate money profits (cf. Parguez, 2007; Forges Davanzati, Pacella and Realfonzo, 2009)<sup>24</sup>.

---

pose theoretical problems if inserted in the MTP approach. In fact, in this framework, in order to start the production process, firms need not only initial finance but also capital goods, and it is unclear where they come from in a context where firms *as a whole* are financed only on the grounds of the expected profitability of their investment project, particularly if one admits that the production of capital goods involves time. Below, in the framework of the basic schema, the view that capitalists are financed because they are owners of means of production will be maintained, on the grounds that fixed capital is the collateral that firms offer banks. Second, as regards the realism of the assumption that *the whole* production is financed via bank creation of money, one should consider that this is a very special case, and there is no logical constraint internal to the MTP to exclude self-financing (see, in particular, Seccareccia, 2003, p.177).

<sup>21</sup> Cartelier (in Arena and Salvadori, 2004, pp.203 ff.) emphasises that "involuntary unemployment equilibrium does not come directly from cash or finance constraints which account only for low employment equilibria. The labour market always clears in these models even if it is a low level of employment. The main assertion of *General Theory* is socially stronger than that: the labour market can be in excess supply (involuntary unemployment) even if all other markets are in equilibrium".

<sup>22</sup> The idea that an order of financing channels is given – which contrasts with the standard Modigliani-Miller theorem – reflects the so-called "pecking order theory" (cf. Myers and Majluf, 1984).

<sup>23</sup> "Employment can only increase *pari passu* with an increase of investments [...] whereas employment is a function of the expected consumption and the expected investments, consumption is, *cet.par.*, a function of *net* income, i.e. on *net* investment" (Keynes, 1973 [1936], p.98).

<sup>24</sup> This assumption reflects Keynes's argument that the increase of aggregate demand – in particular cases (and including public expenditure) – can have a direct positive effect on profits. This case is examined by Keynes when dealing with the employment function, in these terms: "if the output of the industry is perfectly inelastic, the whole of the increased effective demand (in terms of wage-units) is expected to accrue to the entrepreneurs as profit" (Keynes, 1973 [1936], p.283). This occurs when "the direction of the demand is changed in favour of products having low

d. Capitalists as a whole decide how much to save and consume.

The symbols used are listed below.

$\pi$  are aggregate profits

$W_k$  is capitalists' disposable income

$C_w$  is workers' consumption

$C_k$  is capitalists' consumption

$A_k$  is firms' expenditure deriving from their internal retention

$w$  is the unitary money wage

$N$  is the level of employment

$i$  is the interest rate

$F_T$  is firms' total expenditure for production, including their internal finance

$F_d$  is the amount of finance demanded by firms to banks in order to produce consumption goods and investments goods

$F_C$  is the amount of monetary resources devoted to finance the production of consumption goods

$F_I$  is the amount of monetary resources devoted to finance the production of investment goods

$r^e$  is the expected rate of profits

$I$  are investments

$G$  is public expenditure

$p$  is the unitary price of consumption goods

$a$  is average labour productivity

$CR$  is consumer credit

$\alpha$  is the degree of banks' accommodation

a) *The paradox of profits*. In the basic schema, it is assumed that firms get into debt with the banking system in order to advance money wages, i.e.

$$F = wN \quad [3.1]$$

and the “paradox of profits” emerges because workers' monetary expenditure equals firms' monetary costs (i.e. the money wage bill). In this picture, it is assumed that no accumulated stocks of wealth exist, and the situation where aggregate profits derive from aggregate consumption plus investments (Keynes, 1973, pp.54 ff.) is not considered. Moreover, the profits equation in the basic schema does not include either capitalists' consumption<sup>25</sup> or investments (cf. Webster, in King ed. 2012, pp.468-473). In view of these factors, it can be concluded that firms' profits come from sales of consumer goods plus sales of investment goods, not only from workers' expenditure (Zezza, 2004). Moreover, in the basic schema, it is assumed that while production is financed via bank credit, investments are entirely financed via savings (Graziani, 2003), according to the view that firms as a whole act as a single macro-agent. As shown above (section 2) this assumption is both unrealistic and not strictly necessary<sup>26</sup>.

At the beginning of the production process, firms decide the amount of finance demanded to the banking system. In view of assumption b), this is:

$$F_T = F_d + A_k = F_d + (W_k - \bar{C}_k) \quad [3.2]$$

and

---

elasticity of employment [...]. Some products take time to produce, so that it is practically impossible to increase the supply of them quickly” (Keynes, 1936 [1973], p.287).

<sup>25</sup> Under the simplifying assumption that capitalists consume the same goods as workers.

<sup>26</sup> In some recent models of the MTP it is assumed that firms finance investments by issuing bonds. Cf. Zezza (2004).

$$F_T = F_C + F_I = \phi(D^e_c) + \phi(D^e_I)$$

Equation [3.2] establishes that the ‘initial finance’ depends on firms’ expectations on the demand for consumer goods and on the demand for investment goods. The amount of credit applied for by firms producing consumer goods will rise in line with their expectations on workers’ consumption (and, hence, on the wage bill paid in the sector producing investment goods, for a given propensity to consume), and the demand for credit by firms producing investment goods will increase with the growing optimism of their expectations on the demand for investment goods expressed by firms producing consumer goods.

On the basis of assumption b),  $F_T > 0$  if  $r^e - i > 0$ . On the assumption of initial given expectations implying that the expected rate of profits is higher than the interest rate, firms’ demand for credit is

a given: i.e.  $\bar{r}^e > i \rightarrow \bar{F}_T > 0$ . On the macroeconomic plane, firms’ indebtedness towards the banking system will be higher *i)* the lower their internal retentions; *ii)* the more optimistic their expectations and *iii)* the lower the interest rate<sup>27</sup>.

By assumption, aggregate consumption is:

$$C_T = C_k + C_w \quad [3.3]$$

In a closed economy, without State intervention, aggregate demand is:

$$AD = C_k + C_w + I \quad [3.4]$$

When firms repay their debt, they obtain a volume of aggregate net money profits equal to:

$$\pi_n = C_k + C_w + I - F_d - iF_d \quad [3.5]$$

In view of equation [3.5], the condition for aggregate money profits to be nil is:  $C_k + C_w + I = F_d(1+i)$ . On the assumption that firms own an initial stock of wealth, this condition cannot occur, for two reasons. First, the payment of wages and the demand for investment goods are not entirely financed via bank credit. Abstracting, at the moment, from the interest rate and capitalists’ consumption,  $C_w + I > F_d$ , since, by assumption,  $C_w + I = F_d + A_k$ . Second, capitalists’ consumption is not financed via bank credit, but via accumulated wealth, so that capitalists’ consumption does not involve financial costs. In this picture, the lower the workers’ propensity to consume and the higher the interest rate, the lower the aggregate money profits will be<sup>28</sup>.

Note that the existence of ostentation and emulation effects can play a major role in dealing with the issue, on the basis of three arguments. First, as Keynes points out, the propensity to consume can be influenced by “subjective factors”, like “Enjoyment, Ostentation and Extravagance” (Keynes, 1973, p.108). If these factors are applied to capitalists’ consumption, the result will be that the more interested they are in ostentation, the higher their consumption and the higher the aggregate money profits<sup>29</sup>. Second, as Forges Davanzati (2011) argues, workers’ demand for credit depends on the gap between their target wage and their current wage, which, in turn, depends on their “memory” of

<sup>27</sup> At the other extreme (i.e. in the case of pessimistic expectations, high internal retentions and high interest rates), firms may find it profitable to entirely self-finance production and investment. This case is obviously counterfactual and falls outside the theoretical schema of the MTP, where bank credit always exists.

<sup>28</sup> In general terms, this conclusion is in line with Kalecki’s view that workers spend what they earn, while capitalists earn what they spend.

<sup>29</sup> This argument is in line with the Institutional interpretation of the MTP (cf. Forges Davanzati and Pacella, 2013c).

past successful wage claims<sup>30,31</sup>. Third, as Forges Davanzati and Pacella (2010) show, a further reason underlying the propensity to get into indebt on the part of workers can be derived from the Keynesian relative wages argument:

“any individual or group of individuals, who consent to a reduction of money-wages relatively to others, will suffer a *relative* reduction of real wages, which is a sufficient justification for them to resist it” (Keynes, 1973, p.14, italics in original).

They argue that – in a context of heterogeneous workforce – low paid workers emulate high paid workers via consumer credit, so that additional flows of money enter the economic system increasing aggregate money profits.

In the event of workers indebtedness, short-run aggregate money profits are:

$$\pi = C_k + C_w + I + CR - F_d(1+i) \quad [3.6]$$

Quite evidently, workers’ demand for credit is also negatively affected by current and expected interest rates<sup>32,33</sup>. It is worth noting that the basic schema of the MTP conceived banks credit as solely devoted to financing production, while in this expanded version, it is admitted that banks can also finance the demand for credit for consumption purposes.

Let us now analyse the distribution of profits between the two sectors. In line with the basic assumption of the MTP, it is maintained here that the whole of banks’ finance is only devoted to finance *production*, of both consumer and investment goods. In a two-sector model, the demand for investment goods is expressed by firms operating in the sector producing consumption goods (sector 1), and it is financed via accumulated profits in that sector (cf. Lavoie, 1987; Nell, 2002)<sup>34</sup>. This result can be shown as follows.

Profits in sector 1 are:

$$\pi_1 = C_k + C_{w,1} + C_{w,2} - F_1(1+i) \quad [3.7]$$

Equation [3.7] reflects the assumption that capitalists and workers consume a homogeneous good, and that the wage bill paid in sector 2 enters the profit function of firms operating in sector 1. Insofar as *i*)  $wN_c = C_{w,1} > F_1$  (since part of the money wage bill is paid via firms’ internal retention), and *ii*)  $C_k + C_{w,2} > 0$ , it follows that  $\pi_1 > 0$ . Let us assume that firms in sector 1 express a demand for investment equal to a share *b* of their money profits<sup>35</sup>.

<sup>30</sup> There are – Keynes (1973 [1936], p.109) maintains – “time motives which lead to an excess of consumption over income”, generating “negative savings”: “family needs or old age”, or “present hopes and past experience”.

<sup>31</sup> In formal terms, one obtains:  $CR_t = \beta[\overline{C}_{w,t-1}(Z_{t-1}^+) - C_{w,t}(Z_t^+)]$

where *CR* is workers’ indebtedness,  $Z_{t-1}$  indicates worker bargaining power in the previous periods. This equation shows that workers tend to get into indebt as their wages decline over time, on condition that their target wage (and consumption) derives from what they obtained in previous production processes. Moreover, the lower their current bargaining power, the lower their wages and consumption will be and the higher their incentive to increase consumption via bank credit.

<sup>32</sup> Of course, in a long-run perspective, when workers reimburse their debt, *CR* will disappear from the profits equation.

<sup>33</sup> In the GT, Keynes (1936 [1937], p.111, italics in original) finds that consumption (and savings) can also depend on the interest rate: “The rise in the rate of interest might induce us to save more, *if* our incomes were unchanged”. As regards workers’ indebtedness, this establishes that, as the interest rate goes up, this stimulates an increase in savings and, hence, a reduction of consumer credit.

<sup>34</sup> As Parguez (in Arena and Salvadori, eds., 2003, p.263) correctly points out, in the basic schema of the MTP, while the sector producing consumer goods can realize money profits via the consumption on the part of workers employed in the sector producing investment goods, firms operating in this latter sector necessarily obtain negative money profits.

<sup>35</sup> In view of assumption d),  $(1-b)\pi_1$  equals the consumption of capitalists operating in sector 1.

Profits in sector 2 are:

$$\pi_2 = b\pi_1 - F_2(1+i) \quad [3.8]$$

so profits in sector 2 grow in proportion to *i*) firms' propensity to demand investment goods (*b*), and *ii*) profits in sector 1, i.e. with higher consumption (both by capitalists and workers), lower interest rate, and higher internal retentions in firms. Note that, in line with Keynes, there is nothing to ensure that a deregulated market economy will spontaneously achieve equality between savings and investments, and, above all, such an outcome is not achieved even when the interest rate can fluctuate freely. There are two reasons for this. First, the decisions to acquire investment goods are quite independent of the decision on the amount of investment goods to be produced. Second, this also occurs because the amount of  $C_{w,1}$  and  $C_{w,2}$  crucially depends on firms' expectations.

b) *Involuntary unemployment*. As in the GT, the level of employment depends on aggregate demand. For the sake of simplicity, it is assumed that firms' expectations are correct<sup>36</sup>. Equation [3.4] above states that aggregate demand is:

$$AD = C_k + C_w + I \quad [3.4']$$

By assuming  $C_k$  as an institutional datum, and considering equation [3.9], equation [3.4'] becomes:

$$AD = C_k + cwN + b\pi_1 \quad [3.9]$$

In line with the "employment function" of the GT, the level of employment is set at the point of intersection between aggregate demand and aggregate supply, i.e. at the point of effective demand. The aggregate supply function can be constructed on the basis of Keynes's assumption that: "if wages are constant and other factor costs are a constant proportion of the wage-bill, the aggregate supply function is linear with a slope given by the reciprocal of the money wage" (Keynes, 1973 [1936], p.56, footnote n.2).

Therefore, in view of equation [3.9] the level of employment is proportional to: *i*) capitalists' consumption<sup>37</sup>, *ii*) the propensity to invest; *iii*) workers' propensity to consume and *iv*) the money

<sup>36</sup> It can be shown that, if firms' expectations are not correct, they tend to become correct over time, if it is accepted that – other things being equal – firms learn from the past and adjust their current behaviour taking past 'mistakes' into consideration. In any case, as Keynes (1973 [1936], p.51) points out: "it is sensible for producers to base their expectations on the assumption that the most recently realised results will continue, except in so far as there are definite reasons for expecting a change". This is because "It would be too complicated to work out their expectations *de novo* whenever a productive process was being started; and it would, moreover, be a waste of time since a large part of circumstances usually continue substantially unchanged from one day to next". Keynes (1973 [1936], p.77 footnote n.1) adds that "My method there was to regard the current realized profits as determining the current expectation of profits". Allain, Harwing and Hayes (2013) have recently provided a detailed analysis of this issue.

<sup>37</sup> This result derives from the assumption that capitalist consumption enters the profits function. In this sense, this assumption goes beyond the conventional description of classical models, where – in the extreme case – capitalist consumption is assumed to be nil. Note that this conventional description is not typical of classical economists, if one considers Marx's view that: "When a certain stage of development has been reached, a conventional degree of prodigality, which is also an exhibition of wealth and consequently a source of credit, becomes a business necessity to the 'unfortunate' capitalist. Luxury enters into capital's expenses of representation". And, by recalling Goethe, "along with this growth, there is at the same time in his breast a Faustian conflict between the passion for accumulation, and the desire for enjoyment" (Marx, 1994 [1867], pp.293-294). Further arguments can be added in support of this view: a) The existence of a "dynastic" motive which, according to Michl (2009), may induce capitalists to abstain, at least partially, from accumulation, for the sake of passing on to their households an amount of (physical and/or monetary) resources so that their status can be reproduced in a long-run perspective. On the formal plane, this can lead to an increase in the propensity to consume, assuming that goods are durable and transmissible, and/or an increase in non spent liquidity; b) A significant cause of disinvestment is to be found in the so-called financialization process (cf., among others, Palley, 2007, Stockhammer, 2009). Post Keynesian scholars tend to consider financialization as the result

wage bill. *Importantly, and in line with the basic principles of the MTP, the level of employment ultimately depends on firms' demand for credit, both for production and consumption purpose.* This is because high levels of firms' indebtedness imply high levels of the money wage bill (in both sectors), and high levels of the money wage bill, in turn, imply high profits in sector 1 and high demand for investment deriving from firms operating in that sector. Moreover, insofar as firms' indebtedness, for a given interest rate, crucially depends on their expectations, employment grows as firms' expectations become more optimistic. Furthermore, for a given level of firms' indebtedness, employment grows as capitalists' expenditure (both on production and consumption) increases, which, in turn, depends on their accumulated wealth. As regards the supply side, since aggregate supply is  $AS = paN$ , the lower the price level and the labour productivity, the higher the employment<sup>38</sup>.

a. *The demand for credit.* Since the amount of  $\bar{F}_d$  depends on the difference between the expected rate of profit and the interest rate, employment declines (increases) when this difference diminishes (increases). More generally, the level of firms' indebtedness is crucially affected by the dynamics of money wages and by the degree of uncertainty. Keynes deals with this question, in particular, in chapter 19 of the GT, analysing the effects of changes in money wages on investments, via modification of entrepreneurs' expectations. He states two fundamental theses:

“The reduction in the wages-bill, accompanied by some reduction in prices and in money-incomes generally, will reduce the *need for cash* for income and business purpose; and it will therefore reduce *pro tanto* the schedule of liquidity-preference for the community as a whole. *Cet.par.* this will reduce the rate of interest, and thus prove favourable to investment” (Keynes, 1973 [1936], pp.262-263, italics added).

And:

“the reduction in money-wages will have no lasting tendency to increase employment except by virtue of its repercussion either on the propensity to consume for the community as a whole, or on the schedule of marginal efficiency of capital, or on the rate of interest”,

As shown below, these effects can be taken into consideration within an expanded version of the MTP, in a theoretical framework where banking policy can have a significant impact on the path of aggregate demand, with particular reference to wages and worker consumption.

In line with the basic schema of the MTP (and with assumption b), Keynes's argument can be expanded, by considering that – under given circumstances (see below) - firms can find it profitable to minimize their indebtedness towards banks (cf. Nell, 2002; Chapman and Keen, 2006). In a theoretical schema where firms have internal retentions, this implies that most of the production and

---

of a radical modification of the structure and the aims of firms, in a context where a 'shareholder value orientation' prevails, rejecting the view that it is the outcome of the alteration of agents' preferences and more specifically of the fact that investors are becoming increasingly less risk loving and increasingly risk averse and that, as in the mainstream approach, this helps to generate macroeconomic stability (Graziani, 2003, p.158). A different interpretation can be suggested, based on the conviction that contemporary capitalist firms are even more interested in the *timing* of the realization of money profits. Accordingly, firms compare the turnover of fixed capital with the turnover of money capital, and – for a given speed of goods and services production – the lower the money turnover, the more profitable it is for them to try to make money by means of money. Moreover, as suggested by Bronars and Dreere (1991), financialization can be regarded as a device for the purpose of resisting increasing worker claims in the expansionary phases of the cycle, when wages normally tend to grow.

<sup>38</sup> A detailed discussion of the Keynesian aggregate supply function falls outside the scope of this paper. Cf. Ambrosi (2001) and Hayes (2007).

investment are financed via internal funds<sup>39</sup>. The reduction of the demand for credit on the part of firms implies the reduction of aggregate demand and employment.

As Keynes (1973 [1936], p.261, italics in original) points out:

“Perhaps it will help to rebut the crude conclusion that a reduction in money-wages will increase employment ‘because it reduces the costs of production’, if we follow up the course of events on the hypothesis most favourable to this view, namely that at the outset entrepreneurs *expect* the reduction in money-wages to have this effect. It is indeed not unlikely that the individual entrepreneur, seeing his costs reduced, will overlook at the outset the repercussion on the demand for his product and will act on the assumption that he will be able to sell at a profit a larger output than before”.

Moreover, one can argue that the minimization of indebtedness can be conceived as a competitive strategy, on the assumption that firms compete via price cutting. The reduction of  $F$  (which presupposes policies of wage cutting), in fact, allows the individual firm to lower production costs, and, insofar as firms are in competition with each other, each of them has to reduce prices to stay competitive. This, in turn, produces a reduction of total costs and prices thus giving rise to increased *expected* profits.

It can also happen that, if the burden of debt is considered too high by firms, they find it profitable to reduce their demand for credit, even when the banking system is fully accommodating<sup>40</sup>.

Following Keynes, a possible counterbalancing effect is the higher incentive to invest as wages fall, insofar as this implies a decline in the demand for credit and the consequent reduction of the interest rate. However, as Keynes himself remarks, this effect may occur only in the event where wage reductions do not have a negative impact on investments<sup>41</sup>.

The following remarks are in order.

*i)* These conclusions are in line with the basic schema of the MTP (as well as the Keynesian view on the link between wage dynamics and the demand for credit). In that theoretical framework, *money* wage increases are non effective for redistributive purposes, insofar as firms react by increasing prices. In the Keynesian expanded version of the MTP, *money* wage increases may be counterproductive for workers as a whole, insofar as this pushes firms to react by reducing their indebtedness towards banks, thus generating a reduction of aggregate demand and employment<sup>42</sup>.

*ii)* Firms can increase their market share and their profits also by raising labour productivity. As shown by Forges Davanzati and Pacella (2008), this result can be reached through policies of labour market regulation. Wage rises combined with legislation against the use of flexible labour contracts is likely to force firms to compete by raising productivity and, hence, via innovation. In any case, this is a more costly strategy than wage cutting, and, as a norm, it happens when firms are not in the position to compete by means of continuous reduction of wages, which can occur as a result of labour market regulation. Furthermore, as Dutt (2010, p.54) emphasises: “Firms increase labour

<sup>39</sup> In the extended Keynesian version of the model, the amount of production and investment financed via internal retentions crucially depends on the amount and the allocation of capitalists’ initial stock of wealth. In particular, a low level of  $Wk$  – for a given interest rate, and expectations – is expected to push capitalists to express a high demand for credit from the banking system. It follows that the lower the past rate of growth, the lower the current growth rate, and the current employment level.

<sup>40</sup> These issues have been recently examined by Tortorella Esposito (2012, pp.139-141).

<sup>41</sup> More generally, and considering that Keynes admits that money wage variations affect aggregate demand, one can argue that the reduction of firms’ indebtedness can also derive from the following causes. First, an *increase* of money wages is likely to push firms to try to reduce their costs via the reduction of their demand for credit. Second, if *money wages are constant*, the reduction of firms’ indebtedness can be conceived as a strategy aimed at gaining market shares insofar as this reduces their financial burden, allowing price reductions.

<sup>42</sup> These different outcomes of money wage increases (inflationary pressures or reduction of firms’ indebtedness) crucially depend on the intensity of competitive pressure. In an environment where the intensity of competition is high, firms tend to react to money wage increases by reducing their financial costs, while they react via price increases in the event they are price-maker in a market structure where the intensity of competition is low.

productivity growth when the labour market becomes tighter, or the employment rate rises: necessity is the mother of invention”.

iii) The reduction of firms’ demand for credit may also depend on pessimistic expectations about the path of aggregate demand. In particular, if a decline in aggregate demand is expected – caused, for instance, by restrictive fiscal policies (or by increased liquidity preference) – firms may be induced to reduce their production and investment and, as a result, to reduce their indebtedness towards the banking system<sup>43</sup>. In so doing, firms’ expenditure diminishes and so does aggregate demand. This is a case of self-fulfilling prophecies: an *expected* reduction of aggregate demand produces its *actual* reduction. Moreover, restrictive fiscal policies generate a decline of *AD* not only directly, through the reduction of public expenditure, but also indirectly, through the reduction of private investment.

iv) Firms can also compete via the use of “flexible” labour contracts, insofar as – if a discipline device mechanism is in operation - temporary jobs are associated with increasing worker effort. However, as Forges Davanzati and Realfonzo (2004) and Pacella (2008) among others, have shown, labour market deregulation increases uncertainty (because of higher job insecurity), and this reduces the present propensity to consume, thus generating a reduction in aggregate demand and employment<sup>44</sup>. According to this view, *money is held as a reserve of value in a condition of high uncertainty on the part of workers, which can derive from high job insecurity*<sup>45</sup>.

b. *The supply of credit.* As we know, Keynes maintains that, as a norm, the credit market is not competitive and banks tend not to behave in a fully accommodating way. This issue is addressed, in particular, in the TM:

“There is, that is to say, in Great Britain an habitual system of credit rationing in the attitude of bank to borrowers - the amount lent to any individual being governed not solely by the security and rate of interest offered, but also by reference to the borrower’s purposes and his standing with the bank *as a valuable or influential client*. Thus, there is normally a fringe of unsatisfied borrowers who are not considered to have the first claims on a bank’s favours, but to whom the bank would be quite ready to lend if it were to find itself in a position to lend more” (Keynes, 1971 [1930, vol.II], italics added, p.327)

In the theoretical framework presented here, *credit rationing and credit restriction may be, at the same time, cause and effect of a lack of aggregate demand*. Let us pose the condition that banks restrict their credit supply in the event their current and expected profits are lower than the current and expected profits on the part of firms. This condition reflects the assumption that banks are interested in gaining money profits. Two distinct cases are in order.

First, in the case where firms are not homogeneous, the credit system tends spontaneously to contribute to the increase in the size of the biggest firms. Firms with a higher amount of collateral obtain a higher amount of credit and hence can expand, thus gaining further advantages over their (smaller) competitors. As a result, an ‘imperfect’ credit market is likely to spontaneously generate a selection of firms on the basis of their collateral, thus allowing the expansion of the bigger firms and the possible bankruptcy of the smaller firms. A decline in aggregate demand has a primary negative impact on small firms’ profits, entailing a decline in their current and expected profits. Banks react by revising their expectations on firms’ profits, thus reducing their credit supply at the

<sup>43</sup> As regards Italy, Panetta and Signoretti (2010) empirically finds that the reduction of credit is mainly derived from the reduction of credit demand, both on the part of households and on the part of firms. Firms reduce their demand for credit due to their pessimistic expectations, linked to the decline of domestic aggregate demand. [http://www.bancaditalia.it/pubblicazioni/econo/quest\\_ecofin\\_2/QF\\_63/QEF\\_63.pdf](http://www.bancaditalia.it/pubblicazioni/econo/quest_ecofin_2/QF_63/QEF_63.pdf)

<sup>44</sup> Following Lavoie et al. (2004), it can be argued that uncertainty can also affect firms’ reserve capacity, in an attempt to anticipate unexpected increases in demand.

<sup>45</sup> Stockhammer and Ramskogler (2007) stress that i) in a capitalist economy, uncertainty is not evenly distributed among social classes and that ii) workers, in particular, suffer from higher levels of uncertainty, due to job insecurity.

expense of smaller firms. Moreover, one can argue – in line with Keynes’s view – that *banks’ decisions are affected by fundamental uncertainty*, so that – in economies populated by heterogeneous firms – banks tend to finance big firms, insofar as they consider them less likely to go bankrupt (cf. Rasmkogler, 2007). This is the case of *credit rationing*<sup>46</sup>.

Second, assuming that firms are homogeneous so they offer the same amount of collateral to banks, credit restriction – hence low levels of  $\alpha$  – can arise in the event banks’ expected profits are lower than firms’ expected profits, and, importantly, there is no endogenous mechanism guaranteeing equality between banks’ and firms’ expectations. Moreover, in view of assumption *c*), both current and expected profits also depend positively on fiscal policy. It follows that an increase (reduction) in public expenditure – for a given taxation level – increases (reduces) current and expected profits. This is likely to occur due to the following effect. A reduction of public expenditure reduces the money wage bill, thus aggregate money profits, making it more difficult for firms to reimburse their debt to banks. Banks are expected to react by reducing their credit supply. In this case, it follows that *restrictive fiscal policies are likely to produce credit restriction*<sup>47</sup>.

Insofar as the path of aggregate demand, employment and profits ultimately depends on relations between firms and banks (and hence on the value of  $\alpha$ ), the expanded Keynesian version of the MTP describes the dynamics of a monetary economy, in a *credit-led growth regime*. This conclusion is in line with Graziani’s (2003, p.29) view that: “The wage policy of the firms [...] ultimately depends on the credit policy of the banks”.

*c) The role of fiscal policy.* As shown above, the recent developments of the MTP show that public expenditure has a positive effect on firms’ aggregate money profits (cf. Parguez, 2007; Forges Davanzati, Pacella and Realfonzo, 2009). In particular, it is argued that expansionary fiscal policy can act as an “anchor” of profit expectations. It is stressed that expansive fiscal policy allows employment to increase thanks to the additional flow of money that the State produces. In short, the higher the deficit spending, the higher the employment in the public sector and, since firms’ profit expectations rise, the higher the additional employment in the private sector. Moreover, insofar as public expenditure can directly increase aggregate consumption (via, for instance, the payment of unemployment benefits – see Forges Davanzati and Pacella, 2013a), expansionary fiscal policies increase aggregate money profits even when they do not affect firms’ expectations. Abstracting from workers’ indebtedness, equation [3.2] can be rewritten as:

$$\pi = C_k + C_w + I + G - F_d(1+i) \quad [3.16].$$

Let us assume now that public expenditure falls. This generates two effects, which manifest in the ensuing production process. First, it means a decline of net profits, because of *i*) the direct effect of  $G$  on  $\pi$ , *ii*) the negative effects on firms’ expectations (see above). Second, it increases the interest rate. This occurs because – given capitalists’ expectations – in order to finance production and investment they have to increase their demand for credit<sup>48</sup>. This, in turn, reinforces banks’ bargaining power, allowing banks to raise the interest rate<sup>49</sup>. Note that this is likely to occur

<sup>46</sup> Note that, in the Keynesian version of the MTP presented here, uncertainty plays a significant role in determining the path of employment, because *i*) it can reduce the amount of credit supplied; *ii*) it can have a negative impact on workers’ propensity to consume, in a deregulated labour market with high job insecurity.

<sup>47</sup> In the basic schema of the MTP, the opposite link holds. An increase in public expenditure produces inflationary pressure, thus reducing interest rates *in real terms*. Banks are likely to react by increasing the money interest rate or by reducing their credit supply. Of course, the prevalence of one of these two effects crucially depends on the outcomes of expansionary fiscal policy (i.e. increase in employment or inflationary pressure).

<sup>48</sup> The fact that firms get into debt when interest rates are high is justified on two grounds: *i*) their expectations on future profits are optimistic and/or *ii*) they expect further increases in the interest rate.

<sup>49</sup> Note that this effect (the decrease of public expenditure generating an increase in the interest rate) impedes the standard “crowding out” effect as derived from the IS-LM model. This depends on the fact that, in the Keynesian theoretical model, public expenditure is complementary to capitalists’ expenditure. As Graziani (2003, p.25) points out,

independently of the behaviour of the Central Bank, since the Central Bank in fact does not fully control the interest rates of commercial banks<sup>50</sup>. Accordingly, *restrictive fiscal policies redistribute income from wages and profits to financial rents*.

#### 4 – Concluding remarks

This paper dealt with the monetary theory of production and its affinity with Keynes's thought. It has been shown that the basic schema of the MTP – as established by Graziani (2003) – mainly focuses on the problem of the monetary reproduction of a capitalist system, in a situation where firms as a whole are unable to realize money profits. It has been stressed that this conclusion – the so-called paradox of profits – holds on some restrictive assumptions and, particularly, on the assumption that every production process starts without pre-existing stock of wealth. It has been shown that Graziani's formulation is close to Keynes's *Treatise on Money* and can also be interpreted as a 'rationalization' of the Marxian sequence M-C-M'. A simple macroeconomic model has been provided in order to show that the basic assumptions of the MTP are consistent with the fundamental Keynesian thesis, as stated both in the TM and in the GT, with particular regard to the role of aggregate demand and uncertainty.

#### References

- Allain, O., Harwing, J. and Hayes, M. (2013). *Effective demand: securing the foundations – A Symposium*, "Post Keynesian Economics study group", wp n.1302, 8 April 2013.
- Ambrosi, G.M. (2011). *Keynes' abominable Z-footnote*, "Cambridge Journal of Economics", vol. 35, n. 3, pp.619-633.
- Arena, R. and Salvadori, N. eds. (2004), *Money, credit and the role of the State. Essays in honour of Augusto Graziani*. Burlington: Ashgate.
- Barrère, A. (1979). *Déséquilibres économiques et contre-révolution keynésienne*. Economica: Paris.
- Barrère, A. (1985). *Le projet keynésien*, in A.Barrère, *Keynes aujourd'hui*. Economica: Paris.
- Bellofiore, R. (2005), *The monetary aspects of the capitalist process in the Marxian system: an investigation from the point of view of the theory of the monetary circuit*", in Modeley F. (ed.) *Marx's Theory of Money: Modern Appraisals*. Basingstoke: Palgrave/Macmillan, pp. 124-139.
- Bellofiore, R., Forges Davanzati, G. and Realfonzo, R. (2000). *Marx inside the Circuit. Discipline Device, Wage Bargaining and Unemployment in a Sequential Monetary Economy*, "Review of Political Economy", vol. 12 (4).

---

"in the Hicks-Hansen model, banks and firms are [...] aggregated into one single sector" and the model "consequently ignores the interdependence between the IS and the LM lines". Note also that the movements of the interest rate – according to Keynes (1971, pp.335 ff.) – can depend on the lack of co-operation in the management of monetary policy on the international scale. He emphasises that, particularly in the case of fixed rates of exchange, "No national central bank which is a member of an international system, not even the Federal Reserve System of the United States, can expect to preserve the stability of its price level, if it is acting in isolation and is not assisted by a corresponding action on the part of the other central banks". Moreover, Keynes also takes the so-called "Gibson Paradox" into consideration, so that a rise in the interest rate generates inflationary pressures. In this vein, Graziani (2003, p.119) points out "High interest rates [...] might therefore be a source of inflation".

<sup>50</sup> Following Keynes, the decline in profits, involving a reduction of prices, should push the Central Bank to *reduce* the interest rate, in order to allow equality between investments and savings. In the logic of this model, this can happen in the ensuing production period, when the Central Bank has verified the reduction of investments. Moreover, as Keynes himself recognizes, the view that the Central Bank can fully control inflationary pressure – by controlling the dynamics of investments and savings - should be seen as a purely *theoretical* view. In actual fact, this does not happen because: i) investments are affected by uncertainty, so a necessary link is not in operation between the decline of the interest rate and the increase of investments; ii) commercial banks can set the interest rate independently of the base rate fixed by the Central Bank. This latter point is clearly stated by Keynes when he points out that, "at least in Great Britain", the credit market does not work according to the rules governing the functioning of competitive markets, and that credit rationing can be seen as a normal condition (see also Keynes, 1971, chapter 37).

- Blaug M. (1964). *Economic Theory in Retrospect*. London.
- Bronars, S.G. and Deere, D.R. (1991). *The threat of unionization, the use of debt and the preservation of shareholder value*, "Quarterly Journal of Business and Economics", vol. 106.
- Cardim de Carvalho, F.J. (2012). *Aggregate savings, finance and investment*, "Intervention", vol.9, n.2, pp.197-213.
- Cencini, A. (2008), *Elementi di macroeconomia monetaria*. Padova: Cedam.
- Chapman, B. and Keen, S. (2006), Hic rhodus, hic salta! Profits in a dynamic model of the monetary theory of production, "Storia del Pensiero Economico", n. 2, pp.137-154.
- Congdon, T. (2007). *Keynes, the Keynesians and Monetarism*. Cheltenham: Elgar.
- Docherty, P. (2005), *Money and employment*, Cheltenham: Elgar.
- Dupont, F. and Reus, E. (1989), *Le profit macroéconomique monétaire*, « Economie Appliquée », vol. 42, n. 1, pp. 87-114.
- Dutt, A.K. (2010), *Keynesian growth theory in the 21st century*, in P. Arestis, M. Sawyer (eds.), *21st century Keynesian Economics*, Macmillan, New York, pp. 39-80.
- Febrero, E. (2008), *The monetization of profits in a monetary circuit framework*, "Review of Political Economy", vol. 20, n. 1, pp. 111-125.
- Fontana, G. (2000). *PostKeynesian and circuitists on money and uncertainty: an attempt at generality*, "Journal of Post Keynesian Economics", Fall, vol.23, n.1, pp.27-48.
- Fontana, G. and Realfonzo, R. eds. (2005). *The monetary theory of production: Tradition and perspectives*. Houndmills: Palgrave.
- Fontana, G. (2009). *Money, uncertainty and time*. London: Routledge.
- Forges Davanzati, G. and Realfonzo, R. (2008). *Aggregate demand, social conflict and unemployment. Towards a continuist interpretation of Keynes*, in M. Caserta and S.Figuera (eds.), *Rileggere Keynes*, Giuffrè, Milano, pp.41-68.
- Forges Davanzati, G. and Pacella, A. (2008). *Minimum wage, credit rationing and unemployment in a monetary economy*, "European Journal of Economic and Social Systems", vol.XXII, n.1, pp.179-194.
- Forges Davanzati, G., Pacella, A. and Realfonzo, R. (2009a). *Fiscal policy in the monetary theory of production: An alternative to the "new consensus" approach*, *Journal of Post Keynesian Economics*, 31, 4, pp.605-621.
- Forges Davanzati, G. and Realfonzo, R. (2009b). *Money, capital turnover and the leisure class. Thorstein Veblen's tips for MTP models*, in J.F.Ponsot and S.Rossi (eds.), *The Political Economy of Monetary Circuits*, London: Palgrave, pp. 116-137.
- Forges Davanzati, G. and Pacella, A. (2010). *Emulation, indebtedness and income distribution. A monetary theory of production approach*, "Intervention – European Journal of Economics and Economic Policies", vol.7, n.1, pp. 145-165.
- Forges Davanzati, G. (2011a). *Income distribution and crisis in a Marxian schema of the monetary circuit*, "International Journal of Political Economy", vol.40, n.3, Fall, pp.33-49
- Forges Davanzati, G. (2011b). *Credito, produzione e occupazione: Marx e l'istituzionalismo*. Rome: Carocci.
- Forges Davanzati, G. and Patalano, R. (2011). *The equilibrium problem in the monetary circuit approach: A critical assessment*, "Rassegna Economica", LXXIV, n.1, pp.93-110.
- Forges Davanzati, G. and Pacella, A. (2013a). *Unemployment benefits, the 'added worker effect' and income distribution in a monetary economy*, University of Salento – mimeo.
- Forges Davanzati, G. and Pacella, A. (2013b). *Bank credit and the labour market in a Keynesian theoretical perspective*, University of Salento - mimeo.
- Forges Davanzati, G. and Pacella, A. (2013c). *The profits-investments puzzle: A Post Keynesian-Institutional interpretation*, "Structural Change and Economic Dynamics", forthcoming.
- Fumagalli, A. and Lucarelli, S. (2008). *Money and technological change. The role of financing in the process of evolution: An introduction*, "The European Journal of Economic and Social Systems", vol.21, n.2, pp.151-163.

- Graziani, A. (1983). *The debate on Keynes' finance motive*, "Economic Notes", n.1, pp.5-32
- Graziani, A. (1984). *Moneta senza crisi*, "Studi economici", n. 24, pp. 3-37.
- Graziani, A. (1988). *Le teorie del circuito e la Teoria generale di Keynes*, in M.Messori, (ed.) *Moneta e produzione*. Torino: Einaudi, pp. 95-115.
- Graziani, A. (1991), *Nuove interpretazioni dell'analisi monetaria di Keynes*", in J.Kregel, (ed.), *Nuove interpretazioni dell'analisi monetaria di Keynes*. Bologna: Il Mulino, pp. 15-42.
- Graziani, A. (1996), *Money as purchasing power and money as a stock of wealth in Keynesian economic thought*, in G.Deleplace, G. and E.Nell, (eds.) *Money in Motion. The Post- Keynesian and Circulation Approaches*. NewYork: Macmillan, pp. 200-238.
- Graziani, A. (2003). *The monetary theory of production*. Cambridge: Cambridge University Press.
- Hayes, M. (2007). *Keynes's Z function, heterogeneous output and marginal productivity*, "Cambridge Journal of Economics", vol.31, n.5, pp.741-753.
- Lavoie, M. Rodríguez, G. and Seccareccia, M. (2004). *Similitudes and discrepancies in Post Keynesian and Marxist theories of investment: A theoretical and empirical investigation*. "International Review of Applied Economics", 18 (2), pp.127-149
- Keynes, J.M. (1971 [1930]). *A treatise on money*. London: Macmillan.
- Keynes, J. M. (1973 [1936]) *The general theory of employment, interest, and money*. London: Macmillan.
- Keynes, J. M. (1971-89) *The collected writings of John Maynard Keynes*. 30 vols. Edited by D.E. Moggridge. London: Macmillan.
- King, J.E. eds. (2012). *The Elgar companion to PostKeynesian economics*, 2<sup>nd</sup> edition, Cheltenham: Elgar.
- Messori, M. and Zazzaro, A. (2005), *Single-period analysis: financial markets, firms' failure and closure of the monetary circuit*, in G. Fontana and R. Realfonzo (eds.), *The monetary theory of production*. Houndmills, Basingstoke, Hampshire, New York, Palgrave Macmillan.
- Myers, S. C. and Majluf, N. S. (1984). *Corporate financing and investment decisions when firms have information that investors do not have*. "Journal of Financial Economics" 13 (2), pp. 187–221.
- Moore, B. J. (1984). *Keynes and the endogeneity of the money stock*, "Studi economici", n. 22, pp. 23-69.
- Nell, E. (1996). *The circuit of money in a production economy*, in E.Nell and G.Delaplace (eds.), *Money in motion*. London: Macmillan.
- Nell, E. (2002), *On realizing profits in money*, "Review of Political Economy", XIV, 4, October, pp.519-530.
- Lavoie M. (1987), *Monnaie et production : une synthèse de la théorie du circuit*, Economies ed Sociétés, Série Monnaie e Production, n. 4.
- Marx, K. (1994 [1867]). *Capital*. Chicago: Encyclopedia Britannica.
- Michl, T.R. (2009). *Capitalists, workers and fiscal policy. A Classical model of growth and distribution*, Cambridge MA – London: Harvard University Press.
- Palley, T.I., (2007). *Financialization: What it is and why it matters*, "The Levy Economics Institute", working paper n.525.
- Parguez, A. (2007). *The monetary theory of unemployment and inflation or why there cannot be a trade-off between employment and inflation*. Paper presented at the Third International Post-Keynesian conference, Dijon, November.
- Patinkin, D. (1956). *Money, Interest and Prices*. Harper & Row: New York.
- Patinkin, D. (1987). *Keynes John Maynard*. The New Palgrave, London: Macmillan, vol. 3, pp. 19-41.
- Patinkin, D. (1990). *On different interpretations of the General Theory*, "Journal of Monetary Economics", 26, pp. 205 - 43.
- Poulon, F. (1982). *Macroéconomie approfondie*. Paris.

- Proaño, C.R., Flaschel, P., Krolzig, H-M and Diallo, M.B. (2011). *Monetary policy and macroeconomic stability under alternative demand regime*, “Cambridge Journal of Economics”, 35, 3, pp.569-585.
- Rasmkogler, P. (2007). *Uncertainty, market power and credit rationing*, Vienna University of Economics and Business Administration, w.p. n.105.
- Rochon, L. P. (2005), “The existence of monetary profits within the monetary circuit”, in G. Fontana and R. Realfonzo (eds.), *The monetary theory of production*, Houndmills, Basingstoke, Hampshire, New York, Palgrave Macmillan
- Rochon, L. P. and Rossi, S. (eds.) (2003), *Modern theories of money. The nature and role of money in capitalist economies*, Cheltenham, Elgar
- Schmitt, B. (1960), *La formation du pouvoir d'achat*. Paris: Sirey.
- Schmitt, B. (1986), *Introduzione a Ricardo. Scritti monetari*. Roma: Treccani.
- Seccareccia, M. (2004). *Aspects of a new conceptual integration of Keynes's Treatise on Money and the General Theory: Logical time units and macroeconomic price formation*, in R.Arena and N.Salvadori (eds.), *Money, credit and the role of the State. Essays in honour of Augusto Graziani*, Aldershot. Ashgate, ch.XVII.
- Smithin, J. (2013). *Keynes's theories on money and banking in the Treatise and The General Theory*, “Review of Keynesian Economics”, vol.1, n.2, summer, pp.242-256.
- Tily, G. (2011). *Keynes's monetary theory of interest*. BIS papers No 65.
- Tortorella Esposito, G. (2012). *La letteratura post-keynesiana. “Scuola di pensiero” o “tradizione di ricerca”?* . Bergamo: Sestante Edizioni.
- Zeza, G. (2004). *Some simple consistent models of the monetary circuit*. The Levy Economics Institute, wp No 405.
- Zeza, G (2012). *Godley and Graziani: stock-flow consistent monetary circuits*, in D.B. Papadimitriou and G. Zeza (eds.), *Contributions to Stock-Flow Modelling: Essays in Honor of Wynne Godley*, Palgrave Macmillan, Basingstoke, pp. 154- 172, 2012.