

# ЭКОНОМИЧЕСКАЯ ТЕОРИЯ

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## GOVERNMENT SPENDING AND ECONOMIC GROWTH

### 1. Introduction

This paper deals with one of the central remedies for the contemporary financial-economic crisis, i. e., the method of increasing government spending. This method is forcefully recommended in the economic literature and broadly implemented in real economics, at the last decade. However, in the paper, it will be argued that this method is incompatible and irrelevant for this goal in its current form due to the fact that it is based on two erroneous postulates: (1) Keynes's investment multiplier; and (2) the printing of fiat money as the main source for increasing government spending.

First, it will be shown that Keynes's multiplier's essence is not a multiplication but requirement, since (a) the Keynesian multiplier is based on the substitution of the cause (the national income) for the effect (investment), and (b) Keynes's "multiplier" is the inverse of the marginal propensity to invest.

This has occurred because neither Keynes and nor his followers have proposed a clear distinction between (a) phases of the investment process; and (b) sources of the increase of the investment. The whole process of investment generally consists of two phases. The first phase when investment is created; this is, investment (saving) is determinate; and therefore, the causal relation here moves from income to investment. This is when the increment in income causes an increment in investment. While the inverse relation means that in order to increase investment an analogous increment of income is required. In the second phase, investment is transformed into fixed capital and produces income in combination with other services (labour, land, money) and technology. So, in this phase, fixed capital (investment) is the determinant; and thus, the causal relation here moves from fixed capital to income. An increase of fixed capital causes an increment of income; while the inverse relation is equal to the next requirement: in order to increase income an increment of fixed capital is required.

The character of the process of investment depends on the type of the source of its increment. The founders of the concept of multiplier (Kahn, 1931; Keynes, 1936) considered two sources of investment increasing: endogenous, and exogenous: domestic (financial system) and foreign (government and financial system); whilst, modern economists, especially the school of New Keynesians, also consider a third source — the printing of money.

Second, both, Kahn and Keynes (and especially the first), the founders of multiplier concept, rejected the notion of printing money as a further source for the increasing of government spending.

Finally, massive flowing of paper money into the market neutralizes money as a central factor of the market mechanism, which, in turn, negatively influences on the effectiveness of the government spending, and consequently on the growth of economics.

Modern authors have accepted Keynes's version of the multiplier without any reservation and have extended it by two additional multipliers: government purchases (spending) multiplier and taxes multiplier. The majority of works (papers) on the subject, in the last twenty years, revolves around the issue of the size of the multiplier, whilst the problem of the legitimacy of the multiplier itself did not emerge in them at all. Moreover, the models that are employed by modern economists (Ramey; Woodford; Christiano, et al.; Romer and Bernstein; and Cogan and Taylor) to estimate the effectiveness of the government spending are ill-assorted and conflicting with the real facts due to their unrealistic assumptions.

The paper consists of four sections. Following the introduction, the second section, first, describes two phases of the whole process investment and the sources of investment increasing, and then we would present Keynes's definition of the multiplier and its genuine meaning. The third section considers, first, two additional multipliers: government purchases (spending) multiplier and taxes multiplier; and then, its modern versions. Finally, the fourth section deals with the modern theory of money, of followed by conclusions.

## 2. Multiplier

The multiplier is one of the main tools for establishing a relationship between income, investment, consumption and employment as developed by Keynes in his *The General Theory*. Since its very first appearance, the attitude of economists towards the multiplier has been ambiguous. One group of economists state that the Keynesian multiplier is a new paradigm in economic theory (Blaug, Bйnassy, Klein, Pasinetti, and Trevithick). But at the same time, there were economists who indicated doubt regarding the multiplier (Robertson); another group of economists posed serious suspicion regarding to the multiplier's validity (Ahiakpor, Hazlitt, and Stoddard). There are authors who considered multiplier as a dynamic process (Goodwin, Hansen, and Pasinetti) and V. Chick claims that Keynes's multiplier has two views: equilibrium and dynamic (Chick). Many arguments were raised against it, such as: the multiplier is severely static (Schumpeter, Robinson), unrealistic, and characterized by instability, and so forth. Keynes's followers have been attempting to "improve" the multiplier theory and one of central arguments, often used by them, is that the multiplier has rests on a solid mathematical foundation (Minsky). Moreover, two additional multipliers also considered: government purchases (spending) and taxes (vide infra).

Furthermore, It is necessary to stress that Keynes himself in the letter to Beveridge claimed that *The theory of the multiplier*. You write here as though this was a matter on which I had only dogmatized and not discussed. But not only have I given a long chapter expressly to this subject, but about half the book is really about it' (Keynes, 1973, p. 57).

### 2.1. Investment (Saving) as Determinate and Fixed Capital (Investment) as Determinant

One of the main conditions of general equilibrium, since Walras, is the balance between the national income (in prices of services (primary factors)) and the national product (in prices of commodities):

$$\sum_{j=1}^n \pi_j D_j + \sum_{j=1}^{n+S} \pi_j D_{j'} + \sum_{k=1}^K P_k D_k = \sum_{i=1}^m p_i O_i + \sum_{j=1}^{n+S+1} \pi_j O_{j'}, \quad (2.1)$$

where  $p_i$  — is equilibrium price of service  $i$  (land, fixed capital, and labour);  $O_i$  — is equilibrium employed quantity of service  $i$  and  $O_i \leq Q_0$  (available quantity);  $O_j$  — is equilibrium employed quantity of circulation capital goods  $j$ , and  $O_j \leq Q_0$  (available quantity; included raw materials  $S$ , for which  $O_s = Q_0$ ; and money for circulation);  $\pi_j$  — is equilibrium price of commodity  $j$ ;  $\pi_j$  — is equilibrium price of circulation capital good  $j$ ;  $D_k$  — is equilibrium quantities of new capital goods (investment).  $D_j$  — is equilibrium quantities of commodity  $j$  for consumption; and new capital goods (investment);  $D_j$  — is equilibrium quantities of circulation capital goods  $j$ ; and raw materials for circulation.

The left side expression of (2.1) is the National Product (used income)  $Y_\pi$  in commodities prices and in the close economy it is generally divided into two components: commodities for consumption ( $C^d$ ) (individual and publish) and investment ( $I$ ). The right side expression is National Income (produced income)  $Y_p$  in factors' (services') prices  $Y_p$  and it is also divided into two components: spending for consumption ( $C^d$ ) and saving ( $S$ ). Therefore, by the employment of the existence services the national income is created (produced), which is spending on the commodities for consumption and investment. So, in the equilibrium:

$$Y_p = \sum_{i=1}^m p_i O_i = C^d + S, \quad (2.2)$$

$$Y = \sum_{j=1}^n \pi_j D_j = C^d + I, \quad (2.3)$$

$$Y_p = Y_\pi \text{ and } C^d + S = C^d + I, \text{ therefore } S = I, \quad (2.4)$$

Equation (2.4) indicates that in the presence of equilibrium saving is equal to investment. However, individuals who save differ from those individuals who invest, and hence saving may differ from investment. Therefore, in order to establish equilibrium, saving must be equalized to investment; a task to be accomplished by the manipulation of interest rate. This means that, for the period in question, the investment is yielded from the national income, as it produced by the basis of existing services, included fixed capital.

It must be emphasized that Keynes's conditions (equations) of equilibrium is incomplete and even incorrect (see Keynes, 1936); however, despite of this, let us assume that these equations are correct for the establishment of equilibrium state; an assumption which would allow us to discuss Keynes's multiplier.

In addition, must be also emphasized that the Classical (and Walras's) approach and Keynes's approach, in equilibrium state there might be unemployed services — in Walras's case — voluntary unemployment, and in Keynes's case — involuntary unemployment (Davar, 1994, 2002a; 2002b). Despite of that Keynes's macro model did not enable to treatment at not only involuntary unemployment but also unemployment at all.

One of the central statements of Keynes's *General Theory* is that 'Thus the traditional analysis is faulty because it has failed to isolate correctly the independent variables of the system. Saving and Investment are the determinates of the system, not the determinants. They are the twin results of the system's determinants, namely, the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest' (Keynes, 1936, p. 183—184). This is a very important statement, but Keynes undermines it in the multiplier theory, where investment becomes a determinant in the same phase of the whole process of investment (vide infra).

The above-mentioned claim enables us to make clear whether new capital goods (investment), as produced in a certain period (year), are transformed into services

(fixed capital) either in the year question or the next year. Conveniently, it is assumed that new capital goods which are produced during a certain year turns into services for the next year. One of the central assumptions of Keynes' analysis is 'the existing quality and quantity of available equipment, the existing technique,' (Keynes, 1936, p. 245). This means that new capital goods are not involved in the creation (production) of the national income in the year of their production. So in this case there is no direct connection between investment and the creation of national income. There is a connection between them in such a way as to produce new capital goods (invest), which, in turn, create an analogous national income. This is the first phase of the whole process of investment, i. e. when investment is created; therefore, in this phase, investment (saving) is determinate; and therefore, the causal relation here moves from income to investment. This is when the increment in income causes an increment in investment. While the inverse relation means that in order to increase investment an analogous increment of income is required (*vide infra*).

In the second phase, investment is transformed into fixed capital and produces income in combination with other services (labour, land, money) and technology. So, in this phase, fixed capital (investment) is the determinant; and thus, the causal relation here moves from fixed capital to income. An increase of fixed capital causes an increment of income; while the inverse relation is equal to the next requirement: in order to increase income an increment of fixed capital is required. It must be emphasized that the second phase of the process is characterized by the cumulative process; it is the case because: first, the new investment (fixed capital), in general, functions during several years; second, in each year, new additional income is also used for additional consumption and investment.

If we take into account these assumptions, we can conclude that the investment process, according to Keynes's approach, relates only to the first phase.

## 2.2. Sources of Investment's Increment

The character of the process of investment depends on the type of the source of its increment. The founders of the concept of multiplier (Kahn and Keynes) considered two sources of investment increasing: endogenous, and exogenous: domestic (financial system) and foreign (government and financial system). Whilst modern economists, especially the school of New Keynesian, also consider a third source — the printing of money (*vide infra*).

Keynes wrote (Keynes, 1936, p. 64) 'Assuming that the decisions to invest become effective, they must in doing so either curtail consumption or expand income. Thus the act of investment in itself cannot help causing the residual or margin, which we call saving, to increase by a corresponding amount' (Keynes, 1936, p. 64). This in mind, and on the basis of careful analysis (2.3) we can conclude that there are three possibilities for investment increasing: 1) when the value of consumption is decreased and income does not change; 2) value of the consumption is constant (no change) and investment increase by the increase income; 3) both, consumption and investment, are increased by increasing income, either they are increased with variable marginal (average) propensity to consume (Keynes, 1936, p. 114, see also Hawtrey, 1937, p. 179n) or they are increased by constant marginal (average) propensity to consume.

So, an increment of either consumption or investment or the increment of both stipulates an increment in national (produced) income of the same magnitude, and vice versa. In other words, the increment in investment or consumption must be financed by an equivalent increment in national income (increment by the additional employed services). In addition, the increment in investment must be equal to the increment in terms of saving. The relationship between consumption and investment (marginal-aver-

age propensity to consume) does not influence on this conclusion. The latter influence only on the magnitude of the increase in income (*vide infra*). So, we can conclude that in all cases where the increment in investment (income) is a result of endogenous sources, the magnitude of the increment of national product (used income) is equal to the magnitude of national income (Negishi, 1979, p. 182; Samuelson, 1948; 1974; Salant, 1974 (1942; 1964); Haavelmo, 1943; Turvey, 1953). In other words, when the source of the increment of the investment is an endogenous, then the new investment is not involved in the process of producing additional income; it will be involved only in the production of the next year income, when it is transformed into fixed capital.

The second source for increasing investment — exogenous — means that the increment is obtained by means of borrowing from either domestic sources (banks and other similar institutions) or foreign sources (governments and banks), or from both of them together. In the case of exogenous increment of investment, the calculation of the national income, which is created by the additional investment is generally divided into two stages: (1) first, when it is still identified with the endogenous source; (2) second, because of this, i. e., because the source of incrementing the investment is exogenous in the specific year of the investment, additional national income is produced in the industries in which the capital products were initially produced; and the value of income created is equal to the value of investment minus the intermediate input of goods for the production of investment goods. Accordingly, the additional produced income has not been used to finance consumption and investment in the question year as in the previous case; and when it is “free”, it might be used for the new additional purchase of commodities for consumption and investment. Thus, this additional income is divided between consumption and investment in accordance with the marginal (average) propensity to consume (save), on the one hand, and the production of additional income from the next year, on the one other hand.

There is one additional attribute, namely, the question of the efficiency of borrowing and the problem of loan repayment; i. e., in order to calculate the total value of additional income by means of the new investment by the exogenous source, it is necessary to reduce the value of the investment (calculated according to time of return) from the produced income in question.

Regarding the issue of money printing as the source of investment increasing, it should be noted, time and again, that it was absolutely rejected by the founders of the concept of multiplier: ‘There was no reason why additional expenditure on public works needed to be financed by the creation of additional money as against borrowing from the public. ... The increase of employment was not the result of an increasing quantity of money’ (Kahn, 1984, p.104).

### 2.3 The Multiplier of Keynes

The main argument of Keynes’s theory is that ‘when the genuine income of the community increases or decreases, its consumption will increase or decrease but not so fast’ (Keynes, 1936, p. 114). From this we can conclude that income is equivalent to the cause and consumption, as well as the saving (investment), is equivalent to effect.

Keynes continues ‘For  $\Delta Y_w = \Delta C_w + \Delta I_w$ , where  $\Delta C_w$  and  $\Delta I_w$  are the increments of consumption and investment; so that we can write  $\Delta C_w = k\Delta I_w$ , where  $1 - 1/k$  is equal to the marginal propensity to consume.

Let us call  $k$  the investment multiplier. It tells us that, when there is an increment of aggregate investment, income will increase by an amount which is  $k$  times the increment of investment’ (Ibid, p. 115).

Here, Keynes made two incorrect suppositions. First, income and investment have been replaced; investment now becomes the cause and income the effect (Hazlitt, 1959,

p. 139, Stoddard, 2010). Moreover, investment is determinant, which is opposite Keynes's statement "Saving and Investment are determinates", in the first phase of the whole investment process which Keynes considered. However, the theory of causality teaches that such a replacement is generally incorrect and yields inadequate results.

Fortunately, such replacement may also be interpreted in a backward (reverse) direction. Namely, in order that the effect (investment) would occur, it is required (necessary and sufficient condition) that the cause (national income) would be occurred before. It is necessary to emphasize that this does not mean that the effect (investment) churns out the cause (national income); i. e., there is no replacement between the cause and the effect; it is simply the fact that in the case when the causal nexus is known, the backward causality allows us to determine the required cause in order that certain effect would be produced.

Second, Keynes's "multiplier" is only a psychological phenomenon while the basic component — production — is omitted. Hence, we can conclude that  $k$  cannot be the multiplier.

On the other hand, Keynes's assumption the relationship between marginal propensity to consume and marginal propensity to save is expressed as

$$c + i = 1 \quad \text{or} \quad c = 1 - i \quad \text{or} \quad i = 1 - c, \quad (2.5)$$

where  $c$  — is the marginal propensity to consume and  $i$  — is the marginal propensity to save (invest).

Substituting the latter into Keynes's formula, we obtain

$$\Delta Y_w = \Delta C_w + \Delta I_w = c\Delta Y_w + \Delta I_w$$

and

$$\Delta Y_w = 1/(1 - c)\Delta I_w = 1/i\Delta I_w = k\Delta I_w. \quad (2.6)$$

From this we can conclude that Keynes's "multiplier" is the inverse of the marginal propensity to invest (Ahiakpor, 2001, p. 746; Hawtrey, 1937, p. 179; Patinkin, 1978, p. 323). This means that the rate of the multiplier depends on the marginal propensity to invest and the lower the latter, the higher the multiplier. For example, if the marginal propensity to invest is 0.1 then the rate of multiplier is 10, and if the first is 0.05, than the latter are 20. Consequently, *to increase income is it better to consume than to save. So individuals were encouraged to spend on consumption and not save.* Therefore, for the last twenty years the average propensity to invest in USA was decreased and reached 0.04 which means that the multiplier rate must be 25.

On the other hand, the inverse of the marginal propensity to invest indicates *the required quantities of income* for a unit of investment, when the marginal propensity of both does not change. This result is compatible with the result of the backward (reverse) causality in the determination of the investment multiplier (vide supra). Therefore, the genuine meaning of Keynes's multiplier is tantamount to a *requirement*, and not to a multiplication. Hence, the *requirement* indicates on the required quantity of national income for the realization of one unit of investment (saving) when the marginal propensity to consume is constant: 'The multiplier tells us by how much their employment has to be increased to yield an increase in real income sufficient to induce them to do the necessary extra saving, and is a function of their psychological propensities' (Keynes, 1936, p. 117; see also Hicks, 1937). This means that an increase in consumption is not caused by the income that a new investment entails; except of an increase in investment and consumption which is produced by the income yields, by means of the available unemployed services (fixed capital and labor). Keynes's following statement explicitly expresses this kind of interpretation to the multiplier: 'According to the multiplier theory, there is an arithmetical relation between the level of consumption and the level of net investment, so that, other things being equal (i. e. nothing occurred to change the

value of multiplier) consumption and net investment rise and fall in the *same* proportion' (Keynes, 1973). It is amazing that authors such as Keynes, Harrod, Hicks, and Samuelson termed it as a 'multiplier', which has to be source of multiplication, but actually meaning requirement!

According to such interpretation, using Keynes's example again, in order to increase the investment by one, the income is required to increase by 10, where 9 units will be allocated to an increase in consumption. It must be stressed that the corresponding increase of income might not be possible at all, because of the limitations of unemployed services: labor, fixed capital, scarce raw materials, and so on (Hicks, 1974).

Keynes's followers have been trying to vindicate the 'multiplier' and therefore, have been considered successive-period (lagged or dynamic) multiplier according to Kahn, in parallel with his instantaneous (static) version (Klein, 1952; Pasinetti, 1974). However, there are two crucial differences between them. First, Keynes discussed closed economy where the source of the investment is the national income, while Kahn considered open economy where the borrowing is the source of the investment increment. Second, in the latter case, to calculate net multiplier it is necessary to reduce the amount of repayment for borrowing from yielding increasing income.

Post-Keynes economists have extended the multiplier conception and introduced, firstly, government purchases (spending) multiplier, when modern authors even favorably dwell upon the option of taxes multiplier.

### 3. Modern Versions of the Multiplier

#### 3.1. Government Spending (Purchase) and Tax Multipliers

Modern authors have accepted Keynes's version of the multiplier conception without any reservation and have extended it by two additional multipliers: government purchases (spending) multiplier and taxes multiplier.

Let us to consider Mankiw's version of determination of these two multipliers, providing its dominance in contemporary macroeconomics literature (not only in the text books, see Ramey; and Romer & Berstein). Mankiw determines the government-purchase multiplier as 'The ratio  $\Delta Y/\Delta G$  is called the government-purchase multiplier; it tells us how much income rises in response to a \$1 increase in government purchases. An implication of the Keynesian cross is that the government-purchase multiplier is larger than 1' (Mankiw, 2010, p. 292). To tell the truth, according to the above interpretation of the multiplier (see previous section), this expression has to be written as 'The ratio  $\Delta Y/\Delta G$  is called the government-purchase *requirement*; it tells us how much income *must* rise in order to increase government purchases by \$1. An implication of the Keynesian cross is that the government-purchase *requirement* is larger than 1'.

Mankiw writes (Mankiw, 2010, p. 290): 'Now consider the determinants of planned expenditure. Assuming that the economy is closed, so that net exports are zero, we were planned expenditure  $PE$  as the sum of consumption  $C$ , planned investment  $I$ , and government purchases  $G$ :

$$PE = C + I + G. \quad (3.1)$$

In equilibrium condition ( $PE = Y$ ) assuming that  $I$  is fixed then

$$\Delta Y/\Delta G = 1/(1 - MPC^Y). \quad (3.2)$$

Where  $MPC^Y$  is the marginal propensity to consume, which is related to the national income, the differentiation from the marginal propensity to consume is related to the disposable income noted as  $MPC^{DY}$  (vide infra). So, government-purchase multiplier is the determinacy of the investment multiplier and they are equal, and therefore, its essence is the same (vide intra).

He continues: ‘Why does fiscal policy have a multiplied effect on income? The reason is that. According to the consumption function  $C = C(Y - T)$ , higher income causes higher consumption. When an increase in government purchases raise income, it also raises consumption, which further raises income, which further raises consumption, and so on. Therefore, in this model, an increase in government purchases causes a greater increase in income’ (Ibid, p. 293).

There, Mankiw makes two fallacious postulates: (1) the process of “multiplication” in the considered case was discussed by Mankiw, like the majority of other post-Keynes’s economists, as a cumulative (dynamic) process; while Keynes himself considered it as an instantaneous (timeless) process: ‘I have found, however, in discussion that this obvious fact often gives rise to some confusion between the logical theory of the multiplier, which holds good continuously, without time-lag, at all moments of time, and the consequences of an expansion in the capital-goods industries which take gradual effect, subject to time-lag and only after an interval’ (Keynes, 1973, p. 122–123); (2) In order that an increase in government purchases would occur a greater increase in income is required, but not ‘an increase in government purchases causes a greater increase in income’, as Mankiw has asserted. In the following Mankiw describes the process of deriving of calculation of the multiplier and states (Ibid, p. 294): ‘A result from algebra allows us to write the multiplier as

$$\Delta Y/\Delta G = 1/(1 - MPC). \quad (3.3)$$

And in *Mathematical note 3* he added: ‘The government-purchases multiplier is most easily derived using a little calculus

$$Y = C(Y - T) + I + G. \quad (3.4)$$

Holding  $T$  and  $I$  fixed, differentiate to obtain

$$dY = C'dY + dG, \quad (3.5)$$

and then rearrange to find

$$dY/dG = 1/(1 - C'). \quad (3.6)$$

This is the same as the equation in the text’ (note 3, p. 294).

In the closed economy, specifically in the equilibrium state of  $T = G$  (see Benassy), and even in the open economy, taxes stay the main source of the government spending; therefore, assuming that “holding  $T$  is fixed” without assuming simultaneously that  $G$  is also fixed is to assume an unrealistic assumption in terms of closed economy, which, as a result, may yield inadequate results (vide infra); this is the case because the distortion of the balance between them means that the economy is transformed from the closed economy into the open economy where the rules appear to differ. It must be clarify that cutting taxes here means cutting of the total (absolute) taxes and not of the rate of the individual (on commodities and on services) taxes; and that because the cutting of the rate of the individual taxes may be compensated either by the growth of the income or by the improvement of the taxes collection, or both (see Mankiw, 2010, p. 296). Hence, in this condition, the first equation may be rewritten as

$$Y = C(Y - G) + I + G. \quad (3.7)$$

Then differentiate to obtain

$$dY = C'dY - C'dG + dG, \quad (3.8)$$

and then rearrange to find

$$dY(1 - C') = dG(1 - C')$$

and

$$dY/dG = 1. \quad (3.9)$$

So, it is obtain that the multiplier is equal to 1, but not  $1/(1 - C')$ , which, generally, is large than 1. Moreover, using of the disposable income for calculation of the multiplier is questionable; for example, as it was mentioned above, the average *MPC* relation to the disposable income the last years in US equal 0.04; therefore, the magnitude of the multiplier must be equal to 25!

As regards to tax multiplier Mankiw writes: ‘A decrease in taxes of  $\Delta T$  immediately raises disposable income  $Y - T$  by  $\Delta T$  and, therefore, increases consumption by  $MPC \times \Delta T$  for any given level of income, planned expenditure is now higher’ (Ibid, p. 294). Mankiw, once again, forgot to consider the aspect of closed economy, namely, that simultaneously with decrease in taxes, there is also a decrease in the same magnitude in terms of government purchases. Mankiw continues: ‘Just as an increase in government purchases has a multiplied effect income, so does a decrease in taxes. As, before, the initial change in expenditure, now  $MPC \times \Delta T$ , is multiplied by  $1/(1 - MPC)$ . The overall effect on income of the change in taxes is

$$\Delta Y/\Delta T = -MPC/(1 - MPC). \quad (3.10)$$

This expression is the *tax multiplier*, the amount income changes in response to a \$1 change in taxes. (The negative sign indicates that income moves in the opposite directions from taxes.) For example, if the marginal propensity to consume is 0.6, then the tax multiplier is

$$\Delta Y/\Delta T = -0.6(1 - 0.6) = -1.5. \quad (3.11)$$

In this example, a \$1.00 cut in taxes raises equilibrium income by \$1.50’ (Ibid, p. 295). For justifying his ‘strange’ result, Mankiw, in a mathematical note employs the above equation (3.4), but this time, when he assumes that ‘Holding  $I$  and  $G$  fixed’, he makes the same mistake; i. e., changing taxes without changing government expenditure in the closed economy. However, if we take into account the well-established claim that the cutting of taxes in a closed economy decreases also the government purchases in the same magnitude, then, according to Mankiw’s government-purchases multiplier the income must be decreased by \$2.50 for each \$1.00 cutting of taxes. On the other hand, according to Mankiw’s tax multiplier, a \$1.00 cut in taxes raises equilibrium income by \$1.50. So, to sum up, a \$1.00 cut in taxes decreases the income in \$1.00. This result is compatible with the above calculation (see 3.9).

### 3.2. Modern Version of the Multiplier

The majority of works (papers) on the multiplier, in the last twenty years, revolves around the issue of the size of the multiplier, whilst the problem of the legitimacy of the multiplier itself did not emerge in them at all. Recently, the *Journal of Economic Literature* organized a symposium on the subject ‘What is the Size of the Multiplier?’ Ramey asserts that (Ramey, 2011, p. 1) ‘I will conclude that the U.S. aggregate multiplier for a *temporary, deficit-financed* increase in government *purchases* (that enter separately in the utility function and have no direct effect on private sector production functions) is probably between 0.8 and 1.5. Reasonable people can argue, however, that the data do not reject 0.5 or 2’ (Ramey, 2011, p. 1).

At the same time Ramey states ‘The basic idea of the multiplier is illustrated in the so-called “Keynesian Cross Diagram” that is the staple of undergraduate macroeconomics. If interest rates are held constant, then the multiplier for government spending is given by  $1/(1 - mpc)$  and for taxes is given by  $-mpc/(1 - mpc)$ , where *mpc* is the marginal propensity to consume. Allowing for open economy considerations (i. e. a marginal propensity to import) or rises in interest rates lowers the multiplier, whereas allowing for accelerator effects in investment can raise the multiplier. Even in extended models, the size of the multiplier is intimately linked to the marginal propensity to consume’ (Ibid,

p. 5). These results of Ramey significantly differ from the real facts, where the rate of the multiplier, according to Keynes's determination, is 25 (vide supra).

Moreover, the models used for the evaluation of the multiplier's size are based on the additional unrealistic assumptions which rather make them incompatible and irrelevant.

Let us list the common and yet quite unrealistic assumptions characterizing these models: 1. Representative consumer; 2. Representative firm; 3. Infinite-lived households; 4. Constant discount factor; 5. Single produced good; 6. Fiat (paper) money is only used. If we take into account also specific unrealistic assumptions characterizing each particular model (vide infra), it is clear that the use of the results of such models for practical recommendations (like the authors of these researches tend to do), is doubtful at best.

It must be emphasized that some scholars understand that their models are simple, but they do believe that they are realistic nonetheless; therefore, they too have recommended the use of results for policy making. For example, Woodford first characterized the use of models as 'Much public discussion of this issue has been based on old-fashioned models (both Keynesian and anti-Keynesian) that take little account of the role of intertemporal optimization and expectations in the determination of aggregate economic activity. The present paper instead reviews the implications for this question of the kind of New Keynesian DSGE models that are now commonly used in monetary policy analysis. It focuses on one specific question of current interest: the determinants of the size of the effect on aggregate output of an increase in government purchases, or what has been known since Keynes (1936) as the government expenditure "multiplier"; then states that 'These models are too simple to be taken seriously as the basis for quantitative estimates of the effects of some actually contemplated policy change; nonetheless, I believe that the mechanisms displayed in these simple examples explain many of the numerical results obtained by a variety of recent authors in the context of empirical New Keynesian DSGE models, and the simpler analysis here may be of pedagogical value' (Woodford, 2011, p. 1). However, in the conclusions he writes: 'We may summarize our conclusions as follows. Under circumstances like those of a Great Depression — that is, when a disturbance to the financial sector results in insufficient aggregate demand even with the central bank's policy rate at the lower bound of zero, and when there is feared to be a substantial probability of the constraint continuing to bind for years to come standard models of the kind widely used in analyses of monetary stabilization policy imply that the government expenditure multiplier should be larger than one, and may be well above one' (Ibid, p. 40).

In addition, we must stress that so-called "harmless" assumptions, when they are unrealistic to such an extent, map these models quite irrelevant indeed. For example, the assumption of "Single produced good" enables us to introduce the government spending into a utility function of representative consumer (see Woodford; Christiano, et al.; and Ramey). First, the government spending does not have a direct utility, only an indirect one, because its measurement is made in money terms; second, observe that, in practice, the government spending influences the utility function only indirectly, by means of goods and services which individuals would purchase by their new wages, after their return to labor market. Yet, the assumption of "Infinite-lived households" makes the treatment of employment-unemployment quite problematic indeed.

The authors of the paper 'When is the Government Spending Multiplier Large?' state in the abstract that: 'We argue that the government-spending multiplier can be much larger than one when the zero lower bound on the nominal interest rate binds. The larger is the fraction of government spending that occurs while the nominal interest rate is zero, the larger is the value of the multiplier. After providing intuition for these results, we investigate the size of the multiplier in a dynamic, stochastic, general equi-

librium model. In this model the multiplier effect is substantially larger than one when the zero bound binds. Our model is consistent with the behavior of key macro aggregates during the recent financial crisis' (p. 1). Despite of that, the main model here is based on DSGE, which is characterized by all the above-mentioned assumptions, sadly the unrealistic assumptions (Sollow). Especially, the absence of the land capital, construction industry, and the financial sector (money) is crucial, if we take into account the specific character of the contemporary financial-economic crisis. Moreover, there are some other unrealistic definitions and assumptions. For example, the production functions of the final goods include only intermediate good, without production's factors. Yet, in page 11, the authors write that 'using the fact that  $N_t = Y_t'$ '; it may be that from the point of mathematics, this expression is correct, but from the point of economics it is incorrect, because, in the page 8 they write that ' $N_t$  denote hours worked' and little below 'the final good ( $Y_t$ )', so the above expression means that 'hours = good'; however, from the point of economics, this is impermissible.

One of crucial sources of the government purchasing — taxation is considered as deficient 'The analyses above have for simplicity assumed lump-sum taxation. This is clearly unrealistic, but because there is no necessary connection between a path of government purchases and the path of distorting taxes (of various types) used to finance it, a full analysis of the complications raised by taking into account tax distortions is not possible here' (Woodford, 2011, p. 38). Therefore, modern authors (especially Americans) recommending us to print money as one of the main sources for government purchasing.

First, it must be emphasized that the founders of the multiplier concept, especially Kahn, definitely rejected using the method of printing money as a source of the government purchasing (vide supra). Second, there are economists who assert that the effectiveness of the money flowing is much more small than it is evaluated by its recommenders: 'The debate about the American Recovery and Reinvestment Act of 2009 (ARRA) has been accompanied by a surge of research on the size of the government purchases multiplier. In January 2009, Romer and Bernsten (2009) released a paper showing that the multiplier was large and that the stimulus package would have a large effect. Then, in February, Cogan, Cwik, Taylor, and Wieland (2009) responded with a paper arguing that the models used by Romer and Bernstein (2009) were not representative of modern research, and that if one used so-called new Keynesian rather than old Keynesian models, the multiplier was much smaller; they illustrated their results by evaluating ARRA with a representative modern model' (Cogan, Taylor, 2009, p. 2).

Moreover, they concluded that the printing of money as a source of the government purchasing is doubtful: 'Third the findings raise questions about the feasibility of such countercyclical stimulus programs. In the federal system, the states and localities make decisions about their own government purchases and the federal government has only limited ability to affect these decisions in particular ways, especially over a short period of time when money is fungible and the timing of projects can be postponed or grants can substitute for capital borrowing. The implication is not that the stimulus program was too small, but rather that such programs are inherently limited by these feasibility constraints' (Ibid, p. 23).

More importantly, such a massive flowing of fiat money at the market, as it happens in America, neutralizes definitively money as a key factor of market mechanism; since previously the money commodity, serving as a measure of value, in exchange and as a store, was neutralized when it was replaced by fiat money. Hence, it is not surprising that the rate of interest is close to zero for a rather long time. In this connection, it is very interesting to note that one of the main results of the modern authors' research, that 'A large multiplier is especially plausible when monetary policy is constrained by the zero lower bound on nominal interest rates; in such a case, expected utility is maximized by expanding government purchases to at least partially fill the output gap that

would otherwise exist owing to the central bank's inability to cut interest rates. However, it is important in such a case that neither the increased government purchases nor the increased taxes required to finance them be expected to persist beyond the period over which monetary policy is constrained by the zero lower bound' (Woodford, 2011, p. 1). In such situation, it is not surprising that the money multiplier, one of the central tools of modern macroeconomics, in addition for not being used, is not even mentioned; rather surprisingly vanishes away from the scene.

Finally, the modern general equilibrium theory (MGET) is a basis for DSGE's models; however, MGET itself is irrelevant to the reality (Davar, 1994; 2011).

To sum up, Keynes's investment multiplier and its modern variants cannot serve as any basis for the practical recommendations, and of course does not facilitate economic growth. For this purpose, the comprehensive multiplier theory is required, which will be compatible with the second phase of the investment process, when fixed capital (investment) is determinant (the cause), and where the source of an additional increment of investment might be either endogenous or exogenous; also, it will be based not only on a psychological explanation like Keynes's multiplier, but also on an economic and technologic phenomena; and finally, the rate of multiplier will be calculated by means of a cumulative process.

#### 4. Modern Money Theory

Classics (Smith, Marx) and Walras considered money theory as a central and non-separate from economic theory and have discussed their reciprocal influence. Yet, they distinguished between the functions of money and money as a service. Money has the following functions: 1) measure of value; 2) medium of exchange; 3) a store of value; and 4) it is used as world money. These functions of money are carried out by the money commodity (*numéraire*). Fiat (paper) money, however, has to be used for circulation. This means that, they considered two types of money: money as a medium of exchange, a measure of value and store of value where the money commodity (*numéraire*) has to be served and money for circulation where either the money commodity (*numéraire*) or fiat money might be served. Thus, there are two different prices for the money commodity: (a) when money commodity is used as a measure of value its price equal to one; (b) when money commodity is used in circulation its price equal to the rate of interest.

Classics also postulated that the quantity of fiat money must be regularized by the quantity of the money commodity. Smith has stated repeatedly that 'The whole paper money of every kind which can easily circulate in any country never can exceed the value of the gold and silver, of which it supplies the place, or which (the commerce being supposed the same) would circulate there, if there was no paper money' and 'the paper money, which they had circulated by his means, had not at any time exceeded the quantity of gold and silver which would have circulated in the country, had there been no paper money' (Smith, 1937, p. 284, 290, respectively). Marx went further and raised this postulate in the Level of the law. He wrote: 'In so far as they actually take the place of gold to the same amount, their movement is subject to the laws that regulate the currency of money itself. A law peculiar to the circulation of paper money can spring up only from the proportion in which that paper money represents gold. Such a law exists; stated simply, it is as follows: the issue of paper money must not exceed in amount the gold (or silver as the case may be) which would actually circulate if not replaced by symbols' (Marx).

From the seventies, unfortunately, the majority of countries of the world used a fiat money as standard money; fiat money replaced the money commodity and had to fulfill all four functions of money. But this is opposite with the above principal statement of classical money theory, that only money commodity have to serve as a measure of

value, and fiat money has to be used for circulation. It must be stressed that the money theory of Keynes played a significant role in the process of replacing commodity money by fiat (paper) money.

The money theory is an anchor of Keynes's economic theory and his main contribution; and the source of '*Keynesian Revolution*'. However, Keynes was not the first who suggested government intervention. Walras stated that in real economics where distorted equilibrium conditions persist, the State should intervene by regulating wages, prices and the quantity of money (Walras, 2005, p. 372—373).

Meanwhile, Keynes's money theory is incomplete and even incorrect. Keynes merged the transaction-motive, which already represents a combination of the income-motive and the business-motive, with precautionary-motive. This eliminates the difference between two types of money: money as a medium of exchange, a measure of value and a store of value (the money commodity — *numéraire*) and money for circulation (the money commodity — *numéraire*, or fiat money), and therefore, consequently, the difference between two various prices for money commodity are also eliminated.

Theoretical and practical backgrounds for that process, unfortunately, were not properly discussed. Friedman, the guru of monetarism and Nobel Prize laureate and Schwartz wrote "Unfortunately, there are currently legal obstacles to any developments that would enable gold to be used not only as a store of value or part of an asset portfolio but as a unit of account or a medium of circulation. Hence, the current situation provides little evidence on what would occur if those obstacles were removed" (Friedman, Schwartz, 1986, p. 47). To the best of our knowledge, unfortunately, they did not reveal here or anywhere else, what kind of 'legal obstacles' — because they do not exist.

The replacement of the money commodity by the fiat money has yielded several harmful phenomena. First, because the fiat money has no objective value, economics (markets) is managed without valuating of goods and services. Second, because there is only one type of money, namely fiat money, there is only one price — the rate of interest and the price of the money commodity is absent. Therefore, this is another reason why fiat money cannot be served as a measure of value. Third, there are neither obstacles nor limits to printing paper money; *what is occurred in the last decade*.

Finally and most importantly, the rate of interest is generally determined by the Central (Federal in USA) Bank. It must be stressed that the textbooks tend to consider the theoretical version of the determination of the interest rate on the same lines of the classical approach; namely, according to modern theory the rate of interest is determined by the relationship between aggregate demand and aggregate supply of money. However, there are essential differences between them, since the modern theory of interest is based on the Keynes's approach. Moreover, the supply of money depends not only on the quantity of printed money as well as Keynes's approach but also on the rate of the money multiplier. Yet, the modern theory of money continues determining the demand function for money as an inverse function of money according to Keynes, the existence of which is doubtful.

Krugman states that "that Keynesian economics remains the best framework we have for making sense of recessions and depressions", because, by his opinion, "It's important to understand that Keynes did much more than bold assertions. *The General Theory* is a book of profound deep analysis — analysis that persuaded the best young economists of the day". Meanwhile, the Keynes's main suggestion for "active government intervention — printing more money", is based on his Multiplier concept, which is incorrect (*vide supra*). Yet, Keynes's second main issue, *Involuntary Unemployment* is still controversial: (a) there is no existing conventional determination of involuntary unemployment; (b) there is no measuring method for it; (c) the linkage between involuntary unemployment with voluntary and full employment is not considered.

Therefore, some economists (for example Lukas) ignore it, and moreover, there is Macroeconomics text books of which make no mention of it at all.

In contrast to Classics, in the works of most modern economists, the economic and financial sectors are generally separated, and their authors have been claiming that money commodity (*numéraire*) is not money (Hicks, 1967, p. 3). On such misunderstanding of the money theory of Classics the best answer will be Walras's following statement 'In general, however, the commodity which serves as the numéraire serves also as money and acts as a medium of exchange. The standard of measure of value thus becomes the monetary standard. The two functions are, nevertheless, distinct, even when they are found in the same commodity' (Walras, 1954, p. 189). Moreover in the modern general equilibrium theory, money either disappeared (Arrow-Debreu Model), or considered in very simplified form and with unrealistic assumptions (see Applicable (Computable) General Equilibrium, Input-Output Analysis, and Dynamic Stochastic General Equilibrium Theory).

One of the crucial attributes of Classical money theory, especially Walras's general equilibrium theory, is the reciprocal interconnection between micro and macroeconomics, i. e., exchanging information between them in the process of an equilibrium establishment. By means of solution of the model of individual (micro) the three categories of money are obtained and used in macro model: 1. the demand of money commodity for consumption, in terms of money commodity (*numéraire*); 2. either the demand or the supply of income commodity for saving, in terms of money commodity; 3. the supply of money for circulation in production, in terms of either money commodity or paper money, which is determined as the difference between the available quantity of money (cash) in the hands of consumers minus the demand for money and money for savings from the side of consumers.

While, the information, which is passed to micro economics from macro, includes three prices: 1. the price of the money commodity, which in equilibrium is equal to one; 2. the rate of income; 3. the rate of interest. It must be emphasized that Walras assumed that in equilibrium the rate of income is equal to the rate of interest.

In the modern theory, either the connection between micro and macro is not considered or if it is considered, then the connection is depicted in a rather comprehensive model, where, if money is presented at all, it comes to light only as a fiat money. Moreover, these models are based on unrealistic assumptions, like the above-mentioned models that are still in use for the estimation of the rate of the multiplier.

Walras emphasized the specific role of money in distortion of general equilibrium because that changing of price of money impacts directly on prices of almost all products. Hence, changing price of money yields changing prices of products and the result is a disorder of equilibrium. In the case of deep crises Walras recommended that the State should intervene and regulate the quantity of money: 'Therefore the State should issue the *money* and, if necessary, regulate the production of precious metals according to the country's needs and prohibit or make rules for the issue of *banknotes* and the use of *account money*' (Walras, 2005, p. 373).

To sum up, there is a growing need to put an end on the massive flowing of paper money and enabling money, thus, to fulfill its functions.

## Conclusions

In this paper it was shown that (a) Keynes's investment multiplier and its modern variants cannot serve as any basis for practical recommendations, and, to say the least, does not facilitate economic growth; (b) There are economists who assert that the effectiveness of the money flowing is much more small than it is evaluated by its recommenders, and moreover, they concluded that the printing of money as a source of the

government purchasing is doubtful; yet, the founders of the multiplier concept, especially Kahn, definitely rejected using the method of printing money as a source of the government purchasing; (c) finally, the models that are employed by modern economists to estimate the effectiveness of the government spending are ill-assorted and conflicting with the real facts due to their unrealistic assumptions.

For this purpose the comprehensive multiplier theory is required, which will be compatible with the second phase of the investment process, when fixed capital (investment) is equal to the determinant (the cause); where the source of an additional increment of investment might be either endogenous or exogenous (financial system of the country in question, or financial system of the foreign country or foreign country's government) — in the latter case, and in order to calculate the final magnitude of the multiplier's rate, it is absolutely necessary to reduce from the derived income the debt returning; this reduction will be based not only on a psychological phenomenon like Keynes's multiplier, but also on economic and technologic phenomena; and the rate of the multiplier will be calculated by the cumulative process.

Finally and most importantly, there is a growing need to put an end on the massive flowing of paper money and enabling money, thus, to fulfill its functions.

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