The multiplier relation as the pure theory of output and employment in a monetary production economy

Heinrich Bortis, University of Fribourg (Switzerland)*

Introduction

The multiplier relation represents the pure theory – in the sense of principles, not of real theory - of output and employment in a monetary production economy. This relation states how the *scale* of economic activity, i.e. *aggregate* output and employment, is, in principle, determined by effective demand, which, significantly, is a monetary magnitude. Effective demand always enters the scene as autonomous and derived demand, with the former being, in principle, independent of income and output and with the latter dependent upon these magnitudes. In the multiplier formula the multiplier coefficient links, *via* derived or secondary demand, autonomous demand to equilibrium output and employment. This coefficient is directly associated with the leakages out of total income, which, in macroeconomic equilibrium, equal autonomous expenditures. The crucial point is that the multiplier relation is, as a rule, associated with a level of employment *below* the full employment level, whereby, in principle, *all* the sectors of production and *all* the kinds of labour are affected in the same way, implying that the theory of the multiplier is *essentially* of a macroeconomic nature. Involuntary unemployment may thus permanently exist, and there is no self-regulating mechanism to bring about full employment. These propositions hold for the short term, but also for the medium and long run (see, for example, Bortis 1997, ch. 4 and Bortis 2003A, pp. 461ff.).

The multiplier is *essentially* a theory of output and employment and is, as such, associated in a natural way with the classical theory of prices (Bortis 2003A). According to classical theory prices are governed by the conditions of production

and distribution and are, as such, not associated in a regular way with the level of employment. Prices and money wages may change if there are distributional conflicts, or, given money wages, prices and profits may change with variations in monetary demand. To say that the multiplier is associated with a kind of fix-price theory is not in contradiction with Keynes's *General Theory* where *prices vary* with output and employment because of the law of diminishing returns. The multiplier of the *General Theory* remains nevertheless essentially a theory of output and employment because, given money wages, *prices adjust passively.* An equilibrium involving involuntary unemployment can occur only in a monetary production economy where structural rigidities dominate: „Keynes recognised that the industrial system was inflexible; to him this was a reason for switching economic analysis [based upon adjustment through *substitution*] to the analysis of shocks [upon a technical-institutional system where *complementarities* prevail]"(Skidelsky 1992, p. 370). Technical rigidities prevail in the social and circular process of production, represented by the constant, but not invariable Sraffa-Leontief-Pasinetti production coefficients. Normal (long-period) private and state expenditures are governed by institutions (consumption habits, legal dispositions relating to taxes and government expenditures). Though, as a rule, instutions evolve slowly, they are also associated with rigidities. This, incidentally, implies that saving becomes a pure residual: with the propensity to consume institutionally determined through consumption habits and with taxes and expenditures legally fixed, saving adjusts to investment through variations in output and employment and/or in distribution. In such a system there is inherent price rigidity once money wages are given, and quantitiy adjustments dominate, except in the course of the business cycle where quantities vary together will prices and profits. Since, in a monetary production economy, goods are always exchanged against money – there are flows of money and of goods in opposite directions in the process of production and of circulation – the problem of

demand in money terms inevitably arises as is immediately evident from the Marxian scheme of production and circulation (*Kapital*, vol. II, p. 31):

$$M – C \ldots P \ldots C’ – M’ \qquad (1)$$

In the first stage, producers dispose of money and finance M (G in orig.) and buy means of production, i.e. commodities and labour force, C (W in orig.). These are transformed into final products C' (W') in the vertically integrated labour view of the social process of production P which implies the horizontal land aspect of production (on the labour and land aspects of production, see Bortis 2003A). The final goods C' are transformed into money M' (G'). At this second stage of circulation M' governs C', the amount of final goods that may be exchanged against money. It is here that the effective demand problem arises and the multiplier, potentially implying an equilibrium with involuntary unemployment, enters the scene. This is the central theme of Keynes's *General Theory*, which, „[starting from the *Treatise*] has evolved into what is primarily a study of the forces which determine changes in the scale of output and employment as whole [and] it is found that money enters into the economic scheme in an essential and peculiar manner [...]. A monetary economy [„„] is essentially one in which changing views about the future are capable of influencing the quantity of employment and not merely ist direction"(Keynes 1936, p. xxii). It is the *scale* of economic activity which is at stake, not proportions at a given scale (Bortis 1997, ch. 4 and Bortis 2003A). This implies that *muliplier analysis is essentially of a macroeconomic nature* since *all* the sectors of production, whatever their number, are affected by the size of effective demand.

All this is in striking contrast to the neoclassical exchange model where the level of output and employment is given, and where full employment prevails if market conditions are competitive. In the neoclassical model, with productive resources

and consumers' tastes given, the optimal allocation of the given resources, regulated by the principle of substitution combined with maximising behaviour under constraints, moves to the fore. Money is, in principle, unimportant in the neoclassical scheme although Marshall had established a monetary theory of exchange where on the markets for factors of production and for final goods commodities are exchanged against money (Bortis 2003B); in fact, in the neoclassical scheme, money and credit appear as disturbing factors if monetary magnitudes are not in line with real magnitudes, for example, if the quantity of money grows faster than real output inflation sets in. The working of the principle of substitution appears with particular clarity in an underemployment situation: The ‚price' of labour, i.e. the money and the real wage, is supposed to decline, profit and interest rates increase in a first step. As a consequence, labour, having become cheaper relative to capital, is substituted for capital which raises employment. Simultaneously, due to the initial rise of the rate of profits and of interest, the volumes of investment and saving increase, creating thus additional work places. These processes come to an end when full employment is reached. Hence in the neoclassical exchange based framework the optimising behaviour of economic agents is associated with the allocation problem. This problem is solved once *given* quantities and prices stand in definite relations to each other, i.e. once equilibrium structures are established. Hence, while there may be voluntary or frictional unemployment, there does not exist any problem of involuntary or systemic unemployment in neoclassical analysis since the optimum allocation of *given* resources, including labour, is considered. Therefore, with the scale of economic activity already determined, there can be no multiplier either.

To establish the principle of effective demand and hence the theory of the multiplier it must be shown that neoclassical theory is, in principle, not able to come to grips with the great problems of a monetary production economy, specifically the problem of output and employment. The critique of neoclassical

theory is, on the one hand, theoretical, and historical, on the other. The theoretical critique, in turn, went on in two directions, monetary and real. These ‚two routes to effective demand', a monetary and real route, are suggested in Garegnani (1983).The monetary critique is Keynes's (Keynes 1936/1973): Money is not only means of payment, but also store of value. The rate of interest does not bring into line saving and investment, but the supply and the demand for liquidity (money). In macroeconomic equilibrium (planned) investment equals planned saving. Investment (I) is autonomous, governed by long-period expectations, saving depends upon aggregate income (S = sY), where s is the marginal and average propensity to save. This immediately leads to simplest possible form of the multiplier relation:

$$Y = (1/s)\, I \qquad (2)$$

Keynes monetary critique was absorbed by orthodox real – supply and demand - theory by the means of the IS-LM-diagram (Hicks 1937). To establish the principle of effective demand, and hence the multiplier, a critique of the neoclassical real model, i.e. the supply-and-demand mechanism, is required. This critique – Garegnani's ‚real route to effective demand' - is represented by the capital theory debate which followed the publication of Sraffa (1960). With production being a social and circular process and capital being a produced factor of production, depending upon the conditions of production and upon income distribution, capital cannot be measured in physical terms and there are, in principle, no ‚well behaved' relations between the rate of profits (or interest) and the quantity of capital: ‚more' capital cannot always be associated with lower rates of profit and interest, and vice versa. These and other results of the capital theory debate are comprehensively set forth in Harcourt (1972). Most, importantly, with no ‚well behaved' associations between factor prices and factor

quantities existing in principle, falling real wages may be linked with *lower* employment levels: The price mechanism, or the supply-and-demand mechanism, is, *in principle*, unable to produce inevitably a tendency towards full employment if the process of production is of a *social* nature. This does not exclude that in specific real-world situations such a tendency may exist temporarily.

The empirical-historical side of the critique of neoclassical theory in general and of neoclassical employment theory in particular is provided by the employment situation that prevailed during the great depressions, particularly in the deep depressions of the last quarter of the 19th century and of the 1930s. These socioeconomic catastrophies in terms of involuntary unemployment shattered the belief in the normal functioning of capitalist economies; in fact, the belief in ‚the myth of the market economy' (Lazonick 1991) broke down. The fact that real wages rose together with unemployment does not mean that the rigidity of money wages was a fundamental cause of the crisis. The high real wages were not a cause but a result of unemployment: The breakdown of effective demand, specifically investment demand, combined with overcapacities, resulted in a sharp decline of output and employment volumes – due to multiplier effects! – and of prices, the latter resulting in a rise of the real wage rate.

The heavy crises of the capitalist system initiated a strong incentive to for alternatives. Since the socialist alternative was not attractive to Keynes, he opted for a middle way (Fitzgibbons 1988 and O'Donnell 1989, Mini 1991). Keynes's endeavours to work out a third-way alternative to liberalism and socialism culminated in his *General Theory.*

The results produced by the critique of exchange based neoclassical theory in general and of the neoclassical theory of employment in particular on the basis of theoretical principles and of historical events, clears the way for the multiplier principle which is intimately connected with the determination of the scale of output and employment in a monetary production economy. The purpose of these

notes is to present some important variants of the multiplier principle to bring to the open the immense fruitfulness of this principle.
We begin with a remark on method, which is followed by some very sketchy historical reflections. The central sections deal with different types of the multiplier relation. First, Kaldor's two multipliers, based upon Keynes's *Treatise on Money* and on his *General Theory* respectively, are sketched. Subsequently, Harrod's and Domar's association of the multiplier with the inherent instability of the investment and output path is presented; this path is, in fact, a *behavioural* knife-edge equilibrium. This contrasts, third, with the fundamental stability of the *system equilibrium* associated with the supermultiplier equation set forth in Bortis (1997, ch. 4). In the fourth place, the multiplier in the business cycle is alluded to, followed by a very short consideration on cycles with a changing trend. The crucial role of autonomous variables on shaping the trend and the cycle is alluded to in section six. In section seven two further types of the multiplier relation are presented: the saving/investment multiplier associated with the internal employment mechanism and the foreign trade multiplier linked up with the external employment mechanism (Bortis 1997, pp. 190-98). This is followed by some concluding remarks.

A remark on method

In these notes we deal uniquely with the *pure theory* of the multiplier, the multiplier principle or „the logical theory of the multiplier, which holds good, without time-lag, at all moments of time" (Keynes 1936/1973, p. 122). Hence we consider how the causal forces involved work *in principle,* independently of historical realisations. If there is involuntary unemployment autonomous expenditures bring about a multiple of secondary expenditures and thus of output and employment. In contradistinction to the logical theory of the mulitplier, there

is the applied theory of the multiplier consisting of applications of the multiplier principle to some concrete situation set in historical time, picturing, for example, „the consequences of an expansion in the capital-goods industries which take gradual effect, subject to time-lag and only after an interval“ (ibid., p. 122). The meaning of the two multiplier concepts „can be seen most clearly by taking the extreme case where the expansion of employment in the capital-goods industries is so entirely unforeseen that in the first instance there is no increase whatever in the output of consumption-goods. In this event the efforts of those newly employed in the capital-goods industries to consume a proportion of their increased incomes will raise the prices of consumption-goods until a temporary equilibrium between demand and supply has been brought about partly by the high prices causing a postponement of consumption, partly by a redistribution of income in favour of the saving classes as an effect of the increased profits resulting from the higher prices, and partly by the higher prices causing a depletion of stocks. So far as the balance is restored by a postponement of consumption there is a temporary reduction of the marginal propensity to consume, i.e. the multiplier itself, and in so far as there is a depletion of stocks, aggregate investment increases for the time being by less than the increment of investment in the capital-goods industries [...]. As time goes on, however, the consumption goods industries adjust themselves to the new demand, so that when the deferred consumption is enjoyed, the marginal propensity to consume rises temporarily above its *normal* level, to compensate for the extent two which it previously fell below it, and eventually returns to its *normal* level [our emphasis]; whilst the restauration of stocks to their previous figure causes the increment of aggregate investment to be temporarily greater than the increment of investment in the capital-goods industries [...]“ (Keynes 1936/1973, pp. 123-24). Two features emerge from this passage. First, behavioural outcomes fluctuate around institutionalised normal levels of consumption and investment. This way of

looking at things is grounded in Marshall (1920). Indeed, *Book V* on normal demand and supply, hence on normal prices and quantities represents the core of the *Principles,* implying that long-period prices and quantities which are underlying medium and short-period prices and quantities, are located in the present; in a way, ‚the long run is always there' as Luigi Pasinetti (1981) suggests (p. 127, n. 1). This is also the treatment of the long run contained in Bortis (1997, specifically pp. 204-20). Second, the applied theory of the multiplier, reflecting multiplier processes set in historical time, is necessarily very complex, whilst the logical or the pure theory of the multiplier, picturing how the relevant causal forces work in principle, is of striking simplicity.

In the following the logical theory of the multiplier is dealt with. Different aspects of ‚employment reality' are considered, such that various types of the logical multiplier, i.e. of the multiplier principle enter the scene. As has been suggested already, the pure theory of the multiplier is about how the relevant forces governing output and employment in a monetary production economy work in principle. This implies that the multiplier principle is independent of historical realisations of this relation. In general, principles are not reflections or even copies of real world situations. As such, principles are *not theoretical explanations*, starting from given premises, of economic phenomena, eventually leading to testable propositions. A set of principles represents the essential and fundamental elements constiting a phenomenon, with all the accidental elements left aside, and is, as such, a *reconstruction* or a *recreation* of aspects of the real world, i.e. the determination of employment levels in the case of the multiplier, by the means of reason interacting with intuition which, in the social and political sciences, is related to a vision of man and of society. In this way, principles illuminate phenomena from inside and contribute to the understanding of how, for example, the socioeconomic system essentially functions; moreover, principles represent a framework and a starting point to elaborate scientific theories (on the

significance of principles see also Bortis 2003A, pp. 411-15). Hence the pure theory of the multiplier states how the levels of output and employment are governed, in principle, according to the Keynesian, post Keynesian and the classical-Keynesian vision, and represents, as such, an *approach* to come to grips with selected economic phenomena, specifically with the phenomena of employment and of involuntary or system-caused unemployment.

Some historical remarks

The first representation of the multiplier principle is by François Quesnay in his fundamental ‚zigzag' tableau (*le grand tableau ou tableau fondamental*) set forth and commented on in Oncken (1902, pp. 386 – 402). From Quesnay's *grand tableau* beautifully emerges how the autonomous expenditures – consisting of land rents - of the landlords (the nobility and the king), amounting to two million pounds, set economic activity into motion, resulting in a social product of seven million pounds, five million being the value in money terms of agricultural products and two million manufactures. Quesnay worries very much about the fact that the landlords might not spend the whole of the rent since this would disrupt the socio-economic system because cumulative contractive processes would set in: output and rents would be reduced, the reduction of rent causing a further decline of output and so on. System-caused or involuntary unemployment would result. Quesnay sees the autonomous expenditures as a kind of engine which initiates economic activity and where the social product is a multiple of rent expenditures.

Besides setting up a simple and a very robust theory of output and employment, Quesnay deals, explicitly or implicitly, with other great problems of political economy. Production is conceived as a social and circular process, with commodities and money circulationg in opposite directions. Implied in the *grand*

tableau is a sociological, even a political theory of distribution based upon the surplus principle. The fundamental prices are determined within production, and François Quesnay explicity mentions that these fundamental prices are known before goods come to the market, and that market prices deviate, as a rule, from the fundamental ‚prices of production'.

Given this, François Quesnay may be considered the founder of political economy, which deals with the functioning of the socioeconomic – institutional - *system,* in contradistinction to economics, that considers behaviour of economic agents and its coordination by the institutional system or by the market, (on political economy and economics, see Bortis 1997, pp. 76-78, and Bortis 1999, pp. 17-42). Indeed, Quesnay's *grand tableau* and its implications already synthesise classical and Keynesian type elements of analysis which is the hallmark of various post Keynesian and classical-Keynesian developments in political economy, for example (Arestis 1992, Bortis 1997 and 2003A, Lavoie 1992, Lee 1998). It is not surprising, therefore, that Piero Sraffa based his *Production of Commodities by Means of Commodities* upon Quesnay's social and circular conception of the process of production (Sraffa 1960, p. 93). And, in his *Theorien über den Mehrwert,* Karl Marx termed Quesnay's *tableau* as the only stroke of genius produced by classical political economy (Marx 1905-10 / 1973, p. 319).

While the multiplier principle is implicit in Quesnay's *grand tableau*, explicit formulations of the multiplier principle were elaborated at the end of the 19th and at the beginning of the 20th century mainly within the framework of the analysis of business cycles by Knut Wicksell, Alfred Aftalion, Irving Fisher, N. Johannsen and others, with Robert Malthus and Karl Marx as important predecessors (Schneider 1965, pp. 178-88 and p. 199). Of particular interest is N. Johannsen who elaborated the multiplier principle already in 1903 and took it up in a book published ten years later: *Die Steuer der Zukunft* (Berlin 1913). This book

contains two sections explicitly related to the multiplier: *Das multiplizierende Prinzip* (pp. 232 ff.) and *Tragweite[significance] des multiplizierenden Prinzips* (pp. 259 ff.) (cf. Schneider 1965, p. 179).

The theme of the multiplier was taken up definitively and systematically at the outset of the great depression in Richard Kahn's *The relation of home investment to unemployment* (Economic Journal 1931). This is the starting point of the fascinating – and perilous - story of the investment multiplier as it finally appeared in Keynes's *General Theory* (Skidelsky 1992, pp. 449-52). „Kahn's multiplier article [...] was an attempt to answer the three main objections to loan-financed public works as a remedy for unemployment: the meagreness of the employment produced; the budgetary burden entailed; and the crowding out of private borrowing. The inability of Keynes and Henderson to meet these objections [...] turned the balance of the argument against large-scale public works under the Labour government and led to their cessation in the aftermath of the fiscal crisis of 1931. Hubert Henderson abandoned Keynes and sided with the Treasury" (Skidelsky 1992, p. 449).

„Kahn started work on the multiplier theory [...] in August 1930. [His] starting point was the Keynes-Henderson assertion [...] that a public works programme would provide ‚primary' employment (on the job and making materials for the job) and also ‚secondary' employment resulting from the newly employed spending their wages, but that these secondary effects were incalculable. As Kahn later said, there was no obvious reason why the multiplier was not infinite" (Skidelsky 1992, p. 451). Kahn eventually „achieved his finite number by making two deductions (‚alleviations') from the enlarged expenditure stream: saving on the dole (that is, what the unemployed were already spending) and spending on imports. [...] James Meade generalised the calculation by allowing the increased spending to be divided between raising output and raising the price of output. This would create a third leakage – unspent profits minus any diminution in rate

of saving due to rise in prices“ (Skidelsky 1992, p. 450). „But the personal-saving or consumption function first came into the multiplier literature with an article by the Danish statistician Jens Warming in the *Economic Journal* of June 1932. [...] Keynes probably saw Warming’s article when it was first submitted to the *Economic Journal,* of which he was a co-editor. [In fact,] he started to make use of a consumption function in the spring of 1932. So the theoretical influence may have run more directly form Warming to Keynes than from Kahn to Keynes at this point. Kahn, influenced in turn by Warming, presented a multiplier derived from marginal propensities to save and import in a paper on ‚Public Works and Inflation’ to the American Statistical Association in Cincinatti in December 1932; Keynes’s ‚The Means to Prosperity’, published three months later, presented this revised version of Kahn’s theory“ (Skidelsky 1992, pp. 451-52). The Keynesian multiplier was born.

In the light of this historical sketch based on Schneider and Skidelsky, is it fair and right to speak of the *Keynesian* multiplier? In fact, from the point of view of the history of economic theory, the Keynesian multiplier is nothing new. Modern multiplier theory is, in fact, a reinvention, bearing in mind that the multiplier principle is implied in Quesnay’s *grand tableau* and was explicity developed by N. Johannsen (cf. Schneider 1965, pp. 179-81). Morevover, there exist countless empirical discriptions of multiplier processes, for example in the mercantilist literature, where the cumulative effects on economic activity of export surpluses are put to the fore. Moreover, it is very likely that already the rulers of the ancient empires in Egypt, Mesopotamia and Persia, as well as the rulers of Rome, were clear about the very favourable effects of large scale public works on economic life (handicrafts and trade) as well on the stabilising social effects, since entire societies were given gigantic social peace-time aims as was the case with pyramid building, for instance, a point Keynes explicitly insists upon (Keynes 1936 / 1973, pp. 130-31).

To associate the multiplier relation with the name of Keynes is justified by the fact that this principle is part of a *general theory* of employment, interest and money. As such, the multiplier expresses the principle of effective demand which can, in turn, easily be associated with classical elements of economic theory related to value and distribution based upon the surplus principle of distribution and the labour principle of value. In this way the multiplier becomes part of a wider framework of classical-Keynesian political economy encompassing a monetary theory of production (Bortis 1997 and 2003A), providing thus the starting point for erecting a classical-Keynesian alternative to the exchange-based neoclassical (Walrasian-Marshallian-Austrian) framework of analysis. In a way, a lot has been said about the multiplier before Keynes, but Keynes was the only one who integrated this principle into a comprehensive and coherent theoretical scheme, capable of further elaboration and of integration into wider frameworks of analysis.

Kaldor's two multipliers

In his article on alternative theories of distribution (Kaldor 1955-56 / 1980), Nicholas Kaldor distinguishes between two different applications of the multiplier: „The principle of the Multiplier ... could be alternatively applied to a determination of the relation between prices and wages, *if the level of output and employment is taken as given* [our emphasis], or the determination of the level of employment, if distribution (i.e. the relation between prices and wages) is taken as given" (Kaldor 1955-56 / 1980, p. 227). Kaldor goes on to say that the „reason why multiplier-analysis has not been developed as a distribution theory is precisely because it was invented for the purpose of an employment theory ..." (ibid., pp. 227-28). And „yet these two uses of the Multiplier principle are not as incompatible as would appear at first sight: the Keynesian technique, as I hope to

show, can be used for both purposes, provided the one is conceived as a short-run theory and the other as a long-run theory – or rather, the one is used in the framework of a static model, and the other in the framework of a dynamic growth model“ (ibid., p. 228).

Hence Kaldor conceives of the *short-period* multiplier theory as of a ‚fixe price' theory with profit margins fixed at normal capacity utilisation. The marginal propensity to consume and, as a consequence, the multiplier are assumed to be given. Moreover, capacities are underutilised in all sectors of production. As a consequence a macroeconomic equilibrium with planned saving equalling planned investment is reached through quantity adjustments. This appears from the conventional textbook presentation of the macroeconomic S = I equilibrium condition:

$$I = S = -a + s\,Y \qquad \text{and} \qquad Y = (1/s)\,(a + I) \qquad (3)$$

In principle, if planned saving exceeds planned investment, the demand of households for consumption goods falls short of the supply of consumption goods by producers. Stocks pile up, i.e. involuntary investment occurs, to make investment instantaneously identical to saving. Given this, producers will offer less. Income and saving will decline until condition (3) is satisfied. And vice versa, if planned saving falls short of planned investment.

With Kaldor's *long-period* multiplier, however, employment is *given* and the long-period equilibrium between saving and investment in an economy growing at the natural rate of growth is secured through changes in income distribution (Kaldor 1955-56 / 1980, pp. 229-32). The macroeconomic equilibrium condition

$$I = S = s_P\,P + s_W\,W = s_P\,P + s_W\,(Y - P) = (s_P - s_W)\,P + s_W\,Y$$

implies the double-sided relationship between investment and profits. On the one hand, with investment, output and employment given, saving adjusts to investment through changes in income distribution, i.e. changes in the share of profits in income:

$$(I/Y) = (s_P - s_W)\,(P/Y) + s_W \qquad (4)\ .$$

The inverse of the right-hand side of this relation represents the – flexible – long-period investment multiplier linking investment to output growing at the natural rate of growth (the rate of growth of technical progress and the growth rate of population). As will be suggested below, this flexible multiplier is also of crucial importance for picturing cyclical movements, in the course of which output Y, investment I and the profit share (P/Y) are continuously changing due to the interaction of the income and of the capacity effect of investment (see Bortis 1997, pp. 204-220). In fact, Kaldor's long-period multiplier should be more appropriately conceived of as a *medium-term* multiplier which brings saving into line with investment in the course of the business cycle.

On the other hand, income distribution, i.e. the profit share in income, is governed by the investment-output ratio and the propensities to save out of wages and profits:

$$\frac{P}{Y} = \frac{1}{s_P - s_W}\,\frac{I}{Y} - \frac{s_W}{s_P - s_W} \qquad (5)$$

The economic system is stable if the propensity to save from profits exceeds the propensity to save out of wages. Indeed, if saving falls short of investment, i.e. if aggregate demand exceeds aggregate supply, prices and profits will rise relative to money wages to bring about the equilibrium depicted by relation (4), and, vice versa, with saving exceeding investment. However, with $s_P < s_W$, there would be

persisting inflation: with saving falling short of investment, prices and profits would rise, the wages share in income would decline, and, consequently, the gap between saving and investment would widen, since the propensity to save out of wages is larger than that out of profits; contrariwise, with saving exceeding investment, there would be continuous deflation.

„In the limiting case where $s_W = 0$, the amount of profits is equal to the sum of investment and capitalist consumption, i.e.:

$$P = (1/s_P)\, I \qquad (5a)$$

„This is the assumption implicit in Keynes' [*Treatise on Money*] parable about the widow's cruse – where a rise in entrepreneurial consumption raises their total profits by an identical amount – and of Mr. Kalecki's theory of profits which can be paraphrased by saying that ‚capitalists earn what they spend, and workers spend what they earn'"(Kaldor 1955-56/1980, p. 230). (Pasinetti (1962/1974) has shown that relation (5a) also holds in the long run if the propensity to save of the workers is positive.)

From the above emerges that Kaldor's short-period employment multiplier is the multiplier of the *General Theory*, and that his long-period ‚distribution multiplier' is derived from Keynes's *Treatise on Money*.

„The critical assumption is that the investment/output ratio is an independent variable. Following Harrod, we can describe the determinants of the investment/output ratio in terms of the rate of growth of output capacity (g [G in orig.]) and the capital/output ratio, v [a given technical coefficient]:

$$I/Y = g\, v \qquad (6)$$

In a state of continuous full employment [g] must be equal to the rate of growth of the ‚full employment ceiling', i.e. the sum of the rate of technical progress and the growth in working population (Harrod's ‚natural rate of growth' [g'])" (Kaldor 1955-56, p. 231). Since I/Y = s = S/Y, it emerges from relations (4) and (6) that saving adjusts to the investment required to bring about the warranted rate of growth (g) through changes in income distribution. „Hence the ‚warranted' [g] and the ‚natural' [g'] rates of growth are not independent from each other; if profit margins are flexible, the former will adjust to the latter through a consequential change in P/Y" (ibid. p. 232). As a consequence, if restrictions on minimum wages and profits are satisfied (ibid. p.233), „there will be an inherent tendency to growth and an inherent tendency to full employment. Indeed the two are closely linked to each other" (ibid. p. 235). This optimistic conclusion was a reflection of the unprecedented upswing of the 1950s and 1960s, which was, presumably, due the presence of some important autonomous variables : the reconstruction after World War II, resource flows from developed to underdeveloped countries, armaments expenditures due to the Cold War, and the development and the introduction of new technologies.
Kaldor's optimism on employment implied abandoning the *General Theory* to return to the *Treatise on Money*. However, from the early 1970s onwards Kaldor attempted to build a growth model implying involuntary unemployment to adjust to the new employment situation following up the oil-price shock (Targetti 1992, pp. 193-205).

The Multiplier and inherent instability (Harrod and Domar)

The interplay of the income and of the capacity effect of investment lies at the root of the instability of a capitalist economy evolving in historical time. Indeed, on the one hand, when factory buildings are erected and machines are

constructed, primary and secondary incomes are created through the multiplier mechanism (relation 2), implying that the demand for consumption goods increases. On the other hand, while the process of producing the capital goods in question is going on, no additional supply is forthcoming yet. However, when the factories stand and the machines are put to productive use, supply increases but effective demand declines because less workers are required in the investment goods sectors once the construction of the capital goods referred to is terminated. Investment must increase so as to bring about additional effective demand through the multiplier mechanism. This is the basic idea implied in the so-called Harrod-Domar growth model (Harrod 1939, Domar 1946). Domar's emphasis was on the conditions of the dynamic growth equilibrium, Harrod's on the instability of this equilibrium.

With Domar (1946), the starting point is the equilibrium between macroeconomic supply Q and macroeconomic demand Y in some period of time 0, governed by the *income* effect of investment, exhibited by the multiplier relation:

$$Q_0 = Y_0 = (1/s)\, I_0 \qquad (7)$$

In period 1 output increases because of the capacity effect of investment:

$$\Delta Q = Q_1 - Q_0 = (1/v^*)\, I_0 \qquad (8)$$

where $1/v^*$ is the technically given output/capital ratio (Q/K), the inverse of the capital/output ratio put to use in the preceding section.

Effective demand based upon the multiplier effect only increases if investment rises:

$$\Delta Y = Y_1 - Y_0 = (1/s)\, \Delta I^* , \qquad (9)$$

where $(\Delta I^* = I_1 - I_0)$.

Combining relations (8) and (9) yields Domar's condition for the dynamic growth equilibrium:

$$g^* = \Delta I^* / I_0 = s/v^* \qquad (10)$$

g^* is Domar's equilibrium growth rate (Harrod's warranted rate of growth) of investment, output and capital.

Domar's growth equilibrium exhibited by condition (10) is inherently unstable. Indeed, if $\Delta I < \Delta I^*$, then the realised growth rate g falls below the warranted rate g^*. From (8) and (9) emerges that now $\Delta Q > \Delta Y$, that is, additional effective demand (ΔY) is not high enough to absorb the additional output (ΔQ). The reason is that entrepreneurs have not invested enough (relation 9) to create the effective demand required to absorb the additional output (relation 8). This leads to what has been dubbed the *Harrod Paradox:* If the realised rate of growth (g)

$$g = \Delta I / I_0 = s/v \qquad (10a)$$

falls short of the warranted (equilibrium) rate of growth (g^*) as exhibited by relation (10), entrepreneurs have, paradoxically, not invested enough to create sufficient effective demand.

This paradox has been derived by Harrod (1939) in a slightly different way. Harrod starts from the Keynesian macroeconomic equilibrium condition ,saving ($S = s\,Q$) equal investment ($I^* = v^* \Delta Q$)':

$$I^* = v^* \Delta Q = s\,Q = S \qquad (11)$$

To recall, v* is the technically given marginal capital-output ratio. As a consequence, the warranted (equilibrium) rate of growth of output (g*) is given by

$$g^* = \Delta Q/Q = s/v^* \qquad (12)$$

If entrepreneurs invest too little ($I < I^*$) the realised rate of growth of output falls short of the warranted rate ($g < g^*$). However, entrepreneurs think they have invested too much since $(1/s)I < Q$, i.e. effective demand, $(1/s)I$, falls short of output produced (Q). A provisional equilibrium will be restored through v rising above v*:

$$g = s/v \qquad (12a)$$

The realised capital-output ratio v now exceeds the technically required capital-output ratio v*, because stocks pile up due to a lack of effective demand. Given this, entrepreneurs will reduce investment which means that the gap between g* and g widens even more.

On the other hand, if $g > g^*$ we have $v < v^*$, i.e. stocks are run down, because entrepreneurs have invested too much and have, as a consequence, created too much effective demand [$(1/s)I > Q$]. Paradoxically, they think, however, that they have not invested enough and now invest even more. Again the gap between g and g* widens. Hence the equilibrium defined by relations (11 and 12) is an equilibrium on the ‚razor's edge', the economic system is completely unstable. This is due to the fact that there are macroeconomic laws (the paradox of thrift) that stand in contradiction to the rationality of individuals. As a consequence the rational behaviour of the individuals is coordinated in an inappropriate way by the

system. The ‚rationality' of the system is different from the ‚.rationality' of individual producers.

Subsequently, Harrod has shown that the instability of the system is reduced if there are autonomous investments. „Some outlays of capital have no direct relation to the current increase of output. They may be related to a prospective long-period increase of activity, and be but slightly influenced, if at all, by the current increase in trade. Or they may be induced by new inventions calculated to cheapen production or change consumers' modes of spending their income, so that they are not related to increments of output, but are designed to revolutionize the methods for producing some portion of already existing output or to substitute one line of goods for another in the consumers' budget" (Harrod 1939 /1970, p. 57). If the income share of autonomous expenditures of some kind, including export surpluses, is denoted by (a), Harrod's S = I condition (relation 11) and his equation for the warranted rate of growth (relation 12) become:

$$I = a\,Q + v^* \Delta Q = s\,Q \qquad (11a)$$

and

$$g^* = \Delta Q^*/Q = (s - a) / v^* \qquad (13)$$

„It must be noticed that [v* and v] now stand not for the total increase of capital (desired and actual, respectively] per unit increment of output, but only for the net increase of capital after the capital represented by [a] has been subtracted" (Harrod 1939 /1970, p. 58).

To (13) corresponds to the modified Domar growth formula:

$$g^* = \Delta I^*/ I_0 = (s - a) / v^* \qquad (10b)$$

The modified growth relations (10b) and (13) show that the warrated rate of growth g* is reduced once autonomous expenditures are introduced, implying that the economic system becomes more stable. Less investment and output growth is required to set an economy - temporarily – on a cumulative growth path in the direction of full employment.
The Harrod-Domar model of the long-period instability of capitalism has subsequently given rise to developing a host of multiplier-accelerator models. This development has culminated in Hicks's theory of the trade cycle (Hicks 1950).

Institutions and the system: the supermultiplier trend

Since the capital stock is given in the short run, the short-period multiplier is about capacity utilisation. If capacities are sufficiently large, full employment may eventually be reached through the income effect of investment (relations 2 and 3 above). However, „the problem of providing that new capital-investment shall always outrun capital-disinvestment sufficiently to fill the gap between net income and consumption, presents a problem which is increasingly difficult as capital increases. New capital-investment can only take place in excess of current capital-disinvestment if future expenditure on consumption is expected to increase. Each time we secure to-day's equilibrium by increased investment we are aggrevating the difficulty of securing equilibrium to-morrow. A diminished propensity to consume to-day can only be accomodated to the public advantage if an increased propensity to consume to-day is expected to exist some day" (Keynes 1936/1973, p. 105). This passage raises the problem of the relationship between capacity and income in the medium and in the long term, which is intimately related to the issues of the trend and of the cycle. The present section

deals with the multiplier in a long-term context (the trend), the next will be devoted to the medium term (the cycle).

The relationship between trend and cycle has been dealt with extensively by Michal Kalecki (Kalecki 1971, specifically pp. 165-83). He remarks on this issue: „The contemporary theory of growth of capitalist economies tends to consider this problem in terms of a moving equilibrium rather than adopting an approach similar to that of applied in the theory of business cycles. ... I do not see why this [latter] approach should be abolished in the face of the problem of long-run growth. In fact, the long-run trend is but a slowly changing component of a chain of short-period situations; it has no independent entity, and the [basic theoretical relations regarding effective demand and investment] should be formulated in such a way as to yield the trend cum business-cycle phenomenon (Kalecki 1971, p. 165).

This is not the way we want to take, however. We would agree with Gareganani that „we must [attempt to] *explain* why an economy may [fluctuate] around [a trend implying 5% of permanent – long-period – unemployment] rather than [a trend implying 20 of permanent unemployment], i.e. we must aim at a long-period theory of aggregate output“(Garegnani 1983, p. 78). Having explained the trend, a theory of cyclical fluctuations must be elaborated and combined with trend theory. There is, however, a problem here: „The situation is that, on the one hand, the macro-economic models which provide a cyclical interpretation of economic activity cannot give any explanation of economic growth and, on the other hand, those theories which define, or rely on the conditions for a dynamic equilibrium to be reached and maintained cannot give an explanation of business cycles.

From a theoretical point of view , the situation would not be so unsatisfactory if the two phenomena – which yet are so obviously interconnected in their real

manifestations could be explained by two different theoretical models to be combined and integrated“ (Pasinetti 1960 / 1974, p. 69).

In our view, this is what has to be done. The long-period trend model must be different from the model picturing cycles. The trend „model pictures uniquely the functioning of the system, i.e. the interplay of institutions, and is associated with fully adjusted situations; the [cycle model] deals with aggregate behavioural outcomes, e.g. aggregate investment and consumption behaviour, co-ordinated by parts of the system, i.e. the law of effective demand. The two models thus deal with different aspects of socioeconomic reality; the are complementary and can thus be combined and integrated“(Bortis 1997, p. 136). This is, however, possible on the level of *principles* only; in the real world, the institutional trend and cyclical fluctuations interact; for example, gross investment, associated with fluctuations, gradually modifies the fully adjusted capital stock associated with the trend.

Trend or long-period output Q* and employment N* are, *in principle,* determined by effective demand components all of which are governed by institutions and technology, i.e. the conditions of production (Bortis 1997, chs 3 and 4). The latter represent the constant or slowly evolving factors the classical political economists had in mind when they attempted to understand the nature of economic phenomena. The autonomous variables, government expenditures G and exports X, set economic activity into motion giving rise to derived demand, i.e. consumption *and* investment, with part of the income leaking abroad through imports. The autonomous variables are linked with equilibrium output and employment through the supermultiplier (Bortis 1997, pp. 142-54 and Bortis 2003A, pp. 461-67).

$$Q^* = \frac{G + X}{z_S\,[1-(1/k)] + \pi\,(b_1 + b_2) - (g + d)\,v} \qquad (14)$$

where $z_S = 1 - c_S = s_S + t_S$. (14a)

The normal prices and quantities associated with trend output and employment represent a hidden *system equilibrium* which cannot be directly observed. In fact, the system equilibrium is superseded by cyclical movements and by the vagaries of the market (Bortis 1997, pp. 81-89 and pp. 103-17).

Q* is trend or long-period gross domestic product; the star indicates that all the magnitudes on the right hand side represent effective demand components associated with institutions and with the conditions of production (Bortis 1997, pp. 199-204). For example, normal government expenditures G are determined by legal prescriptions, exports X depend, among other factors, on the quality of the education system, on research and development activity leading to the production of new products and high quality standards of existing products, and on the ‚export-mindedness' of the entrepreneurs. The trend rate of growth of output and employment, g, is determined by the rate of growth of the autonomous variables; d is the replacement coefficient and v the capital-output ratio; hence (g+d)v represents the gross-investment/output ratio. The trend or long-period investment volume I* = (g+d)vQ* is thus derived demand, depending upon the long-period growth of output. The terms of trade are π; b_1 is the fraction of output required to buy the imports necessary in the social process of production and b_2 the fraction of income spent upon non-necessary goods associated with consumption. 1-(1/k) is the share of property income, in fact, the social surplus, comprising profits, land rents and labour rents associated with special abilities and with privileges of some kind. Finally, z_S is the leakage out of property income (definition 14a), hence $z_S\,[1-(1/k)]$ is the leakage out of domestic income which is negatively associated with output and employment. The leakage out of income increases when income distribution gets more unequal, i.e. if the property share [1-(1/k)]

increases and if property income is itself unequally distributed. The latter implies that the leakage out of property income ($z_S = 1 - c_S = s_S + t_S$) is large, since more is saved if property income is unequally distributed. The negative association between unequal distribution and the level of output and employment is the crucial feature of the supermultiplier relation.

The leakage coefficient z_S (14a) indicates the fraction of the surplus over ordinary wages which is *not* consumed, the fraction consumed being c_S. Consequently, the leakage coefficient is the sum of the fractions of the surplus paid for taxes (t_S) and saved (s_S). Since the long-period consumption coefficient c_S and the long-period tax coefficient t_S are both determined by institutions - consumption habits and tax laws -, the long-period saving propensity s_S is, fundamentally, a *pure residual* varying with the normal or trend level of output and employment (Bortis 1997, pp. 166-68). This is analogous to Keynes's short-period theory of output determination.

Saving being a pure residual means that the process of adjustment to the long-period equilibrium is, in principle, based upon quantity adjustments; moreover, the economic *system* is stable (see on this Bortis 1998, pp. 25-29). This can be seen immediately from the supermultiplier relation: If long-period output is below Q* the realised rate of profits (r), the mark-up (k) and the property share [1-(1/k)] all exceed their institutionalised normal levels. Given this investment, output and employment will, in principle, rise until the trend level is reached, and vice versa if output and employment are above the trend level. The stable *system equilibrium* pictured by the supermultiplier implies that output capacities have adjusted to long-period effective demand. The *system* equilibrium is stable because of the institutionally governed autonomous demand components, normal government expenditures (G) and normal exports (X), which are, in principle, independent of the level of economic activity and set the economic system into motion; output and employment increase until macroeconomic equilibrium (S=I)

is achieved. In this process saving is entirely passive and adjusts with changes in the level of output and employment; morevoer, the volume of long-preriod investment represents *derived demand governed by the functioning of the system* (Bortis 1997, pp. 166-68). Harrod's knife edge equilibrium, however, is entirely unstable because the autonomous variable initiating income and output creation, e.g. investment, is a potentially highly volatile magnitude depending upon the *behaviour* of investors. Moreover, since the average and marginal propensity to saving is fixed and the income effect of investment is much stronger than the capacity effect, there is no mechanism to bring into line planned saving and planned investment.

Hence in the long term only the capacity effect of investment is relevant, with capacities adjusting to long-period effective demand. However, in the short term only the income effect of investment is relevant, since capacities are given. We now turn to the medium term, where the income and the capacity effect of investment interact.

Behaviour and its coordination by the system: the business cycle

The supermultiplier can also be used to picture cyclical movements around the long-period trend, whereby the mechanism of the cycle rests upon an interaction between the income and the capacity effect of investment (Bortis 1997, pp. 204-220). Cyclical movements occur because an economy is never in a system equilibrium as is pictured by relation (14) above. Entrepreneurs, when investing in the past, could not know what the normal prices and quantities would be in the present.

Formally, the supermultiplier relation remains the same if all the variables are governed by the behaviour of the various actors (on the relation between system-governed and behaviourally determined magnitudes see Bortis 1997, pp. 81-89):

$$Q = \frac{G + X}{z_S\,[1-(1/k)] + \pi\,(b_1 + b_2) - (g + d)\,v} \qquad (15)$$

However, all the independent variables on the right hand of relation (15) now – temporarily - deviate from the institutionallay governed variables and parameters of relation (14). In particular, this is true of the investment/output ratio (g+d)v and of the property share $[1-(1/k)]$, and hence of prices and profits. This gives rise to the double-sided relationship between profits and investment or between the rate of profits and the rate of growth put to the fore by the post Keynesians (for example Kaldor 1955-56 / 1980, Robinson 1962, p. 48), and classical-Keynesians like Kalecki (Kalecki 1971). The mutual relationship between investment and profits represents the income effect of investment which interacts with the capacity effect of investment to produce the business cycle (see, for example, Bortis 1997, pp. 207-14). Indeed, if appropriately interpreted, the Kaldorian relation (4) above could be used in place of the supermultiplier relation (15) above.

On the basis of relations (14) and (15) the mechanism of the cycle can be broadly sketched: If the behaviourally determined realised output Q is below the trend output Q* the realised rate of profits r and the realised property share $[1-(1/k)]$ will rise above their respective system-governed trend or normal levels. As a consequence, the realised rate of growth g and the realised level of investment I will rise above the corresponding desired levels g* and I*. Expanding investment levels and growth rates will, in turn, lead to higher profit rates and investment volumes. With high investment volumes the capacity effect of investment will gradually work out ever stronger. Actual output Q will increase fast and rise above trend output Q*. With actual output growing faster than trend effective demand, the capacity effect of investment will gradually exert pressure on

realised profits and hence the property share as is evident from relation (15). This downward pressure on profits will become stronger with rapidly increasing productive capacities and output and employment levels, and will compensate gradually for the upward pressure on profits exerted by rising growth rates and investment levels on the basis of the income effect of investment. Once realised profits fall below desired profits a downward movement sets in. The growth rate and the volume of investment recede. This will induce a decline of profit due to the income effect. However, the pressure exercised on profits due to the fact that capacity output is now well above trend effective demand will be much stronger. There are now overcapacities and, consequently, unused capacities will appear; profits now diminish rapidly, and investment and output will grow at a rate below the trend growth rate or even decline in absolute terms. Hence, in the course of the cycle, the supermultiplier (15) combines Kaldor's two multipliers. Indeed, relation (15) simultaneously captures quantity changes at a given distribution and changes in distribution with given quantities. The analysis of the business cycle just given implies a stable trend, implying, most importantly and in a normative vein, that a normal rate of profits and, consequently, a normal proprerty share exists. Cyclical movement with a stable trend are represented by fig. 6 in Bortis (1997, p. 209).

Cycles with an changing trend

In a post-Keynesian vein, it may now be postulated that a normal rate of profits making the trend stable – but not invariable – does not exist. This implies that distribution is not institutionalised but is governed uniquely by the income effect of investment, with investments governing profits at a provisionally given level of output and employment. An increasing output, i.e. a growing supply, will depress profits, and vice versa. The cyclical movement of actual – behaviourally

determined - output based upon the interaction between the income and the capacity effect of investment is captured by relation (15) above and is represented by Q in fig. 1.

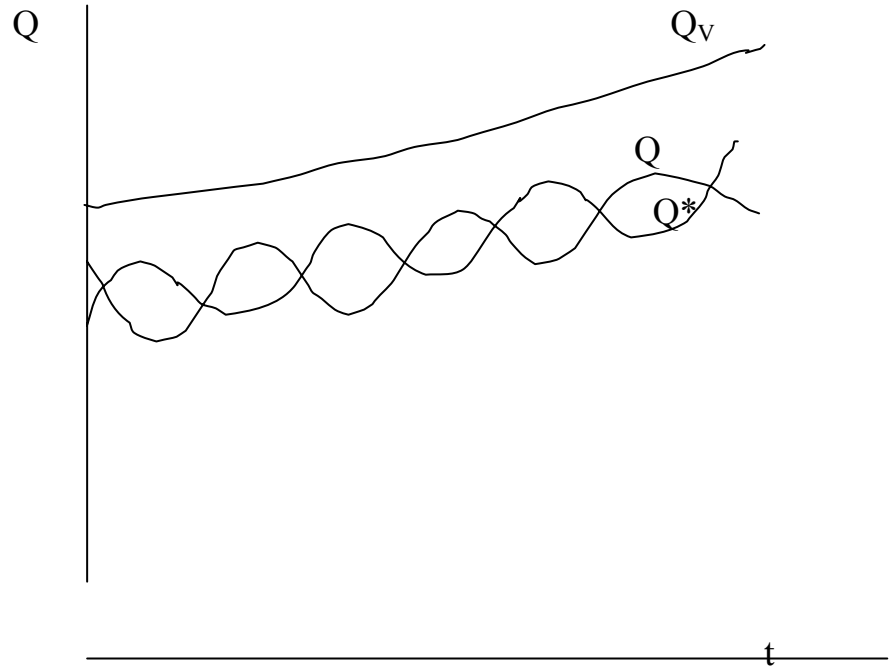

Fig. 1

It has been suggested above and in Bortis (1997, ch. 4) that the supermultiplier formula governs the quantities associated with a system equilibrium in which productive capacities are determined by long-period effective demand. This yields a stable trend if distribution is institutionalised, i.e. if there is a normal rate of profits (Bortis 1997, p. 209, fig. 6). However, if distribution is not institutionalised, long-period output and employment are also determined, but the ‚trend' will now be changing. If, for example, the property share including the profits governed by the income effect of investment (rel. 15 and Q in fig. 1 above) is inserted in the long-period relation (14), long-period output will be represented by the curve Q* in fig. (1) above: Contrarily to the medium term curve Q, the

long-period curve Q* in fig. (1) will move downward if the property share 1-(1/k) increases. In fact, in the long run, where productive capacities are supposed to adjust to long-period demand, a more unequal distribution of incomes is negatively associated with output and employment, and vice versa. Since, moreover, in the long run, investment is a *derived* variable, the investment volume is governed by the *trend* rate of growth corresponding to the growth rate of the autonomous variables G + X, and by the evolution of long-period output. This means that, in the long run, the income effect of investment cannot operate, only the capacity effect is effective. As a consequence the long-period output curve Q* in fig. (1) above moves in a direction opposite to medium-term output Q. The cyclical movement of output Q remains, in principle, qualitatively the same as if the trend had remained constant. It is likely, however, that the amplitude of the fluctuations will widen if the long-period trend is unstable since no fixed – institutionally governed – reference point regarding distribution exists.

The role of autonomous variables in the medium-term and in the long-term cycle

Temporary deviations of autonomous variables from their institutionally governed long-period levels will modify the course of the *medium-term* cyclical movement of output Q sketched in fig. (1) above. For example, due to exceptional circumstances, a natural calamity say, governments expenditures G in relation (15) may temporarily exceed the institutionally governed G* of relation (14). It is likely that prices and quantitities, and, consequently, profits will increase, thus widening the amplitude of the cycle.
The position of the *long-period* trend may be modified if important additions to the autonomous variables G and X occur for longer periods of time (e.g. B* in relation 16 below). Infrastructure projects, substantial improvements in the social

security system or spurts in research and develepment expenditures might be cases in point:

$$Q^* = \frac{B^* + G + X}{z_S\,[1-(1/k)] + \pi\,(b_1 + b_2) - (g+d)\,v} \qquad (16)$$

Contrary to productive trend investment – $I^* = (g + d)vQ^*$ in this relation – the capacity effect of autonomous investment is nil or negligible. However, there will be a considerable income effect. The additional autonomous expenditure B* will give rise to derived demand. Consumption demand will increase, whereby the rise in demand will be stronger if the property share – 1-(1/k) in relation (16) - is relatively low and equally distributed. The latter implies that $z_S = 1\text{-}c_S$ will be low due to a larger propensity to consume out of property income. Investment demand [(g+d)vQ in (16)] will increase for two reasons. First, there will be an increase in trend investment because of the shift of the trend caused by B* and because of an eventually higher trend rate of growth (g) – B* may also grow for some time; both will raise net investment. Second, investment will increase because, on the traverse to a higher trend, the growth rate and the corresponding investment volume will rise above the corresponding trend magnitudes. This may initiate and modify medium term cycles based upon the interaction between profits and investment, i.e. the income effect of investment.
Hence the increase of investment may be very strong. Consequently, on account of the capacity effect of investment, actual output may rise far above trend output. This gradually depresses profits. The pressure on profits will intensify once B* gradually peters out. The downswing now ensuing will be the more violent the larger are the overcapacities that have been built up in the upswing, i.e. the more actual output Q has risen above trend output Q*.

This very rough theoretical sketch might be used to illustrate the fruitfulness of the multiplier principle in providing tentative starting points to explain events of economic history. The above sketch might, for example, be taken as a provisional starting point to explain the extraordinary upswing that took place in Western Europe between the late 1840s and the early 1870s, Eric Hobsbawn's *Age of Capital* (Hobsbawn 1975), due to the massive extension of the railway network, and the great depression that followed from the early 1870s to the mid 1890s. The temporary increase in autonomous expenditures - B* in relation (16) above - would stand for the massive temporary increase in autonomous demand occasioned by the building up the railway structure. The impact on economic activity is likely to be very strong because there is an income effect of investment only with the capacity effect being negligible. Railways – and roads - do not result in much direct output but provide the foundations, the infrastructure, for increased production. Hence the impact on economic activity of autonomous expenditures is strong because the income effect is much more important than its eventual capacity effect. As such, autonomous expenditures stand in direct opposition to productive investment which is directed towards increasing output through the capacity effect. Keynes is very explicit on the difference between various kinds of autonomous expenditures – railways may enhance production in the long run, monuments of some kind lead to expenditures only - and productive investment: „Since the value of a house depends upon its utility, every house which is built serves to diminish the prospective rents obtainable from further house-building and therefore lessens the attraction of further similar investment ... . But the fruits of gold-mining do not suffer from this disadvantage ... . Ancient Egypt was doubly fortunate ... in that it possessed *two* activities, namely, pyramid-building as well as the search for the precious metals, the fruits of which, since they could not serve the needs of man by being consumed, did not stale with abundance. The Middle Ages built cathedrals and sang dires. Two pyramids, two

masses for the dead, are twice as good as one; but not so two railways from London to York [‚but railways are far better than investments in the consumption goods sector]“(Keynes 1936 / 1973, pp. 130-31). And among cynics it is well known that – in the short-term at least - wars are most efficient in employment creation. War expenditures do not result in consumable output but, on the contrary, occasion destructions which, in turn, require expenditures devoted to reconstruction.

Two further types of the multiplier

The supermultiplier – equations (14) and (15) above – contains two basically different variants of the multiplier relation. The first is based upon the equality of saving and investment which represents the fundamental (internal) macroeconomic equilibrium condition, the second emerges from the foreign balance, i.e. the balance on current account, which is associated with external equilibrium. Both variants of the multiplier principle are associated with a particular mechanism of employment determination, i.e. the internal and the external mechanism respectively. Both mechanisms represent alternative ways of determining, in principle, long-period employment and output (see Bortis 1997, pp. 190-98).

Again, the two multipliers considered here are Nicholas Kaldor’s (Kaldor 1989). The long-period ‚internal’ multiplier is analogous to the Keynesian multiplier, the simplest form of which is given by relation (2) above (Kaldor 1989, pp. 90-91). According to the second variant of the multiplier, that is „the ‚foreign trade multiplier’ exogenously given exports [...] together with the propensity to import which is assumed to be a simple function of income [...] determine the equilibrium level of output at the point at which exports and imports are equal,

[...] which can be expressed, in terms analogous to the Keynesian model as [equilibrium output equal the inverse of the propensity to import times exports]. This is more likely to provide the critical constraint when we consider the problem, not in the context of a short-period static equilibrium, but of the equilibrium of an economy in a steady state of growth [...]. Under these conditions investment must be treated as an *endogenous* [our emphasis; this postulate necessarily underlies the whole of long-period supermultiplier analysis] factor, depending on the rate of change of demand (on the so-called ‚accelerator' principle) [...]"(Kaldor 1989, pp. 91-92).

From the supermultiplier relation (equation (14) above) we can directly derive the ‚internal' multiplier based upon the macroeconomic equilibrium condition ‚saving equal investment' (Bortis 1997, p. 190) by postulating an equilibrium in the foreign balance:

$$Qi^* = \frac{G}{z_S\,[1-(1/k)]-(g+d)\,v} \qquad (17)$$

Let us recall here that the first term in the denominator of this relation stands for the leakage out of total income (z = 1- c = s + t) whereby, in long-period analysis, the propensity to consume (c) and the tax rate (t) are both institutionally determined through consumption habits and tax legislation, with the saving ratio being a pure residual. Since, in macroeconomic equilibrium, s equals the investment/output ratio (g+d)v, the multiplier in (17) equals (1/t). Hence, investment being derived demand in the long run, output and employment depend, in principle, upon the relation between government expenditures and the leakage (z). The latter is, in turn, dependent upon income distribution: in a post Keynesian vein, s increases if the distribution of income becomes more unequal. Again, the negative association between unequal

distribution and employment constitutes the crucial feature of the long-period ‚saving equal investment' or ‚internal' multiplier.

The ‚foreign trade multiplier' picturing the ‚external' employment mechanism obtains from the foreign balance equilibrium contained in the supermultiplier relation (14):

$$Qe^* = \frac{X}{\pi (b_1 + b_2)} \qquad (18)$$

In principle, output and employment are larger, the higher the export volume, the lower the import dependence exhibited by the import coefficients and the more favourable the terms of trade are (a low π indicates favourable terms of trade). The effect of foreign trade upon output and employment will be particularly strong if exports mainly consist of labour-intensive high-quality manufactures and imports of land-intensive primary products and standard manufactured goods in the main. Cases in point are Germany, Japan, Switzerland and Taiwan. For example, „Japan's exceptionally high growth rate [in the time-period 1953-76] was due both to her exceptional success as an exporter, with her export volume rising at 16 percent a year, and her exceptionally low income elasticity of demand for imports (which was no doubt assisted by various forms of ‚invisible restraints' on the import of manufactures)"(Kaldor 1989, p. 93, n. 6).

The internal employment mechanism is extremely difficult to handle from a political point of view. In the first place, each society must find an appropriate balance between state activity, the non-profit sector and the profit sector. Given this, long-period employment policy primarily becomes *distribution or incomes policy*: a more equal distribution is, in principle, associated with higher output and employment levels. This is perhaps the basic tenet of Keynes's *General*

Theory. It is well known that income's policies are difficult to handle. Moreover, a stimulation of domestic demand may lead to difficulties regarding the foreign balance in that import surpluses may occur.
Given this, most countries seem to rely at present upon the external employment mechanism. To remain or to become a successful exporter each country or region attempts to attract firms which produce on ist territory and export most of the production. This implies offering favourable conditions to such firms, a well-trained labour force, but not very high wages, a good infrastructure and a high-level education system, but not high taxes, a performing social security system at modest contributions to social security institutions, and certainly no incomes policy and not too much protection of the natural environment. Most importantly, state expenditures and the general level of taxation are to be reduced through privatisation. For these reasons, state activity, including expenditures for social security, has presumably stagnated in the last twenty years or so, or even diminished at the world level, and income distribution has, according to all statistics, become more unequal. Since world economic activity is governed by the internal mechanism (relation (17) above), this is likely to restrain world economic acitivity since the ultimate sources of world effective demand, private and public consumption, have stagnated or, perhaps, even declined in recent years. This is bound to result in very high levels of involuntary unemployment and underemployment worldwide, about thirty percent of the world labour force according to some international organisations. This does not mean, however, that all countries in the world are in a bad socio-economic situation. The successful exporters, above all those who manage to exports high-quality, labour-intensive manufactured goods and services with a large value added and import land-intensive primary products (agricultural goods, raw materials, goods related to energy like oil) and standard manufactures will enjoy a favourable employment situation, and vice versa.

Contrariwise, the employment situation is likely to become particularly dramatic if foreign exchange shortages occur because of capital flights and of high levels of the debt service.
There is thus an inherent contradiction between the internal and the external employment mechanism on the world level. It would seem that this contradiction is, partly at least, at the origin of the deteriorating employment situation worldwide, accompanied by growing inequalities between countries, regions social groups and individuals. This is, perhaps the main tenet, that emerges from Nicholas Kaldor's later work, specifically Kaldor (1985), which led increasing emphasis on cumulatitive destabilising processes due to increasing returns to scale and upon the interaction of the domestic and the foreign trade multiplier on a world level as just pictured.

Conclusions

The multiplier in its various shapes, some of which have been mentioned in these notes, is the natural theory of employment in a monetary production economy. Here, only the pure theory of the multiplier, i.e. the multiplier principle, has been sketched. This means picturing the relevant causal factors in their pure form, independently of historical realisations. In a few illuminating pages, alluded to above, Keynes has brought to the open the basic difference between the logical (pure) and the applied theory of the multiplier (Keynes 1936 / 1973, pp. 122-25). In the real world, then, the working of the multiplier may be most tortuous: there may be temporary bottlenecks or temporary increases of the leakages, the appropriate labour force may not be available: with persistent unemployment it is the weaker and the less qualified which are squeezed out of the production system; on the other hand, many work places are occupied by overqualified or not appropriately qualified people. All this may hamper the smooth functioning of the

applied multiplier. However, these real world difficulties are not a relevant critique of the pure theory of the multiplier – they represent very complex problems which arise in any case, and which we must attempt to solve approximately if the employment situation is to be improved. First and fundamentally, the discussion must take place on the level of principles. As a consequence, the counterpart to the multiplier principle is the (pure) neoclassical employment theory, i.e. the labour market model, in a partial or in a general equilibrium setting. It has been suggested above have that for theoretical and empirical-historical reasons, the multiplier model, i.e. the Keynesian, post Keynesian and classical-Keynesian theory of employment and involuntary unemployment, is probably (Keynes 1921/1973) superior to the neoclassical theory of employment and output, including the output and employment model proposed by the neoclassical synthesis, i.e. the IS-LM-diagram. It would indeed seem that the post Keynesian elaboration of Keynes in the direction of a synthesis between Keynes and the Classics is far more efficient at coming to grips with real world phenomena than is the market equilibrium setting of neoclassical, of neo-Keynesian and of IS-LM-models (Arestis 1992, Bortis 1997 and 2003A, Lavoie 1992, Lee 1998). The Classical-Keynesian approach in political economy also allows us to establish links with modern industrial and managerial economics where the social process of production, technical change, cooperation and business organisation are put to the fore, while the market plays a secondary role. William Lazonick's (1991) *Business Organization and the Myth of the Market Economy* is highly revealing in this respect. Finally, in Bortis (1997) it has been suggested that Classical-Keynesian political economy may easily be linked to other social sciences (sociology, law, politics), including social philosophy and social ethics.

The multiplier principle in its various shapes constitutes a most powerful theoretical tool (in Marshall's sense) to explain employment levels in the short-,

medium and long term as well as system-caused involuntary unemployment, and provides a solid conceptual basis to formulate employment policies.
The multiplier emerges, then, as the natural tool to deal with employment and involuntary unemployment in a monetary production economy where we have circuits of goods and of money. In dealing with the scale aspect of Classical-Keynesian political economy (Bortis 2003A, pp. 461 ff.), the multiplier governs, in principle, the breadth of the flow of money and of goods.

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