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On Gravitation from the Classical Viewpoint: A Comment on Arena, Froeschle and Torre

Giancarlo Gozzi

1. Since the appearance of the seminal contributions by M. Egidi (1975) and P. Garegnani (1976) a growing body of literature has dealt with the analytical and methodological aspects of the classical (and Marxian)¹ conception of competition in a capitalist economy and, more generally, with the stability problem in classical (and Marxian) models of value, distribution and growth.²

The classical (and Marxian) conception of competition rests on the conceptual distinction between market price and production (or natural) price and on the related distinction, on the dual side of quantities, between market and normal (or long-run) quantities; production prices, *i. e.* those particular prices that ensure a uniform rate of profits in all sectors of the economy, and long-run quantities³ of commodities are governed by the more systematic and persistent forces at work in a capitalist economy, while market prices and quantities are influenced by a lot of unsystematic, accidental and temporary forces that have in common the lack of persistency and therefore make a rigorous analytical treatment of market magnitudes impossible.⁴ Competition manifests itself in the capitalist economy through

¹ As is well known the conceptions of competition that characterizes the classics, SMITH and RICARDO in particular, on the one hand MARX on the other do not overlap exactly. Here we are concerned, however, with one important "law of tendency" that characterizes the workings of competition in a capitalist economy, that for the rate of profits to be uniform across sectors; on this aspect of competition the position of the classics and MARX are quite similar.

² On the classical conception of competition we refer the reader to HARRIS [1988], EATWELL [1982], SEMMLER [1984], DUTT [1988] among the more recent contributions; on stability of classical models of value and distribution we refer the reader to BOGGIO [1990] and to the survey by BOGGIO-GOZZI [1990].

³ As is well known, long-run quantities (*i. e.* the quantities of commodities associated with the prices of production) are named in different ways by the classics; in SMITH they are called "effectual demand", while MARX speaks of "social needs".

⁴ This point is well expressed by David Ricardo in the final paragraph of chapter IV of the Principles [1951, p. 91-92]:

"... Having fully acknowledged the temporary effects which, in particular employments of capital, may be produced on the prices of commodities, as well as on the wages of labour,

the mobility of capital across sectors in search of higher profits: capital mobility is, therefore, the centripetal force constantly at work in the economy that, according to the classics, prevents a systematic and persistence difference between market and natural magnitudes. In Ricardo's own words:

"...With the rise or fall of price, profits are elevated above, or depressed below their general level, and capital is either encouraged to enter into, or is warned to depart from the particular employment in which the variation has taken place. [...] It is the desire, which every capitalist has, of diverting his funds from a less to a more profitable employment, that prevents the market price of commodities from continuing for any length of time either much above, or much below their natural price".⁵

Two points may therefore, be stressed at once; the classics (and Marx) conceive of the economy as gravitating around what may be called its long-period position,⁶ which implies that such a long-period position acts as an attractor for the actual path of the economy;⁷ furthermore the long-period position is to be thought of as a reference position of the economy not necessarily attained by the economy. The methodological implication of the classical conception of competition that can be drawn from what has been said above⁸ is the legitimacy of studying the permanent effects of changes in the conditions of the economy by means of the comparison between two long-period positions (of the economy), one characterizing the economy before the change and the other after the change: the long period positions of the economy are the "... 'centre' towards which the competitive economy would gravitate"⁹ because they represent the systematic and persistent forces at work in the capitalist economy. It is precisely for this reason that "... the 'long-period values' of the variables (*i.e.* their values in the 'long-period positions' of the system) were thought to be those relevant for an analysis of lasting changes in the system".¹⁰ However as J. Eatwell has rightly and

and the profits of stock, by accidental causes, without influencing the general price of commodities, wages, or profits, since these effects are equally operative in all stages of society, we will leave them entirely out of our consideration, whilst we are treating of the laws which regulate natural prices, natural wages and natural profits, effects totally independent of these accidental causes. In speaking then of the exchangeable value of commodities, or the power of purchasing possessed by any one commodity, I mean always that power which it would possess, if not disturbed by any temporary or accidental cause, and which is its natural price."

⁵ RICARDO [1951, p. 88 and p. 91].

⁶ As is well known the long-period position is Garegnani's methodological framework to identify configurations of the (capitalist) economy characterized by a uniform rate of profits on the supply side of capital goods; it may, of course, refer to quite different and alternative theories of the determination of the magnitudes of the long period position. See GAREGNANI [1976], EATWELL [1983], MILGATE [1982], and, with specific reference to the relevance of such a distinction for the Capital Theory Controversy of the sixties and seventies, PETRI [1978, 1984].

⁷ At least for not a too great displacement of the actual path of the economy from the long period position; on this, more later on.

⁸ GAREGNANI [1976] has mainly emphasized this methodological implication. See also EATWELL [1983].

⁹ GAREGNANI (1976), p. 27.

¹⁰ GAREGNANI (1976), p. 28.

forcefully pointed out "... simple labelling of forces as dominant is not enough. These forces must operate through a processes which establishes their dominance and through which the 'law-governed' nature of the system is manifest";¹¹ according to us this points, analytically, on the problem of *stability* of long period positions through the formalization of classical competition in terms of a dynamic process. Or, to put it in different words, it can be said that stability of long-period positions is the form that the problem of gravitation of market magnitudes towards natural magnitudes assumes when we abstract from changes in the persistence causes that govern and control production (or natural) prices and long-run quantities, *i.e.* technology, the class struggle within the economy¹² and the accumulation behaviour of the capitalists.¹³ In their interesting paper, Arena, Froeschle and Torre add to the literature on the stability of long-period positions by contributing both on the methodological and analytical level; in particular they build up two different gravitation models of the classical competitive process in order to call attention to three major problems that surround the theory of gravitation:¹⁴

- (i) the relation between *short-run* and *long-run* theories;
- (ii) the microeconomic foundations of the gravitation process;
- (iii) the nature of market adjustments that are considered in the formalization of the gravitation process.

The purpose of this note is to comment on all this three aspects.

2. I will start my comment by recalling the main features of the cross-dual dynamics modelling of gravitation, the class of gravitation models to which the ones developed by A.F.T. in their contribution belong. Cross-dual dynamic models of gravitation take into account the simultaneous (short-run) adjustment of prices and quantities as a consequence of capital mobility across sectors in pursue of higher rates of profits: capital mobility is the force at work in the capitalist economy when it is out of the long-period position. Such a class of gravitation models is, therefore, characterized by the fact that (market) prices and (actual or market) quantities interact with each other:¹⁵ market prices affect the evolution of produced quantities by determining the profit rates differential according to which capitalists decide their investments; on the other hand quantities exert an effect on market prices by determining the relation between demand and supply on

¹¹ J. EATWELL (1983), p. 211.

¹² That is the level of the real wage rate of the working class.

¹³ On the relation between stability of long-period positions and gravitation, see DUMÉNIL-LÉVY [1987] and BOGGIO [1990].

¹⁴ And whose answer is, according to A.F.T., the necessary step to progress on this field.

¹⁵ This is at the origin of the "cross-dual" definition of such a dynamics; GOODWIN [1970] express the same concept by labeling it "cross-field dynamics".

the market for commodities. Two mechanisms, therefore, govern the (short-run) dynamics of capitalist economy when capital mobility (the expression of competition according to the classics) may display its effects:

- a) the law of demand;
- b) the law of profitability.

The law of demand makes the rate of change of (market) prices depend on excess demand on markets for commodities; the law of demand characterizes, therefore, the way the markets are supposed to function. The law of profitability characterizes the (re)production of commodities; it makes the structure of production depend on the structure of profitability.

Within the class of cross-dual dynamics gravitation models it is possible to single out three different groups of models:

- a) temporary equilibrium models of gravitation;
- b) rationing models of gravitation;
- c) complete disequilibrium models of gravitation.

I will discuss the main properties of these classes of models when dealing with point (iii) of A.F.T.; here I want to underline the fundamental methodological difference that distinguishes the cross-dual dynamic models of the classical-Marxian variety from those belonging to the Walrasian conceptual framework:¹⁶ this will give me the opportunity to deal with the first question that A.F.T. treat, albeit very shortly, in their paper, *i.e.* the relationships, and the respective aims, of *short-run* and *long-run* theories, where short-run theory refers to the adjustment process of the economy (*i.e.* the behaviour of the economy out of the long period position) while long-run refers to the long-period position of the economy;¹⁷ the central point, for them, is the possibility of assuming "...a complete dichotomy between both theories", *i.e.* the possibility of *isolating* the (working) of the adjustment process from the long period position of the economy and, symmetrically, to avoid consequences for the long period position of the economy from the unfolding of the gravitation process. Walrasian cross-dual dynamics models are based on the tâtonnement assumption,¹⁸ while classical-Marxian models conceive of competition as a dynamic, decentralized and sequential process. The decentralized character of the process means,

¹⁶ Walrasian cross-dual dynamics models have been developed by MORISHIMA [1960, 1976, 1977] and by MAS-COLELL [1986] among others.

¹⁷ The problem is dealt more fully in ARENA-TORRE (1986).

¹⁸ The renewed interest in tâtonnement models of prices and quantities is quite recent; see the references at footnote 16. The pioneering contribution of GOODWIN [1953] must also be mentioned. It must also be stressed that tâtonnement models of cross dual dynamics are mainly models of production and exchange (but not accumulation); *i.e.* they assume a rate of profit equal to zero. The comparison with the classical-Marxian models of cross-dual dynamics should be made by considering the Walrasian model of accumulation. On all this we refer the reader to the enlightening treatment of the walrasian model of accumulation that characterizes several contributions by ZAGHINI [1967, 1986].

in particular, that the behaviour of the agents, i.e. the capitalists deciding the investments and the firms deciding the activity levels and the prices of commodities,¹⁹ has to be described on the basis of the information they have; this means that, abstracting from perfect knowledge,²⁰ the formalization of the dynamic process has to avoid any reference to natural magnitudes like the uniform rate of profit or the growth rate of the economy.²¹ The long-run position for the economy is the outcome of its short-run working and is not defined independently of it. I am quite in agreement with the observation that "The assumption of dichotomy of long-run and short-run theories must be seriously questioned when long-run variables are changing more quickly"; in fact I would like to add that such a dichotomy requires also a quick convergence of market magnitudes towards their long-run values.

3. I will now move on to discuss the other points raised by A.F.T. in their paper, — points on which they offer an analytical treatment. Concerning the microfoundations of classical models of gravitation, they deal especially with the problem of expectations and with returns to scale in production. As a matter of fact almost all the contributions to the literature on gravitation assume more or less implicitly static expectations concerning prices;²² in their first model the authors assume that the agents make adaptive expectations, taking into account the actual rate of profits of two years, for the rates of profit and the average rate of profits. While this is certainly an important problem, it is difficult to see the precise role that alternative assumptions about expectations have on the problem of stability of long-period positions; I think it is possible to conjecture that a crucial role is to be played by elasticity of expectations more than expectations formation as such; or, to put the same thing in a different way, expectations of the agents display anyway their effects through the law of profitability. In their paper the authors come across another problem related to proper microeconomic foundations of classical models of gravitation, i.e. the analytical treatment of capital mobility. A.F.T. seem to suggest that the classical authors had in mind a "real capital" mobility process; of course real capital mobility is more likely for circulating capital

¹⁹ We will come back to this point in a while.

²⁰ An assumption that we think is quite in contrast with the conception of competition as a dynamic process, a process, therefore, where uncertainty is of fundamental importance.

²¹ This point has been stressed by EGIDI [1975] and, more recently, by FRANKE [1987], among the others.

²² It seems to me incorrect their statement according to which an assumption of adaptive expectation characterizes the analysis of competition by DUMÉNIL-LÉVY [1987]; DUMÉNIL-LÉVY develops a conceptual framework of "disequilibrium microeconomics" which is based on an assumption of adjustment by the agents to the observation of disequilibrium, which is something else from an assumption of adaptive expectations.

models than for fixed capital models.²³ However, in chapter IV of the *Principles* Ricardo writes:

“... It is perhaps very difficult to trace the steps by which this change is effected: it is probably effected, by a manufacturer not absolutely changing his employment, but only lessening the quantity of capital he has in that employment. In all rich countries, there is a number of men forming what is called the monied class; these men are engaged in no trade, but live on the interest of their money, which is employed in discounting bills, or in loans to the more industrious part of the community”

and he adds:

“There is perhaps no manufacturer, however rich, who limits his business to the extent that his own funds alone will allow: he has always some portion of his floating capital, increasing or diminishing according to the activity of the demand for his commodities. When the demand for silks increases, and that for cloth diminishes, the clothier does not remove with his capital to the silk trade, but he dismisses some of his workmen, he discontinues his demand for the loan from the bankers and monied men, while the case of the silk manufacturer is the reverse...”

Financial capitalists (the “monied class” to which Ricardo makes reference) and the credit system (the bankers) are thus explicitly taken into account by Ricardo, for example, in analysing the way capital mobility is realized.

I come, finally, to the last point I want to stress; the nature of market adjustment. As I mentioned above we may distinguish the class of market-clearing models of gravitation from that of disequilibrium models.²⁴ Market clearing models are essentially temporary equilibrium models of the neoclassical variety that deal with the problem of prices and quantities in a multisectoral competitive economy. In fact neoclassical multisectoral models of prices and quantities assume that relative prices adjust in such a way that a uniform, but changing, rate of profits prevail in each period (or instant) of time, while in classical models a uniform rate of profits prevail only asymptotically. The limits of such an approach to the problem of gravitation is the tatonnement dynamics that characterize prices; as quite rightly pointed out by Flaschel-Semmler²⁵ such an analysis of gravitation depends on two distinct notions of time.²⁶ I think that the disequilibrium approach is the more promising on this point.

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²³ NIKAIDO [1983] develops a classical model of gravitation with real capital mobility.

²⁴ Disequilibrium models may be distinguished furthermore according as they assume capacity constraints (rationing models) or if they take into account the possibility that decisions to produce and invest may be realized through changes in inventories.

²⁵ FLASCHEL-SEMMLER [1987].

²⁶ DUMÉNIL-LÉVY [1983] says the same thing, it seems to us, when they observe that in such a case the dynamic process that the working of competition establishes in the economy is not a truly decentralized one.

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