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Is a Marxist explanation of the current crisis possible?

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The object of the paper is to explore whether, or to what extent, a Marxian explanation of the current capitalist crisis is possible. The answer is that, although Marx's theory offers important insights to understanding the ultimate causes of capitalist crises, it is not able to provide a fully satisfactory explanation of typical crises of contemporary capitalism.

In particular, Marx's analysis cannot account for the long periods of stagnation following the eruption of financial and economic crises. In Marx's analytical context, crises are followed by recovery and growth in a relatively short span of time. It is argued that the main reason for Marx's inability to explain crises of contemporary capitalism is that he developed his analysis by considering free-competitive economies, whereas modern economies are characterized by monopolistic competition. A more satisfactory explanation of the current crisis requires going beyond Marx's original contributions.

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1 INTRODUCTION

The economic and financial crisis that began in 2007–2008 eloquently showed the inability of mainstream economics to perceive and explain the fundamental characteristics and the contradictory nature of capitalist market economies. Non-mainstream approaches of different denominations claim to be able to provide better and more satisfactory interpretations of the current crisis.

A significant part of the non-mainstream camp is represented by economists who draw inspiration from Marx's analysis of capitalism. In their view, Marx's focus on the contradictory nature of capitalism and its recurrent experiencing of economic crises provides far better theoretical and analytical instruments to understand the current capitalist phase. The object of the present paper is to explore whether, or to what extent, this Marxist claim is warranted.

In very general terms, the paper argues that Marx's theory can provide an explanation for some fundamental causes of the current crisis but it cannot offer a full explanation of it and, in particular, its prolongation over a significant span of time.

Crises take on specific characteristics that are contingent on the historical phase in which they occur. The present crisis is no exception. But to acknowledge the specific historical character of each crisis does not imply that it is impossible to find some basic features that are common to all. In other words, it is possible to single out some factors that can be regarded as the ultimate causes of capitalist crises. If, despite its transformation, the capitalist mode of production retains its essential features, this must be true also for crises.

Two relevant features of the crisis of 2007–2008, and the preceding period that led to its eruption, are that, in most economies, the process of growth was accompanied by growing inequality in terms of income and wealth; there has been an exceptional process of expansion and innovation of the financial sector, accompanied by growing instability and fragility, which have played a crucial role in the eruption of the crisis.

Both these aspects can be explained and interpreted in Marxian terms. For Marx, distributive inequality, which necessarily is associated with a limited purchasing power of the poorer sections of the economy, is at the core of the explanation of capitalist crises. The ultimate reason for all crises is always the constrained purchasing power of a large part of the population as opposed to the tendency of capitalism to develop the productive forces to the maximum possible extent.

The financial sector certainly plays a crucial role in contemporary capitalism, but its importance for the dynamics of capitalism cannot be regarded as a feature specific to the current historical phase. Finance has always been crucial in the capitalist process of accumulation, growth and crises. On the one hand, finance favors the process of investment by making it less risky at the individual level, even though not less risky at the social aggregate level; on the other hand, finance is inherently prone to speculation and crises that inevitably reverberate through the real economy. Marx had perceived some of these aspects in his analysis of the nineteenth century capitalism.

However, for Marx's theory to be able to contribute to the explanation of the current crisis, it is necessary to take into account some crucial transformations of capitalist economies with respect to nineteenth century capitalism, to which he referred. The structure and organization of production as well as markets in contemporary capitalism are significantly different from those considered by Marx.

The free-competitive capitalism analysed by Marx and Classical Political Economy evolved to become a system characterized by monopolistic competition, the dominance of large oligopolistic firms, etc. Marx himself anticipated some aspects of this transformation, but he did not fully develop his analysis.

The structural transformations undergone by capitalist economies imply, in particular, that crises no longer take the form described by Marx – that is, violent market perturbations ('overproduction crises'). The inability of the economy always to engender adequate levels of effective demand with respect to its productive capacity tends to be associated with relatively long periods of time characterized by low levels of production and employment, rather than by the eruption of deep generalized market perturbations followed by a relatively rapid recovery. The analysis of these aspects requires us to go beyond Marx's original contributions.

In conclusion, Marx's theoretical and analytical contributions are still important and relevant for the comprehension of current crises, but they cannot be regarded as exhaustive. A more thorough and satisfactory interpretation of contemporary crises necessarily requires further developments of Marxian theory by looking to other theoretical traditions, like Keynesian economics and the approach of Kalecki, who was however significantly influenced by Marxism.

The paper is organized as follows. Section 2 is devoted to the discussion of Marx's theory of crises. Section 3 looks at the limits of Marx's analysis to explain the present situation and illustrates the lines along which it must be developed to deal with modern capitalism. Section 4 concludes.

2 MARX'S THEORY OF CRISES

2.1 The possibility of crises

Marx's theory of crises originates from his critique of Say's law.[1] By rejecting Say's law, Marx was able to show that there is no reason why aggregate demand should always equate to aggregate supply. In Marx's terminology, general overproduction crises are possible.

For Marx, there is no possibility of dealing with the problem of demand and crises in a meaningful way if the analysis is carried out by ignoring the essential characteristics of capitalism, which is a monetary economy where firms' production and investment decisions are made individually and driven by profit maximization.[2]

In a barter economy, in which Say's law necessarily holds, the two acts of selling and purchasing are simultaneous. The very nature of barter prevents any seller from deferring her purchase, so it is impossible for aggregate demand to fall short of aggregate supply. The same analytical result can be achieved even if the hypothesis of barter is removed and it is assumed that the exchange of commodities takes place through money, which is assumed to be used and demanded only as a means of circulation.[3]

For Marx, by contrast, in a capitalist economy money may be kept idle (hoarded). In other words, money can be demanded also as a store of value and not simply as a means of circulation. If it is admitted that money can be kept idle, there is no longer any reason why the act of purchasing should coincide with the act of selling. The seller might not buy commodities at all, or spend only a part of her money on commodities, and hold the remaining part idle.

In some circumstances, it is possible that a significant number of money holders prefer not to buy commodities but to keep money hoarded. The economy's propensity to hoard rises significantly. Marx's analysis of the possibility of crises due to an insufficient level of effective demand is based on his analysis of the reasons why the economy's propensity to hoard can increase.

For Marx, the possibility of crises due to an insufficient level of aggregate demand depends on the capitalists' decisions to increase their money hoards instead of spending money on commodities (directly or indirectly). The reason why the capitalist class as a whole should increase its propensity to hoard has to be found in the essential characteristics of capitalism, namely in the capitalists' motives for production and accumulation.

In a capitalist economy, entrepreneurs do not simply produce commodities in order to satisfy (directly or indirectly) their wants. Rather, they start production and investment processes in order to make a profit, indeed in order to maximize profits. Crises can be understood by taking account of this fundamental characteristic of the capitalist mode of production.[4]

1. For a more thorough examination of Marx's theory of crises, see Sardoni (1987) and Sardoni (2011), on which this section is partly based.
2. Ricardo, by regarding the capitalist exchange of commodities as equivalent to barter, ignored an essential feature of capitalism and, hence, accepted Say's law and denied the possibility of general overproduction crises.
3. This is Ricardo's world.
4. 'In reproduction, just as in the accumulation of capital, it is not only a question of replacing the same quantity of use-values of which capital consists, on the former scale or on enlarged scale (in the case of accumulation), but of replacing the value of the capital advanced along with the usual rate of profit … . If, therefore, through any circumstance or combination of

When a large number of entrepreneurs do not expect that production and investment are profitable, they keep money idle and aggregate demand falls short of aggregate supply:

> the supply of all commodities can be greater than the demand for all commodities, since the demand for the general commodity, money, exchange-value, is greater than the demand for all particular commodities, in other words the motive to turn the commodity into money, to realize its exchange-value, prevails over the motive to transform the commodity again into use-value. (Marx 1968, p. 505)

Marx's view can be expressed as follows. An initial actual fall in market prices induces capitalist entrepreneurs to expect future prices and profits to be below what they regard as their normal levels, so that money is hoarded rather than used to purchase means of production and hire labor. As a consequence the demand for commodities and labor falls with further negative effects on prices. In the description of such a process, the importance of expectations must be stressed. In fact, only if expectations are introduced does talk of hoarding make sense. That a reduction in prices lowers profits and that this may lead to a reduction in the rate of accumulation and production is obvious. But in this case, hoarding need not take place. Investment and production may decline, but all the money capital is nonetheless spent.

However, the analysis developed so far demonstrates only that crises are possible, which does not explain how and why they actually occur. We now turn to look at Marx's explanation of the actuality of crises.

2.2 The actuality of crises

For Marx, capitalist economic crises always take the form of a general overproduction of commodities, which brings about a fall in prices and profits. As a consequence, capitalist firms curtail production and investment, which in turn causes a further fall in aggregate demand, prices and profits.

To explain why crises take the form of general overproduction of goods, it is necessary to look at the analytical context in which Marx carried out his analysis. Marx developed his analysis of capitalism by considering an economic system in which free competition is the prevailing market form and firms produce at constant short-period returns.[5] In this context it is easy to see that profit-maximizing firms push production to its maximum; they produce to capacity.

circumstances, the market prices of the commodities … fall far below their cost-prices, the reproduction of capital is curtailed as far as possible. Accumulation, however, stagnates even more. Surplus-value amassed in the form of money (gold or notes) could only be transformed into capital at a loss. It therefore lies idle as a hoard in the banks or in the form of credit money … . Purchase and sale get bogged down and unemployed capital appears in the form of money' (Marx 1968, p. 494).

5. A free-competitive economy is characterized by the fact that each single firm is unable to affect the price at which its output is sold. Moreover, there are no barriers to entry in an industry. On the notion of competition in Marx, and Classical Political Economy, which is very different from the neoclassical notion of perfect competition, see, for example, McNulty (1968). Firms produce at constant unit variable costs and decreasing average total costs, which reach their minimum when production is pushed to its maximum. Maximum production need not be

These assumptions imply that, insofar as the price expected by a firm is above its unit variable cost, it is

$$X = X_M \text{ for } \forall p^e \geq \nu, \tag{1}$$

where X_M is the firm's maximum level of production, p^e is the expected price and ν is the (constant) unit variable cost.

On the other hand, it is

$$X = X_m \text{ for } \forall p^e < \nu, \tag{2}$$

where X_m is the minimum level of production and ν is the unit variable cost.

As for investment decisions, for Marx, profit-maximizing firms tend to increase their productive capacity to the maximum possible extent insofar as the expected rate of profit is above a certain minimum rate of profit; that is to say,

$$\begin{aligned} \Delta K &= \max \text{ for } \forall r^e \geq r^* \\ \Delta K &\leq 0 \text{ for } \forall r^e < r^*, \end{aligned} \tag{3}$$

where r^* is determined by the rate of interest, which depends on the demand for and the supply of money.

Here, for brevity, we do not deal with Marx's theory of the rate of interest in detail. It will suffice to say that, although Marx explicitly stated that the rate of interest depends on demand and supply of money loans (Marx 1959, p. 366), his theory cannot be reduced to a theory of 'loanable funds'. In fact, in Marx's terminology, people borrow even when they sell securities and discount bills. But selling securities and discounting bills is to demand liquidity, not to borrow in order to expand productive capacity.[6]

The capitalist drive to produce and grow at the maximum possible extent clashes with its incapacity to have a corresponding expansion of aggregate demand and, in particular, of the demand for consumer-goods. In fact, when Marx turns to explaining the occurrence of crises, he starts from the hypothesis that there is an initial excess supply in the consumer-good industries. He was convinced that the industries producing consumer-goods were those most likely to experience an overproduction.

The overproduction of consumer-goods then affects the capital-goods industries, which experience overproduction as well. As a consequence of the overproduction of capital-goods, production and employment in this sector are reduced as well. This, in turn, has a negative impact on the demand for consumer-goods, with an additional negative effect on their demand for capital-goods, and so on. The initial partial overproduction crisis turns into a general overproduction crisis.

The reason why overproduction is likely to occur first in the consumer-goods sector is that the bulk of the demand for these goods comes from the working class, whose

interpreted as the maximum output technically feasible. In some circumstances, firms can maximize profits by producing less than what is technically the maximum output; on this aspect, see Kurz (1990).

6. Borrowing to finance investment is only the first of the three forms of borrowing considered by Marx (1959, p. 425). Marx defines borrowing to expand production as a loan of money-capital, whereas the other two forms of loans are simply called advances of money (Marx 1959). For more details on this issue, see Sardoni (1998).

purchasing power in a capitalist economy is constrained.[7] Thus, the fundamental reason for crises is always ‘the poverty and restricted consumption of the masses as opposed to the drive of capitalist production to develop the productive forces as though only the absolute consuming power of society constituted their limit’ (Marx 1959, p. 484).

Like all industries, the consumer-goods industries are driven to push production and investment to the highest possible levels, while the purchasing power of the majority of consumers of those goods is constrained. There is no reason why the purchasing power of the working-class should, or could, grow at the same rate as the supply of wage-goods.

The capitalist class as a whole, and the whole economic system, faces a contradiction. From the point of view of demand, wages should grow at a rate that ensures that consumer-goods can be sold at their normal prices. From the point of view of the profitability of the process of production, wages are constrained.[8]

The wage rate can increase, and – over the cycle – it actually does so, but its rate of increase must not be such as to lower profits below a certain critical rate (Marx 1954, pp. 574–600). Subject to this constraint, there is no reason why the rate of increase of wages should be such as to always ensure a sufficient level of effective demand.

At this stage, it is natural to ask whether, for Marx, there also exist limits to the expansion of the demand for capital-goods (investment), which could play an analogous role to that played by the constraint on the demand for wage goods. This amounts to seeing whether the process of accumulation gives rise to a decline in the expected rate of profit that, in turn, determines a decline in the capitalists’ drive to invest.

It is possible to argue that there is an aspect of Marx’s theory that establishes an inverse relationship between accumulation and the rate of profit. As is well known, Marx held that in a capitalist economy there exists a tendency for the rate of profit to decline. As accumulation proceeds, the organic composition of capital (the ratio of fixed plus circulating capital to direct labor) increases because the new techniques are more mechanized, and the rate of profit has to fall (Marx 1959, pp. 211–266).[9]

7. ‘Overproduction is specifically conditioned by the general law of the production of capital: to produce to the limit set by the productive forces, that is to say, to exploit the maximum amount of labour with the given amount of capital, without any consideration for the actual limits of the market or the needs backed by the ability to pay; and this is carried out through continuous expansion of reproduction and accumulation, and therefore constant reconversion of revenue into capital, while on the other hand, the mass of producers remain tied to the average level of needs, and must remain tied to it according to the nature of capitalist production’ (Marx 1968, pp. 534–535).

8. Marx (1973, pp. 419–420) pointed out this contradiction clearly: ‘To each capitalist, the total mass of workers, appears not as workers but as consumers, possessors of exchange values (wages), money, which they exchange for his commodity.’ However, each capitalist ‘knows this about his workers, that he does not relate to him as producer to consumer, and [he therefore] wishes to restrict his consumption, i.e. his ability to exchange, his wage, as much as possible. Of course he would like the workers of other capitalists to be the greatest consumers possible of his own commodity. But the relation of every capitalist to his own workers is the relation as such of capital and labour, the essential relation’ (ibid., pp. 419–420).

9. For Marx, the rate of profit (in value terms) is $r = \frac{S}{(C+V)} = \frac{\frac{S}{V}}{(\frac{C}{V}+1)}$, where $\frac{S}{V}$ is the rate of exploitation (S is the aggregate surplus-value), and $\frac{C}{V}$ is the organic composition of capital (C is constant capital and V is variable capital). Increases in the organic composition of capital raise $\frac{S}{V}$, so that the tendency of r to fall may be offset, but eventually the tendency to fall must prevail because of natural limits to the growth of labor productivity (Marx 1959, p. 260). Here, for simplicity and brevity, we take for granted that Marx’s law is correct, but this is not the case. Many

But this inverse relationship between the rate of accumulation and the rate of profit cannot be used to explain overproduction crises due to an insufficient level of demand. For this purpose, we need an inverse relationship between the volume of investment and the *expected* rate of profit. On the contrary, Marx's law asserts an inverse relationship between the volume of investment and the *actual* rate of profit. In fact, firms introduce more mechanized techniques, which ultimately lower the rate of profit, because they *expect* a higher rate of profit. It is only *ex post* that they realize that the actual rate is lower.

Mechanization allows the innovative firm in an industry to produce at a lower cost, so that it can earn an extra profit by selling its commodity at the prevailing price (associated with the prevailing method of production used by the other firms). Therefore the new technology is introduced in view of a higher expected rate of profit, and insofar as the firm can produce at a lower cost and sell at the old price, it actually does earn a higher rate of profit. Sooner or later, however, the other firms in the industry adopt the new technology. This lowers the price and the extra profits disappear. The new ruling price is linked to a lower normal rate of profit, because of the higher organic composition of capital (Marx 1959, pp. 264–265).

Thus the law can manifest itself just because capitalist firms are induced to adopt techniques with a higher organic composition of capital by their expectations of a higher rate of profit. But if this is so, it cannot be argued that firms might invest less than is required to ensure the equality between aggregate supply and demand.[10] In conclusion, the capitalist drive to produce and invest at the highest possible rates is essentially constrained only by the limits to the growth of the purchasing power of the largest part of population.

2.3 'Underemployment equilibria' in the Marxian framework?

The eruption of crises generates a sharp decrease in prices, production and investment, which is accompanied by an increase in unemployment. Such situations can be denoted as 'underemployment levels of activity'.

The relevant question to be considered is whether Marx's underemployment levels of activity can be interpreted as underemployment equilibria in a Keynesian or Kaleckian sense; that is to say, positions of the economy that tend to persist over time, insofar as there is no external (exogenous) factor that pushes the economy away from them. The answer, in my opinion, must be in the negative.

Within Marx's analytical setting, in order to argue that an underemployment level of activity can represent a stable position, it must be maintained that crises are permanent phenomena, in the sense that once a crisis has taken place, there is no automatic (endogenous) mechanism to ensure recovery. But Marx himself pointed out that crises are not permanent. Once a general overproduction crisis has taken place, there are

authors have shown that, when the rate of profit is expressed correctly in price rather than value terms, the law no longer holds. The introduction of more productive techniques can never cause the rate of profit in price terms to fall. Okishio (1961) showed that every innovation must engender a higher rate of profit in price terms.

10. One could argue that firms can foresee the eventual fall in the rate of profit, so that they do not invest because they have 'rational' expectations. But if firms can foresee the eventual fall in the rate of profit, this does not imply that they will not invest. They could keep on investing by simply enlarging their productive capacity without technical innovations; they would still maximize their profits (with a constant rate of profit).

endogenous forces that push the economy to resume the process of growth and impel it toward the full utilization of the existing productive capacity.

One main factor, in particular, propels the economy away from its 'underemployment level of activity': the fall in the general level of prices. It was Marx himself who pointed out that the recovery is brought about by the fall in current prices generated by a general overproduction crisis.[11] In order for the economy to remain at an 'underemployment level of activity', it is required that, over time and throughout the system, it is

$$\begin{aligned} p^e &< \nu \\ r^e &< r^*. \end{aligned} \tag{4}$$

But the fulfillment of those conditions is not ensured.

As a consequence of the fall in market prices, ν falls as well and this will affect both the conditions expressed in (4). If ν falls, expected prices can become higher than unit costs, so that firms start to produce to capacity again. On the other hand, a fall in market prices also affects the expected rate of profit, $r^e = \frac{(p^e - \nu)X - F}{K}$. When prices fall, ν, F and K fall as well and, of course, the expected rate of profit is positively affected. If r^* is given and constant, it is not necessarily ensured that $r^e < r^*$ holds over time.[12]

Thus, when the economy is experiencing underemployment levels of activity there are forces at work that prevent such situations from becoming permanent. The tendency to produce and invest at the highest possible rates prevails again, and the economy is pushed towards the full utilization of its capacity and the corresponding level of employment.

Therefore, it can be concluded that, in Marx's original analytical context, we have a cyclical process of growth, with an overproduction crisis at every trough of the cycle. After the crisis, there is a period of stagnation, followed by recovery in a relatively short span of time, and a boom up to a new crisis.[13] Employment follows the same pattern: it is at its lowest levels during the stagnation, and it reaches its maximum possible levels during prosperity.

2.4 An alternative interpretation of crises

The interpretation of Marx's theory of crises expounded above raises a question. If the essential demand constraint faced by the economy is the limited capacity to spend on consumer-goods, while the demand for capital-goods is not subject to similar constraints, could it not be the case that the growth of the economy takes the form of a continuous expansion of the capital-goods sector, while the consumer-goods sector keeps on shrinking? In such a way, the economy would not experience any demand constraint.

11. Because of a crisis, 'a large part of the nominal capital of the society, i.e. of the exchange-value of the existing capital, is once and for all destroyed, although this very destruction, since it does not affect the use-value, may very much expedite the new reproduction' (Marx 1968, p. 496).
12. Here we abstract from the fact that firms could adopt new technologies that lower their costs. This would represent a further factor that brings about the recovery.
13. 'The life of modern industry becomes a series of periods of moderate activity, prosperity, overproduction, crisis and stagnation' (Marx 1954, p. 427).

This sort of interpretation of Marx's theory of growth and crises was put forward by Tugan-Baranovsky (1913).[14] Tugan-Baranovsky believed that whatever is the economy's level of consumption, total output can always be absorbed if the required level of aggregate demand is generated by investment. This implies that the total output must have the adequate composition; that is to say, the required proportion between the production of capital-goods and consumer-goods. If this requirement is not fulfilled, the economy is subject to a crisis, caused by disproportionality between sectors.[15]

Tugan-Baranovsky's position can be easily represented by using Marx's schemes of reproduction. Let us consider a two-sector economy, in which sector 1 produces capital-goods and sector 2 produces consumer-goods; let us also assume, for simplicity, that capitalists do not consume and workers consume their wage entirely. At time t, it is

$$\begin{aligned} k_{1,t} + w_{1,t} + p_{1,t} &= K_t \\ k_{2,t} + w_{2,t} + p_{2,t} &= C_t, \end{aligned} \tag{5}$$

where K is the total output of capital-goods, C is the total output of consumer-goods, k_1 is the amount of capital-goods used to produce capital-goods, k_2 is the amount of capital-goods used to produce consumer-goods, w_1 is the wage bill paid to workers in sector 1, w_2 is the wage bill payed to workers in sector 2, and p_1 and p_2 are total profits in sectors 1 and 2 respectively.

If it is assumed that all profits are saved and spent on capital-goods, so that the demand for labor in both sectors remains unchanged, to have the equality of aggregate supply and demand at t, it must be

$$w_{1,t} = k_{2,t} + p_{2,t.} \tag{6}$$

The demand for consumer-goods generated by the workers of the first sector must equate to the demand for capital-goods by the second sector. Condition (6) clearly shows that equilibrium can be realized at whatever level of consumption. The workers' demand for consumer-goods can be at any low level without affecting the economy's ability to grow.

Thus, Tugan-Baranovsky's position appears as indisputable, but its fallacy becomes evident as soon as the equilibrium condition (6) is considered in dynamic terms; that is, as a condition that ensures a balanced process growth over time rather then in the single period t.

Let us suppose that, at t, condition (6) is fulfilled. At $(t+1)$, the economy can still grow without overproduction if it is

$$w_{1,t+1} = k_{2,t+1} + p_{2,t+1.} \tag{7}$$

As, by assumption, w_1 does not change from t to $(t+1)$, from (6) it follows that

$$k_{2,t} + p_{2,t} = k_{2,t+1} + p_{2,t+1}, \tag{8}$$

14. Tugan-Baranovsky's approach was criticized by Rosa Luxemburg (2003). See Kalecki (1991b) for a brief but illuminating reconstruction of this debate.
15. Rosa Luxemburg, by contrast, argued that, given the limited capacity to consume of the economy, the process of growth can proceed only if there exists 'external' markets that generate the required level of demand. Without such markets, firms would not be induced to invest because of the expected low level of demand for consumer-goods.

which can be fulfilled only if its $p_{2,t+1} = 0$; that is, profits of sector 2 at $t+1$ must be entirely consumed.

This is hardly an acceptable representation of a capitalist economy. There is no plausible reason why some capitalists (those of sector 1) are parsimonious while the others are prodigal. If capitalists in sector 2 behave like the others, there is inevitably an overproduction of consumer-goods, which will then also affect the demand for capital-goods.

The situation just depicted is a limiting case, in which there is no growth of the demand for labor in both sectors and, in particular, in the first sector. However, the conclusions do not change significantly if the labor demand in sector 1 is allowed to grow over time.

Let us suppose that employment, and the wage bill, in sector 1 grow at a rate h.[16] If we assume that at time $t = 0$ there is equilibrium between aggregate supply and demand, the economy can experience equilibrium over time if

$$w_{1,0}e^{ht} = (k_{2,0} + p_{2,0})e^{\gamma t}, \tag{9}$$

where γ is the rate of accumulation of sector 2.

Condition (9) can be fulfilled only if it is $h = \gamma$. The consumer-goods sector must increase its capital at the same rate as the rate at which the demand for consumption from sector 1 grows. This means that the rate of accumulation in sector 2 must be lower than the rate of accumulation in sector 1.[17] If the consumer-goods sector accumulates its capital at a faster rate than h, its output cannot be absorbed entirely by the first sector. Again, there is no plausible reason to justify such behavior of capitalists in sector 2.

Moreover, even if one were ready to accept that the consumer-goods sector behaves in the way required to ensure equilibrium between demand and supply of its goods, this kind of analysis would lead to the conclusion that the consumer-goods sector tends to disappear over time. This, in turn, would produce a growing rate of unemployment because of the assumption of the growing mechanization of the capital-goods sector. Hardly a realistic conclusion.

2.5 The role of finance

Although Marx never arrived at an organic and polished exposition of his analysis of credit and finance in capitalist economies, he offered some important indications concerning the crucial role played by credit and the financial sector in the process of accumulation, growth and crises.

> The credit system appears as the main lever of over-production and over-speculation in commerce solely because the reproduction process, which is elastic by nature, is here forced to its extreme limits, and is so forced because a large part of the social capital is employed by people who do not own it and who consequently tackle things quite differently than the owner, who anxiously weighs the limitations of his private capital in so far as he handles it himself. This simply demonstrates the fact that the self-expansion of capital based on the

16. Notice that the initial hypothesis that growth is sustained by a growing demand for capital-goods implies that h must be lower than the rate of accumulation of sector 1.
17. That is to say, $\frac{p_2}{k_2} < \frac{p_1}{k_1}$. Notice that if the standard hypothesis of the uniformity of the rate of profit is made, such a condition can never be fulfilled.

> contradictory nature of capitalist production permits an actual free development only up to a certain point, so that in fact it constitutes an immanent fetter and barrier to production, which are continually broken through by the credit system. (Marx 1959, p. 441)

Credit functions as a sort of accelerator of the process of accumulation and growth, but it cannot prevent the economy from experiencing crises, generated by its inherent contradictions. Moreover, credit and finance favor speculative behavior, which is another factor of crisis: 'Since property here exists in the form of stock, its movement and transfer become purely a result of gambling on the stock exchange' (Marx 1959, p. 440).

At the beginning of the twentieth century, the Marxist theory of credit was systematized and developed by Hilferding (1981), who saw the 'latest phase' of capitalism as characterized by the elimination of free competition and the growing importance of credit and finance. Hilferding stressed the crucial role of credit and speculation during the different phases of the business cycle (ibid., pp. 267–281), but at the same time he pointed out that the ultimate reason for crises has to be found in the real sector.

2.6 Summary and conclusion

The main features of Marx's theory of crisis can be summarized as follows:

1. By introducing the possibility of keeping money idle (hoarding), Marx introduced the possibility that the level of effective demand falls short of the level of aggregate supply.
2. An increase in the demand for idle money, at the aggregate level, takes place when the capitalist class as a whole is induced to regard investment and production as non-profitable.
3. Crises generated by an insufficient level of demand take the form of general overproduction crises. The analysis is carried out under the assumption that free competition is the prevailing market form.
4. General overproduction crises, however, are temporary phenomena. The economy recovers and starts a new process of accumulation and growth in a relatively short span of time.
5. The possibility that effective demand grows at the required rate to avoid general overproduction thanks to the continuous expansion of the capital-goods sector appears highly unrealistic.

3 MARX'S THEORY AND THE PRESENT CRISIS

Marx's theory of crises is able to explain important aspects of the crisis which capitalist economies experienced in the late 2000s. Marx's individuation of the ultimate reason for crisis in the constrained purchasing power of a large section of the society relates to the crucial role that growing inequality in income and wealth has played in the current crisis. Marx's view of the role of finance as an accelerator of the capitalist process of growth and crisis relates to the destructive role that the financial sector played in the eruption of the present crisis.

This, obviously, does not mean that Marx's original analysis can be applied to the present situation in a mechanistic way. Marx's contributions must be developed and modified to take account of the specific characteristics of the current situation. In particular, with respect to the role of the financial sector, Marx did not consider a particular aspect that has been of crucial relevance in the current crisis – that is to say, the fact that, thanks to the expansion and innovation of the financial sector, the economy could, for a relatively long period of time, avoid the negative effects on aggregate demand of the worsening of wealth and income distribution. As is well known, the expansion of the financial sector made it possible to have a growing indebtedness of households, which could maintain high levels of consumption despite their limited growth of income.

However, it is when we turn to look at the real sector of the economy that Marx's original analysis most evidently shows its inadequacy to deal with the current crisis and its aftermath. Despite the eruption of the financial crisis and the consequent fall of effective demand, production and employment, the economy did not experience phenomena of general overproduction like those depicted by Marx.

Insufficient levels of effective demand caused an increase in the degree of unused capacity and unemployment but not significant market perturbations, so that the prices of goods remained substantially stable. Moreover, this state of the economy has lasted for a large number of years, rather than being rapidly followed by recovery.

Situations of such a kind[18] cannot find a satisfactory interpretation and explanation within Marx's analytical context. Dealing with the present effects of low levels of effective demand requires that Marx's analysis is modified and developed by drawing inspiration from the works of Keynes and, in particular, of Kalecki, whose contribution represents a bridge between the Marxian and Keynesian traditions.[19]

Kalecki carried out his analysis within a framework in which imperfect competition and oligopoly are the prevailing market forms.[20] In this analytical context, it is possible that low levels of demand give rise to situations in which firms produce below capacity and restrain their growth while prices remain relatively stable, because they are cost-determined and not significantly affected by the level of demand.

Kalecki rejected the traditional hypothesis of increasing short-period supply curves, asserting that they are generally flat up to the full utilization of capacity, and only afterward become steeply increasing. Under this hypothesis, the only way to establish an equilibrium level of production for the firm is to posit that it always produces to capacity unless the expected price falls below the unit prime cost; but this clashes with empirical reality, where firms do not always fully utilize their capacity even though the price is above the prime cost (Kalecki 1991a, p. 31).

The rationale of such behavior has to be found in the type of markets in which firms operate; that is, non-perfectly competitive markets. If firms do not operate in free competition, they face a demand curve that is not perfectly elastic (both in the short and in the long period). In such a situation the level of production (and employment) at which the firm's profits are maximized is the one at which the (constant) marginal cost is

18. 'Underemployment equilibria' in Keynesian terminology.
19. Joan Robinson, who paid most attention to the relationships between Marx and Keynes, often pointed out that Kalecki was the natural *trait d'union* between the two.
20. Kalecki's notion of non-perfectly competitive markets was partly influenced by Marx's analysis of the capitalist tendency to concentration and centralization of capital, which leads to the superseding of free competition. But, while Marx's analysis leads to the conclusion that the whole economy will eventually be characterized by the existence of a few large monopolistic firms in every industry, in Kalecki's analysis there is a process of concentration of capital and the creation of large dominant firms, which does not necessarily imply the disappearance of smaller firms. 'Imperfections' and differentiations of markets make it possible for relatively small firms to remain in the market.

equal to the (decreasing) marginal revenue. But this level does not necessarily imply the full utilization of the firm's capacity.

However, the analytical framework considered so far cannot provide the demonstration that the economy could tend to equilibria characterized by unemployment of capital and labor. In a current period, firms may well produce below capacity and employ fewer workers than their plants would allow, but if aggregate demand is not constrained by any obstacle the eventual result must still be the full utilization of capacity with its corresponding level of employment. This would be the 'true' equilibrium position.

The demonstration of the possibility of underemployment equilibria is contingent on demonstrating that there exist constraints to an unlimited expansion of firms through investment. Kalecki explained the existence of such constraints by looking both at the demand side and at financial markets. Of the two factors usually cited as limiting a firm's size and growth rate, that is to say increasing costs caused by diseconomies of scale and demand limitations, Kalecki regarded only the second as relevant, even though he did not regard the demand constraint as a completely satisfactory explanation of the limits to the growth of firms. In fact, the demand constraint *per se* cannot account for the existence in an industry of firms of different sizes.[21]

The decisive factor for a firm's growth is the amount of 'entrepreneurial capital' available to it. And this is not only because the firm's own capital represents the main source of finance for new investment projects but also because the amount of external finance available to any firm in the market depends largely on its 'entrepreneurial capital'.

> The access of a firm to the capital market … is determined to a large extent by the amount of its entrepreneurial capital. It would be impossible for a firm to borrow capital above a certain level determined by the amount of its entrepreneurial capital. If, for instance, a firm should attempt to float a bond issue which was too large in terms of its entrepreneurial capital, this issue would not be subscribed in full … . In addition, many firms will not use to the full the potentialities of the capital market because of the 'increasing risk' involved in expansion. (Kalecki 1965, pp. 91–92)[22]

Thus, there emerges an explanation of the limits to the growth of the individual firm, even in the presence of increasing returns in the long period. Because of demand and financial constraints, firms do not tend to establish an unlimited increase of their productive capacity. From these general conclusions, Kalecki derived a specific investment function.[23] A full treatment of Kalecki's theory of investment is beyond the scope of the present work.[24]

21. 'The limitation of the size of the firm by the market for its products is real enough but it leaves unexplained the existence of large and small firms in the same industry' (Kalecki 1965, p. 91).
22. 'Many economists assume, at least in their abstract theories, a state of business democracy where anybody endowed with entrepreneurial ability can obtain capital for starting a business venture. This picture of the activities of the "pure" entrepreneur is, to put it mildly, unrealistic. The most important prerequisite for becoming an entrepreneur is the ownership of capital' (Kalecki 1965, pp. 94–95). The assumed 'business democracy' is, of course, the hypothesis of perfect competition.
23. In fact, Kalecki made many attempts at deriving a function that he regarded as fully satisfactory. His last attempt at formulating an investment function was in 1968 (Kalecki 1991c), shortly before his death in 1970.
24. For further developments of Kalecki's theory of investment, see Kalecki (1991c). See also Asimakopulos (1971; 1977); Steindl (1981); Sawyer (1985, pp. 43–69).

4 CONCLUSION

Marx analysed capitalism of the nineteenth century and criticized the mainstream of his time, which was Classical Political Economy. Since then, capitalism has undergone a deep process of transformation and the dominant economic paradigm of today is very far from the approach of Smith, Ricardo, Mill, etc. Nonetheless, Marx's theory is still able to explain *some* essential characteristics of capitalist crises.

The ultimate causes of crises are to be found in the inherent contradictions of capitalist market economies, namely in their inability to always ensure that the growth of production and productive capacity is compatible with the growth of the purchasing power of the large majority of the society. Such an inability is inherently linked to the productive and distributive contradictions of capitalism. The profit-maximization drive prevents the economy as a whole from ensuring that the purchasing power of the large majority of the population always grows at the same pace as output and productive capacity. In this framework, finance plays an important role. Finance favors the process of accumulation and growth and it can help to reduce the impact and consequences of the deeper 'real' contradictions of the economy.

However, Marx's original analysis cannot provide a satisfactory account of some important features of contemporary capitalist crises. The essential contradictions of the economy still manifest themselves with the periodic explosion of crises, which however do not take on the same form as that envisaged by Marx. Even though during a crisis the prices of financial assets can decline very sharply, the economy no longer experiences significant market perturbations in the guise of large declines of the prices of goods as well as nominal wages. Production, investment and employment contract, but with no relevant effects on prices of goods and services and on nominal wages.

This characteristic of contemporary capitalism is related to the change of the prevailing market form in the economy's markets for goods and services: from the free competition of the nineteenth century to some form of monopolistic competition, oligopoly, etc. today.

As a consequence of these structural transformations, recessions following a crisis tend to last for longer spans of time than in the past. Past crises were violent and accompanied by large market perturbations, but they tended to last for a relatively short time. In fact, the fall of prices itself was one of the factors that favored the recovery. Those forces are no longer at work in contemporary crises and, as a consequence, recession and/or depression tend to last longer. This happened in the 1930s as well as today. The short period has become long (Kahn 1989).

After a long span of time during which the economics profession has lived with the delusion that market economies had entered a phase of substantial tranquility, the reality of facts put the profession into the foreground of a picture that is hard to understand and explain with the current paradigm. The Marxian–Kaleckian tradition of thought can provide an explanation of the present crisis that is more satisfactory. Kalecki, drawing on the Marxian tradition, was able to explain the effects of insufficient levels of aggregate demand in the context of modern capitalism.[25]

Those who work in the tradition of Marx, Keynes and Kalecki today can legitimately claim the superiority of their approach, which has been ignored and dismissed by the mainstream. This, however, should not be an excuse for not engaging in the effort to develop the contributions of past masters.

25. Of course, Keynes also provided an analytical explanation of such effects but, as argued elsewhere (Sardoni 2011), Kalecki's approach can be regarded as more satisfactory than Keynes's.

If it is true that the ultimate causes of capitalist crises remain the same across time, it is also true that the structural transformations of market economies since the times of Marx and even Kalecki must be understood and dealt with. Here, it is not possible to enter any thorough discussion of such transformations and the theoretical and analytical issues they raise; it will suffice to mention some formidable problems that have to be faced and dealt with to develop a satisfactory analysis of the dynamics of contemporary capitalism: environmental problems, gender problems, and the growing social, political and economic importance of emerging countries.

For obvious reasons, these are all issues about which neither Marx nor Kalecki could offer well-developed and thorough analyses. It is up to the present generation of non-mainstream economists to engage themselves in the task of developing adequate theories and analyses, by benefiting from standing on the shoulders of the 'giants' of the past.

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