
On Marx's Law of the Falling Rate of Profit: Disentangling Some Entangled Variables

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Abstract

This paper argues that Marx's law of the falling rate of profit applies to the problematic of choice of technique in the context of accumulation of capital, and not to the problematic of choice of technique in the context of technological change or new innovation as such. In this context, Marx's "the law itself" is correct. It is, however, true that Marx does confuse the two contexts at times; but here he seems to be following in the footsteps of Ricardo, who had also made an identical mistake.

JEL Classification: B12, B14, B24, B51

Keywords

rate of profit, Marxian economics, Ricardo, classical economics

I.

The majority verdict, which includes me, on Marx's law of the falling rate of profit (FRP) is that Marx made a mistake (see Sinha 2010, and also for a detailed discussion on the literature on Marx's FRP). The law as such is generally interpreted to hold good in the case of productivity enhancing technological changes in an industry or several industries when the real wages are held constant. The point to note here is that a technological change must refer to a *new* technique that was not known in the previous period. Some of Marx's statements lend support to such an interpretation; for example:

No capitalist voluntarily applies a new method of production, no matter how much more productive it may be or how much it might raise the rate of surplus value, if it reduces the rate of profit. But every new method of production of this kind makes commodities cheaper. At first, therefore, he can sell them above their price of production, perhaps above their value. He pockets the difference between their costs of production and the market price of the other commodities, which are produced at higher production costs. This is possible because the average socially necessary labour-time required to produce these latter commodities is greater than the labour-time required with the new method of production.

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His production procedure is ahead of the social average. But competition makes the new procedure universal and subjects it to the general law. A fall in the profit rate then ensues – firstly perhaps in this sphere of production, and subsequently equalized with the others – a fall that is completely independent of the capitalists' will. (Marx 1991 [1894]: 373-74)

Following Okishio (1961), it has become well known that, given fixed real wages, the rate of profits in such cases would rather rise if the commodity happens to be either a capital or a wage good or remain constant if the commodity happens to be a luxury good. One should however note that this statement of Marx does not appear in the section on “the law itself” but rather as a part of “supplementary remarks” on “Development of the Law’s internal contradictions.” In this short note I propose a more sympathetic interpretation of Marx’s “law itself” and suggest that the above statement of Marx could be seen as a minor slip on his part; a slip that was also made by Ricardo before him.

2.

To begin with, the law as such is supposed to be an effect of capital accumulation: “A fall in the profit rate, and accelerated accumulation, are simply different expressions of the same process, in so far as both express the development of productivity” (Marx 1991 [1894]: 349). I propose that Marx’s primary or starting proposition regarding capitalist accumulation is that the rate of capital accumulation is faster than the natural rate of growth of population: “Capitalist production can by no means content itself with the quantity of disposable labour-power which the natural increase of population yields” (Marx 1977 [1867]: 788). Given this primary proposition, it is obvious that in the long run this will cause an upward pressure on wages, if no technical change takes place. Thus a rise in wages would lead to a fall in the rate of profit.

The inverse wage-profit rate relationship was already argued by Ricardo (1951 [1821]). In Ricardo’s case the rise in wages is meant to be a rise in the value of the real wage-basket due to the diminishing returns on land and not a rise in the real wage-basket itself. In his “Machinery” chapter, Ricardo, however, introduces the possibility of displacement of labor through the introduction of machines. In Ricardo, as with Marx, the question of introduction of new technology (i.e., innovation) with the introduction of new machinery gets mixed up with the question of choice among already known techniques. However, in the following statement, “Machinery and labour are in constant competition, and the former can frequently not be employed until labour rises” (Ricardo 1951: 395), Ricardo is clearly alluding to the argument of choice of technique; i.e., even if the machine intensive technique was known, it would not be profitable to employ when wages were low but it does become more profitable when wages rise. Now, if we abstract out the aspect of technological change with the introduction of machinery then its consequence is pure displacement of labor; this is the case with the examples worked out by Ricardo in the earlier part of the machinery chapter. Hence, one direct consequence of the introduction of machinery would be a fall in the growth rate of demand for labor and therefore a slowing down of the tendency for the rate of profit to fall.

Marx’s thesis on the falling rate of profit may be interpreted as a direct critique of Ricardo’s thesis. First of all, Ricardo’s FRP thesis is rooted in nature, i.e., the diminishing returns on land. Marx, however, wants to show that the law of the falling rate of profit has nothing to do with nature; it is rather a consequence of the capitalist law of accumulation itself. Second, Ricardo’s thesis is that the introduction of machinery that displaces labor works as a brake on the falling rate of profit. Marx, on the contrary, wants to argue that, instead of working as a brake, the labor displacing machines or techniques are the long-term cause of the rate of profit to fall.

How does Marx’s argument work? As stated at the beginning of this section, Marx begins with his proposition that the rate of capital accumulation is faster than the rate of growth of population.

This leads to a rise in real wages. This rise in wages makes a (say already known) machine intensive technique more profitable for the capitalists to adopt. However, a consequence of such a switch in technique is that the same amount of output is produced with less living labor. In other words, it displaces labor and increases the effective population to be employed by the accumulating capital. To illustrate this point, let us take a simple example of a one-good corn economy. Let us say that the economy is working with Tech. 1 given by:

10 ton corn seed + 10 units of labor per 40 ton corn

If the wage rate is given by 1 ton of corn per unit of labor, the rate of profit in this economy or the corn industry turns out to be 100 percent. The labor-value of one ton of corn turns out to be $1/3$ units of labor and the organic composition of capital, i.e., c/v , turns out to be 1:1. Let us assume that there exists another known technique, Tech. 2, given by:

16 ton corn seed + 5 units of labor per 40 ton corn

In this case, given the wages equal to 1 ton of corn per unit of labor, the rate of profit of the system turns out to be $19/21$, which is less than 100 percent. Therefore, Tech. 1 would be used by the capitalists. The labor-value of 1 ton of corn, in this case, turns out to be $5/24$ units of labor, which is less than $1/3$ and the organic composition of capital is equal to 16:5, which is higher than 1:1. Now, suppose real wages rise to 2 tons of corn per unit of labor. This would lead to a fall in the rate of profit, if Tech. 1 is operated, from 100 percent to $1/3$ or 33.3 percent, whereas if Tech. 2 is operated then the rate of profit would be $7/13$ or 53.8 percent. Thus clearly the capitalists would switch to Tech. 2. Thus we have a technique change with a rise in organic composition of capital and a fall in the rate of profit along with a rise in labor productivity, in so far as labor productivity is defined by units of output per unit of labor or value production per unit of labor. However, in this case wages have risen but Marx's law of the falling rate of profit is supposed to work with fixed real wages. The clue to the solution of this problem lies in the fact that the context of the law of FRP is accumulation of capital and not simply the case of changes in techniques.

As we can see, in the above example with the rise in wages the system switches from Tech. 1 to Tech. 2 and displaces 50 percent of the labor force per unit of corn output. If the rate of labor displacement by the adoption of machine intensive techniques is such that along with the natural growth of population the effective growth of population (i.e., natural growth of population plus the labor displaced by the new machines for producing the net output produced in the previous period) is equal to or greater than the rate of growth of capital accumulation (i.e., the rate at which capital employs new labor) then real wages must fall back to its original level or even more, if wages respond quickly to changes in the labor market situation. This, however, would not result in capital switching back to the previous labor intensive technique (i.e., Tech. 1), as would be the case in a static scenario. This is because for the given amount of capital that is already accumulated the total demand for labor, if the previous labor intensive technique were used, would be much higher than the available labor supply and so the wages would shoot up again. For an illustration of this argument, let us go back to our example and, to keep the matter simple, assume that the natural rate of growth of population is zero. Let us begin with the economy that has used Tech. 1 and has produced 40 tons of corn. If the economy reinvests 20 tons of surplus corn (assuming no consumption by the capitalists), it would require 20 units of labor in the next period, if Tech. 1 is used. However, if the total labor supply in the economy is only 10 units then this would raise the wage rate, say, to 2 tons of corn per unit of labor. This leads the economy to switch to Tech. 2 and the demand for labor falls back to 9.52 units and thus wages back to 1 or even somewhat less than 1 ton of corn per unit of labor. But again in the next cycle of accumulation the same process must repeat itself. Thus we have short periods of rising and falling wage

cycles with a long trend of continuously rising machine intensity of techniques with, on the average, constant real wages.

This is all Marx means by the “law itself.” This becomes clear when we consider Marx’s conceptual distinction between the “value” composition of capital as such and the “organic” composition of capital, a distinction that has not been given much attention in the Marxist literature on the FRP:

The composition of capital is to be understood in a two fold sense. As value, it is determined by the production in which it is divided into constant capital, or the value of the means of production, and variable capital, or the value of labour-power, the sum total of wages. As materials, as it functions in the process of production, all capital is divided into means of production and living labour-power. This latter composition is determined by the relation between the mass of the means of production employed on the one hand, and the mass of labour necessary for their employment on the other. I call the former the value composition, the latter the technical composition of capital. There is a close correlation between the two. To express this, I call the value-composition of capital, *in so far as it is determined by its technical composition and mirrors the changes in the latter*, the organic composition of capital. Wherever I refer to the composition of capital, without further qualification, its organic composition is always understood. (Marx 1977 [1867]: 762, emphasis added)

In the examples above, the technical composition of capital is well defined, since it is a one-good model. In this case both the technical as well as the value compositions of capital are identical. However, when capital consists of various different commodities then the technical composition of capital is not well defined; and this is perhaps the reason why the above statement of Marx was mostly passed over by the scholars of Marx. But what Marx appears to convey in the above quotation is that in the real world many technical changes do not represent changes in technologies but rather the switches in techniques of the kind our examples have described. In these cases the technical changes do not represent increase in “industrial productivity,” i.e., the productivity of the total capital invested. So even though the technical composition of capital cannot be defined in general cases, whenever he [Marx] expresses a rise in the “value composition” as a rise in the “organic composition” he means switches to already known techniques and not changes brought about by introduction of new technologies.¹ One should also keep in mind that whenever one speaks of a change in technique caused by a rise or a fall in wages one must mean a change to a *known* technique, as there is nothing in the rise or fall in the wage itself that could divine new knowledge. This becomes clear in Marx’s explanation of technical changes in the case of a rise in agricultural wages in England during 1849 to 1859:

What did the farmers do now? Did they wait until the agricultural labourers had so increased and multiplied as a result of this splendid remuneration that their wages had to fall again, which is the way things are supposed to happen according to the dogmatic economic brain? No, they introduced more machinery, and in a moment the labourers were “redundant” again to a degree satisfactory even to the farmers. There was now “more capital” laid out in agriculture than before, and in a more productive form. With this the demand for labour fell, not only relatively, but absolutely. (Marx 1977 [1867]: 791)

Thus once the conceptual distinction between the “value” and the “organic” compositions of capital becomes clear, the problem with the “law itself” disappears. Here one can see that instead

¹It should be noted that the case of “reswitching” does not arise in the context of accumulation and continuously rising labor employment.

of being a brake on the rate of profit to fall, the machine intensification turns out to be the cause of the fall in the rate of profit, given real wages; hence Marx's criticism of Ricardo in the *Theories of Surplus Value II* (pp. 438-69) that he forgets constant capital and defines rate of profit only as s/v . The historical process of the rising organic composition of capital is, however, intricately associated with the process of concentration of capital, as techniques associated with higher organic composition of capital require greater start-up capital to set them in motion.

3.

Up till now we have only considered the role of machines as a labor displacing device that becomes profitable only at higher wages. But Marx, of course, recognizes that in the course of historical accumulation of capital new technologies come to be known and introduced in the production process. He acknowledges that when new technologies that increase the "industrial productivity" of capital are introduced then such technical changes act as a countervailing force to the tendency of the rate of profit to fall:

It might be asked whether these factors [introduction of child and female labor, removal of restrictions on commerce, etc.] that inhibit fall in the profit rate, though in final instance they always accelerate it further, include the temporary but ever repeated increases in surplus-value that appear now in this branch of production, now in that, and raise it above the general level for the capitalist who makes use of inventions, etc. before they are universally applied. This question must be answered in the affirmative. (Marx 1991 [1894]: 340-41)

The slip that Marx, however, makes is that he thinks that once the technique becomes more widely known then the adoption of the technique by other producers in the same industry represents an aspect of choice of technique rather than introduction of new technology, as was the case with the innovating capitalists. Therefore, as he assumes that these new technologies generally come with higher value composition of capital, he argues that a general adoption of such techniques would eventually lead to a fall in the rate of profit. But this is not true to the extent that for the industry at large the technology was still unknown and its general introduction would raise rather than depress the average rate of profit of the system, since it represents an increase in the "industrial productivity." Ironically, Marx, in this case, might be following in the footsteps of Ricardo:

He, indeed, who made the discovery of the machine, or who first usefully applied it, would enjoy an additional advantage, by making great profits for a time; but, in proportion as the machine came into general use, the price of the commodity produced, would, from the effects of competition, sink to its cost of production, when the capitalist would get the same money profits as before, (Ricardo 1951 [1821]: 387)

It should be noted that since Ricardo ignores the impact of constant capital on the rate of profit, his conclusion is that the rate of profit would remain unchanged rather than fall; but the general reasoning of Marx is identical to Ricardo's.

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