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**PROFIT AS COST VERSUS PROFIT AS
SURPLUS OVER COST: A CASE STUDY ON
VARIAN'S "*INTERMEDIATE
MICROECONOMICS*"**

by

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ABSTRACT

On the analysis of Varian's textbook on Microeconomics, which I take to be a representative of the standard view, I argue that Varian provides two contrary notions of profit, namely, profit as surplus over cost and profit as cost. Varian starts by defining profit as the surplus of revenues over cost and, thus, as the part of the value of commodities that is not any cost; however, he provides a second definition of profit as a cost, namely, as the opportunity cost of capital. I also argue that the definition of competitive profit as the opportunity cost of capital involves a self-contradictory notion of opportunity cost.

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Introduction

The standard treatment of profit, of which Varian's is a representative, typically begins by defining profit as the surplus of revenues over costs, that is, as the part of the value of commodities which is not any cost whatsoever. This definition seems to carry the embarrassing implication that capital receives an income without having contributed to production, which suggests that the class of profit-earners is an idle class that shares in production without having contributed to it. Hence the necessity of introducing the idea that, despite the previous definition and contrary appearance, profit is nonetheless the just reward of the capital investor for his contribution to production: profit is a cost of production.

However, it is obvious that the investor does not advance his profit and, therefore, that profit is not a cost for him: he advances a capital and gets a return greater than the advance, the surplus which he did not advance being profit. How could one defend that profit is a cost of production if it is not any capital investment?

The typical answer in Microeconomic textbooks is based on a corruption of the concept of opportunity cost. The concept of opportunity cost is pressed into service because it is impossible to defend that profit is a *direct* cost of the same nature as, for instance, wages, that is, a capital advanced by the investor. The alternative is to defend that profit is the opportunity cost of capital.

The goal of defining profit as the opportunity cost of capital is to argue that profit does not involve any expropriation, that profit is the product of capital and, therefore, that capital, when making profit, just gets back what it contributed to production. Though profit appears to be a surplus, it is not actually such, but a production cost, a value that capital contributed to production and, therefore, has to receive from it. The notion of surplus value is not welcomed in the reaction against Marx because it is taken to be associated to exchange of non-equivalents, monopoly power, exploitation, fraud. The idea that profit is surplus value pocketed by capital is taken to imply that profit is a kind of fraud. This implication is avoided by defending that profit is not a surplus value, but a cost of production.

It is clear that *monopoly* profit involves an expropriation, a surplus for the seller at the expense of the buyer. The idea is that competitive profit is not an expropriation of the same kind as monopoly profit: competitive profit is, unlike monopoly profit, a cost of production, a value that capital contributes to production and, therefore, has to get back from it. Competition does away with monopoly power and prevents one part of the economy from living at the expense of the other. Profit under competition, which exists although it does not exist, is a cost and therefore, it does not involve any exploitation or any surplus value: competitive profit is the opportunity cost of capital. This thesis rests upon a self-inconsistent notion of opportunity cost according to which opportunity cost is the uniform competitive return of capital.

The now standard thesis that the income of capital, competitive profit, is the opportunity cost of capital, appears in the post Second World War reaction against the Marxian conception of profit. It rests on the tacit premise that *surplus value* does not exist, that the notion of *surplus value* is logically incompatible with that of value

simply. Thus, the notion of surplus value is not even considered; it is not a category of Economics. The exclusion of surplus value from the Economic discourse rests, in turn, on the anti-Marxian (and anti-Ricardian) view that the effect of competition is not the equalization of the profit rate at a level which competition itself does not set, but the annihilation of profit in general, which is taken to be equivalent to the annihilation of surplus value in general. In “modern” anti-Marxian profit theory the only profit rate compatible with competition is zero, because competition does away with the profit margin and, therefore, with profit and surplus value.

The annihilation of surplus value paves the way for yet another view which is typical of “modern” Microeconomics, namely, that the only general theory of value is a theory of barter, that a capitalistic economy is, essentially, a barter economy under a different appearance.

The paper is divided into four sections. In the first, I present Varian’s two definitions of profit. In the second, I discuss Varian’s conception of opportunity cost. In the third, I analyze the definition of competitive profit as the opportunity cost of capital. The fourth and final section summarizes the main conclusions of the paper.

1. Varian’s Two Definitions of Profit

Varian begins by defining profit in the context of competition, though the conception of profit that can be found in the subsequent chapters on monopoly and monopolistic competition is exactly the same. This means that Varian’s definition of profit under competition is valid regardless the market structure and is, thus, a definition of profit as such, of profit in general. This definition runs in terms of surplus: profit is the surplus of total revenue over total cost:

“In this chapter we want to study the profit maximization problem of a firm that faces competitive markets for the factors of production it uses and for the output goods it produces.

Profits are defined as revenues minus costs. Suppose that the firm produces n outputs (y_1, \dots, y_n) and uses m inputs (x_1, \dots, x_m). Let the prices of the output goods be (p_1, \dots, p_n) and the prices of the inputs be (w_1, \dots, w_m). The profits the firm receives, π , can be expressed as

$$\pi = \sum_{i=1}^n p_i y_i - \sum_{i=1}^m w_i x_i$$

The first term is revenue, and the second terms is cost.” (Varian, 1993, 315-6)” (Varian 1993, 315).

Accordingly to this conception, profit is not any cost, but the opposite to cost, namely, surplus over cost, that is, the part of the value of commodities which does not represent any cost at all. It is clear that the expression $\sum_{i=1}^m w_i x_i$ is intended to include *all the costs*.

“In the expression for cost we should be sure to include *all* of the factors of production used by the firm, valued at their market price.” (Varian, 1993, 316)

Of course; nobody would dispute that, to calculate *total* cost, we have to include all the factors used valued at their market price; this is, in fact, the meaning of

$\sum_{i=1}^m w_i x_i$ in the above definition of profit, which, as it stands, it is a definition of profit *in general*, valid for all the sub-species that profit might have. But Varian writes:

“Usually this is pretty obvious, but in cases where the firm is owned and operated by the same individual, it is possible to forget about some of the factors. For example, if an individual works in his own firm, then his labor is an input and it should be counted as part of the costs.” (Varian, 1993, 316)

Thus, the entrepreneur-worker who does not take into account the cost of his own labor does not suffer any loss of memory; he just fails to understand what the true cost of his products and, therefore, his true profit. He is the owner of a firm, certainly, but he also sells his work to his own firm. Therefore, the income of the entrepreneur-worker has two elements: first, profit (the income of the man as entrepreneur); secondly, wages (the income of the man as worker).

Why does Varian introduce opportunity cost to define profit? Why does he do it in such a strange way, namely, as a loss of memory which turns out to be a wrong comprehension of the notions of profit and cost? In the next section I examine his conception of opportunity cost and argue that it is self-inconsistent.

2. The Notion of Opportunity Cost Is Inconsistent

Varian explains the notion of opportunity cost by means of examples:

“If an individual works in his own firm, then his labor is an input and it should be counted as part of the costs. The wage rate is simply the market price of his labor –what he would be getting if he sold his labor on the open market. Similarly, if a farmer owns some land and uses it in his production, that land should be valued at its market value for purposes of computing the economic costs. We have seen that economic costs like these are often referred to as **opportunity costs**. The name comes from the idea that if you are using your labor, for example, in one application, you forgo the opportunity of employing it elsewhere. Therefore those lost wages are part of the cost of production. Similarly with the land example: the farmer has the opportunity of renting his land to someone else, but he chooses to forgo that rental income in favor of renting it to himself. The lost rents are part of the opportunity cost of his production.” (Varian, 1993, 316)

When you allocate your working day to firm A rather than to firm B, for instance, you certainly lose the opportunity of allocating your labor to firm B. It is a mistake to conclude from this obvious truth that the allocation of your work to firm A involves a cost *because you lose the wages that you might get in firm B*; it is because *you are already earning wages in firm A*. By selling your labor to firm A rather than to firm B, the wages that you lose are the *difference* between the wages that A and B pay. If firm A pays a higher wage than B, the sale of your labor to firm A involves *no opportunity cost at all*. If firm A pays a higher wage than firm B, to allocate your labor to firm A involves no opportunity cost because you do not lose the wage that firm B would pay: you get it, and some more. What would involve an opportunity cost is the sale of your labor to firm B; the opportunity cost of such an allocation of your working time would be the *extra* wage that you can earn in firm A: this is what you are really *losing* if you sell your labor to firm B.

But Varian does not introduce the notion of opportunity cost in the context of firms which pay different wages. The point that he intends to make is that the allocation of your working day to a firm that you yourself own involves a cost, even though your firm does not have to make a payment to a third party in exchange for labor. Thus, an entrepreneur-worker might think that the whole income that he gets from his firm is

profit. Varian is saying that he is wrong to think so. Part of what he deems as profit is actually the wages of his own labor. You have to deduct some part of your income to get your real profit, which is not equal to your full income. You have forgotten to take into account one of the inputs used in production, namely, your own labor. To estimate the cost of your own labor you have to value it at market price. What does it have to do with opportunity cost?

Varian is saying that the allocation of your working day to your own firm involves an opportunity cost which is the wages that you lose from the outside firm. Varian says that those lost wages are part of the total cost of production of your output in your own firm. The cost of the labor input that you yourself supply to your own firm is the lost wages, the wages that you would earn by selling your labor to an outside firm; in a word, the opportunity cost of your labor. Therefore, advises Varian, if you want to correctly estimate your profit as entrepreneur, deduct from your income the value that your labor would have had in the market, which is its opportunity cost. Do not regard this money as profit, but as the payment for your labor services that your firm makes to you.

This immediately raises the question: was not the opportunity cost of labor the wages lost when my labor was sold to my own firm rather than to other owned by a third party? Varian is saying that part of your income is, actually, wages: wages that your firm pays to yourself. Then, what sense does it make to say that you *lose* the wages that some other firm would pay? You are already earning wages in your own firm! By allocating your labor to your firm you lose the opportunity of allocating it to any other firm, true, but *you do not lose any wages*, except if the wages paid by your firm and the market price of labor are not the same. If your labor had a uniform price in the open market, the opportunity cost of allocating your labor to any firm that is not the best-paying firm would involve an opportunity cost. This cost would be the *difference* between the wages paid by the best paying firm and the wages paid by the firm to which you have sold your labor.

By the act of working for your own firm, *you are not losing any wages*, as Varian mistakenly states. It is true that, if you are the owner of your firm, you may divide your income between profits and wages so as to minimize your taxes before the IRS or for any other purpose, but this is not what is at stake. The point is that if you work for your own firm, you would be wrong not to count your labor as an input, and the corresponding wage as a cost; this is exactly the point that Varian intended to make. The point is that your income has two distinct elements because you are playing two different economic roles: you are an entrepreneur at the same time that you are a worker of the firm that you yourself own. You may tell your friends that the whole of your income is profit and the IRS that it is wages. The point at issue is that you get profit as entrepreneur and wages as worker at the same time. Profit is the excess of revenues over costs, said Varian. If you fail to correctly compute the cost of your labor, you fail to compute costs and, therefore, profit.

We have just seen that what Varian has in mind is not the difference between what you may earn for your working day in two different firms; in other words, he does not have in mind the opportunity cost of allocating your working day to one firm rather than to another. As the text stands, he is mistakenly thinking of the cost of working for your own firm as the cost of *not selling your labor at all*. Hence the contradiction of saying, on the one hand, that the opportunity cost of working for your own firm is the

lost wages and, on the other hand, that you receive the wages of your labor from your own firm.

As a matter of fact, Varian is reasoning on the assumption that your labor has a uniform market price. Accordingly, no allocation of your labor to any firm involves any opportunity cost because, as labor has a market price, you earn the same wages anywhere. Sometimes Varian considers that the opportunity cost of working for your own firm is the opportunity cost of not selling your labor at all, and then he says that the opportunity cost of working for your own firm is the lost wages. Some other times, he takes the contrary view and considers that you are also selling your labor when you work for your own firm.

Let us get the record straight. If, as Varian assumes, your labor has a uniform market price, the opportunity cost of allocating your labor to any firm (including your own) is zero. The opportunity cost of *not* allocating your labor to any firm, that is, of devoting your day to leisure instead of to work, would be the lost wages or, rather, the *difference* between the utility of leisure and the utility of wages. Having cleared up the notion of opportunity cost, let us go back to the original point and see what exactly is the role that opportunity cost plays in the definition of profit.

3. Profit and the Opportunity Cost of Capital

We have clarified the notion of opportunity cost by examining labor and wages. The statement that factors is to be valued at opportunity cost means that they are to be valued at market price. If a factor has a uniform market price, no allocation of it involves any opportunity cost; the only alternative that involves an opportunity cost is not to allocate the factor to any use at all. This is the meaning of the senseless statement that the wages of labor are determined by the opportunity cost of labor. Next, Varian introduces the thesis that competitive profit is the opportunity cost of capital.

“The economic definition of profit requires that we value all inputs and outputs at their opportunity cost. Profit as determined by accountants does not necessarily accurately measure economic profits, as they typically use historical costs –what a factor was purchased for originally- rather than economic costs –what a factor would cost if purchased now. There are many variations on the use of the term “profit”, but we will always stick to the economic definition.” (Varian, 1993, 316).

What exactly is the “economic definition of profit”? This text introduces a distinction between the “economic” and the “accountants’ definition of profit”. Accountants do not “necessarily accurately measure economic profit”, says politely Varian. What do they wrong? Not measure inputs and outputs at their *opportunity* or *economic* cost, but at *historical* cost. Are they wrong in so doing? Varian does not explicitly answer, but his words strongly suggest that they are: not to take opportunity cost into account is equivalent to computing total cost and, therefore, profit incorrectly.

In my opinion, however, valuing inputs at historical cost does not involve any failure to take opportunity cost into account, but only a *miscalculation* of it, which is a totally different matter. Historical and economic cost are two different reference points to estimate opportunity cost if the competitive market price of the input has *changed* over time. The only difference between historical and economic cost as far as opportunity cost is concerned is the *uniform market price in relation to which opportunity cost is estimated*. If we estimate *opportunity cost at historical cost*, we should say that the opportunity cost of not selling your labor and remaining idle is the lost wages that were paid at the time you chose not to sell your work. By way of

contrast, opportunity cost estimated at *economic or current* cost is the current wages paid in the market that you are failing to earn because you have chosen not to sell your labor.

What Varian wants to conclude with his attack to the Accountants is that profit is the opportunity cost of capital. First of all, he wants to argue that profit is a cost. The only way he finds to justify that profit is a cost is to appeal to opportunity cost. Clearly, profit is not a cost for the firm in the same sense as labor, as the firm has to advance wages, but not profit. This why Varian takes refuge in the thesis that profit is the opportunity cost of labor. However, this frontally collides with his initial definition of profit as surplus over cost: if profit is the opportunity cost of capital, it is not a surplus over cost.

Varian has no basis to say that accountants do not value inputs at opportunity cost because they value them at historical cost. The accusation against the accountants is that they estimate opportunity cost *in relation to the wrong uniform market price*; wrong because the price that sets the mark does not prevail any more in the market. The economist does not have this problem because he estimates opportunity cost in relation to current uniform market price. Thus, accountants value inputs (assuming, of course, that they do not “forget” any) at a price which is not the “real” price and, therefore, fail to produce correct estimations of the value of inputs. Since the truth value of Varian’s confused accusation is irrelevant for the thesis at stake in the present paper, let us leave it aside.

Let us follow Varian’s warning and let us value inputs at opportunity cost; that is, not at historical but at current market price. What does it mean for profit? Remember that profit was defined as the surplus of revenues over costs, that is, as the surplus of the value of commodities over their total cost of production. We were told that, to correctly compute total cost and, therefore, profit, we should not forget opportunity cost. We take good note of this. The obvious suggestion is that accountants see a surplus over cost where, the economist, correctly, sees none. Profit, despite accountants, is not any surplus over cost, but a cost itself, namely, the opportunity cost of capital. The idea that Varian is trying to introduce is such a clumsy way is that profit is not, actually such; that, under competition, revenues and costs must be equal because commodities cannot be sold at a price different from cost-price. Competition does away with profit and with surplus value in general.

Note well: the implication of Varian’s thesis is not that competition kills competitive or normal profit, but that competition kills any divergence between total revenue and total cost for any firm. Thus, competition kills profit *in general*, because it annihilates any deviation of the value of commodities from their cost of production. The only way to make profits is to have power to sell one’s output at a price higher than total cost; that is, to have monopoly power. This means that profit involves an equivalent loss for the rest of the economy (and even more, a *deadweight* loss, as Varian explains in the chapter on monopoly!)

In a section entitled “Profit Maximization and Returns to Scale”; there, Varian writes:

“The only reasonable long-run level of profits for a competitive firm that has constant returns to scale at all levels of output is a zero level of profits.” (Varian, 1993, 324)

A “zero level of profit” means that profits do not exist, that revenues are equal to costs. What relation does this statement bear to the previous warning about opportunity cost and with the distinction between “economic” and “accountants’ profit”? That, under competitive conditions, a firm cannot have revenues in excess of total cost; in other words: in competition, profit cannot exist, because profit consists in surplus over cost and competition equals value to cost.

But real firms make profit, do not they? Varian may appeal to two arguments to explain this profit or, rather, appearance of profit. First, he might say that perfect competition is an ideal which does not obtain in reality; therefore, firms operate under monopoly conditions and all the profits they make are monopoly profits. This carries the not very edifying implication that the profits of the corporate sector are made at the expense of the general public and impose the corresponding loss on it.

Secondly, even if one admits that firms operating under conditions near to perfect competition make profits, one can still say that this profit is computed according to the “accountants’ definition of profit”; therefore, it is a computation of profit that fails to take opportunity cost into account. According to Varian, if we correct it and compute opportunity cost, the seeming profit will be shown to be a cost, namely, the opportunity cost of capital. Therefore, profit does not exist under competition because revenues cannot be different from costs. What for the accountant looks like a profit is, actually, the part of cost that the accountant failed to take into account.

As Varian said, to value inputs and output at opportunity cost is the same as to value them at market price. We could rework his initial definition of profit and say: profit is the surplus of the value of all the inputs valued at market price over the value of all the outputs valued at market price.

What Varian is suggesting is, rather, that, under competitive conditions, the value of inputs valued at market prices and the value of outputs valued at market prices *cannot be different*. This means that, under perfect competition, the value of output must be equal to the value of input, which means, in turn, that the surplus of revenues over costs for any firm must always be, if competition prevails, zero. Accordingly, competitive profit is the surplus of revenues over costs that cannot exist under competition. Outside competition, the only profit we have is *monopoly* profit which, as Varian himself acknowledges, does not represent any surplus value, but an exploitation of the buyer by the seller. Conclusion: surplus value does not exist.

The thesis that we have to value capital at its market price, which is its opportunity cost, means that profit is determined by the opportunity cost of capital, just like wages are determined by the opportunity cost of labor. This means that, in a standard production function with labor and capital, total cost is the sum of the opportunity cost of labor and the opportunity cost of capital. Accordingly, to calculate profit, we have to deduct from revenues the total cost, which is made up by wages and...profit! If profit is the cost of the factor capital, it follows from the initial definition of profit that profit is the surplus of revenue over wages and profit. This is a contradiction in terms.

The view that competitive profit is the opportunity cost of capital leads to the more contradictions. The problem solved by the single competitive producer is to determine the amount of output such that profit is maximized. But profit maximization is logically equivalent to cost minimization. Since profit is a cost, it turns out that profit

maximization implies the maximization of, at least, one cost, namely, profit itself. If profit is the opportunity cost of capital, then profit maximization becomes logically equivalent to cost *maximization*, not to cost *minimization*. Is not this a contradiction? Likewise, minimization of the cost of capital implies minimization of profit. Is not this a contradiction too?

There still is another interesting way to understand the flawed logic that leads to the thesis that competitive profit is the opportunity cost of capital. Consider the standard textbook production function where output is a function of capital and labor. The first-order partial derivative of the production function in relation to capital is the marginal product of capital; likewise, the first-order partial derivative of the production function in relation to labor is the marginal product of labor. As it is well known, if the production function is well-behaved, the two first-order conditions for the maximization of profit are that the marginal product of capital is equal to the interest rate and that the marginal product of labor is equal to the wage rate.

Under competitive conditions, where constant returns to scale must prevail and where output cannot be sold at a price higher than its cost-price, the total output is exhausted by the profits of capital and the wages of labor. The Euler Theorem can be used to state this idea in formal terms. The value of output is equal to the value of input, which has two parts: the value of the labor contributed by the owners of the labor-power and the value of the capital contributed by the owners of capital. Since each factor gets an income determined by its productivity, it follows that each factor shares in output according to its contribution to output. Wages, being the value of the labor contributed to output, is a production cost. Likewise, profit, being the value of the capital contributed to output, is a production cost. The relation between labor and capital is a partnership of equals in which both stand on the same footing and work together to produce and output in which they share according to what they have contributed.

If the value of output is made up of the contributions of labor and capital, what sense does it make to set profit maximization as the end goal of rational production? Why is it rational to minimize wages? Profit is the share of capital and wages the share of labor. It seems that the rational line of action would be to *maximize profit and wages*, because profits and wages are the incomes of the two classes of society, who collaborate to produce as much output as possible. If capital and labor collaborate to produce output, what sense does it make to say that the rational line of action is to maximize profit, which implies that wages are to be minimized? Moreover, if labor and capital share in output according to their contribution, what room is left for any maximization except of production?

As I see it, the principle of profit maximization is incompatible with the idea that labor and capital are factors which collaborate to produce an output in which they share according to their contribution. First of all, profit is defined as surplus over wages, so profit and wages are opposite terms: profit has a positive sign, whereas wages has a negative sign. Profits and wages are in conflict because capital acts so as to maximize its share in output; actually, capital sets labor in motion and maintains it not to produce output, but to produce profits. It is from the viewpoint of the opposition of profits to wages that wages are conceived as cost. Varian starts with a definition of profit in which it is clear that there is a conflict between capital and labor: profit is the surplus of revenues over costs, where wages are, of course, a cost. But this is politically

very incorrect, and Varian makes a clumsy maneuver to establish that profit is a cost as well, to introduce the fantasy that capitalist production consists in a “partnership” of equals, labor and capital, who collaborate in production. This is why he introduces the view that profit is the opportunity cost of capital in a way that contradicts his initial definition of profit and the very notion of opportunity cost.

Mishan On Opportunity Cost

1. Inasmuch as many modern textbooks still employ definitions of rent that, although serviceable in some circumstances, are theoretically unsatisfactory, it is as well that we examine them briefly before developing the analysis. These definitions fall easily into two categories: (i) rent as a payment in excess of that necessary to maintain a factor in its current occupation and (ii) rent as the difference between the current earnings of the factor-owner and his transfer earnings—the latter term signifying, in this context, his earnings in the next preferred occupation.

Both definitions are unsatisfactory in restricting the economist's vision of rent to a difference between the existing occupation of a factor and other occupations rather than to changes in the prices of the factors. It is as if the concept of consumer surplus were to be defined in terms of the introduction, or rather the withdrawal, of a particular good without much attention being paid changes in goods prices. Given this restriction, however, the (ii) definition is the worse of the two, since, for its validity, it would require that men were motivated in their choice of occupation solely by pecuniary differences. Bearing in mind that it is entirely possible for a man earning \$200 a week in occupation A to be forced by circumstances into his less preferred occupation B paying \$250 a week, the rent of working in his preferred occupation A turns out, on this definition, to be *minus* \$50—which is a distinctly awkward sum to be associated with a preferred position.

The (i) definition, in contrast, does much better with this example, since it could be interpreted as asking the minimum sum the man will accept to induce him to move from A, his preferred occupation, to B. If it is discovered that this sum is, say, \$20, then, as compared with **B**, his rent in occupation A is \$20. But although this definition is undeniably superior to the (ii) definition, it is, in general, ambiguous. For whenever the amount of the factor, say, labour, supplied depends, among other things, on the market price of labour, a change in this price and/or a change in occupation present us, in general, with two alternative amounts of labour to cope with: the amount of labour supplied at the original price (or in the original occupation) and the amount of labour supplied at the subsequent price (or in the subsequent occupation).

As with the ordinal treatment of consumer surplus, then, it transpires that each of these alternative amounts of labour becomes relevant when recourse is had to both *CV* and *EV* definitions of rent.

Conclusions

1) There is a contradiction in standard profit theory between the conception of capital as the surplus of revenues over costs and the conception of capital as the opportunity cost of capital. If profit is a *surplus over cost*, it cannot be a *cost*, and *vice versa*.

2) The standard thesis that the profit of capital is determined by the opportunity cost of capital is based on an incoherent notion of opportunity cost. From the very notion of competition, which involves a uniform profit rate, it follows that no allocation of capital involves any opportunity cost.

3) The ultimate goal of the introduction of the idea that profit is the opportunity cost of capital is to suggest that production for the sake of profit is a political system of equality in which “people” contribute “factors” to production and get from production just what they contribute to it.

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