

Interest and Profit

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Introduction

What is the relationship between interest and profit? This question is more likely to arise in the heterodox economic literature, for example, in “Post Keynesian” economics (Davidson 1996, Mongiovi 1996), than in mainstream analysis. In the standard approach, the rate of interest is often identified with the return to capital, so that a high rate of interest means the same thing as a high rate of return to capital. For policymakers and market participants, however, this is highly confusing when applied to practical discussions of monetary policy. In a practical context, the more usual argument is that higher interest rates will tend to *reduce* profitability by causing an economic downturn. The reason for the inconsistency seems to be a combination of ontological uncertainty about *both* concepts, interest and profit, and the reflexive use by most economists of competitive marginalist analysis, even in the *macroeconomic* context, in which demand constraints are pervasive and the existence of large imperfectly competitive firms cannot be ignored (Kaldor, 1983, 1985). Even Keynes in the *General Theory* (1936, pp. 135-46), though he had a clearer idea than most of the difference, was guilty of this error in developing the concept of the “marginal efficiency of capital” (MEC). Nonetheless, discussions within Keynesian and Post Keynesian economics have been helpful in trying to sort out the confusion. At least in these schools of thought the rate of interest on money is seen as specifically a *monetary* phenomenon and therefore as different in kind from a surplus over production costs.

From the point of view of business the real rate of interest on money is mainly a cost factor, not a measurement of the profitability of enterprise. For this and other reasons, including the inherent limitations to “effective demand”, there is therefore an *inverse* relation between the real interest rate on money and entrepreneurial profit. Income distribution is the primary channel through which monetary policy affects the economy, and higher real interest rates, for example, will have a direct negative impact on both real wages and entrepreneurial profit. A main conclusion is that profit as such is essentially in the nature of “differential rent”. This term, however, is applied to the specific characteristics of each business *firm*, including demand conditions, rather than plots of land

or individual pieces of machinery. The profit share in gross domestic product (GDP) is determined by (a) considerations of “effective demand”, as Keynes did try argue in the 1930s, and (b) the bargaining power of the main players in “the struggle over income distribution” - business itself, labor, and the financial interests (which, confusingly, are also often called “rentier” interests).²

Alternative Theories of Profit

As suggested, the orthodox neoclassical theory of economics is not much help in discussing profit. In the “best developed model of the economy” in this tradition (Hahn, 1983, p. 1), there is no profit at all in equilibrium. Total income is distributed between wage earners and a rental return to different types of purely physical capital as such. Nothing remains as a surplus over and above the costs of production, and nothing is left recognizable as profit in the accounting sense. It is allowed that “short-run” profit may accrue to a firm in “disequilibrium”, if it gets into a temporary position with some sort of monopolistic advantage before competing firms can enter the market. In fact, it is *only* such fleeting situations that are supposed to provide the incentive for firms to engage in productive activity at all. In the long-run all short-run profits are “competed away”, allowing the firm only to cover the costs of production.

As neoclassical theory is silent on the question of profit, it is necessary to turn back to older sources, such as the Marxian and “classical” theories discussed more than fifty years ago in an important, but now neglected, article by Kaldor (1955/56). In that same paper, Kaldor also put forward what he described as a “Keynesian” (demand side) theory of income distribution, although the genuinely Keynesian credentials of this are dubious. The next section of the paper, therefore, follows Kaldor only to the extent of discussing the Marxian and classical theories respectively. The third section then puts forward a synthetic theory of real profit that addresses the flaws in the older theories, and also brings the argument back to Keynes by introducing what some modern writers have called “Keynes-Kalecki” elements. Once again, however, the reference to Kalecki has mainly to do with issues on the supply side of the economy and the determination of the mark-up (Kalecki, 1971, pp. 43-61), rather than Kalecki’s own attempt (similar to Kaldor’s) to modify Keynesian demand side theory (Ibid., pp. 1-14). The Keynesian theory of effective demand is retained in its original form, which, in turn, helps to clarify the interest-profit distinction.

Surplus Value and Classical Theories of Profit

In addition to Kaldor's paper, clear expositions of Marx's theory of "surplus value" are found in Sweezy (1942, pp. 56-71) and Rima (1996, pp. 220-43). The reason it is now worth re-examining the Marxian view, or some features of it, in spite of the obvious anti-capitalist bias, is that it does address the question of the existence and origins of profit, a subject that orthodox economics (supposedly the staunch defender of capitalism) studiously avoids.

Marx used the term value in a specific sense. He adhered to a strict version of the labor theory of value, whereby the value of any commodity is given by the amount of "socially necessary" labor time that went into its production. This was a major issue in the development of Marxian political economy, and caused the long-running debate on the "transformation problem" of how to reconcile "values", defined in these terms, with the "prices" observed in the empirical world. However, the validity or otherwise of the labor theory of value is not an important issue for the main questions in debate here. It would always be possible to substitute what Ingham (2004, p. 202) perceptively calls a "social theory of value" at any point in the discussion. The original Marxian concept of value is therefore mentioned here only for the sake of completeness and the historical record. With this caveat, recall that in Marx the expression for total value is given by a formula such as:

$$(1) \quad y = s + c + v$$

where y stands for "total value" (meaning either the value of aggregate output, or that of an individual firm) and s , c , and v stand for "surplus value", "constant capital", and "variable capital".

Constant capital accounts for the amount of materials and physical capital equipment that are "used up" in the production process (originally measured as "stored-up labor time"), that is, outlays on raw materials plus depreciation. Variable capital, meanwhile, is "the value of the outlay on wages and salaries" (Sweezy 1942, p. 63). The trick in Marxian political economy is the argument that the value of the variable capital needed to sustain the workforce will be less than the total value created during the working day. For example, during an eight hour day the time necessary to produce the equivalent in goods and services of the wage bill may be only five hours. What is produced in the remaining three hours becomes surplus value, the s term in equation (1), and goes to the employer as profit.

In many ways, as Sweezy (Ibid.) pointed out long ago, equation (1) is just an accounting identity, similar to

the modern concept of GDP, or to an income statement for a firm. It adds the wage bill, v , depreciation c , and the profit or surplus, s . It is true that from the perspective of a pre-Marxian classical economist there would be one obvious omission - that no allowance is made for ground rent. However, Marx was aware of this and made the explicit assumption that ground rent is zero (Ibid., p. 67). Moreover, this was not unreasonable by the time Marx (1867) was writing, compared with the eras of Adam Smith (1776) or David Ricardo (1817). There is also another omission, however, this time from the standpoint of a modern monetary economist that is more serious on general theoretical grounds. There is no mention in the formula $s + c + v$ of interest on money as anything separate from the profit or surplus. If production takes time, however, and taking a long position in goods, in this way, is surely an essential feature of capitalism, then there should also be an interest charge on *both* constant capital and variable capital. This was not taken into account in the original version of the Marxian scheme in Vol. I of *Das Kapital*.

Another key variable in Marx was the “rate of exploitation” or “rate of surplus value” (Sweezy 1942, p. 64). This gives the ratio of surplus value to the value of variable capital (three hours to five hours in our example). If the symbol s' stands for the rate of surplus value:

$$(2) \quad s' = s/v$$

The overall rate of profit, p , is then given by the ratio of surplus value to total capital:

$$(3) \quad p = s/(c + v)$$

Equation (3) implicitly defines profit as a percentage of the total value of capital “used up” in the production process rather than as the total value of capital employed (probably the more usual definition). However, Marx could get round this with no real loss of generality simply by assuming that all capital “turns over” exactly once during the production period (Ibid., pp. 67-8). In other words, the depreciation rate is assumed to be 100%.

The point at which Marx does get into difficulties, however, is not in defining a rate of profit for each individual enterprise, or in working out the average mark-up for the economy as a whole, but in the simultaneous insistence that the process of competition must “equalize” the rate of profit across all enterprises (Rima, 1996, pp. 233-5). This is what caused confusion in the Marxian scheme between values defined in terms of their labor inputs and prices observed in the actual economy. The point is that the ratio of constant capital to total capital, a ratio Marx calls the “organic composition of capital”, is bound to differ between industries depending on their technical requirements. Therefore, if the rate of profit is to be equalized between those same industries, the prices charged by

them must differ from their supposed values in equation (1). From the point of view of a workable theory of profit the problem is not with the logic of equations (1) through (3), but with this additional assumption that rates of profit between different industries and firms are equalized. How is this supposed to happen? The standard answer, noted by Rima is that:

(e)conomy-wide equalization is brought about by inter-industry capital movements. If the rate of profit is above average in ... (some) ... industries ... capital will tend to be attracted from industries... where the rate of profit is lower than average, until the average is ... (the same) ... for all. (ibid., pp. 234-5).

This is obviously not an idea unique to Marxism but is taken directly from classical economics, and *still* appears in mainstream textbooks to this day. There is always, however, a sense of confusion as to exactly what this “capital”, flowing from one place to another, is supposed to be (Smithin, 2009, pp. 95-6). If the notion of capital is meant to involve specific items of physical plant, equipment and machinery, then the image of these things being “attracted to”, or “flowing from”, one industry to another is a problem. It is possible to imagine an individual machine being unbolted from one location, sold second-hand, and moved to another, but even then it would have to be used for a somewhat similar purpose to its original function. It is not possible to visualize a broad mass of physical things being switched effortlessly from one purpose to another. It is really only capital in the sense of *money itself* that can move from one industry to another with any degree of fluency. *Constant* capital though presumably does consist mostly of physical things such as machines and plant, and this must cast doubt on the existence of any smooth mechanism to equalize industrial profit rates. (It also illustrates that a 100% depreciation rate, even if not significant for purpose of working out the equations, should not be taken seriously as a description of the actual world). The same sort of argument applies to the sociologist’s concept of “human capital”, things like experience and expertise gained in a particular firm or industry.

For a concrete example involving both types of capital, imagine an entrepreneur who builds a hotel in a vacation resort that is popular for a time, but then becomes unfashionable. Profits fall, and on the standard argument, capital will then flow out of that enterprise and find its way to some more profitable location. But, how can this happen? The building is where it is. It cannot get up and walk away. Nor can the entrepreneur effectively try to turn the physical capital into money as an alternative exit strategy. Who would now want to buy the building, except a vastly reduced price? Also, as far as human capital is concerned, it may be that this particular entrepreneur

is well suited to be a hotelier, and would not be as effective doing anything else. It remains true that no new hotels will be built in the area, and any new *money* that is available will go somewhere else. It might still be said therefore, that in the “very long run” there would be a *tendency* towards that re-allocation of society’s total resources claimed as the main advantage the market system. If the discussion of surplus value or profit is to have any empirical validity, however, we cannot reasonably be talking only about an underlying trend or tendency that, in practice, can never reach final fruition before some other change happens to disturb or reverse it. In a real world situation the mere fact that one resort or one industry is declining while elsewhere another is thriving, will never achieve the literal equalization of profit rates in any finite period of time. What, after all, is a rational business strategy for the stranded hotelier? It may be simply to stay in business and take whatever lower profits are on offer, as long as they are on offer, rather than sell up and lose everything. It may even be reasonable to invest still *more* in a declining asset (for example, refurbish the hotel and try to drive out the remaining competitors on the beach), and so make the best of a bad situation.

What occurs in reality is simply that for long periods of time some industries with low profits co-exist with other industries with high profits. There are bound to be different profit performances within the same industry also, due to the different abilities of the personnel and the different qualities, age, and efficiency of the equipment. This is the empirical situation documented by countless studies of industrial organization. There is no reason to expect the equalization of profit rates across the board in *any* concrete state of the world. How, though, would it be possible to capture this reality in economic theory, and yet still use the device of equilibrium modeling for heuristic purposes? Conceptually, a “finite horizon equilibrium”, would have to exist, involving imperfect competition and different profit rates in each industry, that stays in place until some new innovation or divestment occurs. Even with no profit equalization, however the same *interest rate* should prevail everywhere, because money itself can be moved around more easily.

It is not easy to arrive at the correct terminology to describe the finite horizon equilibrium. We might think of it, for example, as simply a “long-run” equilibrium in the restricted sense that this term is used in intermediate textbooks, as opposed to the “very long run” equilibrium just mentioned. A problem with this, however, would be the overtones of the standard neoclassical growth model, which would be better to avoid. Another alternative is to use the expression “medium run” from more recent mainstream economics (Blanchard 2000; Solow 2000), and

think of the time horizon in that literature as the empirical counterpart to our theoretical equilibrium model.³ In that case however, (and *unlike* in neoclassical economics) it is important to note that there would be no other long run or very long run *except* that realized empirically by the stringing together of the historical sequence of medium run outcomes (Kalecki 1971; Marterbauer and Smithin 2000). This is a key issue in the application of any type of equilibrium theorizing to the actual course of events.

Evidently the transformation problem is made redundant. In such a world, there would be an individual version of equation (3) for every enterprise, defining the rate of profit in that enterprise, and an aggregate version of it, summing up the individual firm equations. The concept is similar to Kalecki's notion of the "degree of monopoly" (Kalecki, 1971, p. 45). From the aggregate equation it would still be possible to make meaningful *macroeconomic* statements about the overall profit mark-up, and nothing is lost in terms of the "vision" of capitalism that can be achieved. Profit is now being re-interpreted as the differential rent of each enterprise. However, this is "rent" that accrues not merely through the possession of land, or individual pieces of machinery, but from the *totality* of firm specific attributes, including the physical sunk capital, the particular expertise of the management and workforce, *and* the demand conditions for the product.

Meanwhile, Kaldor (1955/56, p. 85) also used Ricardo's famous "corn model" of rent, profit and wages, to illustrate the pre-Marxian classical theory. In this picture of the world, labor is applied to agricultural land to yield "corn" (grains such as wheat), supposed to be the only product available in the economy. Production is subject to diminishing returns, and both the average product (AP) and marginal product (MP) of labor are falling. However, it was *not* argued that total employment is determined by any sort of marginalist principle. The real wage, also measured/paid in corn, is taken to be a constant close to the subsistence level, and the demand for labor is therefore *pre-determined* each period by a previously accumulated "wages fund" of stored-up corn. This fixes the amount of labor demanded at each real wage, the amount of labor actually employed, and the level of output. The only role played by marginalism (a concept that later on came to dominate economics almost completely) is to determine the total of ground rent. This is given by the cumulative difference between the AP and MP of labor applied to intra-marginal land, multiplied by the amount of employment, and goes to the landowners. Profit is then whatever is left over for the organizers of production (basically tenant farmers), and is the difference between the MP of labor and

the real wage, again multiplied by the amount of employment. In the era of classical economics, this basic theory of profit and rent was made the centerpiece of a series of theoretical propositions about the causes of growth, tax incidence, the merits of free trade versus protection, and so on.

However, from a modern perspective a number of problems come to mind, just as in the Marxian case. Once again, there are questions of whether the profit margin can be expected to persist, the relevance of the emphasis on ground rent, and in a generalized version of the model (one that included industry as well as agriculture), again whether the rate of profit is supposed to be equalized across all sectors. Finally, if applied to a modern financially orientated capitalist system, where would the rate of interest fit it - what role would it be expected to play?

The later (post-Marxian) *neoclassical* economists, whether of the nineteenth century or their modern descendants, would, of course, have completely rejected the notion of any demand constraint fixing the amount of employment. One of the main tenets of mid-nineteenth century mainstream economics (“political economy” in those days) was a supposedly decisive refutation of the wage fund argument. The idea that demand constraints might limit the amount of employment did not then re-emerge until the advent of Keynesian economics, as late as the mid-twentieth century, when it took a completely different (monetary) form, and was promptly dropped once again, in more recent times, with the resurgence of the neoclassical school (to the point of total domination) in contemporary academia.

The basic argument, illustrated by the theory of perfect competition, is that the typical firm is so small in relation to the market that it simply *believes* it can sell all it wants to at the going price. Therefore, it need never be constrained from employing more labor by fear of a lack of demand or an accumulated wage fund, whether conceived in real or financial terms. Wages are actually thought of as a physical share in the output that will *eventually* be produced, and do not need to be distributed until after the product has been sold (or rather exchanged). Therefore, the position taken by late nineteenth century neoclassical economists, and (perhaps more surprisingly) in most subsequent mainstream economics for the next 150 years, was that employment will be pushed to the point where the real wage equals the MP of labor. It is in this neoclassical (rather than classical) vision that profit disappears with a final distribution of income ultimately between the two “primary factors” of wages and ground rent, and no room for any separate accounting for interest on money. This was exactly the description of orthodox

theory given by Schumpeter (1934, pp. 3-56), in the famous first chapter of *The Theory of Economic Development*. It is also worth noting, however, that although defending this construct on the grounds that it is a useful starting point, Schumpeter himself was the first to recognize that this would hardly do as a theory of *capitalism*. Commonsense, after all, dictates that the profit motive should a prominent role. This was why Schumpeter had to go on to develop his own theory of “creative destruction”, to give some sort of account of where profits come from (Collins, 1986, pp. 122-3). More recent mainstream theory, however, has had no compunction in generalizing from the classical model to a pure neoclassical one. Instead of having just one variable factor (labor), and one fixed factor (land), later theory dispenses with land altogether, and adds another variable factor, the so-called capital whose reward is also determined by marginal productivity. The result is the now standard theory of distribution based on the “aggregate production function” and the influential neoclassical growth model descended from Solow (1970) that is still one of the main textbooks topics to this day. The basic idea can also be extended to multiple variable factors to any number desired.

There is, however, an alternative method of modifying the original classical model, based on the questions raised above about the nature of profit and interest, and yet still initially retaining marginalist principles, which may be more instructive (Smithin, 2009, pp. 100-1). It has already been argued that interest rates should be sharply distinguished from profit - they are not the same thing. It must also be taken into account that in actual capitalism, money and credit creation are integral parts of the technique by which profits themselves are generated (Smithin 2009). It is not credible therefore despite Schumpeter that interest rates will automatically fall to zero in equilibrium. They could only do so as the result of a deliberate episode of central bank policy. Failing this even in a static circular flow there will be an interest charge on the wage bill, as credit creation and the monetary circuit must continue for the most routine circulation of commodities to occur. It was also argued that it is only money, not physical capital that can flow freely from one use to another. It is the interest rates themselves (with due allowance for the individual “risk factors” stressed in microeconomic textbooks) *not* profit rates that will be equalized across firms as borrowers. Profit itself will differ between firms and industries because, as explained, there must always in effect be “fixed factors” in place in every enterprise. Therefore, if we abandon the neoclassical equilibrium in which interest rates do not exist, but continue for the moment to apply marginalist principles (as opposed to Keynesian or classical ones), this would give a level of output/employment at the point where the real wage *inclusive* of the

interest charge is equal to the MP of labor (Smithin 1986). The final distribution of income would then be between wages, interest, and “firm specific profit” - three shares rather than two. There are some similarities of this result to the old Marshallian concept of “quasi rent” (Keynes, 1936, p. 135), but a main difference is that under diminishing returns and marginalism (and even more obviously, in a world of generalized imperfect competition and demand constraints introduced in the next section), this can be thought of as more or less “permanent” income stream to each firm. As the profit depends explicitly on firm level characteristics, there is no strong tendency for it to be competed away, or for profit to be rapidly equalized amongst firms. The three-fold division of income, while different than the two-fold neoclassical scheme is also different from the three-way split of classical economics. Profit in the new scheme takes the place of “rent” in the classical one³, while interest income, and financial returns generally, take the place of the classical “profits of stock”. There is no chance of firm specific profit being competed away in the new scheme, any more than there was of rent in the classical framework, but also no chance of the purely interest share being competed away either, as this is fundamentally determined in the financial sector, above all by the policy of the central bank. Note that the category of financial income can also be thought of as incorporating the dividend yields of those shareholders who are *not* the active managers of the firm. These returns can also be regarded in some sense as a mark-up over base interest rates (with appropriate adjustment for the different “risk” and contractual status of the obligations), as in the concept of the “equity premium” from theoretical finance. The *true* profit for each firm, however, is the firm specific profit applied to each separate entity. These are sums that are *not* extractable by passive shareholders or bondholders, and remain under the control of the real managers or controllers of the firm, those who might genuinely be called the entrepreneurs. In accounting terms, profit is the residual claim on income, *whether or not* accurately identified as such in the formal rules and regulations. The broadest distribution of income in aggregate therefore (before allowing for taxes and transfer payments) is between wages and rentier/financial incomes, both broadly defined, and entrepreneurial profit, properly so-called.

An Alternative Theory of Profit

In this section, the objective is to put forward a synthetic theory of profit which will summarize the argument. It will

need to be more general, however, in two separate senses, than the discussion so far. First, there is no reason why it should rest on the classical/neoclassical premise of diminishing marginal productivity, or (a slightly different point) on any marginalist principle at all. Second, in the sense of Keynes (1936), that a “more general theory” should allow for the presence of *demand constraints* that limit the output of each individual firm, and in aggregate. Equation (4) therefore reverts to the Marxian type notation introduced above, but initially values the different components purely in money terms. It also allows for the fact that production takes time (and hence both for an interest charge and the need for entrepreneurs to form expectations) with a one-period production lag (the simplest possible):

$$(4) \quad y^e = s + (I + i)c + (I + i)v$$

Given the production lag y^e is the expected money value of output offered for sale one period in future. The terms c and v refer to constant capital and variable capital as before, but are expressed in money terms at the start of the period of production. Both bear an interest charge $(I+i)$, where i is the nominal rate of interest. The expected surplus s is also a sum of money, and the analog to the Marxian rate of surplus value is now $s' = s/[v(I+i)]$. Next, introduce a new term, $k' = c/v$, related to the organic composition of capital,⁴ and equation (4) can be re-written as:

$$(5) \quad y^e = (I + s' + k')(I + i)v$$

This expresses total *expected* value in money terms as a mark-up over investment in variable capital, also measured in money terms. The mark-up covers three main elements in the accounting scheme, the interest charge, depreciation on fixed (or constant) capital and, once again, what Marx would have called “exploitation” or surplus value, the net profit.

Equation (6) can be rewritten in a more familiar notation. Let Y stand for real output produced in the current period and sold one period in the future, and P for the price level, so that y^e becomes $P_{+1}Y$. Similarly, the money value of variable capital can be identified with the nominal wage bill WN , where W is the nominal wage rate and N is the level of employment. Finally, let the symbol k (different from k') stand for the “gross entrepreneurial profit share”, such that $k = k' + s'$. The newly-defined mark-up factor k includes an allowance both for depreciation on physical capital and the rate of surplus value and is a “gross” mark-up in that sense, but it is “net” of the nominal interest charge. From a behavioural perspective it is an advantage that k is the *expected* mark-up or surplus, as this is what is relevant for economic decision-making, but in equilibrium actual and expected k will

coincide. Both in equilibrium and out, there always exists a subjective value of k at both the firm level, and (in summation) in aggregate (Kalecki, 1971, pp. 47-8). However, this term is not an expected profit *rate*. As previously explained, the latter concept is difficult to define and is hardly meaningful at the aggregate level. It is always remains possible for each *firm* to define either an expected (or, eventually, an *ex post*) accounting rate of return for themselves in the course of individual business decision-making, and presumably each will be doing so. In specifying an aggregative behavioral model however, it is important to realize that the mark-up term k itself would be a more useful concept, and could reasonably be employed as an incentive variable (in an aggregate investment function, for example). This is because an increase in k is a prerequisite both for an increase in the rate of surplus value, and *on average* for an overall increase in the various *ex ante* profit rates or rates of return used as individual decision metrics. Each firm is also aware of the depreciation allowances that must be set aside under alternative business plans. With the new notation, equation (5) then becomes:

$$(6) \quad P_{+j}Y = (I + k)(I + i)WN$$

This is the basic value equation now written in standard economic notation, highlighting the role of the gross profit share, the rate of interest, and wages.

Finally, define the term A as the AP of labor, and the relationship between labor inputs and output will be:

$$(7) \quad Y = AN$$

Although equation (7) only explicitly involves the relation between output and labor input, it by no means ignores the constant capital component (which was also accounted for in defining the profit share). The contributions of the various machines, technical knowledge, raw materials, *etc.*, are rolled up in the term A . What emerges is best described as a “virtual labor theory of production” rather than a labor theory of value. It is a rival or antidote to the familiar “AK” model of contemporary neoclassical growth economics (Jones, 1998, pp. 148-50). This essentially accepts Keynes’s (1936, p. 41) view that in macroeconomics it is best to restrict attention to “quantities of money-value and quantities of employment” rather than to attempt the quixotic task of trying to give a concrete meaning to notion of the capital stock.

Next, we have to employ the simple mathematical technique of taking logarithms, or “logs”, of each of the variables. The effect is to turn a multiplicative relationship such as XZ (X times Z), into a linear one, $\ln X + \ln Z$ (the log of X plus the log of Z). It will also mean that any graphs can conveniently be drawn as straight lines. With this

technique and combining equations (7) and (6), we get:⁶

$$(8) \quad \ln P_{+1} = k + i + \ln W - \ln A$$

Next, subtract the term $\ln P$ (log of the price level) from both sides of the equation, to give:

$$(9) \quad \ln P_{+1} - \ln P = k + i + \ln W - \ln P - \ln A$$

and, re-arranging:

$$(10) \quad k = \ln A - [i - (\ln P_{+1} - \ln P)] - (\ln W - \ln P)$$

The term in square brackets $[i - (\ln P_{+1} - \ln P)]$ is actually the nominal interest rate minus expected inflation, in other words the real interest rate, r . Also, let lower case w stand for the log of the real wage rate ($w = \ln W - \ln P$) and lower case a for the log of labor productivity ($a = \ln A$). Then from (10) the basic theory of profit, essentially an “adding up” theory in terms of logarithms or percentages, becomes:

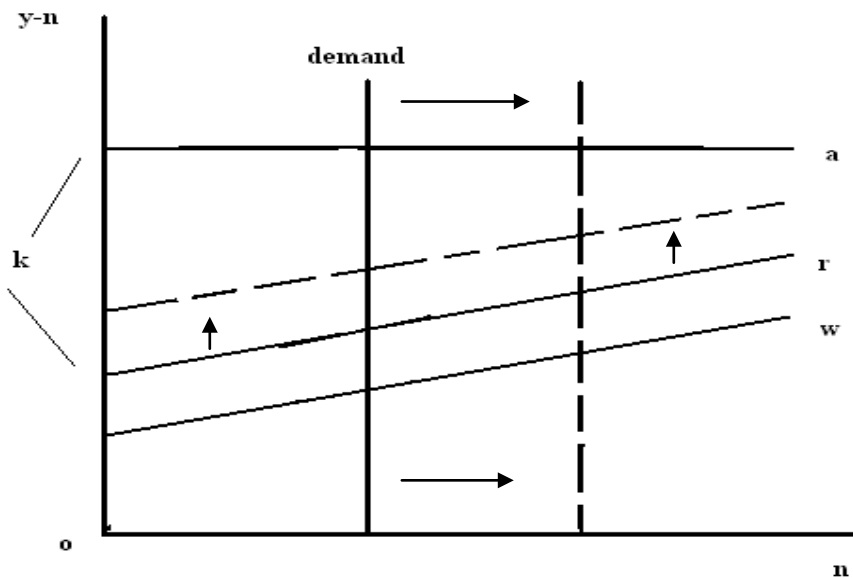
$$(11) \quad k = a - r - w$$

The gross mark-up or profit share is equal to the (log of) labor productivity, minus the real interest rate, minus the (log) of the real wage rate.

We now turn to some simple graphical analysis to illustrate some of the implications of the theory of equation (11). Suppose, in the first instance, that labor productivity can be taken as “given” for the time being, by whatever stage of technological development the society has reached. The term a will therefore be a constant. This does *not* mean, however, that the capital stock itself, regardless of how this is defined, is supposed to be held constant - an assumption that Keynes (1936, p. 246) misleadingly made in *The General Theory*.⁷ Similarly, take it that the real interest rate is determined in the financial sector (ultimately by the policy of the central bank) and that real wages have been determined by some sort of bargaining process, perhaps involving labor unions, or other socio-political factors. It might plausibly be argued, for example, that the real wage rate rises with employment, for example, because the bargaining power of labor increases. In these circumstances the mark-up k is the residual component of income after the other shares have been decided. So this is the situation depicted in Fig. 1, which graphs the log of output per head, $y-n$, against the log of employment, n . Taking a cue from Keynesian economics, the actual level of employment is determined by a demand constraint depicted as a vertical line on the page. As simple as this diagram is, it immediately answers the original question about the relation between interest and profit.

If there is an increase in real interest rates this will cut into (reduce) the profit share. Conversely, a reduction in interest rates will lead to an increase in profit. With a vertical aggregate demand function there will be no change in output when interest rates change, but things could always have been made somewhat more complicated by making the constraint itself depend on income distribution (for example on k), or other variables (Atesoglu and Smithin 2007). This is not necessary here as the objective is only to establish the idea of the surplus as the residual claim on income. Meanwhile as also shown in Fig. 1, an increase in aggregate demand itself (a relaxation of the demand constraint) increases output and employment in an essentially Keynesian manner, but also reduces the profit share. The reason for this is that real wages are rising as employment rises, but productivity and the real interest charge stay constant. It would not be correct to describe this situation as a “falling rate of profit”, as in Marx. Rather it is the average mark-up or “average rate of surplus value”, that is falling as demand increases and the economy expands. If so, however, presumably with similar effects on the political economy of the system (Smithin 1996).

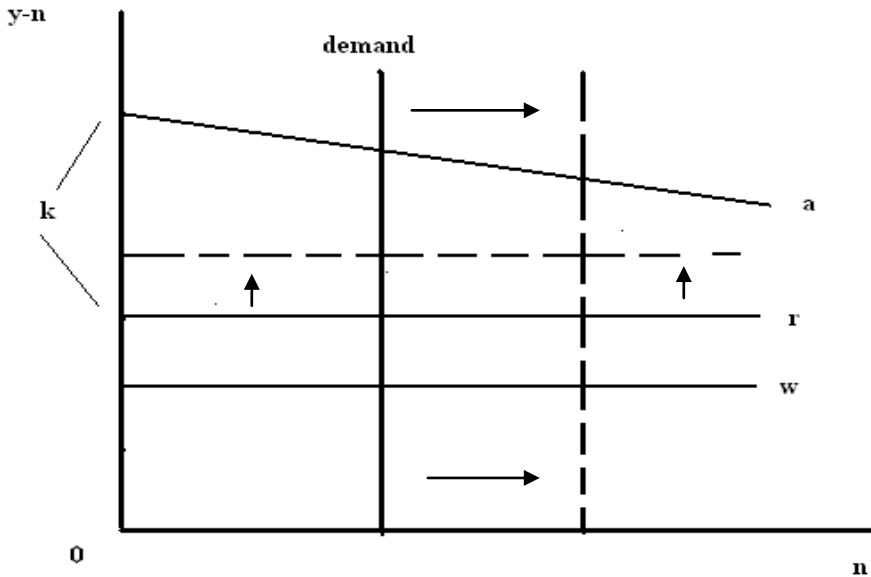
Figure 1: Distribution of Income between Wages, Interest and Profit



In the diagram in Fig. 2, in an obvious next step, the a line, representing the log of the AP of labor is now made downward sloping, which would occur if there was diminishing marginal productivity. This varies the technical assumptions about production, but note that the marginal principle itself still plays no role in determining the values of the distributional variables. These are assumed determined by bargaining power as before. For

simplicity, the real wage itself is now made a constant (there is a “target real wage” in wage bargaining), and there is still an interest charge on the wage bill. The main result, of an inverse relationship between real interest rates and profit continues to hold. Also from Fig. 2, note that even though productivity is now declining as output increases, as long as there is binding demand constraint there is never going to be a point at which the a and r lines intersect.⁸ In such a “Keynesian” world, it is therefore possible to entirely avoid the confusion about the issue of *causality* between productivity and interest that occurs everywhere else in economics.⁹ Once again Keynesian policies will “work” (that is, a relaxation of the demand constraint will increase employment), but still cause the mark-up and the rate of surplus value to fall.

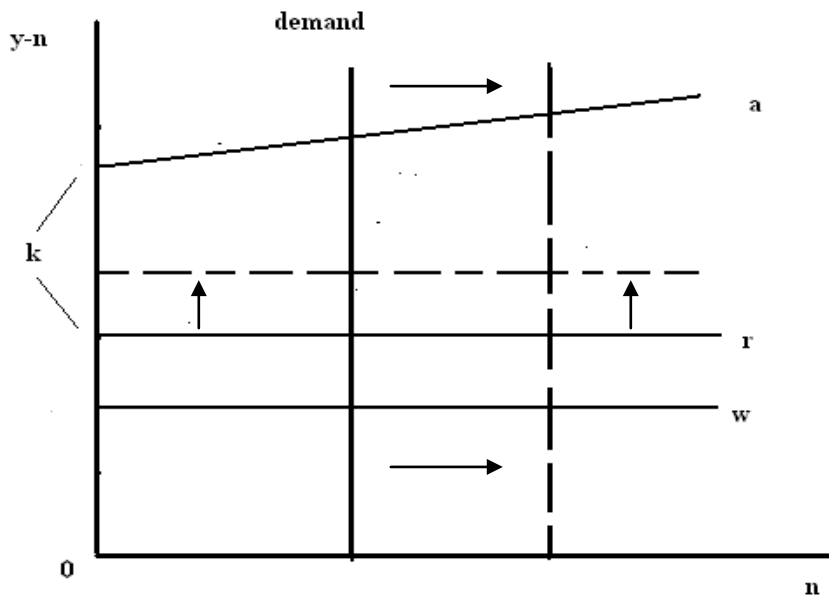
Figure 2: Decreasing Returns to Labor Inputs



A final alternative premise considered in Fig. 3 is some of form of *increasing* returns to labor inputs. These might arise, for example, because of economies of scale, a “learning by doing” effect, or similar. The real wage rate and the real interest rate are again pre-determined by collective bargaining and central bank policy. As shown in Fig. 3, there is still an inverse relationship between interest rates and profit. Although the mark-up now increases with the scale of output, an increase in interest rates reduces its value at each *level* of employment and *vice versa*. If there is a relaxation of the demand constraint (if Keynesian policies are pursued) in this case there is a *different*

result about income distribution than before. An increase in demand will increase output and employment, but will now also allow the mark-up to increase. Because of the increasing returns technology, firms can be *more* profitable if there is an increase in demand, without there being an adverse impact on real wages or the real interest rate. In this situation, “Keynesian economics” would presumably meet with more favour from the corporate sector than it might do otherwise.

Figure 3: Increasing Returns to Labor Inputs



It would clearly be possible to go on to examine other cases each with different technical assumptions about the behavior of the variables. The exercises already completed, however, establish that the simple expression $k = a - r - w$ provides a flexible tool of analysis for dealing with questions of income distribution between the three key groups of recipients in capitalist economic systems. It was Keynes (1971-89, vol. IV, pp. 5-32) who long ago characterized these three groups as the “business class” (merchants, manufacturers and entrepreneurs), the “investing class” (those who invest in titles to money, or rentiers), and the “earner” (labor). In the terms used here, business receives entrepreneurial profit k , the investor gets the real interest rate r , and the earner receives the real wage, w .

Conclusion

Max Weber's definition of capitalism was "... the provision of human needs by the method of enterprise, which is to say, by private businesses seeking profit" (Collins, 1986, pp. 21-2). The profit motive is the main principle of capitalism. Every business strives to make profit, and if they fail they literally go "out of business". Therefore, it is clear that neoclassical theory, which focuses mainly on market exchange rather than business enterprise, and in which there are no profits, or profits tend to zero, cannot be an adequate theory of capitalism.

Profit is not the same thing as interest on money. Profit is the surplus, whether measured in money or real terms, over and above the costs of production, including the necessary interest and financing costs. It is unlikely that this surplus will be the same in every firm or industry. It will differ according to a variety of circumstances, such as demand conditions, the specialized nature of the physical capital already invested, and the competence and different expertise of the management and workforce. It is therefore unreasonable to expect to see the "equalization of the rate of profit" among industries or even among different firms in the same industry. There is no effective mechanism to achieve this. The economy-wide *profit share* is therefore simply the aggregate of all of the individual surpluses. On the other hand, *interest rates* can be equalized across a monetary economy as *money* itself can flow freely. The implication is that in the presence of a Keynesian demand constraint there is always an inverse relation between the general level of interest rates and the aggregate mark-up.

Empirically identifying the profit or surplus is complicated by the different accounting rules and regulations in place in different jurisdictions, and by different systems of corporate governance. If, for example, the shareholders of a company are the same persons as those controlling the firm then any dividend payments that they receive may genuinely be counted as part of profit. On the other hand, if the shareholders are purely passive, then the real managers of the firm will see the dividends that they have to pay out as just another element of cost similar to interest payments (albeit with a different contractual status and the addition of some sort of risk premium to the sums disbursed). In this case, we would have to look for the surplus or profit in such areas as retained earnings, the salaries, bonuses and prerequisites of the top management, and possibly also, consumption-type spending by the firm itself (Smithin, 2009, p. 107). These, however, are empirical rather than theoretical issues. For them to come up for discussion at all, for there to be any debate about how the surplus is distributed, there must be a profit surplus in existence in the first place.

Notes

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2. Since the early twentieth century, influenced by Keynes (1923, 1936) himself among others, this term has come exclusively to mean the recipients of income from financial assets.
3. According to Solow (2000, 137) "... (t)here must be a medium run, five-to-ten year time scale at which some ... transitional model is appropriate".
4. In the national accounts, any remaining ground rent could be subsumed into that category.
5. This is also similar to the standard economic concept of the capital/labor ratio. If the depreciation rate was less than 100%, k' might be interpreted as the capital/labor ratio multiplied by the depreciation rate. For example, using standard notation, $k' = \delta(K/N)$ where δ is the depreciation rate.
6. Equation (8) also uses the accepted approximations that $\ln(1+k) = k$ and $\ln(1+i) = i$.
7. If firms are to expand production at their planned rates, they must be making sufficient investment to keep the a term at the same level in each period.
8. This was already the case in Fig. 1, when real wages were rising.
9. The usual argument focuses on constant capital rather than variable capital, but the same logic applies.

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