CHAPTER IX
PROFITS—AND OTHER INCOMES

This chapter is mostly about profits. Wages and other incomes are briefly touched upon, but the Spotlight is on profits. The importance of profits should be clear: the firm which earns profits is also the prime generator of other incomes, including wages and salaries, as we saw in Chapter IV. In that chapter we also saw how profits can be increased by improved technology and cost reduction. In Chapter VIII we saw how changing market conditions affect selling prices and profits. In the upcoming Chapter X we will see how profits serve as the central motivating force of free-market firms. In the present chapter, our primary purpose is to explain the nature of profit itself—why the firm necessarily seeks profits and why profits are a *justified* return.

Controversy over profits—their justification and morality—has raged since the ancient and medieval taboos against the taking of interest on loans ("usury"). People did not understand why the moneylender should get back more than he lends. In modern times, Marxists and other socialists have maintained that profits are the result of "exploitation" of workers by capitalist owners of the means of production. For Marxists, profits belong to the workers in the first place, and are taken from workers only through capitalistic "monopoly" ownership of the means of production. Hence, for Marxists, profits are no more a deserved or earned income than is interest. In the following pages we will see why the taboos and attacks on profits are wide of the mark.

I. Introductory

First of all, *production takes time*. This fact is obvious, and may even seem trivial, but for economics the element of time is crucial. Why? Before we answer this question, we should briefly describe why production is *not an instantaneous* process but takes time to unfold and materialize.

Phases of the Production Process

As we have already seen, the entire production process involved at least three time phases. First comes the *ex-ante* phase during which the firm is engaged in estimating, speculating, planning, and investing activities—all centered around its decision as to what to produce, how much, and at what price. This is followed by the actual *physical production* phase. During this period, means of production are combined according to appropriate techniques that bring the product through stages of maturation until it is made ready for market. Finally comes the *ex-post* phase during which the product is supplied to the market, and the firm is able to see whether the sale of its product proceeds as planned.

Thus the entire production process embraces more than a physical-technical coordination of production resources in some appropriate technical combination. It includes also the *ex-ante* planning period and the *ex-post* or after-the-dust-has-settled period of reckoning. Even if physical production were somehow magically instantaneous, it still takes time to *plan* it (especially prices and quantities) and to *assess results* in the aftermath of market sales.

Moneylender vs. Entrepreneur

Overall, then, the production process involves not only the acquisition and use of means but also a prolonged *waiting* period until the product is completed, marketed, and hopefully sold. Seen from another viewpoint, when the firm undertakes production, it is making *current* outlays on factors of production in anticipation of *future* sales or payoff. To paraphrase a once popular commercial, the firm typically pays out *now* in order to fly *later*. In a general sense, therefore, the firm is essentially in the same position as the *moneylender*: both make a current outlay of money in exchange for a future payoff.

True, there is a technical difference between moneylending and entrepreneurial production by the firm. The moneylender makes his current outlay of money to the borrower in *one lump sum*, whereas the firm makes its current outlays mostly in the form of a *series* of regular payments to workers (wages), landlords (rent), power companies, and other resource owners from whom it purchases or hires the necessary means of production. But this is merely a superficial technical or institutional difference, and does not alter the *essential similarity* between moneylending and production: both processes are *inter-temporal* in that they span a period of time from the present into the future. Furthermore, they are similar because the future payoff is characteristically expected to be greater than total current outlays. In the one case this increment is called *interest*; in the other it is *profit*.

To be sure, profits earned by firms consist of more than the equivalent of interest. As we will see, total profits earned by the firm include not only (a) a *pure interest* component but also (b) an *entrepreneurial* component due to uncertainty and risk, and (c) a *purchasing-power* component to compensate for changes in the value of money associated with changing price levels. Each of these components plays a vital role in determining the size of the firm's *price spread* (profit margin) between the expected selling price and the unit costs incurred in production. Let us first examine the interest-rate component.

II. Time-Preference and Pure Interest

The first question we must ask is: What exactly is the connection between the *interest* rate earned in moneylending and the *profit* rate earned by the firm? The answer given by economics is straightforward: The common basis for both the interest rate and the profit rate is man's natural *time-preference*. But what is "time preference"? Briefly, and somewhat crudely, it means that man prefers the *present* time to the *future*, other things being equal.

Meaning of Time-Preference

To be more precise, the *time-preference* axiom refers to the deeply-rooted and widely observed fact that, other things being equal, people prefer to enjoy any given satisfaction or good in the *present* rather than to enjoy the same good in the *future*. To put it another way: For any given goal set by a person, he would prefer to realize it *sooner* rather than *later*. The less the waiting time, the better. As one writer has put it, a bird in the hand is worth *more than* a bird in the bush. It makes no difference whether the goal is material or spiritual, tangible or intangible—man prefers to achieve his goals in the

shortest possible time, *ceteris paribus*. Conversely, the more distant the future achievement of any given goal, the less valuable does the goal become. Man attaches a "disutility" to *waiting*; postponement of consumption involves sacrifice.

It is important to stress the *sameness* of the object of satisfaction whose present availability is preferred to its future availability. Unless it is the same satisfaction that is being time-compared, it would be possible to raise the following objection: In wintertime, why would anyone prefer ice delivered then to ice delivered in the following summer when the weather is very hot? The fallacy here is the assumption that summer ice is literally the *same* good or satisfaction as winter ice. To be sure, ice is ice when regarded purely in terms of its physical-material properties. But the fact that cooling ice-in-summer provides significantly greater, and hence different, satisfactions than ice-in-winter compels us to regard the two ices as *different* goods rather than the same good.

Life Is Not Forever

Why is time-preference so deeply rooted in the nature of man? Some writers explain it in terms of an obvious physiological fact: Man does not live forever. Alas, *man is mortal*! The life he enjoys must someday be ended. Nothing is more certain in life than death— unless it be taxes, to paraphrase Dorothy Parker.

Furthermore, although death may be as certain as taxes, uncertain is the duration of the life-span of any given person. The mortality tables have it all clearly laid out—the variability of individual life-spans. This only compounds the time-scarcity problem for the individual. How much time does one have left? How much time does one need to accomplish his goals? Is there time enough? If not, which time priorities are to be assigned to one's goals? Can one tailor any given goal in order to fit the cloth of time available? Can one afford to postpone any given goal?

Time a Scarce Resource

As Böhm-Bawerk once put it: "[We] humans live out our lives in a temporal world ... our Today, with its needs and cares, comes before our Tomorrow, and ... our Day-After-Tomorrow may perhaps not be assured as at all." There it is. Finite but *indeterminate* lifetime makes it even more uncertain that we can satisfy all our wants, regardless of other means available. So long as tomorrow is "not assured," any satisfaction postponed today may never be realized.[1]

In this connection we can also invoke the *maximizing* principle (Chapter V) according to which man always acts in the expectation that his action will leave him better off than otherwise. This implies that, other things being equal, man will want to accomplish *more* rather than less within his given lifetime. Given man's mortality, it becomes clear that *time* is the *scarcest* of means at man's disposal. No matter how any given person manages his own time-scarcity, the fact remains that the only way to assure fulfillment of a given goal is to realize it sooner rather than later, *ceteris paribus*. Postponement of a goal only courts the likelihood it will never be fulfilled.

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[1] Eugen von Boehm-Bawerk, *Capital and Interest* (South Holland, Ill.: Libertarian Press, 1959), Vol. I, p. 266.

Time-Preference Axiomatic

Best of all, however, the validity of the time-preference theorem does not need to rest on psychology or physiology as above (e.g., the temporal limitations of human life, impatience, the disutility of waiting). As L. von Mises has put it, time preference is simply a "categorical requisite" of human action:

> [E]ach individual in each of his actions is forced to choose between satisfaction in various periods of time.... The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant. He who consumes a nonperishable good instead of postponing consumption for an indefinite later moment thereby reveals a higher valuation of present satisfaction as compared with later satisfaction.... If he were not to prefer satisfaction in a nearer period of the future to that in a remoter period, he would never consume and so satisfy wants....The knowledge provided by this insight ... refers to every kind of want-satisfaction, not only to the satisfaction of the vital necessities of mere survival.[2]

Present Goods vs. Future Goods

At this juncture, we should introduce the important distinction between "present goods" and "future goods." This distinction is based on the fact that any given good can be made available for consumption either in the "present" or the "future." *Present goods*, then, are simply goods which are presently available for present consumption. This category embraces all consumers' goods that are ready at hand for direct or immediate consumption, including leisure and money. Money, to be sure, is not directly consumable itself, but since it is readily exchangeable for consumers' goods, it is a present good par excellence. For example, the money lent by the moneylender or paid out currently to workers and other resource-owners by the firm is classified as a present good.

In contrast to present goods are *future goods*. As the term suggests, these embrace all goods that only in the future can be regarded as present goods. Thus, this category includes future product—goods that will be completed only at a future date. It also includes goods-in-progress that are expected to emerge as consumers' goods at some future date, as well as capital goods that enable production of consumers' goods for consumption only in the future. They also include any *claim* on present goods in the future, such as money to be repaid by borrowers to moneylenders; hence, the promissory note (IOU) given by the borrower at the time of the loan is a future good. Similarly classified as future goods are securities such as stocks and bonds, which constitute claims to future income.

Inter-temporal Exchanges

We can now readily describe the activities of both the money-lender and the firm in terms of present goods and future goods: both are essentially engaged in *exchanges* of

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[2] Ludwig von Mises, *Human Action* (New Haven: Yale University Press, 1949), pp. 480-485.

present goods for future goods. The *moneylender* typically exchanges a lump sum of money (present goods) for the borrower's promissory note or IOU (future goods). Since the IOU promises repayment to the lender at a future date, it constitutes a future claim against the borrower. All loan transactions therefore are in essence an exchange of present goods (creditor's money) for a future good (the debtor's IOU).

Productive activities by *the firm* can be similarly described as involving essentially inter-temporal exchanges of present goods for future goods. The firm's current outlays of money on wages, rent, materials, and utilities can be classified as present goods. These current outlays are made in exchange for an ownership claim or title to the future product turned out with the help of workers, landlord, suppliers, and utility companies. Thus, all employment transactions between firm and worker involve an exchange in which the firm makes a series of present payments to the workers in exchange for rightful title to the product. Furthermore, the firm's outlays of money for factors of production also constitute an investment made in the present in expectation of profits at a future date (Chapter IV).

Premium vs. Discount

We can now restate the *time-preference* theorem in terms of present goods versus future goods. Man attaches a *greater subjective value* to present goods presently available to him than to the same goods available only in the future. For example, a person would rather hold a $100 bill now than hold it, say, five years from now, other things being the same—that is, disregarding the possible risk of not getting it back later from a borrower, and disregarding possible changes in the value of money due to a changing price level. Conversely, man attaches a *lower subjective value* to future goods, available only in the future, compared to the same goods available in the present. Thus, a moneylender who is promised a $100 bill in future repayment by a borrower (future goods) will now lend the borrower *less than* $100 (present goods) in exchange for the IOU of $100.

In effect, we have just described the difference between "premium" and "discount." Even though these two terms are actually two sides of the same coin, there is a difference. *Premium* reflects the higher subjective value we attach to present goods that are presently available rather than in the future—the greater value attached to the convenience of earlier availability as compared to deferred availability. In the market place, present goods always command a premium or higher price over future goods.

In contrast, *discount* reflects the lower ("discounted") subjective value that we attach to future goods because they suffer from deferred availability—they are characteristically available only after a period of waiting. That is to say, discounting reflects the sacrifice involved in postponing present consumption and in waiting for its future availability. Hence, the market attaches a lower price to future goods compared to present goods that are presently available.

A Loan Transaction

For example, assume A possesses a given stock of wealth, say, ten barrels of sugar. Along comes B and asks to borrow the 10 barrels for one year. To this A replies: Okay, but I request repayment of 11 barrels. B agrees, and it's a deal—a deal that reflects

a *premium* of one barrel of sugar, or 10 percent attached by A to the one-year loan. This case is one possibility. An alternative scenario could run as follows: B offers to repay A 10 barrels of sugar one year from now in return for 10 barrels borrowed today. But A protests, and suggests instead that he lend B only 9.1 barrels in exchange for the deferred repayment of 10 barrels. If B agrees, it's a deal—in effect, the same kind of deal as above, except that it reflects the other side of the coin, the *discount*: 10 barrels available a year from now is today worth only 9.1 barrels to A, revealing a present discount rate of 0.9 barrels, or about 10 percent of the 9.1 barrels lent.

Thus, premium and discount turn out to be merely two sides of the same coin. These two different ways of expressing valuations always refer to the *same* goods or object. They differ only with respect to which end of the time-span of goods availability one happens to focus on—on whether the goods availability is present or future. The *premium* emphasizes the greater value attached to presently available goods, whereas the *discount* emphasizes the lower value attached to the same goods available only at a later date.

Firm Discounts the Future

Just as we can describe loan transactions in terms of "premium" and "discount," so can we describe *production and selling* by the firm as involving a premium or a discount. As we saw in Chapter IV, the firm "works back from price" whenever it plans its current production. That is to say, it peers into the future to estimate its future market demand—its *expected selling price* and the quantities to be produced at that price. It then determines the *profit rate* it would like to earn on each unit to be sold (the unit profit rate). The residual obtained by subtracting the unit profit margin from the unit selling price represents the self-imposed limit on how much the firm can profitably spend currently on *factors of production* for each unit of output. Now, where does the premium or discount element enter into these calculations?

Let us assume a firm that is making product X and expects to sell it at some future date—say, a year from now, for $100. At this price it expects to sell its entire future output of X, which is currently in the works. Thus, there is a time-spread between *current* factor outlays and *future* selling of its product. The firm will have to wait until some future date before it can sell its output and reap the harvest of its current outlays on production. For the firm, therefore, the future selling price of $100 constitutes a future good. Like any future good, which is naturally handicapped by its deferred availability, this potential future $100 for each unit sold will have a *lower* present value compared to the same $100 were they presently available. That is to say, the future $100 is translated into a present *discounted* value.

The rate at which the future $100 is discounted is, of course, a subjective matter, depending on the subjective valuations of the firm's executives. For instance, if the firm is willing to expend only $90 now on factors of production on each unit produced, in exchange for the future $100, the $10 difference represents the rate of discount. Conversely, the future $100 price represents a $10 premium attached to the current total outlay of $90.

Pure Interest Rate

This brings us to a crucial point. Implicit in the concepts of "premium" and "discount" is the *pure interest rate*, which is actually the subjective time-preference rate. Hence, the "pure" interest rate should not be confused with the actual *market* or "loan" rate of interest, of which the pure rate is but one component. The other two components of the market rate allow for (a) uncertainty and risk factors attached to the loan, and for (b) changes in the purchasing power of the dollar. (More on this in Section III.) Thus, the actual rate of interest paid on loans in the market comprises all *three* components: subjective time-preference, uncertainty and risk, and changes in the value of money. In our present discussion we will focus on the time-preference or "pure" rate of interest, unless otherwise specified.

In our sugar-loan illustration, the premium rate of 10 percent actually represents a pure interest rate; so does the *discount* rate. Both of these rates also reflect Mr. A's subjective *time-preference* rate at the time of the loan. For example, if A had felt otherwise, and either (a) had asked a premium of 1.5 barrels for the 10 loaned, or (b) offered only 8.7 barrels in return for repayment of 10 barrels, both of these cases would have reflected a 15 percent rate of time preference: in the first case this rate is reflected in the 1.5 barrel *premium*, and in the second case the rate is reflected by the *discount* of 1.3 barrels. In both events the time-preference rate is the same 15 percent, which is also A's interest rate.

We can now also see why the pure interest or time-preference rate can be described as the *inter-temporal exchange rate* between (a) present goods presently available and (b) future goods available only at a later date. In our sugar illustration the 10 percent premium rate of interest was derived from the ratio of 11/10, while the 10 percent discount rate of interest was obtained from the ratio 10/9.1.

The "Price of Money"

The reader should not be misled by the customary notion that interest rates are related only to *money* loans. We have just seen, in our sugar illustration, that a loan transaction between creditor and debtor can take the form of *non-money* goods. Indeed, history tells us that as far back as the Babylonian King Hammurabi, more than 2,000 years B.C., people were making loans in non-money commodities. The only difference between a sugar loan and a money loan is that the former is transacted in barrel units of sugar, whereas the latter involves units of money (e.g., dollars).

For this reason it is also misleading to define the interest rate merely as the *price of money*, rather than in the basic universal terms of time-preference. First of all, interest-bearing loans can be made in *non-money* goods as well as money units, as we have just noted. True, in the modern economy, interest is usually paid in the form of money, but this does not make interest a purely *monetary* phenomenon. Indeed, at heart, interest is a reflection of universal time-preference.

For another thing, the word "price" is literally misused. A money "price" represents the *full* number of money-units asked by the seller in exchange for a unit of his goods. In contrast, an interest payment is only a *fractional* payment, only a part of the

total sum of money-units being exchanged. For example, an interest payment of $10 on a loan of $100 is only *part* of the total value of the transaction.

Furthermore, the present "price" of $100 is simply another batch of 100 dollar-bills—no more, no less. That is to say, anyone who wants to "buy" some money can go to the bank and buy, say a $100 bill by paying with a check or 100 dollar-bills, the "price" of money here being simply $1 for $1.

Additionally, and more precisely, the "price" of any good—say, X, be it money or a non-money good—is equal to the *amount* of other goods that this good X can be exchanged for in the market. For example, if the market price of X is $5, it means that one unit of X is exchangeable for five dollar-units. (The "exchange rate" is 1:5.) On the other hand, from the point of view of one dollar bill, the "price" of that dollar is how much it can be exchanged for in terms of X (which is one-fifth of X). For this reason, the "price" of a dollar is *not* the interest rate *but rather* how much the dollar can be exchanged for in terms of the full array of alternative goods. Technically speaking, it is approximately the inverse or reciprocal of the general "price level" of all non-money goods. Thus, the higher the price level, the lower the "price of money," and vice versa.

Saving and Investing

Finally, and most fundamentally, the "price of money" concept mistakenly implies that the natural phenomenon of the interest rate arises only in *loan* transactions between parties A and B. This misconception gives rise to the expression that interest is "the price of a *loan*," which implies that a loan necessarily involves two *separate* parties, the lender and the borrower. However, a person can "lend to himself" as well as to others. For example, individual savers or groups of savers can "borrow" *their own* accumulated savings and invest these savings, without resorting to loans from other parties. Indeed, the classical concept of the "capitalist-entrepreneur," who was a central figure in spearheading the Industrial Revolution, was based on this notion of the saver and capital accumulator investing *his own* wealth without recourse to borrowing from others.

In all such cases, where people indicate a relatively lower time-preference by saving and investing in productive ventures—whether their own or others'—the presumption is that the saver-investor believes his investment in production will yield him a *future consumption* that will be *greater* than otherwise. This does not mean that savers-investors value the future absolutely over the present, but merely that they prefer a future consumption that would be greater than otherwise. In working to make for themselves a "better future" than otherwise, they in effect hasten the realization of their future.

Interest-Rate Tables

We have now seen that inter-temporal exchange transactions can involve money and non-money goods, and can also involve an investment of one's own accumulated savings rather than a loan transaction. We should also note that loans can be made for consumption purposes (consumer loans) as well as for production purposes (commercial loans). In any case, the various possible *rates* of exchange between present goods and future goods—that is, the various *rates* of subjective time preference as well as premium

and discount—can be numerically expressed in the form of *interest tables*, such as Tables III and IV, which are condensed versions.

TABLE III

Compound Interest on One Dollar

End of Year	3%	5%	10%	15%	20%
1	1.03	1.05	1.10	1.15	1.20
2	1.06	1.10	1.21	1.32	1.44
3	1.09	1.16	1.33	1.52	1.73
4	1.13	1.22	1.46	1.74	2.07
5	1.16	1.28	1.61	2.01	2.49
10	1.34	1.63	2.59	4.05	6.19
15	1.56	2.08	4.17	8.13	15.4
20	1.81	2.65	6.72	16.1	38.3
30	2.43	4.32	17.4	66.2	237
40	3.26	7.04	45.3	267	1470
50	4.38	11.5	117	1080	9100

For example, Table III can illustrate the terms of a *premium*-type loan transaction. Imagine a current loan of $1,000 to be repaid in 5 years at 15 percent interest per annum. Table III tells us that the premium rate attached to each dollar borrowed is 2.01 (see the first column for the year 5, then across to the 15 percent column). We then multiply 2.01 by $1,000 and get $2,010. This is the total to be repaid by the borrower: it consists of $1,000 principal plus $1,010 premium interest.

In contrast, we can use Table IV to illustrate the terms of a *discount* interest loan. Imagine a borrower who offers to repay the lender $1,000 at 15 percent interest, at the end of 5 years. Table IV tells us that the rate at which the future $1,000 should be discounted by the lender is .497 (see the first column for year 5, and then across to the 15 percent column). We then multiply .497 by $1,000 and get $497. Hence, in a 15 percent loan, $497 is the present discounted value of $1,000 to be repaid 5 years from now; that is, the lender who wants to receive $1,000 in a 5-year, 15-percent loan should lend out no more than $497.

TABLE IV

Present Discounted Value of a Future Dollar

End of Year	3%	5%	10%	15%	20%
1	.971	.952	.909	.870	.833
2	.943	.907	.826	.756	.694
3	.915	.864	.751	.658	.578
4	.889	.823	.683	.572	.482
5	.863	.784	.620	.497	.402
10	.744	.614	.385	.247	.162
15	.642	.481	.239	.122	.0649
20	.554	.377	.148	.0611	.0261
30	.412	.231	.0573	.0151	.0042
40	.307	.142	.0221	.0037	.0007
50	.228	.087	.0085	.0009	.0001

Some Propositions

While we have these two interest tables at hand, we should examine them for several *important propositions* implied in their numerical structure. The first implied proposition should be familiar by now: the greater is the *time-preference rate*, the greater is the numerical rate of interest, or the lower is the present discounted value. This can be seen by scanning each year-line from left to right. In Table III, for example, the numbers increase in value to reflect the higher time-preference or interest rates. Similarly, Table IV tells us, as we scan from left to right, that lower and lower present discounted values apply to the increasing rates of time-preference or interest.

We now come to a second proposition implied in these interest tables: the *longer* the time-span involved in the inter-temporal transaction, the greater is the premium rate of interest, or the lower is the present discounted value. This can be seen by scanning each percent column from the top down. In Table III, for example, the numbers increase in value, reflecting the greater premium attached to transactions of longer duration. In Table IV they drop in value, reflecting the increased rates of discount applied to such transactions.

A third proposition implied in our tables runs as follows: the time-preference or interest rate is always *positive*, never zero or negative. In other words, inter-temporal exchanges will always be transacted at a premium or discount rate of interest. For instance, A will never lend B 100 units of X now for only 100 units or *less* to be repaid at a later date, other things being equal. This assumes A's time-preference rate is the only determining factor in the terms of exchange, excluding personal considerations such a friendship or blood relationship with B.

Time-Preference; Relative vs. Absolute

In this connection it is important to note that positive time-preference is *relative*, not absolute. An *absolute* time preference means that a person provides only for present consumption or acquires only present goods, and never saves any current income for future consumption (those "rainy days") nor acquires any future goods (such as IOU's or securities).

Such *absolute* time-preference is conceivable only under two unlikely conditions. One would be a catastrophe-ridden world, where everything was going to "come to an end" at any moment, and there would truly be "no tomorrow." With catastrophe hanging overhead like a Damocles1 sword, no one could be blamed for living it up today, with nary a care for the morrow. The other condition would be a non-scarcity world of absolute abundance, like the Garden of Eden. Here everyone could truly be a pure consumer (a pure non-saver), never having to worry about saving something for future consumption.

At the opposite extreme is the case of absolutely no time preference. This means that people have no desire to live "in the present"—to do any consuming now—but prefer to *save everything* for the future. At this extreme rate of abstinence, the human species clearly could not survive; it would simply perish!—which makes this condition totally unrealistic. Furthermore, if people literally *never* consume anything, including the things they might buy with their savings, there is obviously no point in doing any saving in the first place.

However, there are people who have *relatively* low time-preference rates and, therefore, tend to be *savers* as well as consumers. That is to say, even while they consume significant portions of their current income, they also set aside significant amounts for future consumption by saving for those rainy days, retirement, or other future goals. Savers characteristically have longer *time horizons* than non-savers: for them the future stretches over a greater span of years than for non-savers; the latter care more about "living it up" today, care less about future consumption. Yet, even among savers, the rate of saving will vary according to one's age, circumstances, and preferences.

Time-Preference: High and Low

Clearly, then, real-world rates of time-preference must lie mostly between the one extreme of absolute time preference and the other extreme of absolutely no time preference. Real people are characterized by *relative* rates of time-preference, ranging from relatively "high" to relatively "low" time-preference rates, and varying from individual to individual and from age to age. That is to say, even though people prefer to consume now rather than later—other things being the same—they do *save* some of their income and allocate it toward future consumption. By saving varying proportions of their income, they divert varying amounts of current consumption toward *future* consumption.

People with relatively *high* time preference tend to use most or practically all of their income for *present* consumption, and save very little, if anything. Indeed, some people may consume *more than* their current income ("live beyond one's means," so to

speak) either by living off their accumulated savings, or by borrowing the savings of others whose time-preference rate is lower and who, therefore, save more.

On the other hand, people with relatively *low* time preference tend to *postpone* present consumption at a greater rate than people with high time preference. They are the people who defer much consumption by *saving* significant parts of their current income. These are the savings that are usually channeled into investment—via the financial system (e.g., the stock and bond markets)—in the growth of productive capacity of firms. Firms depend on these savings to supplement their own internal saving or cash flow, and invest them in new capital goods (see Chapter IV).

Because investment by firms in *capital goods* tends to increase productivity and reduce unit costs of production, thereby increasing profits, savers are reasonably induced to share in these profits by investing in firms. Thus, people are always tending to balance their time-preference and the disutility of postponed consumption against the advantages of investing in the higher productivity of expanded capital structure. Hence, it is the saver-investor, possessed of relatively lower time preference, who provides the capital for ever more elaborate ("longer") processes of production which, in turn, increase the productivity and standard of living of the community. In other words, the saver-investor provides the *present goods* that enable the firm to produce *future goods*, in return for which he acquires a claim to a share of the profits.

Calculation of Profits and Costs

We can now see how Table IV, on present discounted values, can help illustrate the *profit calculations* of the firm. Since the firm is a discounter of future values—seeking to keep its present costs below its expected future selling price—Table IV becomes the relevant table. On the one hand, this table deals with present discount factors, while on the other hand, the firm must necessarily attach a discounted value to its current factor outlays—a value calculated on the basis of its expected future selling price.

Assume, for example, that the firm is producing a computer to sell at $100,000 a unit, each of which takes two years to produce. The firm wants to earn a 15 percent profit as its pure interest rate. Working back from its future price of $100,000, the firm knows it must limit its unit costs to something *less than* $100,000. The question now is: What is this cost-ceiling that will allow the firm to earn 15 percent pure interest over two years on each unit produced?

If we were, instead, involved in a *loan* transaction, the calculation would be fairly simple. A two-year loan at 15 percent, repayable in the sum of $100,000, would call for a present cash outlay by the lender of only $75,600 (obtained by multiplying the discount factor .756 by $100,000). That is to say, $75,600 represents the *present discounted value* of $100,000 repayable at the end of two years. The firm, too, like the moneylender, makes a present discounted payment in exchange for a greater payoff in the future. But there the resemblance ends. For practical reasons, the firm does not make its present discounted outlay to workers and other owners of production-factors in *one lump sum* as does the moneylender. In practice, the firm breaks its total outlays down into a *series* of regular weekly or monthly income payments, which enable wage-earners, rent receivers and materials suppliers to make their own current expenditures for consumption and production purposes.

Discounting Current Factor Outlays

Thus, the difference between making a *series* of current payments to factor-owners, stretching over two years, as compared to a mere *lump-sum* loan of cash, introduces an insignificant complication in the calculation of present discounted values of current cash outlays. Whereas *the lender* makes only one lump-sum outlay at the start of the two-year period, and then waits a full two years for repayment of *every* dollar of principal, it is otherwise with the firm.

The firm does not have to wait a full two years for a payoff on *each* of its currently paid-out dollars to factor-owners. Indeed, the first month's outlays wait 23 months for their payoff; the second month's outlays wait 22 months for their payoff; the third month's outlays wait 21 months; and so on, until the final monthly outlay waits no longer.

Over the two-year period as a whole, therefore, each of the firm's current monthly outlays to factor-owners involves not *one* present discount factor (e.g., 0.756) but rather a *series* of them, each numerically lower than the preceding one. Theoretically this implies that each month's outlays would have to be determined by use of lower and lower discount factors, and therefore payments to workers and others would be larger each successive month. In practice, however, it is more convenient for both the firms and factor-owners to have the payments made in uniform, *unchanged* amounts. How can this practical institutional complication be handled?

Making Regular Payments

Since the firm will be making twenty-four identical monthly outlays, the firm can calculate an approximate present discount factor by using the twelfth or mid-point month as its guide. In Table IV we see that the discount factor for the end of the twelfth month, at 15 percent interest, is 0.870. This implies that the average of all monthly discount factors is 0.870, and that the sum o£ the different present discounted values will total about $87,000 over the two-year period. That is to say, the firm must limit its current outlays to $87,000 per unit produced, yielding a profit margin of $13,000 for each unit sold at $100,000.

In practice, of course, there is no assurance that the firm will be able to hire or purchase factors of production at market prices (wage rates, rents, etc.) that will be low enough—that is, low enough to keep unit costs from exceeding the $87,000 limit which the firm will be willing to spend for each unit produced. The firm's inducement to employ labor and other resources depends crucially on the current market price of the resources. Thus, if one or more of the resources needed is *overpriced*, the firm may have to cancel the venture altogether—unless it finds a way to economize on some inputs, or decides to accept a reduced profit margin.

Relevant Costs of Production

This brings us to a vital consideration: Which costs should the firm include in its calculation of the *cost of production*? First of all, costs can be calculated either as a marginal cost (MC) or as a per unit or average cost (AC). The MC is simply the total cost

that will be involved in producing a given quantity or batch of products. The AC is simply the total cost (or MC) divided by the number of units to be produced, yielding a per-unit cost. Now, to return to our question: Which types of costs should be included in the calculation of MC or AC?

It helps to realize, at the start, that not all expenditures by the firm are to be regarded as *relevant costs*—costs that will necessarily be incurred by the forthcoming production. For example, as we will see below, not every dollar expended for plant and equipment is a relevant cost. Furthermore, relevant costs must be broken down into (a) *explicit costs*, and (b) *implicit costs*. Leading examples of each category are as follows:

Typical *explicit costs* include:

Wages and salaries,
Rent,
Interest,
Materials,
Power,
Repairs and maintenance.

In contrast, *implicit costs* include such items as:

Depreciation of plant and equipment,
Implicit wages and salaries of owner,
Implicit rent on owners land and factory facilities.

What is the real difference between explicit and implicit costs? *Explicit costs*, usually referred to as "out of pocket" expenditures, always involve an outlay of money for goods and services purchased or hired for the given production program. They can be measured strictly on the basis of the purchase price of the given factor. Also, these factors are usually "short-lived" and therefore "expire" in the process of production: the factor is either technically transformed (e.g., materials) or is "embodied" in the product (e.g., labor, power). They are readily measurable or calculable. *Implicit costs*, in contrast, usually involve one or another complication when it comes to their calculation.

Implicit Earnings

For instance, in cases where the owner of the firm provides professional services (managerial, legal, etc.) so that the firm does not have to hire these services on the market, resources are being used even though no specific money expenditures are involved. Thus costs of production are incurred which are equivalent to the wages and salaries that the owner could have earned by selling his services to other firms. These foregone earnings constitute an *opportunity cost* whose value is imputed from the market value of the owner's services to his own firm.

Similar reasoning applies to the use of land and factory facilities that are owned by the firm but which are used in production instead of being rented to the market. Here the *rent* that could have been earned by selling these resources directly to the market are

definitely an opportunity cost. Therefore their use in production by the firm involves a cost of production whose value is imputed from the rent that could have been earned on the market.

Depreciation and Interest

Why is *depreciation* of plant and equipment placed under implicit costs rather than explicit costs? Does not the acquisition of equipment, for instance, involve an outlay of money and, therefore, should be treated as an explicit cost? Well, equipment usage is complicated by the fact that it is durable or "long-lived," and therefore does not get used up ("consumed") in a single act of production. This has two important implications. First, the value of the equipment used up in a single act of production is usually only a fraction of the total purchase price. Second, at any given moment, equipment commands a *resale value*—either as productive equipment that still is useful, or as mere scrap. How does this help us calculate the economic cost of using equipment in production?

From the above it should be clear that the cost of equipment used in production—and the same goes for the physical plant—is measured not by its original purchase price but only by the portion of it that is actually used in the current production program. This portion is measured by the difference between the equipment's *current* resale value (at the start of the current production period) and its *prospective* resale value (at the termination of the production period). This difference in resale values is called *depreciation*, and reflects the economic cost of the wear-and-tear of the equipment used in production.

A final note about *interest* costs listed among explicit costs above. On loans received by the firm, only the interest portion of the obligation—not the principal—is included as an explicit cost. Inclusion of the principal would involve double-counting, since the proceeds of loans typically become embodied in explicit expenditure items such as wages and salaries, materials, etc.

Specifically, the funds could have been invested in stocks and bonds, and could have earned dividends and interest for their owners. When owners of the firm invest in production instead of stocks and bonds, they are foregoing an *opportunity* to earn income elsewhere. The interest and dividends they could have earned on the financial markets they now want to exceed by investing in production instead—for earnings that are expected in the form of profits.

Profits as Opportunity Costs

We have now completed the first, and main, leg in our journey to uncover the nature of the profit margin. It is time, also, to briefly survey our results. Our first goal has been to link the basic component of the profit margin to the pure interest (time-preference) rate. Both moneylender and firm are engaged in the inter-temporal exchange of present goods for future goods. Since the present value of future goods is typically *discounted*, both moneylender and firm naturally attach a discount to their future payoffs. Here lies the reason for both the interest on money loans and the profit margin earned by firms.

We can now also see why the profit margin reflects an *opportunity cost*—the equivalent of what the firm could have earned elsewhere, by investing in financial assets

instead of in production. Owners of the firm always have the option of investing their savings in the purchase of securities that yield interest or dividends and capital gains. By investing, instead, in production, they expect to earn at least the equivalent of what they could earn in the foregone investment opportunities. In effect, the owners of firms are merely lending their capital funds to themselves instead of to others. Furthermore, it makes no difference if the firm, in addition to investing its owners' savings, also *borrows* the savings of others via the financial markets: in both cases it will want to earn at least the equivalent of alternative earning possibilities.

III. Uncertainty and Inflation

We said at the start that the profit margin consists not only of a time-preference or *pure interest* component, but also of "entrepreneurial" and "purchasing power" components. The *entrepreneurial* component is included because of the hazards and risks faced by the firm due to the uncertainty of selling successfully in the market. The *purchasing-power* component is included because of changes in the value of money that are related to changes in the money supply and general price level.

Uncertainty and Changing PPM

If we were living in an *imaginary world* devoid of any uncertainty and risk, and in which the purchasing power of money ("PPM" hereafter) was perfectly stable, the profit margin could then consist only of pure interest. In the real world, however, there are no riskless markets or stable PPM.

Instead, there is constant uncertainty of market demand and selling conditions, and the PPM is subject to depreciation due to government monetary inflation and rising price levels. Both market uncertainty and changes in PPM affect *ex-ante* planning and *ex-post* sales experience in unpredictable ways and, therefore, compel the firm to provide against adverse effects by appropriate provision for both entrepreneurial and PPM components in the planned profit margin.

Impact of Uncertain Demand

How does market *uncertainty* influence the firm's *ex-ante* planning of its profit margin? In our preceding illustration we had the firm earning a $13,000 profit on each unit sold at $100,000, representing a 15 percent return on a two-year production project. But this assumed *certainty* of sales—that the firm would actually sell every unit produced (say, 200 units) at the expected selling price of $100,000. Such certainty of sales is possible only in the unreal world of *static, unchanging* market conditions in which the firm has complete knowledge of market demand and exactly how many units to produce.

However, unchanging market conditions do not exist in the *real world*, where demand and supply are in constant dynamic flux and market-clearing prices become unpredictable. In a world of market uncertainty and unpredictability, *ex-post* realized sales may or may not turn out as planned in the *ex-ante*. How does this uncertainty prospect affect *ex-ante* profit planning?

Impact of Reduced Sales

Suppose, for instance, that the firm wants to hedge against the possibility that it will not sell all of its 200 units, in which case it would have to slash its price in order to sell out the remaining unsold units. Such a prospect would, of course, also reduce the expected profit rate of $13,000 per unit. In order to minimize the effects of these adverse prospects on profits, the firm can, say, add a five percent margin for uncertainty and thereby *enlarge* its *ex-ante* planned profit rate from 15 to 20 percent. In principle, this increase in profit rate can be sought in two ways: (a) by *lowering* the ceiling on its unit costs from $87,000 to $83,000 (discount factor 0.833 multiplied by $100,000), or (b) by *raising* its expected selling price to about $103,700. Or it could plan a combination of (a) and (b). Its final choice will, of course, depend on whether it can effectively reduce its unit costs or whether, in its judgment, the market demand is inelastic against a price increase. In any case, the greater the uncertainty and risk attached to a given project, the larger will be the *entrepreneurial* component of the *ex-ante* profit margin.

If market demand is seriously disappointing, quantities sold will be less than expected, selling prices will have to be slashed, and profits will be less than expected. The drop in profits may either be slight or so great as to wipe out the profit margin or even prevent the firm from recouping some of its factor outlays.

Impact of Excess Demand

Of course, the market could throw a pleasant surprise by having demand exceed the firm's expectations. For example, assume *demand increases* at the same time that product is being released to the market, resulting in an excess demand for the product. As we saw in Chapter VIII, the firm might be able to spot this incipient shortage fairly early in the selling period, and decide to *raise its price* to take advantage of the unanticipated bulge in demand for its product. If so, its *ex-post* profit margin would surely exceed its *ex-ante* planned margin due to the emergence of *entrepreneurial* profit.

Thus, we see that the *entrepreneurial* profit component enters into the picture only after the firm makes due allowance for pure interest or time-preference. It can emerge both in the *ex-ante* planning phase and in the *ex-post* selling phase. In view of inevitable and pervasive market uncertainty, the entrepreneurial component must be regarded as a categorical element of the firm's profit margin. But whereas the pure-interest component is always positive, the entrepreneurial component can be either positive or negative.

Impact of Inflation

Finally, the firm's profit margin must make due allowance for prospective changes in the *purchasing power of money* (PPM), especially in periods of rising or falling prices. Since we are living in an "age of inflation" marked by rising prices and shrinking PPM, it is reasonable for the firm to anticipate a *decline* in PPM by the time its product is selling on the market. Rising prices and declining PPM, in turn, mean that the dollar buys less and less as time goes by. Failure to allow for this inflation effect in the

profit margin will, other things being equal, yield profits whose real purchasing power is less than planned.

In order to minimize the inflation impact on the purchasing power of its *ex-post* profits, the firm will include an *inflation component* in its *ex-ante* profit margin. The size of this PPM component will vary, of course, with the anticipated rate of inflation: the higher the rate of price inflation anticipated, the larger will be the inflation component, and the larger will be the *ex-ante* profit margin. So long as inflation is anticipated, the firm will hedge against it by inflating its profit margin.

But this can be a hazardous game. There is no guarantee that the anticipated market demand will increase sufficiently to absorb the inflated profit margin. As we saw in Chapter VIII, increases in selling prices can be realized only when market demand is increasing faster than market supply. If for any reason such buoyant demand is checked, or even slowed down, the roof can cave in; market demand will resist the inflated selling prices and the firm will fail to realize anticipated sales.

Market Rates of Interest

At this point we should note that market rates of interest charged in the *loan market* will tend to reflect entrepreneurial risk and PPM considerations as well as pure interest rates. Thus, market rates of interest will tend to increase not only when subjective time - preference increases, but also when investments become riskier and when price-inflation intensifies. For this reason the loan-market rate of interest will tend to reflect gross profit margins in the economy.