

# THE THEORY OF INTEREST

AS DETERMINED BY IMPATIENCE TO SPEND INCOME  
AND OPPORTUNITY TO INVEST IT

BY

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## CHAPTER I INCOME AND CAPITAL<sup>1</sup>

### §1. *Subjective, or Enjoyment, Income*

INCOME is a series of events.<sup>2</sup>

According to the modern theory of relativity the elementary reality is not matter, electricity, space, time, life or mind, but events.

<sup>1</sup> *The Nature of Capital and Income* (first published in 1906) was primarily intended to serve as a foundation for *The Rate of Interest* which immediately followed it. It was my expectation that the student would read the former before reading the latter.

But now, for the convenience of those who do not wish to take the time to read *The Nature of Capital and Income*, I have written this first chapter summarizing it. I have availed myself of this opportunity to redistribute the emphasis and to make those amendments in statement which further study has indicated to be desirable.

A friendly critic, Professor John B. Canning, suggests that *The Nature of Capital and Income* should have been called "The Nature of Income and Capital" and that the subject matter should have been presented in reverse order, inasmuch as income is the basis of the concept of capital value and is, in fact, the most fundamental concept in economic science.

While it might not be practicable to employ the reverse order in such a complete presentation as I aimed to make in *The Nature of Capital and Income*, I have, in this chapter, where brevity may justify some dogmatism, adopted Professor Canning's suggestions. This radical change in mode of presentation may induce some who have already read that book to review it now in the reverse order employed in this chapter. I hope also that some who have not read it may be moved, after reading this chapter, to read *The Nature of Capital and Income* in full. I have tried, in this chapter, to confine myself merely to those conclusions most essential as a preliminary for proceeding to the consideration of the origins, nature and determinants of the rate of interest.

<sup>2</sup> The first writer to employ the concept of events as fundamental in interest theory appears to have been John Rae, whose book, originally published in 1834, is commented on elsewhere.

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For each individual only those events which come within the purview of his experience are of direct concern. It is these events—the psychic experiences of the individual mind—which constitute ultimate income for that individual. The outside events have significance for that individual only in so far as they are the means to these inner events of the mind. The human nervous system is, like a radio, a great receiving instrument. Our brains serve to transform into the stream of our psychic life those outside events, which happen to us and stimulate our nervous system.

But the human body is not ordinarily regarded as an owned object, and only those events in consciousness traceable to owned objects other than the human body are generally admitted to be psychic income. However, the human machine still plays a rôle in so far as, through its purposeful activities, it produces, or helps produce, other owned objects which are material sources of desirable events—food, houses, tools, and other goods, which in their turn set in motion a chain of operations whose ultimate effect is registered in our stream of consciousness. The important consideration from this point of view is that human beings are ever striving to control the stream of their psychic life by appropriating and utilizing the materials and forces of Nature.

In Man's early history he had little command over his environment. He was largely at the mercy of natural forces—wind and lightning, rain and snow, heat and cold. But today Man protects himself from these by means of those contrivances called houses, clothing, and furnaces. He diverts the lightning by means of lightning rods. He increases his food supply by means of appropriated land, farm buildings, plows, and other implements.

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He then refashions the food by means of mills, grinding machinery, cook-stoves and other agencies, and by the labor of human bodies, including his own.

Neither these intermediate processes of creation and alteration nor the money transactions following them are of significance except as they are the necessary or helpful preliminaries to psychic income—human enjoyment. We must be careful lest, in fixing our eyes on such preliminaries, especially money transactions, we overlook the much more important enjoyment which it is their business to yield.

Directors and managers providing income for thousands of people sometimes think of their corporation merely as a great money-making machine. In their eyes, its one purpose is to earn money dividends for the stockholders, money interest for the bondholders, money wages and money salaries for the employees. What happens after these payments are made seems too private a matter to concern them. Yet that is the nub of the whole arrangement. It is only what we carry out of the market place into our homes and private lives which really counts. Money is of no use to us until it is spent. The ultimate wages are not paid in terms of money but in the enjoyments it buys. The dividend check becomes income in the ultimate sense only when we eat the food, wear the clothes, or ride in the automobile which are bought with the check.

### §2. *Objective, or Real, Income (Our "Living")*

Enjoyment income is a psychological entity and cannot be measured directly. We can approximate it indirectly, however, by going one step back of it to what is called real income. Real wages, and indeed real income in gen-

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eral, consist of those final physical events in the *outer* world which give us our *inner* enjoyments.

This real income includes the shelter of a house, the music of a victrola or radio, the use of clothes, the eating of food, the reading of the newspaper and all those other innumerable events by which we make the world about us contribute to our enjoyments. Metaphorically we sometimes refer to this, our real income, as our "bread and butter."

These finals in the stream of outer events are what we call our "living," as implied in the phrases cost of living and earning a living. The final outer events and the inner events which they entail run closely parallel, or, rather, the inner events generally follow closely in time on the outer. The enjoyment of music is felt almost instantaneously as the piano or singer produces it. The enjoyment of food is experienced with the eating or soon after the eating.

These outer events, such as the use of food, or clothes, etc., are like the resultant inner events in not being very easily measured. They occur largely in the privacy of the home; they are often difficult to express in any standard units. They have no common denominator. Even the individual who experiences them cannot weigh and measure them directly. All he can do is to measure the money he paid to get them.

### §3. *Cost of Living, a Measure of Real Income*

So, just as we went back of an individual's enjoyment income to his real income, we now go back of his real income, or his living, to his *cost* of living, the money measure of real income. You cannot measure in dollars either the inner event of your enjoyment while eating your din-

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ner or the outer event of eating it, but you can find out definitely how much money that dinner cost you. In the same way, you cannot measure your enjoyment at moving picture theater, but you do know what you paid for your ticket; you cannot measure exactly what your house shelter is really worth to you, but you can tell how much you pay for your rent, or what is a fair equivalent for your rent if you happen to live in your own house. You cannot measure what it is worth to wear an evening suit, but you can find out what it costs to hire one, or a fair equivalent of its hire if, perchance, the suit belongs to you. Deducing such equivalents is an accountant's job.

The total cost of living, in the sense of money payments, is a negative item, being outgo rather than income; but it is our best practical measure of the positive items of real income for which those payments are made. For from this total valuation of positive real income may be subtracted the total valuation of the person's labor pain during the same period, if we wish to compare a laborer's income with that of a man who does no labor but lives on his income from capital (other than himself), a "rentier."

Enjoyment income, real income, and the cost of living are merely three different stages of income. All three run closely parallel to each other, although they are not exactly synchronous in time. These discrepancies, as has been intimated, are negligible as between real and enjoyment income. So also the time elapsing between the cost of living and the living is usually brief. There is a little delay between the spending of money at the box office and the seeing of the entertainment, or between paying board or rent and making use of the food or hous-

ing facilities. In many cases, the money payment follows rather than precedes the enjoyment.

#### §4. *Cost of an Article vs. Cost of Its Use*

The only time discrepancy worth careful noting is that which occurs when the money spent is not simply for the temporary use of some object but for the whole object, which means merely for all its possible future uses. If a house is not rented but bought, we do not count the purchase price as all spent for this year's shelter. We expect from it many more years of use. Hence out of the entire purchase price, we try to compute a fair portion of the purchase price to be charged up to this year's use. In like manner, the statisticians of cost of living should distribute by periods the cost of using a person's house furnishings, clothing, musical instruments, automobiles and other durable goods, and not charge the entire cost against the income of the year of purchase. To any given year should be charged only that year's upkeep and replacement, which measures, at least roughly, the services rendered by the goods in question during that particular year. The true real annual income from such goods is the equivalent approximately of the cost of the services given off by those goods each year.

Strictly speaking, then, in making up our income statistics, we should always calculate the value of *services*, and never the value of the objects rendering those services. It is true that, in the case of short-lived objects like food, we do not ordinarily need, in practice, to go to the trouble of distinguishing their total cost from the cost of their use. A loaf of bread is worth ten cents because its use is worth ten cents. We cannot rent food; we can only buy it outright. Yet there is some discrepancy in time in

the case of foods that keep, such as flour, preserved foods and canned goods. These we may buy in one year but not use until a later year, and in such cases the money given for the food might almost be said to be invested rather than spent, like the money given for a house. A man who buys a basket of fruit and eats it within an hour is certainly spending his money for the enjoyment of eating the fruit. But, if he buys a barrel of apples in the fall to be eaten during the winter, is he spending his money or is he investing it for a deferred enjoyment? Theoretically, the barrel of apples is an investment comparable to a house or any other durable good. Practically it is classed as expenditure, although it is a border-line case.

Spending and investing differ only in degree, depending on the length of time elapsing between the expenditure and the enjoyment. To spend is to pay money for enjoyments which come very soon. To invest is to pay money for enjoyments which are deferred to a later time. We spend money for our daily bread and butter or for a seat at the theater, but we invest money in the purchase of bonds, farms, dwellings, or automobiles, or even of suits of clothes.

#### §5. *Measuring at the Domestic Threshold*

In practice, we can estimate with fair accuracy in all ordinary cases how much of what we pay is for this year's use. That is to say, we can find out pretty nearly our cost of living for the year. We need only reckon what is spent on personal articles and services—on everything which enters our dwellings (or enters us), food, drink, clothes, furniture, household rent, fuel and light, amusements, and so on, our "bread and butter"—exclusive of what is left over for future years, such as what we pay for

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securities, machinery, or real estate, or what we put into the savings bank. The domestic threshold is, in general, a pretty good line of division. The cost of almost every object which crosses it measures a portion of our real income, and few other expenditures do.

Thus, at the end of production economics, or business economics, we find home economics. It is the housekeeper, the woman who spends, who takes the final steps through the cost of living toward getting the real income of the family, so that the family's enjoyment income may follow.

### §6. Money Income

We have just been dealing with money payments for consumption goods, or money *outgo*. We may now go back one further step to money received by the individual spender, or money income. Money income includes all money *received* which is not obviously, and in the nature of the case, to be devoted to reinvestment—or, as the expression is, "earmarked" for reinvestment. In other words, all money received and readily available and intended to be used for spending is money income. It sometimes differs from real income considerably. For instance, if you more than "earn your living" of \$6,000 with a salary of \$10,000, you voluntarily put by the \$4,000 remaining as savings. This part of your money income is saved from being turned immediately into real income. That is, instead of spending all your salary for this year's living you invest \$4,000 of it to help toward the cost of living of future years. And so, the \$4,000 is not only credited as income but debited as *outgo*. With it you buy durable objects such as land or buildings, or part rights in these, such as stocks or bonds. Your money income is

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in this case your salary (or it may be dividends, rent, interest, or profits) and it exceeds real income by the amount of your savings. On the other hand, you may be living beyond your (money) income. This means, expressed in terms of the concepts here used, that your real income for the year is greater than your money income.

That all one spends on his living measures real income, even when he "lives beyond his income" (beyond his *money* income), may be a hard saying to some who have never attempted to work out consistent definitions of economic concepts which will not only satisfy the requirements of economic theory but which will also bring these economic concepts into conformity with the theory and practice of accountancy. But a definition of income which satisfies both theory and practice, in both economics and accountancy, *must* reckon as income in the most basic sense all those uses, services, or living for which the cost of living is expended even though such expenditure may exceed the money income.

Thus we have a picture of three successive stages, or aspects, of a man's income:

Enjoyment or psychic income, consisting of agreeable sensations and experiences;

Real income *measured* by the cost of living;

Money income, consisting of the money received by a man for meeting his costs of living;

The last—money income—is most commonly called income; and the first—enjoyment income—is the most fundamental. But, for accounting purposes, real income, as measured by the cost of living, is the most practical.\*

\*Later in this chapter we shall see that these three sorts of income are all of a piece, parts of the entire economic fabric of services and

To recapitulate, we have seen that the enjoyment income is a psychological matter, and hence cannot be measured directly. So we look to real income instead; but even real income is a heterogeneous jumble. It includes quarts of milk, visits to the moving picture house, etc., and in that form cannot be measured easily or as a whole. Here is where the cost of living comes in. It is the practical, homogeneous <sup>4</sup> measure of real income. As the cost of living is expressed in terms of dollars it may, therefore, be taken as our best measure of income *in place of* enjoyment income, or real income. Between it and real income there are no important discrepancies as there are between money income and real income. Money income practically never conforms exactly to real income because either savings raise money income above real income, or deficits push money income below real income.

### §7. Capital Value

Savings bring us to the nature of capital. Capital, in the sense of capital *value*, is simply future income discounted or, in other words, capitalized. The value of any property, or rights to wealth, is its value *as a source of income* and is found by discounting that expected income. We may, if we so choose, for logical convenience, include as property the ownership in ourselves, or we may, conformably to custom, regard human beings as in a separate category.

disservices. Which of the three comes out of our accounting depends merely on which groups of these services and disservices are included in our summation.

<sup>4</sup>Even this is not homogeneous as a measure of subjective enjoyment; for a dollar to the poor and a dollar to the rich are not subjectively equal. See my *A Statistical Method for Measuring "Marginal Utility" and Testing the Justice of a Progressive Income Tax*. Economic Essays contributed in honor of John Bates Clark, pp. 157-193.

I define wealth as consisting of material objects owned by human beings (including, if you please, human beings themselves). The ownership may be divided and parcelled out among different individuals in the form of partnership rights, shares of stock, bonds, mortgages, and other forms of property rights. In whatever ways the ownership be distributed and symbolized in documents, the entire group of property rights are merely means to an end—income. Income is the alpha and omega of economics.

### §8. The Rate of Interest

The bridge or link between income and capital is the *rate of interest*. We may define the *rate of interest as the per cent of premium* paid on money at one date in terms of money to be in hand one year later. Theoretically, of course, we may substitute for money in this statement wheat or any other sort of goods. This will be discussed in Chapter II. But practically, it is only money which is traded as between present and future. Hence, the rate of interest is sometimes called the price of money; and the market in which present and future money are traded for that price, or premium, is called the money market. If \$100 today will exchange for \$105 to be received one year hence, the premium on present money in terms of future money is \$5 and this, as a percentage of the \$100, or the rate of interest, is five per cent. That is to say, the price of today's money in terms of next year's money is five per cent above par. It should always be remembered *that interest and the rate of interest are not identical*. Interest is computed by multiplying capital value by the rate of interest.

The aim of this book is to show how the *rate of interest* is caused or determined. Some writers have chosen, for

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purposes of exposition, to postulate two questions involved in the theory of the rate of interest, viz., (1) why any rate of interest exists and (2) how the rate of interest is determined. This second question, however, embraces also the first, since to explain how the rate of interest is determined involves the question of whether the rate can or cannot be zero, i.e., whether a positive rate of interest must necessarily exist.

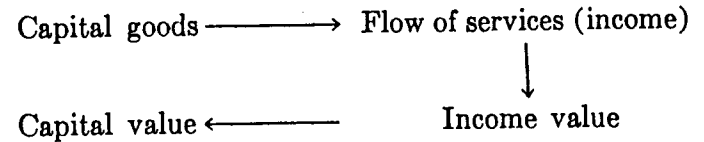
### §9. *Discounting is Fundamental*

But although the rate of interest may be used either way—for computing from present to future values, or from future to present values—the latter process (discounting) is by far the more important of the two. Accountants, of course, are constantly computing in both directions; for they have to deal with both sets of problems. But the basic problem of time valuation which Nature sets us is always that of translating the future into the present, that is, the problem of ascertaining the capital value of future income. The value of capital must be computed from the value of its estimated future net income, not *vice versa*.

This statement may at first seem puzzling, for we usually think of causes and effects as running forward not backward in time. It would seem then that income must be derived from capital; and, in a sense, this is true. Income is derived from capital goods. But the *value* of the income is not derived from the *value* of the capital goods. On the contrary, the value of the capital is derived from the value of the income. Valuation is a human process in which foresight enters. Coming events cast their shadows before. Our valuations are always anticipations.

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These relations are shown in the following scheme in which the arrows represent the order of sequence—(1) from capital goods to their future services, that is, income; (2) from these services to their value; and (3) from their value back to capital value:



Not until we know how much income an item of capital will probably bring us can we set any valuation on that capital at all. It is true that the wheat crop depends on the land which yields it. But the value of the crop does not depend on the value of the land. On the contrary, the value of the land depends on the expected value of its crops.

The present worth of any article is what buyers are willing to give for it and sellers are ready to take for it. In order that each man may logically decide what he is willing to give or take, he must have: (1) some idea of the value of the future benefits which that article will yield, and (2) some idea of the rate of interest by which these future values may be translated into present values by discounting.

### §10. *Costs, or Negative Income*

Cost of production of durable agents or capital goods has its influence included in the preceding formulation, since any cost is simply a negative item of income. Future negative items are to be discounted exactly as future positive items. It is to be remembered that at the given point of time when the value is being computed only *future* costs can enter into the valuation of any good.

Past costs have no *direct* influence on value. Only indirectly do they enter to the extent that they have determined the existing supply of goods and have thus either raised or lowered the value of the services of these goods.

In this indirect way, past costs can determine present values temporarily and until the prices of goods available are brought into conformity with the present costs of production through the operation of supply and demand. For example, the cost of producing woolen cloth declined very sharply after the close of the World War, but the price did not decline for many months because the new cloth made at less expense was not sufficient to meet the demand, hence the price remained above the new costs of production for a time. Again, the cost of making shoes advanced rapidly during the early years of the twentieth century, but the price of shoes did not advance *pari passu* with increased costs, because the supply of more cheaply made shoes was still large and for a time controlled the market price. In the same indirect way, many other influences affect the value of the services of any good, especially any alternative to those services. But none of these considerations affects the principle that the value of the good itself is the discounted value of the value (however determined) of its future services.

### §11. *The Discount Principle Applied*

The principles which have been explained for obtaining the present value of a future sum apply very definitely to many commercial transactions, such as to the valuation of bank assets, which indeed exist largely in the form of discount paper, or short time loans of some other kinds.

The value of a note is always the discounted value of the future payment to which it entitles the holder.

Elaborate mathematical tables have been calculated and are used by brokers for informing their customers what price should be paid for a five per cent bond in order that the purchaser may realize 5 per cent, 4 per cent, or any other rate of interest on the prices to be paid. The price of the bond is calculated from two items, the rate of interest to be realized and the series of sums or other benefits which the bond is going to return to the investor. Aside from risk, there can never be any other factors in the calculation except these two. Of course, an investor may refuse to buy a bond at the market price because he has, as an alternative, the opportunity to buy another bond cheaper so that he can realize a higher rate on his purchase price. But that fact does not alter the principle that market prices represent discounted benefits. The only market effect of this man's refusal will be a slight tendency to lower the market price of the first bond and raise that of its rival, that is, to alter the rate of interest realized. Later we shall study more fully the effects of such alternative opportunities. Here we are concerned only to note that the price of the bond is dependent solely on two factors: (1) its benefits and (2) the interest rate by which these are discounted.

The principle is, of course, not confined to bonds. It applies in any market to all property and wealth—stocks, land (which has a discounted capital value just as truly as any other capital), buildings, machinery, or anything whatsoever. Risk aside, each has a market value dependent solely on the same two factors, the benefits,<sup>5</sup> or re-

<sup>5</sup>Including, of course, all benefits or services whatever from the possession of the wealth such as the option to subscribe to stock, now often



turns, expected by the investor and the market rate of interest by which those benefits are discounted.

The income which he expects may be a perpetual income (flowing uniformly or in recurring cycles) or it may be any one of innumerable other types. If we assume that five per cent is the rate of interest, any one of the following income streams will have a present value of \$1000: a perpetual annuity of \$50 per year; or an annuity of \$50 a year for ten years, together with \$1000 at the end of the period; or \$100 a year for fourteen years, after which nothing at all; or \$25 a year for ten years, followed by \$187.50 a year for ten years, after which nothing at all.

### §12. *Double Entry Bookkeeping*

We began this chapter with the enjoyment income received by a person and then travelled back, by way of real income, cost of living, and money income to capital value, which simply embodies the capitalization or anticipation of income. This was going upstream, as it were, from the enjoyer of income to its source. We may now reverse our point of view and look downstream. We then

attached to bonds, or the privilege attaching to certain bonds which permits National Banks to use the bonds for the security of National Bank notes. Some of these benefits may be very indirect and related to whole groups. A man seeking voting control as a benefit who already possesses 49 per cent may pay a specially high price for a few more shares of stock for the benefit of raising his holdings to 51 per cent. Or, a man may include in the benefits of his wealth the fun of running the business, or the social standing he thinks it gives him, or political or other power and influence, or the mere miserly sense of possession or the satisfaction in the mere process of further accumulation. However indirect, unusual, or bizarre the benefit, the principle still holds that the value of any capital good or goods is derived solely from the prospect of future benefits.

think of the income stream not so much as flowing to its enjoyers as flowing *from* its various sources.\*

Capital value is income capitalized and nothing else. Income flows from, or is produced by, capital goods and human beings, so that the capital value is also the value of capital goods. The income is credited to (and outgo or cost debited to) these goods and (or including) human beings.

As every bookkeeper knows, most of the items of income (positive or negative) take the form of *money payments*. (These are not a *stock* of money, which is always capital but a *flow* of money.) Some are operations paid for—events in the productive process, such as grinding, spinning, weaving, hoisting, hauling, plowing; others are events of consumption, such as eating food, wearing clothes, hearing music, or seeing a play at the theatre; while still others are within the human mind, such as enjoyments or their opposite, labor effort or discomfort.

It might seem that in sorting and combining such a

\*Possibly it would help to adjust our mental attitudes to this changed point of view if we could change the name of income to outcome, or output. Income suggests coming *toward us* while outcome suggests coming *from the source*. Thus the outcome from a farm is the net value of its crops; the outcome from a railway company is its dividends, etc.

Under this new procedure, we credit each item of income as outcome from its source and debit every negative item. Negative items of income are outgo. If we could change this name also, we would call it ingo, or input.

It is a mere clerical matter of bookkeeping thus to credit to its source every service rendered as so much outcome (or income) and debit it with every disservice rendered, as so much ingo (or outgo).

Having suggested these new terms, however, so that the student may mentally, or literally by lead pencil, substitute them for the old, I shall hereafter, for simplicity, adhere uniformly to the original terminology, using the term income even when we are thinking merely of its coming *from its capital source* while the recipient is forgotten.

miscellany of income items we could never avoid confusion and double counting and that the sum total would far exceed the true psychic or enjoyment income. But the fact is that almost as many negative items as positive items are included here and that, *in fact, except for enjoyment income and labor pain*, every positive item is also negative, according to its relation to the capital source. Thus when Smith pays Jones \$100 (no matter where it came from), Jones receives an item of income of \$100 while Smith suffers an item of outgo of the same amount; and when a coupon of \$100 is cut from a bond and deposited, the bond is credited with yielding \$100 and the bank account is debited with the same sum. The same principle is applicable to the final big coupon called the principal of the bond. The same item is thus entered twice, once on one side of somebody's books and the other time on the other side of somebody's books.

The bookkeeping implications of such couples of items were discovered by accountants long ago and are the basis of their double entry bookkeeping, though its economic significance has been largely overlooked. One important significance is that this double entry prevents double counting; when we take the sum total of all income items for society, including psychic as well as physical items, this double entry results in cancelling out everything except the psychic items of enjoyment and labor pain.

Every operation of production, transportation, exchange, or consumption—every process, in fact, except final enjoyment—is double faced, or two items in one. I have called such an operation an “interaction” because it is income to be credited to the capital which yields it, while it is outgo to be debited to the capital which receives

it. Thus, in any complete bookkeeping, \$100 worth of plowing, on the one hand, is credited jointly to the plow, the plowman, and the team, or motor, which do the plowing; that is, which yield or bestow the service. On the other hand, it is debited to the land which is plowed, that is, which receives the service.

If the plow is owned by one person and the land by another, the latter paying \$100 to the former, then the service of plowing, though a self-cancelling interaction for the two persons taken together, evidently cannot be ignored by either separately. If \$100 is paid for this service of plowing, the \$100 item is an expense to the landowner to be subtracted from his gross income. It is no concern of his that this self-same service of plowing is counted as income by the plow-owner. So this item of \$100 worth of plowing affects our accounts quite differently according to the point of view. It may be a plus item from the point of view of one person and a minus item from that of another. When, however, the two accounts are combined and the plus and minus items are added, their algebraic sum is zero. For society as a whole, therefore, no positive income results from plowing until the land has yielded its crop and the crop has been finally consumed.

Thus, simply by the mechanical, clerical processes of making bookkeepers' entries, we reach again, in the opposite order, the various stages originally described in the opening pages of this chapter. That is, the sum total of income flowing from a group of capital sources is naturally different according to which capital sources are included. There are certain cancellations within any group of capital goods which have an uncanceled fringe, and this may itself in turn disappear by cancellation if

the group is enlarged by including other capital items with interactions between the new and old members. Henry Ford's mines yield a net income, the difference between certain credits and debits. If we include the railway which transports the product to the factory, certain credits to the mines from turning their product over to the railroad now disappear, being debits to the railway. If the circle be still further enlarged, say to include the Ford factories, other items likewise disappear as parts of interactions within the enlarged circle, and so on.

We must, of course, include all services as income. A dwelling renders income to the owner who dwells in it himself just as truly as when he lets it to another. In the first case, his income is shelter; in the second, his income is rent payments in money. All wealth existing at any moment is capital and yields income in some form. As a business man said to me, his pleasure yacht is capital and gives him dividends every Saturday afternoon.

§13. *Simplicity Underlying Complications*

In our present-day complicated economic life we are likely to be confused by the many industrial operations and money transactions. But net income still remains exactly what it was to primitive Robinson Crusoe on his island—the enjoyment from eating the berries we pick, so to speak, less the discomfort or the labor of picking them. The only difference is that today the picking is not so entirely hand-to-mouth, but is done by means of complicated apparatus and after the frequent exchange of money; that is, a long chain of middlemen, capital, and money transactions intervenes between the labor of picking at the start and the satisfaction of eating at the end.

To continue the literal example of berry picking, we find today huckleberries picked by hired laborers on the Pocono Mountains, sorted, graded, shipped by rail and motor to New York City wholesalers, resold to retailers who sell and deliver them to the housewife in whose kitchen they are again sorted and prepared for their ultimate mission of giving enjoyment. The individual's total income when elaborately worked out, after cancelling, in pairs or couples, all such credits and debits, whether of money payments or the money value of services—in production or exchange—coincides necessarily with his enjoyment income, less the labor pain suffered in the same period, from which sort of income we started our discussion in this chapter. This coincidence occurs necessarily and automatically, by virtue of these mathematical cancellations.

It is interesting to observe that a corporation as such can have no net income. Since a corporation is a fictitious, not a real, person, each of its items without exception is doubly entered. Its stockholders may get income from it, but the corporation itself, considered as a separate person apart from these stockholders, receives none.

The *total income* of a real person is his *enjoyment income* only provided we include the credits and debits of his own body. The physical music, or vibrations which pass from his piano to his ear are, strictly speaking, only interactions to be credited to his piano and debited to his bodily ear. The music in his consciousness comes at the other, or brain, end of the auditory nerve. The piano plays to his ear, his ear to his brain, and his brain to his consciousness. His whole body mechanism is a transmitter from the outer world to his inner life, through ear, eye, and its other sense organs.

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Or if the body mechanism, with its debits and credits, be omitted the total result is not his enjoyment income, subjectively considered, but the real income as above set forth. If we measure this, his real income, in money units, we find it equal to the total valuation of his cost of living less the total valuation of his own labor pain.

How to place a money valuation on a labor pain is a difficult question. This question is important in accounting theory, especially in its relation to the problems of measuring human welfare. But, fortunately for us, the difficulties of this valuation do not disturb the theory of the rate of interest, since this theory is actually concerned only with *differences* in the income stream at different times, not in a meticulous measurement of the *total*. Moreover, practically the only point in interest theory where labor pain enters is the case of a worker who suffers present labor pain in order to secure future satisfactions for himself or his family. This case is that of a laborer's savings; and all we need do here is to take the laborer's own valuation. Presumably, if the rate of interest is 5 per cent, the labor he will exert this year for the sake of \$100 next year has a valuation in his mind of about \$95.

But a laborer's savings are practically a negligible element in determining the rate of interest. To others than laborers the only important way labor enters is through the payment of wages and salaries, and these are money expenses incurred for the sake of future money returns. A laborer building a railway does not work for the future dividends from the railway. He is paid for immediate living by his employer in expectation of those future dividends. Thus wages are a sort of measure of labor pain

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to the employer of labor, whether or not they be so regarded by the laborer.<sup>7</sup>

If we exclude labor pain and further exclude from the laborer's bookkeeping the income items, positive and negative, flowing from his household effects—the use of furniture, clothing, food, and so on—the total income then turns out to be not his real income *but his money income*—assuming that, as is ordinarily true, all his income flows in through money payments and none in kind.

### §14. *Capital Gain not Income*

The most interesting and valuable result of applying these bookkeeping principles is that thereby we automatically separate capital from income, two things which are so often confused and in so many ways. It is not uncommon for economic students to make the mistake of including capital gains as income. Capital gains, as already implied, are merely capitalization of future income. They are never present income. Therefore a true meticulous accounting, item by item, of the income, or of the services and disservices, rendered by any specified group of capital items will infallibly grind out this truth. It will never confuse capital gain in that capital group with income realized from that group. This is true whether our capital group and its income are so extended as to include enjoyment income (positive and negative) as the final net income, or whether our specific group is so restricted as to leave plowing or money payments as the uncanceled fringe.<sup>8</sup> We shall always find that only the income actually detached from, or given off for en-

<sup>7</sup> They may be so regarded in cases where labor is paid by the piece and the laborer is free to stop work at any point.

<sup>8</sup> See *The Nature of Capital and Income*, Chapters VII-X.

joyment by, that group, as in cutting coupons from a bond, will result from the summation of the accountant, who will never record as income the increase or decrease in the capital itself.

A bond price, for example, will grow with accrued interest *between* two coupon cuttings. That growth in its value is not income but increase of capital. Only when the coupon is detached does the bond render, or give off, a service, and so yield income. The income consists in the event of such off-giving, the yielding or separation, to use the language of the United States Supreme Court. If the coupon thus given off is reinvested in another bond, that event is outgo, and offsets the simultaneous income realized from the first bond. There is then *no* net income from the group but only growth of capital. If the final large payment of the principal is commonly thought of not as income (which it is if not reinvested) but as capital it is because it is usually and normally so reinvested.

Likewise, if my savings bank account gains by compound interest, there is no income but only an accretion of capital. If we adopt the fiction that the bank teller hands over that accretion at any moment to me through his window, we must also adopt the fiction that it is simultaneously handed back by me through the same window. If the first event is income, the second is outgo. If it passes both ways, or does not pass at all, there can be no net income resulting. This is good bookkeeping and sound economics. There is no escape from such mathematical conclusions. By no hocus pocus can we have our cake and eat it too. This is as impossible as perpetual motion, and fundamentally as absurd. The absurdity is especially evident when the cause of an increase or decrease in the capital value of a bond or in-

vestment is not due to any change in the expected income at all but comes through a change in the *rate of interest*. Consols and rentes fluctuate in value every day with every change in the money market. Yet the income they actually yield flows on at the same rate. Merely the capital value is found sometimes on a 3 per cent basis and sometimes on a 4 per cent basis. A rise in the market is a capital gain, but it is not income. Income may be *invested* and thus transformed into capital; or capital may be *spent* and so transformed into income. In the first case, as we have seen, capital accumulates; in the second case, capital is diminished. In the first case the man is living inside his money income; in the second case he is living beyond his money income.

If Henry Ford receives \$100,000,000 in dividends but reinvests all but \$50,000, then his real income is only \$50,000,<sup>9</sup> even if his money income is \$100,000,000. And if, during the year of rebuilding his factories to make his new car, he received no dividends and yet spent \$40,000 in that year for living expenses and all other satisfactions, then his *real* income was this \$40,000 even if his money income that year was zero.

Thus the income enjoyed in any year is radically different from the ups and downs of one's capital value in that year—whether this is caused by savings or the opposite, or by changes in the rate of interest or by so-called chance.

We may in our bookkeeping add our savings to our real income and call the sum total gain. For my part, I

<sup>9</sup> Except, as already stated in a previous footnote, he derives in addition to this obvious income other less tangible and more subtle income from the sense of possession, prestige, power, etc., which go with great wealth.

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prefer not to call it income. For the two parts of this total—enjoyed income and accumulation of capital or capitalized future enjoyments—are unlike. The only argument for adding them together is that the recipient *could* use the savings as income and still keep his capital unchanged. Yes, he *could*, but he didn't, otherwise there would be no savings! One part is income, and the other is capital gain.

This distinction between the real income, actually enjoyed, and the accretion or accrual of capital value, that is, the capitalization of future enjoyments, is not only in general vital, but vital to the understanding of this book.<sup>10</sup>

We cannot understand the theory of interest so long as we play fast and loose with the concepts of capital and income. And enjoyment income, which plays the central rôle in interest theory, is never savings or increase of capital.

### §15. *Capital-Income Relations*

In conclusion we may say that the chief relations between capital and income are:

- (1) Capital value is income capitalized or discounted.
- (2) If the rate of interest falls, the capital value (capitalized value of expected income) rises, and *vice versa*.
- (3) This rise or fall in capital value is relatively great for durable goods like land, and relatively small for transitory goods like clothes.

\* For fuller treatment of this subject the reader is referred to: *The Nature of Capital and Income; Are Savings Income*, Journal of American Economic Association, Third Series, Vol. IX, No. 1, pp. 1-27; *The Income Concept in the Light of Experience*, privately printed as English translation of article in Vol. III, of the Wieser Festschrift, *Die Wirtschaftstheorie der Gegenwart*, Vienna, 1927, 29 pp.

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(4) Capital value is increased by savings, the income being decreased by the same amount that the capital is increased.

(5) These savings thus diverted from income and turned back into capital will, except for mischance, be the basis for real income later.

### §16. *Application to this Book*

The problem of the rate of interest is entirely a problem of spending and investing, of deciding between various possible enjoyments constituting income, especially between relatively small but immediate enjoyments and relatively large but deferred enjoyments. There is an eternal conflict between the impulse to spend and the impulse to invest. The impulse of a man to spend is caused by his impatience to get enjoyments without delay, and his impulse to invest is caused by the opportunities to obtain by delay relatively more enjoyment either for himself or others.

For the study of interest from this point of view we need as our chief subject matter a picture of a person's income stream. We may get this most clearly by plotting day by day, month by month, or year by year, the closest statistical measure of one's real income, namely, one's cost of living.

If this income flows at a constant rate of \$200 a month or \$2400 a year, the picture of the income stream is as shown in Chart 1.

If the income stream flows at an increasing rate, the picture is as shown in Chart 2.

If it flows at a decreasing rate, the picture is as in Chart 3.<sup>11</sup>

<sup>11</sup> In all three examples, each month's income is represented by a rectangular column or bar. In the last two cases, the resultant row of

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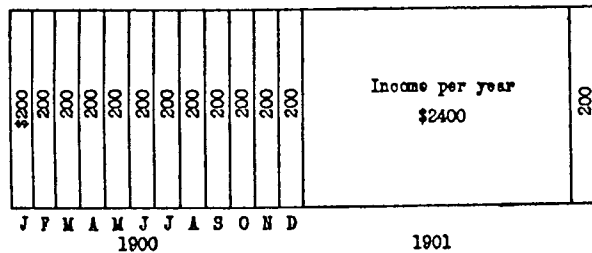


CHART 1  
Income Stream Uniform.

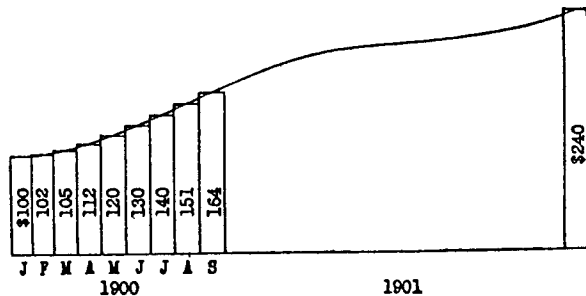


CHART 2  
Income Stream Increasing.

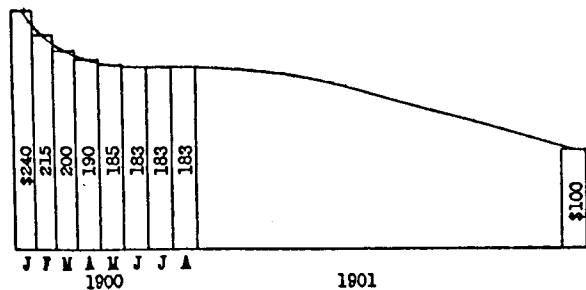


CHART 3  
Income Stream Decreasing.

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Of course, these particular forms are only special types; numerous other types might be given.

In interest theory the income with which we deal are not statistical records of the past but those of the expected future. What is to be one's future income stream, chosen from among several income streams available, becomes of supreme importance.

## §17. Confusions to be Avoided

The very first effort of the beginner in this subject should be to rid his mind of all prepossessions as to the nature of income and capital. My grandchild of six recently asked the cashier of a savings bank, "Show me the money I am going to get when I grow up." The cashier gravely took him into a back room and held up a bag of coins. The vision of that bagful will doubtless persist into adult life as a picture of a savings bank account, even after he has learned in college that the total deposits of a bank far exceed the cash on hand, and that the depositor's capital is not actual cash but the right, measured in terms of cash, to the services or benefits flowing from the bank's assets, real estate, mortgages on real estate, stocks and bonds, and all the rest of its resources. Both capital and income *seem* to be simply money. We can always show a money sample, as did the cashier, and where one's capital is liquid so that it may readily be turned from one form to another via money—or rather

bars makes a series of flat tops or steps. But by taking days instead of months, we come nearer to a sloping curve which is a better and simpler ideal picture. Hereafter we shall use such continuous curves. But they may always be thought of as made up approximately of a series of columns or bars. For fuller discussion of such charts, see *The Nature of Capital and Income*, p. 204 ff.

credit—it is most simply and lazily pictured to the mind's eye as being itself money.

The student should also try to forget all former notions concerning the so-called supply and demand of capital as the causes of interest. Since capital is merely the translation of future expected income into present cash value, whatever supply and demand we have to deal with are rather the supply and demand of future income.

It will further help the student if he will, from the outset, divest himself of any preconception he may have acquired as to the rôle of the rate of interest in the distribution of income. This subject will be dealt with in Chapter XV; but it may be well here to point out that interest is not, as traditional doctrine would have it, a separate branch of income in addition to rent, wages and profits.

The income stream is the most fundamental fact of economic life. It is the joint product of many agencies which may be classified under many heads, such as human beings, land, and (other) capital. The hire of human beings is wages; the hire of land is land rent. What, then, is the hire of (other) capital—houses, pianos, typewriters, and so forth? Is it interest? Certainly not. Their hire is obviously house rent, piano rent, typewriter rent, and so forth, just as the man in the street calls them. Rent is the ratio of the payment to the physical object—land, houses, pianos, typewriters, and so forth—so many dollars per piano, per acre, per room. Interest, on the other hand, is the ratio of payment to the money *value* of these things—so many dollars per hundred dollars (or per cent). It is, in each case, the ratio of the net rent to the capitalized value of that rent. It applies to all the categories—to land quite as truly as to houses, pianos, type-

writers. The income from land is thus both rent and interest just as truly as the income from a typewriter or a bond. We can and do capitalize land rent just as truly as we do house rent. For example, land worth "20 years purchase" yields 5 per cent interest. All this is true quite irrespective of the question of distinctions between land rent, on the one hand, and house rent, piano rent, typewriter rent, and so forth on the other.<sup>12</sup> It is a question of that sort of price which links one point of time with another point of time in the markets of the world. And it is a question concerning every branch of economic theory in which the time element enters. The rate of interest is the most pervasive price in the whole price structure.

As to profits, I believe the most fruitful concept is also that of the man in the street. When risk attaches to any one of the aforementioned forms of capital—human beings, land, houses, pianos, typewriters and so forth—the man in the street calls the net income profits. And profits, likewise, may be measured either (as rent) in relation to the physical units producing them, or (as interest) in relation to the values of these profits; that is, either as dollars per acre, per room, per piano and so forth; or dollars per \$100 worth of land (houses, pianos, and so forth); or as dollars per share of ownership in any of these; or dollars per \$100 worth of such shares. To pretend that either interest or profits is the income solely from capital goods other than land and that these two concepts are inapplicable to land—to pretend, in short, that wages, rent, interest and profits are four mutually

<sup>12</sup> Cf. Fetter, Frank A., *Interest Theories Old and New*, American Economic Review, March, 1914, pp. 76 and 77; Fetter, *Principles of Economics*, pp. 122-127; Davenport, H. J., *Interest Theory and Theories*, American Economic Review, Dec., 1927, pp. 636, 639.



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*exclusive* divisions of the income stream of society is to treat different classifications of one thing as if they were themselves different things. It is as if we should speak of a certain total space as consisting partly of acres of land, partly of tons of soil, and partly of bushels of ore. Or again, it is like classifying a pack of cards into aces, clubs and red suits and pretending that these three classes are mutually exclusive.

The simple fact is that any or all income may be capitalized, including that credited to human beings, thus giving the resultant economic value of a man. William Farr, J. Shield Nicholson, Louis I. Dublin, and others have made such computations.<sup>13</sup> However, we so seldom capitalize wages that we have no practical need to call wages or any portion of them interest. Nor where risk is a dominant factor, as in profits, is there real need to call the income interest. For instance, hoped-for dividends, according as the hope varies, are daily and automatically capitalized in the stock market and need not themselves be called interest. Much less would it be worth while to call enterpriser's profits interest. No one ever attempted to capitalize them. But in meticulous theory, all may be capitalized and so become interest.

### §18. *A Working Concept of the Rate of Interest*

While any exact and practical definition of a pure rate of interest is impossible, we may say roughly that the pure rate is the rate on loans which are practically devoid of chance. In particular, there are two chances which should thus be eliminated. One tends to raise the rate,

<sup>13</sup> For instance, Dr. Dublin computes the total value of the "human capital" of the United States to be 1,500 billion dollars, or about five times the value of all other capital.

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namely, the chance of default. The other tends to lower it, namely, the chance to use the security as a substitute for ready cash. In short, we thus rule out, on the one hand, all risky loans, and, on the other, all bank deposits subject to withdrawal on demand, even if accorded some interest. We have left safe securities of fixed terms not likely to be transferred or transferred often before maturity. Such securities give us the nearest approach to pure interest both for short and long periods according to the time to maturity.

In this book, I shall usually confine the concept of the rate of interest to the rate in a (humanly speaking) safe loan, or other contract implying specific sums payable at one date or set of dates in consideration of repayment at another date or set of dates. The essentials in this concept are (1) definite and assured payments, and (2) definite and assured repayments, and (3) definite dates. The concept includes the concept of the rate realized on a safe security such as a bond purchased in the market. It is this that concerns us in this book. We are not primarily concerned with *total* interest, but with the *rate* of interest.