

ECONOMICS U\$A LESSON #23

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Stasio: Economics U\$A. One of a series of programs designed to explore Twentieth Century micro and macro economic principle. The subject of this edition is Profits and Interests. Our guest is Edwin Mansfield, Director of the Center for Economics and Technology at the University of Pennsylvania. I'm Frank Stasio.

Stasio: Anyone who's taken out a loan or carried a balance on their credit card knows something about interest rates. But how are interest rates determined? What causes them to change? And what is their effect on the economy? Frank Miano was a homebuilder in Maryland. He was temporarily forced out of business because the state tried to hold down interest rates. Miano knew something about interest rates that many lawmakers did not.

Miano: I don't think it's any different than any other commodity. If there's a shortage of sugar in the marketplace, then the price of sugar is going to go up. If there's a shortage of coffee, the price of coffee is going to go up, so money is no different. If there's a shortage of money, the cost of money is going to go up.

Stasio: We'll see why Miano and other homebuilders were temporarily shut down by a credit crunch in the nineteen seventies. For now it's enough to know that Miano was right. Money is a commodity and like other commodities it is the market that sets the price. The price of money is called the "interest rate." Edwin Mansfield is a Professor of Economics at the University of Pennsylvania.

Mansfield: If Joe Doaks borrows a dollar for a year and pays six percent interest, that means that he pays six cents to the lender for the use of the dollar for the year.

Stasio: Why would anybody pay money for the use of money?

Mansfield: Because they can use the money in a way that may net them eight percent or ten percent. If I can borrow some money in order to go into business and earn profits that amount to say, ten percent of the amount that I borrowed, then I'm well off to pay six percent.

Stasio: The interest rate is based partly on risk. The more likely the borrower is to repay the loan, the lower the interest rate. So part of the interest rate is the premium paid to lenders for risking their money. Since government securities like Treasury Bonds are virtually risk-free, an indication of the risk premium is the difference between the interest paid on those securities and the rate paid by firms and consumers. Lenders charge a price for the use of their money, so borrowers try to use that money in ways that make them worth the cost of the loan. The money a borrower makes or loses by investing a loan is called, "the rate of return."

Manfield: The variety in...in fact, a bewildering variety of investment possibilities in any economy. Each one of those investment possibilities has a perspective rate of return. Suppose the General Electric is interested in installing a particular piece of equipment. A piece of equipment may cost a million dollars and suppose that the perspective extra profit associated with and resulting from the investment that piece of equipment is a hundred thousand dollars a year. And for simplicity let's suppose that that hundred thousand a year will continue to come in forever, just to keep matters simple. Then that particular investment has a ten percent rate of return because the investor gets back ten percent of the amount of the investment each year.

Stasio: The interest rate does more than offer commercial opportunities for lenders and borrowers. Mansfield says that interest rates help the economy to make the most of limited financial resources.

Mansfield: The interest rate is extremely important from a point of view of society as a whole in screening out those projects that are less productive from those that are more productive. If you had no interest rate whatsoever, if you had a zero interest rate, then any project which had a positive rate of return, would become profitable and the number of projects which would be okay to buy such an allocation system would be far greater than the supply of funds. So there would have to be some other mechanism for allocating funds because that mechanism would have broken down completely. In other words, suppose that you only have a million dollars to allocate and that you can allocate them by saying, "just take all projects with a rate of return as twenty percent or higher." That's one way to do it and in many respects a very sensible way. If so-and-sos don't do that, take all projects where the rate of return is zero or higher, well then you'll use up the

amount that you had and a great deal more. And so you won't really have solved the allocation problem at all.

Stasio: Interest also serves as an incentive for consumers to put off buying for a while. This permits their savings to be used to create more capital, that is plant and equipment necessary to ensure economic growth. As Mansfield has said, firms face a variety of possibilities for investing their money. All of these choices can be put into two categories, financial investments and capital investments.

Mansfield: A financial investment would consist of things like bonds and stocks where, for example, today the United States Treasury is auctioning off a seven-year, to be precise six-year-eleven-month notes. Now the people who buy those notes are buying a particular financial investment. They'll get a piece of paper which will say on it that the U.S. Treasury owes them a certain amount in interest. Another way to invest in this kind is to...to buy, say IBM stock. That's another form of financial investment. This is different from adding to the nation's stock of plant and equipment, buildings, equipment that we've got. You look out the windows in this office. You see a variety of office buildings and many of them are being constructed at this moment. When these are built, they'll constitute an addition to the country's plant, an addition to the country's reservoir of office buildings. Similarly if, again to take the case of GE, if they buy that particular piece of equipment, that's an addition to the stock of such equipment in the United States. That's not the case when you simply go out and just buy a share or a hundred shares of GE stock.

Stasio: Decisions about how much to invest in plant and equipment, vary with changes in the interest rate 'cause interest rates rise. It becomes more expensive to borrow, launching a new project of buying more equipment is much less appealing when the cost of borrowing is high.

Mansfield: You look back to the late seventies and early eighties when interest rates were going up rapidly. What was happening was that the projects that would have been economical would have been profitable that an interest rate even of fifteen percent became unprofitable when the prior rate went up to twenty percent. And now you see the same in reverse with interest rates having gone down, there are projects that become profitable that wouldn't have been profitable before.

Stasio: Still firms may undertake new capital projects even when the interest rate is rising, if their expectations of higher sales are rising even faster.

Mansfield: To the extent that as interest rates go up, the firms believe that the business climate is more favorable that their sales will go up, then it's true that the cost of the project go up in terms of interest costs. But at the same time and perspective gross revenues show a project go up as well because it appears that...that the sales of the product was produced say, with the extra capacity that they're financing will be greater.

Stasio: The interest rate is essentially set by market forces. Efforts to artificially set the interest rate at a fixed point without regard to the market can lead to disaster. The State of Maryland learned that lesson during the nineteen seventies when its century-old limit on mortgage interest rates brought the housing industry to a near standstill. Laws like Maryland's Interest Ceiling stem from the belief that states should protect desperate

borrowers from unscrupulous lenders, who might charge them an exorbitant rate of interest. The ceiling stayed above market rates for decades. But in the nineteen seventies spiral inflation pushed market rates near all-time highs. Nationally market rates shot up higher than the legal limit posed by the State of Maryland. Since lenders were forced by law to charge lower rates than could be gained elsewhere, it became unprofitable to lend money in Maryland. Money left Maryland and found its way to high-yielding New York money market funds. Before long, money for home mortgage loans dried up and Maryland's Housing Industry fell into a deep slump.

Mansfield: It looks like a small builder who had maybe three or four spec houses that he built and was sitting and was paying interest on those. It's a question of staying power. How long can you make those payments and maintain that unit until it's sold?

Stasio: Maryland homebuilder Frank Miano was forced out of business for a time during the state's credit crises.

Miano: We sold some houses at a loss in order to get out from under the construction loans. We finally got, we finally did sell them.

Stasio: Pressure to attract mortgage money back into the state grew. State Senator Lawrence Levitan sponsored a Bill to lift the interest rate ceiling.

Levitan: We were not only hearing from...from lenders and developers at the time of the interest crunch and where the interest rate hit the ceiling and went...and went above the ceiling, but we heard it from the average citizen, the guy on the street, the guy that wanted to buy his house, the guy that wanted to sell a home. They...they need it. They

understood that they, that the ceiling only...only, the only effect of that ceiling was to prevent them from entering the marketplace.

Stasio: Levitan's Bill passed and the interest lid was lifted in nineteen seventy-nine.

Levitan: Once we raised the ceiling that...that changed. People were able to sell their houses and did. Money started to flow into the State of Maryland.

Stasio: Lenders and policymakers may try to set interest rates arbitrarily, but as you can see market forces apply overwhelming pressure to find the best rate of return for money.

Edwin Mansfield.

Mansfield: Suppose that the...the prime rate, this is the interest rate that banks charge their most credit-worthy customers, suppose that the interest rate, prime rate was ten percent. Well, if a bank were to set its prime rate at fifteen percent, suppose that City Bank would set its prime rate at fifteen percent, its customers would go elsewhere.

They'd go to Chase Manhattan. They'd go to Banker's Trust. They go to other banks where they'd only have to pay ten percent, so it would be a foolish move for City Bank and the chairman of City Bank certainly would not be foolish enough to try such a thing.

On the other hand, suppose that City Bank were to establish a prime rate of seven percent well, they would get an enormous number of takers. There'd be lots of...of firms would be interested in borrowing at seven percent. But City Bank would be losing profitable opportunities. It would be getting less money than they could. The stockholders would be up in arms and rightfully so. So that couldn't occur.

Stasio: So for instance when car dealers or other retailers offer loans at interest lower than market rates, sometimes called, “below market financing,” the sellers will lose money unless they can find ways to make up the difference.

Mansfield: There are some, maybe not free lunches, but cheap lunches in this world. In other words, people...people make mistakes and they sometimes sell things for less than they could get elsewhere. But in general if you get some special deal along one dimension of a product or a transaction, the seller may be making up for it along other dimensions. So it's possible that you know the financing charges may be less. The price that they're charging for something else may be more, so overall the price is pretty much what it would be under other circumstances. Or conceivably that, you know, quality differences may exist. So you may get a better apparent deal or you may find that what you want isn't of high quality.

Stasio: What are the factors that determine the cost of borrowing? As you might expect in a market system it is the supply and demand for loanable funds.

Mansfield: The interest rate is a price like any other and to the extent that the market is competitive the...the demand for loanable funds, the demand curve looks like any other demand curve. It's in a downward sloping to the right and it reflects how much in the way of loanable funds consumers and business firms and governments want to borrow at each interest rate. There's also a supply curve, which like normal supply curves tends to slope upward and to the right. And it shows that each interest rate, how much in the way of loanable funds will be supplied. And the intersection of the demand and supply curves is the equilibrium interest rate.

Stasio: While market forces actually drive the interest rate, the federal government can enter the marketplace and exert powerful influence over the cost of borrowing.

Mansfield: Federal Reserve policy certainly influences the supply curve. When the Federal Reserve eases money, it tends to push the supply curve for loanable funds to the right. When it tightens up, there's a tighter monetary policy, more restrictive monetary policy. The supply curve for loanable funds tends to be pushed to the left. Now the government is also on the demand side for all the funds, because it's in the market to borrow. I mean this has of course been particularly the case in the last few years when the deficits have been huge. So the...the interest rates are a function of the government and such things as the federal deficit as well as the demand and supply of loanable funds, the private sector.

Stasio: To make intelligent choices about whether or not to invest in capital, a firm must be able to determine the value of capital goods. Managers have a way to compare the potential benefits of their investment against other opportunities.

Mansfield. One has the problem of evaluating pieces of equipment, evaluating assets of various kinds, pieces of land, plant. And these assets have associated with them a stream of income, net income, after you take account of the upkeep and so on, there's a net return each year to an asset. And one can capitalize that stream in order to obtain a value for the asset. For example, suppose that one has a machine and it turns out product and the net profit from the product, which is a product of the machine, is ten thousand dollars a year. Suppose that the interest rate is ten percent, then the capitalized value of the machine is the ten thousand dollars divided by the ten percent. Or take another case.

Suppose that you have now not a...a fiscal investment, but instead suppose you have a bond. Suppose you have a bond which yields a thousand dollars a year and the interest rate is ten percent, then the amount that you should be willing to pay for the bond is ten thousand dollars. Why? Because if you were to pay more than ten thousand dollars for the bond, you'd be getting less than ten percent return. There's no reason to do that because if the interest rate is ten percent, there are other investments available where you can get ten percent. You pay less than ten percent, less than ten thousand dollars for the bond, you're getting more than ten percent on your money. And it's unlikely that whoever is selling you the bond will be willing to...to let you get off by paying less than ten thousand dollars.

Stasio: Firms after accounting for risks look for investments that will bring them the greatest return. If they fail to make the investment that yields the highest return, the firm is said to suffer an opportunity cost. Economists also apply the principle of opportunity cost to their definition of profit. In this way their definition of profit differs from an accountant's understanding of that term.

Mansfield: To the accountant profit is simply the difference between revenue, sales of the firm and cost. The difference is profit. And this is the concept that's used in annual reports of firms, that's used in financial directories and sources such as moodies are standard in (unclear). Almost always when you look at numbers concerning profitability, they will be based on the accountant's definition. And it's a perfectly reputable and sensible definition. However, for some purposes it is better to define profit somewhat differently. And an alternate definition which is used by economists is that economic profits are profits above and beyond what the owners of the firm could get from their

resources invested in the firm if they were to implore them elsewhere. In other words opportunity cost is an important part of this definition. Economic profit is the profits of the firm above and beyond the opportunity cost of the input supplied by the owners. So that if a firm is...is obtaining a profit of say, ten percent on its investment, but if it could obtain a profit of six percent elsewhere, then the economic profit is just four percent. The difference between what it's earning and what it could be earning, the best that it could earn elsewhere.

Stasio: And what's the value of that kind of a model?

Mansfield: Well, it's very important, particularly when you look at questions like, "should a firm stay in a particular business?" Now suppose that I have a business. Suppose that I own a plant that produces ships or produces electronic gear. Now suppose that I'm earning fifteen percent on that investment. What, suppose that if I were to take my money out of that firm and my time, suppose that I'm an owner and provide a lot of time as well as financial investment. Suppose that I could earn twenty percent somewhere else and I'm earning fifteen percent now. Then really I'm not earning a profit according to economists. There's a loss involved because I could do better with a lot of money elsewhere. A situation of this sort, if I want to maximize profit it's clear that I should redeploy my resources. I should go elsewhere. I should get out of that industry. Now the economist's definition of profit highlights this, focuses on that kind of issue and shows immediately that really there's an economic loss, whereas the accountant's definition doesn't. It just says there's a fifteen percent rate of return.

Stasio: We've been talking about the return on plant, equipment and labor. While all of these inputs are limited they are not fixed. Market forces will keep a steady supply of those resources or encourage substitutes. But when the input is land the supply will not increase, no matter what the price. Land for all purposes includes minerals and other natural resources whose supply is fixed by nature. Economists call the return to such fixed assets "rent." Since changes in price will not effect the supply of land, rent is considered a payment greater than what is needed to attract an adequate supply. It should be noted that the term, "rent," as used by economists is more technical than the common use of that word. Rent is criticized from time to time as unproductive income since the premium paid to landlords does not increase the supply. One of the most well-known critics of rent was Henry George, the American economist who expressed in the book Progress and Poverty.

Mansfield: Henry George was an American economist who believed that the functions of government should be supported financially by a tax on land. He believed that since the supply curve for land was vertical, in other words the same amount of land would be available regardless and utilized regardless of its price. That if the price of such land were reduced and the reduction went in the form of taxes to the government, that there wouldn't be any difference really in resource allocation. The same land would be used although what would happen would be that the landowners would be getting less in the way of income. I think that...that a number of points have to be made about his theories and propositions. One is that in many cases the supply curve for land isn't, is vertical as is sometimes assumed. If you raise the price of a particular kind of land, more land can be put into use. Take for example the reclamation of land in New Jersey. There's land

outside New Jersey that has been reclaimed that was swamp land. There's land in a variety of parts of the United States and the world as a whole that has been reclaimed in this way. Although it isn't just this particular amount of...of ground, it's also the land which the land is used and if you increase the price, it's often possible to upgrade the land to do more, to make it more productive. So in a real sense the supply curve may not be as nearly vertical as George believed. Also, of course, there's an ethical question here as to, if you believe that the land rents are unearned, there would be lots of other incomes in the society that can be regarded in the same way as unearned. Also there are questions about even if the supply curve were to be vertical, should one simply confiscate income of the landowners and take it over and turn it over to the government? So lots of questions involved. I don't think that in the foreseeable future it's likely that his ideas will be put into operation.

Stasio: Very little of the total national income goes to rent, about one percent. Most of the nation's income is paid out in the form of wages and salaries. In fact more than three quarters of national income takes the form of wages and salaries. Nine percent is interest and eight percent is corporate profits. The rest is the return to the owners of unincorporated firms. Let's review some of the main ideas in our discussion about profit and interest. Interest is the cost of borrowing money. The rate of interest depends on the riskiness of the loan and the supply and demand for loanable funds. Firms and individuals pay interest. They believe the rate of return on their investment will be greater than the rate of interest. They calculate the rate of return by comparing the estimated stream of annual returns to the cost of the investment. Firms determine rate of return on their investment by estimating the assets' annual return and compare that to

other investment opportunities. This is called “capitalizing the firm’s stream of investments.” To maximize profits, firms must invest in projects which offer rates of return greater than the going interest rate. Profit by an economist definition is different from the one more commonly used by accountants. The accountant defines profit as all revenues greater than costs. Economic profit on the other hand is revenue that is greater than what can be earned through other investments. Economic profit is an important concept for determining when a firm should go out of business. Finally, another kind of property income is rent. Rent is the price paid for land when land is defined as resources whose supply is fixed by nature. Since changes in price will not affect the supply of land, rent is considered a payment greater than what is needed to attract an adequate supply. Interest plays an important role in allocating the supply of loanable funds. It is also a reward for consumers who postpone spending. By encouraging saving interest provides money for the expansion of capital which contributes to economic growth.

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