

ECONOMICS U\$A  
PROGRAM #123

PROFITS AND INTEREST:  
HOW DO YOU GET THE BEST RETURN?

BY FRANK B. PHILLIPPI

AIRSCRIPT  
DECEMBER 3, 1985

## 23. PROFITS AND INTEREST: HOW CAN I GET THE BEST RETURN?

### PURPOSE:

To show the economic reasons for payments of interest and normal profits, the causes of “windfall” profits, and how the decision to invest in plant and equipment is related to the interest rate and expected returns on the investment.

### OBJECTIVES:

1. Interest rates are determined by the supply and demand for loanable funds, and both the supply and demand for funds are affected by the level of interest rates. If the interest rate is lower in one market than another, the supply of funds to that market will be reduced.
2. Factory buildings and equipment help in the production of output; they have marginal physical product. The demand for new fixed investment depends on the expected returns on investment; if the expected return exceeds the prevailing interest rate, the firm would be willing to borrow in order to invest in plant and equipment.
3. Entrepreneurs and others who hold equity stakes often earn a return in excess of the normal return to an investment.
  - a) such returns are called pure economic profit; they are due to the temporary monopoly or “windfall” profits that may occur because of the innovative or risk-taking activity of the entrepreneur.
  - b) “windfall” profits encourage other firm or entrepreneurs to enter the industry; ultimately this drives prices and profits down.

### KEY CONCEPTS:

normal profit	return on a fixed investment
economic profit	present value of an investment
interest rate	anti-usury laws
marginal value product of capital	
supply and demand for loanable funds	

### ILLUSTRATIVE EVENTS:

1. the unavailability of mortgage funds in the late 70s in states which had usury ceilings.
2. the decision of General Motors to invest \$3 billion to build new plants rather than renovate existing plants.
3. the success of the founders of Apple Computer

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ANNENBERG/CPB PROJECT (Logo and Music)

TEASER

DAVID SCHOUMACHER: In Maryland, state law protected home buyers from high interest rates. How could rapidly changing economic conditions turn that law against them? For years General Motors got the most out of their investment by refurbishing old assembly plants. Why the, would they decide to spend 500 million dollars on a radically new plant? And how could an idea developed by two college dropouts be worth 300 million dollars? One of the fundamental incentives of our economic system is to make money. It is why we work, why we save, why we invest and why we take risks. Individuals and institutions alike want to maximize the money they can get from the marketplace. Profits and Interest: How Do You Get The Best Return? With the help of economic analyst Richard Gill we'll investigate that question on this edition of Economics U\$A. I'm David Schoumacher.

(MUSIC PLAYS - OPENING TITLES)

(PROFITS AND INTEREST: HOW DO YOU GET THE BEST RETURN? appears on screen)

PART I

DAVID SCHOUMACHER: It was the church which first decreed that charging for the use of money was sinful. The concept of usury and its immorality can be found in the

Bible...and by the Middle Ages it was part of the church law. Through the years the term usury came to mean “excessive interest rates” and the idea of limiting interest rates to reasonable levels was adopted as government policy. What caused that policy to work against the people it was designed to protect? For 100 years Maryland financial institutions had lived with state laws setting usury ceilings. Because market interest rates on home mortgages stayed below these ceilings, few problems arose. Homeowners could get mortgages and lenders could get an acceptable rate of return. But then, in the 1970s, inflation drove interest rates up. Maryland’s financial institutions were faced with paying out higher interest rates to depositors than they could earn by providing home mortgage loans. Baltimore banker Douglas Dodge explains...

DOUGLAS DODGE: “Well, in that period of time interest rates generally were rising...reflecting the value of money really all over the world. And the result was that the yield available to banks and thrift institutions, insurance companies who traditionally may have made mortgage loans or purchased mortgage loans became unattractive relative to other investment alternatives.”

DAVID SCHOUMACHER: As economic conditions changed, Maryland’s banking community began to look elsewhere for investments. Money that normally would have gone into home mortgages simply went shopping for higher returns, readily available from certificates of deposits and from the large New York money market funds. While this helped the financial institutions, it devastated Maryland’s housing industry. One Maryland home builder who felt the pressure personally was Frank Miano.

FRANK MIANO: “Well, let’s take a small builder who had maybe three or four spec houses that he’d built and were sitting, and he was paying interest on those. And it’s a question of staying power...How long can you make those payments and maintain that unit until it’s sold?”

DAVID SCHOUMACHER: Miano’s losses on houses like these temporarily forced him out of the home building business.

FRANK MIANO: “We sold some houses at a loss in order to get out from under the construction loans. We finally did sell them...”

DAVID SCHOUMACHER: As lenders cut back on home mortgages, new home buyers and sellers became frustrated. Even the resale market was affected. Maryland wasn't the only state facing this problem. Eighteen other states had ceilings on interest rates. Usury laws had placed a stranglehold on so much of the nation's housing money that Congress was ready to ban them. Pressures to change the law mounted in Maryland. Senator Laurence Levitan sponsored the bill to raise usury limits.

SENATOR LAURENCE LEVITAN: “We were not only hearing from lenders and developers at the time of the interest crunch...when the interest rate hit the ceiling and went above the ceiling...but we heard from the average citizen...the guy on the street...the guy who wanted to buy his house...the guy who wanted to sell a home. The only effect of that ceiling was to prevent them from entering the marketplace.”

DAVID SCHOUMACHER: Senator Julian Lapidés opposed lifting the ceiling...

SENATOR JULIAN LAPIDES: “When people need or want money, they're unconcerned about the cost at that moment. And that's why the state has to be almost in place of the parent...We have to really be responsible to protect the public from themselves.”

DAVID SCHOUMACHER: The bill passed easily, clearing both houses by February 21, 1979. Governor Harry Hughes signed it the next day. What happened? Interest rates on mortgages shot up to 12%...then gradually came in line with interest rates across the nation.

SENATOR LAURENCE LEVITAN: “So, in effect, what we had is we froze these people in their property...They couldn't move. They couldn't sell. Once we raised the

ceiling, that changed...People were able to sell their houses, and did...Money started to flow into the State of Maryland.

SENATOR JULIAN LAPIDES: “I really think that the consumer lost badly that year, and in subsequent years when we just removed all limits in Maryland now, and I think that the public has been damned.”

FRANK 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’s going to go up...so money’s no different...If there’s a shortage of money, the cost of money’s going to go up.”

DAVID SCHOUMACHER: The action by the Maryland legislature to raise usury ceilings ended the crisis. Interest rates did increase, but mortgage loans did become available. We asked economic analyst Richard Gill to explain the limits on what the government can do to control the rate of return on investments in a market economy.

(MUSIC PLAYS - COMMENT AND ANALYSIS I)

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RICHARD GILL: Sometimes good intentions produce counter-productive results. The basic philosophy behind usury laws is honorable enough: borrowers are often people in need; they can be taken advantage of by lenders. The fact is, however, that money, in the form of loanable funds, is subject to the forces of supply and demand as is any other commodity in the marketplace. The demand for loanable funds to borrow will depend on the interest rate...The lower the interest rate the greater the number of homebuilders, developers and potential homeowners who will be interested in borrowing money. On the supply side, the savings and loan and other lending institutions will be looking for the highest rate of return on their loans. If they can’t get it in a particular area...in this case, the State of Maryland...they’ll look elsewhere. In short, the higher the rate of interest, the greater the supply of loanable funds that will be forthcoming. In this particular

diagram, supply and demand are equated at an interest rate of 15%. And what Maryland's usury law did was to say, no, you can't charge 15%, only 10%. They put a ceiling on interest rates, here, meaning the supply of loanable funds coming on to the market was reduced. And this meant (A) that a lot of people who would have been happy to borrow at 10% couldn't find lenders to lend to them, and (B), even more significantly, the total supply of mortgage money...and thus new homes...was reduced below what would otherwise have been the case. A few people got good deals; many simply could not build homes at all. Good intentions. The road to new homes in Maryland was definitely not paved with them.

## PART II

DAVID SCHOUMACHER: For more than 50 years General Motors put together its top-of-the-line products at this plant in Detroit. It has seen conversion to military production, post-war prosperity and the pressure of foreign competition. Millions of cars have rolled out of the doors here. So why after all those productive years did GM decide to move its assembly line somewhere else? The nation's largest auto maker had a policy of getting the quickest possible return on any capital investment...money put into plants and equipment. In effect, GM planners wanted new assembly plants to start to return profits in 5 years. As auto industry analyst Maryann Keller explains, this system worked well as long as sales of large American cars were strong.

MARYANN KELLER: "General Motors always had a higher return on investment than the other auto companies because General Motors produced the largest cars and dominated that segment of the car market."

ANNOUNCER: Automotion...America on the move...a tremendous display.

DAVID SCHOUMACHER: During the 1950s and 60s, the "boom" years for American auto makers, GM had a return on equity of 20% a year. To keep the old plants efficient, engineers and plant managers fine-tuned production processes. As long as sales were

strong and profit margins wide, GM could cover the inefficiency of old age in its assembly plants. Then, in the 1970s, several events cracked the comfortable cocoon of General Motors. A series of oil shortages, new government regulations, and changing consumer preferences shook the foundations in Detroit. Every fourth car in the U.S. was now foreign made. Journalist David Davis recalls that GM got the message from its dealer network.

DAVID DAVIS: “Not only couldn’t a General Motors dealer not sell cars to a level that would help him pay his bills, but just down the street there was a Toyota dealer who was still successfully selling cars. On the other end of town there was a Mercedes Benz dealer who was selling cars for \$35,000 who couldn’t get enough. And for some reason the guy selling Oldsmobiles and Pontiacs and Buicks and Chevrolets couldn’t move a car to save their lives. And it was a very sobering moment.”

DAVID SCHOUMACHER: In 1980, General Motors, America’s symbol of blue-chip profitability reported an annual loss. It was the company’s first since 1921. Did GM know that a changing market meant changes in car making? Robert Stempel is the executive in charge of GM’s Buick, Oldsmobile and Cadillac division.

ROBERT STEMPEL: “Things like the energy crisis, the concern over the availability of oil, meant that our products were going to have to get hundreds of pounds lighter, engines were going to have to get a lot more efficient, and things we had given away as we controlled emissions or safety...we were going to have to regain. And that meant looking at the very process that had served us for sixty years in this business of how to assemble an automobile.”

DAVID SCHOUMACHER: For GM, the switch to new plants involved weighing tradeoffs. Was it the best place to invest its money?

ROBERT STEMPEL: “Obviously, your rate of return has to be such that it’s better than just investing in real estate or what you can get in the banking industry...and recall we went through some very good returns on money in our country for a while. So the hurdle

rate...that is the good return on investment...was a key decision. Our experience told us though, if we built the plant right, its usable life was many years. And that meant we really had to think about this decade and beyond.”

DAVID SCHOUMACHER: The indecision ended in 1981. GM Chairman Roger Smith announced a ten year 80 billion dollar expansion program, which included the construction of new assembly plants. The Orion Plant, north of Detroit, represented the first wave in that strategy. GM spent 500 million dollars to build an assembly plant when the prime interest rate was running at 14%. Inside the 77-acre building GM puts together front-wheel drive Cadillacs and Oldsmobiles, making extensive use of computers and robot technology. At full production the Orion Plant can turn out 75 new cars every hour. Obviously, it was faster, but was it a better way to make cars? Plant Manager Leslie Richards...

LESLIE RICHARDS: “Certainly we build a car with greater accuracy in the body shop than we’ve ever built cars before, as a result of the new tooling and the robots. It wouldn’t really be possible, in my opinion, to operate a plant of this size without the kind of material management computer systems that we have. Ninety-five hundred different part numbers are being kept track of on a daily basis at this plant.”

DAVID SCHOUMACHER: As far as the auto industry goes, GM’s Orion Plant is state-of-the-art at least until the next generation of plants. It is cleaner and brighter and a better place to work...even if it is a place where fewer humans are needed. But is it making a profit?

MARYANN KELLER: “I think GM hopes to get a rate of return on its assembly plants of somewhere between 15 and 20%. It usually takes at least 12 months before you’re running at full speed and you’re running everything to its maximum efficiency...But I’d say that GM is probably close in Winsfield and Lake Orion to achieving the kind of returns that it hopes.”

ROBERT STEMPEL: “In a pure financial sense, is it starting to pay off?...Yes...Because the time that it takes us to build a car in that new plant is less than it took us to build a similar car in our old multi-story plant. So our bet on the future that we could become more productive is starting to pay off.”

DAVID SCHOUMACHER: Many people felt that General Motors had little choice but to build plants like Orion. It was modernize or be run over by the rapidly changing auto business of the 1980s. From an economic’s standpoint the question is: How does General Motors or for that matter any business decide what will be profitable? We ask economic analyst Richard Gill.

(MUSIC PLAYS - COMMENT AND ANALYSIS II)

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RICHARD GILL: Essentially what GM had to do in deciding whether or not to make this new investment was to compare the expected rate of return on the investment with the cost of the money needed to finance it...that is, the interest rate. How, then, does one calculate this “expected rate of return” on an investment? Let’s consider a very simple case. A firm is considering putting a million dollars into a new piece of machinery for its plant. This machinery, let’s say, is very short-lived. It will last only a year. During that year, the businessman expects that this machinery will add enough to output to bring in an extra 1.2 million dollars of total revenue. The rate of return here is pretty obviously 20%. The way we would calculate it in this case is by the formula: Cost of machine = expected added revenue divided by  $1 + R$  ... where  $R$  is the expected rate of return. In numbers, \$1 million = \$1.2 million over  $1 + R$ , or  $R = .20$ . If the interest rate is below 20% the investment will be profitable; if the interest rate is above 20%, it will be unprofitable and won’t be undertaken. Of course, in real life, as in the GM decision, the matter is much more complicated: The new plant and equipment would last many years not just one; the difficulty of guessing the expected rate of return with a different line of product was a serious one; and so on. Still, calculations of this sort do show us the general way in which the rate of interest affects investment decisions. The higher the rate

of interest, the smaller the number of investments that will make it to fruition. Had interest rates been too high, GM's Orion Plant would never have been built.

### PART III

DAVID SCHOUMACHER: The most impressive thing about the early computers was their size. Today you can do more work faster than the 1950s version of a computer with microprocessors or computer chips like these. In 1976, two young Californians decided to take a gamble on computer chips. In four years they were multimillionaires. What could they have done to earn such a high rate of return? Steve Jobs dropped out of college, studied Eastern religions, designed video games for Atari...

STEVEN JOBS: "I received a letter from a six-and-a-half year old boy a few months ago which to me completely sums up what we've accomplished in the last few years. And it reads: 'Dear Mr. Jobs, I was doing a crossword puzzle and a clue was 'as American as Apple blank.' I thought the answer was computer, but my Mom said it was pie.'"

DAVID SCHOUMACHER: Steve Wozniak won a science fair prize at age 12, started designing computers in high school, and finally raised enough money to build one six years later.

STEPHEN WOZNIAK: "Well, I took it down to the club and I hauled my TV set...my Sears TV set...down and would demonstrate to everybody...Look how small this is, look how few chips it is, and it's running Basic on the screen...and I built it myself."

DAVID SCHOUMACHER: The founder of Atari, Nolan Bushnell, recalled the video game they created...

NOLAN BUSHNELL: "I had one little project that everyone kept turning down. It was a project called "Breakout" which was one of the games. And nobody wanted it and finally I said to Steve, 'Hey, do this for me...you know.' And he said, 'Done.' Wozniak

wasn't on the payroll at that time and Jobs was...and I think that he sort of farmed...you know the two of them worked something out in the evening and I think two weeks later, which in a project that traditionally took 3 or 4 months, boom, we had a prototype back..”

DAVID SCHOUMACHER: In January, 1976, Jobs the promoter began pestering Wozniak the designer to build some printed circuit or PC boards so other hobbyists could build their own computers.

STEPHEN WOZNIAK: “We put in a thousand dollars total and we'd have to sell 50 before we made money. We looked at each other and I said, ‘I don't think we're going to get our money back,’ and he said, ‘No, maybe we're not going to get our money back but at least for once in our lives we'll have a company.’ He just wanted to have a company. And if you're like me, you know, and you're free, that's more of a reason for doing something... You don't have to justify it in some concrete productive sense if you're going to make money... First chance in a lifetime... So we kind of started as just a little play dream.”

DAVID SCHOUMACHER: For start-up capital, Jobs sold his VW van and Wozniak his programmable calculator. In a few weeks they had a prototype.

STEPHEN WOZNIAK: “Well, we got our PC boards made and I took this blank PC board down to Hewlett-Packard and showed it off to all my engineer friends and everyone was gloating over it, and I thought it was the most beautiful PC board in the world. And a couple of days later the phone rang there, right at work, and I picked it up and Steve said, ‘Guess what!’, and he sounded real excited and I said, ‘What?’ And he said, ‘I just got a 50 thousand dollar order.’”

DAVID SCHOUMACHER: That first order came from the owners of the Byte Shop, one of Silicon Valley's first computer stores. And Jobs used it to get the electronic parts for the Apple I, on credit. The garage at Steve Jobs' parents' house, where the first Apples were assembled, has entered the entrepreneurial folklore as the log cabin

birthplace of the personal computer industry. It was here that Wozniak tested the Apple I and started working on future models. Jobs wrote advertising and managed the money.

NOLAN BUSHNELL: “The characterization that Steve Jobs was the marketer...the promoter...was absolutely true and that Steve Wozniak was the technologist. Steve Jobs was the guy that really forced the company to happen...who solved the problems...who hired the people...who made sure the company started to be pushed into a real organization...and of course Mike Markkula helped a great deal as well.”

DAVID SCHOUMACHER: Marketing expert Mike Markkula was so impressed with the computer’s potential...he took some of the fortune he’d made while at INTEL and provided expansion capital in return for a partnership. The threesome then began developing the Apple II for the West Coast Computer Fair in the spring of 1977.

STEPHEN WOZNIAK: “We got the first units just the day before the show. Then we sat down and we carved off all the little excess shavings that were hanging off of them, made them look presentable, and we put our boards in, and it was a complete working Apple II computer.”

DAVID SCHOUMACHER: Journalist Michael Moritz wrote a history of Apple. He describes how Apple stole the show...

MICHAEL MORITZ: “They had colorful large logos that were hoisted higher in the sky than anybody else’s...They had the impression of a well-established booth even though the booth was just draped with crepe paper...but it was, as they say in Silicon Valley, an order of magnitude more advanced than a card table.”

DAVID SCHOUMACHER: Although there were only three finished computers at the fair, the company took orders for 300 in following weeks.

STEPHEN WOZNIAK: “Mike Markkula’s comment after the show was...he looked back and he said, ‘it’s gonna happen...we’re gonna be a 500 million dollar company.’”

DAVID SCHOUMACHER: That breakthrough led to full-scale production. The handful of employees moved into a new building in Cupertino and launched an advertising campaign. The design of the Apple II sets it apart from its competitors. First, it was expandable...Owners could add circuit boards to run printers, speech-boxes and other devices. Second, the computer had more memory capacity so it could run complicated financial programs like VisiCal...and, when Wozniak came up with a disc drive, it revolutionized the way that information was entered and stored.

MICHAEL MORITZ: “Apple developed a floppy disc that could work and that they could market before anybody else. And it put them ahead of the pack.”

DAVID SCHOUMACHER: By September, 1980, the Apple II dominated the personal computer market. It was being used at home for both fun and profit, in offices for word-processing and financial calculations, and in schools to educate and entertain. One hundred thirty thousand had been sold...The company had 1,000 employees working at plants from Ireland to Singapore. Annual sales hit 300 million dollars. Apple’s success in the salesroom led to a growing interest in its stock as the company prepared to go public.

MICHAEL MORITZ: “It’s clear that for underwriters and investors, in the fall of 1980, the prospect of an Apple public offering seemed rather like the second coming. The people who had stakes in the company, people who were underwriting it, the venture capitalists who had invested were clearly going to see three lemons in a row on the slot machine.”

DAVID SCHOUMACHER: On December 12, Apple stock was snapped up by the public, making it the largest initial offering since the Ford Motor Company went public. In addition to raising cash for the company, the offering rewarded early employees and

investors handsomely. The big winners, however, were Apple's founding entrepreneurs...Steve Jobs and Steve Wozniak, who had in a relatively short time become multimillionaires because of their creation.

STEPHEN WOZNIAK: "It was rather astounding and shocking...I knew it was one of the finest products ever, that sort of deserved to be such a huge winner, but it was something you could have never looked ahead and really believed and expected."

DAVID SCHOUMACHER: Of all the entrepreneurs who turned inventions into fortunes in California's Silicon Valley, none did it as spectacularly as the founders of Apple computers. But are such huge profits justified? And what role do they play in a market economy? We asked economic analyst Richard Gill.

(MUSIC PLAYS - COMMENT AND ANALYSIS III)

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RICHARD GILL: Large profits in a capitalistic system, according to the great economist Joseph Schumpeter, derive from one source and one source only: innovation. They are the superabundant rewards given by the system to those who are clever enough, daring enough, enterprising enough to come up with something new. The Apple computer story is really a letter-perfect example of what Schumpeter was talking about. A few quick points about this process: First, innovation decisions have a quite different flavor from the kind of expected rate of return calculations we were discussing earlier. How can you calculate an expected rate of return when you're doing something completely new? You're flying in the dark. It's doubtful that the rate of interest plays any major role here at all. Second, the original entrepreneurs weren't really risking big money. They had to sell a van and a calculator to get started. Their risks were far more subtle...a sense of personal failure perhaps...their reputations, Schumpeter might have said. Third, the huge profits these entrepreneurs made did not last that long. IBM and all the brotherhood quickly swooped down into the personal computer market. Entrepreneurial profits are often huge, but also transitory. The leader is followed by the "swarm"...This was also

part of Schumpeter's description. Schumpeter's general conclusion? These enormous, short-lived profits are fully justified by the benefits that innovation brings. Given the dominant role that such innovation has played in the entire history of American economic growth, one finds it difficult to disagree. Huge profits can represent monopoly and distortion; but they also can be the oil that lubricates the wheels of progress.

DAVID SCHOUMACHER: Of the thousands of people who start new firms every year in the United States, most will fail. As we have seen, financial institutions, large corporations and individual entrepreneurs must carefully calculate the probabilities for failure and success. We are propelled by the forces of the marketplace to invest our time and money in those ventures offering the best chance of return. For Economics U\$A, I'm David Schoumacher.

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