Host: Welcome once again as MIT professor Paul Samuelson discusses the current economic scene. This series is produced by Instructional Dynamics Incorporated. This program was recorded August 27.

Paul Samuelson: I'd like today to talk about a problem of long run importance. I'm constantly being asked, what is this notion that the stock market accomplishes something? Isn't it manifestly a case of hysteria and enthusiasm at the moment that I'm speaking in August of 1974? The Dow Jones Industrial averages of 30 stocks, stocks that people look at, have at least momentarily broken down through 700, below 700. They were 1,050. Adjusted two or three years back, the American economy hasn't changed very much, but the quotations on those stocks have certainly changed. Indeed, they're right now as low as they were back at the depths of the 1970 recession. And you could go back to the middle 1960s to find the Dow Jones as low as this. They're broad categories of stocks, public utility stocks, for example, which are right now where they were 13 or 15 years ago. Now, that being the case how can a economist seriously argue that the something like the random walk hypothesis holds for the stock market? How can he argue that all of the best information is constantly being processed by the best intelligence and is constantly being turned into some of kind of correct pricing? That's the question that I'm asked repeatedly, and I'd like therefore to discuss this fundamental problem to you. It's not only a fundamental problem in personal finance, but it's a problem of great moment for how we run the economic system. Because if the stock market is just a casino, that doesn't accomplish very much, then if we wiped it out under some puritanical laws, there wouldn't be much harm done. On the other hand, if it really is accomplishing a lot, it would be a tragedy to let temporary populist bouts of opposition to such an institution lead to the euthanasia of it. For this purpose, I was asked to prepare an article for a new journal. This is the new journal called the Journal of Portfolio Decision Making. It's to bridge the gap between the academic world of finance, the sort of thing that assistant and associate professors of finance in the graduate business schools of this country write about and study. And, the actual practical world where institutional money managers are putting their reputations on the line each day in trying to perform a little bit better than a random dog could do, and a little bit better than the best of their colleagues could do. Let me say in the beginning, that this particular magazine or journal is, as I understand it, being published by the same publishers who published the Institutional Investor, which has been a very successful magazine for people in the money market. The Institutional Investor group have sponsored innumerable conferences in New York, and those conferences, I imagine don't come cheap, and they're attended by really thousands of people. No doubt there's an ebb and flow. It's no secret that there are a lot of holes in people's shoes in Wall Street today, so instead of each company taking 20 tickets to a conference like this they might economize and send just three people there, so the attendances are down, but perhaps the loss to the commercial world is a gain to scholarship and so this may help to explain why this new journal is being started. It's new editor, I think they're lucky in their choice of him, it's Peter Bernstein, Peter Bernstein is a well-known economist who happens also to be a well-known investment counselor. He was a graduate of Harvard College and taught at Williams College and then was an economist for New York Bank, I think the amalgam made it Workers' Bank, and then he went into his father's firm, rather famous firm of Bernstein McColley. Fred McColley was a very emminent researcher at the National Bureau, did some of the first work on the relationship between term structures of interest rate. And that

prospered and finally became part of Hayden Stone and more recently, I believe that organization continues with Hayden Stone but Peter Bernstein has gone back on his own and I think he's doing some consulting for a large foundations. So, you have a man who has a foot in both worlds. The new issue will be available to subscribers, I don't think you can see it on your friendly news stand unless you have an unusually academic news stand. Sometime I suppose this fall because I know that the first edition is now in the press. Well, when invited to contribute to the first issue, I thought I would and I thought I'd really throw the gauntlet down to the practical man. So, let me share with you the rather brief views that I stated in this original article. No mathematical equations in the article. I suppose that's uncharacteristic of an academic economist and it's written in a casual style, but it's meant seriously. The title that I gave is Challenge To Judgment. That is a challenge to the notion that discretionary security analysis and portfolio decision making does accomplish something. I begin by pointing out that there, there are now two worlds. Once upon a time, there was one world of investments. It was the world of practical operators in the stock markets and the bond markets. But now there are two worlds. There's the same old practical world, of course, a little bit the worse for wear, and the new world of the academics with their mathematical stochastic processes. Stochastic process means they probabilistic analysis. These worlds it's fair to say are still light years apart. They're as far apart as the distance from New York to Cambridge or New York to Berkeley, or perhaps exaggerating a bit, they're as far apart as the vast width of the Charles River between the Harvard Business School and the Harvard Yard where the academic statisticians tend to reside. Now perhaps there has been in recent years some discernible rate of convergence between this disparate worlds but in any case I guess I would expect the future to show some further approach between them. But let me reveal my own bias. I think the ball is in the court of the practical men. It is the turn of the mountain to take the first step towards the theoretical Mohammed. In other words, the convergence I think is going to have to take place between the practical men, coming closer to the academics than to have the academics get closer to the practical men. Now that shows how academic I am. Well let me explain. If you oversimplify the debate, it can be put in the form of the following simple question Resolved that the best of money managers cannot be demonstrated to be able to deliver the goods of superior portfolio selection performance. Any jury that reviews the evidence, and I think there is a great deal of relevant evidence, must at least come out with the Scottish verdict, superior investment performance is unproved. In our system of jurisprudence, the jury finds you guilty or unguilty, or not guilty, innocent. But in the Scottish system it used to be the case at least that there was an intermediate category called unproved. Well I think that superior investment performance is to say the least unproved. Now let me clarify. I don't want to be misunderstood. It's true, the Morgan Guarantee Bank trust department did do better in certain years than the average mutual fund. That's demonstrable fact. It's not in doubt. It isn't denied either that, say, the T. Rowe Price organization achieved greater increments of wealth in many years than did many other organizations. And both of these may well turn out to perform better than the market as a whole in the future. Yet, remember this. There were years when the Dreyfus Fund or the Enterprise Fund or the Fidelity Funds or, dare I say it, Chang, Chang's portfolios, they seem greatly to outperform the mob. And then again, there were other years when they didn't. And the same thing is true about the Morgan Guarantee Trust portfolio. It's no secret that the last year or so has not been great for the first tier of the market where the Morgan people have primarily been. They can tell you how they've done on Avon and Polaroid and perhaps Xerox and IBM and the story is not the great triumphant story that it used to be. Similarly, with respect to T. Rowe Price, they still, it still is an estimable organization, but the confidence in which an observer can say that that organization has recently been outperforming the

rest or the averages must very much be diminished. What at issue, what's at issue, is not whether as a matter of logic or root fact, that could exist at subset of decision makers in the markets who are capable of doing better than the averages on a repeatable sustainable basis. There's no reason and logic why there shouldn't be a small group of, I won't even call them insiders because that sounds as if they get their extra edge by means of inside information, but there could be a small group of people who are capable of doing better than the averages, then the totals on a repeatable sustainable basis. There's nothing in the mathematics of random walks or Brownian movements, which academic economists apply to the stock market, that A, proves this to be impossible, or B, postulates that it is in fact impossible. In other words, as a matter of logic or a matter of fact. The crucial point though is this. When investigators, and there are a lot of them, a lot of good ones, like Irwin Friend of the Wharton School at the University of Pennsylvania or Jack Trainor, now the editor of the Securities Analyst Journal, or James Laurie at the graduate business school, or Fisher Black and Myron Scholes of the graduate Chicago Business School. Or, it doesn't have to be an academic, any foundation treasurer of fair-minded and serious intent. If they look to identify those minority groups or methods, and endowed with sustainable superior prowess, they seem quite unable to find them. The only honest conclusion then, I think, is to agree, that a loose version of the "efficient market" or random walk unquote hypothesis does accord with the facts of life. Now, this truth, let me emphasize, is a truth about New York. It's also a truth about Chicago and it's a truth about Omaha. And it's as true in New York as it is in Cambridge. If it's true, it's true about the real world, it's not something which is true in the learned papers in the assistant professors of finance or in the PhD theses of graduate students of the business schools. It's either true or it's not true. This doesn't say that many people, even most people, aren't capable of frittering away the funds given them. Most people can be capable of doing worse than the averages or worse than at random. To lose money all you have to do is flip a coin. Buy General Motors on heads and sell it on tails and just keep doing that. That way you'll do worse than the averages. And you'll do worse even in holding General Motors or avoiding it. The money you lose and on that system the odds are overwhelmingly against you. That money will go to lower the losses of your hard-pressed broker. It's not true that it's a zero sum game. That what you lose some other speculator wins because there's a lot of dead weight loss due to just the dead weight of commissions. Similarly, the transaction volume generated by the non-random decisions of the vast majority of the big and small investors who all think they have a flair, but don't demonstrably have it. Most of those transactions serve only to suck economic resources out of useful GNP activities, you name it, (mumbles) and you, whatever you think is useful in the GNP. And puts those resources into brokers, telephone solicitations and into a lot of bookkeeping. Now, this is not a condemnation of market activity. Even if 8 out of ten transactions are wasteful, who's to say which are the two that are not. I went to a retirement dinner for Professor Larry Seltzer of Wayne State University, a very eminent economist who had been there 50 years if you can believe it, and in his nice little speech he quoted one of his professors and said, "All my life what I've been teaching has been half wrong and unfortunately I don't know which half it is." Well, so it can be argued that some transactions are desirable and necessary. But, this is a useful hint to most pension and trust managers that their clients would in all likelihood be ahead if their turnover rates were halved. And their portfolios were more broadly diversified. You might say they also serve who only sit and hold. But, no doubt, the fees that I might earn as a consultant by giving such sensible advice and which portfolio managers might earn by following such prosaic behavior, are less than from trying to give it that old post-college try. What is it that logic can demonstrate? What it can demonstrate is that not everybody, nor even the average person can do better than the comprehensive

market averages. That would contradict the tautology that the whole is the sum of its parts. Moreover what statistical probabilistic theory can suggest, this is not a logical theorem, is this. If you select at random a list, of say, a hundred stocks, and if you buy them with weights that are proportional to their respective total outstanding market values, although your sample's performance won't exactly duplicate that of a comprehensive market average, it will by the law of large numbers, come close to doing so. Closer than if you throw a dart at only one stock. But of course, you won't do as well with a sample, even a random sample, of a hundred stocks as you would with 200, 300, or using all the stocks that are available in the marketplace. Now, do I really believe what I've been saying? That judgment doesn't help. I'd like to believe otherwise. But a respect for evidence compels me to incline towards the hypothesis. Now it's only a hypothesis, that most portfolio decision makers should go out of business. They should take up plumbing, teach Greek, or just be ordinary corporate executives. Now, even if this advice to drop dead is good advice, it obviously isn't counsel that's going to be eagerly followed. Few people will commit suicide without a push. And fewer still will pay good money to be told to what it is against human nature and self interest to do. It was Ralph Waldo Emerson who said, "The will world beat a path to the door of the man who invents a better mousetrap." Let's amend that, the person that invents a better mousetrap. Well that shows what Emerson knew about economics. The Wells Fargo Bank out on the west coast sent out a trial balloon in the way of a sensible, non-managed fund that embodied essentially the whole market. The Standard and Poor 500 stock. It was even better than that because they enabled you to mix your own leverage at very low interest rates relative to the market so that sticking with the evidence you could do as well as the market with the sureness, and you could take advantage of the little bit of daylight that seems to be there in the way of the not perfectly equilibrated prices. What I have in mind here, but I don't want to digress too far, is that there is a little bit of evidence, that if you put your money into non-volatile stocks, you think that's the prudent way of investing, but it's the only imprudent way of investing. They do a little bit worse on the average than more volatile stocks. Now you would say, "How is that possible?" The volatile stocks, we're comparing cheese and chalk. They're very volatile, and how can you compare them? Well, the way you compare them is the following. You buy the non-volatile stocks on leverage, so by leveraging up your position you make them just as volatile, as the volatile stocks are without that much leveraging. Then you look at the average rate of return which has actually been earned over the years by a comprehensive portfolio of one as compared to the other, and lo and behold, and this is the only deviation practically from the random walk hypothesis that has ever been observed, and that has lasted as a valid observation, you could do a little bit better in the volatile stocks. Well, I think the Wells Fargo was in a position to take advantage of that. But, alas and alack, I don't believe that the world beat a path to the San Francisco door or Los Angeles door of the Wells Fargo Bank system. There's an organization in Boston, Battery Marts, that has likewise a scheme for matching the averages. All you need is perhaps a few hundred thousand dollars to get into it, and I may be wrong, but I don't have the impression that they're overflowing with inquiries and telephone calls. One of the American Express mutual funds has experimented with establishing an outlet for pension fund money. All you need is a million dollars I believe to get into it. But it's surprising how many, how few are the millions of dollars ready to go into these sensible mousetraps, these sensible instruments. In fact, one's left with the impression and an awful lot of underbrush has been growing up before the doors of these deviance into good sense. Ralph Waldo Emerson, not withstanding. At the very least then, I suggest, some large foundation should set up and in-house portfolio that seeks to track and duplicate the S and P 500 Index. To do this, if only for the purpose, of setting up a naive model against which their own in-house gunslingers can

measure their prowess. Instead, as you know, most portfolio committees bolster their self-esteem by showing they have done better than the Valuline 1500 Stock Index. And no wonder, that index being a geometric median index, I can outperform it merely by buying its stocks and its proportions. And I can do so both in down markets and up markets. Since money is only sophisticated enough to grow arithmetically, dollar on top of algebraic dollar. Algebraic dollar because it's loss as well as gains. I've seen the same thing in a recent report, some mutual fund, it shall be nameless, didn't do as well as the Standard and Poor's average, so they pointed out the index, they pointed out they did better than the average stock in the index. Well, they don't realize it, but they've shifted the ground to very close to the geometric mean because, I won't go into the details, it's the law of normal distribution, and anybody who buys all the stocks in the index will do better than the average stock in the index because the stocks that make a gain, make a much larger gain than those which lose on the average because the tail of the distribution is always skewed off to the right. That's true, by the way, in down markets and up markets, but I'd have to state the proposition a little more carefully. Perhaps CREF, which pioneered the variable annuity and the variable pension plan, it's the non-profit organization set up by teachers annuity, perhaps it can be induced to set up an in-house pilot plant operation of an unmanaged diversified fund, but I wouldn't like to bet on it. I've actually suggested to my colleague, Professor Franco Modigliani, who's going to be the president of the American Economic Association, in 1976, that economists might want to put their money where their darts are. That the AEA might, as a service, contemplate setting up for its members, a no load, no management fee, virtually no transaction turnover fund along the Sharpe Mossin Lintner lines of the academic theories. But I daresay there's so little supernumerary wealth to be found among 20,000 economists that you could do better if you tried such a fund among 20,000 chiropractors. For as George Bernard Shaw should have said, those who have don't know, those who know don't have. That's my twist on if you're so smart why ain't you rich. Well now how does one judge the validity of all this I've been asserting? We certainly don't want to replace old, tired dogmas such as be selective in the search for quality with new dogmas. However scientific is their nomenclature. But the sad truth is, that it is precisely those who disagree most with a hypothesis of efficient marketing pricing of stocks, who poo poo beta analysis, and all that. They're the one who are least able to understand the analysis needed to test that hypothesis. What do they do? Well, first they simply assert that it stands to common sense, a great effort to get facts and greater intelligence in analyzing those facts, will pay off in better performance somehow measured. But of course by this logic, the cure for cancer ought to have been found way before 1955. Second, those people always know a man, a bank, or a fund that does do better. But alas, anecdotes don't make science. And once the Wharton School dissertation writers seek to quantify these performers. They have a tendency to evaporate in air, or at least into statistically insignificant T-statistics. Well, let me sum up, I have to do it very briefly. It isn't ordained in heaven, or by any second law of thermodynamics, that a small group of intelligent and informed investors, can't systematically achieve higher mean portfolio gains with lower average variabilities. People who different heights, in their pulchritude and their acidity. Why not in their PQ or performance quotient? Any sheep with a billion dollars has every incentive to track down organizations with such high PQs. But as Frank Knight used to point out, paradoxically, it takes PQ to identify PQ. So, it's not easy to get off the ground. But anyone with special abilities, like those could earn a differential rent on that flair, which we economists call a rent. Those few with extraordinary PQ won't give away such rent to the Ford Foundation or their local bank trust department. They have too high an IQ for that. Like any racetrack tout, they will share it with those well-heeled people who can most benefit from it. It's a mistake though to think that so much money will follow

the advice of those best talents. Inevitably as a matter of the logic of competitive arbitrage alone, that the rest of us will be left with white noise, random darts situations, in which every security of the same expected variability has the same expected mean return. Because for the nature of the case, there must always be an important measure of uncertainty and of doubt concerning how much of one's money one can entrust wisely to an advisor whom you only suspect of having exceptional PQ. Many of my academic colleagues fall implicitly in the confusion on this point. They think that the truth efficient market or random walk or more precisely Fair Martingale hypothesis, is established either by logical tautology or with the same empirical uncertainty, the same empirical certainty as the proposition that nickels sell for less than dimes. Well, we're left though, with the fact that if there do exists such talents, they are very rare and they are very hard to identify. This fact, although not an inevitable law, is a brute fact. The ball, as I've said, is in the court of those who doubt the random walk hypothesis. They can dispose of the uncomfortable brute fact, and the only way that any fact is disposed of, by producing brute evidence to the contrary.

Host: If you have any comments or questions for Professor Samuelson, address them to Instructional Dynamics Incorporated, 450 East Ohio Street, Chicago, Illinois, 60611.