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Towards A Legal Framework For Efficiency and Equity in the Securities Markets

By SHEEN T. KASSOUF*

RECENT advances in the analysis of risk-taking and the role of the securities markets point to prescriptive policy which is often in conflict with our present legal framework.¹ The purpose of this article is to show that the present judicial and regulatory process imposes inequitable costs and inefficiencies on individual investors and on society in the aggregate. This conclusion is reached by briefly outlining the economics of the securities markets, by anatomizing optimal decision-making in the face of uncertainty, and by examining the role of the trustee in the investment process. The focus is on regulation surrounding trust portfolio investments, since it is here, from the economic point of view, that a substantial amount of unjustified intervention occurs in the investment process. Economic analysis can now provide objective criteria on which to base legislation and judgments. Such criteria should replace the widely varying subjective judgments of the courts and agencies.

The Economic Role of the Securities Markets

The virtues of competitive unregulated markets have been known to economists since Adam Smith.² These virtues obtain as well in financial markets.³ The fundamental virtue, known as the "invisible hand theorem," states that in free competitive markets if each individual, uncoerced and guided solely by self-interest, enters into voluntary

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1. See, e.g., Cohen, *The Suitability Rule and Economic Theory*, 80 YALE L.J. 1604 (1971); Note, *The Regulation of Risky Investments*, 83 HARV. L. REV. 603 (1970).

2. For an elegant diagrammatic exposition of a market economy see Bator, *The Simple Analytics of Welfare Maximization*, AM. ECON. REV., March, 1957, at 22.

3. See W. BAUMOL, *THE STOCK MARKET AND ECONOMIC EFFICIENCY* (1965).

transactions, then society will arrive at an "optimal state," as if drive by an invisible hand. An optimal state is one in which no individual can improve his well-being, except at the expense of another. This is the essence of economic "efficiency." If, however, an individual's welfare could be improved at no cost to anyone else, then we would be in an inefficient state. Although this theorem is the foundation for the laissez-faire economists, it is now widely recognized, Adam Smith notwithstanding, that there are at least two reasons why government intervention, economic or legal, can be justified.

First, there are an infinite number of optimal states, each corresponding to a different distribution of wealth among society's members. The theorem is silent in distinguishing between them. Saudi Arabia and Sweden may both be in optimal economic positions in spite of widely different distributions of wealth. Similarly, two individuals within a society may be in optimal economic positions even though one is wealthy and the other is poor.⁴ Ethical notions of equality justify governmental intervention⁵ in such situations to prevent the uneven distribution of wealth from proceeding beyond certain limits.

Second, the presuppositions of Smith's theorem may not hold, thus justifying government intervention. One of the major requirements of the theorem is the existence of competitive markets. The economic purpose of antitrust legislation is to insure competitive environments so that economic efficiency may be achieved.⁶ Another presupposition of the theorem is the absence of "external diseconomies"—no individual or corporation imposes a harmful effect upon others which goes uncompensated. The textbook example of an external diseconomy is a firm's smokestack soiling the laundry of nearby citizens who cannot recover damages from the firm.⁷

4. Economists, Marxian and Western, generally believe that the distribution of wealth becomes increasingly unequal in the early development of "free" industrialized societies. There is some controversy as to whether this inequality tends to reverse itself in maturing economies.

For some interesting consequences of primogeniture, patterns of mate selection, methods of inheritance, differential fertility of different income classes, and other socioeconomic variables on the distribution of wealth, see Pryor, *Simulation of the Impact of Social and Economic Institutions on the Size Distribution of Income and Wealth*, AM. ECON. REV., March, 1973, at 50.

5. Inheritance and progressive income taxes are the usual instruments used to achieve a more egalitarian distribution.

6. To be sure, these regulations and their enforcement are concerned to some extent with distributional inequities and the fear that some individuals and corporations would become too wealthy or powerful.

7. For an excellent introduction to Adam Smith's theorem and its implications see E. MISHAN, *WELFARE ECONOMICS* (1964). The problem of "public goods," closely

Except for regulation relating to the enforcement of contracts, intervention in the market process by legal or governmental authorities can be economically justified only if it is designed to correct a distributional inequity or to compensate for externalities. In the absence of inequities and externalities, an unhindered, competitive financial market will ensure that society's savings are directed to the most productive uses. Stock prices signal to entrepreneurs the cost of capital. Individual investors, guided by the future potential earnings of a corporation and seeking to maximize their expected future well-being, will tend to move society to an optimal state. The remainder of this article will examine the investment decision-making process and some regulatory and judicial interventions that do not seem justified on grounds of equity or economics.

The Definition and Measurement of Risk-Attitudes

It is apparent that individuals have widely differing preferences when faced with risky alternatives: a widow may choose a government bond which is shunned by the young executive. Von Neumann and Morgenstern in their seminal work⁸ have shown that under certain circumstances an individual's risk-attitude may be summarized in a relatively simple way. This simple summary describes an individual's preferences in *any* conceivable situation. Two of their assumptions are: (1) when faced with two risky alternatives, *A* and *B*, an individual always has a distinct preference for one, or finds them equally desirable; and (2) for *any* three risky alternatives, *A*, *B*, and *C*, if the individual prefers *A* to *B* and *B* to *C* then he prefers *A* to *C*. An individual satisfying these two assumptions⁹ is said to have consistent, transitive preferences and is occasionally characterized as "rational." The power of the resulting measure of risk-attitude springs from the fact that it can finely and objectively distinguish preferences among individuals, as opposed to the almost meaningless broad categories now used by many, such as, "aggressive, seeks large gains," or "cautious, seeks preservation of capital," or "seeks moderate gains consistent with preservation of capital." These latter, almost meaningless, definitions of risk-attitude often lead to tortured, sententious arguments reminiscent of philosophical debate concerning the number of angels that can dance on the head of a pin.

related to externalities, is discussed in Samuelson, *Diagrammatic Exposition of a Theory of Public Expenditure*, 37 REV. ECON. & STAT. 350 (1955).

8. J. VON NEUMANN & O. MORGENSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* (1944).

9. Other assumptions are required to derive their conclusions, but these two are the most important.

Consider an investor whose present wealth is unity (starting wealth may always be measured as 1.0 by the choice of appropriate units) who is faced with three alternatives:

1. Make no investment; end of period total wealth will remain 1.0 with certainty;
2. Invest in project *A* which will result in total wealth of 1.2 or 0.9 with equal probability, that is total wealth will be either augmented 20 percent or diminished 10 percent;
3. Invest in project *B* which will result in total wealth of 1.8 or 0.5 with equal probability, that is total wealth will be either augmented 80 percent or diminished 50 percent.

In making the choice, one might be tempted to calculate the "expected" wealth of each alternative. The expected, or actuarial wealth of these alternatives is 1.00, 1.05, and 1.15 respectively.¹⁰ If the reader ranks these three alternatives according to his own preferences, however, he may discover that, like many investors, he resists ranking alternatives on an actuarial basis. In fact, a not insignificant proportion of individuals might prefer (1) to (2) and (2) to (3), completely reversing the order of expected values, and perhaps a majority would prefer (2) to (1) and (1) to (3). Thus, risk attitudes may vary substantially among individuals.

Von Neumann and Morgenstern have shown that each "rational" individual chooses among risky alternatives *as if* he associated with each possible wealth outcome a number called the *utility of wealth*, and that he treats this quantity as the subjective value of wealth.¹¹ Figure 1 diagrams a possible utility function of wealth for an individual investor.¹² Note that greater wealth has greater utility (or loosely speaking, well-being) but that the *increase* in utility diminishes with each unit increase in wealth. Intuitively, one would expect that a one dollar

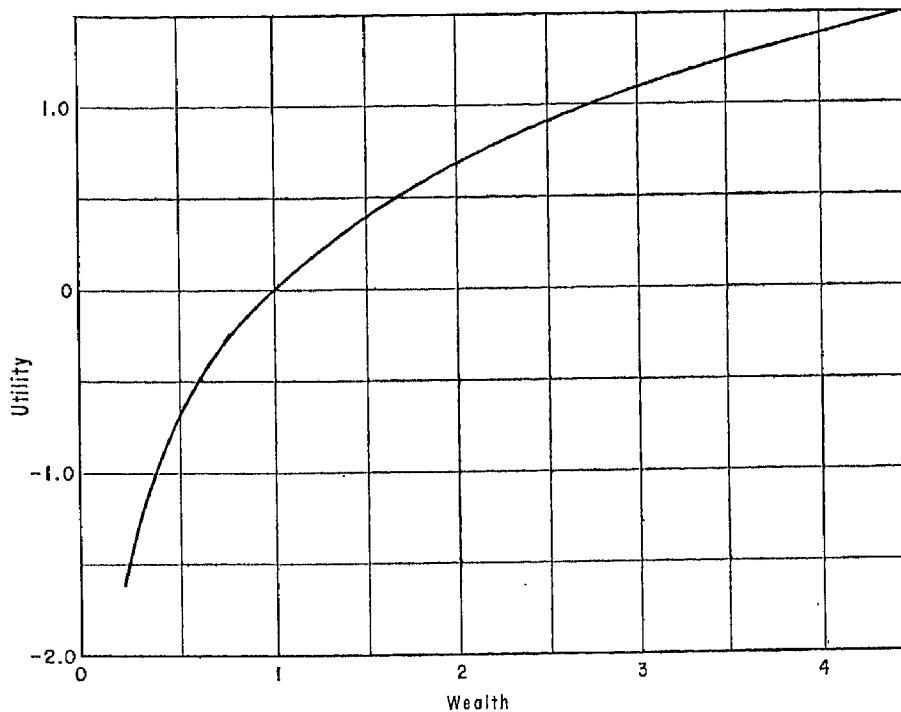
10. The expected value of an alternative is the *average* outcome if the alternative is pursued repeatedly.

11. We are making two simplifying assumptions here. One, time is divided into two periods, now and later. Two, satisfaction is derived from wealth. Excepting Midas-types, whose love of money Keynes found a somewhat disgusting morbidity, the satisfaction from wealth is derived from the more fundamental preference for consumption goods. For an explicit introduction of a multi-period analysis and the use of consumption rather than wealth see Samuelson, *Lifetime Portfolio Selection by Dynamic Stochastic Programming*, 51 REV. ECON. & STAT. 239 (1969).

12. The particular utility function shown in Figure 1 is the natural logarithm of wealth. This function is used in this article as a convenient example. Different investors, of course, will have different utility functions. The natural logarithm function can be justified for an investor whose goal is a long term growth of assets.

increase in wealth would yield less and less satisfaction as one becomes wealthier. Of course, an individual may not consciously associate with each wealth level a number called the utility of that level, but if his choices are consistent and transitive, then an outside observer would not be able to distinguish his behavior from one who *does* consciously calculate expected utility.

FIGURE 1
An Individual Investor's Utility Function



It is relatively easy to construct a close approximation to an individual's utility function.¹³ With such a construct, it is then possible to rank any set of alternatives, no matter how complicated. Using the utility function of Figure 1, the expected utilities of the three alternatives discussed above are $1 \times 0 = 0$, $\frac{1}{2}(0.1823) + \frac{1}{2}(-0.1054) = 0.0385$, and $\frac{1}{2}(0.5878) + \frac{1}{2}(-0.6931) = -0.0527$, respectively, so that this individual prefers alternative (2) to alternative (1), and

13. See S. KASSOUF, *NORMATIVE DECISION MAKING* 25-44 (1970); H. RAIFFA, *DECISION ANALYSIS* 51-103 (1968).

alternative (1) to alternative (3), and of course, alternative (2) to (3).

Now consider a fourth alternative: investment in project *C* will result in wealth of 0.5, 0.75, 1.0, 1.5, or 2.0 each with probability of $\frac{1}{5}$. The expected utility of this last alternative is $\frac{1}{5} \times$ utility of 0.5 + $\frac{1}{5} \times$ utility of 0.75 + . . . + $\frac{1}{5} \times$ utility of 2.0 = $\frac{1}{5}(-0.6931) + \frac{1}{5}(-0.2897) + \frac{1}{5}(0) + \frac{1}{5}(0.4055) + \frac{1}{5}(0.6931) = 0.0236$. Thus the four alternatives would be ranked in this descending order: (2), (4), (1), (3).

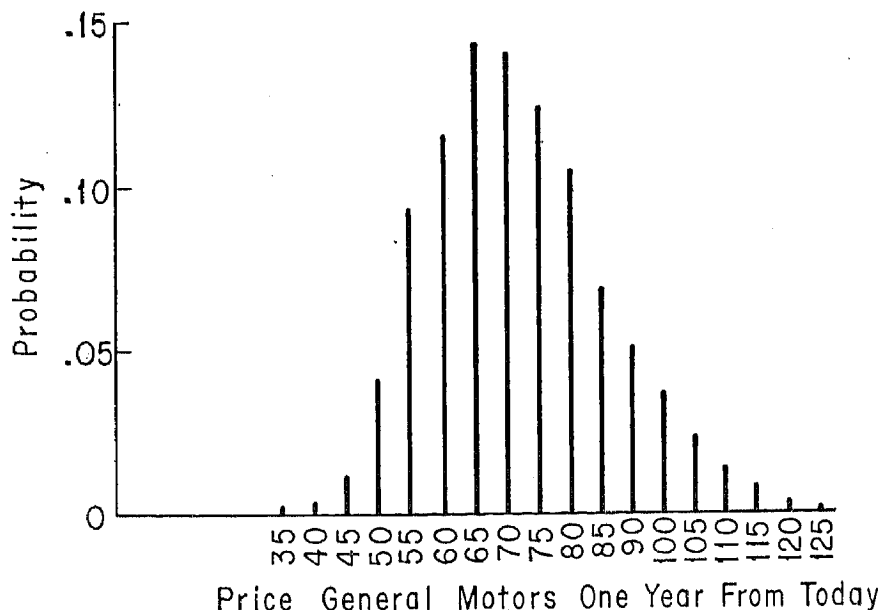
To summarize the economic view of risk-attitudes: if an individual has consistent transitive preferences, his risk-attitude can be accurately defined by a utility function. This function varies among individuals, and spans a continuum ranging from a function which describes an ultraconservative individual to a function which describes one who is hopelessly risk-loving.

The Definition and Measurement of Expectations

The discussion so far has centered on an individual's risk-attitude and its quantification. In this calculation probabilities have been used as if they were given. In the real world, unlike the casino, these probabilities are objectively unknown and are subjectively determined. (What is the probability that General Motors stock will be \$100 per share one year from today?) Just as they differ in their subjective evaluation of wealth, investors will differ substantially in their evaluation of the prospects for General Motors, even if they are provided with the same information. An investor's evaluation of the future prospects of an investment is called his expectation. Many security analysts use vague language in describing their expectations ("I think it will go above 100," or, "I don't like the stock, I think it will go lower"). Nevertheless, it can be shown¹⁴ that if an individual's preferences are consistent and transitive among choices where probabilities are not given, he behaves *as if* he assigns a detailed probability distribution similar to Figure 2. Figure 2 might describe an investor's expectations for General Motors stock one year from today. He considers a wide span of possible outcomes, ranging from 20 to 120, and with each outcome he associates a probability. Generally, the more detailed his knowledge, the more detailed this distribution.

14. See S. KASSOUF, *NORMATIVE DECISION MAKING* 45-54 (1970); H. RAIFFA, *DECISION ANALYSIS* 157-187 (1968).

FIGURE 2
Subjective Price Expectations for General Motors Stock



Using an investor's distribution to describe his expectations for an investment, it can be seen that there are an infinite number of gradations over a continuum ranging from very risky to completely without risk. With these measures of expectations, the usually ill-defined phrases "probable safety of an investment," and "the probable loss associated with an investment," can now be quantified. The distinction between an investment and a speculation, which has fruitlessly occupied many, can now be left to metaphysicians.

The economist's view of decision-making under uncertainty may be summarized in this manner: (1) if an investor's preferences among risky alternatives are consistent and transitive, then he is behaving, consciously or not, as if he placed subjective values on differing future wealth levels; (2) he makes subjective probabilistic estimates of future outcomes; (3) he implements his probability estimates to maximize his expected future well-being.

Although many do not believe that individuals have consistent, transitive preferences, and claim instead that much of investment be-

15. For a thorough review of the empirical research in the capital markets which tends to validate this view of decision-making, see Jensen, *Capital Markets*, 3 BELL J. ECON. & MANAGEMENT SCIENCE 357 (1972).

havior is impetuous or whimsical, recent research indicates that the economic model closely approximates actual behavior.¹⁶ Indeed, if one rejects the economist's view entirely, one must conclude that individuals (and investors in particular), do not "know their own minds," make inconsistent choices, and/or do not experience distinct levels of well-being with differing levels of expected future wealth.

It is important to note here that even if all investors are "rational" in the Von Neumann and Morgenstern sense, modern financial markets may preclude the necessary conditions for the invisible hand theorem. Therefore, intervention by regulation may be necessary to move society to an optimum. This need may arise from the fact that sophisticated present day markets provide investors with abundant "liquidity," or the opportunity to change the nature of their asset holdings at relatively little cost with great speed. If this available liquidity dominates investors' expectations, shifting their concern from the long run to the immediate short run, then asset prices may no longer have any relation to their future potential earnings. When investors behave this way, prices take on a life of their own with little or no connection to the future earnings potential of the companies involved. This is a subtle externality which severely distorts the flow of savings, and which results in some enterprises receiving funds that can be better utilized by other more efficient firms. Keynes observed this tendency almost four decades ago, and it is worth quoting his famous passage in detail:

[P]rofessional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be.¹⁶

After discussing investment behavior in the United States during the 1920's, Keynes is led to observe: "There is no clear evidence from experience that the investment policy which is socially advantageous coincides with that which is most profitable."¹⁷ If, at various times,

16. J. KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY* 156 (1936).

17. *Id.* at 157.

investors do not seem in fact to be guided by the earnings of an investment over its total life, intervention by regulatory and legislative bodies may be justified. Inducements such as preferential taxation of long term capital gains, and discouragements such as higher transaction costs are possible means of intervention.

The Optimal Ex Ante Portfolio

An investor concerned with his expected *total* future wealth, does not view securities in isolation, but rather in combination. To illustrate this, consider a simple two-security world where security *A* has two equally likely outcomes, a gain of 15 percent or a loss of 5 percent, and security *B* with equally likely outcomes of a gain of 20 percent or a loss of 10 percent. The investor's problem is not simply choosing between *A* and *B*; it is choosing that *combination* of *A* and *B* which maximizes his expected future well-being. Simplifying further, assume that the outcomes of both securities are tied in this manner: if *A* returns 15 percent, *B* will lose 10 percent; if *A* loses 5 percent, *B* will gain 20 percent. Let *p* be the proportion of wealth that an investor places in *A* and $1-p$ the proportion in *B*. Then a portfolio of *A* and *B* will yield a terminal wealth of either $0.90 + 0.25p$ or $1.20 - 0.25p$.¹⁸ A mathematical calculation shows that an investor with the utility function of Figure 1 will choose $p = 0.6$,¹⁹ so that with 60 percent of his wealth in *A* and 40 percent in *B*, his terminal wealth will be 1.05 with certainty. This example characterizes a "hedged" transaction. Security *A* might represent a convertible bond and security *B* the *short sale* of an appropriate number of common shares into which the bond may be converted.²⁰

The problem quickly becomes more complicated with the addition of more securities whose outcomes are not perfectly related. In general, the outcomes of securities are not perfectly related as in the above

18. The terminal wealth is simply the initial wealth plus the increase or decrease associated with each stock in the portfolio. Thus, where *A* gains 15 percent and *B* loses 10 percent, the terminal wealth is:

$$\text{Terminal Wealth} = 1.0 + p (.15) - (1 - p) (.1) = 0.9 + .25p.$$

Similarly, where *A* loses 5 percent and *B* gains 20 percent:

$$\text{Terminal Wealth} = 1.0 - p(.05) + (1 - p) (.2) = 1.2 - .25p.$$

19. This result is reached by maximizing the expected utility with respect to *p*. Since Figure 1 represents the natural logarithm of wealth, the expected utility *U* is:

$$U = \frac{1}{2} [\ln(0.90 + .25p) + \ln(1.20 - 0.25p)].$$

The value of *p* for which *U* is maximized is obtained by taking the derivative of *U* with respect to *p*, setting the result equal to zero, and solving for *p*.

20. For explicit examples of these kinds of investments see S. KASSOUF, *EVALUATION OF CONVERTIBLE SECURITIES* (1962).

example. However, security prices do tend to be positively related: when conditions are favorable for General Motors, they are generally favorable for other auto companies, and for tire companies, and with less certainty, for other corporations. The strength of these co-relationships varies greatly. The principal of diversification is based upon these differing relationships. Blending various securities in differing proportions gives rise to a portfolio whose probability distribution will differ from those of each of the component securities. It is the resultant probability distribution of the portfolio which is of relevance to an individual's welfare, not the characteristics of any isolated component. An individual component very often may have undesirable characteristics when viewed in isolation, but which nevertheless makes a useful contribution by modifying the *portfolio's* characteristics. Vinegar in isolation is not an appealing food, but as a component of a salad it may be very valuable indeed.

This is the portfolio problem with which the modern theory of finance deals.²¹ In spite of its complexity, its solution is feasible. There is a large and growing body of literature outlining relatively simple approximations to the exact solution.²² An individual investor can now answer a series of relatively simple questions and a computer program will then infer both his risk-attitude and his expectations, and will provide him with his optimal portfolio. Our interest here, however, is with trustee investments, the problem to which we now turn.

The "New" Role of the Trustee

The investment decision for a substantial amount of assets is not made by the beneficial owners. Trustees, guided by trust instruments, legislation, and judicial rulings, direct a large and growing proportion of this country's assets.²³ Even if externalities or distributional inequities did not exist, this separation of investment decision from the beneficial owner may preclude society from arriving at an optimal position. If trustees are unaware of their beneficiaries' preferences, or if they are impeded by law or custom from seeking optimal portfolios, then serious inefficiencies and inequities may be imposed on individual beneficiaries and on society in the aggregate.

21. See H. MARKOWITZ, *PORTFOLIO SELECTION* (1959).

22. See, e.g., Jensen, *Capital Markets*, 3 *BELL J. ECON. & MANAGEMENT* 357 (1972).

23. 1 SEC, *INSTITUTIONAL INVESTOR STUDY REPORT* (Supp. 1971). See especially *id.* Appendix I, table 22, at 307-08.

Most trust instruments do not sharply define investment powers; consequently, trustees look to legislatures and the judiciary for investment standards. The central theme of these standards has evolved from Justice Putnam's 1830 decision,²⁴ which announced the "prudent man" rule:

All that can be required of a trustee to invest, is, that he shall conduct himself faithfully and exercise a sound discretion. He is to observe how men of prudence, discretion and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income, as well as the probable safety of the capital to be invested.²⁵

Almost a century and a half later, this vague rule, with no operational definition of "prudence," "discretion," "speculation," and "safety," still dominates the behavior of trustees. It has become a shield behind which trustees often take shelter. Instead of being concerned with the welfare of beneficiaries, trustees point to the rule as justification for restricting their activities to relatively few investment alternatives.²⁶ It is no surprise that bank trust departments tend to concentrate massive amounts of assets in relatively few stocks.²⁷ This behavior serves neither the beneficiaries nor society. This investment decision process, centered on the avoidance of surcharge and restricted to lists of stocks considered above suspicion (lists sometimes numbering less than 200 issues), can be almost perfectly simulated by computer.²⁸ It strongly implies that many trustees do not seek optimal portfolios uniquely associated with each beneficiary, but instead, cloaked in the prudent man rule, attempt to avoid criticism. "Worldly wisdom," Keynes wrote, "teaches that it is better for reputation to fail conventionally than to succeed unconventionally."²⁹

24. *Harvard College v. Amory*, 26 Mass. (9 Pick.) 446 (1830), cited in Note, *The Regulation of Risky Investments*, 83 HARV. L. REV. 603, 612 (1970).

25. *Harvard College v. Amory*, 26 Mass. (9 Pick.) 446, 461 (1830).

26. For an eloquent statement cautioning trustees see Miller, *Without Precedent*, 111 TRUSTS & ESTATES 874, 924 (1972), where he writes "neither can you remove a wrong to a beneficiary by saying that, because of some technicality, you owe him no duty." Ironically, Mr. Dean E. Miller, the Deputy Comptroller of the Currency for trusts, in his position with regard to options, stands behind technicalities based upon irrelevant legal precedents. See note 40 *infra*.

27. See 1 SEC, INSTITUTIONAL INVESTOR STUDY REPORT 215-22 (Supp. 1971). The Wall Street Journal reported that the largest bank trust department in the country, with \$27.44 billion in trust assets on December 31, 1972, had 56 percent or \$12.14 billion invested in 31 stocks. Wall Street Journal, May 24, 1973, at 8, col. 1.

28. P. CLARKSON, PORTFOLIO SELECTION: A SIMULATION OF TRUST INVESTMENT (1962).

29. J. KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY 158 (1936).

Given the economist's view of the investment process, how might a trustee proceed when charged with the power to direct investments? First, the beneficiary's risk-attitude should be determined as explicitly as possible. For an individual beneficiary this is relatively simple, and can be elicited by having the individual make simple choices from hypothetical alternatives.³⁰ When the beneficiary is a group, or when the beneficiary is incapable of expressing "intelligent" preferences, such as a child, the trustee should be guided by the preferences of the trustor; in the absence of that possibility, the trustee should explicitly impute a well-defined risk-attitude which he can defend on the basis of custom and logic. This choice of risk-attitude might at some time be subject to post-audit criticism but at least the trustee will not be defending shadowy and slippery notions of "prudence" and "safety." In time, the courts or the legislature may develop appropriate utility functions for various classes of beneficiaries who are unable to provide their own.³¹

In addition to the beneficiary's risk-attitude, expectations for the various investment alternatives are required for the trustee to construct an optimal portfolio.³² The trustee will make his largest contribution in analyzing these alternatives. Informed judgments about future possibilities result from close study of particular corporations, their position in an industry, the industry's evolving role in the economy, the possible impact of fiscal and monetary policy, the possibility and effect of government intervention, the influence of international developments, etc. Linking these expectations (which can be expressed quantitatively, as in Figure 2) to the beneficiary's utility function will then generate an optimal portfolio. As expectations are revised with unfolding events, the portfolio is revised.

This procedure has clear advantages: trustees will be free to maximize beneficiaries' well-being; society will benefit as savings are channeled to the most productive uses; clear standards will exist to judge the investment performance of trustees. The question of negligence, or improper investment behavior, can be judged more scientifically.

30. See H. RAIFFA, *DECISION ANALYSIS* (1968).

31. The utility function in Figure 1 can be justified for beneficiaries whose goal is long term growth of assets, e.g., children who will not draw upon the assets for some extended period of time.

32. The notion of an optimal portfolio, of course, does not imply that it will achieve the highest gains. An optimal portfolio may well experience a drastic loss, just as a foolish investment may reap large gains. The optimal portfolio will vary among beneficiaries, depending upon each beneficiary's risk-attitude and price expectations for the portfolio.

Consider, for example, the suit brought by Hanover College against Donaldson, Lufkin, and Jennrette (DLJ).³³ The college alleged that DLJ made some improper investments when, acting as investment advisor with discretionary powers, they purchased 16 common stocks which were "unseasoned, speculative, volatile and risky," and sustained losses of \$2.4 million. The College sought damages equal to these losses, in spite of the fact that these 16 stocks represented a small portion of the entire portfolio and that the portfolio taken as a whole increased in value 25 percent, a better performance than the Standard & Poor's 500 stock average over the same four year period. In evaluating the college's allegation, it is not sufficient to cite the losses sustained on the purchase of any one, or even of any subset, of the securities purchased. The characteristics of the *entire* portfolio must be judged. Because securities interact with one another, a portfolio is something more than the sum of its parts. The expectations that a trustee may have for a *portfolio* (expressed as a probability distribution similar to Figure 2) may not be achievable by any individual security. The example above illustrating an optimal *ex ante* portfolio, for example, shows that individual securities *A* and *B* have distributions which indicate a possibility of loss in each security, whereas a portfolio of these two securities yields a distribution that will *not* experience a loss.³⁴ Although this case is extreme (but not impossible) it demonstrates the complementary effect that securities may have upon each other.

The proper method of judging this allegation would be to determine whether DLJ imputed the correct utility function to the college *and* whether DLJ's *ex ante* expectations were soundly based. This judgment procedure eliminates the danger of judging *ex ante* expectations by *ex poste* results. It also eliminates the danger of judgments that confound the use of an improper risk-attitude ("DLJ took too much risk") with faulty and negligent expectations ("DLJ had no basis for believing the stock had a small probability for such a large decline"). Too often judgments are unduly influenced by the outcome of investments, and tend to be asymmetrical. Thus "poor" outcomes are criticized and "good" outcomes are praised.³⁵ Now, with objective

33. See Belliveau, *Is Discretionary Management of Pension Funds in Jeopardy*, PENSIONS, Spring, 1972, at 47-50. This suit was subsequently settled out of court.

34. See text accompanying note 20 *supra*.

35. Arnold Bernhard recounts an incident contrary to this usual practice. In the late 1920's, a leading industrialist turned over a million dollars to Jesse Livermore with the instructions to invest it. After six months, the industrialist discharged Livermore when he found his million dollars had almost doubled. He informed Livermore

measures of risk-attitudes and expectations, it is possible to neglect the irrelevant outcome of an investment when judging the *ex ante* behavior of trustees.

The Regulatory Agencies

At present there are many legal impediments to optimal investment behavior on the part of trustees. Two such problems are examined briefly below.

The Comptroller of the Currency, supervisor of the trust departments of national banks, requires that "funds held . . . in a fiduciary capacity shall be invested in accordance with the instrument establishing the fiduciary relationship and local law."³⁶ The Comptroller's position is that absent a provision in the trust instrument allowing the selling of options, local law will control.³⁷ Local law, either by statute³⁸ or case law,³⁹ ostensibly prohibits the use of options as speculative devices. This prohibition is based upon decisions⁴⁰ involving questions of fact

that anyone who doubled his investments in six months was obviously taking too much risk.

36. 12 C.F.R. § 9.11(a) (1973).

37. See Kuhn, *Using Call Options to Improve Trust Investment Performance*, 111 TRUSTS & ESTATES 250, 295 (1973).

38. See, e.g., CAL. CIV. CODE § 2261 (West Supp. 1973); ORE. REV. STAT. § 128.020 (1953). Connecticut recently enacted legislation authorizing the selling of call options for state trust funds. Conn. Pub. Act No. 73-594 (June 11, 1973).

39. E.g., *Fraser v. Farmers' Co-op*, 167 Minn. 369, 209 N.W. 33 (1926); *Whorsley v. Patton-Kjose Co.*, 90 Mont. 461, 5 P.2d 210 (1931). See generally 38 C.J.S. *Gaming* § 1 (1943); Annot. 83 A.L.R. 522 (1933).

40. The position of the Comptroller is set forth in Deputy Comptroller Dean E. Miller's letter to Sheen Kassouf, June 19, 1972:

"This is in reply to your letter of June 13 and in further reference to this Office's position relating to the writing of options by national banks on behalf of trust accounts. We have now completed our inquiry in this area and have come to the conclusion, reluctantly, that we cannot change our position. This is based primarily upon the observation that the law of trusts has not changed to the point that we could say with assurance that a bank engaging in this activity would be free from the risk of accusation of breach of fiduciary duty. As you know, Regulation 9 does not make the law as to what is and what is not a breach of trust—it merely incorporates the laws of the states in this regard. We have not found sufficient evidence that the law has been changed through court decision or legislative enactment in the various states, so that we can conclude that the cases in this area would not apply to any form of option transaction. We note that Mr. Walter Barton in his treatise on this subject came to somewhat the same conclusion as to the legal question." It is difficult to understand the statement that Barton "came to somewhat the same conclusion,"—that Barton supported the Comptroller's blanket prohibition against "any form of option transaction" by trustees. Indeed, Barton concluded the opposite in his closing remarks on legality. W. Barton, *Writing Puts and Calls as an Investment for Trusts* 72, August 1971 (National Graduate Trust School, Northwestern University). Contrary to his own sage advice to trust officers, note 26 *supra*, the Comptroller has here seen fit to rely

which have no present relation to the use of options as an investment technique for bank trust departments. The irrationality of the Comptroller's stance can be seen by considering a simple example of a trust officer faced with the following two alternatives:

- (1) Buy 100 shares of Ford Motor Co. for a trustee account. This noncontroversial strategy is available to almost all trust officers. The common stock is presently on the "approved list" of most major bank trust departments.
- (2) Buy 100 shares of Ford Motor Co. and *simultaneously sell a call option on these shares.*

Assume that at the time these two alternatives are available, the price of the common stock is 60 and the premium that the seller of the option would receive for a six-month option is 7.5. The trust officer pursuing alternative (1) would realize a gain on this investment if the common stock moved up and would show a loss if the common stock fell in price. In contrast, the trust officer following alternative (2) would show no loss unless the common stock fell *more* than 7.5 points. (This example neglects all transaction costs.) Alternative (2) is superior to alternative (1) for every outcome where the common stock, six months from purchase, sells for less than 67.5. The following table shows the profit or loss for each alternative, dependent upon the price of Ford Motor Co. common stock six months after purchase:

Final price of Ford	Profit from alternative 1	Profit from alternative 2
45	-15	-7.5
50	-10	-2.5
55	- 5	+2.5
60	0	+7.5
65	+ 5	+7.5
70	+10	+7.5
75	+15	+7.5

Selling the call option reduces the variability of possible return, thus making the investment more stable than an outright purchase.

on precedent contained in the cases cited by Barton. Examination of these cases shows them to be irrelevant to the question posed. This distortion of the use of precedent arises because the Comptroller fails to distinguish between options on securities vs. options on commodities, real estate, oil, gas and mining interests; between those who buy them and those who sell them; between those who sell them without owning the underlying securities and those who do. This illustrates the problems cited in Note, *Regulation of Risky Investments*, 83 HARV. L. REV. 603, 613 (1970):

"First, when an investment was held improper in one case, courts often treated the question of fact in that case as a question of law, and the case became precedent holding that no investment of that type was proper. Second, courts often treated rules they established as universal rules, even though prudence is dependent on the time and place of making an investment."

This result can hardly be considered inappropriate, especially when the reduced variability is often accompanied by *larger expected return*. Thus if a security is considered an appropriate investment in and of itself, the simultaneous sale of an option can hardly be considered "in prudent."⁴²

This is not a trivial matter. Recent research⁴³ indicates that the use of options is a *necessary* condition to ensure an efficient capital market. By the blanket prohibition of any option investments by trustees on behalf of beneficiaries, the comptroller has impeded economic efficiency: many individuals can increase their well-being without concomitant decrease in anyone else's, and society in the aggregate (including noninvestors) is prevented from achieving an optimal state.

Another instance of regulatory interference involves the Federal Reserve Board, which is empowered by the Securities Exchange Act of 1934 to set federal margin requirements.⁴⁴ Pursuant to this act the Board issued Regulation T⁴⁵ prescribing the terms and amount of credit which brokers are permitted to grant to margin account clients.

An investment opportunity often arises which requires the short sale of a security.⁴⁶ For technical reasons involving the receipt and delivery of securities, virtually all short sales must take place in margin accounts at brokers who are bound by Regulation T. This regulation prescribes that when a short sale takes place, the client must deposit with the broker appropriate collateral consisting either of securities or cash.⁴⁷ Since trust law in many states forbids the trustee to relinquish

41. See Optimal Investment Strategies and an Organized Option Market, Address by B.G. Malkiel, New York Society of Security Analysts, October 26, 1972 (published by the Chicago Board Options Exchange).

42. In private discussions with the Deputy Comptroller for Trusts, he made clear that this prohibition of the use of options in trust accounts was based upon court decisions and that the questions of fact treated in these decisions indicated to him that any investment involving options was improper. In spite of the compelling logic that options per se need not be speculative devices, he stated that trust departments seeking relief should look not to the Comptroller's Office, but to the courts or the legislatures. This perhaps is not too surprising since the Comptroller has no incentive to amend his interpretation of Regulation 9, if in his estimation there is the slightest chance he can be criticized, since there is no apparent direct benefit to his Office. See also note 40 *supra*.

43. E.L. Schrems, The Sufficiency of Existing Financial Instruments for Pareto Optimal Risk Allocation, unpublished doctoral dissertation, Stanford University, 1973.

44. 15 U.S.C. § 78g (1970).

45. 12 C.F.R. §§ 220.1-8 (1973).

46. See text accompanying note 20 *supra*.

47. 12 C.F.R. § 220.3(b) (1973).

the custody of any of the assets in the trust,⁴⁸ short sales are a forbidden technique for trust investments.

The Board was asked to allow brokers to execute short sales on behalf of national bank trust departments if the trustee, in lieu of the required cash or securities, deposited with the broker a representation that he held, and would continue to hold while the short position was not covered, the required collateral. This would not violate the intent of Regulation T: it would only change the location of the collateral required for the short sale.

The Board rejected this request⁴⁹ citing "possible evasions" which might occur, *i.e.*, bank trust departments might enter into short sales without holding the appropriate collateral. Thus the fear that bank trust departments, which are subject to severe judicial sanction for improper investment behavior, might violate margin requirements if given the opportunity, led an agency of the government to preclude certain trustees from achieving an optimal portfolio on behalf of their beneficiaries. In addition to this fear of violation, the Board is apparently still influenced by the position of its Governors in 1937:

[T]raders on the short side of the market should not be in a position, with a given amount of funds, to exert a greater influence on the market than they could with the same amount of funds if they were trading on the long side.⁵⁰

Short selling thus is viewed in isolation rather than as a possible device which under certain circumstances will reduce risk. Short selling per se, with no regard to the circumstances that might make it acceptable from the point of view of the individual and society,⁵¹ is thus considered a technique which should not be encouraged, and which should be made impossible for certain investors.

Conclusion

An individual's optimal portfolio is determined by his risk-attitude and his expectations. If each individual invests in order to achieve his optimal portfolio, then under very general conditions, society in

48. See 4 R. POWELL, *POWELL ON REAL PROPERTY* § 537 (P. Rohan ed. 1971); 2, 3 A. SCOTT, *LAW OF TRUSTS* §§ 175, 186, 188.1 (3rd ed. 1967).

49. Personal correspondence, June 30, 1972.

50. Cited by the Board in its February 20, 1973 interpretation of Part 220, Regulation T. *Treatment of Put and Call Options and Combinations Thereof as Securities*, 38 Fed. Reg. 5237 (1973).

51. For an empirical and theoretical examination of short selling which indicates that this technique may be beneficial to financial markets see F. MACAULAY, *SHORT SELLING ON THE NEW YORK STOCK EXCHANGE* (1951).

the aggregate will also achieve its optimum position. It is therefore important that each investor be allowed to pursue his self-interest without legal restriction, except in those instances where legal or governmental intervention is justified, either to correct an inequitable distribution of wealth or to correct the existence of economic externalities.

Whenever an individual's portfolio is determined indirectly by an intermediary such as a trustee, objective criteria exist to judge whether or not an optimal portfolio was in fact achieved. These criteria can be quantified. With these objective measures the courts can readily determine negligence or improper behavior on the part of trustees.

Furthermore, regulatory agencies and legislative bodies, guided by the decision-making process outlined above, can provide the environment necessary for achieving economic efficiency. Impediments and restrictions to the investment process can then be justified on equitable or economic grounds and not on what often appears to be paternalistic and elitist considerations.