



American Finance Association

Who Should Buy Portfolio Insurance?: Discussion

Author(s): Eduardo S. Schwartz

Source: *The Journal of Finance*, Vol. 35, No. 2, Papers and Proceedings Thirty-Eighth Annual Meeting American Finance Association, Atlanta, Georgia, December 28-30, 1979 (May, 1980), pp. 595-596

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/2327420>

Accessed: 28/11/2009 08:16

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=black>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Blackwell Publishing and American Finance Association are collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Finance*.

<http://www.jstor.org>

DISCUSSION

EDUARDO S. SCHWARTZ*: Professor Leland seeks to characterize investors who will benefit from purchasing generalized portfolio insurance, i.e. investors who could increase their welfare by buying a contract that provides a payoff which is a convex function of the returns on a reference portfolio. The paper represents an important contribution to the literature and I am sure it will stimulate further research in this area.

The main results of the paper are Propositions II and III. Proposition II establishes that an investor with average expectations will want to buy portfolio insurance if his risk tolerance increases with wealth more rapidly than the risk tolerance of the average or representative investor. This result is similar to that obtained by Leland [4] in analyzing the optimal payment schedule for oil and gas leases. Proposition III demonstrates under certain assumptions that those investors whose expectations of returns are more optimistic than those of the average investor will also wish to purchase portfolio insurance. This rather surprising result tells us that the optimal way of exploiting positive alphas (more optimistic expectations) is by larger amounts of risky investment but at the same time protecting through insurance the returns in the less favorable states of the world.

A recent study by Brennan and Solanki [2] touches some of the same issues. While Leland addresses the question 'who should buy portfolio insurance?', Brennan and Solanki study what kind of insurance contract should an investor buy given his preferences and beliefs. In this study the focus is on characterizing as generally as possible tastes and beliefs of investors wishing to buy portfolio insurance. In the other study the emphasis is on obtaining analytical expressions of the payoff function for HARA utility functions and lognormal beliefs.

Brennan and Solanki's results derive from the assumptions of 'risk-neutral valuation relationships' and lognormality in the reference portfolio return distribution, which together imply the existence of a market utility function with constant proportional risk aversion. These assumptions require that variance term in the pricing function and the variance of the (investor's subjective) probability density function be identical; but they do not require, in my opinion, that the expected return be the same as the expected return of the representative investor. I therefore disagree with Professor Leland when he says that Brennan and Solanki assume homogeneous expectations; their framework is similar to that leading to his proposition III, but as indicated above the objective of the analysis is different.

Most of Leland's analysis concentrates on the market as the reference portfolio and relegates to a footnote the general case where the portfolio is different from the market. Although this is understandable, given the importance of the market in portfolio analysis, it would be of interest to investigate further whether these results hold in the general case.

Purchasing portfolio insurance is equivalent to either holding the reference portfolio and buying a put option on the portfolio; or buying a call option on the

* University of British Columbia

reference portfolio plus an appropriate amount of the riskless asset. This equivalence is the familiar put-call parity relationship for European options. Unfortunately options on portfolios do not yet exist. It is still possible, however, to duplicate the returns to any option on a portfolio if portfolio returns are lognormally distributed and continuous trading is allowed by an appropriate trading strategy involving the portfolio and the riskless asset: this is what Leland calls *dynamic* investment strategies. The hedging arguments developed by Black-Scholes [1] and Merton [5] to value put and call options also apply in the case of generalized portfolio insurance.

In practice, however, transaction costs preclude continuous adjustment of the amount invested in the reference portfolio as required by the *dynamic* trading strategy. "It is therefore of interest to inquire whether this strategy has any practical utility, in view both of the impossibility of effecting continuous portfolio adjustment and the costs which must be incurred in making discrete portfolio adjustments" (Brennan and Schwartz [3, p. 64]). In a similar context the above mentioned address this issue by simulating the returns under different investment strategies and they conclude that approximations to the dynamic trading strategy go a long way toward fulfilling its objective, even in the presence of transaction costs. Further research is required in this area.

The preceding arguments clearly show the benefits that would derive from the introduction of traded options on the market portfolio or a Market Index. For an excellent discussion, proposal and economic justification of Index options see Rubinstein and Cox [6].

To conclude this discussion I would like to say that Professor Leland has presented an important and challenging paper which has stimulated my interest in this field.

REFERENCES

1. Black, F. and Scholes, M. "The Pricing of Options and Corporate Liabilities". *Journal of Political Economy* 81: 637-654 (May-June, 1973).
2. Brennan, M. and Solanki, R. "Optimal Portfolio Insurance", Working Paper No. 666, Faculty of Commerce and Business Administration, University of British Columbia (1979).
3. Brennan, M. and Schwartz, E. "Alternative Investment Strategies for the Issuers of Equity-Linked Life Insurance Policies with an Asset Value Guarantee", *Journal of Business* 52: 63-93 (January, 1979).
4. Leland, H. "Optimal Risk Sharing and the Leasing of Natural Resources, with Application to Oil and Gas Leasing on the OCS", *Quarterly Journal of Economics*, pp. 413-437 (August, 1978).
5. Merton, R. "The Theory of Rational Option Pricing", *Bell Journal of Economics* 4: 141-232 (Spring, 1973).
6. Rubinstein, M. and Cox, J. *Options Markets*, Prentice-Hall, forthcoming (1980).