

## Investment Desirability of the ESOP Protection Trust

Robert F. Stambaugh\*

*Miller Anderson & Sherrerd Professor of Finance*

*The Wharton School*

*University of Pennsylvania*

This report summarizes my analysis of the ESOP Protection Trust from an investment perspective. My analysis was conducted at the request of StockShield.

A significant fraction of the investment portfolio of an Employee Stock Ownership Plan (ESOP) often consists of the company stock of the sponsoring employer. A severe investment loss on that stock can result in great hardship for both the employees participating in the ESOP as well as for the sponsoring employer. The ESOP Protection Trust (hereafter, simply the “Trust”) provides an opportunity for ESOPs to pool severe downside risk of the holdings in employer stocks and thereby reduce the risk of a severe loss faced by any given individual ESOP. With such sharing of risk, each ESOP sacrifices some degree of upside return potential: An ESOP that does not experience a severe loss must share a fraction of such losses incurred by other ESOPs in the Trust. In addition, there are costs and fees associated with creating and administering the Trust. The basic rationale for an ESOP to invest in the Trust is that the benefit of risk reduction outweighs the upside sacrifice.

My analysis evaluates and quantifies this rationale by asking the following question: What annual *riskless* rate of return, when added to the return earned by an ESOP portfolio *without* Trust protection, makes the resulting investment as desirable as the same ESOP portfolio *with* Trust protection? In other words, imagine an ESOP offered a riskless rate of return, in addition to whatever return the ESOP otherwise earns, as an inducement *not* to participate in the

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\*The opinions expressed herein are solely those of the author and should not be construed or represented as those of the Wharton School or the University of Pennsylvania.

Trust. What riskless rate of return per annum would be necessary to induce the ESOP not to participate in the Trust?

I answer the above question using a framework that evaluates investment portfolios from the perspective of an investor who likes gains and dislikes losses, but not symmetrically. That is, a loss of a given magnitude is disliked more strongly than a gain of the same magnitude is liked. The degree of this asymmetry characterizes the investor's risk tolerance. The lower is the investor's risk tolerance, the stronger is the dislike for a loss relative to how much a gain of the same magnitude is liked. I quantify risk tolerance by equating it to the investor's desired stock-cash mix in a simple allocation between a stock-market index fund and cash. For example, an investor who opts for a 90-10 mix in such an allocation has greater risk tolerance than one who opts for a 60-40 mix. I consider both of those degrees of risk tolerance as well as one corresponding to a 30-70 mix.

In addition to risk tolerance, the degree of risk in the ESOP portfolio is the other key ingredient in answering the question posed above. I consider three different risk scenarios, characterized by how likely it is that an ESOP's covered stock position experiences more than a 50% loss over a five-year horizon. Based on guidance from StockShield, I consider a scenario with a 1-in-5 chance as well as two other scenarios that halve and double that case: 1-in-10 and 2-in-5.

The following table reports the additional annual riskless percent return that makes an unprotected ESOP portfolio as desirable as the same ESOP portfolio with Trust protection:

Desired stock-cash mix (reflects risk tolerance)	Chances of more than a 50% loss		
	1 in 10	1 in 5	2 in 5
90-10	0.32	0.71	0.79
60-40	0.66	1.04	0.88
30-70	1.41	1.37	0.77

Consider, for example, an investor who would opt for a 90-10 stock-cash mix. This degree of risk tolerance is perhaps the one best matched to that of an investor comfortable with the typical asset allocation of ESOPs, which generally have a high fraction of their portfolios invested in company stock. The ESOP Protection Trust activates protection when the five-year loss exceeds 50%. When there is a 1-in-5 chance of an ESOP experiencing such a loss, we see from the table that an unprotected ESOP portfolio would have to receive an additional 0.71% of riskless return per year in order to be as desirable to this investor as an ESOP portfolio protected by the Trust. This additional riskless return of 0.71% per year clearly represents an economically significant value of the Trust protection. For example, one-year U.S. Treasury securities are currently yielding about 0.57% per year. We thus see that in order to have the unprotected ESOP portfolio be as desirable to this investor as the portfolio with Trust protection, the unprotected portfolio would have to receive an additional riskless return greater than what could be earned by investing the entire portfolio in one-year treasuries and then adding that profit to what the unprotected ESOP earns on its actual investments.

We also see from the above table that the value of Trust protection is robust to the other specifications of risk tolerance and stock risk. Even when there is just a 1-in-10 chance of a protected loss, the same 90-10 investor discussed above still sees the unprotected portfolio as needing to earn an additional 0.32% per year to be as desirable as the portfolio with Trust Protection. All of the other values in the table are substantially larger than this one. To sum up, I find that for wide ranges of risk tolerance and risk, portfolios whose returns reflect participation in the ESOP Protection Trust are substantially more desirable than the corresponding unprotected portfolios.

The following table summarizes the Trust specifications and technical/economic assumptions used in my analysis.

Specifications of ESOP Protected Trust	
Number of participating ESOPs	10
Each ESOP's protected stock position	\$5,000,000
Minimum loss to activate protection	50%
Each ESOP's cash deposit	\$250,000
Fees	\$25,000
Maximum refund if cash exceeds eligible losses	80% (remainder charged as Success Fee)
Horizon	5 years
Technical/Economic Assumptions	
ESOP weight in stock before Trust contribution	90% (with remainder in cash)
Return on cash	0%
Expected annual return on employer stock	9%
Correlation among employer stocks	0.30
Expected return on stock market	8%
Standard deviation of annual stock-market return	20%
Probability distribution of stock returns	lognormal
Investor utility function (form of risk tolerance)	iso-elastic (constant relative risk aversion)
Number of simulated outcomes per case	1,000,000

## *Curriculum Vitae*

### **ROBERT F. STAMBAUGH**

Finance Department  
The Wharton School  
University of Pennsylvania  
Philadelphia, PA 19104-6367  
(215) 898-5734 (voice)  
(215) 898-6200 (fax)  
[stambaugh@wharton.upenn.edu](mailto:stambaugh@wharton.upenn.edu)  
<http://finance.wharton.upenn.edu/~stambaug/>

#### **Education**

Ph.D., University of Chicago, 1981, finance and econometrics.

M.B.A., University of Chicago, 1976.

B.A., Dickinson College, 1974, cum laude, honors in economics. Majors: economics, mathematics.

#### **Employment**

The Wharton School, University of Pennsylvania: Miller Anderson & Sherrerd Professor of Finance (July 2008–present), Ronald O. Perelman Professor of Finance (July 1989–July 2008), Donaldson, Lufkin & Jenrette Term Professor of Finance (July 1988–June 1989), Assistant Professor of Finance (July 1981–June 1983), and Lecturer in Finance (September 1979–June 1981).

Graduate School of Business, University of Chicago: Professor of Finance (July 1987–June 1988), Associate Professor of Finance (July 1984–June 1987), and Assistant Professor of Finance (July 1983–June 1984).

Ford Motor Company, Dearborn, Michigan: Financial Analyst, July 1976–September 1977.

#### **Professional Activities and Honors (Academic)**

President, American Finance Association, 2013  
Board of Directors, American Finance Association, 1988–90  
Editorial committee, *Annual Review of Financial Economics*, 2007–2012  
Editor, *Journal of Finance*, 2003–2006  
Editor, *Review of Financial Studies*, 1989–92

Associate Editor, *Journal of Finance*, 1988–1994  
Associate Editor, *Journal of Financial Economics*, 1984–92  
Associate Editor, *Review of Financial Studies*, 1988–89  
Research Associate, National Bureau of Economic Research, 1990–present  
Fellow of the Financial Management Association, elected 2010  
Fellow of the American Finance Association, elected 2014  
Marvin Bower Fellow, 1997–98, Harvard University Graduate School of Business  
Batterymarch Fellow, 1985–86  
Keynote speaker, 2004, European Finance Association meetings, Maastricht  
Keynote speaker, 1998, Northern Finance Association meetings, Toronto  
Whitebox Advisors first prize, 2012  
AQR Insight Award, 2012, honorable mention  
Marshall E. Blume Prize, 2012, honorable mention  
Marshall E. Blume Prize, 2014, honorable mention  
Goldman Sachs Asset Management Award, 2007 (Western Finance Association)  
Moskowitz Prize, 2003, honorable mention  
Geewax-Terker Prize, 2002, honorable mention  
Fama-DFA Prize, 2002, second-place paper (*Journal of Financial Economics*)  
Fama-DFA Prize, 1999, second-place paper (*Journal of Financial Economics*)  
Fama-DFA Prize, 1997, second-place paper (*Journal of Financial Economics*)  
Smith-Breeden Prize, 1996, first-prize paper (*Journal of Finance*)

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### **Discussions and Comments**

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### **Working Papers**

“Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle,” with Jianfeng Yu and Yu Yuan.

“Scale and Skill in Active Management,” with Lubos Pastor and Lucian A. Taylor.

“Investment Noise and Trends”

“Investing in Socially Responsible Mutual Funds,” with Christopher C. Geczy and David Levin.