
PÉTER ESÖ, PETER KLIBANOFF, AND KARL SCHMEDDERS

Pedigree vs. Grit: Predicting Mutual Fund Manager Performance

It is winter in Chicago. A somber, cool mood fills the heated halls of AMBTPM (Active Management IS Better than Passive Management) Asset Management Company. Larry “double-digit” deBolt, the most successful mutual fund manager in AMBTPM’s history, has announced his retirement at the tender age of forty-three. He now plans to get acquainted with his children and spend more time with his growing family. On the professional side, he is enthusiastic about publishing his controversial book on his success story entitled “Those Who Write ‘How to Succeed in the Stock Market’ Books Are Far More Successful than Those Who Read Them.”

AMBTPM’s management team now faces the daunting challenge of replacing the seemingly irreplaceable navigator of its two signature funds, AMBTPMSignature and deBoltONE, both growth and income funds. Two candidates have been short-listed: Contestant number one is Robert “Bob” Smith, a thirty-five-year-old Ohio State graduate who has managed a growth and income fund for five years. He does not have an MBA and lists his hobbies as chess, the military, and his family. The second contestant is Putney X. Rockefeller, a thirty-two-year-old Princeton graduate with an MBA from Harvard (as she is consistently quick to point out). She has managed a growth and income fund for two years, and lists her hobbies as frequently as possible at cocktail parties. They are croquet, crocheting, skydiving, and Harvard alumni events.

The management team is divided, based on their personal philosophies regarding what makes a successful manager. Leading one group is CEO Jack Beam, a Kellogg MBA who is certainly impressed by pedigree and favors Ms. Rockefeller. He believes that top-school graduates with MBAs are smarter, better educated, and have access to better networks from which to gather information—all essential factors for success in mutual fund management.

Larry deBolt himself leads the other group. He was an upstart from rural Indiana who dropped out of a large state school in the early 1980s to be a day trader. Amassing a small fortune for himself and his friends resulted in a job offer managing a small fund for his brother-in-law’s company. His continued success over the next ten years was legendary and led him to seek early retirement. His viewpoint had permeated most of the management team and was essentially: “Look at me! An MBA is worthless, undergrad institution doesn’t matter, age doesn’t matter. In fact, MBAs and ‘top’ school graduates are too fussy, political, and upwardly mobile. We should recruit a more experienced manager from a successful fund without regard for these factors.” Bob is the candidate he prefers.

This is such an important decision for AMBTPM that everyone in the firm has an opinion. You are a relatively new research analyst for AMBTPM, and you were an investment banker

©2007 by the Kellogg School of Management, Northwestern University. This case was prepared by Professor Péter Esö, Professor Peter Klibanoff, Professor Karl Schmedders, and Graeme Hunter '04. Cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management. To order copies or request permission to reproduce materials, call 800-545-7685 (or 617-783-7600 outside the United States or Canada) or e-mail custserv@hbsp.harvard.edu. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the permission of the Kellogg School of Management.

before going to business school. You are somewhat political and certainly upwardly mobile (you have massive loans to pay off!) and see the benefit of establishing a precedent that those from top undergraduate institutions with MBAs are preferable fund managers who will return superior performance.

You recall a major discrimination lawsuit that made headlines while you worked for your previous employer. Multivariate regressions had been decisive in proving the case. Controlling for variables such as age, education, rank, and specialization within the profession, multiple regressions had shown a strong negative relationship between gross salary and gender at a particular employer.¹ Your fascination with this case, coupled with the growing influence of analytical techniques in human resources management to determine expected performance levels, fair salaries and so forth, had convinced you of the potential benefits of having superior statistical knowledge and partly motivated your concentration on decision sciences while obtaining your MBA.

Seeing a great opportunity to utilize your knowledge now, you catch Jack Beam in the hallway and offer to test whether characteristics such as undergraduate institution, age, MBA, etc., statistically influence performance. “Meet me in my office in eight minutes,” Jack replies as he desperately ducks into the restroom.

Eight minutes later, Jack thrusts the following regression output in front of you:

Table 1: Jack’s Regression

Regression: RET						
	Constant	GRI	SAT	MBA	AGE	TEN
Coefficient	−2.64216	−2.11046	0.005735	−0.18065	−0.068893	−0.118722
Standard error of coefficient	3.34653	0.738858	0.00266	0.756644	0.041818	0.083502
T-ratio	−0.7895	−2.8564	2.1563	−0.2387	−1.6474	−1.4218
P-value	43.016%	0.4452%	3.151%	81.139%	10.006%	15.567%
Beta-weight		−0.1214	0.0937	−0.0103	−0.0801	−0.0691
Standard error of regression		8.354658				
R-squared		4.33%				
Adjusted R-squared		3.44%				
Number of observations		540				
Residual degrees of freedom		534				
T-statistic for computing						
95% confidence intervals		1.9644				

¹ See *Barbara Lavin-McEleney v. Marist College*, 1999 U.S. Dist. LEXIS 22499, September 28, 1999.

Jack explains, “I also thought of using a regression to show that pedigree is important—I needed something concrete to prove my case. Using a sample of funds classified by Morningstar as either growth or growth and income U.S. equity mutual funds for various years between 1988 and 1994, I ran the above regression.² Clearly the R-squared is so low that the regression is useless. So thanks for the offer, but no thanks.”

The data can be found in the Excel file accompanying this case, which contains the following information:

- RET** The excess return of a fund in the year of the observation. The excess return is defined as the percentage return on the fund minus the percentage return on a benchmark portfolio consisting of all stocks trading on the three major U.S. exchanges (NYSE, AMEX, and Nasdaq). For example, if a fund had a return of 10 percent in 2007 and the benchmark returned 12 percent in 2007, then the value of RET for that fund for 2007 would be -2 .
- GRI** Dummy variable that equals one if Morningstar classifies this fund as a growth and income fund, and zero if it is classified as simply a growth fund.
- SAT** Average composite SAT score (i.e., verbal SAT score plus math SAT score so that 400 is the lowest possible composite SAT score and 1600 the highest) of students at the school where this manager got his/her undergraduate degree.³
- MBA** Dummy variable that equals 1 if the manager has an MBA degree, 0 if he or she does not.
- AGE** The age in years of the manager in charge of the fund on December 31 of the year preceding the year of the observation (i.e., the end of the previous year).
- TEN** The tenure of the manager at the fund in whole number of years (i.e., how long the current manager has been in charge of the fund in question). Note that this does not represent how long a person has been a fund manager in total. For example, for a fund that was started in the year of the observation TEN equals 0.

² The data used is a randomly selected subset of the sample used in Judith Chevalier and Glenn Ellison, “Are Some Mutual Fund Managers Better than Others? Cross-Sectional Patterns in Behavior and Performance,” *Journal of Finance* 54, no. 3 (June 1999). We thank Judith Chevalier for providing the data.

³ Funds with managers with undergraduate degrees from non-U.S. institutions and funds that were co-managed by a team of managers in a given year were not included in the sample.



Study Questions

1. (a) Why do you disagree with Jack's comments about the uselessness of the regression due to the low R-squared?
- (b) Can you think of a situation in which a useless regression has a high R-squared?
- (c) There are techniques to determine the validity of a regression model—in particular, whether the relationship is linear and the error terms display equal variance (homoskedasticity). Does the regression in Table 1 violate either of these two assumptions? Justify your answer.

Jack is soon convinced that a low R-squared doesn't render his regression useless, and begins bombarding you with questions. Use Table 1 above to answer Questions 2 through 6.

2. (a) Estimate the excess return (RET) of the funds that Bob and Putney currently manage. Assume that Princeton's average composite SAT score is 1355, while Ohio State's is 1042. Between Bob and Putney, who is expected to obtain higher returns *at their current funds* and by how much?
- (b) Between Bob and Putney, who is expected to obtain higher returns *if hired* by AMBTPM and by how much?
3. (a) Can you prove at the 5 percent significance level that if Bob had attended Princeton instead of Ohio State, then the return of his current fund would be greater?
- (b) Can you prove at the 10 percent level of significance that if Bob were managing a growth fund instead of a growth and income fund, then he would achieve at least 1 percent higher average returns?
4. (a) Does the regression in Table 1 provide strong evidence for the claim that fund managers with MBAs perform worse than managers without MBAs? What is being held constant in this comparison? Discuss.
- (b) It has been suggested that fund managers without MBAs get higher expected returns because they invest in riskier stocks. If this were true, what effect would including an independent variable, Beta (with higher values corresponding to higher levels of systematic risk in the fund's portfolio), have on the coefficient of MBA in the regression of Table 1?
5. (a) What is the lowest level of significance at which you can prove that the manager's age has a negative impact on his or her fund's performance holding the type of the fund, the manager's education, and years of experience at the fund constant?
- (b) A survivorship bias is thought to be present in analyzing fund manager performance in which a younger manager's survival in the industry is more closely linked to his/her performance than an older manager's survival. In other words, if a new manager does not perform successfully, he or she is not tolerated in the industry for long, but a more

experienced manager may be forgiven a year or two of poor performance. Would the presence of this survivorship bias dampen or exacerbate the effect seen in Part (a)?

6. (a) “Streamline” the regression given in Table 1, that is, eliminate all variables that are not significant at the 15 percent level. Write down the new regression equation and check whether the specification satisfies the assumptions of linearity and homoskedasticity.
- (b) Compare the coefficient of AGE in the new and the old regressions. What can explain the sign (direction) of the *change* in this estimator? Discuss.

Build your own regression models to answer the following questions. Make sure that you identify and include the “right” explanatory variables for each problem, and use a regression specification that does not violate the fundamental assumptions of regression analysis.

7. (a) Run a regression to compare the average returns of growth and growth and income funds. Which type of fund yields a greater average return? Discuss whether or not the assumption of homoskedasticity is satisfied in this specification. What are the implications of this finding regarding the estimated difference in the average returns and the significance of the difference?
- (b) Redo the analysis in part a using Excel’s TTEST function instead of a regression. Using this technique, can you prove at the 5 percent level of significance that the average returns of growth and growth and income funds differ?
8. (a) You receive the prospectus of a growth fund started in the current year by a Princeton alum. What is the estimated RET (excess return relative to the return of the benchmark market portfolio) for this fund?
- (b) Are you confident that this fund will “beat the market”, that is, provide a return in excess of that of the benchmark market portfolio? Which standard error do we have to use in order to answer this question?
- (c) Suppose that you manage to identify a large number of growth funds started recently by Princeton graduates. By investing equally in all of these funds, how likely is it that your return will exceed that of the benchmark market portfolio by more than 1.5 percent? Which standard error did you use in your answer?
9. Suppose that you gain access to a much larger sample of random observations of the same variables that you have in the current dataset. Do you expect that any of your answers to Parts (a)–(c) of Question 8 will change, and if so, how? Discuss.
10. (a) Based on the dataset, can you prove at the 5 percent level of significance that among fund managers with the same educational background and same experience with the same fund, those managing growth and income funds are, on average, older?
- (b) Using the regression developed in part a, provide an 80 percent confidence interval for the average age difference between managers who graduated from the same college in the United States and have managed a growth fund for the same number of years, but differ in whether

or not they have an MBA. Are the (otherwise comparable) managers with MBAs younger or older, on average? Discuss (conjecture) why this is the case.

11. Based on your analysis of the case, which candidate do *you* support for AMBTM's job opening: Bob or Putney? Discuss.