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Views of Financial Economists on the Equity Premium and on Professional Controversies*

The consensus of 226 academic financial economists forecasts an arithmetic equity premium of 7% per year over 10- and 30-year horizons and of 6%–7% over 1- and 5-year horizons. Pessimistic and optimistic 30-year scenario forecasts average 2% and 13%, respectively. Respondents claim to revise their forecast downward when the stock market rises. They perceive the profession's consensus to be higher than it really is and are influenced by this perception. There is agreement that markets are efficient and lack arbitrage opportunities and that government intervention in financial markets is detrimental.

The equity premium is perhaps the single most important number in financial economics: the rate by which risky stocks are expected to outperform safe fixed-income investments, such as bonds or bills. It is the main input both in asset allocation decisions—how much of one's portfolio an investor should put into stocks versus bonds—and in the capital asset pricing model (CAPM)—the model used by most practitioners in computing an appropriate hurdle rate for accepting investment projects.

The academic finance profession has been teaching asset allocation and CAPM budgeting for many years. But oddly, it has been relatively quiet in recommending an appropriate ‘‘standard’’ for the equity premium, the key input to these models. This is unfortunate, in that without a good estimate of the equity premium, the mainstream theories are really quite useless from a practical perspective. The main reason for the scarcity of good justifications and recommendations for a ‘‘good practical estimate’’ is, of course, that neither do financial economists know what the correct equity premium is nor is there

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a consensus on how it should be estimated. Existing estimates are discussed in more detail in Section I.

This article intends to supplement existing equity premium estimates with a ‘‘common practice estimate,’’ the consensus in the academic profession. Although this consensus is itself likely to be a weighted estimate obtained by other methods, the distribution of estimated values among academics is itself interesting. The consensus estimate can be a number of some relevance in classroom, courtroom, and boardroom discussions, even if it may not be the best estimate of the equity premium itself. Then again, if there was agreement on how to calculate the best estimate, there would be no need for a survey of financial economists to begin with. Still, surveys in general and this survey in particular have shortcomings, and these are discussed in Section II, which describes the design of the survey.

Section III discusses the principal survey results, that is, the consensus view about the equity premium among the 226 responding financial economists. The most important findings, in brief, follow. The arithmetic 30-year equity premium consensus forecast is about 7%. It is between 0.5% and 1.5% lower on the 1-year horizon, depending on the central statistic. The consensus perception of a pessimistic outcome (at one in 20 probability assessments) over 30 years is 2%–3%; the optimistic equivalent is 12%–13%. There is evidence for a ‘‘false-consensus effect,’’ in that economists seem to anchor their forecast to what they perceive the consensus to be—and this perceived consensus is about 0.5%–1% above the actual consensus. Finally, economists claim that increases in the stock market would, on the margin, cause them to reduce their forecast of the equity premium. Section IV briefly discusses the answers to a set of issues of interest to both financial academics and financial practitioners. The strongest consensus obtains that markets are efficient and lack arbitrage opportunities and that government intervention in financial markets is detrimental. Section V concludes with a summary of the findings.

I. Existing Estimates of the Equity Premium

Cochrane (1997) and Siegel and Thaler (1997) provide comprehensive surveys of the macroeconomics and finance literature about the equity premium puzzle—the question as to why stocks have historically performed so well relative to bonds. This section briefly discusses existing methods to estimate the equity premium.

A. Equity Premium Measurement Issues

Unfortunately, there is neither a uniformly accepted precise definition nor agreement on how the equity premium should be computed and applied.

First, the geometric average is earned by a buy-and-hold investment strategy that is long on stocks and short on interest-bearing securities, while the arithmetic average is earned by a strategy that rebalances investment to a fixed amount each year. Mathematically, the geometric mean is always lower than the arithmetic mean. For example, a 50% decrease followed by a 100% increase leaves an investor with a 0% geometric return, although the arithmetic average would suggest a positive 25% return. Historically, the 30-year geometric mean equity premium has been about 2% lower than the arithmetic mean (see app. A for more detail). It is not clear whether the arithmetic or the geometric average should be used in capital budgeting applications using the CAPM (Indro and Lee 1997).

Second, stocks are long-term investments, and the most common method to compute the equity premium—subtracting a short-term bond return from a long-term equity return—is neither parsimonious nor necessarily a fair investment holding-period comparison.[1] Subtracting off the return to long-term bonds instead of the return to short-term bonds for a 30-year equity premium computation decreases the long-term equity premium by between 1% and 2%. Shiller (1989) subtracts a bond index that splices corporate bonds with treasuries. This, too, results in a lower equity premium.

Lacking formal agreement on how the equity premium should be computed and used, even identical views on the implied equity premium can easily lead different individuals to respond with and themselves use different estimates for the same task. This article describes arithmetic equity premia relative to short-term bills, unless otherwise indicated.

B. Historical Average Equity Premia

Perhaps the most popular method to obtain an estimate of the equity risk premium is an extrapolation of historically realized equity premia into the future. Table 1 shows that practitioners can advocate a whole range of estimates as ''their'' equity premium choice. The use of Ibbotson equity premia estimates seems to be particularly widespread. For example, the most popular finance textbook, Brealey and Myers (1996, p. 146), recommended 8.2%–8.5% in 1996, as sourced from the *Ibbotson 1995 Yearbook*. Table 1 shows that as of December 1998, the equivalent 1926–98 Ibbotson historical arithmetic equity premium average has risen to 9.4%. Shiller (1989, ch. 26) has assembled a longer data set, which can justify as low an equity premium average as 4.3%, using geometric averages over the entire 129-year history.

1. Abel (1999) decomposes the equity premium into a risk and a term premium. Not surprisingly, the term premium accounts for about 25% of the observed equity premium.

TABLE 1 Historical Stock Market and Equity Premium Performance

Source and Time Frame	Number of Years	Geometric Mean (%)	Arithmetic Mean (%)	Arithmetic SD (%)	Arithmetic Minimum (%)	Arithmetic Maximum (%)	Arithmetic SE (%)
Stock market return historical averages:							
Shiller 1870–1998	129	9.3	10.8	17.8	−42.9	54.9	1.6
Shiller 1899–1998	100	10.2	11.9	18.6	−42.9	54.9	1.9
Ibbotson 1926–98	73	11.2	13.2	20.3	NA	NA	2.4
Shiller 1926–98	73	11.0	12.8	19.3	−42.9	55	2.3
Shiller 1949–98	50	13.3	14.3	15.1	−21	46	2.1
Shiller 1974–98	25	14.8	15.9	15.5	−20.8	38.6	3.1
Shiller 1994–98	5	23.8	24.5	13.4	.0	35.1	7.4
Equity premiums historical averages:							
Shiller 1870–1998	129	4.3	6.0	18.5	−45.4	53.4	1.6
Shiller 1899–1998	100	5.3	7.1	19.1	−45.4	53.4	1.9
Ibbotson 1926–98	73	7.1	9.4	NA	NA	NA	NA
Shiller 1926–98	73	6.1	8.0	19.8	−45.4	53.4	2.3
Shiller 1949–98	50	6.9	8.2	16.1	−31.8	44.1	2.3
Shiller 1974–98	25	6.5	7.9	16.3	−31.8	31.3	3.3
Shiller 1994–98	5	18.4	19.0	12.7	−.0	28.6	5.7

NOTE.—Ibbotson estimates are published in the Year-End Summary Report (1998). They are based on the Standard and Poor's 500 Stock Index (S&P500) return with dividends (''large company stocks'') and 30-day-to-maturity Treasury bills. Shiller indices are published in Shiller (1989, ch. 26) and updated on http://www.econ.yale.edu/~shiller/chap26.html. They are based on the dividend-adjusted S&P500 (formerly called the Standard and Poor's Composite Index) and a short interest rate spliced from corporates and treasuries, and are computed from January-to-January index averages (of the following year), not December-to-December closing prices. Thus, the last price used in the computations is an average January 1999 index price. The indices differ primarily because of the use of different interest rates. Geometric means are computed as $g_T = \sqrt{[\Pi_{y=1}^{T}(1 + rm_y)]/[\Pi_{y=1}^{T}(1 + rf_y)]}$, where rm_y is the market return and rf_y is the risk-free rate in year y. Arithmetic statistics are computed from a T-year series of $(rm_y - rf_y)$ in a standard fashion. Unreported: averages computed using the value-weighted stock market index obtained from Center for Research in Security Prices have means of about 0.3% more and standard deviations of about 2% more than equivalent S&P returns. Unreported: inflation from 1926 to 1997 was about 3.1%. NA = not available.

Yet, historical averages have limits. Even from a theoretical perspective, an observer could interpret recently high historical stock returns to be indicative of lower (not higher) future stock returns. If the true expected rate of return on stocks were to have fallen over the last couple of years because investors were unexpectedly streaming into the stock market and competing away previously higher expected rates of return, because investors became less risk averse, or because volatility declined, recent increases in stock prices (high stock returns) would soon be followed by lower stock returns in the future. There is also the more mundane nonstationarity problem that 50-year old equity premia may have little relevance to the world today. But stock returns are so volatile that shorter time series have too high a standard deviation to be useful estimators. For example, a 95% confidence interval (plus or minus two standard errors) for the true equity premium average over the 1994–98 period ranges from $+7.6\%$ to $+30.4\%$—not a useful range for practical capital budgeting purposes.

C. Predictive Regressions

An alternative popular method to estimate future expected returns relies on the observation that, in the very long run, expected corporate payouts and expected investment returns must be equal. The stock price today must be the present value of all future dividend payouts (or earnings). Many researchers (e.g., Campbell and Shiller 1988; Fama and French 1988; Blanchard 1993) have used this observation to predict future equity returns and equity premia with dividend yields (and, to a lesser extent, other variables).[2] As of 1999, a regression of annual data from 1927–97 yields

$$\mathrm{EQP}_y = -11.5\% + 3.95\left(\frac{D_{y-1}}{P_{y-2}}\right) + \mathrm{noise}_y, \tag{1}$$

where EQP_y is the equity premium (here the difference between the return on a value-weighted stock index and short-term treasury investments) in year y, and D_{y-1}/P_{y-2} is the lagged dividend yield. As of 1999, with a dividend yield of below 1.5%, this regression predicts a 1-year-ahead forecast of less than -10%. (Longer period forecasts converge to the historical average.) Variations of such ''conditional models'' predict equity premia ranging from about -10% to about 0%. These are not comfortable estimates. After all, why would anyone hold equity if stocks did not offer higher expected returns than bills? And, what

2. ''Fortunately,'' aside from a number of statistical problems, such models have predicted consistently poorly out of sample at least since 1946. Goyal and Welch (1999) show that this is because simple linear models are unstable—the coefficients have declined over time.

does this imply for firms' capital budgeting decisions—should firms place a lower hurdle rate on riskier projects?

D. Theoretical Arguments

Yet another popular approach to estimating the expected equity premium relies on calculations of what reasonable expected rates of returns are necessary to entice the average investor to be roughly indifferent between investing in stocks and bonds, given historical aggregate volatility and covariances. Assuming reasonable risk aversion for such an investor (and introspection), such estimates typically arrive at estimates of about 1%–3% (Mehra and Prescott 1985).

Unfortunately, these calculations have predicted about 1%–3% for decades, while the historical 1926–98 average has increased to an all-time high of 9.4%. This puzzle deepens even further if the average investor is not tax-exempt, because equity capital gains face lower effective tax rates than bond interest receipts. Cochrane (1997) and Siegel and Thaler (1997) both conclude that economic theory has great difficulty in explaining such high figures (even with high degrees of risk aversion and all sorts of modifications to standard consumer choice models).[3] Still, they remain skeptical about the continued presence of an equity premium in the (often quoted) 6%–8% range.

E. Popular Views

Small investor surveys tend to find equity premium expectations between 10% and 15% per year. On October 10, 1997, The *New York Times* reports that a Montgomery Asset Management telephone survey found an expected 1-year stock market return of 22%. On November 22, 1999, *Fortune* Magazine mentions that a similar Paine-Webber survey in July 1999 found expected stock market returns in excess of 20% for both the 1-year and 10-year horizons. On November 15, 1999, the *Financial Times* reports a Gallup/Paine-Webber poll that found ''only'' a 16% expected stock market return over both 1- and 10-year horizons.[4]

3. In addition to models based on standard representative agent utility maximization, these summary papers also discuss other, more ''radical'' explanations, such as behavioral explanations (e.g., Benartzi and Thaler 1995) and ex post survival bias (e.g., Jorion and Goetzmann 1999).

4. Not surprisingly, investors have poured into the stock market in unprecedented numbers. In the 1996 *Mutual Fund Fact Book,* the Investment Company Institute reports a strong positive correlation between stock market rallies and mutual fund net inflows (p. 130). In 1995, investors poured in $164 billion, which was up from $2.8 billion, just after the crash (in 1988), up from a $40 billion/year average throughout the 1980s, and up from net outflows during the 1970s. (In general, the more aggressive the equity fund investment style, the larger the net fund inflows in the 1990s.) Aggregate net inflows into the three major public equity markets (equity issues minus dividends and repurchases and bankruptcies) have seen multiyear levels unprecedented since the Great Depression.

In contrast, professionals tend to be more conservative. A survey of pension fund executives and other institutional investors by *Pensions and Investments* (January 12, 1998, p. 1) found an expected equity premium of 3%, and the 1997 Greenwich Associates survey of fund professionals found an expected 5-year equity premium of 4%–6%.[5]

Individual organizations tend to be in line with professional investors. Financial Engines appears to use a short-term equity premium of about 6%. McKinsey seems to have standardized recently on an equity premium arithmetic figure of 5%–5.5% for valuation purposes. The Social Security Administration Office assumes a 7%–3% = 4% geometric equity premium, based on a dated historical average. Naturally, those arguing that rescuing Social Security requires an asset reallocation into equities contend that the 4% equity premium is too low, based on observed historical averages; others consider this figure too high (Diamond 1999).

A sampling of finance textbooks shows that, for instance, Copeland, Koller, and Murrin (1995, p. 260) recommends a 5%–6% geometric average. Grinblatt and Titman (1998, p. 174) uses 10% in an example but, after giving a discussion, is notably silent on giving any estimate (see p. 176). Ross, Westerfield, and Jaffe (1993, p. 257) recommends 8.5%, Van Horne (1992, p. 214) 3%–7%, and Weston, Chung, and Siu (1997, p. 190) 7.5%.

F. Summary

In sum, there are wide discrepancies in estimates of the expected equity premium, ranging all the way from −10% to +20%, depending on the source of the forecast. Such disagreement about the expected equity premium can lead to absurd consequences in the classroom, courtroom, and boardroom: the same project may require passing a hurdle rate of 10% in one company and 20% in another; the same investor may receive retirement advice that suggests vastly different retirement ages, saving needs, and investment policies; and politicians may or may not advocate different reforms of the social security system, each based on a different estimate of the equity premium and each backed up by a generally accepted estimation method.

The goal of this survey is to provide a ‘‘metaestimate,’’ that is, a

5. Fund managers predicted the Standard and Poor’s 500 Stock Index (i.e., without dividends that account for about 1%–2% per year) to offer a 10.4% mean and a 9.8% median. A range of 8%–14% represents about two-thirds of the distribution. The survey was taken in September and October 1997 and encompassed 2,309 funds, of which about 75% responded. It is published in ‘‘What Now?’’ by Greenwich Associates. Prior academic research on investment expectation can be found in Shiller (1987, 1999), Pound and Shiller (1989), and Kon-Ya, Shiller, and Tsutsui (1991, 1996). An update of Kon-Ya et al. (1996) of their 1991 article on Shiller’s website (http//aida.econ.yale.edu/Schiller/data.htm) shows a 1-year stock market expectation of 6.6% by U.S. respondents but high year-to-year variability.

weighted average of estimates used by financial economists, which could become a focal point different from the aforementioned estimates. Although this consensus has no claim that it offers the correct best ex ante estimate, it is at least an appropriate common-practice estimate among one group of well-informed individuals, who are usually asked to provide such estimates in their ordinary course of instruction and who are without financial incentives to radiate biased estimates.

II. The Survey Design

This article summarizes the results of two surveys, henceforth referred to as the first and second survey.

A. The First Survey

The first survey is reprinted in appendix B. This article reports statistics for (*a*) forecasts of the mean and 5% and 95% confidence intervals for the equity risk premium (stocks minus equivalent horizon bonds) for 1-year, 5-year, 10-year, and 30-year horizons; (*b*) an estimate of the mean that other academics would provide on this survey; and (*c*) views regarding nine issues of relevance to the academic finance literature.

This survey was posted on my World Wide Web site (http://linux.agsm.ucla.edu/) in October 1997. In addition, a hard copy was mailed to finance professors at 11 universities with large finance faculties, associate editors at three major journals, and my colleagues at the University of California, Los Angeles. Almost all of the responses came from the mailings, not from visitors to the Web site. There were 114 valid completed forms, the first arriving in October 1997, the last in February 1998.

To correct the major ambiguity in the first survey, whether participants had responded with a geometric or arithmetic average, respondents were contacted by e-mail in October 1998 and asked whether their 30-year answers were arithmetic or geometric averages and whether their views on the 30-year equity premium forecast had changed. Eighty-five participants responded to the request for clarification; only 29 did not. Overall figures provided in the tables reflect appropriate adjustments to the first-survey estimates, as described in appendix A, to make them equivalent to answers to the second survey.

B. The Second Survey

The second survey is reprinted in appendix C. It was shorter than and corrected several shortcomings of the first survey. It elicited explicitly both geometric and arithmetic 30-year averages, requested an equity premium defined as the difference between stocks and short-term bills, posed a question about how an increase in equity prices would influence a researcher's views, and added questions on the 100-year equity premium and 30-year inflation, on whether the respondent considered himself an expert or had published on the subject, and on survey completion time and clarity of the survey. This second version was posted both on my Web site and on the *Journal of Finance* World Wide Web site and elicited 112 responses by Ph.D.-level financial economists.[6] The first response was received in January 1999, the last in May 1999. Reported figures in the tables break out responses to this second (more accurate) survey.

C. Problems

The surveys admittedly suffer from a number of problems. First, economists had no powerful incentive to reveal their best estimates. However, the cost of jotting down a number that all finance professors have to tell students on a daily basis is low. The majority of professors contacted were willing to participate. Even though it is possible that participants represent a biased sample, a visual inspection reveals a fairly large subset of professors at many leading universities. Second, the surveys were not a controlled experiment but an attempt to take the pulse of the profession. The surveys did not permit anonymous responses, and none was received. I was clearly identified as the person asking the question. Most finance professors would be unlikely to answer a survey sent by someone they do not know. Indeed, most responses were received only after private e-mail reminders. Third, second-survey participants answered 1 year later—after a significant market rise and after the first write-up of this article was available. Yet, even if the circulated first draft of the article had changed some participants' views, I would be interested more in their revised than in their original views for this article. Fourth, the presence of the Brealey and Myers's (1996) historical figures on the right of each question may have induced respondents to anchor on them. In defense, the Ibbotson numbers are familiar to most finance professors, and their presence may have increased the survey response rate by allowing participants to answer without delaying until they could find the time to verify the Ibbotson numbers. (Moreover, these figures were originally intended to clarify whether I was asking for a geometric or arithmetic average.) Fifth, the questions in the first survey were ambiguously phrased and required e-mail clarification and adjustments. Unfortunately, it is not possible to find a fresh set of participants to replenish the pool. Fortu-

6. Fourteen responses were from individuals who were not financial economists with a Ph.D. (mostly finance Ph.D. students; their 30-year arithmetic average forecast was 5.3% on average, with a median of 5.9%).

nately, clarified adjusted answers to the first survey are very close to the answers of the second survey.

III. The Academic Equity Premium Consensus

A. Long-Horizon Equity Premia

Figure 1*D* plots the distribution of 226 answers to the 30-year arithmetic forecast for the equity premium using the largest set of answers. Impulse lines within the bars on the 30-year graph plot the distribution of answers to the second survey only.

Table 2 shows that various central statistics (the mean, the 5% and 95% truncated mean, and median) suggest an academic expected arithmetic 30-year equity premium consensus of about 7%.[7] Figure 1 shows that the mode response is about 8%. Still, only about 20% of participants on either the first or the second survey picked an (unadjusted)[8] number between 8% and 8.9% (8.5% being the largest), equal to the historical Ibbotson estimate quoted by the questionnaire itself. The historical average does seem to have strong influence, but about 80% of the participants provided their own estimate instead. The standard deviation of the expected 30-year premium is about 2.0%,[9] the first quartile is 6%, and the third quartile is 8.4%. There is a pronounced clustering between 5% and 9%, but there are more individuals below 5% than there are above 9%. Remarkably, figure 1 does not indicate multimodality—the profession does not divide neatly into two or three camps, each of which forecasts its own number. Most individuals choose a convex combination of the above-mentioned forecast methods, with most of the weight on the long-term historical average.

As to differences between the first and second survey, 112 second-survey respondents offered an equity premium estimate of 6.7%–7.0%, depending on the central statistic. Adding in the e-mail-clarified responses (for a total of 197 clear responses), the mean 30-year equity premium forecast rises back to the 7.1%, equal to the average of all 226 respondents. The (relatively small) difference of 0.4% can thus be mostly attributed to a sampling variation across individuals (perhaps because of the increased stock market level by the time the second

7. There is one outlier of 15%, which is responsible for a 0.04% higher estimate. In correlation and regression computations, this observation was eliminated.

8. This is the only exception where the frequency of unadjusted estimates to the first survey is quoted. This is because there is a question as to how many individuals just copied the provided 8% Ibbotson estimate provided by the survey. The median and mean unadjusted response to the first survey was about 6%, not 8%.

9. Nordhaus (1994) surveys a set of economic and natural researchers about the potential impact of global warming and finds remarkably high dispersion in expert opinion. This equity premium survey mirrors this dispersion in expert opinion in finding high across-expert dispersion.

survey was run; see Sec. III*E*) and only secondarily to remaining miscorrection in the adjustment calculation.

In sum, 6.8%–7.0% is a robust estimate for the consensus about the 30-year arithmetic equity premium among financial economists. However, there is considerable disagreement across economists. The following are not reported in table 2.

Geometric average. About half the respondents explicitly offered a geometric 30-year equity premium forecast. The academic consensus for the geometric 30-year equity premium is around 5.2% per year.

One-hundred-year equity premium forecast. Among 45 responses to the (optional) request for 100-year forecasts on the second survey, the 100-year arithmetic equity premium forecast mean was 6.5%, which was about 1% less than the same respondents' 30-year forecast mean.

Stock market forecast. Respondents to the second survey offered a 30-year arithmetic stock market forecast of 11% (SD of 2.1%).

Recent updating. Among 85 first-survey respondents contacted by e-mail about a year later, only nine individuals chose to reduce their estimates; four individuals chose to increase their estimates.

B. Shorter-Horizon Equity Premia

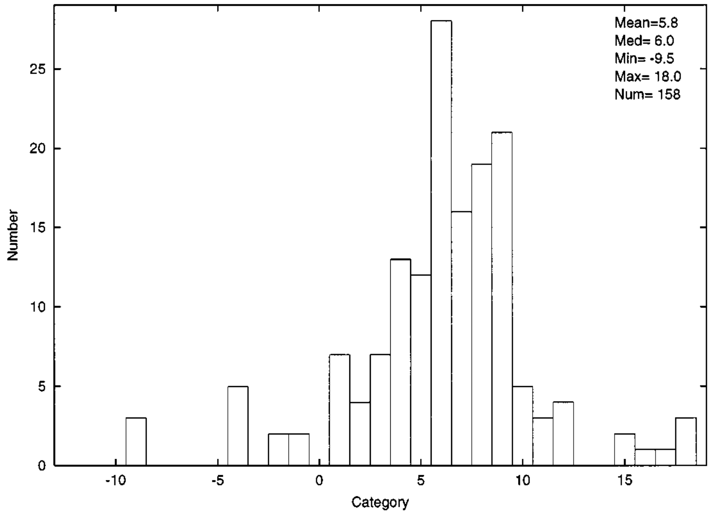
Table 2 shows that the largest set of adjusted responses, 170 in total,[10] indicates an arithmetic 10-year equity premium forecast of 7% (SD: 2%). For the 58 individuals answering this question on the second survey, the average was slightly lower and practically identical to the average of these respondents' 30-year arithmetic equity premium forecasts; both were 6.8%. (The average difference between 10-year and 30-year arithmetic equity premia forecasts when both are available is 0.2%.) It is fair to characterize any difference between 10- and 30-year equity premia forecasts as insignificant.

However, the two shorter-term (1-year and 5-year) arithmetic equity premium forecasts are lower, both in economic and statistical terms.[11] Relative to the 10-year and 30-year forecasts of about 7.1%, the 5-year untruncated forecast mean is about 0.5% lower, and the 1-year untruncated mean forecast is about 1% lower. (Truncated mean differences are smaller, and the average drops for respondents for which I

10. In the second survey, shorter-term equity premia estimates were optimal. There is no real difference between statistics computed over all reported answers or only for those individuals' answers where both shorter- and longer-equity premia forecasts were available. See app. A for more details.

11. About 20% of survey participants offered an expected premium term structure that was monotonically increasing in horizon; 50% had the expected premium term structure monotonically decreasing. This decline in forecast by horizon is comforting in another sense: many financial economists did not just copy the provided Ibbotson estimate but instead provided their own estimate. The number of unadjusted 8% answers drops from the 20% for the 30-year estimate to about 15% for the 1-year estimate.

A



B

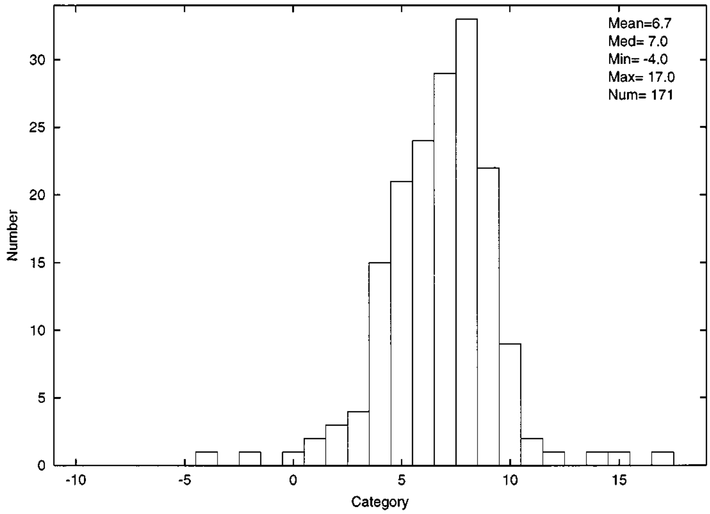
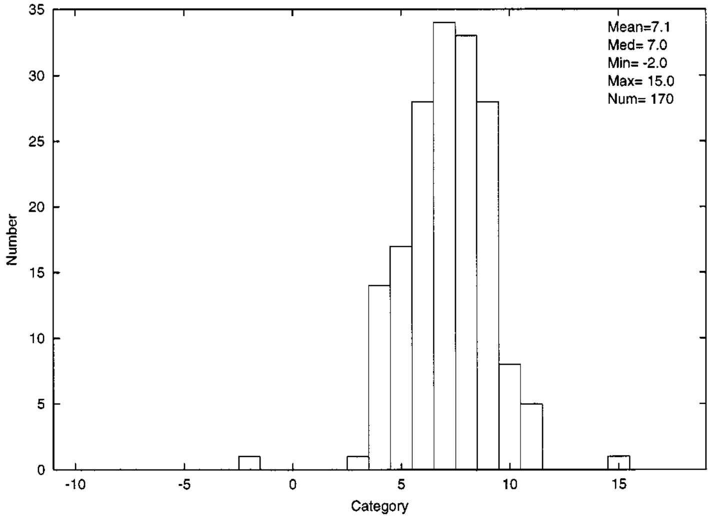


FIG. 1.—The distribution of arithmetic equity premia forecasts by financial economists. The surveys from which these histograms were computed are reproduced in appendices B and C. Statistics are over both the first and second survey (after adjustments to first-survey responses explained in app. A). *A,* Distribution of the 5-year expected equity premium; *B,* distribution of the 1-year expected equity premium; *C,* distribution of the 30-year expected equity premium; and *D,* distribution of the 10-year expected equity premium. 1*D* reports responses to the second survey as impulse lines inside the bars.

C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D

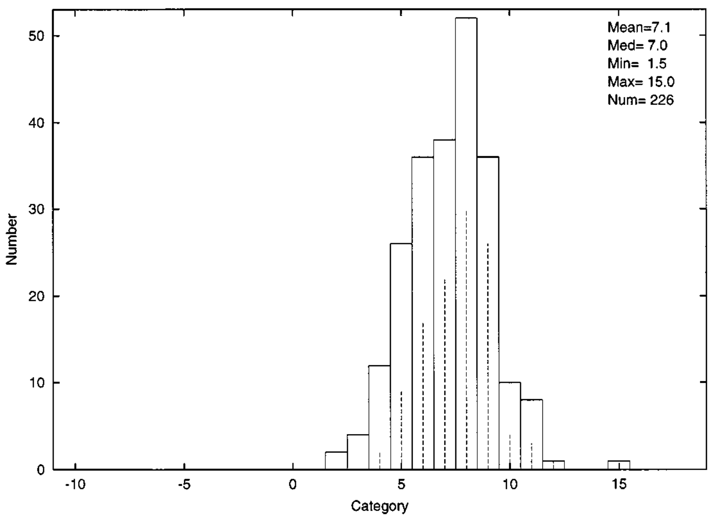
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TABLE 2 **Univariate Statistics for Arithmetic Equity Premia Forecasts**

Description	Mean5 (%)	Mean (%)	SD5 (%)	SD (%)	Minimum (%)	Q1 (%)	Median (%)	Q3 (%)	Maximum (%)	*N*
30-year forecast	7.1	7.2	1.7	2.0	1.5	6	7	8.4	15	226
30-year forecast (S2)	6.7	6.8	2.0	2.2	1.5	5	7	8	15	112
10-year forecast	7.0	7.1	1.9	2.0	−2	6	7	8.4	15	170
5-year forecast	6.7	6.7	2.0	2.6	−4	5	7	8.0	17	171
1-year forecast	6.5	5.8	2.4	4.5	−9.5	4	6	8.5	18	158

NOTE.—The table presents the distribution of arithmetic equity premia forecasts by financial economists. The surveys themselves are reproduced in appendices B and C. The ‘‘S2’’ line reports only responses to the second survey. Other lines report statistics from both surveys after adjustments to first-survey responses, as explained in appendix A. Mean5 and SD5 are the mean and standard deviation after each series is truncated at its fifth and ninety-fifth percentile. Q1 and Q3 are quartiles 1 and 3.

have a 30-year forecast are 0.7% and 1.4%.) This is primarily because of a more frequent presence of negative forecasts rather than a left shift of the distribution. Twelve respondents recommend an estimate that suggests that they believe Treasury bills will outperform stocks over the next year (two believe that this will occur over the next 5 years). Compared to the long-term forecast, there is also considerably more disagreement among economists for what the best short-term equity premium forecast is. The truncated standard deviation across financial economists rises from the 1.7% for 30-year forecasts to about 2.5% for a 1-year forecast; the untruncated standard deviation rises even more.

C. Optimistic and Pessimistic Scenarios

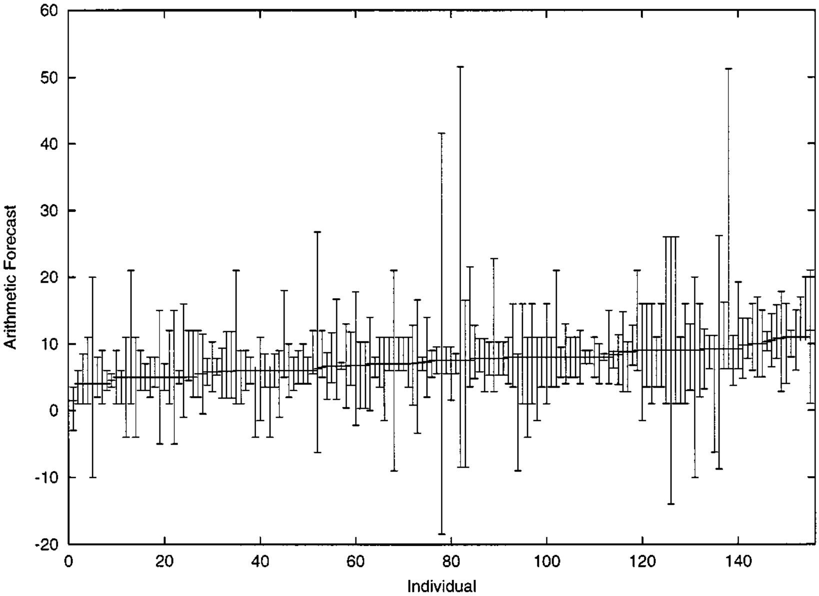
Respondents were also asked to provide their fifth percentile and ninety-fifth percentile scenarios for the equity premium. This was an optional question, so the number of responses to these questions is lower than the number of responses to the earlier question about the 30-year mean forecast. Most finance professors are unlikely to have given much thought to this question, because they do not usually have to provide such figures. Consequently, scenario estimates are intrinsically less reliable than economists' own expected forecasts. This unreliability is reflected in a much wider dispersion of answers and some inconsistencies.[12] The reader should focus primarily on the more robust statistics based on medians and truncated means and not on the simple means.

Figure 2 graphs the expected, most optimistic, and most pessimistic scenarios when individuals are sorted by their 30-year arithmetic forecasts. The statistics are provided in table 3. The top half of table 3 shows that the most optimistic arithmetic 30-year equity premium scenario consensus is somewhere between 11% and 13% per year. (For 56 answers to the second survey, the median and mean is about 11%.) Shorter-term optimistic-case scenarios are successively more optimistic, but the magnitude depends strongly on the central statistic used. The 10-year optimistic scenario arithmetic equity premium forecast lies at around 15%, the 5-year optimistic scenario lies at around 20%, and the 1-year optimistic scenario lies between 25% and 30%. In the minds of many academics, the most recent 3 years were rather unusual (one in 20) realizations.

The bottom half of table 3 shows that the consensus for the pessimistic arithmetic 30-year equity premium scenario (at the 5% level) is between 2% and 3% (median) per year. (For 55 answers to the second survey, the median and mean are about 4%—higher than they are in

12. There were four responses for which the optimistic scenario was not better than the average forecast and one response for which the pessimistic scenario was not worse than the average forecast. These five responses were first eliminated.

A



B

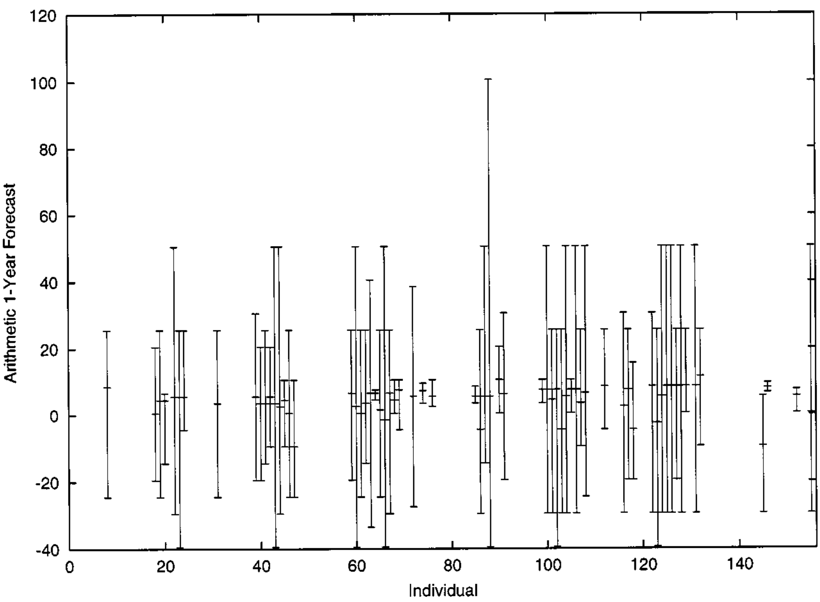


FIG. 2.—The pessimistic-scenario, average, and optimistic-scenario 30-year arithmetic equity premium forecast by 226 financial economists. Forecasts from the first survey were adjusted, as explained in appendix A. In both figures, individuals are indexed (lined up) identically, sorted by their mean forecast. Clustering in 1-year responses is induced because of discreteness in 30-year responses and the sorting procedure. *A*, Distribution of the 1-year expected equity premium; *B*, distribution of the 10-year expected equity premium.

TABLE 3 **Univariate Statistics for Arithmetic Equity Premia Optimistic and Pessimistic Outcome Forecasts**

Description	Mean5 (%)	Mean (%)	SD5 (%)	SD (%)	Minimum (%)	Q1 (%)	Median (%)	Q3 (%)	Maximum (%)	*N*
Optimistic:										
30-year scenario	12.8	13.3	4.9	6.7	3.5	9	11.2	16	51.5	158
10-year scenario	15.4	16.5	5.5	10.9	6	11	15.4	19.1	101.2	104
5-year scenario	21.2	23.1	11.5	22.3	8	11	17.8	26	201	101
1-year scenario	28.6	29.2	14.9	17.0	6	17	26	51	101	71
Pessimistic:										
30-year scenario	2.2	2.2	4.0	4.5	−18.5	1	3.2	5	11	159
10-year scenario	−.8	−1.0	5.4	6.2	−24	−4	1	2.8	8.9	106
5-year scenario	−8.3	−9.0	10.2	12.4	−59	−14	−7.2	.3	8.9	102
1-year scenario	−19.2	−19.6	13.5	11.9	−39	−29	−24	−9	6.5	72

NOTE.—The table presents the distribution of arithmetic equity premia pessimistic and optimistic scenarios (at the 5% level) by financial economists. The surveys themselves are reproduced in appendices B and C. The ''S2'' line reports only responses to the second survey. Other lines report statistics from both surveys after adjustments to first-survey responses, as explained in appendix A. Mean5 and SD5 are the mean and standard deviation after each series is truncated at its fifth and ninety-fifth percentile. Q1 and Q3 are quartiles 1 and 3.

the overall sample [not lower as is the mean forecast].) Shorter-term pessimistic-case scenarios are successively more pessimistic. The 10-year pessimistic scenario forecast lies around 0%, the 5-year pessimistic scenario lies around −8%, and the 1-year pessimistic scenario lies between −20% and −25%.

It is remarkable that even at a probability of one in 20, financial economists tend not to believe that a meltdown of Japanese-style proportion lasts for 10–30 years. Indeed, the confidence of financial economists is remarkable: the typical pessimistic one-in-20-case 30-year scenario foreseen by financial economists is about the equity premium that Mehra and Prescott (1985) consider to be consistent with reasonable risk aversion. This low a number would be consistent with the hypothesis that recent high stock returns are simply reflections of lower required future equity returns, which coincides with the personal view of Siegel (1999) and myself.[13]

There is a negative correlation between the optimistic and pessimistic estimates across economists—economists who indicate a more positive optimistic scenario also indicate a more negative pessimistic scenario. Thus, variation in optimistic/pessimistic scenarios are driven more by differences in confidence than by differences in estimates of the mean. The correlation between the pessimistic and mean equity premium forecast is positive—economists with higher equity premium mean forecasts also provided more favorable pessimistic scenarios. Thus, the pessimistic estimates in the survey tend less to reflect disagreement on where the economy lies in terms of the risk-return tradeoff—in which case one would expect individuals indicating a more positive equity premium mean also to indicate a more negative possible outcome—but more to reflect across-economist views about the attractiveness of the stock market. The term structure of volatility that can be extracted from these extreme forecasts is roughly consistent with a random walk with a volatility of about 15%.

D. The Perceived Consensus

What equity premium do financial economists believe their peers are recommending? This is interesting for a number of reasons. Economists are likely to weigh their otherwise private estimates against what they perceive to be a common consensus and to come up with a posterior estimate that averages the two. An incorrect perception of the estimates of others can delay the process of collective adjustment. If one believes that everyone else believes the equity premium to be 8%, then one may be reluctant to quickly adjust one's view away from 8%. In this sense,

13. To avoid economists' 7% consensus from becoming the ''Welch number,'' I must take the unusual step of quoting my own personal estimate: 2–3% arithmetically over 30 years (see also Welch 1998).

this survey may aid the profession's aggregation of opinions. Further, the perception might indicate the extent to which this survey is informative to researchers. If economists' personal views and views of the profession's consensus already coincided, this article would be less informative and economists' estimates could be considered more reliable.

Table 4 shows that economists' perceived consensus is not monotonic in the horizon, although differences are small. The belief is that the 30-year and 5-year equity premium consensuses are each about 7.5%, about 8% for the 10-year consensus, and 6% for the 1-year consensus. When this is compared to the equity premia forecasts themselves (on the left side), the popular view is that their own consensus is between 0.5% and 1% higher than what it actually is. Except on the 1-year horizon (which has fewer responses and higher standard series deviation), the difference is statistically significant. Note also that economists believe more in their ability to judge the consensus than to judge the equity premium itself, even over 30 years. However, there is still substantial disagreement among economists.

The influence of this overestimate is further explored in table 5. The left part of the table provides the univariate means and standard deviations for the set of researchers with both a forecast and a consensus estimate. Again, the misperception is between 0.5% and 1.0%. However, economists' own estimates need not be influenced by their perceptions of the prevailing consensus—for example, everyone may invariably believe that others use the Ibbotson 8% figure and, thereby, have their own equity premium forecast be unaffected. To explore whether there is an ''anchoring'' effect, that is, whether economists have a perception of the consensus and shade their own equity premium forecast toward this perception, table 5 describes the results of a regression with the demeaned consensus on the demeaned forecasts.[14] A coefficient of one indicates perfect shading, a coefficient of zero perfect irrelevance.

The regressions reported on the right side of table 5 show that the same economists who indicate that they believe the professional consensus to be higher also offer a higher equity premium forecast themselves. This is especially pronounced on the 1-year and 30-year horizons. It is weaker on the 5-year and 10-year horizons. Perhaps financial economists often use either short-horizon (1-year) or long-horizon (30-year) rates but less often use either 5-year or 10-year rates.

14. Naturally, economists may settle on their own forecast and believe that it is also held by the profession. Ross, Greene, and House (1977, p. 280) reported a series of studies in which subjects show a tendency to ''see their own behavior choices and judgments as relatively common and appropriate to existing circumstances while viewing alternative responses as uncommon, deviant, or inappropriate.'' Marks and Miller (1987) summarize this literature and describe some explanations. However, in this equity premium survey context (in which there is no temporal precedence), it is not even clear if there is a philosophical difference between this view (in which own choices influence the consensus perception) and the view stated in the text.

TABLE 4 Univariate Statistics for Economists' Arithmetic Equity Premia Consensus Estimates

Actual Mean (%)	Description	Mean5 (%)	Mean (%)	SD5 (%)	SD (%)	Minimum (%)	Q1 (%)	Median (%)	Q3 (%)	Maximum (%)	*N*
7.1	Perception 30-year	7.6	7.6	1.5	1.7	1	6.5	7.8	9	12	216
6.7	Perception 30-year (S2)	7.5	7.4	1.6	1.9	1	6	7	9	12	112
7.0	Perception 10-year	8.1	8.2	1.3	1.4	4	7	8	9	12	101
6.7	Perception 5-year	7.7	7.6	1.6	1.7	1	7	8	9	11	99
6.5	Perception 1-year	6.0	6.0	2.3	2.4	0	6	7	8	12	69

NOTE.—The table presents the distribution of economists' perception of the prevailing equity premia forecast. The surveys themselves are reproduced in appendices B and C. The ''S2'' line reports only responses to the second survey. Other lines report statistics from both surveys after adjustments to first-survey responses, as explained in appendix A. Mean5 and SD5 are the mean and standard deviations after each series is truncated at its fifth and ninety-fifth percentile. Q1 and Q3 are quartiles 1 and 3.

TABLE 5 Statistics for Economists' Arithmetic Equity Premia Consensus Estimates

	Univariate Statistics, Common				$\hat{A}_i - \hat{A}_i = \alpha_0 + \alpha_1(\hat{C}_i - \hat{C}_i) + e_i$			
Description	Mean_A (%)	SD_A (%)	Mean_C (%)	SD_C (%)	α_0	α_1	SE (α_1)	N
30-year	7.1	1.9	7.6	1.7	.0	.62	.06	214
30-year (S2)	6.7	2.1	7.4	1.9	.0	.73	.08	111
10-year	7.2	1.8	8.2	1.4	.0	.31	.12	99
5-year	6.7	2.3	7.7	1.7	.0	.28	.14	97
1-year	4.7	4.2	6.0	2.4	.0	.79	.19	67

NOTE.—The left side of the table presents the mean and standard deviation of economists' arithmetic equity premia forecasts (A_i) and their perceptions of the prevailing equity premia consensus forecast (C_i), provided an individual supplied both an equity premium estimate and a consensus estimate for the same horizon. The right side provides ordinary least squares regression output when the demeaned arithmetic forecast ($\hat{A}_i - \hat{A}_i$) is regressed on this economist's demeaned perception of the professional consensus about the same-horizon arithmetic forecast ($\hat{C}_i - \hat{C}_i$). The surveys themselves are reproduced in appendices B and C. The ''S2'' line reports only responses to the second survey. Other lines report statistics from both surveys after adjustments to first-survey responses, as explained in appendix A.

In sum, the regressions are consistent with an attempt by economists to provide a forecast that lies between their personal estimate and their perceived consensus belief. If this is the case, the results of this survey may help economists improve their anchoring their own predictions relative to the profession, which would cause a downward revision in the aggregate consensus forecast.

E. Other Statistics

The most interesting remaining question concerns the influence of market movements. Almost all finance professors subscribe to the view that markets follow a random walk in the short run. Updating of equity premia opinions is likely to be a very slow process, and changes in opinion are likely to be marginal only. Still, participants on the second survey were also asked to indicate whether they would be positively, negatively, or not at all influenced by stock market movements on the margin. Coding this feedback rule as $+1$, -1, and 0, respectively, the mean response by 112 participants to this question was -0.367, with a standard deviation of 0.5. Thus, average participants claim that a bull market leads them to predict a lower future equity premium.[15]

Finally, the second survey asked whether financial economists considered themselves to be relatively better informed with respect to the equity premium and whether they have published in the area. Fifty-one respondents indicated no prior relevant publication, 13 of whom considered themselves less qualified (mean arithmetic 30-year equity premium: 6.6%), three of whom considered themselves better qualified (mean: 7.3%), and 35 of whom considered themselves equally qualified (mean: 7.3%). Of the 17 individuals who indicated a relevant publication, six considered themselves better qualified (mean: 6.4%) and 11 considered themselves equally qualified (mean: 6.6%). Thus, lower forecasts tend to be either by individuals who had published related work or by individuals who felt ill-qualified to answer the survey.

IV. Questions Debated in Academic Finance

The first survey took the opportunity to add a set of questions that asked respondents' views on issues that are commonly debated in the academic literature and on which most researchers who attend finance

15. Respondents indicating that they follow a positive feedback rule are also more optimistic about the market. Sixty-six individuals indicate they are not influenced by stock market movements on the margin and provide 7.3% as their equivalent average; 43 individuals follow a negative feedback rule, with 5.7% as their equivalent average; and only two individuals follow a positive feedback rule (with 4% and 8% as their average arithmetic 30-year equity premium estimates). The fact that there is a correlation between the indicated feedback rule and the forecast should not be surprising, given the stellar recent stock market performance.

conferences and seminars are likely to have an interest in (or at least an opinion on). Answers could range from 1 (strongly disagree) to 3 (neither agree nor disagree) to 5 (strongly agree). Table 6 lists both the questions and the received responses (see also app. B).

The first question asked whether the stock market is more likely to follow a random walk or more likely to have long-horizon negative autocorrelation. It turns out that more professors have an opinion (‘‘agree’’ or ‘‘disagree’’) than no opinion (‘‘neither agree nor disagree’’), but when they do, this opinion is roughly evenly split. The jury is still out.

The second question concerned the use of the capital asset pricing model (CAPM) for capital budgeting purposes. Although a sizable minority of professors do not believe that it is ‘‘good enough’’ to be used for capital budgeting purposes, a majority feels that it is.

The third question asked whether size and book-market values are more likely to be characteristics (in the Daniel and Titman [1997] sense) or more likely to be risk factors (in the Fama and French [1993] sense). The respondents mildly favored the view that they are characteristics.

The fourth question asked whether the risk factors or characteristics (size, book-market, price-earnings, or momentum) are likely to be useful for portfolio selection in the future. The profession does not have a strong view on this issue. The ambivalent view is remarkable, given the large number of publications and strong ongoing interest in detecting past ‘‘anomalies.’’ Prior to conducting this survey, it had seemed to me that the common working hypothesis in finance is that at least the major anomalies are universally viewed to represent persistent phenomena. This survey does not confirm this hypothesis.

The fifth and sixth questions asked whether markets are basically efficient and arbitrage-free. There was much agreement here: financial economists feel that, by and large, financial markets are efficient. The sixth question asked whether economists believe in arbitrage opportunities—an ability to make money without risk. Apparently, the respondents did pay attention and also marked a strong view in favor of absence of arbitrage.

The only question that elicited more support than absence of arbitrage was the question about whether governments should intervene more in financial markets. The profession strongly feels that this would be counterproductive.

Finally, there are two questions related to corporate finance. The eighth question asked whether large Fortune 500 firms have too little debt in the capital structure and whether share repurchases dominate dividends as a means of payout. The profession has no views on whether large Fortune 500 firms would be better off with more debt

TABLE 6 Questions on Issues Debated in Academic Finance

	Question	Univariate Statistics		Response Count					
		Mean	SD	1	2	3	4	5	Total
Q1	I believe that the true stock-market index's 3–5-year return autocorrelations are zero (random walk [à la Richardson, choose agree]), rather than negative (à la Fama-French, Shiller, choose disagree).	2.85	1.1	7	42	17	31	5	102
Q2	I believe that the CAPM is a good enough approximation of reality to deserve use in capital budgeting contexts.	3.41	1.1	5	22	19	51	13	110
Q3	I believe that size/book-market/price-earnings/momentum power can explain cross-sectional returns primarily because they are **risk** factors (in the Fama-French sense) and not just firm **characteristics** (in the Daniel-Titman sense).	2.64	1.2	18	33	19	20	7	97
Q4	I believe that size/book-market/price-earnings/momentum factors are **stationary** enough, so that they will work well in the future in explaining cross-sectional expected return differences.	2.77	1.0	9	37	24	26	3	99
Q5	I believe that, by and large, public securities market prices are efficient.	3.84	.8	1	9	13	71	16	110
Q6	I believe that, by and large, public securities market prices offer arbitrage opportunities.	2.16	.9	22	60	17	8	2	109
Q7	I believe that, by and large, government regulation and intervention in public securities markets should be increased. (Please select **middle** if intervention should be held steady, and **strongly disagree** if intervention should be decreased.)	2.13	.8	29	39	40	0	1	109
Q8	I believe that Fortune-500 U.S. corporations, by-and-large, have too little debt in their capital structure.	3.09	1.0	4	26	23	30	6	89
Q9	I believe that Fortune-500 U.S. corporations, by-and-large, should use share repurchases instead of dividends as payout means.	3.68	1.0	4	7	21	42	18	92

NOTE.—''Response Count'' tallies number of respondents selecting each number on a 1–5 scale, where 1 = disagree and 5 = agree; see app. B for details.

in their capital structure. But they perceive dividends to be an unwise mechanism for corporations to disburse funds relative to share repurchases.

In sum, it is remarkable how weak the views of financial economists are, even on issues, such as absence of arbitrage, that are typically seen as relatively uncontroversial: about one-quarter of the participants responded with a value between ‘‘strongly disagree’’ and ‘‘neither agree nor disagree.’’ On most questions, there was neither strong agreement nor strong disagreement by many participants, even when central issues in finance and stark positions were concerned.

V. Conclusion

This article presents the results of the first comprehensive survey of financial economists. Two hundred and twenty-six finance professors shared their forecasts and perspectives on the equity premium and some related issues. The primary findings are as follows.

1. The average arithmetic 30-year equity premium consensus forecast hovers around 7%. On the one hand, this is not as high as the current historical 9.4% arithmetic average quoted by Ibbotson or even as high as the Brealey and Myers (1996, p. 146) quoted average of 8.4% per year. Practitioners who would prefer to base their estimates on the perceived academic consensus should thus use a lower 7% arithmetic premium instead.

On the other hand, the 7% equity premium consensus forecast seems too high for comfort among macroeconomists, who argue that stock prices have risen because rational, informed investors now require and expect lower future equity rates of return. These rational, informed investors are not the finance professors surveyed here. Indeed, the 1%–3% theoretical estimate is roughly the academic consensus for a worst-case (one in 20) 30-year scenario.

2. There is a term structure of equity premia forecasts: short-term forecasts are lower than long-term forecasts. (Unfortunately, this consensus also prevailed on the first survey in early 1998!)

3. There is evidence for a ‘‘false-consensus effect.’’ On average, finance professors believe that their consensus is about 0.5%–1% higher than it actually is, especially on shorter horizons; there is also a strong correlation between researchers’ perceptions of the consensus and their own estimate. This is evidence that participants anchored their own responses on their perceptions of the professional consensus—and it may indicate that the publication of this article may shade down the equity premium consensus forecast among financial economists.

4. On average, financial economists claim to revise their forecast down as markets increase (‘‘negative feedback’’).

5. There is strong agreement among financial economists that the government ought to decrease its intervention and regulation of public securities markets and that markets are by and large efficient and arbitrage-free. They also would mildly recommend to corporations to use more share repurchases and fewer dividends. And they have no strong views, one way or another, whether the stock market follows a random walk, whether firms can reasonably use the CAPM for capital budgeting, whether large firms should use more debt financing, whether size and book-market are risk factors or characteristics, or even whether size and book-market will continue to predict stock returns in the future.

Appendix A

Adjustments

The first survey considered the request for an average, paired with the well-known Brealey and Myers/Ibbotson 8% estimate, to mean ''arithmetic''; it also considered the use of a long-term bond for long-horizon premia (rather than short-term bonds) to be the relevant definition. Because neither is a standard in this literature, this introduced ambiguities in the first (but not second) survey.

Geometric versus arithmetic averages. A Taylor approximation yields

$$\frac{[(1+r)^T - 1] - T \cdot r}{T} \sim \left(\frac{T-1}{2}\right) r^2 + \left[\frac{(T-1)\cdot(T-2)}{6}\right] r^3 + O(r)^4, \quad \text{(A1)}$$

where r is the rate of return and T is the horizon, which can be used to adjust geometric and arithmetic averages. Because market returns are not perfectly serially uncorrelated (see Roll 1983), the historical 1926–97 differences provide a better adjustment.

	Number of Holding Years						
	1	2	3	4	5	10	30
Equity premium (%)	.0	1.0	1.4	1.7	1.8	1.9	1.8

To correct the casual distinction between geometric versus arithmetic averages, I e-mailed participants of the survey with a request for clarifications of answers generated by the first survey. This revealed that about a third of respondents had originally quoted a geometric average. To adjust answers to the first survey, for the 25 individuals who indicated that their answer was for a geometric average (out of 85 who responded to the request for clarification), the historically appropriate adjustment of 1.8% was added to 5-year, 10-year, and 30-year estimates. For the 31 individuals who did not respond to the request for clarification, the following adjustment was computed. Among the 85 received clarification responses, a regression was fitted with the dependent variable being a dummy indicating whether the response was geometric (G_i) and the independent variable being the quoted 30-year forecast (Q_i):

$$G_i = 0.823 - 0.0877 \cdot Q_i + \text{noise}_i. \tag{A2}$$

The fitted estimate was used as a ''probability'' adjustment ($p_g(Q_i) \equiv \hat{G}_i$) to translate the original answers by the 31 participants who had not responded to the request for clarification into arithmetic averages (a_i):

$$a_i = Q_i + p_g(Q_t) \cdot 1.8\% \tag{A3}$$

for 5-year, 10-year, and 30-year forecasts. Of course, no adjustment was necessary for 1-year forecasts.

Bonds versus bills. Historically, over the 1926–98 period, long-term bonds offered a geometric return of about 5.3% (arithmetic: 5.8%), whereas short-term bills offered a return of about 3.8%. However, these averages can be deceptive. The return on both instruments over the 1926–81 period was identical; the long-term bond has been a much better performer only since 1981. Over the sampling period (October 1997–May 1999), the quoted yield difference between the short-term and long-term bond was about 1.1%. (Other bond features, e.g., the value of a long-term call feature, reduce this figure.)

The first survey asked for the difference between the equity premium and the long bond, whereas the second survey asked for the difference between the equity premium and short-term treasuries. To translate all quoted first-survey forecasts into bill-adjusted equity premia, a reasonable adjustment into Treasury bill–adjusted rates was added (1% for the 5-year, 10-year, and 30-year forecasts, and 0.5% for the 1-year forecasts).[16] A reader interested in using an equity premium forecast relative to a bond rather than a bill should subtract about 0.5% to the 1-year bill-quoted equity premia and about 1% to the longer-term bill rates. These adjustments were applied to all quoted figures from the first survey: long-horizon and short-horizon equity premia, optimistic and pessimistic scenarios, and consensus estimates.

Other adjustments. In addition, there were five extreme outliers on the first survey, in which the respondent quoted either 12% or 1,500%. I sent e-mails to these respondents to ask them if this was their correct estimate of the per annum equity premium. All five respondents replied that they had misread the survey, either assuming that I had asked for the market expected return (not net of the risk-free rate) or that I had asked for a compound figure. Although it is possible that they meant to say 12% and I unduly influenced them, this is unlikely—these particular finance professors happened to have made their relevant views on this issue publicly known in other venues. In four cases, the answer in the survey was corrected. In one case, the respondent indicated that his numbers were wrong but that he was too busy to fill out the survey again. This answer has been removed from the survey. The second survey had some automatic checks to alert respondents to extremely large or small estimates, which were primarily useful for catching individuals quoting total rather than average returns.

Perceived clarity. The second survey also gathered some descriptive statis-

16. This is lower than the historical 1.5% difference because some participants may have assumed a definition of equity premia without reading the question more carefully. (This adjustment adds 112/226*1.0% $\sim$ 0.5% to the overall average.) The closeness of results from the first survey and the second survey, especially after adjusting for the rising equity market, further indicates that this issue has been dealt with appropriately.

tics. For 110 responses, the average time spent on the survey was about 3.5 minutes. On a scale of 1–10, with 1 indicating perfect clarity and 10 indicating perfect opacity, the mean was 1.8. There was a small negative correlation between perceived clarity and equity premia mean estimates, and a small positive correlation between time spent and equity premia mean estimates. In a regression, the coefficients indicate that an individual who felt one point more confused and an individual who spent about 2 minutes less indicated an arithmetic equity premium mean of about 0.25% less.

Other adjustments. Residual adjustment error is likely to play only a small role. Sampling variation and the bull market of 1998 probably account for much of the 0.4% difference between the overall survey figures and the second survey figures. This difference is well within the range of disagreement among economists' answers.

Appendix B

The First Survey

Market Risk Premium ($E\,R_m - r_f$) Survey

Dear Colleague:

Please take 5 minutes to answer the questions in this survey. The first set of questions concern the market risk premium. It should take about 3 minutes of your time. The second set of questions concern such issues as "will the size/book-market/etc. characteristics continue to predict expected return characteristics?," and should take another 3 minutes. All survey questions pertain exclusively to the U.S. market.

I hope the consensus view on these questions will be of great interest to the finance profession. I am planning to publish an academic paper that summarizes the results of this survey.

Market Risk Premium

(Background Information: As of October 6, 1997, the S&P-500 stood at 965, the DJ stood at 8,040, the 30-year T-bond stood at 6.3%, the 3-month T-bill stood at 4.9%.)

Define the so-called "market risk premium" as *your* expected return on the SP500 minus the equivalent treasury bond, please give *your* opinion on the *expected* (forward-looking) annualized market risk premium. (Note: use this definition, even if this spread reflects factors other than risk. The famous Ibbotson "historical" equivalent is 8.2%.) I would like your estimate of the future market risk premium, conditional today, i.e., beginning on the day on which you fill out the survey.

Market-Risk-Premium-Survey

Per-Annum Market Risk Premium: Exp. Return on SP500 *MINUS* Risk-Free Bond

	1-year	5-year	10-year	30-year
Total Return Translation Table	not necessary	click here	click here	click here
Your Expectation (Mean, Per-Annum)				
Your "Worst Case" (<5% prob), **Per-Annum**				
Your "Best Case" (<5% prob), **Per-Annum**				
Guess the academic finance profession's mean e.g., as expressed on this survey by other finance professors				

What percentage of their new retirement contributions would you advise a new finance colleague to put into stocks (rather than bonds)? %

I permit publication of my name as one in many in a list of participants **with identification of my name with the risk premium choices above**: yes no

I permit publication of my name as one in many in a list of participants, but I do not permit publication of my choices together with my name. yes no

Additional Questions

The following are 9 "optional" questions. Please answer them. They concern basic debates in finance today. If you do not like a particular question, or do not have a view on it, just leave it blank. Remember: I am asking for your personal view, not whether a null hypothesis can be rejected with 95% probability!

I permit publication of my name as one in many in list of participants on the following questions: ◉ yes ○ no

(Unlike answers to the above questions, for which I requested permission to identify the respondent, the answers to the questions below will be strictly anonymous and confidential.)

	Question	Strongly Agree	Agree	Middle	Disagree	Strongly Disagree	No View
1	I believe that the true stock-market index's 3-5-year return autocorrelations are zero (random walk [ala Richardson, choose agree]), rather than negative (ala Fama-French, Shiller, choose disagree).	○	○	○	○	○	○
2	I believe that the CAPM is good enough an approximation of reality as to deserve use in capital budgeting contexts.	○	○	○	○	○	○
3	I believe that size/book-market/ price-earnings/momentum power can explain cross-sectional returns primarily because they are **risk** factors (in the Fama-French sense) and not just firm **characteristics** (in the Daniel-Titman sense).	○	○	○	○	○	○
4	I believe that size/book-market/ price-earnings/momentum factors are **stationary** enough, so that they will work well in the future in explaining cross-sectional expected return differences.	○	○	○	○	○	○
5	I believe that, by and large, public securities market prices are efficient.	○	○	○	○	○	○
6	I believe that, by and large, public securities market prices offer arbitrage opportunities.	○	○	○	○	○	○
7	I believe that, by and large, government regulation and intervention of public securities markets should be increased. (Please select **middle** if intervention should be held steady, and **strongly disagree** if intervention should be decreased.)	○	○	○	○	○	○
8	I believe that Fortune-500 U.S. corporations, by-and-large, have too little debt in their capital structure.	○	○	○	○	○	○
9	I believe that Fortune-500 U.S. corporations, by-and-large, should use share repurchases instead of dividends as payout means.	○	○	○	○	○	○

Identification

Date (Fill in only if printed, not if filled out via WWW)		
Your Email Address:		
Your Name:		
Professional Status:	Professor PhD Student MBA Student	PhD Graduate MBA Graduate Other ;
Area	Finance Accounting	Economics Other ;
Primary specialization:	Asset-Pricing - Empirical Asset-Pricing - Theory Asset-Pricing - Both Asset-Pricing - Derivatives Asset-Pricing - Fixed Income	Corporate Finance Market Microstructure Other Empirical Other Theoretical Other

Feel free to comment, but please note that you should instead send me email about this survey if you think I have made a mistake (or that I could do the survey better). I will not see these comments until I tabulate the surveys.

Submit Survey Answers | Reset Survey Answers

Please do not forget to check your own WWW and email entries in the directory: http://linux.agsm.ucla.edu/dir/ (or to look up anyone of your choice).
For feedback about this website, please send email to ivo.welch@anderson.ucla.edu. To get back to the home page, click homepage.

Appendix C

The Second Survey

Ivo Welch, UCLA
January 1999

[The intent of this survey is to gauge consensus estimates of the equity premium from academic and academically oriented finance and economics professionals, e.g., members of the AFA, WFA, AEA, or ASSA. If you have difficulties filling out this survey, please send an email to Ivo Welch.]

equity-survey

Dear Colleague:

Please take a moment to answer the 5 primary questions in this survey (and to input your email address). After you have filled out the form, please press the "submit" button at the end of the page.

The distribution of answers to this survey will be published in an academic paper, possibly in the Journal of Finance. Your identity will be strictly confidential, i.e., it will not be released or published anywhere, much less jointly with your estimates.

The following 5 questions revolve around 30-year forecasts of the equity premium and the stock market. For your convenience, equivalent historical averages, published by Ibbotson, for the 1926-1997 period are in the right-most column of the table. Please enter percentages without "%". PLEASE send email if you encounter difficulties.

	Please Fill In	Requested (30 year forecast)	Long Definition all over the next 30 years	Historical Ibbotson
1	% per-annum	**Stock Market** (S&P) *Arithmetic* Per-Annum Rate of Return, Nominal	*Your* expected arithmetic per-annum return on the stock market (e.g., the S&P500) over the next 30 years. if unclear, click for mathematical definition.	13.0% *
2	% per-annum	**Equity Premium,** *Arithmetic* Per-Annum Average Rate	*Your* expected arithmetic per-annum average return over the next 30 years on: the stock market (S&P500) return minus the arithmetic per-annum average return on rolled-over 30-day T-bills. if unclear, click for mathematical definition.	9.2% *
3	% per-annum	Equity Premium, **Geometric** Per-Annum Average Rate	*Your* expected *geometric* per-annum average return over the next 30 years on: the stock market (S&P500) return net of the *geometric* per-annum average return on rolled-over 30-day T-bills. if unclear, click for mathematical definition.	6.9% *
4	% per-annum	Other Economists' Forecasts of Equity Premium, Arithmetic Average, 30 Years	What do you think will be the average answer of other economists to this survey's Question 2?	
5	◯ Decrease it very slightly (neg feedback) ◯ Not even the slightest epsilon change ◯ Increase it very slightly (pos feedback)	◉ Presume that the stock market closed up much higher today, while interest rates remained constant. On the margin, how would today's positive stock market return influence your forecast of the 30-year arithmetic equity premium tomorrow?		

Identity Information

The identity information on this page will be held strictly confidential.

Background ◉	○ Finance/Econ Professor ○ Other Professor ○ Finance/Econ PhD or PhD Student ○ Other
Please fill in your email address:	
Please fill in the date:	used to infer current stock price level
How much time did you spend on this survey?	
Was this survey clear? ◉	Very Clear 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ Not Clear at All

◉ This is my first submission to this survey.
○ This is an update of my earlier submission, indicating how my views have changed.
○ This entry supersedes an earlier erroneous entry.

○ I would likely participate in a future survey.
◉ I would not object to receiving a very short email request for a future survey.
○ I would never participate in such a survey again. Please do not email me any such requests.

After the results of this survey will have been written up in a working paper, and posted on the WWW.

◉ Don't bother sending me a copy---I already have too many papers on my desk.
○ I would like to receive a short email alert with the URL pointing to the paper.
○ I would like to receive a printed copy of the paper by U.S. mail.
Postal Address:

Optional Questions

Please answer any of the following 10 questions, omit what you do not want to answer, then press the submit button below:

	Please Fill In	Requested	Long Definition
6	% per-annum to % per-annum	95% Confidence Range for Your *Arithmetic* Equity Premium Forecast, **30-Years** (Q2)	*Your* 95% confidence interval around *your* 30-year arithmetic equity premium per-annum rate forecast (i.e., your answer to Question 2). if unclear, click for mathematical definition.
7	○ Same ○ Different	◉ Would your answer to question 2 (your equity premium forecast) be the same if the time frame was 1, 5, 10, or 100 years, instead of 30 years? (If different, please fill in differing choices below in questions 8 through 11.)	
8	% per-annum	Equity Premium, Arithmetic Mean, **1 Year**	*Your* expected forecast of the arithmetic equity premium over the next 1 year. (Like Question 2, but different time horizon.) if unclear, click for mathematical definition.
9	% per-annum	Equity Premium, Arithmetic Mean, **5 Years**	*Your* expected forecast of the arithmetic equity premium over the next 5 years. (Like Question 2, but different time horizon.) if unclear, click for mathematical definition.
10	% per-annum	Equity Premium, Arithmetic Mean, **10 Years**	*Your* expected forecast of the arithmetic equity premium over the next 10 years. (Like Question 2, but different time horizon.) if unclear, click for mathematical definition.
11	% per-annum	Equity Premium, Arithmetic Mean, **100 Years**	*Your* expected forecast of the arithmetic equity premium over the next 100 years. (Like Question 2, but different time horizon.) if unclear, click for mathematical definition.
12	• ○ The equity market is essentially a random walk. • ○ There may or may not be mean reversion in equity premia, but the statistical significance thereof is so low that these changing means have almost no influence on my asset allocation decision. • ○ The term structure of (my expected) equity premia has (or should have) a significant influence on my asset allocation decisions. • ◉ No Answer.		
13	○ Above Average ○ About The Same ○ Below Average	◉ How do you consider your ability to forecast the equity premium, relative to the average finance professor?	
14	○ Yes ○ No	◉ Have you published on the subjects of this survey (the equity premium or aggregate stock returns)?	
15	% per-annum	30-Year Inflation, Expected Arithmetic Average	The arithmetic average of the annual CPI inflation rates over the next 30 years. (The historical average from 1926 to 1997 was 2.5%.) if unclear, click for mathematical definition.

Submit Survey Answers | Reset Survey Answers

Your help is highly appreciated.

* Ibbotson data are computed from 1926 to 1997 means, and provided only for calibration purposes---these numbers clarify comparables to finance professors familiar with the basic series. They are not guaranteed to be correct---please contact Ibbotson Associates for definite and up-to-date numbers.

Mathematical Definitions of Requested Expectations

Question 1: Stock Market Return, Nominal, Arithmetic Average, 30 Year Horizon

Your expectation for the arithmetic stock market return (ASMR):

$$\text{ASMR}(30) = \left(\frac{1}{30}\right) \cdot \sum_{y=1}^{30} \text{mr}_y ,$$

where mr_y is the (unknown) one-year stock market return in y years. (Note also that all stock market related questions do not request the performance of stocks as constituted in the current S&P index, but the performance of stocks in the then-prevailing S&P in the future.) click here for more details on requested time frame.

Question 2: Equity Premium, Arithmetic Average, 30 Year Horizon

Your expectation for the arithmetic equity premium (AEQP):

$$\text{AEQP}(30) = \left(\frac{1}{30}\right) \cdot \sum_{y=1}^{30} (\text{mr}_y - \text{tbr}_y) ,$$

where mr_y is the (unknown) one-year stock market return in y years, and tbr_y is the (unknown) one-year return on rolled-over short-term (30-day) treasury bonds in y years. click here for more details on requested time frame.

Question 3: Equity Premium, <u>Geometric</u> Average, 30 Year Horizon

Your expectation for the **geometric** equity premium (GEQP):

$$\text{GEQP}(30) = \frac{\text{GSMR}(30)}{\text{GTBR}(30)} ,$$

$$\text{GSMR}(P) = \sqrt[P]{\prod_{y=1}^{P}(1 + \text{mr}_y)} \qquad \text{GTBR}(P) = \sqrt[P]{\prod_{y=1}^{P}(1 + \text{tbr}_y)}$$

where mr_y is the (unknown) one-year stock market return in y years, and tbr_y is the (unknown) one-year return on rolled-over short-term (30-day) treasury bonds in y years. click here for more details on requested time frame.

Questions 7-10: Equity Premium, Arithmetic Average, Different Horizons

Your expectation for

$$\text{AEQP}(P) = \left(\frac{1}{P}\right) \cdot \sum_{y=1}^{P} (\text{mr}_y - \text{tbr}_y) ,$$

where P=1 in question 7, P=5 in question 8, P=10 in question 9, and P=100 in question 10. As above, mr_y is the (unknown) annual stock market return in y years, and tbr_y is the (unknown) annual return on rolled-over short-term (30-day) treasury bonds in y years. click here for more details on requested time frame.

Question 13: 30-Year Inflation, Arithmetic Average

Your expectation for

$$\text{AIR}(30) = \left(\frac{1}{30}\right) \cdot \sum_{y=1}^{30} i_y ,$$

where i_y is the (unknown) annual inflation rate "in y years." click here for more details on requested time frame.

Timing Details

The 30-year questions ask you for your forecasts from tomorrow through 30 years after tomorrow. Thus, if you answered this questionaire on 12/31/1998, the 30-year questions asks you for annualized forecasts using returns from 1/1/1999 to 12/31/2028--i.e., from 1999 (inclusive) through 2028 (inclusive). Note also that *within* each year, the returns are compounded (not averaged), even if the requested average is arithmetic.

Similarly, if you answered this questionaire on Dec 31, 1998, the 1-year forecast question 7 asks you for your forecast for 1999, and the 100-year forecast question 10 asks you for your forecast from 1999 (inclusive) through 2028 (inclusive).

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