Appendix A
Round 1 Questionnaire

Round 1
Study of Selected Economic Variables
Using the Delphi Method

On behalf of the Society of Actuaries, I have the honor to invite you to participate in a Study to make long term (20 year) forecasts of four selected economic variables (annual increase in CPI, 10 Year Treasury yield, S&P500 total return, Corporate Baa yield) and the factors that can change their direction. You have been selected by members of the Society or its consultants because of your insight and knowledge underlying the variables we have chosen to include. Our focus in this Study is on your judgments, underlying analysis, methods of estimation and techniques used by you to quantify your estimates. We are interested in plausible future developments that could change these estimates and your rationale for the resulting change in your estimates.

The Society of Actuaries is a nonprofit <u>educational</u>, <u>research</u> and professional society of 17,000 <u>members</u> involved in the modeling and management of financial risk and contingent events. The mission of the SOA is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal problems involving uncertain future events. This Study is being conducted to provide actuaries and other financial professionals with an alternative framework with which to project future values of economic variables, an alternative which relies more on judgments from a diverse panel of experts than is usually utilized under more traditional stochastic and deterministic methods.

No attributions will be made, but respondents will be listed as participants in the final report which will, as appropriate, be widely disseminated in the professional literature.

A second round, based on the responses to the enclosed questionnaire, will be sent to you in two or three months. Please contact us with any questions and return your responses in time to arrive at the Society by December 1, 2004. You can respond (email preferred) to Ronora Stryker (email rstryker@soa.org, fax 847 273-8514, ph 847 706-3614) with a copy to Ted Gordon (email tedjgordon@att.net,
fax 860 434-0870).

We appreciate your willingness to participate in this initiative.

Sincerely yours,

Steven Easson, FSA, FCIA, CFA
Chairperson of the Society of Actuaries Project Oversight Group on the Study of Selected Economic Variables Using the Delphi Method.

Round 1 Questionnaire

OVERVIEW OF QUESTIONNAIRE

Please complete the portions of this questionnaire in which you are expert or interested. You may omit any of these questions without affecting the analysis planned for this Study.

This first round questionnaire asks for your judgments about selected variables. As you will see, the four variables under consideration are:

1. Annual increase in the Consumer Price Index
2. 10 Year Treasury Spot Yields
3. S&P 500 Total Rate of Return
4. Corporate Baa Spot Yields

All data are for the U.S. and brief definitions and historical data sources for each variable appear at the end of this questionnaire.

This questionnaire has three parts. You will be asked:

➢ First, to provide your judgments about the values you expect each variable to attain in 20 years, and the "highest" and "lowest" plausible values you see for these variables, and the reasoning for your judgments.

➢ Second, to list for each variable some prospective developments that could significantly alter your estimates.

➢ Third, to provide your view about the usefulness of judgmental methods in various applications.

PARTICIPANT'S BACKGROUND

No attributions will be made, but for demographic analysis, please check the appropriate boxes (answering more than one slot in each list is OK).

Name: _____

My primary employment is in:

Government Agency _____
Insurance Industry Corporation_____
Other Corporation or Business _____
Non Government Organization _____
University _____

Independent Consultant ____
Other _____

Years of experience in the following fields:

Economist _____
Actuary_____
Investment Manager _____
Futurist _____
Modeler _____
Politician _____
Scientist _____
Other (Specify profession) _____

Mailing Address: (We plan to send a small token of appreciation for your participation)

_____
_____
_____

Phone Number: (for follow up if necessary)

_____

QUESTION 1.

Part (a)

The table below lists some historical data for each of the variables. Please provide your judgments as follows.

Imagine the world in 2024. Please enter your judgments about the values you think these variables may attain in that year. In:

Column 1, please enter the lowest plausible value; that is the value which you believe has a 90% chance of being exceeded.

Column 2, please enter the expected value; that is the value that is equally likely to exceed or fall below the actual result in 2024.

Column 3, please enter the highest plausible value; that is the value which you believe has a 10% chance of being exceeded.

| | | | | 1 | 2 | 3 |
Variable	Highest Value in last 40 years	Lowest Value in last 40 years	Current Value (2003)	Lowest plausible Value in 2024	Expected Value in 2024	Highest Plausible Value in 2024
1. Consumer Price Index (% annual Increases)	13.30	1.00	1.90			
2. 10 Year Treasury Spot Yields (% monthly peak)	13.72	4.03	4.27			
3. S&P 500 Total Rate of Return (percent)	33.3	-30.6	20.1			
4. Corporate Baa Spot Yields (%)	16.55	4.81	6.60			

Part (b)

Since the actual values that will be realized in 2024 are dependent on what happens in the next 20 years, we also want your ideas on the key developments that can affect the course of the variables in that interval. For each of your answers in Columns 1-3, please give us reasons for your views, concentrating particularly on those situations in which you believe the variable will in the next 20 years exceed the historical highs and lows of the last 40 years. We are most interested in the thought processes/rationale(s) you used in making your estimates.

An example is given below:

> Variable number: 2   Reason: I think that 10 year Treasury bond yields will be over 14% sometime in the next 20 years is because of a return of inflation- driven by OPEC oil policies designed to destabilize Western economies.

Variable number 1:   Reason:

Variable number 2:   Reason

Variable number 3:   Reason

Variable number 4:   Reason:

QUESTION 2.

In the table below please list a few plausible future developments that you believe could, if they occurred, significantly impact on the course of each of the four variables. Developments may be listed under more than one variable since a future event may affect many variables. Several examples are provided; you may cross these out if you believe they are not plausible or significant. Remember we're asking about developments that may occur within the next 20 year period (we'll be asking about your rationales, timing of the development and the level of impact in Round 2). Several of the examples have blanks; if you choose to include them please fill in the blanks with your assumptions.

1. Annual increase in Consumer Price
1. Oil prices rise to above _____ $/barrel for at least five years.
2. New technologies drop costs of production of most products by __ %

3.

4.

5.

2. 10 Year Treasury Spot Yields
1. Confidence in the US drops; direct foreign investment reaches ___% of current levels.
2. U.S. Government current account deficit increases to 10% of GDP.

3.

4.

5.

3. S&P 500 Total Rate of Return
1. Profit margins of most US companies drop to ___% of current levels for 10 years
2. Productivity increases _5% for five continuous years.

3.

4.

5.

4. Corporate Baa Spot Yields
1. Expanded R&D by most US companies substantially jeopardizes ability to service debt.
2, Rating agencies tighten maximum debt/equity ratio to ____%.

3

4.

5.

QUESTION 3.

We invite your views on how the judgmental process employed in this Study might be applied to enhance the traditional actuarial (e.g., stochastic, deterministic) estimation process or to aid in planning. Please provide your answers using the following scale, and add other applications if you wish to the end of the table:

> 5= Use of judgmental processes is essential
> 4= extremely useful
> 3= somewhat useful
> 2= May help or hurt
> 1= Counter productive

Possible Use	Applicability
The historical period used to calibrate stochastic models	
Expected values of variables.	
Identification of potential developments that could affect forecasts	
Mean reversion assumptions in stochastic models	
The period over which the current assumption reverts to the mean	
The volatility assumptions used in stochastic models	
Validity of outliers that stochastic models may forecast.	

Thank you for your participation. You will receive the second round in a few weeks.

DEFINITIONS OF STUDY'S U.S. ECONOMIC VARIABLES AND HISTORICAL DATA SOURCES

For your information, here are the definitions and sources of historical data for the four variables (time series data for the variables appear on the next page):

Variable	*Definition*	*Source*
1. Annual Percentage Increase in the Consumer Price Index	The Consumer Price Index (CPI) represents the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.	Bureau of Labor Statistics at http://www.bls.gov/cpi/home.htm
2. 10 Year Treasury Spot Yields (% annual)	Yields on Treasury securities at constant, fixed maturity are constructed by the Treasury Department based on the most actively traded marketable Treasury securities.	Federal Reserve Bank at http://www.federalreserve.gov/releases/h15/data/m/tcm10y.txt
3. S&P 500 Total Rate of Return (% annual)	Yearly S&P 500 TROR= 2* (S&P500 Index End + Dividends - S&P500 Index Beg)/ (S&P500 Index Beg + S&P500 Index End - Dividends)	Calculated from data on www.econ.yale.edu
4. Long Corporate Baa Spot Yields (% annual)	Average yield to maturity on selected long-term bonds	Federal Reserve Bank at http://www.federalreserve.gov/releases/h15/data/m/Baa.txt

CPI Annual Increase

**10 Year Treasury Spot Yields;
Monthly Peak**

S&P 500 Total Rate of Return

Corporate Baa Yield