Test-Retest Reliability of Subjective Survival Expectations

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Discussion by

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RAND, NBER, NETSPAR, MEA, SMU
Why we need them

Intertemporal decision-making

Views about future are used in those decisions

What views?
In 1966 F. T. Juster proposed subjective probability of future auto purchase

- Rather than qualitative “highly likely, likely etc.”
- One year later subjective probabilities predicted actual purchases better than qualitative

If everyone has 0.30 probability of purchasing, no one is likely to purchase, yet 30% will purchase

Subjective probabilities permit quantifiable heterogeneity in beliefs
Life-cycle model single person
Constant relative risk aversion

\[ u = \frac{c_t^{1-\gamma}}{1-\gamma} \]

Only uncertainty is mortality
No bequest motive

\[ \frac{d \ln c_t}{dt} = \frac{1}{\gamma} (r - \rho - h_t) \]

\( h_t \) mortality risk

Observable heterogeneity
Survival curves, males. Marital status and education

- single, <HS
- single, college
- married, <HS
- married, college
Mortality risk. Single males lacking high school; married male college graduates
$$\frac{d \ln c_t}{dt} = \frac{1}{\gamma}(r - \rho - h_t)$$

\(\gamma = 1.4\)

\(r = \rho\)

At age 75 annual consumption declining
- 7% among high risk type
- 1% among low risk type
Consumption paths. Males high risk and low risk

\[ \frac{d \ln c_t}{dt} = \frac{1}{\gamma} (r - \rho - h_t) \]

Identify \( \gamma \) from slope of consumption path and \( h_t \)
Data on $h_t$

What people believe in choosing consumption

Life tables
  • Period
    o Current mortality
  • Cohort
    o Estimated changes in survival: trends in mortality
Social Security Office of the Actuary

Forecast life expectancy at age 55, males.
But
Percent with fair or poor self-rated health from HRS
Percent with one or more ADL limitation

![Bar chart showing the percentage of people with one or more ADL limitations in different age groups over three years (1998, 2004, 2010). The chart compares two age groups: 51-56 and 57-61.

- In 1998, the percentage for 51-56 was lower, and for 57-61 was higher.
- In 2004, the percentage for both age groups increased, with 57-61 being significantly higher.
- In 2010, the percentage for both age groups continued to increase, with 57-61 surpassing 14%.

The chart indicates an upward trend in ADL limitations for both age groups across the years.
Percent with diabetes

![Chart showing the percent with diabetes from 1992 to 2010. The chart indicates an increase in the percentage over time, particularly a significant rise from 2004 to 2010.](chart)

Legend:
- 51-56
- 57-61
Average subjective survival probability. Men ages 55-59.
Forecasting power of subjective probability of working past age 62 or 65 (now 70)

Trend in labor force participation in U.S.
Labor force participation of men

- 55-59
- 60-64
- 65-69


Participation rates:
- 55-59: Around 80%
- 60-64: Increasing, around 60-65%
- 65-69: Increasing, around 30-40%
Forecasts by Social Security Office of Actuary

Figure 2. Trustees’ Assumptions versus Actual Participation Rates (men, age 65–69)

Sources: Bureau of Labor Statistics and author’s compilations of data from Social Security actuary.
Subjective probability of working past age 65, men 55-56
Stock market expectations

Given high historical rates of return, why don’t more people hold stocks: “Lack-of-stock-holding puzzle”

Explanation: very high risk aversion

Alternative: stock market expectations

“What are the chances the stock market will be higher one year from now?” ....10% higher...etc.
Hurd, Maarten van Rooij, and Joachim Winter

Used CenterData panel to ask about eight targets -30%, -20%...+30%

Fit normal distribution to find expected rate of return and variance
Median 0.3% in 2004; 2.1% in 2006
Substantial heterogeneity
For most people stocks not a good investment

Similar findings in U.S. data
This paper

Addressing important questions

- Rounding (and focal point)
- Noise

Value of subjective probabilities in life-cycle model when rounding and noise modelled.
First question

Why does DNB Household Survey use 11 point scale? HRS wave 1 in 1992 used 11 point scale. In 1993 changed to 101 point scale.

Next we would like to ask your opinion about how likely you think various events might be. When I ask a question I'd like for you to give me a number from 0 to 100, where "0" means that you think there is absolutely no chance, and "100" means that you think the event is absolutely sure to happen.
Has become standard

- HRS
- SHARE
- ELSA
- Etc.
A few suggestions about this paper

Heterogeneity
- Who is more reliable?
- Who uses more rounding?

Pay special attention to 0.50
- Some rounding
- But expression of “epistemic uncertainty.”
- Lack of knowledge of probability (or knowledge of probabilities)
Outside this paper

What about other data sets?

- Here “forced” noise because of different scales
- Likely different in HRS and others where scales constant
Conclusion

- Interesting, valuable paper
- Demonstrates value of subjective survival probabilities
- Let’s have more of similar