

**Financial Robo-Advice:
Fancy Software Is Not a Substitute for
Trustworthiness and Good Science**

**By Zvi Bodie
October 1, 2018**

The Main Points

- Pure 100% robo-advice has so far been a failure.
- Almost all providers of advice offer a hybrid service that includes a human advisor.
- Almost all advice – robo or human--is biased towards encouraging investment in equities.
- There is a danger that participants in DC retirement plans will face risk unprepared.

6 Key Questions

- What is the history of robo-advice?
- How good is robo-advice today?
- What is worse than not having insurance?
- Can the regulators be trusted to act in the best interest of ordinary people?
- What is the future for robo-advice?
- Can innovative structured products substitute for good advice?

“Technology Can Give Everyone the Help They Need”

- Financial advisors can be expensive, can't always sufficiently answer all of the many questions we need answered, and many are focused on wealthier clients.
- **The solution?** High quality [retirement calculators](#), detailed online information and services like [robo advisors](#) — can help everyone access the detailed modeling you need to assess where you stand, discover ways to strengthen your finances and make better decisions about your money and when, where and how to retire.

The Case of Financial Engines

- **First robo-advice service founded in 1996 applying William Sharpe's model**
- **Widespread adoption by plan sponsors to satisfy regulatory requirement to offer help to participants**
- **Evolution towards hybrid model through acquisition of advisory firm and recent merger with Edelman.**
- **It is now the largest independent RIA in the U.S.**

Role of human advisors

“Some day Bob and Sue may be able to sit at their dining table with an on-line program and make good retirement income choices by themselves. But it seems likely that for some while an experienced, unbiased, and frugal human advisor may be well worth the added cost, at least at the outset.”

William Sharpe,
[*Retirement Income Scenario Matrices.*](#) (2017)

How good is robo-advice today?

➤ Advice is flawed

Example: *Betterment*

“At *Betterment*, we believe that ...
the more long-term your investing goals, the
more risk you can afford to safely take.”

**No free lunch: You cannot earn a risk
premium *safely*, no matter how long your
time horizon.**

Retirement Calculator Scorecard

	Accuracy	Usability	Education	Weighted Result
ESPlanner Basic	3	3	3	3
New Retirement	3	3	2	2.8
AARP	3	2	2	2.6
MarketWatch	3	1	2	2.4
T. Rowe Price	2	3	2	2.2
Schwab	2	2	2	2
Vanguard	1	3	2	1.6
Bankrate	2	1	1	1.6
Fidelity	1	2	1	1.2

Advice is not consistent with economics.

<u>Robo-advice (wrong)</u>	<u>Economics (right)</u>
Saving is for the short run. Investing is for the long run.	Saving = income minus consumption; investing = saving
The only way to manage risk is to diversify.	Three ways to manage risk: hedge, insure, or diversify.
Stocks become safe in the long run.	If they did, there would not be an equity risk premium.

4 Fallacies About Stocks

Fallacy #1: Stocks are not risky in the long run.

Fallacy #2: Stocks are a good hedge against inflation.

Fallacy #3: Dollar-cost-averaging improves your risk-reward tradeoff.

Fallacy #4: You can identify the best equity managers by simply looking at their track records.

The “Bodie Paradox”

- As the time horizon gets longer, the probability of a shortfall relative to the risk-free asset gets smaller and smaller, but the market price of insurance against the shortfall – a “shortfall put” -- gets larger and larger.

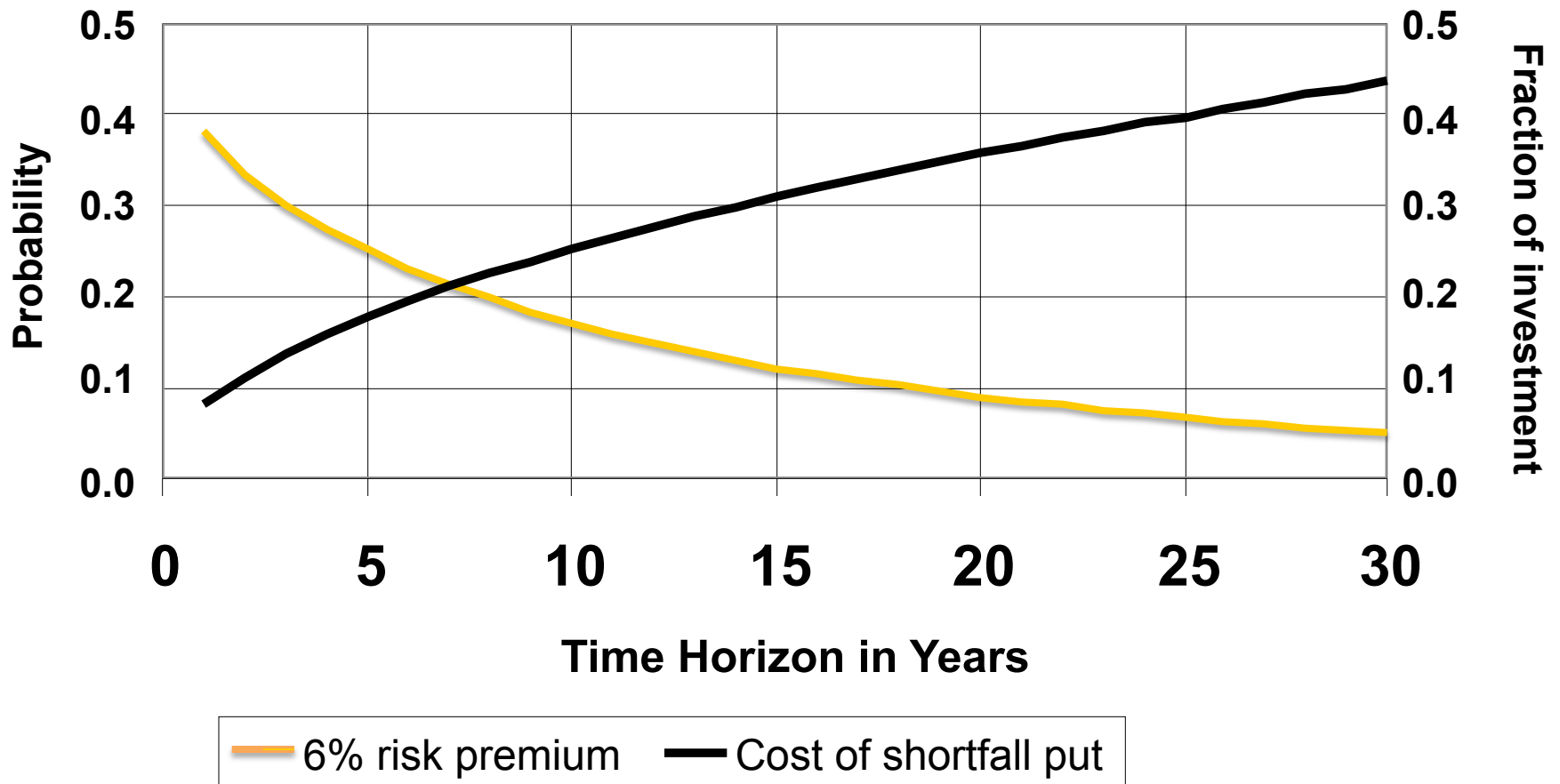
Explanation of the paradox

The explanation for this apparent paradox is that the ***probability*** of a shortfall is not a sufficient metric of risk.

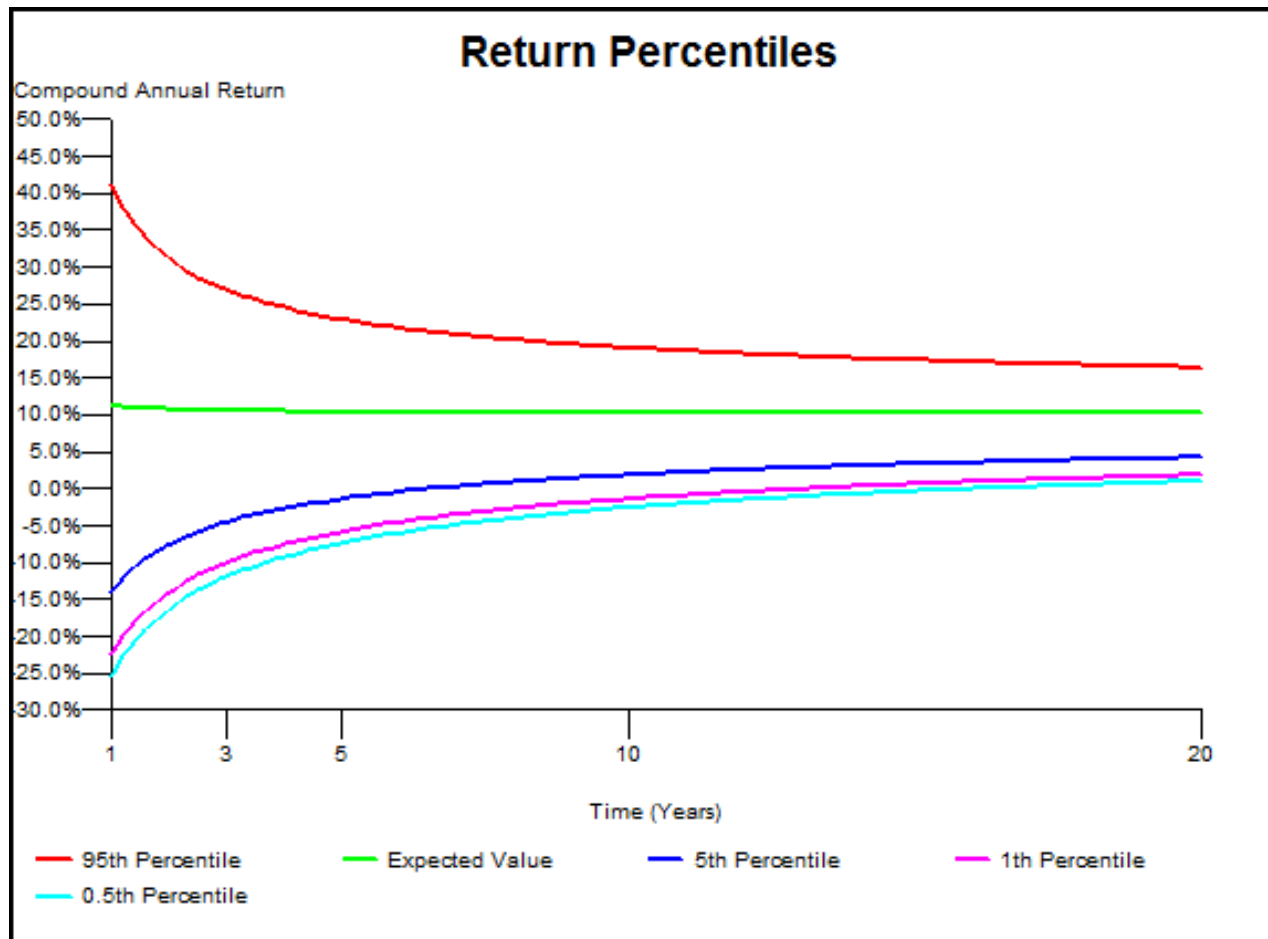
The risk metric must also reflect the ***severity*** of a possible shortfall. The cost of insuring against a shortfall takes into account both elements and thus is a better metric of shortfall risk.

The “Bodie Paradox”

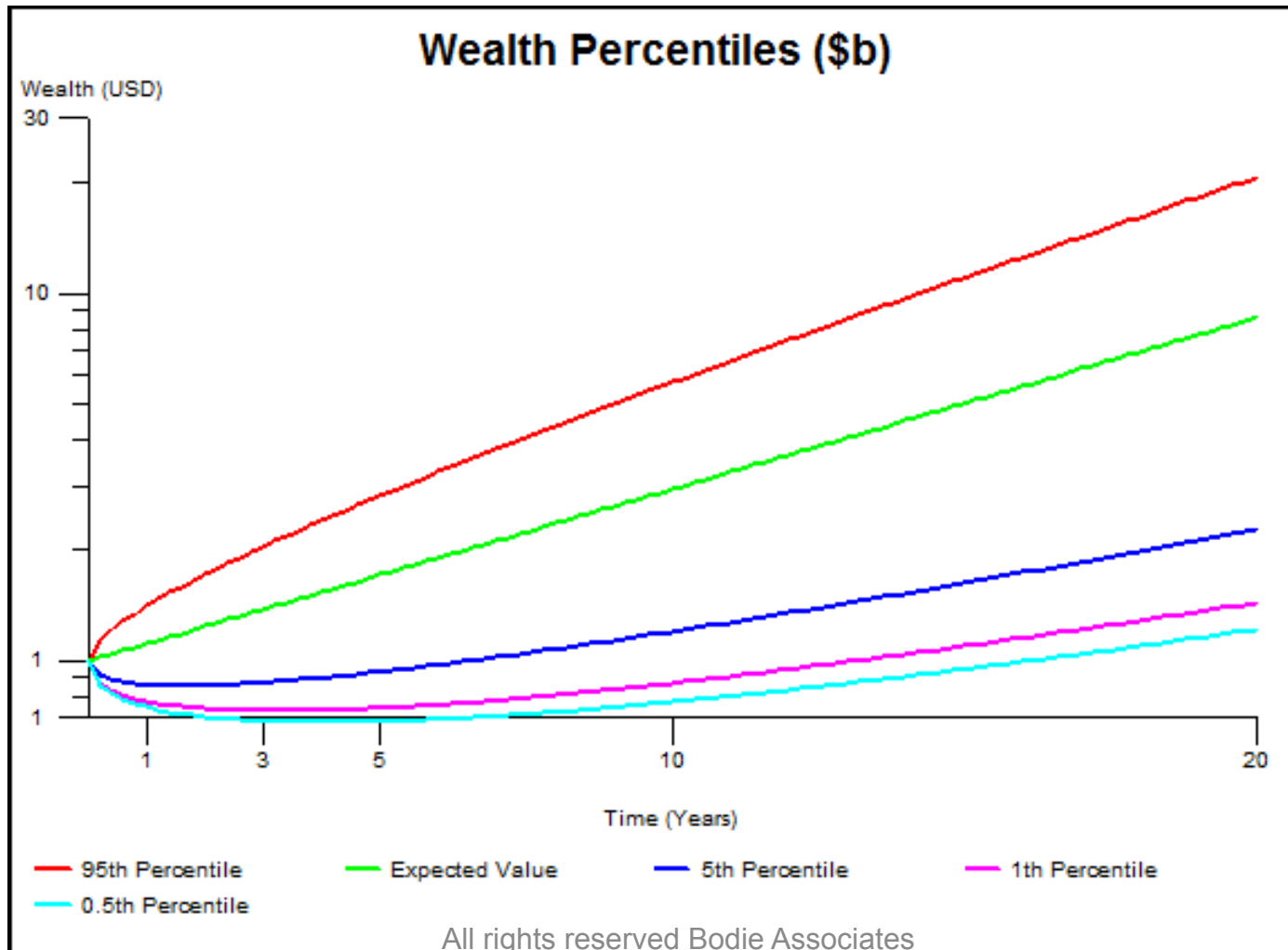
Probability of shortfall vs. cost of shortfall insurance



Looking at distribution of rate of return is misleading.



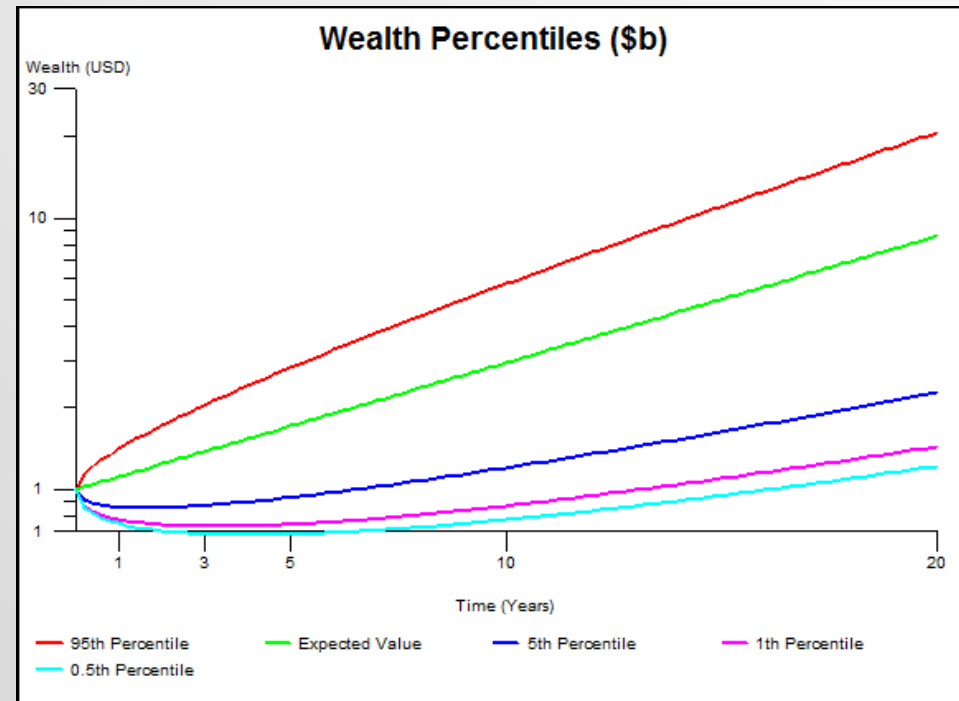
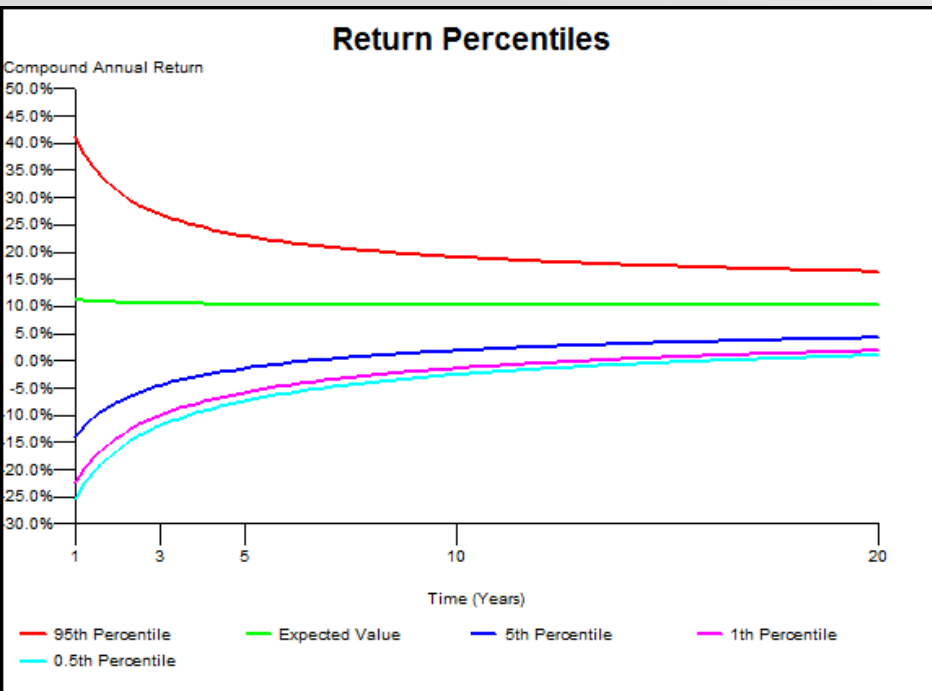
Look at distribution of terminal wealth or lifetime income.



All rights reserved Bodie Associates

2018

The graphic on the right is the one to pay attention to.



Need a better way to communicate risk

Lots of overlapping simulations

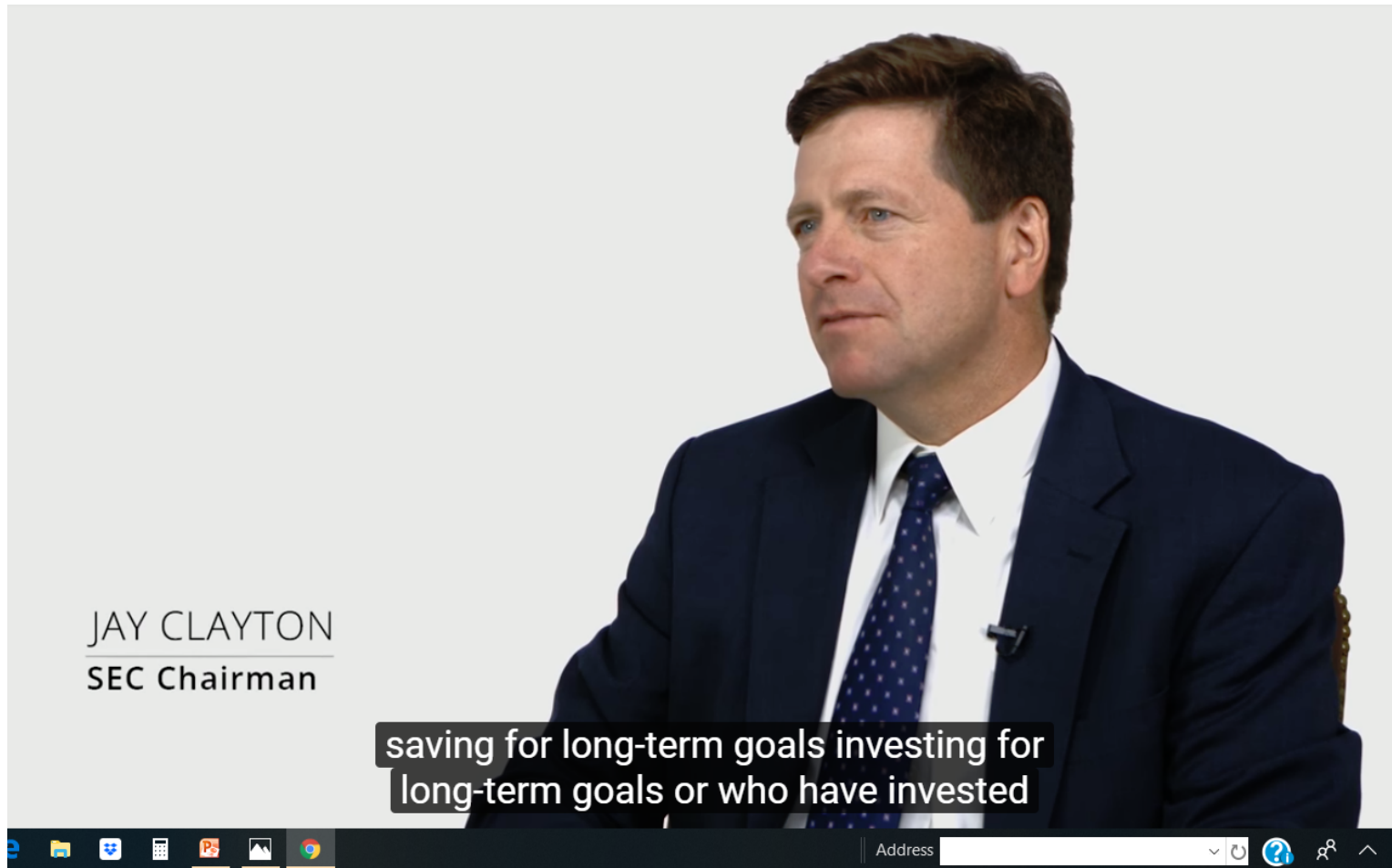
**Dynamic chart showing
simulation runs one at a time**

What is worse than not having insurance?

- Thinking you have insurance when you do not.
- Distinguish essential needs from wants and “immunize” essentials with **risk-free assets**.*

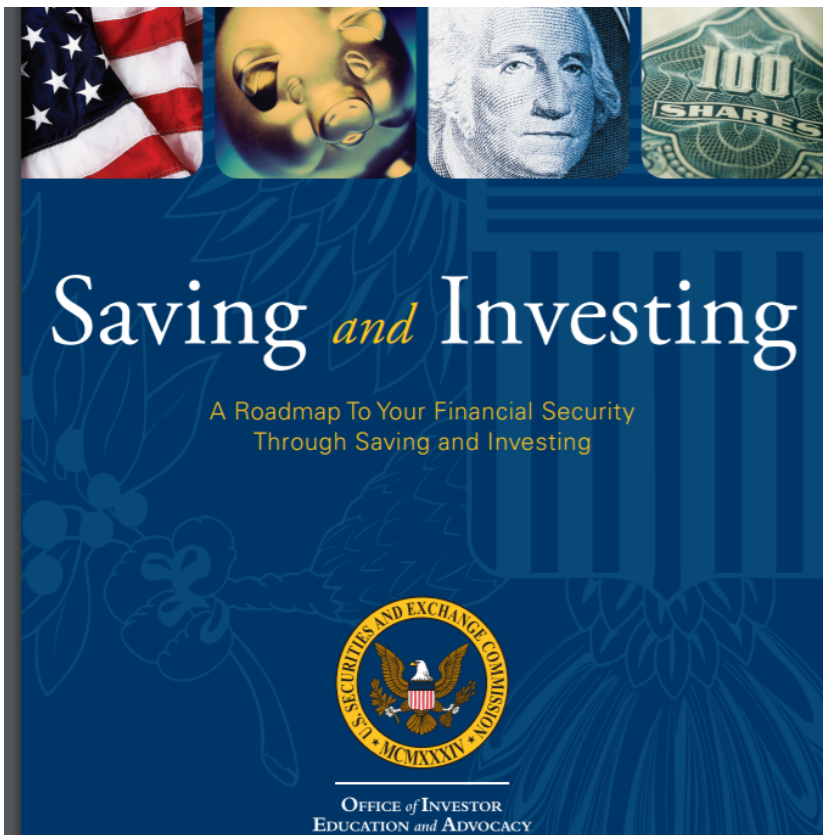
*No asset is completely risk free. The idea is to get as close as possible.

Is the SEC a captive of the industry?



ROADMAP TO SAVING AND INVESTING

But how “safe” is a savings account if you leave all of your money there for a long time, and the interest it earns doesn’t keep up with inflation?



Ibonds before stocks

On the Road to Investing

Worry-Free Investing

Invest In I Bonds

Invest In Risky Assets

WALL ST

Investor.gov
U.S. Securities and Exchange Commission

Roboadvisers (With Human Helpers)



Robots Can Manage Your Money. But Even They Need Humans.

Betterment, among the largest so-called roboadvisers, is one of the latest online services to reduce even further the cost of advice from a mix of algorithms and warm-blooded professionals.

Sept. 7, 2018

Betterment

ROBO-PRODUCT

Five **stand-alone financial-advice packages** tailored to specific

All rights reserved Bodie Associates
2018

Hybrid Approach

charles
SCHWAB

Invest

Bank

Trading

Investment Advice

Insights

Find a branch

Contact Us

Search



Log In

Open an Account

Find the
Schwab Intelligent
investment advice
option for you.

Our Intelligent investment solutions are designed to provide you with robo-advice, plus the level of personalized planning and guidance that fits your needs. We'll help you choose the right option.

All rights reserved Bodie Associates

2018

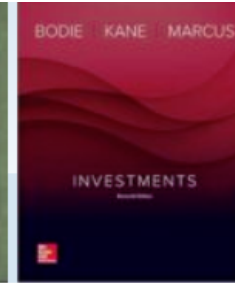
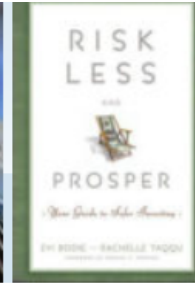
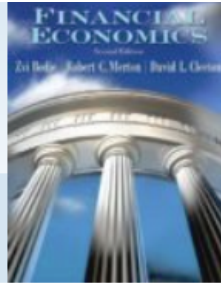
23

Address



Welcome to ZviBodie.com

Providing trustworthy and helpful information about
finance and investing to ordinary people everywhere.

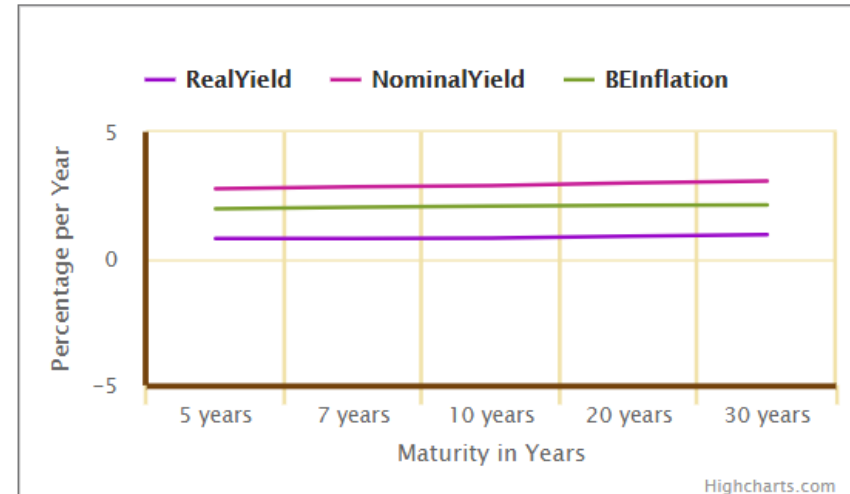


[News](#) [Books](#) [Videos](#) [Market Rates](#) [Trusted Resources](#) [Q&A](#)



Videos

Zvi discusses investing for retirement and other financial topics in this collection of videos.



Market Rates

View chart for Term Structure of Interest Rates, updated daily.



**PERSONAL
FINANCE**
with
Zvi Bodie

0:10 / 4:18

⏪ ⏩ ⏮ ⏭ 🔊 📄 ⚙️ 📺 🗉

The image shows a video player interface. On the left, a man with glasses and a beard is speaking at a podium. The background is a blurred image of US dollar bills. Overlaid on the right side of the video is the title 'PERSONAL FINANCE' in large red letters, followed by 'with Zvi Bodie' in smaller black letters. At the bottom of the video frame, there is a progress bar and a control bar with icons for play/pause, next, previous, volume, closed captions, settings, full screen, and a share icon. The current time is 0:10 / 4:18.

Key Questions and Answers

- What is the history of robo-advice?
 - Trend is towards hybrid model.
- How good is robo-advice today?
 - Biased towards equities and logically flawed
- What is worse than not having insurance?
 - Thinking you do when you do not.

Key Questions and Answers

- Can the regulators be trusted to act in the best interest of ordinary people?
 - No. They are industry captives.
- What is the future for robo-advice?
 - Hybrid model
- Can innovative structured products substitute for good advice?
 - In theory yes, but not yet in practice.