

RESEARCH REPORT #2
TROUBLE WITH THE CURVE:
IMPROVED CURVE-FITTING FOR SAFEMAX

William P. Bengen 10/7/2025

Perhaps you recall a movie a few years back, titled “Trouble with the Curve.” Clint Eastwood stars as an aging baseball scout tasked with checking out a hot prospect. Although he’s very impressive overall, Eastwood can ascertain a fatal flaw. The kid can’t hit a curveball.

I’ve had my own trouble with curves in my research into sustainable withdrawals, but not the baseball kind. I use curve-fitting software to create a mathematical formula for SAFEMAX as it varies with Shiller CAPE, within the context of a particular inflation regime. The fitted curve generates recommended values of SAFEMAX for all values of Shiller CAPE, including those which have not occurred historically.

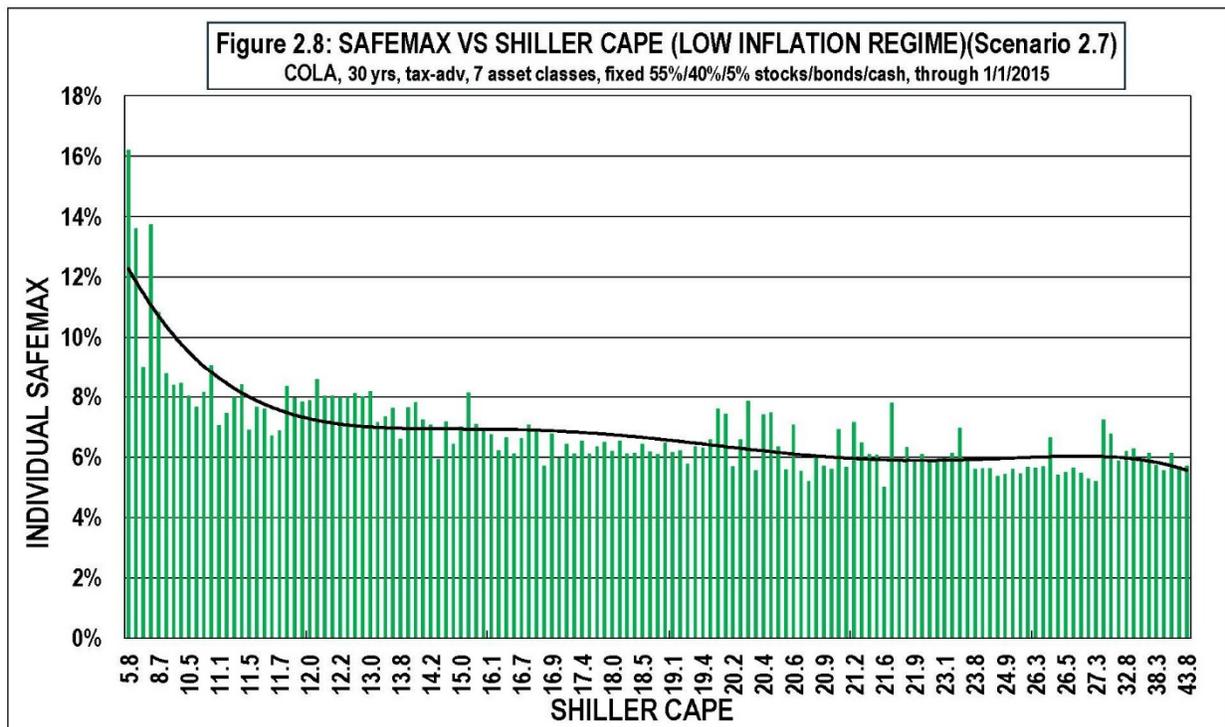


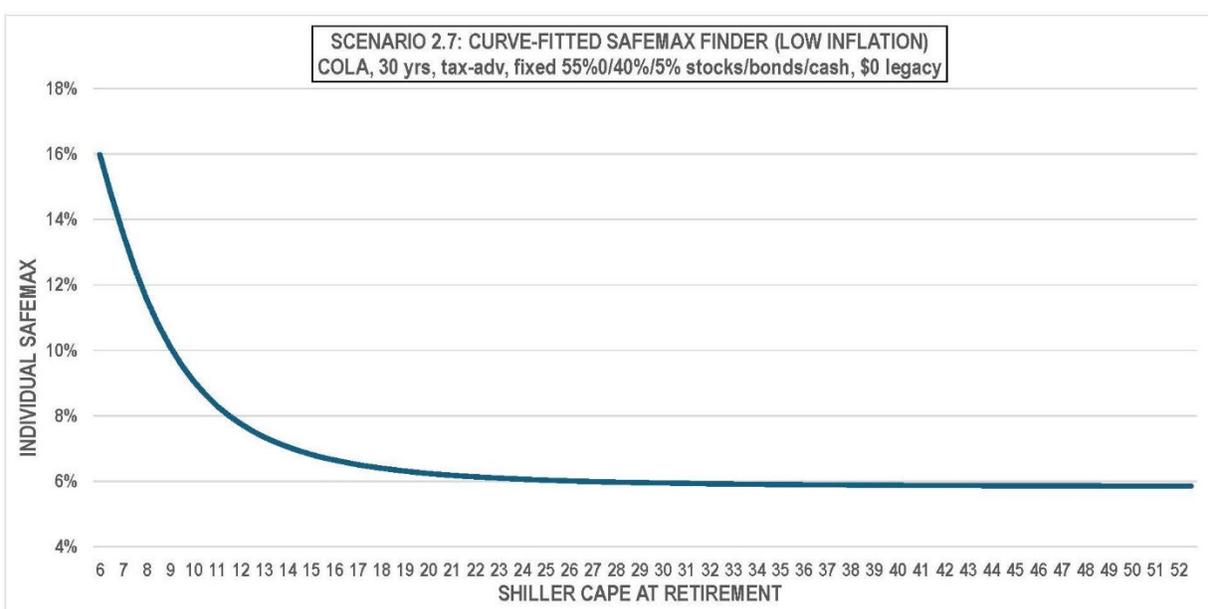
Figure 2.8 is an updated version of a chart which appears in my book, “A Richer Retirement.” It plots SAFEMAX values of individual retirees against

Shiller CAPE for a low-inflation regime. Note that the chart includes more retirees than before and features Shiller CAPE values that are significantly higher than those in the original chart.

“Curve-fitting” software attempts to find a mathematical equation that best describes the data in a chart. The software I used for the book generated a 6th-order polynomial equation as a “best-fit” case. The black line in Figure 2.8 represents SAFEMAX values generated by the polynomial equation. As you can see, it is a reasonable fit for the original data, which appears in green.

However, despite the acceptable degree of fit, I was never completely satisfied with the polynomial solution. The shape of the curve it generated, with all those lumps and bumps, seemed contrary to expectations of a smooth, even curve. There were considerable distortions at high levels of the Shiller CAPE.

Since I wrote the book, I have been experimenting with other curve-fitting software, with the intention of finding a more suitable fit method. I discovered that using a ***non-linear fit method*** generated a curve more in line with expectations, thereby improving the correlation between the fitted curve and the data.



The figure titled “Scenario 2.7” presents the new fitted curve for the data in Figure 2.7. As you can see, it is a smooth, continuous curve rising steeply on the left side, and falling gradually at the right side. This is as expected.

All the retirement scenarios on my website now incorporate the new fitted curves. This will make it easier to determine SAFEMAX for very high values of Shiller CAPE.

Yours for a Richer Retirement,

Bill Bengen

