Virginia529

Prepaid Program Funded Status Discussion

November 13, 2017

Joint Legislative Audit and Review Commission

Shawn McLaughlin, Chairman
Virginia529 Board

Mary G. Morris, CEO
Virginia529

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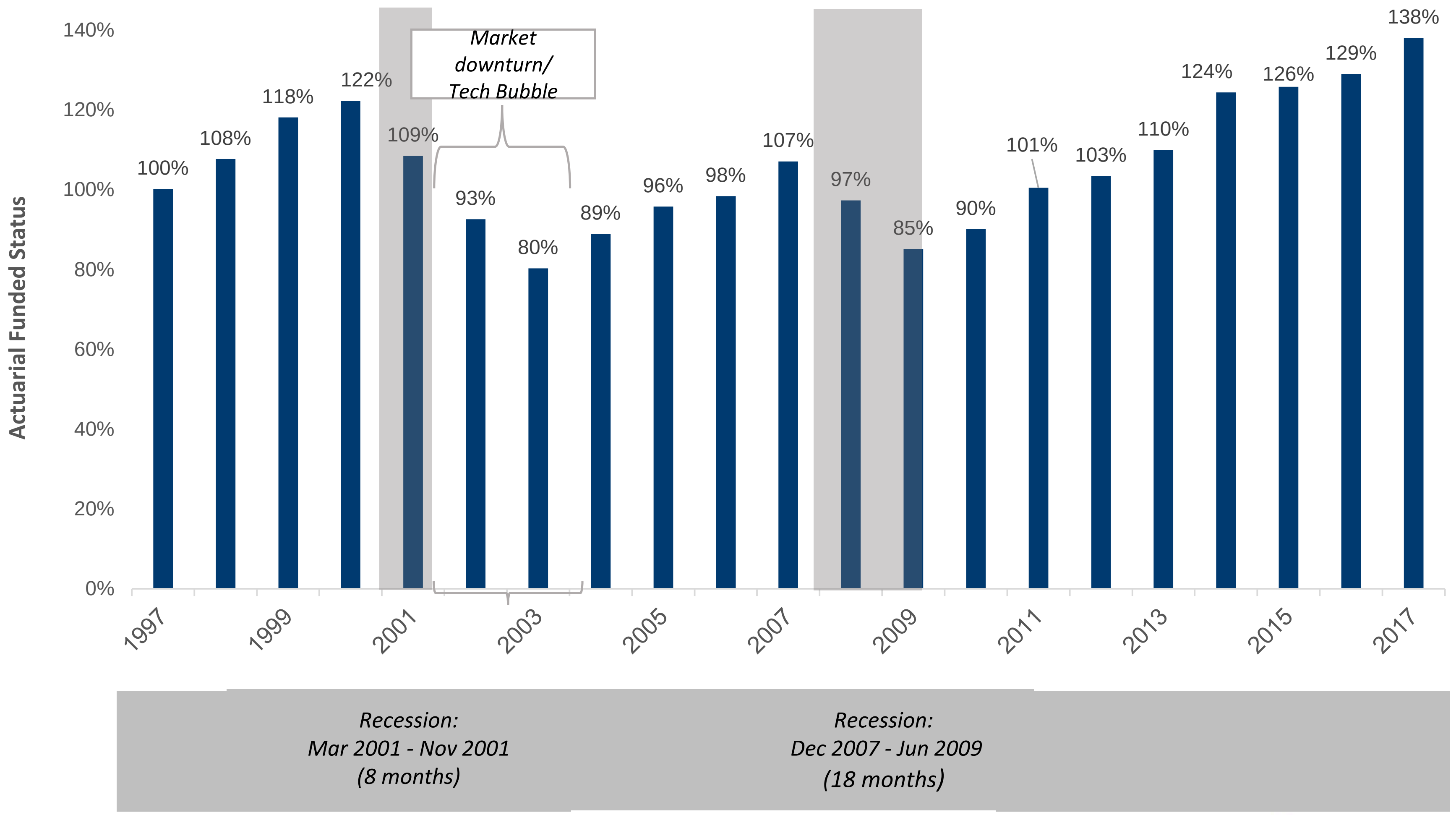
Historical Prepaid529 Actuarial Funded Status



Source: 2016 Virginia529 Annual Report, chart 3 in MD&A
As of June 30, 2017 Annually

GRS Primary Findings –
2017 Quadrennial Actuarial Audit of Virginia529 Prepaid

I. Prepaid529 is actuarially sound (i.e., the Fund has sufficient assets, including the value of future installment payments due under current contracts, to cover the actuarially estimated value of the tuition obligations under those contracts, including any administrative costs associated with those contracts), and

II. Primary actuarial assumptions (including the investment return assumption of 6.25 percent and the tuition increase assumption of 5.00 percent for two years and 6.50 percent thereafter) are reasonable.

GRS Summary of Areas Addressed – 2017 Quadrennial Actuarial Audit of Prepaid529

I. GRS was able to replicate the present value of future obligations payable from Prepaid529 and the present value of future installment contract payments due to Prepaid529 within 2 percent for the majority of the test lives.

II. GRS performed consistency checks between the original data produced by Virginia529 and the Milliman's "scrubbed" data file. GRS found the data used in the actuarial valuation to be reasonable and appropriate.

III. GRS found that Milliman followed the appropriate ASOPs that are most applicable for a prepaid tuition program.

IV. GRS reviewed the June 30, 2016, actuarial valuation report prepared by Milliman and found that the report was generally complete and contained the appropriate information.

V. GRS found that the economic and demographic actuarial assumptions employed by Milliman in their June 30, 2016, actuarial valuation were reasonable.

GRS's Summary of Areas Addressed – 2017 Quadrennial Actuarial Audit of Prepaid529 (cont.)

VI. GRS agreed with Milliman that Prepaid529 was actuarially sound because it had sufficient assets (including the value of future installment payments due under current contracts) to cover the actuarially estimated value of the tuition obligations under those contracts (including any administrative costs associated with those contracts).

VII. GRS agreed that based on the current funding level (129 percent with a 96 percent probability of Prepaid529 funds exceeding obligations) and the average load of about 11 percent on contract prices to increase the actuarial reserve of the program, the pricing methodology was actuarially sound.

VIII. GRS recommended, as a result of the actuarial soundness, funding level, and average load on contract pricing, two options be considered:

- Reduce the pricing reserve on Prepaid529 contracts.
- Consider an asset allocation to further reduce risk. A change in asset allocation likely would require a change in the investment return assumption used in the actuarial valuation.

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Appendix

- Other Prepaid Plans: Actuarial Funded Status and Reserves
- Funded Status Policy Matrix
- August 3, 2017 Letter from JLARC to Shawn McLaughlin, Chairman, VA529
- September 8, 2017 Letter from Milliman to Mary G. Morris, CEO, VA529

Other Prepaid Plans: Actuarial Funded Status and Reserves

States with open plans	% Funded (FY16)	Reserve (Deficit) in millions
AK	-	-
FL	114%	1,657.9
IL	79%	(264.3)
MD	133%	270.0
MI **	107%	58.9
MA	-	-
MS **	72%	(126.5)
NV *	128%	188.2
PA	114%	217.5
TX **	109%	819.1
VA	129%	589.7
WA	136%	626.0

*** Funding % as of 2015**

**** Figures represent data for open prepaid plans**

data not available

529 Prepaid Plans Funded Status Policies

State	Program Name	Assets (in millions)	Accounts	Policy	Funded Status Policy Description/Comments
FL	Florida Prepaid College Plan	$ 10,915	523,168	**N**	None
IL	College Illinois! 529 Prepaid Tuition Program	$ 908	39,933	**N**	There are no policy triggers with respect to a specific funded ratio or amount. There is not a specific amount [funded status] that the Plan tries to stay within.
MA	U.Plan Prepaid Tuition Program	$ 87	7,132	**N**	None
MD	Maryland Prepaid College Trust	$ 946	34,726	**Y**	If [the Board] determines that the market value of the program's assets exceeds the amount needed to satisfy all scheduled payments of Benefits currently due or scheduled to be due under all Contracts by 30% or more, in the Board's sole discretion, they may provide for a rebate from the excess to Account Holders of existing Contracts. Any rebate would be an amount determined solely by the Board. *"Given that 75% of our current overfunding can be attributed to market fluctuation, the Board has not acted on this discretion."* -Lauren Shipley, Executive Director, July 2017
MI	Michigan Education Trust	$ 1,055	42,597	**N**	None
MS	Mississippi Prepaid Affordable College Tuition Program	$ 353	18,297	**Y**	The policy establishes a funding target of 100% for the Legacy program (pre-2011) and a funding target of 115% for the Horizon program (post-2011). The policy includes actions the Board will take if the target is either not met or exceeded for both plans. State contributions (make-up $) may be returned to the State if the funded target is exceeded, but no amounts contributed from participants will be returned. The risk premia charged on new contracts will be reduced if the funded status exceeds funding targets by specific amounts. The Board will measure the funding target in an annual valuation and will informally review the policy annually, formally review the policy every two years until 2020 and every five years, thereafter. *The MS Plan was suspended for more than two years because of a significant underfunded status - resulting in the Legacy program, which remains underfunded, and the Horizon program which currently is adequately funded. The underfunded status of the Legacy program was a result of the recession as well as flaws in the actuarial valuation methods and pricing model used by MS. Prior to the suspension in 2012 and subsequent restructuring, the program had never had an actuarial audit, had never taken a systematic look at past and future performance, had a long term return assumption of 7.8%, and NO RESERVE was included in the pricing.* From comments by State Treasurer Lynn Fitch, March 2014.
NV	Nevada Prepaid Tuition Program	$ 237	12,010	**N**	The [Board] requires a 120% funded status. The program is not backed by the full faith and credit of the State, therefore, the Board selected a higher funded status requirement. The Board would consider adjusting the contract prices and risk premium (margin) if it reached funded status what was deemed excessive. But at 130.5% the Board has not instituted a formal policy to address funded status. Nevada uses a five-year market cycle smoothing affect for their actuarial funded ratio rather than a market funded ratio.
PA	Pennsylvania Guaranteed Savings Program	$ 1,796	104,363	**N**	"*Pennsylvania relies on the analyses and expert advice of its actuary in addressing our actuarial status. We do not think it is advisable to institute a strict policy of the type you mention in your email [to address a high funded status].*" -John Stevens, Director
Private	Private College 529 Plan	$ 315	8,089	**N**	None
TX	Texas Tuition Promise Fund	$ 686	29,902	**N**	None
WA	Washington Guaranteed Education Tuition	$ 2,094	103,245	**N**	None. Washington GET was suspended as of July 2015 and plans to reopen Fall 2017. The program was suspended after artificial premiums were included in pricing to address a significantly underfunded status that was reversed unexpectedly and quickly by a two year tuition freeze implemented in 2013, followed by a 5-20% tuition rollback implemented in 2015 to come over a two-year period. The result was considered an untenable status for current account owners who saw the value of their accounts decline precipitously because of the tuition policies. (Based on GET website and media reports)

(1) Assets and account balances as of December 31, 2016.

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August 3, 2017

Mr. Shawn McLaughlin
Chairman
Board of the Virginia College Savings Plan
9001 Arboretum Parkway
North Chesterfield, VA 23236

Dear Mr. McLaughlin,

The Joint Legislative Audit and Review Commission (JLARC) invites you or a designated board member to discuss the funded status of the Prepaid529 fund at the November 13, 2017 JLARC meeting.

In particular, JLARC is interested in options the board may be considering to address the present funded status of the Prepaid529 fund, which was calculated by Milliman as 129 percent as of July 1, 2016. Options that JLARC is interested in hearing more about, along with any other practical options, include: 1) decreasing the pricing load on future Prepaid529 contracts and 2) providing a rebate or dividend to account holders. If the board has determined that it is premature to take action at the present funded status, please be prepared to discuss at what level of funded status the board would feel compelled to take action and what potential actions could include.

The November 13, 2017 JLARC meeting will be held at 10:00 a.m. in the Virginia State Capitol or Pocahontas Building. JLARC staff will inform you of the meeting room as soon as it has been confirmed.

I look forward to seeing you or your designee at the JLARC meeting. If you have any questions before then, please do not hesitate to contact Hal Greer at 804-371-4572.

Sincerely,

Delegate Robert D. Orrock Sr.

CC: Mary Morris Virginia529

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September 18, 2017

Mary G. Morris
Chief Executive Officer
Virginia529
9001 Arboretum Parkway
North Chesterfield, VA 23236

Re: Reserve Management for prepaid529

Dear Mary:

This letter is in response to your question about an appropriate target level for the prepaid program's actuarial reserve and the reserve component in contract prices. Due to the uncertainty surrounding future tuition increases and future rates of return provided by the capital markets, it is a very important question without an easy answer.

We are not aware of an industry standard among the various state prepaid tuition programs. Few, if any, of these programs have an official target level for the actuarial reserve. Each state faces different economic and policy environments that impact public university tuition. They also generally have different investment policies affecting the level and volatility of investment returns.

Unlike pension plans, where the employer is responsible for making annual contributions toward maintaining a fully-funded plan, a prepaid tuition plan charges a one-time premium for a contract and cannot go back to the purchaser and ask for more money if tuition grows more than expected and/or investment returns fall short of those needed to pay promised benefits. In this sense, a prepaid tuition contract is similar to an insurance policy. But insurers can generally predict their policies' future claims with a high degree of accuracy, allowing them to invest in primarily fixed income securities with maturities matching the insurer's expected claims. Even with the ability to predict future claims and invest in matching assets, insurers significantly enhance their ability to pay claims (and avoid insolvency) with a large reserve of capital and the use of reinsurance. Generally, insurers have greater regulatory capital requirements for insurance products with less predictable claims, riskier assets, and a low correlation between asset returns and the value of the claims.

Due to the uncertainty of future tuition increases and its high historical real growth rate, prepaid tuition plans have generally invested in a balanced portfolio of growth assets and fixed income with a goal of generating a long-term rate of return that matches, or exceeds, the long-term growth rate of tuition. This is particularly challenging since annual tuition

increases have shown little correlation to the returns of different asset classes. Prepaid tuition plans find themselves in the position of having to forecast future tuition levels and the returns on risky asset portfolios supporting them – a position that requires a large capital base to draw upon during periods of higher than expected tuition growth or lower than expected investment returns.

Milliman has always recommended that prices for prepaid tuition contracts incorporate at least a 10% stabilization reserve component. The purpose is to build a capital base to support the program during difficult economic periods. This 10% target is a compromise between adding enough to build up a capital base and offering a reasonable expected return on investment for the families that purchase these contracts. With a 10% reserve, the expected return on the prepaid tuition contract still exceeds the yield on high quality tax-free Virginia general obligation municipal bonds. We regard these bonds as a comparable investment to prepaid tuition contracts from a risk and tax perspective.

If the assumptions for tuition increases and investment returns used to calculate contract prices are realized over time, on average, then the overall reserve for the program will tend to grow above 10%. Once the program's reserve is above 10%, then selling new contracts with a reserve component of 10% in the prices will dilute the overall program reserve. Selling contracts with a reserve level below 10% will dilute the program's reserve even faster. And, of course, if the program experiences higher than expected tuition increases and/or lower than expected investment returns, the reserve will decrease. In its relatively short life of 20 years, there have already been two periods where the prepaid tuition program experienced significant declines to its funded ratio due to high tuition and/or poor investment returns.

In the 2000-2003 period, the program's funded ratio fell from 122% to 80%. In the 2007-2009 period, the ratio fell from 107% to 85%. Over the 20-year history of the program, the standard deviation of the funded ratio is about 14.1%. In other words, we expect the change in the funded ratio from one year to the next to be within a range of 14.1% higher or lower about two-thirds of the time. So, a "two standard deviation" event would lead to an increase or a decrease in the funded ratio of about 28.2%.

If the prepaid program experienced a two standard deviation decline in the funded ratio this year, that would eliminate almost the entire reserve. Or, this could happen over a multiple year period like the 2000-2003 and 2007-2009 events. Other state prepaid tuition programs have suffered even more severe downward shocks to their funded ratios.

The build-up in the reserve over the past seven years has come in a time of modest tuition growth (about 6.1% annualized growth) and strong investment returns (about 8.1% annualized growth with no years of negative returns). While future tuition increases are unknown, many investment experts are predicting much lower returns in the future for pension and prepaid tuition plans. So, it would not be surprising to see one or more years of declines in the funded ratio over the next few years as poor experience surfaces to balance out the recent strong experience.

While there may be a level of the reserve that would provide a cushion sufficient to protect the program against all plausible economic scenarios, we don't think that the program's current reserve is at that level.

Variability of Results

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: future experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and increases or decreases expected as part of the natural operation of the methodology used for these measurements. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Data Reliance

In performing this analysis, we relied on data and other information (some oral and some in writing) provided by the staff of the Virginia529. This information includes, but is not limited to, contractual provisions, contract holder data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Third Party Distribution

This report was prepared exclusively for the Virginia529 for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning the Virginia529's operations, and uses the Virginia529's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

Qualifications

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We look forward to reviewing the results of our analyses with you at your earliest convenience.

Respectfully submitted,

Alan H. Perry, FSA, CFA

Member American Academy of Actuaries

Jill M. Stanulis, EA

Member American Academy of Actuaries

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