

# Use of Managed Risk Funds in the Retirement Savings Industry in the U.S.

*MILLIMAN FINANCIAL RISK MANAGEMENT LLC*

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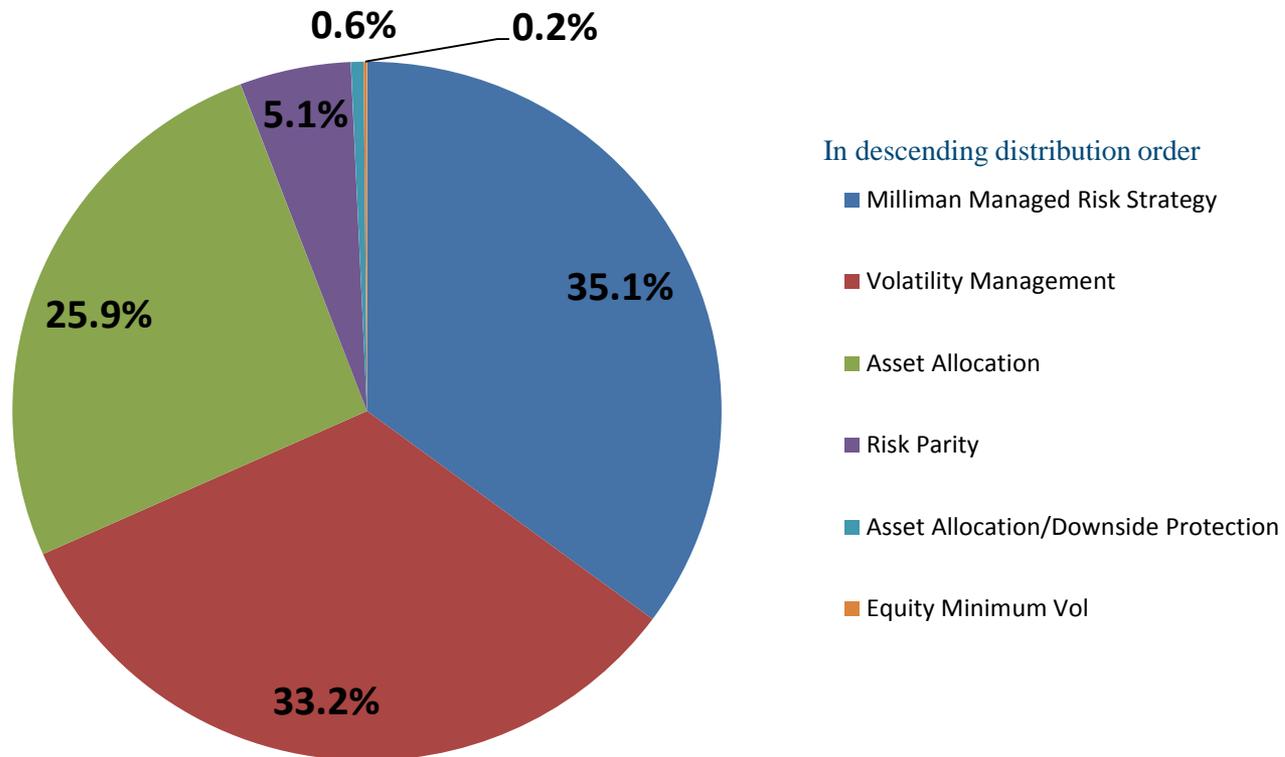
# U.S. Variable Annuity Market Trends

- VA sales ≈ \$140 billion in 2013
- Massive shakeup in the VA market
  - Planned reductions in market share: Prudential, Met Life
  - Market share increases: Lincoln, SunAmerica, TransAmerica
- Massive regulatory change
  - SIFI
  - Solvency II
  - Canadian VA requirements
  - Bias against captive reinsurance
- Widespread adoption of managed risk funds

# An Overview of Managed Risk Funds

Total VA Managed Risk Funds have about \$200 billion of AUM

## Distribution of Risk Management Strategies



# Effects of Volatility

- Volatility reduces returns for retirement-oriented investors for multiple reasons
  - Reduces Compound Annualized Growth Rate
  - Sequence of Return Effects – Reduces Internal Rate of Return
  - Investor behavior reduces returns over time

## S&P 500 INDEX

Year	Annual Return
2000	-9.1%
2001	-11.9
2002	-22.1%
2003	28.7%
2004	10.9%
2005	4.9%
2006	15.8%
2007	5.6%
2008	-37.0%
2009	26.4%
2010	15.1%
2011	2.1%
2012	16.0%
2013	32.4%

S&P 500 (2000 to 2013)	Returns	Reduction in Returns
Average of the Annual Returns	5.55%	
Compound Annualized Growth Rate	3.60%	-1.95%
Internal Rate of Return (5% withdrawals)	1.08%	-2.52%
Internal Rate of Return with behavior model	-0.87%	-1.95%
		-6.42%

# Effects of Volatility

- A Managed Risk Fund can reduce the effects of volatility for retirement-oriented investors
  - The charts below are based on a backtesting analysis for a balanced fund with the Milliman Managed Risk Strategy

## MANAGED RISK ASSET ALLOCATION FUND BACKTEST

Year	Returns
2000	6.8%
2001	-2.3%
2002	-7.4%
2003	16.1%
2004	8.1%
2005	8.4%
2006	13.9%
2007	6.1%
2008	-13.0%
2009	16.8%
2010	10.0%
2011	-1.7%
2012	12.9%
2013	21.8%

Managed Risk Asset Allocation Fund Backtest (2000 to 2013)	Returns	Reduction in Returns
Average of the Annual Returns	6.89%	
Compound Annualized Growth Rate	6.45%	-0.44%
Internal Rate of Return (5% withdrawals)	5.90%	-0.56%
Internal Rate of Return with behavior model	5.90%	0.00%
		-1.00%

*The rates of return are hypothetical historical illustrations. There is no assurance that the investment process will consistently lead to successful investing.*

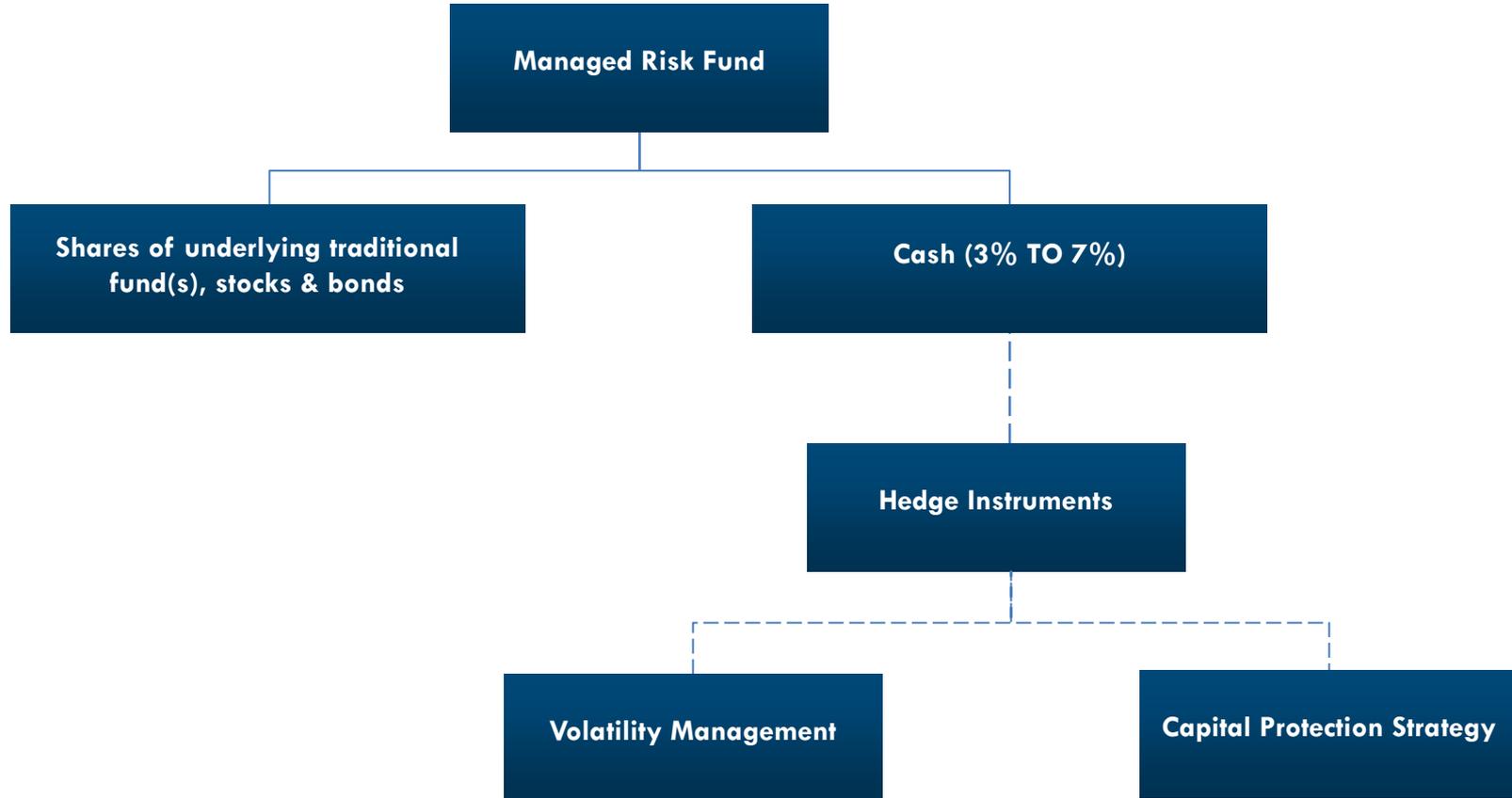
# The Importance of Equity Investments

- There is a gap between the amount people have saved for retirement vs. what they will need in retirement
  - Bond yields are currently too low to provide sustainable income during retirement
  - Exposure to equities is critical for portfolio growth
- A large proportion of the target population segment must invest in equities to have any hope of maintaining their standard of living in retirement
- Source: <http://www.census.gov/people/wealth/>

## HOUSEHOLD NET WORTH

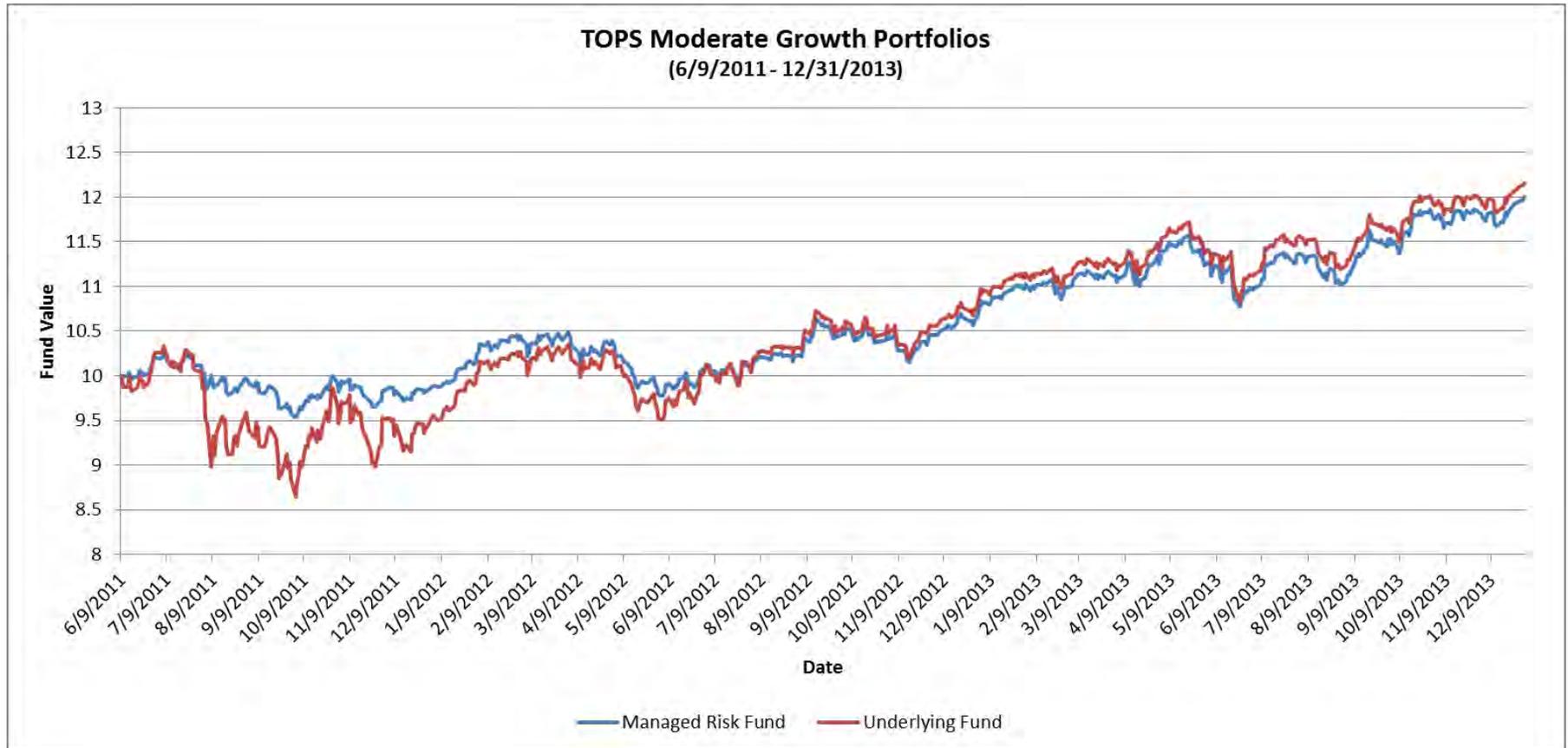
	Negative - Zero	\$1 - \$4,999	\$5K - \$9,999	\$10K - \$24,999	\$25K - \$49,999	\$50K - \$99,999	\$100K - \$249,999	\$250K - \$499,999	\$500K or Over
55 - 64 yrs.	12%	6%	3%	5%	6%	10%	21%	15%	21%
65 - 69 yrs.	9%	6%	3%	5%	4%	10%	19%	19%	24%

# Typical Managed Risk Fund Structure



# The Milliman Strategy – Live Portfolios

- Fund performance has demonstrated the benefits of the Milliman Strategy in reducing downside exposure while allowing upside participation



# Funds with the Milliman Strategy

- Over 40 funds currently use the Milliman Strategy:

Fund Name	Inception Date	Market	Fund Name	Inception Date	Market
LVIP Managed Risk American Balanced Allocation	3/16/2012	Variable Annuity	Jackson National/MMRS Moderate Fund	4/28/2014	Variable Annuity
LVIP Managed Risk American Growth Allocation	3/16/2012	Variable Annuity	Jackson National/MMRS Growth Fund	4/28/2014	Variable Annuity
LVIP Managed Risk Profile 2010	5/31/2011	Variable Annuity	Jackson National/MMRS Conservative Fund	4/28/2014	Variable Annuity
LVIP Managed Risk Profile 2010	5/31/2011	Variable Annuity	Calvert VP Volatility Managed Moderate Portfolio	4/30/2013	Variable Annuity
LVIP Managed Risk Profile 2030	5/31/2011	Variable Annuity	Calvert VP Volatility Managed Moderate Growth Portfolio	4/30/2013	Variable Annuity
LVIP Managed Risk Profile 2040	5/31/2011	Variable Annuity	Calvert VP Volatility Managed Growth Portfolio	4/30/2013	Variable Annuity
LVIP Managed Risk Profile 2050	5/31/2011	Variable Annuity	Sustainable Opportunities Fund	6/15/2012	Retail Mutual Fund
LVIP Managed Risk Profile Conservative	12/30/2011	Variable Annuity	Even Keel Managed Risk Fund	11/26/2013	Retail Mutual Fund
LVIP Managed Risk Profile Moderate	12/30/2011	Variable Annuity	Even Keel Opportunities Managed Risk Fund	11/26/2013	Retail Mutual Fund
LVIP Managed Risk Profile Growth	12/30/2011	Variable Annuity	Even Keel Traveler Managed Risk Fund	11/26/2013	Retail Mutual Fund
American Funds Managed Risk Asset Allocation Fund	10/1/2012	Variable Annuity	Even Keel Explorer Managed Risk Fund	11/26/2013	Retail Mutual Fund
American Funds Managed Risk Growth Fund	5/2/2013	Variable Annuity	Wealth Preservation Conservative Fund	11/2/2012	401(k)
American Funds Managed Risk Growth-Income Fund	5/2/2013	Variable Annuity	Wealth Preservation Growth Fund	11/2/2012	401(k)
American Funds Managed Risk Blue Chip Income and Growth Fund	5/2/2013	Variable Annuity	Wealth Preservation Moderate Fund	11/2/2012	401(k)
American Funds Managed Risk International Fund	5/2/2013	Variable Annuity	LAT Presidential Managed Risk Profile 2010	11/2/2011	401(k)
FVIT American Funds Managed Risk Portfolio	11/1/2013	Variable Annuity	LAT Presidential Managed Risk Profile 2020	11/2/2011	401(k)
FVIT Blackrock Global Allocation Managed Risk Portfolio	11/1/2013	Variable Annuity	LAT Presidential Managed Risk Profile 2030	11/2/2011	401(k)
FVIT WMC Research Managed Risk Portfolio	11/1/2013	Variable Annuity	LAT Presidential Managed Risk Profile 2040	11/2/2011	401(k)
FVIT Index Managed Risk Portfolio	11/1/2013	Variable Annuity	LAT Presidential Managed Risk Profile 2050	11/2/2011	401(k)
FVIT Select Advisor Managed Risk Portfolio	11/1/2013	Variable Annuity	LAT Presidential Managed Risk Moderate	11/4/2013	401(k)
TOPS Managed Risk Balanced	6/9/2011	Variable Annuity			
TOPS Managed Risk Growth	4/26/2011	Variable Annuity			
TOPS Managed Risk Moderate Growth	6/9/2011	Variable Annuity			
TOPS Managed Risk Flex	8/30/2013	Variable Annuity			

# The Milliman Managed Risk Strategy

- The Milliman Strategy includes two sophisticated risk management techniques:
  - Volatility Management
  - Capital Protection Strategy
- The Milliman Strategy reduces downside exposure and provides much greater certainty that investors can achieve funding objectives

## Backtested Performance - U.S. Large Cap



*The performance data represents hypothetical past performance, is for illustrative purposes and is not intended to represent any actual investments, past performance is no guarantee of future results.*

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## Backtested Performance - Developed International Markets



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## Backtested Performance - Developed International Markets



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## Backtested Performance - Emerging Markets



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# Hypothetical Lifetime GMWB – Assumptions

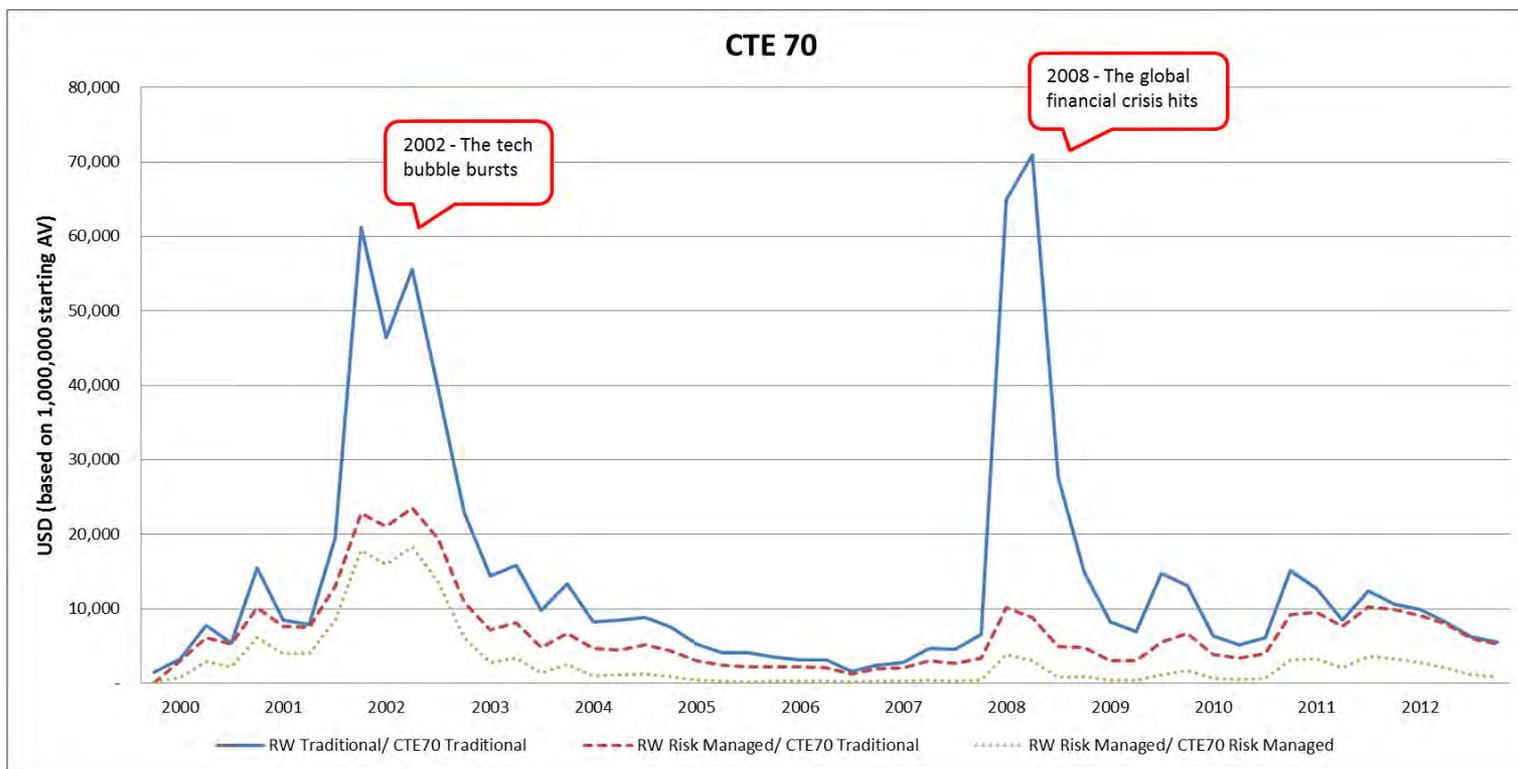
## VA Product Details

- Lifetime guaranteed minimum withdrawal benefit (GMWB) with tiered withdrawals, 5% at Age 65
- Starting AV of \$1,000,000, Rider charge of 1%, M&E of 2%
- Industry representative mortality, lapse, and utilization assumptions
- Underlying fund is a generic 70/30 equity/bond fund.
- Volatility management target is 16%
- Same product and cells as used to create Milliman Guarantee Index Hedge Costs

# Hypothetical Lifetime GMWB

## US Statutory Reserve – CTE 70

Risk managed funds provide reduced volatility of capital even without credit for protection in reserve scenarios



Metric	RW Traditional/ CTE70 Traditional	RW Risk Managed/ CTE70 Traditional	RW Risk Managed/ CTE70 Risk Managed
Average	14,242	6,861	2,904
Standard Deviation	33,029	10,377	8,607

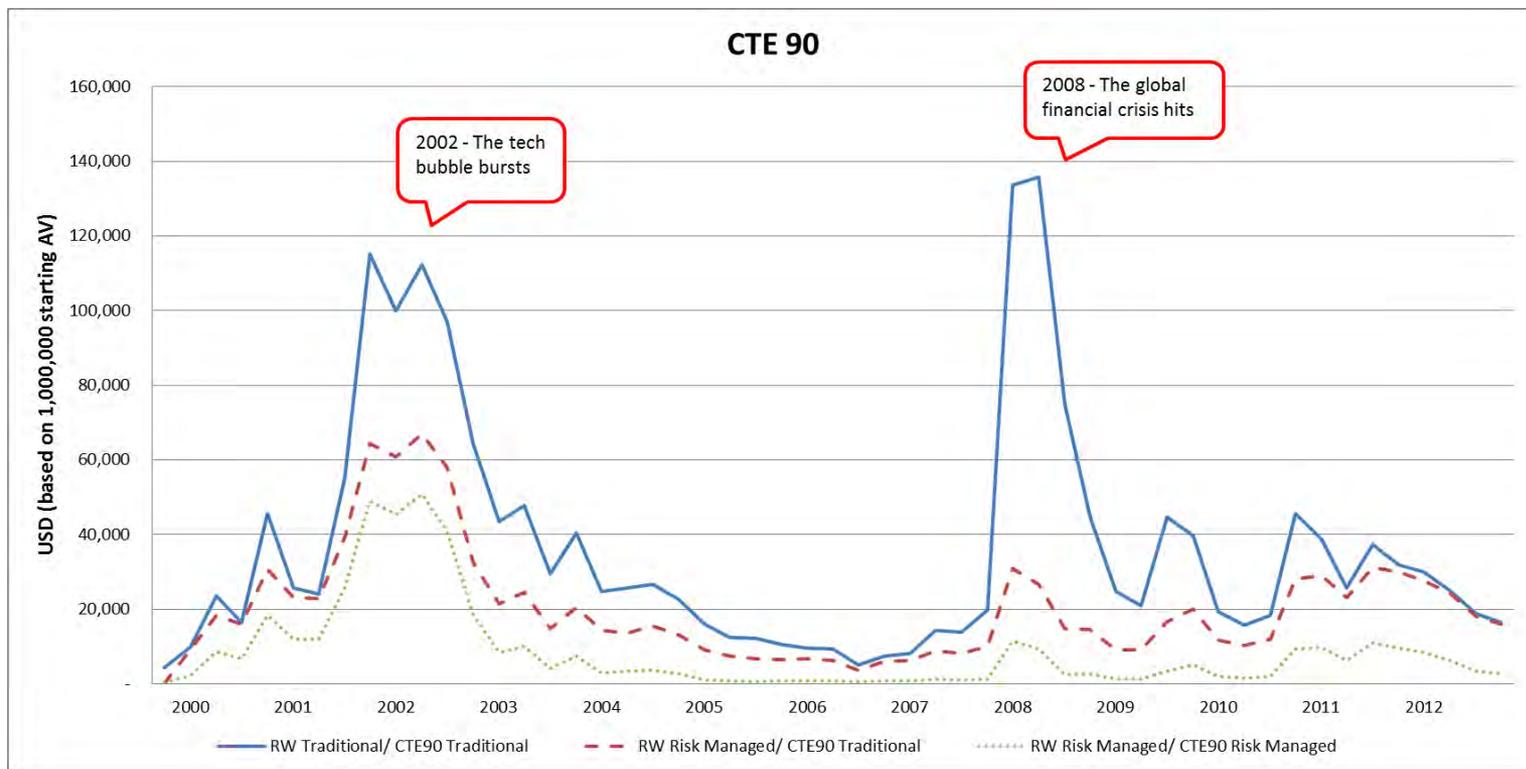
The underlying portfolio consists of 70% S&P 500 and 30% Barclays Aggregated with an 80bps annual fee for the underlying portfolio and a 100bps annual fee for the risk managed portfolio. The 20bps difference represents the cost of the risk management strategy.

The rates of return are hypothetical historical illustrations. There is no assurance that the investment process will consistently lead to successful investing.

# Hypothetical Lifetime GMWB

## US Statutory Capital – CTE 90

Risk managed funds provide reduced volatility of capital even without credit for protection in reserve scenarios



Metric	RW Traditional/ CTE90 Traditional	RW Risk Managed/ CTE90 Traditional	RW Risk Managed/ CTE90 Risk Managed
Average	36,534	20,543	8,552
Standard Deviation	65,241	29,946	24,405

The underlying portfolio consists of 70% S&P 500 and 30% Barclays Aggregated with an 80bps annual fee for the underlying portfolio and a 100bps annual fee for the risk managed portfolio. The 20bps difference represents the cost of the risk management strategy.  
The rates of return are hypothetical historical illustrations. There is no assurance that the investment process will consistently lead to successful investing.

# Risk Managed Funds, IFRS and Solvency II

## Impact on Fair Value

- Reserve values will be determined based on the volatility target of the fund.

## Reduction in Solvency Capital Requirement

- Managed Risk strategy eliminates the fat left tail in return distribution, improving the VAR(99.5) metric in the internal model approach.
- The implied volatility shock magnitude can be reduced due to volatility management.

## Protected Income Planner™

A mathematical tool to help financial advisors calculate a sustainable withdrawal rate for their clients.



### longevity risk

No one knows how long they are going to live. This unknown time horizon is a major risk that must be addressed in the financial planning process. PIP provides tools to manage longevity risk through portfolio construction.



### market risk

Downturns in the market can be devastating to retirement savings. This tool includes the Milliman Managed Risk Strategy™, which seeks to reduce the impact of severe declines in the market.



### inflation risk

Over time, the cost of goods and services tends to rise. Subsequently, purchasing power tends to fall. This tool provides the option to account for inflation.

# Protected Income Planner™

Planning withdrawals from your retirement savings should be simple, transparent, and reliable. The Protected Income Planner is designed to assist financial advisors in calculating sustainable withdrawal rates for their clients, compare results, and illustrate the potential to increase withdrawal rates through the use of risk management. This is the first "sustainable withdrawal rate" of its kind.

## Instructions

1. login
2. set longevity, inflation and asset allocation parameters
3. calculate results

> create new account

# Managed Risk Funds – Not Just for Variable Annuity Living Benefits

- Managed Risk Funds are not just for variable annuity living benefit guarantees
- Volatility may reduce returns for retirement-oriented investors for multiple reasons
  - Reduces Compound Annualized Growth Rate
  - Sequence of Return Effects – Reduces Internal Rate of Return
  - Research shows that investor behavior often reduces returns over time

*All guarantees are based on the claims paying ability of the issuer.*

# The 4% Rule

- Research on traditional asset allocation strategies generally finds that investors can sustainably take 4% withdrawals in retirement
- The 4% number is driven by more than just the expected return on the portfolio
- The investor faces several difficulties when determining a sustainable withdrawal rate
  - The investor must plan for potential adverse market conditions
  - The investor is exposed to the sequence of returns effect
  - The investor does not know how long he or she is going to live
- A single good or bad year right before retirement can have a large effect on the sustainable withdrawal rate

## Let's Review The 4% Rule

**Client Age: 65; 60% Equity, 40% Fixed Income; Adjust Withdrawals for Inflation  
Confidence Level: Moderately High**

<b>Sustainable Withdrawal Rate</b>	<b>4.1%</b>
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*All withdrawal rates shown are stated as a percentage of the starting portfolio value.*

### Development of the Sustainable Withdrawal Rate (SWR)

(+) Average compounded annualized growth rate for a buy-and-hold investor	7.6%
(-) Impact of adverse market environment	3.1%
(-) Sequence of returns effect	1.3%
<i>Return assumed for planning purposes</i>	<i>3.1%</i>
Must provide for withdrawals over	27 years
<b>Sustainable Withdrawal Rate</b>	<b>4.1%</b>
Probability of Success	94%

*Source: Milliman Economic Scenario Generator, 2014. The above chart is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. The returns shown above are net of a 1% investment management fee but do not reflect taxes. The "Return assumed for planning purposes" equals the "Average compounded annualized growth rate" minus the "Impact of adverse market environment" and the "Sequence of returns effect."*

# Sustainable Withdrawal Rate (SWR) Under Different Market Scenarios

*Let's see how the withdrawal rate might change if the next year:*

Sustainable withdrawal rate  
under different market scenarios

...is similar to the favorable market environment of 2013	4.4%
...is similar to the difficult market environment of 2008	3.1%
<b>Range of Results</b>	<b>1.3%</b>
<i>Original Sustainable Withdrawal Rate</i>	4.1%

*Source: Milliman Economic Scenario Generator, 2014. The above chart is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. The returns shown above are net of a 1% investment management fee but do not reflect taxes.*

# Maximizing Sustainable Withdrawal Rates Using Managed Risk Funds

- Managed Risk Funds can help investors maximize their sustainable withdrawal rate during retirement
  - Allows more investment in growth-oriented assets
  - Decreases the investor's exposure to adverse market conditions and the sequence of returns effect
- Managed Risk Funds reduce the investor's exposure to a single good or bad year right before retirement
  - Narrows the range of outcomes and leads to a more predictable withdrawal rate

# An Alternative to Large Bond Holdings

- Traditional asset allocation strategies recommend large allocations to bonds during retirement
  - Acts as a risk management tool
  - Provides income
  - Given the current low level of rates, bonds may not be well suited for these two tasks
- A Managed Risk Strategy allows more investment in growth-oriented assets
  - Provides an alternative to using bonds as a risk management strategy
  - Reduces the investor's exposure to inflation by investing in assets that will grow as prices in the market increase

# Maximizing Sustainable Withdrawal Rates Using Managed Risk Funds

*Male, Age 65; confidence level, moderately high, no inflation adjustment*

	100% Bond	60% Stock/ 40% Bond	Managed Risk Portfolio	100% Stock
<b>Sustainable Withdrawal Rate</b>	<b>4.3%</b>	<b>5.4%</b>	<b>6.0%</b>	<b>4.8%</b>

*All withdrawal rates shown are stated as a percentage of the starting portfolio value.*

## Development of the Sustainable Withdrawal Rate (SWR)

(+) Average compounded annualized growth rate for a buy-and-hold investor	3.9%	7.6%	8.6%	9.3%
(-) Impact of adverse market environment	2.0%	3.1%	3.1%	5.0%
(-) Sequence of returns effect	0.7%	1.5%	1.7%	2.4%
<i>Return assumed for planning purposes</i>	1.2%	2.9%	3.8%	1.9%
Must provide for withdrawals over	27 years	27 years	27 years	27 years
<b>Sustainable Withdrawal Rate</b>	<b>4.3%</b>	<b>5.4%</b>	<b>6.0%</b>	<b>4.8%</b>
Probability of Success	96%	94%	94%	93%

*Source: Milliman Economic Scenario Generator, 2014. The above chart is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. The returns shown above are net of a 1% investment management fee but do not reflect taxes. The "Return assumed for planning purposes" equals the "Average compounded annualized growth rate" minus the "Impact of adverse market environment" and the "Sequence of returns effect."*

# Sustainable Withdrawal Rate (SWR) Under Different Market Scenarios

*Let's see how the withdrawal rate might change if the next year:*

Sustainable withdrawal rate under different market scenarios	100% Bond	60% Stock/ 40% Bond	Managed Risk Portfolio	100% Stock
...is similar to the favorable market environment of 2013	4.1%	5.7%	6.5%	5.5%
...is similar to the difficult market environment of 2008	4.4%	3.9%	5.2%	2.7%
<b>Range of Results</b>	<b>0.3%</b>	<b>1.8%</b>	<b>1.3%</b>	<b>2.8%</b>
<i>Original Sustainable Withdrawal Rate</i>	4.3%	5.4%	6.0%	4.8%
<i>The above chart is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results.</i>				

Source: Milliman Economic Scenario Generator, 2014. The above chart is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. The returns shown above are net of a 1% investment management fee but do not reflect taxes.

# Conclusions

- Managed risk funds have been widely adopted in the U.S. retirement savings industry
- All available guaranteed living benefit production capacity is being absorbed by the Baby Boomer market
- Insurers are experimenting with alternative solutions in order to have a balanced set of product offerings
- Managed risk funds are starting to appear in the European market

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