

Managing long-term care spending risks in retirement

by Wade D. Pfau, Ph.D., CFA and Michael Finke, Ph.D., CFP®

All retirees must plan today for the possibility that they will experience significant long-term care health expenditures. Large unplanned expenses, such as those relating to long-term care, have the potential to wreak havoc on a retirement income plan.

Asset-based policies provide a viable alternative for those seeking long-term care insurance.

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Table of contents

About the authors.....	3
Executive summary.....	4
Introduction.....	5
Long-Term care spending risk.....	6
Why consumers don't buy long-term care insurance.....	7
Methodology.....	10
Raising awareness of the need for long-term care insurance.....	18
Conclusions.....	20
References.....	21
Appendix on capital market expectations.....	22

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Executive summary

The unknown cost of health care is among the most significant risks to any retirement plan. All retirees face the possibility of a debilitating illness that will require advanced and costly care over a long period of time. It is a source of anxiety for retirees, yet most are unwilling to accept the variable costs and potential loss of premiums paid under conventional health-based long-term care insurance products. And few have taken the necessary steps to understand the complete range of long-term care insurance product features and options available to them.

A different generation of protection, such as life insurance and long-term care or annuities and long-term care, create a hybrid product consideration.

This approach protects against long-term care expenditures while also providing a guaranteed death benefit, which guards against the possibility of lost premiums. This new class of hybrid products is central to our analysis, in which we simulate multiple long-term care event scenarios to demonstrate the impact of a hybrid product, a traditional health-based long-term care policy and a self-funding approach. In scenarios where no long-term care event is experienced, premiums paid using a traditional health-based policy are simply lost, while a hybrid policy provides a death benefit. In scenarios where a long-term care event is experienced, insurance helps dramatically reduce the net costs to a household.

Long-term care insurance provides value when health expenses are high. At the 90th percentile of long-term care costs, an unprotected retiree — one who is self-funding their protection against a long-term care event — will be exposed to risk of over \$1 million in assets.

In contrast, a retiree holding a long-term care insurance policy will be exposed to roughly 1/3 the risk of out-of-pocket expenses and premiums. With long-term care insurance — like all insurance products — a retiree trades a premium expense for protection against a loss. In this case, the loss due to high health expenses can have a devastating impact on legacy values and income security.

Outcomes for a conventional long-term care policy and a hybrid policy are similar under the 90th percentile costs, assuming that premiums on a conventional policy do not increase. Despite these similar outcomes, survey evidence suggests that individuals are much more attracted to a product that provides protection against significant health expense as well as a death benefit, and provides both without the negative features of variable premium costs and the potential for lost premium dollars.

Introduction

Insecurity about health costs and medical spending present a significant challenge in retirement planning. According to the 2015 Retirement Confidence Survey, only 18% of workers feel very confident that they will have enough money to pay medical expenses in retirement (EBRI, 2015).

People generally want to enjoy retirement without making drastic lifestyle changes, without relying on help from others, and without accepting a substandard level of care as they age.

Retirement income planning necessarily involves three important unknown factors:

1. How long they will live
2. How their investments will perform over time
3. How much they will spend each year in retirement.

The optimal plan for a retiree is one that provides the greatest lifestyle benefit for the lowest level of risk.

These risks can be effectively managed. Investment portfolios can be better diversified, and withdrawals can be timed to maximize tax efficiency. Longevity risk can be reduced by pooling resources among retirees through annuitization. And spending risk can be reduced by pooling extreme health expenses among retirees through long-term care insurance.

Long-term care spending risk

Studies of retiree spending show that expenditure amount within most categories stays relatively constant or even declines as a retiree ages.¹ Health care spending increases with age on average, however, health care spending is far more volatile. This volatility in health care spending exposes a retiree to a risk that can devastate an investment portfolio.

It may be helpful to think of health care spending risk in the same way we think of investment risk.

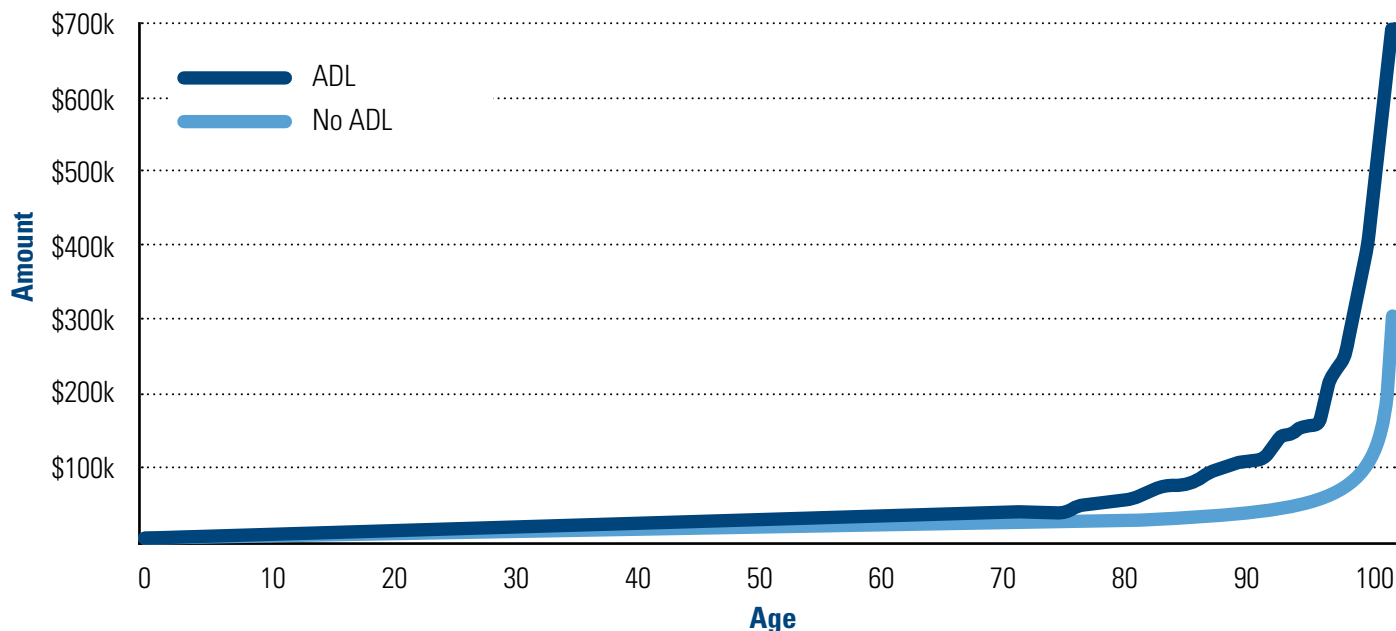
A significant drop in the market will drag down the value of a retirement nest egg, but we accept some volatility in the hope that risky investments will provide

higher return. We try to reduce extreme risk using strategies such as portfolio diversification.

Health care spending risk is also volatile. Retirees will require expensive medical services when unable to care for themselves and will experience a decline in their retirement nest egg as costs outpace income. Long-term health care expenses are an extreme form of health care risk that dominate the right tail of the health care spending category in retirement.

Figure 1 illustrates the distribution of 10-year out-of-pocket health expenditures for retirees using longitudinal data from the 2004 to 2012 Health and Retirement Study conducted by the University of Michigan. The distribution shows that most retirees will actually spend a modest amount on health care in retirement out-of-pocket. But at the tails of the distribution, and particularly in the top 5th percentile of expenses, the magnitude of out-of-pocket health care expenditure for households can present a significant risk to the sustainability of an investment portfolio.

Figure 1
Distribution of 10-year health care expenses



2. Brown, Jeffrey and Amy Finkelstein. 2007. "Why is the market for Long-Term Care Insurance So Small?" *Journal of Public Economics*, 91(10), 1967–1991.

Figure 1 also illustrates the important health care risk presented by the need for assistance in performing basic Activities of Daily Living, or ADLs. The high cost of health care services in the United States, coupled with the limited coverage provided by Medicare, places the burden of extended long-term care expenditures on retirees. Those who choose not to protect themselves from this risk must be willing to cover the possible out of pocket costs of a random health event that requires extended long-term care.

As with any random risk that has a large negative financial impact on only a small percentage of a group, it makes sense to pool the possibility of extreme long-term care expenditures among retirees. The rationale is the same as protecting against any low probability event that has a high magnitude of wealth loss. A retiree has only three choices when dealing with random long-term health care expenditure risk:

1. Save enough to cover a catastrophic health risk,
2. Bear the risk of running out of wealth without sufficient assets
3. Purchase an insurance instrument to hedge against long-term care risk.

The cost of providing private long-term care insurance (the difference between premiums and claims) is roughly the same as automobile insurance (Brown and Finkelstein, 2007). But the percentage of consumers who purchase collision and comprehensive insurance to protect against the possible loss of a \$35,000 car is greater than the percentage who will pay to protect against a much larger wealth loss from a long-term care eligible health event. Estimates of the gain from purchasing long-term care insurance have been so consistently positive that most academics consider the widespread lack of coverage to be a puzzle.²

Why consumers don't buy long-term care insurance

Although the benefit from buying long-term care insurance is well established, many are not attracted to the product for a number of behavioral and rational reasons. We review these reasons to provide insight into the attractiveness of a long-term care product whose features include a fixed guaranteed premium amount, a tax-free guaranteed long-term care benefit amount, as well as a guaranteed death benefit that pays out if a policy holder does not experience long-term care claims or a partial death benefit based on the amount of long-term care benefit paid out prior to death.

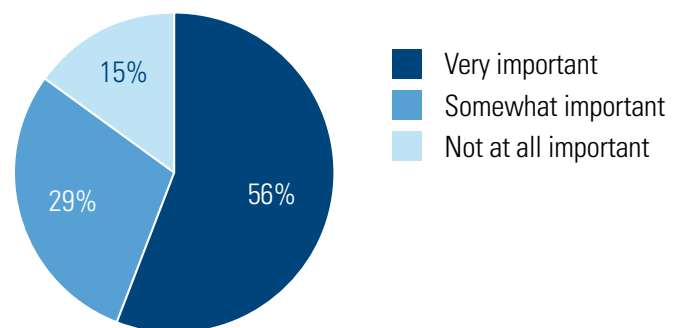
Premium certainty

The first barrier to long-term care insurance demand is that premiums on many policies are subject to increases based on claims experience. The variability of insurance premiums transfers some of the spending risk of unknown long-term

Figure 2

Importance of variable long-term care premiums

How important is the concern that an insurance company may increase premiums in the future?



3. 2012 Health and Retirement Study conducted by the University of Michigan

care expenditure back to the consumer. This creates a participation in the risk of increasing long-term care costs, or in claims that exceed those anticipated in the underwriting process. The possibility of sharp increases in premiums levied can complicate a spending plan. In addition to these budgeting complications, many consumers are simply not attracted to products whose future cost is variable. This so-called “ambiguity aversion” affects the demand for similar financial products such as fixed rate versus adjustable rate mortgages despite the potential benefit of small loss in risk sharing between the consumer and the insurance company.

A survey of 929 respondents over the age of 55 from throughout the United States was asked to rank the importance of concern over a possible increase in future premiums when considering the purchase of long-term care insurance.³ A majority of respondents (56%) considered the possible increase in premiums to be “very important.” Figure 2 shows the distribution of responses.

Despite their greater ability to withstand possible increases in long-term care premiums later in

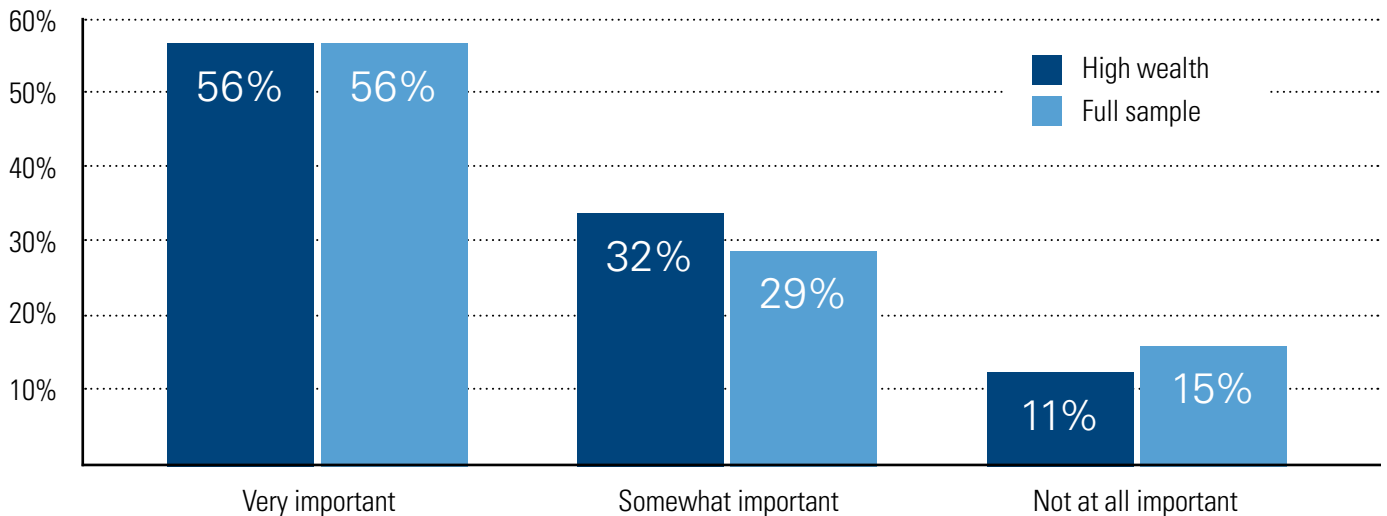
retirement, a larger percentage of high wealth (i.e., top 20%) respondents felt that possible increases in premiums were either very important or somewhat important (Figure 3).

This unwillingness to participate in the risk of higher than expected claims with an insurance company among those who are best able to withstand a future premium increase suggests that a product which provides a fixed long-term care benefit at a fixed premium may be more attractive than a product that provides more coverage at the risk of premium variability.

One explanation for the value placed on a fixed benefit and fixed premium by clients is the preference for certainty when planning for future spending. As we will show later, there is a significant amount of variability in the cost of long-term care

Figure 3

Wealth and concern about long-term care premium increases



among regions and the individual may prefer to accept the risk of matching the cost of care to the available budget (for which the individual has greater control) over the risk of rising future premiums with no control over managing costs.

Importance of a death benefit

Nobel Prize-winning behavioral economist Daniel Kahneman and his co-author Amos Tversky developed a theory of how individuals behave when faced with uncertain decisions that may involve gains and losses (Kahneman and Tversky, 1979). The researchers found that when faced with a decision that may involve a gain and a loss, subjects would overweight small losses and often ignore the possible impact of large losses. This so-called prospect theory has been confirmed in hundreds of experimental tests and the effects of loss aversion can help explain behavior in markets for a number of consumer products.

The market for private insurance appears to be significantly affected by preferences that are consistent with prospect theory. Consumers will carry low deductibles on an auto insurance policy while avoiding the large loss protection provided by umbrella insurance. They will pay to protect against the loss of a smart phone, but ignore disability insurance. Getting individuals to protect against large risks can be a challenge, particularly if the premium payments are viewed as a loss.

In a new article on behavioral predictors of long-term care insurance, Wharton Professors Daniel Gottlieb and Olivia Mitchell (2015) combine an experimental study that identifies subjects' tendency to overweight small losses and evaluates whether this tendency predicts demand for long-term care insurance.

Premiums paid to fund long-term care insurance may be viewed as a loss if there is a possibility that the consumer will never receive any payout from their investment.

In other words, the purchase of long-term care coverage may be viewed as a succession of small losses (premium payments) that may never pay out. If the policy does pay out, then it protects against a very large loss that is often undervalued by consumers. Thus, they have little interest in accepting many small losses if the only benefit is a very large payout of long-term care claims.

Gottlieb and Mitchell find that this tendency to frame insurance as a gain or a loss results in a decrease in demand for long-term care insurance of between 25 and 66 percent. Their results suggest that an insurance product that provides no expected gain and costly premiums may be unattractive to a large percentage of clients who exhibit loss averse preferences.

A possible benefit of combining long-term care protection with a death benefit is that consumers who may be tempted to frame long-term care coverage as either a gain or loss will no longer view the absence of a long-term care claim as a loss. Although the life insurance benefit may be of modest value in a simulation that assumes rational preferences, its existence may make the purchase of highly valuable long-term care coverage more palatable.

An important rational concern that presents a barrier to the purchase of long-term care insurance is the possibility of a change in future Medicare laws that affects the out-of-pocket contributions of retirees toward long-term care expenses. This possibility that the government will adopt a greater share of the long-term care expenditure burden in the future, despite the complications, presents an additional risk that reduces the value placed on private insurance.

For example, the Community Living Assistance Services and Supports (CLASS) Act was originally included as a provision of the Affordable Care Act. The CLASS Act would have allowed the government to sell private policies which provided coverage for long-term care. Although, given the political opposition to this provision, it seems unlikely that

the public sector will again intervene in the private market but some change in future rules remains a possibility.

An asset-based approach to long-term care

Despite the possibility that public policy changes may either increase or decrease long-term care risk in the future, all retirees must plan today for the possibility that they will experience significant long-term care health expenditures. With traditional health-based long-term care insurance, an individual pays insurance premiums over time in order to hedge against the risk of a long-term care event. If the event does not occur, they will receive no benefit from the premiums paid other than the pure insurance value.

An asset-based long-term care product provides a similar hedge against the expense of a long-term care health event while paying a death benefit if the retiree does not use all of the long-term care benefit. This certainty of some payout on the policy avoids the pain of loss aversion while providing an important non-behavioral benefit of financial risk protection.

Asset-based products appear to be more behaviorally appealing to consumers and with both the guaranteed death benefit and long-term care benefits, the potential for a positive impact on legacy also appears quite appealing.

The following section simulates the investment and health expense experience of thousands of retirees in order to illustrate the differences between those who choose no insurance protection, those who employ a traditional long-term care insurance policy, and those who select an asset-based approach that blends long-term care and life insurance features. The results provide insight into the consequence of failing to address long-term care risk and the difference between traditional and asset-based protection strategies.

Methodology

This section explains the methodology for how we will compare the distribution of potential costs for funding three different types of long-term care events for a couple using three different funding mechanisms. Long-term care events include:

1. No long-term care spending is required
2. A home health aide is required for the final five years of life
3. A home health aide, assisted living, and then nursing home care are required for the final fifteen years of life.

Funding mechanisms include:

1. Self-funding from financial assets
2. Purchasing a traditional health-based long-term care insurance plan
3. Purchasing an asset-based whole life insurance policy integrated with long-term care insurance.

Stochastic present value

The objective is to compare three methods for funding long-term care spending needs for three varying long-term care shocks in order to understand better about the distribution of potential funding costs for different long-term care events. The outcome measure we use is called the stochastic present value (SPV), which provides a calculation for the amount of funds needing to be set aside today to cover the realized future long-term care spending. This measure incorporates the randomness and uncertainty with regard to individuals not being sure about how long they will live, and also not knowing what market returns will be realized in the future.

The cost of long-term care spending, also known as the stochastic (or random) present value of spending, is the actual net cost of funding a long-term care spending need after accounting for realized longevity and market returns. The stochastic present value for long-term care spending is the current amount of assets a couple would require today

to meet their long-term care spending needs. We estimate the potential impacts for differing long-term care funding mechanisms in order to see how they would have impacted the cost of funding long-term care for longer and shorter lifespans, during different financial market environments, during periods of high and low inflation, and for different types of long-term care spending shocks. We use 50,000 simulations for longevity and market outcomes to understand the full range of possibilities. The stochastic present value allows an individual to know that if they have set aside more than the number shown for long-term care costs, then they will be “okay” at a level of risk they were willing to accept. If they have set aside less, then they must deal with a potential shortfall later in life.

Based on 50,000 ages of death for the second member of the couple, as well as 50,000 sequences of asset returns through each age of death, we are able to investigate the present value for funding long-term care expenses. The stochastic present value is the amount of assets required today to successfully finance a long-term care event through death based on the actual age of death and the experienced markets returns. A strategy which lowers the stochastic present value for a particular level of long-term care costs is desirable in the sense that it increases the probability that the retiree will have enough assets to support their retirement. There is an entire distribution of costs for each long-term care funding event, since randomness applies both to when the event happens and what market returns the underlying assets earn which are used to fund the event. We can focus on different parts of the distribution to obtain an idea about the upside potential and downside risks associated with different strategies.

From the distribution of costs, we focus on the 10th percentile, median, and 90th percentile of costs from this distribution. We can interpret the 10th percentile outcome as a good luck case in which long-term care funding costs remain low. It is important to note, however, that lower costs for a severe long-term care event is driven mostly by a short retirement of

less than 15 years, which truncates the time spent consuming long-term care. The median reflects more typical outcomes. It is the midpoint of the distribution, with a 50% chance for lower costs and a 50% chance for higher costs. These are reasonable planning outcomes. The 90th percentile is a bad luck outcome in which long-term care funding costs are high. Different costs are triggered by the sequence of market returns and the timing of the long-term care event.

Simulated ages of death

To simulate the costs for long-term care, we require simulations for survival and market returns. Survival is calculated using the Society of Actuaries’ RP-2014 Mortality Tables Draft for Healthy Annuitants. Mortality rates are provided for males and females, and joint survivorship is simulated assuming independence for the ages of death with each member of the couple.

Case studies are provided for both a couple in which both members are 50, as well as a couple in which both members are 65. For the 50 year olds, there is a 5% chance that both spouses will have passed away by 77, and the median age of death for the longest-living member is 91. Average life expectancy for males is 84, and it is 86.2 for females. Meanwhile, for 65-year old couples, in 5% of cases both spouses will be deceased by age 78, 50% of couples will have at least one member live to at least 91, and 5% of couples will have at least one member live to age 101. The life expectancy at 65 for males is 84.5, and it is 86.5 for females.

Simulated asset returns

For financial market returns, we simulate returns for bills (six-month maturity) and consumer price inflation. The data we use to guide the capital market simulations is available from Yale University professor and Nobel laureate Robert Shiller’s website. Additional information about our return simulation assumptions can be found in Appendix 1.

It is important to consider what asset allocation is appropriate for the underlying funds earmarked to support long-term care.

Depending on one’s comfort with market volatility, one possibility is that a retiree could hold a total returns investment portfolio to cover all retirement goals and to take distributions from the portfolio as appropriate to cover long-term care expenses. Another possibility is that a retiree maintains a larger reserve of low-volatility financial assets which have been set aside to cover contingencies such as long-term care. Advocates of the asset-based long-term care insurance hybrid plans generally suggest that the one-time premium to fund this approach be drawn from this reserve of low-yielding assets, such as cash, CDs, and money market funds. For this reason, our baseline will use the simulated market returns for bills as the discount rate to calculate the stochastic present value for long-term care costs. We assume that the underlying fees for this investment portfolio total 0.2% annually to cover fund management costs.

Finally, we assume that long-term care costs grow randomly over time at a rate that matches simulated overall consumer price inflation. Because long-term care expenses and insurance premiums may frequently be tax deductible when certain spending thresholds are met, but because the complexities which will relate to individual circumstances, we do not otherwise consider taxes as a part of this analysis.

Long-term care expenses

Longevity and market returns are both randomized, but long-term care events do not fluctuate randomly. To demonstrate risk for long-term care expenses, we consider three different types of deterministic long-term care expense scenarios within the broader context of longevity and market risk. This allows us to understand better about the uncertain overall cost for different types of long-term events, which in turn depend on when they happen and about the market

returns would be realized before they happen. Rather than also trying to incorporate random long-term shocks, as well, we will instead simulate three different deterministic spending shocks:

- **No shock:** No long-term care spending is needed.
- **Mild shock:** During the last five years of life for the longest living member in the couple, a member of the couple requires the services of a home health aide. We assume the initial cost for a home health aide reflects the median 2015 annual price found in a Genworth survey, which is \$45,760. This costs subsequently grows with consumer price inflation. For those cases where both spouses have passed away within five years, we assume the long-term care need begins shortly after the simulation period begins and lasts for the remainder of that lifetime.
- **Severe shock:** During the last fifteen years of life of the longest living member in a couple, a home health aide is needed for four years, then assisted living is required for eight years, and then a nursing home stay is required for three years. We again assume the initial cost reflects the median 2015 annual prices from the Genworth survey, which are \$45,760 for a home health aide, \$43,200 for assisted living, and \$80,300 for a semi-private room in a nursing home. We assume these prices grow with consumer price inflation. For those cases where both spouses have passed away with fifteen years, we assume the long-term care need begins shortly after the simulation period begins and lasts for the remainder of that lifetime.

Long-term care funding strategies

The cost of long-term care is calculated as:

$$LTC\ Spending + LTC\ Insurance\ Premiums - LTC\ Insurance\ Benefits = LTC\ Cost$$

This equation highlights that the overall cost of funding long-term care expenses is the present value of the stream of actual expenses to cover long-term care, plus any premiums paid for long-term care insurance, less any benefits received (including death benefits, when applicable) from the insurance policies.

We consider three different long-term care funding strategies and how the costs for funding long-term care differ between the three strategies for the three different long-term care events identified in the previous section. The funding strategies include:

1. Self-funding from investments
2. Purchasing a health-based traditional long-term care insurance policy and funding any difference between benefits received and care expenses using financial assets
3. Purchasing an asset-based traditional long-term care insurance policy and funding any difference between benefits received and care expenses using financial assets.

The self-funding strategy is a plan that any long-term care expenses will be funded through distributions from financial assets. With this strategy, the household maintains the full risk for the size of long-term care spending, and the range of potential spending outcomes will be the widest. If no long-term care event is realized, then the costs of self-funding are \$0, but without any risk sharing the cost of an expensive long-term care event is potentially quite large. A risk averse individual may be willing to pay a premium in order to better protect wealth in the event of an expensive long-term care event, even if that means experiencing the loss of premiums in the case that no long-term care event is experienced.

Next, the traditional health-based long-term care insurance strategy involves paying an annual premium for long-term care insurance until a long-term care event takes place, and then being eligible to receive a defined amount of long-term care benefits based on the costs of care.

The final asset-based strategy involves the purchase of a long-term care insurance policy bundled with a whole life insurance policy. This may be done with a single upfront premium, a set of premiums for a fixed term, or ongoing premiums. The cash value is invested and is liquid after surrender charges, and the policies generally will provide a fixed interest rate for cash value growth. Long-term care expenses are

first subtracted from cash value before the insurance company must actually cover care expenses with other resources, which allows these policies to be treated as high deductible policies. These policies generally provide a death benefit for a fixed amount less any LTC claims.

Table 1 provides details for two different long-term care insurance strategies which have been designed to be as similar as possible in terms of their underlying benefits. Both policies reimburse long-term care expenses up to \$5,000 per month per person. They both have 30-60 day elimination periods after a qualifying long-term care event begins and before benefits are paid. The health-based policy provides benefits for up to 5 years (60 months) per person, and the policy includes spousal coverage which allows one spouse to receive benefits from the other's pool of funds. Effectively, the couple shares 10 years of coverage. The monthly benefit amount available grows at a 3% compounded rate within the policy.

For the asset-based policy, there are two parts of the policy which provide benefits. The base policy covers up to 2 years and 1 month of benefits (25 months). As a further form of high deductible coverage and to account for the fact that less costly care may be needed at the start of a qualifying event, the benefits from the base policy do not adjust for inflation. However, an optional continuation of benefit rider has been included, which allows for lifetime benefits for both spouses, with available benefits per month growing at a compounded 3% inflation rate after the benefits from the base policy have been exhausted.

Both policies include a waiver of premiums after a qualifying long-term care event takes place. Premiums are allowed to increase in the future with the health-based policy, and many owners of these policies have experienced significant premium increases over time. To illustrate this possibility, we use an example provided in the July 2016 issue of *Kiplingers* for an individual who experienced a 60% increase in their premium in the 10th year of

Table 1

Features of long-term care insurance (LTCI) policies

	Health-based LTCI	Asset-based LTCI
Amount and length of benefits		
Base Policy Structure	Two individual policies with an ability for spouses to share benefits with each other	Continuous-premium whole life insurance with accelerated death benefits for qualifying LTC expenses
Initial monthly long-term care benefit	\$5,000 per person	\$5,000 per person
Deductible / Elimination Period	30 days (all types of care)	30 days for home health care 60 days for all other care
Benefit Period for Base Policy	5 years (60 months) per person (Combined: 10 years)	25 months, jointly
Inflation Adjustment for Base Policy	3% compounded	0%
Benefit Period for Continuation of Benefit (COB) Rider	n/a	Lifetime (unlimited)
Inflation Adjustment for COB Rider	n/a	3% compounded
Spousal Coverage	Two individual policies with an ability for spouses to share benefits with each other	One policy can cover both spouses; with continuation of benefit rider both can simultaneously receive benefits for life
General policy characteristics		
Waiver of premium	Yes	Yes
Premiums Guaranteed not to increase	No	Yes
Types of Care Covered	LTC facilities, assisted living facilities, home health care, homemaker services, hospice care, adult day care, international coverage, respite care, bed reservation, care coordination, caregiver training, supportive equipment	LTC facilities, assisted living facilities, home health care, homemaker services, hospice care, adult day care, international coverage, respite care, bed reservation, care coordination, caregiver training, supportive equipment
Underwriting Process	Select classification after typically more aggressive underwriting process with health exam	basic questionnaire and interview about health
Requirements for coverage	Benefits reimburse qualifying expenses. Qualification is based on receiving care because of either: (1) being unable to perform two of six ADLs or (2) being cognitively impaired.	Benefits reimburse qualifying expenses. Qualification is based on receiving care because of either: (1) being unable to perform two of six ADLs or (2) being cognitively impaired.
Other considerations		
Death Benefit	\$0	\$125,000 if LTC not used; Long-Term care spending first spends down death benefit value

(continued on next page)

Table 1 (continued)

Features of long-term care insurance (LTCI) policies

	Health-based LTCI	Asset-based LTCI
Policy details for 50-year old couple		
Upfront Policy Premium Lump-Sum	\$0	\$0
Annual Ongoing Policy Premiums	\$5,935 for 10 years then 60% increase to \$9,496	\$6,069 (\$2,3043.75 for base policy, \$192.50 for premium waiver, and \$3,572.35 for continuation of benefit rider)
Policy details for 65-year old couple		
Upfront Policy Premium	\$0	\$177,293 (\$75,191.25 for base policy and \$102,101.45 for continuation of benefit rider)
Annual Ongoing Policy Premiums	\$10,851 for 10 years; then 60% increase to \$17,362	\$0

the policy. Premiums are guaranteed not to increase with the asset-based policy.

Both policies are fairly comprehensive with their coverage, including for long-term care facilities like nursing homes, assisted living facilities, home health care, homemaker services, hospice care, adult day care, international coverage, respite care, bed reservation, care coordination, caregiver training, and supportive equipment. Both policies also offer the standard qualifications for receiving benefits, which include either being unable to perform two of six standard Activities of Daily Living (ADLs), or being cognitively impaired, as determined by a qualified physician. The health-based policy requires more rigorous underwriting, while the asset-based policy includes a basic health questionnaire and fewer underwriting and premium classifications. The asset-based policy also provides a death benefit for unused long-term care benefits (it is \$125,000 if no benefits are received). This feature is not available with the health-based policy.

We consider scenarios for a 50-year old couple and a 65-year old couple. For the 50-year olds, the combined annual premiums for the health-based policy are \$5,935 for the first 10 years, and then premiums rise to \$9,496 thereafter. For the asset-based policy, coverage could be obtained either as

one upfront payment, a fixed term for premiums, or ongoing premiums. The couple chooses ongoing premiums, which are \$6,069 annually. This consists of \$2,303.75 for the base policy with the \$125,000 death benefit and 25 months of long-term care coverage, \$192.50 for the waiver of premium, and \$3,572.75 for the lifetime continuation of benefit rider with a 3% compounded growth rate for benefits. The continuation of benefit rider becomes the source of benefits once long-term care expenses exceed the amount of the death benefit.

For the 65-year old couple, ongoing premiums total \$10,851 for the health-based policy for 10 years, and then rise to \$17,362. For the asset-based policy, since this couple is at retirement, they decide to pay a one-time premium for their policy with financial assets held in their low-volatility contingency fund. This premium is \$177,293, which consists of \$75,191.25 for the base policy with 25 months of coverage combined with a \$125,000 death benefit, and \$102,101.45 for the lifetime continuation of benefits rider. It is important to also note that waiting until 65 creates a greater risk that someone within the couple has developed a medical condition which makes him or her ineligible for health-based coverage. In these circumstances, the couple may still be able to qualify for the asset-based policy with less stringent underwriting.

Results for the 65-year old couple

The primary case study is for a 65-year old couple, with details of their two policies provided in Table 1. First, Table 2 shows the distribution of costs for three long-term care events using three funding strategies, assuming that the financial assets in the contingency fund are invested in low-volatility assets: 100% bills. For the no long-term care event case, self-funding results in no explicit cost. The distribution of costs for insurance are driven by two factors: longevity and market returns. With the low-volatility assets, though, longevity is the primary driver for differences in outcomes. For health-based long-term care insurance with ongoing annual premiums, a short lifetime represents less premiums paid, and a long lifetime represents more premiums paid. Meanwhile, for asset-based insurance, the cost differences are driven by longevity as well. There is only a single premium paid for the insurance, but the stochastic present value of the death benefit will be greater for shorter lives, and less for longer lives. It is important to recognize from Table 2 that the net costs for insuring long-term care expenses are less than half for the asset-based approach relative to the health-based approach. This holds true across the distribution of potential spending outcomes.

Next, for a “mild” long-term care event lasting five years, the distribution for self-funding costs ranges

from \$132,452 to \$366,616. In 2015 dollars, this event would cost \$228,000 to finance. The range of costs again depends on longevity and the market experience. Costs can be less when the remaining lifetime is less than five years, and in cases that the return on bills exceeds the cost growth of the long-term care expenses. Costs can be greater when the long-term care event happens in the more distant future and when the costs of long-term care grow more rapidly than bill returns. Both types of insurance help reduce the net costs for long-term care. Because the asset-based approach has characteristics of a high-deductible policy, the health-based policy does have an edge for the low-cost (10th percentile) portion of the distribution, but asset-based care provides a lower cost at the median and 90th percentiles. The range for the health-based approach is \$140,851 to \$357,528, while the range for the asset-based approach is \$180,177 to \$307,827.

Finally, for a severe event, the total costs with today’s pricing is \$769,540. The range of costs experienced is wide in the self-funding case. Costs may be less when both members of the couple live less than 15 years, or when bills grow at a faster pace than long-term care expenses. Costs may be greater when cost-inflation exceeds the discount factor over long periods of time. With both types of insurance, the net costs are

Table 2
Costs of funding long-term care for a 65-year old couple
financial assets earmarked for LTC are invested as 100% bills

		Self-Funding	Health-based LTCI	Asset-based LTCI
No LTC event	10th Percentile	\$0	\$185,696	\$80,844
	Median	\$0	\$283,381	\$112,173
	90th Percentile	\$0	\$381,282	\$142,711
“Mild” LTC event	10th Percentile	\$132,452	\$140,851	\$180,177
	Median	\$227,317	\$251,217	\$214,401
	90th Percentile	\$366,616	\$357,528	\$307,827
“Severe” LTC event	10th Percentile	\$476,732	\$88,439	\$180,572
	Median	\$765,979	\$256,765	\$237,566
	90th Percentile	\$1,165,538	\$623,684	\$440,901

substantially lower than with self-funding. Asset-based LTCI supports a lower median cost compared to health-based LTCI, and the range of costs is less both on the down side and the up side. At the extreme, the 90th percentile of costs with a “severe” long-term care event suggest that the asset-based approach requires \$440,901 to meet costs which exceed benefits, while health-based funding requires \$623,684 to cover the full costs. Self-funding requires \$1,165,538 to fund the severe long-term care event at the 90th percentile. Comparing the asset-based strategy to self-funding, the couple can set aside \$724,637 less than otherwise in a contingency fund while still being able to support these extreme long-term care expenses.

Results for the 50-year old couple

The basic story for 50-year olds is similar to the 65-year old case. Table 3 provides the results. There are a range of costs for different long-term events which are impacted differently with various funding mechanisms. With health-based insurance, premiums are lower than for 65-year olds because of the reduced risk for insurance companies at this stage, but premiums will generally be paid for longer. For the asset-based approach, annual premiums are also used. However, in the no event case, the main driver for the lower costs with the asset-based insurance is the death benefit rather

than the slightly lower premiums. The sooner the death benefit arrives, the less it will be discounted, and this is why the relevant difference in costs reduces as we move toward the higher cost region of the distribution. Higher costs are associated with longer lives and more lifetime premiums paid. For the “mild” and “severe” events, we observe that both types of insurance again tend to reduce costs relative to the self-funding case. Because of the high-deductible nature of the asset-based insurance, the two types of insurance are more comparable for the mild event, and the asset-based strategy has the edge for the “severe” events. At the 90th percentile for the “severe” event, the asset-based insurance reduces the cost by \$786,695, relative to self-funding, suggesting that the couple may be more comfortable with a substantially smaller contingency fund set aside as reserves for long-term care expenses. Intuitively, the premiums in the no event case could be viewed as the cost of creating \$786,695 of additional liquidity in the severe event case. This cost is also \$220,145 less than for the health-based insurance.

Table 3

Costs of funding long-term care for a 50-year old couple financial assets earmarked for LTC are invested as 100% bills

		Self-Funding	Health-based LTCI	Asset-based LTCI
No LTC event	10th Percentile	\$0	\$149,978	\$76,989
	Median	\$0	\$210,757	\$115,426
	90th Percentile	\$0	\$275,395	\$151,324
“Mild” LTC event	10th Percentile	\$101,896	\$145,003	\$139,695
	Median	\$208,861	\$208,134	\$209,369
	90th Percentile	\$399,495	\$288,767	\$344,523
“Severe” LTC event	10th Percentile	\$377,534	\$136,615	\$114,544
	Median	\$724,139	\$250,697	\$205,143
	90th Percentile	\$1,300,800	\$734,250	\$514,105

Raising awareness of the need for long-term care insurance

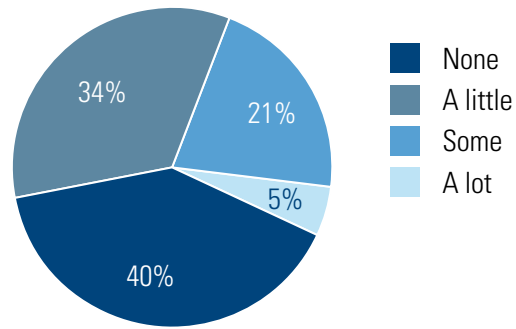
Another important barrier to the purchase of long-term care insurance is a general lack of knowledge about the product. Unlike the loss of a car, most consumers are unaware of the potential magnitude of the out of pocket costs of long-term care or may mistakenly believe that Medicare will cover all or most of their long-term care expenditures. A consumer who has a weak grasp on the potential risk and of the potential insurance solution will not buy the product.

According to the newest data on long-term health care expense, the median national daily rate for a private nursing home in the U.S. is \$250, or \$91,250 per year (Genworth, 2015). These costs, however, range from between \$60,000 to \$70,000 per year

Figure 4

Self-assessment of long-term care insurance

How would you rate your knowledge of long-term care insurance?

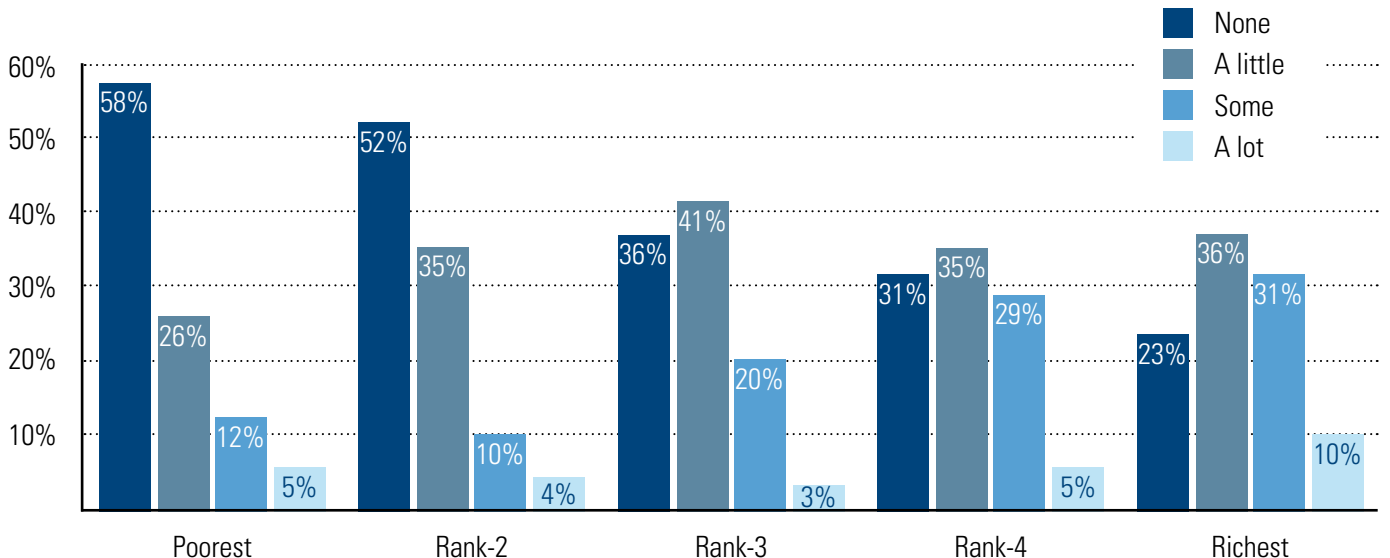


in lower-costs states away from the coasts. For example, the median private nursing home costs \$60,773 in Missouri, \$68,620 in Texas, and \$68,255 in Iowa. Costs rise to \$96,725 in Florida, \$113,150 in Pennsylvania, and \$104,025 and even higher in states with the highest labor and land costs. The median

Figure 5

Wealth quintile and long-term care insurance knowledge

Wealthier are more knowledgeable



cost of lower levels of care, for example in assisted living facilities, is \$43,200.

Figure 4 shows that knowledge of long-term care insurance is low among respondents 55 and older. Not only are many consumers unaware of the costs of long-term care, only 5% believe that they know “a lot” about long-term care insurance and just 21% report having “some” knowledge.

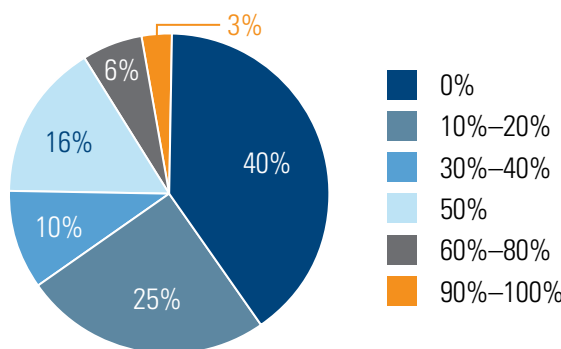
The lack of awareness of long-term care insurance is not as great among the Americans who are most at risk of significant wealth losses not covered by Medicaid. Among those in the top 20th percent of wealth, 10% know “a lot” and 31% have “some” knowledge of long-term care insurance (Figure 5). While 58% of those in the lowest wealth category have no knowledge of long-term care insurance, just 23% in the highest wealth category have no knowledge.

Clearly, there is some awareness of long-term care insurance among those who are at greatest risk of suffering significant wealth losses due to long-term care expenditures. It does appear, however, that many wealthy older clients need to be educated on the need for protecting against the large and prolonged potential expenses of long-term care in order to incorporate protection into a retirement income plan.

Figure 6

Likelihood of purchasing long-term care insurance

Highest 20% wealth likelihood of purchasing LTC insurance



Higher knowledge among higher wealth respondents translates into a higher likelihood of purchasing long-term care insurance. A quarter of respondents in the top wealth category indicated a 50% likelihood of purchasing long-term care insurance in the future (Figure 6). Another 25% indicated a 10-20% chance and 10% percent indicated a 30% likelihood.

The larger percentage of high wealth respondents (40%) who indicated no likelihood of purchasing long-term care may best be viewed as a reflection of the generally low awareness of the need for long-term care insurance. That only a quarter of them see a 50% chance of purchasing insurance does indicate a demand for the product, but one that will likely need to be enhanced by increasing knowledge of risk exposure.

Conclusions

A retirement income plan must provide a framework for meeting planned retirement expenses, having access to reserves for unexpected contingencies, and also supporting any legacy objectives. Large unplanned expenses, such as those relating to a costly long-term care event, have the potential to wreak havoc on a retirement income plan. This paper has explored three different possible funding mechanisms for long-term care events in order to provide a broader understanding about the net costs of long-term care with different funding strategies.

Self-funding leads to the widest range of costs. Naturally, the cost is \$0 if no long-term care event happens, but costs can be substantial if a long stay in a nursing home is needed. At some point, these growing costs may leave one unable to meet other spending and legacy objectives. Even in the event that a long-term care event does not take place, self-funding may still exact a real cost on retirement if fear leads to too much assets being set aside for these potential contingencies. In this case, retirement spending suffers in favor of an unintentionally large legacy.

Insurance reduces the overall range of costs. If no long-term care event happens, then the cost of long-term care becomes the cost of the premiums. But when an expensive event takes place, the net cost is the cost of care plus the cost of premiums, less the benefits received by the insurance policy. What we have observed with the choice between comparable health-based and asset-based long-term care policies, is that the insurance policies both reduce the net costs of long-term care when a qualifying event has taken place. Through the death benefit and the fundamentally high-deductible nature of the asset-based policy, it is able to provide similar coverage at a noticeably lower cost in the event that no qualifying long-term care event takes place. In either case, by reducing the net potential costs from long-term care at the extreme side, insurance may

free up more assets to be truly liquid so they may be used and enjoyed in retirement, rather than serving as unnecessary contingency funds that only lead to additional unintended legacy.

These findings suggest a quantitative explanation for which asset-based long-term care insurance can help to reinvigorate the long-term care insurance market, in addition to the ways in which these policies can also satisfy many of the qualitative concerns which have developed regarding traditional health-based long-term care insurance policies.

The use of traditional health-based long-term care insurance was never widespread and has declined in recent years. Consumers fear the use-it-or-lose-it nature of traditional policies. Asset-based policies may also be available for some individuals who are otherwise unable to qualify for health-based policies, especially for those who have waited until their 60s to seek insurance. An optional continuation of benefit rider is also available with asset-based policies which allow for unlimited lifetime benefits for both members of a couple. Americans also worry about the possibility that insurance premiums could be increased in the future, as has been a frequent occurrence with health-based long-term care policies. Such rate increases could make policies unaffordable, leading to a greater lapse rate among participants. Also, asset-based policies which are available with a single upfront premium, reduce the lapse risk in which someone who begins to experience cognitive decline unintentionally (or misguidedly, through confusion) allows their health-based insurance policy to lapse just before they would have become qualified to use it (Hou, Sun, and Webb, 2015). For these quantitative and qualitative reasons, asset-based policies provide a viable alternative for those seeking long-term care insurance.

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Appendix on capital market expectations

The capital market expectations connect the historical averages from Robert Shiller's dataset together with the current market values for inflation and interest rates. This makes allowances for the fact that interest rates and inflation are currently far from their historical averages, but it also respects historical averages and does not force returns to remain low for the entire simulation.

Table A1 provides summary statistics for the historical data, which guides the Monte Carlo simulations for investment returns. A Cholesky decomposition is performed on a matrix of the normalized values for the risk premium, bond yields, home prices, bills and inflation. A Monte Carlo simulation is then used to create error terms for these variables, which preserve their contemporaneous

correlations with one another. Then the variables are simulated with these errors using models that preserve key characteristics about serial correlation.

With the correlated error terms, inflation is modeled as a first order autoregressive process starting from -0.1% inflation in 2014 and trending toward its historical average over time with its historical volatility. Bond yields are similarly modeled with a first order autoregression with an initial value of 2% in 2014. Bills are simulated from an initial value of 0.2%. Next, home prices and the risk premium are both modeled as random walks around their historical averages and with their historical volatilities. Bond returns are calculated from bond yields and changes in interest rates, assuming a bond mutual fund with equal holdings of past 10-year Treasury issues. Stock returns are calculated as the sum of bond yields and the equity premium over yields. Long-term care cost inflation is simulated as 1% higher than the simulated inflation rates. For instance, if inflation is 1.6% in a particular year, long-term care costs grow at 2.6%.

Table A1

Summary statistics for U.S. returns and inflation data, 1890-2014

	Correlation coefficients									
	Arithmetic means	Geometric means	Standard deviations	Stocks returns	Risk premium	Bond yields	Bond returns	Home prices	Bills	Inflation
Stock returns	10.8%	9.2%	18.2%	1	0.99	0.04	0.05	0.15	-0.09	0.05
Risk premium	6.1%	4.4%	18.3%	0.99	1	-0.09	-0.02	0.13	-0.20	0.03
Bond yields	4.7%	—	2.4%	0.04	-0.09	1	0.53	0.14	0.85	0.22
Bond returns	4.8%	4.6%	6.6%	0.05	-0.02	0.53	1	-0.06	0.34	-0.09
Home prices	3.4%	3.1%	7.1%	0.15	0.13	0.14	-0.06	1	0.05	0.39
Bills	4.5%	—	3.0%	-0.09	-0.20	0.85	0.34	0.05	1	0.14
Inflation	2.9%	2.8%	5.4%	0.05	0.03	0.22	-0.09	0.39	0.14	1

Source: Data from Robert Shiller's webpage. The U.S. S&P 500 index represents the stock market, 10-year Treasuries represent the bond index, the Shiller-Case home price index for homes, 6-month Treasuries for bills, and the Consumer Price Index for inflation.

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