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Integrating Whole Life Insurance into Retirement Income Planning

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Introduction

Can more efficient retirement income solutions be obtained through careful efforts to combine investment portfolios, income annuities, and whole life insurance into a retirement income plan? With risk pooling and the ability to better manage longevity and sequence of returns risk, the answer is yes.

A basic investment portfolio allocates assets between stocks and bonds. Stocks are volatile investments which focus on growth, and bonds are generally used to diversify and reduce overall portfolio volatility. The benefits from investment strategies are liquidity and upside growth potential. But investments alone do not necessarily create an efficient retirement plan. By efficiency, we mean that there may be an alternative way to structure retirement assets during working years, to be able to support a higher level of retirement spending as well as an equal or greater amount of legacy assets at the end of retirement.

Actuarial science principles can contribute to better retirement outcomes. Actuarial science principles allow personal retirement planning to be treated more like a defined-benefit pension plan. These plans pool financial market risks between different cohorts and pool longevity risk between different individuals within the same cohort. By including actuarial science principles, longevity-protected spending can be determined in advance through these pooling mechanisms. In contrast, those relying on their own devices to manage market and longevity risks must behave conservatively regarding market return assumptions and the planning horizon, lest they run out of assets. And even with conservative spending assumptions, investment portfolios do not have guarantees and remain vulnerable to depletion.

To compare with investments, we can think of the combination of whole life insurance and income annuities as “actuarial bonds” with an average maturity equal to life expectancy. These financial products, which invest primarily in a fixed income portfolio, can better hedge a retiree’s personal financial goals. By combining them, the overall planning horizon can essentially be fixed at something close to life expectancy, as whole life insurance provides a higher implied return when the realized lifetime is short, and income annuities provide a higher return when the realized lifetime is long. This is a more effective way to use fixed income assets than as a portfolio volatility reduction tool.

As for specific options to incorporate whole life insurance into retirement income, we will consider three possibilities. First, at the most basic level, the death benefit for life insurance provides a method to meet a legacy goal using risk pooling and tax advantages that is distinct from preserving investment assets for this purpose. This can allow the retiree to potentially enjoy a higher standard of living in retirement than otherwise possible, while also ensuring that assets have been earmarked to meet the legacy goal.

Second, a permanent death benefit supported through whole life insurance can be integrated into a retirement income plan by helping the retiree to justify the decision to buy an income

annuity and to overcome the behavioral hurdles related to using annuities. The death benefit allows the retiree to purchase a life-only single life annuity that offers the most mortality credits to the risk pool and therefore offers the highest payout rate to the owner. The death benefit then hedges the risk of loss on the annuity due to an early death and replaces the asset for the household.

The key idea is that the retiree can feel comfortable buying an income annuity because of the understanding that the life insurance death benefit will return the amount spent on the annuity premium to the household at the time of death when annuity payments cease. As opposed to obtaining a form of life insurance for the household through the annuity by adding cash refund provisions or a joint life option, this integrated approach with a separate life insurance policy creates greater flexibility for the household by reducing the required annuity premiums needed to meet a spending goal.

Finally, the cash value of whole life insurance may serve as a volatility buffer to help manage sequence risk in retirement. Because the insurance company is better positioned to use asset-liability matching to hold assets to maturity, cash value for individual policyholders does not experience downside risk for capital losses in the face of rising interest rates. It is guaranteed to grow and can provide a temporary resource to supplement retirement spending rather than being forced to sell portfolio assets at a loss during poor market environments or when the portfolio is in a more precarious position with a higher distribution rate needed to manage a spending goal from a declining asset base. With this management of volatility and reduction of the sequence of returns risk triggered by needing to sell assets at a loss to meet spending goals, the volatility buffer has the potential to sustain an increased standard of living from a given asset base than strategies that rely primarily on an investment portfolio. We consider using cash value to support retirement spending in order to preserve the portfolio whenever remaining portfolio assets fall below their initial level at the start of retirement. This alternative does not specifically incorporate an income annuity into the retirement plan, though it could also be used along with an annuity as well.

We examine these options through a case study with a 40-year old couple. The baseline for comparison with each of these options is to use a term life policy to meet life insurance needs during the working years, and to then otherwise draw retirement income with systematic withdrawals from an investment portfolio. This is the “buy term and invest the difference” strategy or investments-only strategy that is traditionally used by investment managers. The strategy is compared against various options during retirement that include roles for whole life insurance and/or income annuities.

By tracking the course of income and legacy wealth through age 100 for each scenario, we find that the inclusion of whole life insurance into the financial plan can allow for greater income and legacy throughout retirement when targeting a specific legacy goal, when using the covered asset strategy, or when implementing the volatility buffer. Our simulations show that the risk pooling features of the income annuity and life insurance are essentially a

more significant factor in boosting retirement income than is the greater upside potential offered through increased reliance on investments. We also show that the volatility buffer does provide an effective way to help manage sequence of returns risk. Incorporating whole life insurance, even though it requires larger premiums than term life insurance, supports a higher income level while also supporting a larger legacy. We can indeed conclude that an integrated approach is a more efficient retirement income strategy.

Background on Life Insurance

The traditional purpose of life insurance is to provide a death benefit to help support surviving family members or a family business in the event of the policyholder's untimely death. Human capital is the present value of all the wages we can expect to earn during the remainder of our working years. For those with families or other fixed obligations that depend on receiving that human capital in the form of those future wages, the life insurance death benefit can serve as a replacement for lost wages in the event of an early death during the working years.

In this context, the amount of life insurance one seeks to hold is the amount dependents would need to sustain their lifestyle or meet their obligations in the absence of the policyholder being able to contribute to the family through wages or other caretaking. But life insurance can play other roles as part of a lifetime retirement income plan as well. Here we investigate life insurance from the broader retirement income perspective.

For this basic human capital replacement framework, one generally does not associate a need for life insurance after retirement begins. The value of human capital approaches zero as the working years end. The household subsequently funds lifestyle using assets accumulated during the working years.

Term life insurance can potentially well serve the role of human capital replacement. With term life insurance, one purchases a contract to receive a death benefit should death occur within a certain number of years or by a certain age. The term could be chosen to end once family needs or other financial obligations no longer depend on the future earnings of the worker. A mantra of "buy term and invest the difference" developed in the investing world as the way to approach the life insurance decision. Because the death benefit is temporary with term life insurance, and it also does not accumulate any cash value, term-life premiums will be smaller than with other forms of life insurance, at least during the level pay period covered by the term policy. For a given pool of funds, this affords a greater remaining amount to be invested after life insurance obligations are met. An analogy can be drawn to leasing the death benefit during the time it is needed, and then cancelling the lease once this need has ended.

But for lifetime financial planning, is it best to pay the smallest amount possible for life insurance in order to invest as much as possible in the financial markets? This research tests the concept of "buy term and invest the difference" by investigating whether there are

better ways to approach life insurance from the context of comprehensive lifetime financial and retirement income planning. The focus is specifically about whether whole life insurance should be considered by the household as part of a longer-term retirement strategy that can be set into motion during the accumulation phase.

Even though term insurance premiums are lower, this type of life insurance may not always provide the best value in the context of financial planning outcomes related to getting the most spending power and legacy from the available asset base. We focus particularly on whole life insurance as alternative to term insurance. We compare retirement income strategies with and without whole life insurance to determine how it may fit into a retirement income plan as an alternative to "buy term and invest the difference" approaches to financial planning.

Whole life insurance receives its name because it provides the owner with a death benefit for the whole lifetime. It is a form of permanent life insurance. Whole life also extends beyond providing just a death benefit because it includes a cash value accumulation component. Whole life insurance may be viewed as a fixed-income investment vehicle that incorporates a permanent death benefit as well. A whole life policy provides a tax-free death benefit and tax-deferred growth for its cash value. When structured properly, there are also ways to access the cash value on a tax-free basis. Whole life policies include provisions that guarantee the amount and duration of premium payments. The policy endows at the point that the cash value has grown to equal the death benefit. Whole life policies are typically designed to endow at either age 100 or age 121.

With whole life insurance, there is as a policy cash value that provides a portion and eventually the entire death benefit. This cash value is a reserve that builds over the years because through the annual premiums the owner essentially overpays during early years vis a vis the actual mortality cost. The cash value represents the amount that the policy holder could receive by surrendering the policy before death. This is a feature not provided with term life insurance. The cash value represents an asset for the policyholder and the cost to the insurance company of providing the full death benefit is not the full amount of the death benefit. Rather, it is the difference between the death benefit and the cash value. Nonetheless, the full amount of the death benefit is provided to the beneficiary at the policyholder's death. This aspect helps to reduce the costs of insurance implicit inside the whole life policy over time relative to a term policy.

The Case Study

Steve and Susie are a married 40-year-old couple with two children. Steve is employed and Susie is a homemaker. Steve is seeking an additional amount of life insurance death benefit of $500,000 that, along with his other life insurance, will support his family in the event of his death prior to age 60. Steve plans to retire at age 65, but because a 25-year term life policy is not available, the analysis will be created assuming that a death benefit is needed

for human capital replacement purposes through age 60, and the whole life insurance policy for comparison to the term life policy will be a limited pay policy through age 60.

Steve presently has $275,000 saved in a 401(k) plan with his employer, which is invested with an equity glide path strategy matching a typical target date fund. The asset allocation glidepath is 80% stocks for ages 35-44, 65% stocks for ages 45-54, 50% stocks for ages 55-64, 40% stocks for ages 65-74, and 30% stocks for ages 75 and older. He would like to plan for retirement at 65, and he believes it will be possible to set aside $19,000 per year from his salary for his life insurance and 401(k) contributions. The $19,000 value represents the 401(k) employee limit, and we assume it grows with inflation over the next 25 years until his planned retirement date, and that the contribution limit is increased with a catch-up of $6,000 in today's dollars after age 50. Steve expects to be in the 32% marginal tax bracket in his pre-retirement and post-retirement years.

In all scenarios, we assume that Steve is directing at least enough to the 401(k) to satisfy the conditions for the highest possible company match, though we do not specifically model any company match when simulating retirement income. An employer match would increase income proportionately for all our scenarios. More generally, Steve and Susie may also have other resources in retirement which we are not analyzing. We are modeling the relevant features about how to best make the investment and insurance decisions for the $19,000 annual set-aside to meet life insurance needs and to obtain the most desirable retirement outcomes from this portion of their household resources.

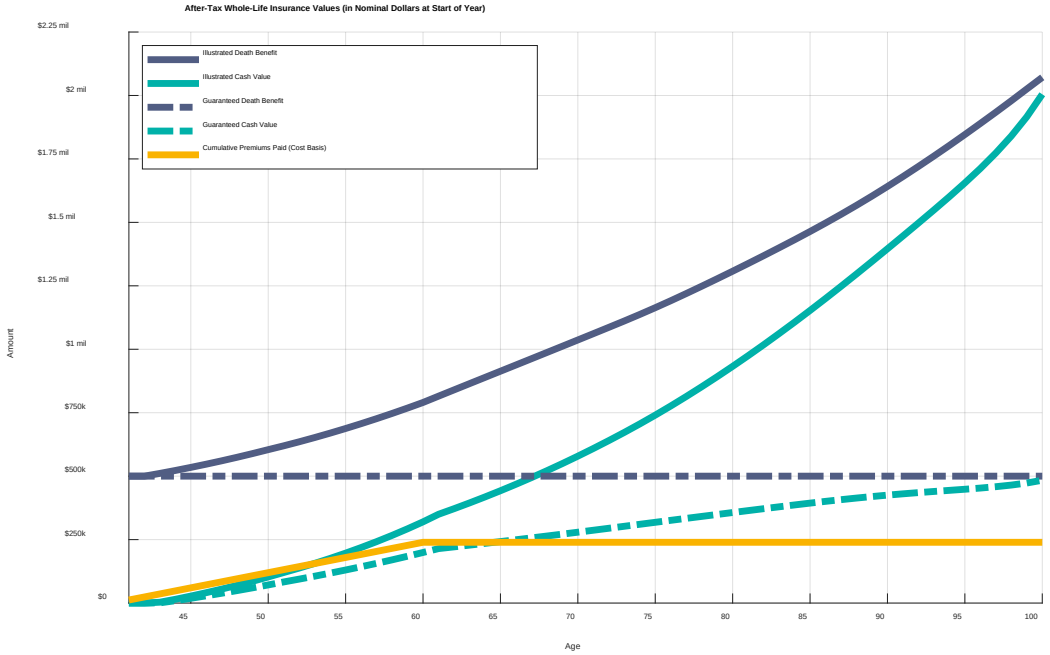
Steve must decide whether to purchase a term life insurance policy to provide his family with financial protection against the loss of his income, or to purchase a whole life insurance policy which can provide the same protection against his premature death, as well as being integrated into his retirement income strategy. From the savings he can set aside for his insurance and retirement planning needs, he will pay for life insurance premiums and the taxes to cover those premiums (at a 32% marginal tax rate), and the remainder will go into his tax-deferred 401(k).

The term life policy he considers is a 20-year level term policy with a $500,000 death benefit and an annual premium of $532.50. This is based on an illustration run by a major life insurance carrier in September 2019 for a 40-year old male with preferred health status. Taxes on the pre-tax income required to cover this premium are $251. After paying the term life premium and taxes, he would contribute the remaining $18,217 per year to his 401(k). Because his insurance premiums are fixed and his savings will grow, the 401(k) contributions will grow to represent an increasing portion of his available pool of funds for investments and insurance over time.

The whole life policy Steve considers also carries an initial death benefit of $500,000 and the whole life insurance annual premium is $11,970. This premium is also based on an illustration run in September 2019 from the same carrier for a 40-year old male with preferred health status. It is a limited pay policy with premiums paid through age 60 when the policy has become fully paid up with an endowment age of 100. It is a participating

policy, and the nominal values for the death benefit and cash value (both illustrated at the current dividend rate and guaranteed) are shown in Figure 1.

Figure 1
Whole Life Insurance Policy Illustration Values for a 40-Year Old Male



Unlike term insurance, the death benefit has the potential to grow over time. Taxes to cover the whole life premium are $5,633, and so with a whole life policy Steve can contribute $1,397 in the first year to his 401(k). Total 401(k) contributions will increase over time as a result of the pool of funds increasing with inflation and the catch-up contribution after age 50, while the whole life premium remains fixed in nominal dollars. While premiums end at age 60, cash value is guaranteed to grow sufficiently net of life insurance costs to equal the death benefit at age 100.

For investment returns, we simulate outcomes based on historical volatility and today's lower interest rate starting point. Inflation is fixed at 2% annually. Long-term real bond yields are 0.47%, or 2.47% for overall interest rates. The historical volatility for long-term US government bonds since 1926 in the *Stocks, Bonds, Bills, and Inflation* data from Morningstar is 9.8%. The 'risky' asset is based on large-capitalization stocks in the United States. Morningstar data reveals that the arithmetic average return on large-capitalization stocks for the period 1926-2018 was 12%, with a standard deviation of 20%. This is 6% larger than the 6% average return earned by long-term U.S. government bonds. The subsequent analysis uses this historical 6% equity risk premium with 20% standard deviation.

To better understand the impacts of investment volatility on the upside and downside, Monte Carlo simulations are used to create a distribution of outcomes. The tables of results report the 10th percentile, median, and 90th percentile from this distribution. We can interpret the 10th percentile outcome as a bad luck case with poor investment returns. It is possible that retirement outcomes could be even worse, but generally Steve and Susan could expect better retirement outcomes than seen at the 10th percentile. The median reflects more typical outcomes. It is the midpoint of the distribution, with a 50% chance for worse outcomes and a 50% chance for better outcomes. These are reasonable outcomes for Steve and Susan to expect. The 90th percentile is a good luck outcome in which investments perform very well, supporting greater spending and larger account balances.

Note that these results are presented in terms of nominal dollars to avoid reader confusion about why inflation-adjusted dollars are less than nominal dollars. This decision does not impact any comparisons for the relative outcomes between scenarios. However, readers should understand that the purchasing power of a given amount of income or wealth will be less in the future. For today's 40-year old, the real purchasing power of money will be about 60% of what it is today at age 65, and about 30% of today at age 100, assuming average inflation.

The investment portfolio is modeled using 10,000 Monte Carlo simulations for investment returns based on these capital market expectations. To be comparable with the actual insurance products that already have fees included into their pricing, we assume a 1% overall fee on investments assets that reflects a combination of expenses on investments and advisory fees. As investments are held in tax-deferred accounts, there is no further tax drag to worry about. At retirement, Steve completes a rollover of his 401(k) to a traditional IRA. This is not a taxable event. Investors earn the market returns net of fees and portfolio distributions for retirement spending and legacy are taxed as income.

Regarding asset allocation, an important methodological point to discuss is how we treat actuarial bonds like whole life insurance and income annuities. With a whole life policy, the cash value is a liquid asset contained outside the financial portfolio. It behaves like fixed income, though it is not exposed to interest rate risk (i.e. the accessible cash value does not decline when interest rates rise). Cash value is not precisely the same as holding bonds in an investment portfolio, as there is not a practical way to rebalance the portfolio between stocks and policy cash value. Nonetheless, Steve will incorporate the cash value into his asset allocation decisions to maintain the overall proportion between stocks and "bonds" for household assets. This is the same for income annuities, which are a bond-like asset also providing mortality credits. With both, if the target date fund calls for a 50% stock allocation, then the actual stock allocation Steve uses will be 50% of the sum of the financial portfolio balance, the pre-tax value of life insurance cash value, and any annuity premium after annuitization takes place, divided by the portfolio balance. Though this could conceivably call for a stock allocation of greater than 100% when the cash value or annuity premium is large relative to the financial portfolio, we constrain the maximum possible stock allocation for the financial portfolio to not exceed 100%. This change in

asset allocation, when viewed holistically, allows for a higher distribution rate while maintaining the same probability of success and overall risk level for assets.

Life insurance premiums are paid with post-tax funds. But no taxes are due on the death benefit, making it a post-tax number. As well, a life insurance policy can be arranged so that funds can be borrowed from the cash value without being taxed, which does reduce the death benefit on a one-for-one basis for any dollars removed. So that dollars in the 401(k) can be compared on an equal basis to death benefit and cash value numbers in the life insurance, the investment values are expressed on a post-tax basis.

Table 1 provides the results for the two different life insurance approaches during the accumulation period between ages 40 and 65. The top summarizes how they allocate their savings between insurance and Steve's 401(k) for the scenarios as we have already described. Next, we observe the distribution of 401(k) assets at age 65. Scenario 1 is to buy term insurance and invest the difference in a target date fund. In post-tax terms at retirement, the wealth accumulation ranges from $813k at the 10th percentile to $2.43 million at the 90th percentile, with a median outcome of $1.36 million. Scenario 2 presents 401(k) assets when whole life insurance is used. Because higher premiums mean less is contributed to the 401(k) plan, lower accumulations can be expected at retirement. At the median, the 401(k) balance is 20% less when whole life insurance is used. It is 32% less at the 10th percentile and 14% less at the 90th percentile. The differences vary on account of the asset allocation effects in which the cash value, though not held within the 401(k), is treated as a fixed-income asset. This results in a higher stock allocation in the 401(k) when whole life insurance is used.

The story changes if we add the accumulated cash value to investigate the overall assets. Illustrated cash value at the retirement date is $468k. Term insurance does not provide a cash value. Across the distribution, the combination of cash value with investments is larger. At the median, the combination is 14% larger. There are three basic reasons for this outcome: cash value insurance provides tax advantages, whole life insurance has lower insurance costs than term life insurance because the life insurance company only needs to protect the difference between the death benefit and the cash value, and the insurance company's general account can invest for higher fixed income returns than a household investor by seeking greater credit risk through diversification, less liquid assets, longer maturity bonds, and access to institutional prices on trades.

Table 1

The Accumulation Phase, Ages 40 to 65

	Investments + Term Life	**Investments + Whole Life**
Term-Life Premiums	$533	$0
Whole Life Premiums	$0	$11,970
Taxes Paid	$251	$5,633

Age 40 Remaining Contribution to 401(k)	$18,217	$1,397	

Distribution of 401(k) Assets at Age 65			% change
10th Percentile	$813,724	$553,320	-32%
Median	$1,360,698	$1,084,172	-20%
90th Percentile	$2,426,452	$2,079,616	-14%

Life Insurance Values at Age 65		
Cash Value	$0	$467,899
Death Benefit	$0	$913,487

Distribution of 401(k) Assets + Whole Life Cash Value at Age 65			
10th Percentile	$813,724	$1,021,219	25%
Median	$1,360,698	$1,552,071	14%
90th Percentile	$2,426,452	$2,547,515	5%

Note: Investment and Insurance values at age 65 are provided on an after-tax basis assuming a 32% marginal tax rate.

We now investigate three different ways that this couple considers incorporating whole life insurance into their lifetime financial plan: (1) as an alternative means for funding a legacy goal, (2) as a behavioral justification for also including an income annuity in the retirement plan, and (3) as a volatility buffer to help manage sequence of returns risk for their investments. In the following analyses, the baseline Scenario 1 is the "buy term and invest the difference" case. Term insurance is used for human capital protection during the working years, and its smaller premium allows for a greater amount to be contributed to the tax-deferred investments.

Efficiently Funding a Legacy Goal with Whole Life Insurance

The most natural use for permanent life insurance is to fund a legacy goal. Table 2 compares the effectiveness of two strategies for meeting a legacy goal during retirement: "buy term and invest the difference" and using whole life insurance. Values are expressed on an after-tax basis with a combined 32% tax rate applied to qualified plan distributions and legacy values.

As Steve and Susan are now getting more serious about their financial planning, they begin to also think about their legacy goals for their children. Knowing how much to leave to ones' children is not a scientific process, but this couple anchors onto their $500,000 current life insurance need adjusted for inflation and believes that an appropriate overall legacy goal is to provide $1.61 million after taxes should he live to age 100. The couple would like to support the highest living standard possible while still maintaining a 90% chance that this after-tax legacy goal will be met without relying on the whims of the market.

The question becomes: what is the most efficient way to meet the after-tax legacy goal while also being able to support the highest retirement lifestyle from this same pool of assets in a way that does not jeopardize the legacy goal?

If Steve uses whole life insurance, he can now seek the highest spending rate for his remaining investment assets that maintains a 90% chance that the portfolio is not depleted by age 100. He no longer needs to preserve a safety-margin for the investments to provide 90% confidence. This allows for a higher spending rate from investments.

This is the trade-off that we must test empirically: can Steve spend more or less when using whole life insurance after considering the trade-off between the higher insurance premiums and less 401(k) assets at retirement, but the ability to use a higher distribution rate from investments since there is no longer a need to maintain the safety-margin with investments for legacy. Table 2 provides these results. In Scenario 1, the couple purchases term insurance to provide a death benefit for human capital replacement need. For the remainder of savings, they invest in their 401(k) and use this pot of investment assets to support their spending and post-retirement legacy goals. In Scenario 2, the couple maintains a whole life policy into retirement to cover legacy and invests the remainder in their 401(k) to cover retirement spending.

This example provides an extreme case to illustrate the point, because the investment assets in Scenario 1 at retirement are hardly sufficient to meet the legacy goal with 90% success while also supporting spending. The table shows a sustainable withdrawal rate of 0.05% in Scenario 1, as only a slight amount of spending is feasible to be able to support the legacy goal with sufficient confidence. Meanwhile, a 2.86% withdrawal rate is possible in Scenario 2. The withdrawal rate in Scenario 2 may be lower than anticipated for those familiar with the 4% rule of thumb about retirement spending, but it results from a 35 year planning horizon, the 1% fee, and the low interest rate environment. Scenario 1 requires a substantial safety reserve to support legacy, leaving little for spending. Scenario 2 covers legacy with life insurance allowing for greater spending from investments.

The higher distribution rate allows for more spending in Scenario 2 while also meeting the legacy goal. As for legacy wealth at 100, the couple sought a 90% chance to meet their legacy goal of $1.61 million after taxes and we see that this is approximately what is left in the 10th percentile for Scenario 1. At the 10th percentile, the illustrated death benefit is larger in Scenario 2 so that some spending from cash value would have been possible, though this is not simulated. For the remainder of the distribution, legacy wealth is less in Scenario 2. We can understand this as follows: the couple must spend less in Scenario 1 to ensure that investments can support their stated legacy goal. If they do not experience the bad market environment, Scenario 1 supports a larger legacy than intended at the cost of not enjoying as high a lifestyle as otherwise possible. The couple maintains extra reserves for their investment portfolio to ensure legacy, which means they spend less and may end up leaving behind even more than anticipated.

In Scenario 2, pooling risk through life insurance allows the couple to instead enjoy a higher standard of living throughout retirement while still meeting their stated legacy goal. Though legacy may be less at higher percentiles of the distribution, it still exceeds the stated legacy goal and allowed for a more comfortable retirement for the couple. Whole life insurance provided the couple a more efficient way to meet the legacy goal, which allows them to enjoy a higher standard of living in retirement with these assets.

Table 2

Whole Life Insurance as a Means to Support the Legacy Goal

	Scenario 1 Investments + Term Life (Baseline)	**Scenario 2 Investments + Whole Life**	% change from Baseline
Sustainable Spending Rate from Investment Assets (with 90% Success)			
	0.05%	2.86%	5620%
Distribution of Systematic Withdrawal Income at Age 65			
10th Percentile	$407	$15,787	3778%
Median	$676	$30,876	4467%
90th Percentile	$1,215	$59,450	4794%
Distribution of Legacy Wealth at Age 100			
10th Percentile	$1,621,057	$2,075,605	28%
Median	$3,802,228	$3,600,436	-5%
90th Percentile	$9,195,331	$6,711,261	-27%

Note: Monetary values are provided on a post-tax basis assuming a 32% tax rate.

Because investments are used as the source of legacy in Scenario 1, it becomes necessary to remain extra cautious about retirement spending to maintain the desired safety margin for investments in order to support the intended legacy. Scenario 2 allows for a higher standard of living in retirement while still providing the desired confidence that the legacy goal can be met by using actuarial science.

Integrating Life Insurance with Lifetime Income

Table 3 demonstrates another way to use life insurance as part of a lifetime plan. The life insurance death benefit can provide the psychological support needed to purchase a life-only income annuity as part of an integrated plan combining investments, whole life insurance, and income annuities. Life-only single life income annuities are positioned to take the most advantage of risk pooling and mortality credits to support the highest level of protected income from a given asset base. We consider three additional scenarios.

Scenario 1 uses the same "buy term and invest the difference" strategy as before, but now there is no specific legacy goal to be funded. The couple may spend more aggressively from their investment assets in retirement. Term insurance is used for pre-retirement human capital protection, and its smaller premium allows for a greater amount to be contributed to the tax-deferred investment account for systematic distributions in retirement.

Scenario 2 also uses term life insurance prior to retiring, but the couple will also purchase a joint-life income annuity at the retirement date to help support retirement spending.

Scenario 3 integrates investments with a whole life insurance policy and with a single-life income annuity purchased at retirement.

Upon reaching age 65 in 25 years, Steve and Susan will consider whether a single-premium immediate annuity (SPIA) might be a worthwhile addition to their retirement income plan. Income annuities offer a variety of options regarding whether income starts immediately or is deferred, whether income covers a single life or joint lives, whether there is a certain payment for a set number of years, whether any cost-of-living adjustments will be made to benefits, and whether cash or installment refund provisions are included in the event of an early death. To simplify our analysis, we consider two basic possibilities: Steve buys a single life-only immediate annuity at 65 on his life, or Steve and Susan buy a joint life and 100% survivor annuity for them both. Both income annuities include a 2% annual cost-of-living adjustment that matches the assumed inflation rate, so that the annuity income adjusts to keep the purchasing power consistent throughout retirement. In both cases the annuities are purchased with qualified retirement funds after Steve has stopped working and completes a rollover from his 401(k) to a traditional IRA.

A male life-only income annuity offers the highest payout rate (the most income) because the buyer offers the most "mortality credits" to the risk pool. Those dying earlier provide more funds to those who live longer. Generally, it is difficult to predict what annuity rates will be in twenty-five years. Because the Monte Carlo simulations stem from the current level of interest rates, we assume that the interest rate environment will be similar at the time of annuitization. However, because in 25 years it is likely that people will be living longer, we will make a downward adjustment to the payout rates to account for this increased longevity. In early October 2019, we obtained life-only annuity payout rates for 65 years olds from the same major carrier as the life insurance illustrations. The single-male option with a 2% COLA was paying 4.87%, while a joint-life option with 2% COLA was paying 3.89%. Using the Society of Actuaries 2012 Individual Annuitant tables with estimated mortality improvements over time, we estimate that in 25 years the longevity effect will reduce the payout rate at age 65 for a single male annuity by 0.36%, and the reduction for a joint-life version is 0.18%. This leads to a 4.51% assumed payout rate for single-life and a 3.71% payout rate for joint life. The single-life income annuity provides 22% more income for a given premium relative to the joint-life income annuity, since the payments are not expected to be received for as long.

With the accumulated investment assets, all retirement income in Scenario 1 will be generated with a systematic withdrawal strategy. Steve seeks annual spending adjustments that match the 2% overall inflation rate. The couple uses the highest withdrawal rate possible that keeps investments above $0 by age 100 with a 90% probability. This means accepting a 90% chance that the spending level can be sustained throughout retirement in inflation-adjusted terms. In Scenario 1, spending from these assets falls to $0 once the portfolio balance depletes.

Scenario 2 shares many similarities with Scenario 1. Steve uses the same term policy and invests the remainder in a tax-deferred account, leading to the same retirement date wealth accumulation. The difference happens at the retirement date. In Scenario 2, Steve purchases a joint-life and 100% survivorship income annuity with a premium amount equal to up to the pre-tax equivalent of the death benefit for the whole life policy at age 65. With a 32% combined marginal tax rate, the pre-tax amount to be annuitized is up to $1.34 million. In simulations where the couple's 401(k) balance has not grown sufficiently to leave at least $100,000 remaining after the annuity is purchased (to maintain a pool of liquid assets), the couple only annuitizes the amount that leaves $100,000 of liquid investable assets (on a pre-tax basis) after the annuity is purchased.

Though Steve does not use the whole life policy in this scenario, annuitizing this pre-tax equivalent amount allows for a proper comparison between Scenarios 2 and 3. After annuitization, the remaining portfolio balance will be utilized for retirement spending using a systematic withdrawal strategy that maintains a 90% probability that the account remains above $0 by age 100. The joint-life and 100% survivor income annuity provides income growing at 2% annually for as long as one member of the couple is alive, and any systematic withdrawals will supplement this income for as long as financial assets remain. Portfolio depletion is less drastic in this case, as at least the inflation-adjusted annuity income continues for life.

Next, in Scenario 3 Steve uses a whole life insurance policy rather than term life insurance. Because of the higher premium, he invests less in his 401(k) plan. Steve also buys a male life-only income annuity at 65 with the same amount of assets from his retirement portfolio as in Scenario 2. That is, he will use up to $1.34 million to purchase the annuity. He can opt for single-life instead of joint-life, because the death benefit from his whole life insurance policy will replace the annuitized assets upon his death. If desired, Susan could then use part of the death benefit to buy another single-life income annuity. The difference in annuity payout rates allows for 22% more income to be generated by the same annuity premium as compared to Scenario 2. Any remaining investment assets will be utilized with a spending rate that supports a 90% chance that assets remain by age 100.

Like Scenario 2 in the previous case study, Scenario 3 also treats the cash value as part of the fixed income allocation and adjusts the stock allocation in the remaining investment portfolio to keep the overall targeted ratio between stocks and bonds at each age. Scenarios 2 and 3 also treat any annuity premium as a fixed income asset as well, which can further

increase the stock allocation in remaining investments. This is important, because otherwise a strategy which combines an investment portfolio with the same asset allocation as before, with a conservatively invested whole life insurance policy and income annuity, would create a more conservative overall asset allocation from the retirement balance sheet perspective. This would reduce the growth potential within the strategy. With these adjustments, we are essentially asking whether the fixed income component for household assets should be allocated only to traditional bonds or also to actuarial bonds as represented by whole life insurance policy or income annuities.

Table 3

Whole Life Insurance Combined with Investments and Income Annuities

	Scenario 1 Investments + Term Life (Baseline)	**Scenario 2 Investments + Joint-Life SPIA + Term Life**	% change from Baseline	**Scenario 3 Investments + Single-Life SPIA + Whole Life**	% change from Baseline
Sustainable Spending Rate from Investment Assets (with 90% Success)					
	2.27%	2.85%	26%	3.31%	46%
Distribution of Annuity Income at Age 65					
10th Percentile	$0	$27,666		$21,888	
Median	$0	$33,890		$41,198	
90th Percentile	$0	$33,890		$41,198	
Distribution of Systematic Withdrawal Income at Age 65					
10th Percentile	$18,472	$1,938		$2,251	
Median	$30,888	$12,746		$5,650	
90th Percentile	$55,080	$43,120		$38,599	
Distribution of Total Income at Age 65					
10th Percentile	$18,472	$29,604	60%	$24,139	31%
Median	$30,888	$46,636	51%	$46,848	52%
90th Percentile	$55,080	$77,010	40%	$79,797	45%
Distribution of Legacy Wealth at Age 100					
10th Percentile	$0	$0	--	$2,072,414	++
Median	$1,187,866	$747,967	-37%	$2,536,772	114%
90th Percentile	$4,446,008	$3,350,976	-25%	$5,830,306	31%

Note: Monetary values are provided on a post-tax basis assuming a 32% tax rate.

Table 3 outlines the retirement outcomes for Steve and Susan. Scenario 1 presents the strategy for buying term insurance and investing the difference in a target date fund. With the capital market expectations and asset allocation decisions, the sustainable spending rate that supports a 90% chance that assets remain at age 100 is 2.27%. This spending rates

supports an after-tax inflation-adjusted retirement income ranging from $18,472 at the 10th percentile to $55,080 at the 90th percentile, with a median of $30,888.

As for legacy wealth at age 100, it ranges from $0 at the 10th percentile to $4.45 million at the 90th percentile, with a median amount of $1.19 million. Legacy wealth consists of the after-tax value of any remaining financial assets in the investment portfolio and any life insurance death benefit. With Scenario 1, there is no annuitization or death benefit. Investment assets are the only resource to support spending and legacy in retirement.

Scenario 2 also uses term life insurance, but the difference is that partial annuitization takes place with a joint life income annuity at the retirement date. At retirement, the distribution of investment assets is the same as in Scenario 1. A joint-life income annuity with a 3.71% payout rate is purchased. After taxes, this supports annuity income of up to $33,890. This is the annuity amount at the median and 90th percentile, but there were not sufficient assets at the 10th percentile to annuitize this much and preserve $100,000 for liquidity. This explains the smaller $27,666 amount at the 10th percentile. Annuity income grows with the same 2% cost-of-living adjustment to match the assumed overall inflation rate. A 2.85% withdrawal rate (higher than Scenario 1 because of the more aggressive asset allocation) is then applied to any remaining investment assets to generate additional retirement income for Steve and Susan. Scenario 2 supports total income at retirement ranging from $29,604 to $77,010 at the 10th and 90th percentiles, with a median income of $46,636. These numbers are larger than in Scenario 1 (60% larger at the 10th percentile, 51% larger at the median, and 40% larger at the 90th percentile). This demonstrates the potential for mortality credits through the income annuity to pool risk to support a higher spending rate relative to an investments-only strategy designed to work with a high probability of success.

Where Scenario 2 falters is with legacy. Higher lifetime spending can be supported, but only through an offset to the legacy potential since a large portion of investment assets are annuitized. Because partial annuitization with a life-only income annuity removes a significant chunk of investment assets, the distribution of legacy wealth falls by as much as 37% at the median. By age 100, the investment portfolio is also depleted at the 10th percentile, though annuity income is still available to the couple for as long as they live. Scenario 2 has taken advantage of only one-type of “actuarial bond,” creating real trade-offs when compared with Scenario 1: more retirement income, but less legacy wealth.

Scenario 3 integrates investments with whole life insurance and income annuities. With partial annuitization through a single-life SPIA with a 4.51% payout for an amount equal to the death benefit of the whole life policy at age 65, inflation-adjusted annuity income is $41,198 at the median after taxes are paid. The 3.31% withdrawal strategy (driven by the more aggressive asset allocation that accounts for the cash value and annuity) is then applied to any remaining investment assets, generating additional income. More aggressive allocations tend to support a higher sustainable spending rate with the same objective of maintaining a 90% chance that investment assets are not depleted at age 100. Total retirement income at age 65 ranges from $24,139 to $79,797, with a median of $46,848.

Compared to Scenario 1, retirement income is 31% larger at the 10th percentile, 52% larger at the median, and 45% larger at the 90th percentile.

As for legacy wealth at age 100, Scenario 3 maintains the whole life death benefit, which is still available despite investments depleting at the 10th percentile. At the median, Scenario 3 supports legacy wealth of $2.54 million, which is 114% larger than in Scenario 1. Legacy is 31% larger at the 90th percentile. Scenario 3 also annuitized a large portion of the investment assets so that while remaining investments are able to grow on average they do not represent a large portion of the legacy. The larger legacies in Scenario 3 are driven primarily by the death benefit from the life insurance policy.

The integrated approach provides more legacy wealth while also supporting more retirement income. At the median, Scenario 3 provides 52% more lifetime spending and 114% more legacy than Scenario 1. This is the meaning of greater efficiency. A more integrated approach using actuarial science and mortality credits alongside investments is better positioned to outperform the upside growth potential of an investments-only strategy.

Adding Whole Life Insurance Cash Value as a Volatility Buffer in Retirement

The next potential use for whole life insurance in lifetime financial planning is using the cash value with the volatility buffer strategy to help manage the sequence of returns risk for investment portfolio distributions. Buffer assets, such as the cash value of whole life insurance, provide an alternative means to help manage of sequence risk in retirement. Buffer assets are held outside the financial portfolio. They can be drawn to avoid selling portfolio assets at a loss. Returns on these assets should not be correlated with the financial portfolio, since the purpose of these buffer assets is to temporarily support spending when the portfolio is otherwise down. The cash value of permanent life insurance meets this requirement as it is contractually protected from declining in value.

Table 4 provides this comparison. In the new Scenario 2, investments are combined with whole life insurance and the cash value is available to be used entirely as a volatility buffer to help support the portfolio and maximize retirement spending. Policy loans are taken with the cash value serving as collateral to avoid taxes on these distributions. A loan interest rate of 5% is used to grow the loan balance. We assume that the whole life policy uses non-direct recognition, which means that there is no adjustment to the growth for the cash value that has been used as collateral for loans. Legacy values at age 100 reflect any remaining investment assets along with the remaining net life insurance death benefit after offsetting the loan balance due.

One must be careful that the loan balance with its accumulating interest does not exceed the limit of the available cash value and thereby trigger income taxes on all life insurance policy gains. The maximum amount that can be taken from the cash value in any year is the amount that would not grow with interest to exceed the cash value by age 100 (with an additional $5,000 buffer of protection so that the net cash value does not fall entirely to $0).

This process ensures that the loan balance growth stays below the cash value, protecting the policy from "blowing up" and generating a so-called "phantom tax". In practice, this outcome can be avoided by monitoring the policy and paying down the loan balance if it is approaching too closely to the total cash value limit.

The cash value of whole life insurance can be used as a buffer asset to help manage the sequence of returns risk exacerbated by taking distributions from a volatile investment portfolio. Maintaining fixed distributions from investments in retirement increases exposure to sequence risk by requiring a higher withdrawal rate from remaining assets when their value declines. Temporarily drawing from the cash value of life insurance has the potential to mitigate this aspect of sequence risk for an investment portfolio by reducing the need to take portfolio withdrawals at inopportune times. By reducing exposure to sequence risk, this may preserve greater overall legacy wealth. Whether or not this strategy will work becomes an empirical question to be tested.

In this simulation, the decision rule is to use the cash value as a source of retirement spending in any year that the remaining investment portfolio balance has fallen before its initial retirement date level in nominal terms, as long as there is still sufficient remaining cash value.

The volatility buffer may not necessarily reduce legacy. Though use the volatility buffer reduces the net death benefit, the investment portfolio may ultimately grow by more than the reduction to the death benefit, potentially leaving a larger net legacy. This happy outcome can result from the peculiarities of sequence risk and the ability to avoid selling portfolio assets at a loss. The cash value provides a stable income source not impacted by market volatility. Life insurance also receives tax benefits and the distribution from the cash values can be less since taxes are not paid on the proceeds. The decision rule for when to use the volatility buffer is when it is still available in years that remaining investment assets in retirement have fallen below their initial level at the start of retirement.

In Table 4, Scenario 1 is first repeated to serve as a baseline for comparison. It is the classic "buy term and invest the difference" strategy. Scenario 2 switches from term life insurance to whole life insurance and makes the cash value available as a volatility buffer.

Because the cash value provides an additional base of assets to replace some portfolio distributions as well as a fixed income resource that allows the stock allocation in the investment portfolio to be increased, the initial withdrawal rate for investments increases to 3.93% in Scenario 2 while still maintaining a 90% chance that investment assets remain at age 100. This withdrawal rate is 73% larger while still maintaining the same downside risk for investments. It is larger both because of the asset allocation effects of treating cash value as a bond, and because distributions are not always taken from the investment portfolio.

Investments at retirement can generally be expected to be lower because of the higher whole life premiums, but this still allows inflation-adjusted spending in retirement to increase from anywhere between 18% and 48% across the distribution. The median increase in retirement lifestyle is 38%. Meanwhile, legacy assets are also better supported in Scenario 2 with the synergies created by the volatility buffer in managing sequence risk for the investment portfolio. At the median, legacy assets are 108% larger at age 100 after also supporting a 38% larger lifestyle as well. Across the distribution of outcomes, whole life insurance used as a cash value volatility buffer can beat "buy term and invest the difference" for a lifetime financial plan initiated by the 40-year old couple. It provides another viable option for retirement planning.

Table 4

Whole Life Insurance as a Volatility Buffer

	Scenario 1	**Scenario 2**	
	Investments + Term Life (Baseline)	**Investments + Whole Life Volatility Buffer**	% change from Baseline
Sustainable Spending Rate from Investment Assets (with 90% Success)			
	2.27%	3.93%	73%
Distribution of Total Income at Age 65			
10th Percentile	$18,472	$21,745	18%
Median	$30,888	$42,608	38%
90th Percentile	$55,080	$81,729	48%
Distribution of Legacy Wealth at Age 100			
10th Percentile	$0	$0	--
Median	$1,187,866	$2,469,575	108%
90th Percentile	$4,446,008	$5,114,570	15%

Note: Monetary values are provided on a post-tax basis assuming a 32% tax rate.

Conclusions

We find substantive evidence that an integrated approach with investments, whole life insurance, and income annuities can provide more efficient retirement outcomes than relying on investments alone. Because whole life insurance can play an important role in producing more efficient retirement outcomes, younger individuals planning for both retirement and life insurance needs may view whole life insurance in a new light as a powerful retirement income planning tool. The conventional wisdom of "buy term and invest the difference" is less effective than many realize when viewed in terms of the risk management needs of a retirement income plan.

Because the benefits of cash value life insurance are affected in subtle ways by their tax efficiency and resistance to sequence of return risk, there has not been a clear understanding of how the ownership of whole life insurance affects the retirement income planning problem. We explored a more integrated approach which includes investments and whole life insurance. By strategically combining these elements, the potential exists to develop more efficient retirement income strategies that support a higher income level and greater legacy wealth than investment-only strategies.