

What We Can Learn from Life Cycle Finance

The conference "Life Cycle Investing for Financial Planners" was held at Boston University School of Management's Executive Education Center on July 26th to 28th, and featured sessions by Professor Zvi Bodie, financial planners Paula Hogan and Rick Miller, and more. The purpose of the conference was to introduce financial planners to some of the concepts of life cycle finance - an economist-based perspective on many of the challenges of financial planning - and how those concepts can be applied (and how they are different from our current perspectives in the financial planning world).

In this month's newsletter, we look at some of the information taught at the conference. In the process, we will try to understand whether and how some aspects of financial planning might be changed (and improved?) to incorporate some of the life cycle finance economics perspective.

Hopefully, this newsletter issue will be the beginning of a better dialogue between economists and academia, and the financial planning profession. I believe we have much to learn from each other.

Editor's Note: I would like to thank Professor Zvi Bodie of Boston University for his gracious assistance in the development of this newsletter issue.

About the Author

Michael E. Kitces, MSFS, MTAX, CFP®, CLU, ChFC, RHU, REBC, CASL, CWPP™, is the Director of Research for Pinnacle Advisory Group (www.pinnacleadvisory.com), a private wealth management firm located in Columbia, Maryland. In addition, he is an active writer and speaker, and publishes The Kitces Report and his blog "Nerd's Eye View" through his website www.kitces.com.

The Kitces Report © 2008-2010 www.kitces.com

Written and edited by Michael E. Kitces

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means without the prior written permission of Michael Kitces.

Introduction

At the broadest level, Life Cycle Finance is a label for the body of economic theory, models, and research, that explore how individuals should make decisions about saving, investing, and spending over their lifetimes.

A basic tenet of life cycle finance is the assumption that the process of decision-making will include several different phases across the entire "planning horizon" (the total length of time for which one plans, generally from the present until death, such as 60 years for a 25 year old who expects to live to age 85). Over the planning horizon, individuals will make decisions about how to manage their financial wealth, and what to do with their income/earnings as received, in order to fund their spending (consumption) throughout the years. For much of this time period, the individual's cumulative amount of lifetime income will not yet have been received, but may be quantified as the present value of all remaining future earnings, or the individual's "human capital" (and from the quantitative perspective, an individual's wages represent a 'wage rate of return' on their human capital asset). Thus, the individual's total balance sheet will be comprised of two assets - financial capital, and human capital - which will be used to fund one liability, the individual's consumption (or more accurately, the present value of all future spending, which is a liability that {hopefully} will balance with his/her total assets!). An illustration of the wealth balance sheet is shown in Figure 1 at the top of the next page.

Of course, there are many different ways that we might spend over our lifetimes. We could have high spending now, and lower spending later, or vice versa, or some other pattern. The balance sheet shown in Figure 1 simply quantifies the present value of all future consumption, without telling us about the spending pattern that underlies it.

To evaluate an individual's spending preferences over time, we need to determine their willingness to forgo current spending (i.e., saving) in order to have more funds available to spend in the future, which is affected by the individual's perceptions about the value of

Figure 1. Lifetime balance sheet of assets (financial and human capital) and liabilities (consumption).

Assets		Liabilities	
Financial Capital	\$200,000	Future Consumption	\$1,000,000
Human Capital	\$800,000	Net Remainder	\$0

(Editor's Note: Technically speaking, this balance sheet does not have to always equate to a net remainder of \$0. It could equate to a positive balance, which would represent the individual's goal to leave a legacy amount after death. But to say the least, it's not a good sign if the balance sheet nets out to a negative amount!)

spending now versus in the future. In economics terms, we evaluate these spending preferences with what is called a "utility function," where utility is an abstract measure of how much enjoyment or good the individual derives from the decision. In simple terms, if the utility of eating a cookie is 3 units, and the utility of eating cake is 6 units, I will tend to eat cake - at least unless I can eat twice as many cookies, so that the total utility will add up to at least the same 6 units of happiness!

As just mentioned, the measure of utility is an abstract concept. There is nothing sacred about valuing a cookie at "3" and a piece of cake at "6" except to be able to relate them to each other - that I enjoy a cookie half as much as a piece of cake, would require 2 cookies to equal a piece of cake, and can thus mathematically model what spending decisions I would make about cookies versus cake based on this utility function. In a similar manner, we can create utility functions about any particular consumption decision - including the decision to spend now versus spending later, a key utility function to model an individual's lifetime spending preferences. And if we can model an individual's utility function for spending over a lifetime, we can then take the next step: optimizing an individual's spending, saving, and investing decisions to maximize their lifetime utility (happiness).

Getting a Handle on Utility

While the general concept of utility is relatively straightforward - in the context of an individual planning their financial affairs, it's a measure of the expected happiness/enjoyment/benefit that will result from any particular decision - its precise measurement and the derivation of a "function" (i.e., a mathematical

equation that quantifies utility/happiness of various levels of spending at various points over time) is much more difficult in practice. Fortunately, though, there are at least a few things that we do know about the utility of consumption - and/or have witnessed in the empirical data about spending and behaviors - that we can explore.

First of all, individuals generally exhibit a tendency for diminishing marginal utility of consumption. To dissect the term, this means that at the margin, the more we have consumed, the less utility (enjoyment) we derive from the next unit of consumption. To take a somewhat extreme example, increasing our spending by \$10,000/year from \$200,000 to \$210,000 does not provide us with nearly as much happiness as increasing our spending from \$10,000 to \$20,000, even though both result in the same \$10,000 increase in income. Especially at lower income levels, we tend to experience a significant increase in happiness as income increases up to and beyond the levels necessary to combat poverty and provide for basic subsistence, and a moderately significant increase shortly thereafter (as we begin to afford some of the initial "niceties" of greater affluence). However, as income rises higher and higher, we derive less and less additional enjoyment from each \$1 (or \$1,000, or \$10,000) of additional income available for spending. Thus, at the *margin*, our additional happiness utility is less and less, and the higher our wealth/income/spending, the more it diminishes. This is not to say, however, that it is expected to go negative. Generally, we still assume that greater income or wealth, or more spending, provides *some* additional utility; nonetheless, the *marginal* utility appears to diminish more and more as wealth and income increase. (Editor's Note: The fact that we experience diminishing marginal utility also helps to explain other common spending behaviors. If we did not have diminishing marginal utility, it would suggest that we would also engage in other strange behaviors, such

as a willingness to gamble all of our wealth at high stakes. In practice, most people are not willing to bet their life savings on a single spin of the roulette wheel, because in reality we know that doubling our wealth would not create as much happiness as losing all our wealth would cause in decreased happiness. Again, this is because the marginal utility of our wealth increases diminish as we become more affluent.)

Another phenomenon of utility is that as human beings, we exhibit a behavior that an economist would call "habit formation" - or what we might call a tendency to reach a certain standard of living and then want to maintain our "spending habits" at that level. For instance, we might derive a certain amount of utility happiness for increasing our standard of living from \$40,000 to \$60,000 per year. However, if we ever have to go from \$60,000/year back to \$40,000, we experience far more distress. And it is not simply because the psychologists have shown we happen to be loss averse (i.e., we experience more negative feelings about a loss than positive feelings about an equivalent gain), although that is also true. A change in our ongoing spending from \$60,000/year back to \$40,000 may require us to materially change our entire standard of living - to move, to drive a different car (or give up a car entirely), or at more extreme levels, to possibly even to spend time with a different group of friends who do activities that we can afford. As a result, although we may see diminishing marginal utility as our wealth and income rises, we see extremely significant negative utility to decreases in our ongoing consumption, even if there was only a modest increase in our utility rising to that consumption in the first place.

However, as mentioned briefly earlier, the greatest challenge to utility is simply the fact that because it is such an abstract concept, its actual measurement is, in practice, extremely difficult. At best, we can derive a certain understanding about people's consumption utility by examining their behavior. But in the classic economic sense, to literally derive a mathematical equation to model all the nuances of how human beings make spending decisions over time is difficult, to say the least.

Consequently, under the life cycle finance approach, a simplifying assumption is often made: that the optimal utility function of an individual's consumption is a steady level of lifetime spending (i.e., a constant inflation-adjusted standard of living). (Mathematically, this means the utility function assumes that the individual's personal discount rate for deferring consumption is equal to the risk-free rate that funds can be grown to pay for that future deferred consumption, resulting in a desire to smooth spending throughout the time horizon since it is neither more preferable to spend earlier nor later.)

Accordingly, under most applications of the life cycle finance approach, the goal is to optimize an individual's saving and investing decisions in a manner that will allow them to maintain the highest level of stable consumption for life. For instance, a series of savings and investing solutions that allows someone to maintain consumption of \$70,000/year (inflation-adjusted) for life is presumed to be better (i.e., have more utility) than a series of saving and investing decisions that results in a \$65,000/year standard of living, or notably is presumed to have more utility than a plan that allows for \$80,000/year spending now but only \$60,000/year spending in retirement, or vice versa. (Note: We will discuss in a later section the implications if someone's utility function is significantly different than one of lifetime level consumption in real dollars.)

Optimizing Solutions to Fit the Utility Function

The idea of finding optimal planning solutions to support a level amount of lifetime consumption is not exactly a new phenomenon. In point of fact, financial planning at its core has been focused on this approach for many decades. Even the old rule of thumb - the client will retire on 70% of his/her pre-retirement gross income - is based on the assumption that 30% of gross income goes to taxes and savings, and the other 70% goes towards consumption. In other words, retiring on 70% of pre-retirement gross income was meant to equate to retiring on 100% of pre-retirement consumption; the rule of

Out and About

- Michael will be presenting on "The Impact of Market Valuation on Safe Withdrawal Rates" at FPA Houston on September 23rd
- Michael will also be presenting on whether "To Roth or Not To Roth" at FPA Charlotte on September 30th
- Michael will be participating on a panel about "Real Life and Portfolio Distributions" at the FPA Annual Convention on October 10th

Interested in booking Michael for your own conference or live training event? Contact him directly at speaking@kitces.com, or see his list of available presentations at www.kitces.com/presentations.php.

thumb was a "level consumption" approach. Similarly, most planners are quick to acknowledge the "habit formation" principle discussed earlier; that clients have a significant difficulty reducing their standard of living once they have become accustomed to it, and thus would prefer approaches that maintain the current standard of living and allow for it to improve, but minimize the risk that it must ever be given up.

Instead, what is more notable is how the focus of planning itself begins to shift when the anchor of success is lifetime consumption, instead of the current approach which arguably focuses first on (financial) "wealth" and only secondarily on how wealth can support a standard of living.

For instance, in a financial-wealth-based approach, volatility is seen as a natural aspect of being invested to grow your wealth. Time horizon becomes a driving factor to assess whether it is reasonable to take a risk, under the auspices that given enough time, the likelihood of losses is reduced. (However, see the discussion in the May 2010 issue of *The Kitces Report* for an exploration of how stocks may be risky in the long run as well, or email feedback@kitces.com to request a copy.)

On the other hand, in a consumption-based approach, volatility - of income - is a serious problem to be avoided, especially given the habit formation tendencies of most individuals to maintain a certain standard of living. In addition, other significant risks that distort the ability to maintain a consistent real (inflation-adjusted) standard of living are also elevated, such as the impact of unexpected inflation or longevity. Accordingly, if the primary goal is to ensure a constant standard of living, with all the constraints of habit formation on the adverse impact of ever reducing the standard of living, then different solutions begin to emerge, such as Treasury Inflation-Protected Securities (TIPS) to guarantee a *real* inflation-adjusted return; annuitization to protect against unexpected longevity; and options or other true hedging vehicles to ensure there is no devastating reduction in income from assets (or at least no devastating reduction in the value of assets).

Treasury Inflation-Protected Securities

If one of the greatest risks to accumulating the assets necessary to sustain a certain level of lifetime income is unexpected inflation, then clearly the optimal solution to manage this risk must be TIPS: the one investment option that - short of a Federal government default - guarantees a specified *real* rate of return and

keeps up with inflation. If markets deliver an extended period of below-average returns, TIPS will still guarantee a positive real rate of return. If there is a surprise in inflation, TIPS will still guarantee a positive real rate of return. Other investment options might be *expected* to keep up with inflation; only TIPS guarantee it.

Of course, as many financial planners are quick to point out, the guaranteed real rate of return on TIPS isn't a very "good" rate of return, relative to our typical expectation in today's world about long-term investment returns. Depending on the exact maturity that one purchases, the current TIPS market offers something in the vicinity of a 2.0% real rate of return. Relative to a long-term historical return on equities of approximately 7% on an inflation-adjusted basis, the return of TIPS looks remarkably unappealing.

On the other hand, it must again be emphasized that equity returns are *expected* returns; TIPS real returns are "risk-free" (to the extent that the United States government is still viewed as a secure borrower) *guaranteed* returns. Accordingly, while an investor might still consider pursuing the *risky* route of equity-based investing, it arguably should be better acknowledged that there *is* a way to guarantee the necessary inflation-adjusted asset base to fund lifetime consumption while enjoying at least "some" growth - via TIPS. Or viewed another way, a life cycle finance approach that starts with the goal of optimizing lifetime consumption might start with a TIPS-based approach as a *baseline* solution, and then consider introducing risk, from there, to adjust the investment plan based on the client's risk tolerance.

Example 1a. James is a 25-year-old who earns \$100,000 and plans to retire in 40 years. He wants to sustain retirement spending until his life expectancy (approximately a 20-year retirement). As a baseline, he could consider investing in TIPS with a 2% real return. Assuming no real growth rate in his earnings (i.e., his income simply grows with nominal inflation adjustments each year), this would require him to save just over 20% of his annual income, allowing him to maintain an \$80,000/year standard of living that would be sustained in retirement using the accumulated savings of his TIPS portfolio. (Editor's Note: As a simplified example, this ignores the impact of taxes for the time being).

Example 1b. Alternatively, James could invest in a hypothetical balanced portfolio of stocks and bonds expected to generate a real return of 5% over inflation. With this growth rate, James could

theoretically save approximately 10% of his annual income, maintaining a \$90,000/year standard of living and generating the asset base necessary to sustain that standard of living through retirement. *However*, the latter return is not risk-free. Instead, there is a possibility that James could have a shortfall; potentially, a very significant one, especially if he chooses to follow a path of lower savings and high spending - in anticipation of higher return - and then turns out to not *get* the higher return that he expected over this particular time period.

Although the equity-based portfolio in Example 1b may allow James the opportunity to consume at a higher level and save less - and still maintain that higher spending in retirement - if stocks provide an unfavorable series of returns James may have to delay his retirement as much as 5-10 years (out of only 20 years he wished to remain retired!)! Whether this is a desirable risk to take is up to James to decide; but when a risk-free TIPS investment approach is used as a baseline, at least the benefits - and potential consequences in terms of delayed retirement - of the riskier path can be better understood in contrast.

Annuitization

Another potential solution to controlling risk to maximize consumption utility is the use of annuitization, to eliminate one of the primary risks of maintaining lifetime level consumption - living longer than anticipated (and depleting financial capital in the process). As indicated in the preceding example, TIPS may be able to ensure a lifetime inflation-adjusted real rate of return to accumulate the assets necessary to fund spending in retirement, but there is still a risk that the retirement time horizon itself may extend longer than anticipated.

Annuitization provides an optimal solution to the longevity problem, as it is designed, almost by definition (at least, in the classic life contingent immediate annuity), to make payments as long as an individual (or couple) remains alive. Thus, from the framework of maximizing the probability of maintaining lifetime level consumption, TIPS can guarantee an inflation-adjusted real rate of return to generate the required assets at retirement, and an immediate annuity can liquidate those assets in retirement to guarantee the desired lifetime spending, regardless of how long the individual lives.

An important caveat to the annuitization solution, though, is that - at least in this framework - the

optimal immediate annuity is an *inflation-adjusted* immediate annuity. If the annuity doesn't guarantee a *real* (inflation-adjusting) stream of payments to maintain spending needs, then the purchasing power of the income stream deteriorates over time, and the individual needs to save and invest outside assets to make up for inflation in the later years. Except given the unknown factor of mortality, a risk remains that the individual can outlive the pool of money that is saved up to fund the "extra" payments to keep pace with inflation. By using an inflation-adjusted annuity (there are now a few companies making them available in the marketplace), the client can be guaranteed "success" in maintaining a steady *inflation-adjusted* standard of living, and that consumption level can be sustained regardless of how long he/she lives.

Options and Hedging

As noted earlier, the "best" way to *ensure* a desired level of asset accumulation - without being impacted by inflation - is to fund investing goals with TIPS that provide a risk-free real rate of return. However, one of the caveats of this approach, implied in the earlier examples, is the significant requirements for saving (and thus, indirectly, the reduced level of sustainable consumption that's left after required savings) when risk-free TIPS are used as the primary or sole investment. It may be a guaranteed path, but it's also a slow one.

Obviously, the clear alternative is to introduce different investments to the portfolio - ones that introduce some risk, but also offer an opportunity for higher return. In our traditional approach, this has been implemented by taking the risk - and taking advantage of the risk premium - associated with equities.

Under the traditional approach, though, the way to manage this risk has been through so-called "time diversification" - the concept that if the individual can stay invested long enough, good times must eventually follow bad times, and the ultimate return will (still) be better than the (low) return of a risk-free investment choice. However, as explored in the May 2010 issue of *The Kitces Report*, the empirical evidence for the effectiveness of time diversification is mixed; at best, it is highly reliant on sustained economic growth at healthy levels, and even then stocks can underperform expectations for a problematic extended period of time. If a long period of poor performance coincides with an important time period during the planning time horizon - for instance, during early retirement or in the final years leading up to it - then even if the performance of stocks *does* eventually average out to its long-term

expected result, the outcome for the individual *in the meantime* may be a catastrophic failure of goals and/or a necessity to dramatically adjust consumption going forward.

So how else can the risk of equities be managed, if not via time diversification? By using options, derivatives, and other similar tools that allow the investor to truly hedge risk, rather than simply counting on time diversification to average out in the end. Although the investor will not necessarily want to (or be able to) hedge out 100% of all risks - the cost would be so high that he/she may as well just go back to buying TIPS - it may still be possible to mitigate enough risk to significantly diminish the impact of adverse market events and its potential impact on spending goals, which is especially valuable given the earlier constraint that individuals form (spending) habits that cause income reductions to be extremely distressing.

Below, we explore two strategies to implement this process of hedging downside risk more concretely (and giving up some upside in the process): using puts to limit downside risk, and using calls to gain partial upside participation.

Using Puts to Hedge Downside Risk

The basic principle of using puts to hedge downside risk is relatively straightforward - in addition to whatever positions the client has invested in equities, the client reserves a small amount of cash that is used to purchase a put option. The put option increases in value if the market declines, to offset the decline in the value of equities.

For example, using very recent market values (at the time of this writing), a client could purchase a put option on the S&P 500 at a strike price of 1,100 that expires in December of 2012, for a cost of approximately \$175 (as of the time of this writing, when the actual index is approximately 1,122). This would cost approximately 16% of the strike price, which means in practice the investor would put approximately 13.8% of the portfolio into put options, with the other 86.2% remaining invested in equities (such that the option position is equal to 16% of the equity position, and allowing the stock position to be fully protected, aside from the approximately 2% difference between the index and the nearest option strike price). This effectively equates to participating in 86.2% of the upside of the stock market, with an option that will cover any losses below the S&P 1100 index level. However, the client would need to earn approximately 6.4% per year on the remaining 86.2%

of the portfolio, just to reach the initial value of the portfolio over this 2.3 year time period.

While this cost may seem significant - and by traditional investing standards, it is - it must also be viewed in the context of the current investment environment. Over the past two years, the S&P 500 has gone through a round trip including a decline in excess of 50%, and a recover rally over more than 70% from the market low. The pricing of a put option incorporates this market volatility to arrive at the cost of insuring the portfolio against a decline (although technically speaking, the price of the option is based on expected future volatility, not solely based on prior volatility; on the other hand, recent volatility often predicts future volatility, and the markets clearly still have an elevated expectation of high volatility in the foreseeable future). For the client who experiences (and is protected from) a 50% decline, the cost of the option may not seem so bad. Conversely, for the client who enjoys a 70% rally, the cost of the option may similarly seem like a very moderate cost relative to the upside that is gained (and the downside that was still protected).

More simply stated, *if* the investor believes that markets do in fact price efficiently, then in theory the cost of the option should reasonably reflect both the cost of managing downside risk for the expected volatility of the markets, and be fairly compensated by the opportunity for "good" volatility to the upside on the underlying stock position. To say the least, advisors who believe that the cost of the option is "unreasonably" expensive should be cognizant that they are saying, in essence, that they believe markets are inefficient and mispriced and that the advisor believes he/she can do a better job forecasting the downside risk and upside opportunity of stocks than the markets can themselves. Otherwise, the markets themselves should - in theory - reflect an efficient price that is a fair value for the genuine risk and opportunity involved, albeit one that is higher in markets (or time periods) with greater volatility and risk in the first place.

Using Calls to Gain Partial Upside Participation

According to what is called the Put-Call Parity principle, an investor should be able to construct an equivalent exposure to the market using either a long stock position matched with a put option (upside with the stock position and a put option limiting the downside), *or* by purchasing a call option and a discounted bond that will mature at a value equal to the strike price of the option (limited downside by the maturing bond with upside via the call option). If put-

Figure 2. Simplified Equation of Put-Call Parity.

$$C + PV(K) = P + S_0$$

Where at any given time:

C = Price of the call option

PV(K) = Present value of the strike price of the option (or in practice a discount bond equal to the present value of the strike price)

P = Price of a put option

S₀ = Initial value of the stock

call parity does not apply, then theoretically arbitragers will have an opportunity to buy or sell some combination of puts and calls in a risk-free manner, until the prices do in fact line up in a manner that put-call parity applies once again. A slightly simplified version of this principle is shown in the equation in Figure 2, above.

Notwithstanding the possibly confusing mathematical terms shown in Figure 2, this equation is simply a restatement of the put-call parity principle just discussed - that a call option plus a sufficient quantity of discount bonds is equal to the value of a put option plus the underlying stock.

Accordingly, in principle any position that can be created with a put option married to a position in the underlying stock - already shown as a strategy in the preceding section - could be replicated by using a call option plus a discount bond. Nonetheless, in practice a slightly different strategy is commonly implemented in the context of using a bond plus a call option.

While the common approach using put options is to own a long position in stock and use whatever amount of the portfolio is necessary to hedge its downside risk with put options, the more typical approach with call options is to purchase enough bonds to restore most or all of the portfolio's starting value, and use the remainder to obtain whatever limited upside equity exposure is feasible.

Example 2a. Charles can purchase a risk-free government bond with 2.3 years remaining until maturity (with a current yield of approximately 0.60%), which would require investing approximately 98.6% of his portfolio into the government bond. With the remaining 1.4% of the portfolio, Charles would purchase a December 2012 call option with a strike price of 1,100 (actual price of the index is approximately 1,122), at a

current cost of approximately \$159. At the end of the time period, the portfolio would be guaranteed to maintain 100% of its original value (as that's the value that the bonds will mature at), and any appreciation in the markets will be reflected as appreciation in the value of the call options. Given the limited dollar amount invested in options - but the significant inherent leverage in how options appreciate in positive scenarios - this portfolio would participate in approximately 9.9% of the upside of the markets above the strike price.

Example 2b. Continuing the preceding example with Charles, assume that he had \$100,000 to invest. At a cost of \$159 per option, Charles could purchase 9 options contracts, at a cost of \$1,431, leaving \$98,569 invested in the market. If the market finished with 10% cumulative appreciation (from the strike price, which would actually be approximately 8% from the market valuation at the time this example was created), then the 9 options contracts would mature with a value of \$110 each (assuming the market finished with a price of 1,210 from a strike price of 1,100). When added to the bonds, which would appreciate from \$98,569 to approximately \$99,973, the portfolio would finish with a value of approximately \$100,963. Given 10% appreciation in the stock market above the strike price, the portfolio would be up 0.99% (from the final bond value of \$99,973), for a participation rate of 9.9%. Notably, though, even if the market had finished negative, the client was guaranteed a final value of \$99,973, representing an average annual compound loss of only 0.01%/year (the account wasn't quite perfectly protected because Charles had to buy a whole number of options contracts). Thus, in essence, Charles could participate in "only" 9.9% of the upside of the market above the strike price, but have an absolute guarantee against (virtually) any losses.

On the other hand, options can be purchased at whatever prices and levels are desired. It is not necessary to seek to hedge 100% of the value of the portfolio, if some level of losses can be tolerated. Instead, a lower principal guarantee might be sought, with an opportunity for more upside to go along with it.

Example 3a. Charles decides that a 5% loss is acceptable, in pursuit of a greater gain. Accordingly, he invests only \$93,666 in bonds, to provide him a total value of \$95,000 by December of 2012. The remaining \$6,334 is invested in the same call options shown earlier, purchasing approximately 40 options contracts (to make the numbers work out,

Charles is assumed to purchase 40 options contracts and invest the remaining \$93,640 in bonds). If the market rises 10% from the strike price again, the call options will finish with a value of $40 \times \$110 = \$4,400$. In this scenario, Charles actually participates in approximately 46% of the appreciation in the stock market. However, because he was willing to accept more exposure to a loss and invested more heavily in the options, the end result was a final portfolio value that was less than the original \$100,000; the final value is only approximately $\$94,974 + \$4,400 = \$99,374$. (Editor's Note: Charles' loss here is because he chose to continue participating in appreciation above the original strike price of 1,100; he could choose a lower strike price, which would allow him to maintain value if the market remains flat, but exposes him to slightly less upside value above 1,100 if the market does appreciate further.)

Example 3b. Continuing the preceding example, the difference between the scenarios (Examples 2b and 3a, with a 100% principal protection or 95% principal protection, respectively) is more apparent if the market appreciates by 30%, representing an average annual growth rate of 11.7% for the 2.3 year time horizon until the option expires in December 2012. In this case, the position in Example 2b - with a 100% floor guarantee - finishes with \$102,943, for a total return of approximately 2.9% for a 30% rise in the markets (but with a 100% guarantee of principal). On the other hand, in the Example 3a scenario, the client finishes with \$108,174, representing total appreciation on the portfolio of 8.2% with a guarantee that no matter what, the portfolio cannot decline in total by more than 5% as of December, 2012.

Example 3c. Continuing the preceding examples further, it is still notable that the options being shown in the example - real prices from today's marketplace - are priced for *significant* volatility (at least relative to historical levels), and are priced based on the cumulative returns over an entire 2.3 year time period. Accordingly, if the markets actually exhibit this kind of volatility - for instance, a 50% price increase over 2.3 years, representing an 18.7% average annual rate of return as the economy hypothetically recovers - a somewhat more appealing result occurs. In the Example 2b scenario (fully protected downside), the portfolio finishes with \$104,923, a cumulative return of 4.9% (again, due to the limited upside participation by having a 100% principal

protection). On the other hand, in the Example 3a scenario, the client finishes with \$116,974, a cumulative return of almost 17%; again, with a guarantee that the result would be no worse than a 5% cumulative loss at the end of 2.3 years.

Of course, these scenarios still show two extremely conservative approaches - one that guarantees *no* price losses after 2.3 years, and another that guarantees no more than a 5% loss, total, after 2.3 years. Even with the adjustment from a 0% loss guarantee to a 5% loss guarantee, the latter combination resulted in a cumulative return almost triple the no-loss approach in the strong market recovery of Example 3c. For clients who are willing to expose themselves to an even greater loss - for example, to absorb a 10%, 15%, or even 20% maximum loss (still noted as cumulative losses over a 2.3 year time period), the upside opportunities would be significantly larger. In addition, the target levels for options could be adjusted as well, for instance to give up a portion of the initial upside for a greater bonus if there is significant upside beyond that point. Hypothetically at least, the investor can construct virtually any combination of bonds and call options desired to create some combination of downside protections and upside opportunities.

Options Strategies Summary

Again, in these scenarios, as with the earlier examples regarding put options, the outcomes are significantly impacted by today's expected market volatility and its effect on the price of options. For instance, the first call option scenario - with a 100% floor and a 9.9% upside participation rate - could have been achieved at an upside participation rate of approximately 50% just a few years ago when the risk-free rate of government bonds was several percentage points higher (which requires less to be invested in bonds to guarantee principal and allows more to be invested in call options), and the volatility of the markets was much lower (which outright reduces the price of the call option itself and allows for more options to be purchased). The rather limited participation rates reflect today's ultra-low-interest rate environment and highly elevated volatility risks. On the other hand, with high volatility, significant downside losses can be avoided - guaranteed - and if markets are truly volatile to the upside (e.g., the 70% rally from the market lows) then significant upside gains may still potentially be earned, with limited (if any) downside potential!

Another indirect virtue of the options-based approach is the psychological value for a client to see that their downside risk is limited (and/or in the extreme, is

protected completely). Accordingly, a client might be shown an illustration like the one in Figure 3, below, which provides a visual comparison of the call option strategies in Examples 2 and 3, compared to just investing in stocks directly. It clearly illustrates that in the event the market declines (further left on the horizontal axis), the losses are limited for the options strategy (the red line does not decline), while the value of stocks (the blue line) continues to decline. On the other hand, if the market appreciates (to the right on the horizon axis), the red line rises in value, but not as much as an outright exposure in stocks (the blue line). And both scenarios are shown relative to what could be achieved by simply investing at the risk-free rate (green line).

As noted, in theory a client can replicate the upside opportunities and downside risks using either put or call options by applying the principles of the put-call parity principle. However, in practice, given the way these strategies are commonly implemented (and as shown here), the put strategy tends to use a higher "cost" in terms of potential for the option premium to expire worthless (which indirectly creates a lower floor for potential losses) but provides more upside opportunity as well. The call strategy tends to set a higher floor that is closer to the initial value of the portfolio, but does so by giving up what may be a much larger share of the upside and maintaining a relatively small upside participation rate (especially at today's interest rates and options volatility pricing).

In any event, it is important to note that limited downside through the use of options - whether under the put- or call-based strategic approach - ensures that if a market decline occurs, a client's lifetime consumption may only be minimally impacted, in a

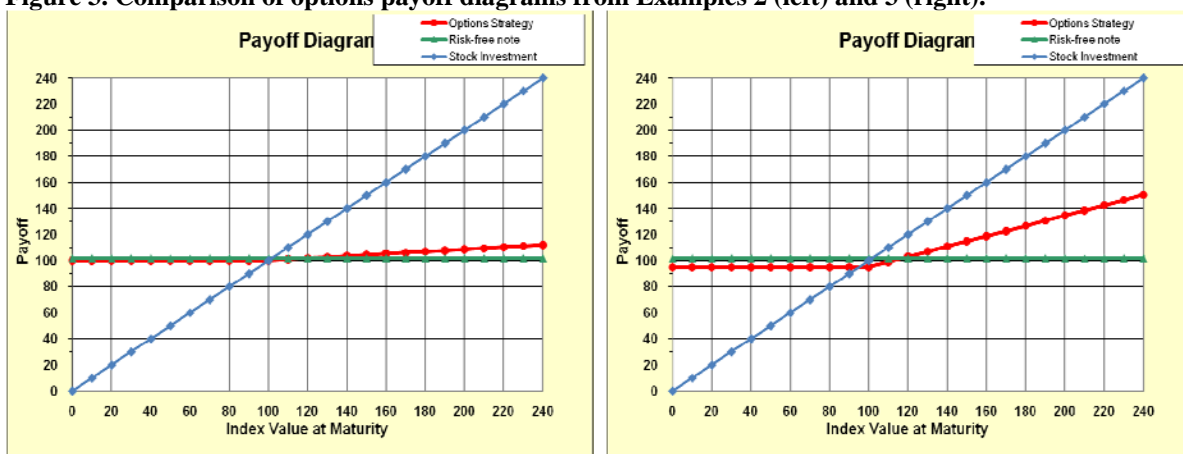
manner consistent with the habit formation preferences most people exhibit in their spending behaviors.

As many advisors are also quick to point out, clients are giving up some substantial upside opportunity with many of the options strategies outlined here (although again, it is important to understand that today's option pricing reflects the market viewpoint that very significant risks still exist, which are - not surprisingly - expensive to protect against; in lower risk environments, upside participation would be far greater). On the other hand, when the focus is on securing and maintaining consumption, rather than on just growing and increasing assets, it may be more appealing to give up a(n albeit) significant portion of upside, to allow for at least *some* growth while ensuring there is no downside that can cause both financial, and psychological, harm and distress for the client.

What About Human Capital?

As noted on the balance sheet shown earlier in Figure 1, ultimately there are two significant assets that individuals will use to fund their consumption "liabilities" throughout their lifetimes. The first, as we have discussed in some depth now, is their financial capital. In fact, focusing on the investment and management of financial capital - along with the act of savings that creates the capital - has been a major focus for most of our history as financial planners, and in our current curriculum and practitioner experience. However, this ignores the other significant asset that contributes to the balance sheet: an individual's human capital.

Figure 3. Comparison of options payoff diagrams from Examples 2 (left) and 3 (right).



As discussed earlier, human capital represents the present value of an individual's future lifetime earnings. As time passes, the number of years until an individual's retirement declines, and accordingly the value of someone's human capital will generally decline with age. During that time period, as an individual works and receives those earnings, they are converted from human capital to an income cash flow, which is either spent (maintaining consumption and the individual's standard of living) or directed to savings (i.e., converted to financial capital). Since only a portion of earnings will be saved - because the rest are used for current consumption - total wealth (as a combination of human and financial capital) generally declines over time, as the individual converts total human capital into a combination of consumption (that is spent) and financial capital (that is retained for the future). In addition, the relative concentration of wealth shifts from human to financial capital as the individual ages, until retirement when all remaining capital to support consumption in retirement is financial (since by definition, there is no more human capital - the present value of future earnings - when the individual decides that he/she will not work any more and will have no more future earnings). This relative shift of human to financial capital is shown in Figure 4 below.

The importance of examining human capital on the balance sheet becomes evident with a focus on sustaining lifetime consumption. As Figure 4 illustrates, for most of an individual's lifetime, human capital is actually the larger asset, and has the greatest overall impact on the sustainable level of lifetime consumption. Accordingly, it is helpful to look deeper at the factors that affect human capital.

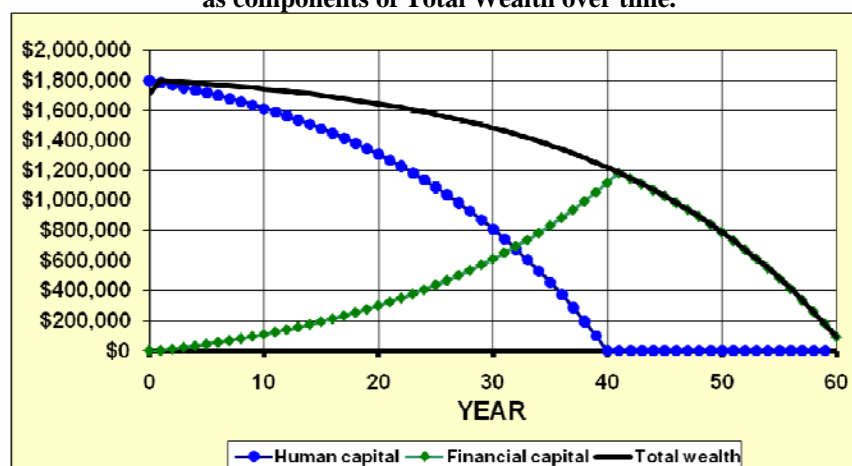
Factors That Impact Human Capital

For any given level of an individual's earnings, there are several factors that impact their cumulative present value. The first, clearly, is the level of earnings itself; an individual earning \$100,000/year for life will have a higher present value than an individual only earning \$50,000/year, all else being equal. The second is the growth rate of earnings; not only to the extent that earnings do or do not keep pace with inflation (a growth in nominal earnings), but to the extent of any *real* growth in earnings (i.e., growth in excess of just increases in inflation). For instance, individuals in the early stages of their careers often experience significant growth in their real earnings as they mature to levels of higher responsibility that come with higher compensation, in addition to mere inflation adjustments for compensation. This is often especially true for many professional-type careers; the experienced lawyer often makes significantly more than the associate with only 1-2 years of experience, and the experienced doctor makes significantly more than recent medical-school-graduated resident. However, the effect is not unique to such professionals; in many career paths, individuals can grow their income above and beyond inflation adjustments alone, especially compared to the early years of their careers.

On the other hand, real earnings can also experience a decline. This may be temporary, due to voluntary or involuntary unemployment, or for some careers a decrease in available work (for instance, fewer hours available to work from the manufacturing factory or fast food restaurant). In other cases, it may be due to a declining business, a change in health that restricts job access or job duties, or a more permanent decline due to a failure to improve in job skills in a changing environment.

Beyond the factors that affect the growth trajectory of earnings (and therefore their present value), there is another extremely important factor: when the individual stops working (i.e., retires), which defines the end point of the earnings years. Not surprisingly, an earlier retirement period means there are fewer working years and therefore a lower level of human capital.

Figure 4. Diagram of Human Capital and Financial Capital as components of Total Wealth over time.



The fact that human capital is heavily influenced by the timing of retirement (or more generally, the cessation of paid employment) also means that individuals have some opportunity to adjust the overall amount of wealth on their personal balance sheet by choosing to work longer, or conversely to reduce wealth - perhaps if goals have already been met - by retiring early. On the other hand, it also emphasizes the importance of disability insurance, as the loss of available working years can have a dramatic adverse impact on total wealth and sustainable consumption by unexpectedly cutting short the working years (or significantly reducing earnings) and taking a large slice out of the size of an individual's human capital.

Integrating Human Capital

The traditional planning approach generally focuses only on financial capital, and does little to acknowledge human capital, nor to focus on "total" wealth (defined as the combination of financial *and* human capital). However, incorporating human capital onto the balance sheet and trying to maximize *total* wealth and its accumulation, and to optimize the consumption it can support, leads to a new perspective on several planning issues.

For instance, as indicated by Figure 4, human capital is actually the larger of the two assets for a significant portion of an individual's lifetime. Accordingly, for much of the planning horizon, the best way to improve someone's lifetime standard of living is to focus on ways to improve their careers, not how to invest their assets.

In other words, helping a client achieve an extra 1% real rate of growth on their annual income - and its impact on the total value of their human capital - actually has far more impact than a 1% annual increase in the return on their financial assets, up until just a few years before retirement. Viewed from this context, financial planners could arguably seek to integrate outside career counselors and business consultants into their practices, on behalf of their clients, to help clients achieve their financial goals. Similarly, planners can teach and train their clients about the importance of their human capital on the balance sheet, both from the perspective of the importance of protecting it (i.e., disability insurance) and increasing its value (e.g., training, education, programs, etc., that improve job skills and the career track).

Another important impact of considering human capital on the balance sheet is that it has its own volatility and exposure to the business cycle. Some individuals will be highly susceptible to the business cycle - e.g., manufacturing jobs in certain industries. Others may have jobs that are extremely secure despite the business cycle - e.g., working for the Federal government. Consequently, individuals who wish to manage their *overall* wealth to the risks of the business cycle and uncertainty - which can affect both their human capital, and their financial capital investments such as stocks - may wish to adjust their financial investment decisions based on their human capital risks.

For instance, an individual who is employed in an industry that has significant exposure to the business cycle might invest more conservatively with his/her financial capital, to reduce the risk that there is a decline in human capital (e.g., a reduction in hours or compensation, or a layoff) at the same time their financial capital declines (e.g., a stock market decline in the face of a recession). Alternatively, individuals in jobs that are more secure despite the business cycle might be more comfortable with portfolios that have greater volatility. Individuals who have potentially extreme fluctuations in the value of their human capital - e.g., professional athletes - might be especially encouraged to minimize the risks in their financial capital if there is still significant uncertainty about the value of their human capital (i.e., they are not certain if a team contract or endorsement deal will occur or be renewed, or there is concern about how long they can continue to play their sport at a professional level). Notably, from this perspective, financial planners themselves arguably have a career that is highly susceptible to the business cycle (especially for business practices where revenues are significantly impacted, directly or indirectly, by the performance of the markets), which would suggest that a more conservative portfolio might be appropriate for a financial planner's personal portfolio to counterbalance the uncertainty of income (i.e., volatility in the value of human capital).

A third significant factor of human capital in the overall financial plan is the uncertainty of how long earnings will continue - in other words, when the individual will retire. On the one hand, there is the risk of an early cessation of earnings due to disability that would curtail wealth and force a reduction in lifetime consumption - although this risk can generally be insured against. On the other hand, there is the possibility that the individual's retirement date itself may change *in response to* what occurs with his/her financial capital. Arguably, this is what many clients do in the real

world, although the life cycle finance model provides a clearer way to model and evaluate it.

For instance, when an adverse financial event occurs, and the portfolio (i.e., financial capital) declines, the client chooses to work longer - increasing his/her human capital by deciding to work more years - to make up for the decline in financial capital. Conversely, if the financial capital experiences unexpected favorable returns that increase its value above what was originally anticipated, the client's total wealth reaches its desired level (to sustain a certain consumption goal) earlier, and the client can retire early - voluntarily reducing their human capital - because it is no longer needed to accomplish the goal due to the returns on the financial capital. Notably, this means in essence that a client's flexibility about a retirement date - assuming he/she has such flexibility given potential health concerns - provides an opportunity to make decisions about adjusting human capital up or down to manage it in response to changes in financial capital for the purposes of achieving certain overall spending goals throughout life.

Implications For Financial Planning

Although ultimately, the solutions implied by a life cycle finance approach are tools that financial planners already hold in their quiver, there is nonetheless a very different focus when viewed with the economist's lens.

Most significantly, when the primary focus is not asset accumulation and growth, but instead is establishing a certain level of consumption (and maintaining it due to habit formation tendencies), then solutions which ensure the success of those goals rise in importance, such as the use of TIPS to manage inflation risk and annuitization to alleviate the risk of longevity. In some ways, this is not unlike the shift from asset-based planning to goals-based planning - where maintaining a certain level of spending may be one of the primary goals. Nonetheless, even many planners who utilize a very goals-based planning approach rarely use tools like TIPS and annuitization as solutions, despite their rather 'optimal' value to directly address certain significant risks to a spending goal and ensure a favorable outcome.

On the other hand, many clients appear to just prefer an equities-based solution, perhaps for the upside that it affords and despite the risk that it presents. Nonetheless, in even such scenarios, the life cycle

finance research begins to make an interesting case that time diversification and "saving enough for a rainy day" alone may be a very inefficient solution to the investment problem where spending is not very flexible on the downside. Instead, an approach that utilizes options or other similar tools to *guarantee* certain disastrous declines in asset value will not occur may be more effective. Under the current approach, the client is simultaneously exposed to incredible upside in bull markets, and severe risk in an extended period of unfavorable returns. An options-based approach, at its core, is simply a hedging methodology that agrees to give up some upside, in exchange for ensuring there is less downside. The end result may generate far less wealth in a significant bull market, but may radically increase the probability that a client achieves the goals that were set forth at the beginning and/or at least significantly reduce the severity of any shortfalls.

Perhaps more important, though, is how the perspective on investment risk may change when the risk-free solution becomes the *baseline* and the risky alternative is truly viewed for what it is - a risky alternative. As highlighted earlier, this approach might present a client with two options: to spend 80% of income and save the other 20%, with a guaranteed path of success to maintain that spending for life; or to spend 90% of income and save the other 10%, with the risk that if returns are not favorable, retirement may be delayed by 5 (or some other number of) years. This puts the trade-off in a clearer focus; the risk-free path for what it is, and the upside (higher spending or early retirement) and downside (delayed retirement) tradeoff potential of the risky path, in terms that relate directly to the client's goals, lifestyle, and their financial and human capital.

Either way, though, life cycle finance makes the point that we should not view the financial assets on the balance sheet in isolation. Instead, they need to be viewed in the context of an individual's total wealth, including his/her human capital. Once viewed from this framework, the investment policy for the *financial* assets may even be adjusted to counterbalance the expected volatility and uncertainty (or lack thereof) of the individual's human capital. Those whose incomes are subject to high risk from the business cycle might choose to take on less bull and bear market exposure (i.e., less equities) than someone whose income and job prospects are significantly more stable. Alternatively, individuals might even consider trying to use their financial assets specifically to help hedge risks from their human capital. This might include not only holding conservative portfolios to counterbalance volatile human capital, but could even incorporate the use of options in the financial markets to hedge the impact of

human capital risks; for instance, buying puts on the stock market to generate value in the event of a market recession to hedge the financial impact if a recession causes the individual to become unemployed, or reduces the individual's business income.

In addition, when viewing the client's total wealth, it is notable again that for much of client's life, steps that increase the value of his/her human capital have a significantly greater impact on the ability to achieve goals (or even increase goals) than better returns on financial capital. While the management of financial capital may be the sole focus of managing total wealth *in* retirement - when by definition there are no more working years and therefore no more human capital on the balance sheet - it likely deserves less of a focus relative to human capital right up until the final years before retirement.

Caveats and Concerns

In practice, many planners do not implement - and many clients do not choose - the planning solution prescriptions implied as "optimal" under the life cycle finance framework, such as TIPS, annuitization, and options to hedge risk.

The implication from this newsletter is that perhaps we as financial planners have more to learn about the solutions to implement to sustain client standards of living. However, the fact that the solutions of life cycle finance are so rarely implemented begs the question of whether they are not, in fact, as "perfect" a solution as the economist framework suggests.

Fundamentally, solutions like TIPS and annuitization are presumed to be the optimal solutions because they maximize utility, *given* a utility function that assumes lifetime level spending is not only the primary goal, but in essence is the *only* goal. And strictly speaking, it is difficult to argue that if the client's one and only goal is to ensure a maximal amount of lifetime spending with no risk, that solutions like TIPS and annuitization are the way to go.

However, in practice, clients often have more complex goals than to "just" maximize a specific level of consumption, to the exclusion of any/all other goals. Which means, in essence, that the utility function we designed earlier - to maximize a stable lifetime real standard of living - is incorrect, or at least is inadequate and fails to fully capture client goals in the "real world."

So what does the lifetime level spending utility function fail to capture? First and foremost, it appears that most clients do not necessarily want the "fully guaranteed" solution, and the complete forfeiture of potential upside that it often requires. In other words, although most human beings have some leaning towards being risk averse, it doesn't necessarily mean that many/most clients want to *totally* eschew every possible risk, and the potential for upside that often goes along with it. In practice, most clients have at least *some* desire for upside - for the opportunity to not simply achieve their stated goal, but have the possibility of an even better outcome - and are willing to entertain at least some adjustments to their lifetime spending or other goals in pursuit of that (at least slightly) risky result.

In this context, it is still notable that perhaps some of the options-based solutions discussed here - hedging downside risk by giving up some, but not all, of the upside - may be a more effective approach than solely relying on time diversification under the traditional approach. Unfortunately, though, options themselves may be significantly more difficult to implement in practice than in theoretical applications discussed in this newsletter. A number of additional compliance complications arise when financial planners wish to use options for clients, although notably the rules are less complex for basic hedge transactions (e.g., buying "married" puts - acquiring a put option to protect the downside of a stock position that the client actually owns in the portfolio) than for more complex ones (e.g., option collars, spreads, etc.). Further challenges arise if the planner envisions applying options systematically across an entire client base, with clients who have different levels of sophistication, different account types, varying points where they started working with the planner, etc. And perhaps first and foremost, it may be necessary simply to re-educate clients (and perhaps much of the financial planning community) that options can be as much about hedging and *reducing* risk as they are often denounced for being "speculative" and increasing risk; it's all about how they are used.

On the other hand, solely investing in TIPS and utilizing annuitization for income, while it virtually eliminates downside risks - and does so in a much more straightforward manner than using options derivatives - also eliminates the opportunity for a better outcome in a manner that is unsatisfactory for many (or even most?) individuals in reality. Whether it is appropriate or not, most individuals in reality seem to express at least some preference to have the opportunity for a "better life" - including via the possibility of favorable appreciation in the value of financial assets. (Editor's Note: Some would make the case, though, that clients have such a

preference for equities and "more upside" because they have not only very optimistic but unrealistic expectations about future equity returns, and that if expectations were adjusted to be "more appropriate" the decision outcomes might be different.)

In addition, it appears that a lifetime level spending utility function itself may not be accurate for some clients. For instance, many planners have interacted with clients at the retirement transition who have outright stated a goal of spending more in the early years of retirement (e.g., for additional travel in their 50s and/or 60s), and then scaling that spending down in later years as their health and desire for travel declines. A level consumption utility function simply does not capture these goals as stated.

Nonetheless, it is notable that the stable consumption utility function *does* acknowledge the fact that spending may change based on family situations, in part because it is commonly defined in practice (in the life cycle finance context) as a level amount of consumption *per family member* - which means that total consumption is already assumed to adjust upwards when there are children in the home. Given a finite amount of earnings, this also means, indirectly, that the life cycle finance approach already implicitly assumes that there will be less savings during the child rearing years, and more saving once children have left the home, freeing up a portion of income that formerly went to supporting the child(ren) - and in the experience of many planners, this appears to be a valid representation of what clients have actually done as their children have grown up and left the home.

Of course, having children also introduces another twist to the issues of consumption utility functions - the fact that many individuals would like to leave something for their children (or other family members, or a charity, etc.) when they pass away (over and above any material support needs in the context of minor children). Such legacy goals can be incorporated into the life cycle finance model - for instance, by reducing the consumption goal to a point that there would be an expectation of assets being left over. However, in practice, clients appear to place an even greater emphasis on the desire for leaving a legacy than even a mild adjustment to legacy goals would suggest - given, once again, the strong consumer preference to shy *away* from immediate annuitization, which would generally eliminate any legacy in exchange for guaranteeing (inflation-adjusting) lifetime income. Notwithstanding how often clients state their concerns about outliving their assets and maintaining their income, the dearth of

demand for immediate annuities suggests that in reality clients weight these goals differently. In addition, the strong preference that most individuals have to maintain liquidity - even above and beyond what they "need" just to handle expenses - further reduces the common use of immediate annuitization, notwithstanding the fact it may result in an apparently "less optimal" solution.

Applying some concepts of human capital also raises unique challenges for the planner. First and foremost, most planners are not trained as "career counselors" and do not necessarily have a very strong skillset around guiding clients through career decisions. Fortunately, this can potentially be addressed by planners partnering *with* career counselors as a new third party professional relationship, where the career counselor can address the direct career issues and the financial planner can focus on the financial planning ramifications of various career decisions (including both the long-term impact of a job change, and the short-term risks and impact of changing jobs, searching for a new job, leaving the workforce to re-train or go back to school, etc.).

Another complication of the human capital concepts presented here is that while, from a theoretical perspective, it may be desirable to use financial capital to counterbalance the risk of human capital - e.g., by using riskier investments for conservative human capital careers and more conservative investments for those with financially riskier careers and incomes - in practice clients often don't align with this approach. Instead, conservative clients tend to make conservative career decisions *and* wish similarly conservative portfolios to reflect their risk preferences, while risk-inclined individuals who are comfortable with financially riskier careers (e.g., many types of entrepreneurial business owners) often also embrace riskier financial investments as well, again reflecting their comfort with risk across the spectrum. Financial planners may need to do a great deal of (re-)education with clients to demonstrate why clients might consider a difference balance to their financial and human capital risk decisions.

Summary/Conclusion

In the end, the life cycle finance movement within the field of economics still seeks to address the same problems that we as financial planners work through with clients on an ongoing basis.

Nonetheless, because of the significant differences in perspective between the two fields, problems are often framed differently, which results in differing

conclusions about what solutions may be best to accomplish various client goals.

As a result, both fields have the opportunity to learn much from each other about the challenging problems that clients wish to solve, the ways to approach those problems, and the solutions that might be implemented to achieve them. We may not yet be able to reach consistent consensus about a single perfect solution to address any and all given client needs, but there is clearly much we can learn by looking at the problem from each other's perspective.

What did you think?

Hopefully you found this latest issue of *The Kitces Report* to be of value to you. However, since it is produced for you, the reader, we would like to hear from you about how the style, format, and content of the newsletter could be further improved to make it more valuable for you.

Please let us know what you think by emailing us at feedback@kitces.com!

Thanks in advance for sharing your thoughts!

The publisher of *The Kitces Report* takes great care to thoroughly research the information provided in this newsletter to ensure that it is accurate and current. Nonetheless, this newsletter is not intended to provide tax, legal, accounting, financial, or professional advice, and readers are advised to seek out qualified professionals that provide advice on these issues for specific client circumstances. In addition, the publisher cannot guarantee that the information in this newsletter has not been outdated or otherwise rendered incorrect by subsequent new research, legislation, or other changes in law or binding guidance. The publisher of *The Kitces Report* shall not have any liability or responsibility to any individual or entity with respect to losses or damages caused or alleged to be caused, directly or indirectly, by the information contained in this newsletter. In addition, any advice, articles, or commentary included in *The Kitces Report* do not constitute a tax opinion and are not intended or written to be used, nor can they be used, by any taxpayer for the purpose of avoiding penalties that may be imposed on the taxpayer.