PORTFOLIO Optimization
Portfolios

The sophistication behind an easy approach
to asset allocation for Pacific Life’s
Variable Universal Life Insurance products
Variable universal life (VUL) insurance offers the policyowner the flexibility to structure the desired death benefit, as well as premium payments, according to individual needs and objectives. The policyowner also has the ability to allocate these premium payments among a variety of investment options.
Executive Summary

A question that is often asked by policyowners is, “What is an appropriate mix of investment options for my VUL policy that can help me meet my life insurance needs and financial goals?” Reviewing all of the available investment options in your VUL policy to create and maintain an asset allocation over time can be a complex and time consuming process.

Pacific Life offers an easy approach to align your VUL policy with your insurance goals and risk tolerance. Portfolio Optimization—a series of asset allocation portfolios formed as fund-of-funds and compiled using the eligible investment options available in Pacific Life’s variable insurance products.

The Portfolio Optimization portfolios are constructed based on the principles of Modern Portfolio Theory. Each of the five portfolios follows an optimized asset allocation process that addresses various levels of risk. An optimized asset allocation portfolio seeks to maximize the expected return for the given level of risk. The process incorporates two steps:

- Develop optimization analysis to determine the asset class breakdown using “mean variance optimization.”
- Evaluate the underlying portfolios’ asset classes to achieve the desired asset class breakdown.

Asset allocation is the process of distributing investments among varying classes of investments (e.g., stocks and bonds). It does not guarantee future results, assure a profit, or protect against loss. Fund-of-funds are subject to the risks associated with the underlying funds in which they invest. They also involve direct expenses for each fund and indirect expenses for the underlying funds, which together can be higher than expenses incurred when investing directly in an underlying fund.
“Investors generally want to take the smallest possible risk to secure the greatest possible return.”

HARRY M. MARKOWITZ, PH.D, NOBEL LAUREATE

Portfolio Optimization

Based On Modern Portfolio Theory

Pacific Life Fund Advisors LLC (PLFA), investment adviser to the Portfolio Optimization portfolios, develops the asset allocations for the portfolios with research provided by investment consultant, Ibbotson Associates, Inc. (“Ibbotson”). The foundation of Portfolio Optimization is based on Harry Markowitz’s Modern Portfolio Theory, which earned Markowitz the 1990 Nobel Prize in Economics.

Modern Portfolio Theory demonstrates that asset classes generally have different levels of risk and return, and typically behave differently during the same market cycles. In a period where one asset class is increasing in value, other asset classes may be decreasing in value or not increasing as much.

Investors have long appreciated the value of diversification as a tool for reducing risk. But Markowitz took it a step further. He developed a quantitative definition for risk, then studied how diversification within an asset allocation portfolio can reduce risk. His research led him to conclude that some asset allocation portfolios are more efficient than others. An efficient portfolio is one that achieves the smallest possible level of risk for a given level of expected return, or stated another way, a portfolio that provides the highest possible expected return for a given level of risk.
An optimal portfolio’s expected return and expected risk can be measured and plotted on a graph by making certain assumptions. The line that connects all optimal portfolios across all levels of risk appear on what is called the Efficient Frontier. An optimal portfolio is simply the mix of assets that maximizes portfolio return at a given risk level. This example illustrates an efficient frontier for combinations of two asset classes: stocks and bonds.

**Stocks and Bonds: Risk vs. Return**

1970-2012

Any portfolio not on the Efficient Frontier has some degree of inefficiency. Portfolios to the right of the Efficient Frontier add additional risk for a given expected return. Portfolios below the Efficient Frontier offer lower expected returns for the same level of expected risk.

In this example, stocks are represented by the Standard & Poor’s 500® and bonds are represented by the 20-year U.S. government bond.
Modern Portfolio Theory seeks to build an efficient asset allocation portfolio aligned with the investor’s risk profile.

**Potential to Reduce Risk or Increase Return**

1970-2012

Here is an example of how an efficient asset allocation could be constructed. The example above reflects an investor’s original allocation portfolio, which is comprised of fixed-income assets. By adding stocks to the allocation and adjusting the cash and bond exposure, the investor was able to reduce risk without sacrificing return or increase return without assuming additional risk.

**Lowering Risk**

By adding 20% stocks to the portfolio allocation and adjusting the cash and bond exposure, the investor was able to lower risk without affecting return, as demonstrated in the “Lower-risk Portfolio.”

**Increasing Return for the Same Risk**

By adjusting the allocation percentages of the stocks, cash and bonds, the investor was able to increase return without adding additional risk as illustrated in the “Higher-return Portfolio.”

In this example, stocks are represented by the Standard & Poor’s 500®, bonds are represented by the 20-year and five-year U.S. government bonds, and cash by the 30-day U.S. Treasury bill. Past performance is no guarantee of future results. Risk and return are measured by standard deviation and compound annual return, respectively. They are based on annual data over the period 1970–2012. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © 2013 Morningstar, Inc. All rights reserved. 3/1/2013
2 Step Process Behind Portfolio Optimization

1. **Develop optimization analysis.**

   Based on research provided by Ibbotson, PLFA identifies the asset classes to be used for the five Portfolio Optimization portfolios. The current allocations cover four major asset classes and approximately 18 different asset class styles.

   A methodology known as "mean variance optimization" is used to determine the optimal allocations, based on asset classes, that appear on the Efficient Frontier. The results of the mean variance optimization analysis can be seen on the following page.

   Mean variance optimization requires three statistical estimates for each asset class:

   - Expected return
   - Expected risk
   - Expected relationships between asset classes, or correlation coefficient

   Forecasts are developed for each statistic using a combination of historical data, current market information, and additional analysis. Expected risk is measured using standard deviation. The goal for optimal asset allocations is to lower the standard deviation without necessarily lowering the expected return. This process is done by examining the relationship between asset classes/asset class styles, then combining asset classes/asset class styles that are not completely correlated.

2. **Portfolio Optimization**

   The theory behind Portfolio Optimization is that diversification among asset classes can help reduce volatility over the long term.

   - **Asset class:** A group of investments that exhibit similar characteristics, such as stocks, bonds, real estate, or cash.
   - **Standard deviation:** Is applied to the annual rate of return of an investment to measure the investment’s volatility. An investment with a high standard deviation will exhibit higher volatility, and an investment with a low standard deviation will reflect lower volatility. Standard deviation is also known as historical volatility and is used by investors as a gauge for the amount of expected volatility. In the mean-variance analysis setting, the standard deviation of a portfolio is based not only on the risk of each asset class, but also on the relationship between the returns of the asset classes.
   - **Correlation coefficient:** Measures how well the predicted values from a forecast model “fit” with the real-life data. The statistic can range between +1 and -1. A +1 indicates that the asset classes move together in the same direction (i.e., perfect correlation). A -1 indicates that the asset classes move together in opposite directions (i.e., perfect negative correlation). A 0 indicates no relationship.
FUND ANALYSIS TERMS
AT A GLANCE

**Returns-based style analysis** measures the return behavior of an investment option and attributes it to any number of selected market benchmarks. If a fund’s style is relatively stable, this approach can reasonably predict its future style. The R-squared ($R^2$) measures the percentage of a fund’s price movements that can be explained by price movements of a benchmark index. Investment options with a high $R^2$ statistic have historically closely tracked their benchmarks and are expected to offer reliable asset class exposure.

**Holdings-based analysis** is a “bottom-up” approach in which the characteristics of a fund over a period of time are derived from the characteristics of the securities it contains at various points in time over the period.

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**Every variable investment option has some degree of risk depending on what it invests in and what strategies it uses.**

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2. **Evaluate the underlying portfolios.**

If you assume each eligible investment option represented only one asset class style, it is a simple process to match eligible investment options to the target asset class allocations. But that assumption can mask “style drift,” which is the divergence of an investment option from its stated style or objective. That is why the Portfolio Optimization portfolios uses a more in-depth approach to filling the targeted asset class allocations. A returns-based style analysis is used that seeks to find the combination of asset classes that best explain the behavior of each eligible investment option. Holdings-based analysis, fund manager interviews, and regression analysis are also used to determine the target allocations.

The five Portfolio Optimization portfolios’ current target allocation percentages are displayed on the next page.

Each of the Portfolio Optimization portfolios gives you the opportunity to allocate your net premiums and accumulated value into a single diversified investment option that aligns with your risk tolerance and investment time horizon.

The Portfolio Optimization portfolios are an easy way to allocate your net premium payments in a minimum amount of time.

**Sophisticated Asset Allocation without Sacrificing Time**

A Risk Tolerance Self-Score Questionnaire is available to help you align your risk/reward investor profile with a Portfolio Optimization portfolio. You and your life insurance producer should complete the questionnaire together to determine which Portfolio Optimization portfolio aligns with your personal financial situation, time horizon, and risk tolerance.

While all variable investment options are subject to market risk, some investment options may experience greater volatility than others. The variable investment options are not FDIC insured or guaranteed.
Five Portfolio Optimization portfolios are developed that span the risk spectrum from conservative to aggressive-growth.

### Portfolio Optimization Portfolios (as of 5.1.13)

<table>
<thead>
<tr>
<th>Portfolio Type</th>
<th>Investment Goal</th>
<th>Target Asset Class Allocations as of 5/1/13</th>
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</thead>
<tbody>
<tr>
<td>CONSERVATIVE PORTFOLIO</td>
<td>Seeks current income and preservation of capital.</td>
<td>20% Equity  80% Debt</td>
</tr>
<tr>
<td>MODERATE-CONSERVATIVE PORTFOLIO</td>
<td>Seeks current income and moderate growth of capital.</td>
<td>40% Equity  60% Debt</td>
</tr>
<tr>
<td>MODERATE PORTFOLIO</td>
<td>Seeks long-term growth of capital and low to moderate income.</td>
<td>55% Equity  45% Debt</td>
</tr>
<tr>
<td>GROWTH PORTFOLIO</td>
<td>Seeks moderately high, long-term capital appreciation with low, current income.</td>
<td>75% Equity  25% Debt</td>
</tr>
<tr>
<td>AGGRESSIVE-GROWTH PORTFOLIO*</td>
<td>Seeks high, long-term capital appreciation.</td>
<td>90% Equity  10% Debt</td>
</tr>
</tbody>
</table>

### Investment Goal
- **CONSERVATIVE PORTFOLIO**: Seeks current income and preservation of capital.
- **MODERATE-CONSERVATIVE PORTFOLIO**: Seeks current income and moderate growth of capital.
- **MODERATE PORTFOLIO**: Seeks long-term growth of capital and low to moderate income.
- **GROWTH PORTFOLIO**: Seeks moderately high, long-term capital appreciation with low, current income.
- **AGGRESSIVE-GROWTH PORTFOLIO***: Seeks high, long-term capital appreciation.

### Target Asset Class Allocations as of 5/1/13

![Graph showing asset class allocations](image)

- **Less Risk**
  - Shorter
  - Debt vs. Equity
- **Risk/Volatility**
  - Investment Time Horizon
- **More Risk**
  - Longer

* Portfolio Optimization Aggressive-Growth may not be used with certain policy riders. Check your prospectus for more information.

Refer to the Pacific Select Fund prospectus for more information regarding the Portfolio Optimization portfolios.
Alternative or non-traditional investment strategies are asset classes with return characteristics that are generally expected to have a low to moderate correlation to traditional stock and bond investments and may offer diversification benefits. Typically offered through hedge funds and other private investment vehicles, alternative investment strategies are gaining greater exposure in traditional investment vehicles to help deal with the volatility and uncertainty of today’s global markets.

Pacific Life Fund Advisors has added alternative investments to the broad range of asset classes that comprise the underlying investment options for the five Portfolio Optimization Portfolios.

The alternative investment strategies available to the Portfolio Optimization Portfolios are:

- PSF Currency Strategies Portfolio, managed by UBS Global Asset Management (Americas)
- PSF Precious Metals Portfolio, managed by Wells Capital Management
- PSF Global Absolute Return Portfolio, managed by Eaton Vance Management

Each of the five Portfolio Optimization Portfolios has some exposure to all three alternative strategies, which provides a convenient access to new sources of performance and diversification.

Non-traditional or alternative investment performance may be correlated with traditional equity and fixed income investments over short or longer term periods, resulting in a lessened diversification effect and increased volatility from including such a portfolio as part of an asset allocation strategy. Currency exposure subjects a portfolio to changes in the rates of exchange between currencies, which may result in increased volatility. Companies engaged in precious metals-related activities may be adversely affected by drops in the prices of the precious metals themselves, which prices can be volatile.
What are the expenses associated with the Portfolio Optimization portfolios?

Each Portfolio Optimization portfolio will bear its pro-rata portion of the operating expenses of the underlying portfolios in which it invests. Other fees and expenses associated with the Portfolio Optimization portfolios include an annual 0.10% advisory fee in addition to other fund operating expenses.

A fund-of-funds may have higher fees and expenses than a fund that invests directly in equity and debt securities.

How will PLFA maintain the target allocation in my Portfolio Optimization portfolio and do the target allocations or portfolio managers of the underlying portfolios change?

PLFA periodically reviews each allocation to determine whether rebalancing is appropriate and may use cash flows to rebalance to target allocations. Although PLFA does not intend to make frequent tactical adjustments to the target asset mix, it may modify the target allocations and underlying portfolios from time to time based on market conditions or other factors.

PLFA also monitors the performance of each portfolio manager and each underlying portfolio and may, from time to time, recommend a change to portfolio management or the underlying portfolios.

Can I allocate to other variable investment options in addition to a Portfolio Optimization portfolio?

Yes. In addition to the Portfolio Optimization portfolio you have chosen, you may also allocate your net premiums or policy accumulated value to any of the other investment options currently offered under your policy.

How will policy loans and withdrawals affect my Portfolio Optimization portfolio?

Unless you indicate otherwise, the amount of any policy loan or withdrawal will be taken proportionately among all of the investment options you have chosen. The amount of any policy loan or withdrawal will be based on the Portfolio Optimization allocation percentages.

Will allocating to a Portfolio Optimization portfolio affect the death benefit on my variable universal life insurance policy?

Allocations into a Portfolio Optimization portfolio will not affect your initial death benefit. Portfolio Optimization portfolios are designed to help you allocate your net premiums into a diversified asset allocation strategy that’s aligned with your risk tolerance and investment time horizon. Based on its performance, your Portfolio Optimization portfolio has the potential to increase your policy accumulated value over time, which may result in an increase to your total death benefit.
Variable Universal Life Insurance generally requires additional premium payments after the initial premium. If either no premiums are paid, or subsequent premiums are insufficient to continue coverage, it is possible that coverage will expire.

Pacific Life refers to Pacific Life Insurance Company and its affiliates, including Pacific Life & Annuity Company. Insurance products are issued by Pacific Life Insurance Company in all states except New York and in New York by Pacific Life & Annuity Company. Product availability and features may vary by state. Each insurance company is solely responsible for the financial obligations accruing under the products it issues. Insurance products and their guarantees, including optional benefits and any fixed subaccount crediting rates, are backed by the financial strength and claims-paying ability of the issuing insurance company, but they do not protect the value of the variable investment options. Look to the strength of the life insurance company with regard to such guarantees as these guarantees are not backed by the broker-dealer, insurance agency or their affiliates from which products are purchased. Neither these entities nor their representatives make any representation or assurance regarding the claims-paying ability of the life insurance company. Variable insurance products and shares of Pacific Select Fund are distributed by Pacific Select Distributors, Inc., (member FINRA & SIPC), a subsidiary of Pacific Life Insurance Company, and an affiliate of Pacific Life & Annuity Company, and are available through licensed third-party broker-dealers.

This material must be preceded or accompanied by the currently effective product and underlying funds prospectuses. These prospectuses contain more complete information about Pacific Life and a life insurance product’s risks, charges, limitations, and expenses, as well as the risks, charges, expenses and investment goals/objectives of the underlying investment options. Read them carefully before investing or sending money.

Asset allocation is the process of distributing investments among varying classes of investments (e.g., stocks and bonds). It does not guarantee future results, assure a profit, or protect against loss.

Life Insurance Producer’s Name

Broker Dealer’s Name

State Insurance License Number
(or affix your business card)