READING 10: MANAGING INDIVIDUAL INVESTOR PORTFOLIO

A- Investor characteristics

An investment approach that begins with consideration of biases, preferences, and perceptions of risk paves the way for a meaningful discussion of portfolio objectives and may result in a stronger, more enduring client relationship than if such consideration were not given.

1- Situational Profiling

Many useful attempts have been made to categorize individual investors by stage of life or by economic circumstance. Such “situational” profiling runs the risk of oversimplifying complex behavior—individual investors are unique and likely to exhibit characteristics that cut across arbitrary lines of categorization. Nonetheless, situational profiling can serve as a useful first step in considering an investor’s basic philosophy and preferences, facilitating the discussion of investment risk by anticipating areas of potential concern or special importance to the investor. Examples of situational profiling include approaches based on source of wealth, measure of wealth, and stage of life.

a. Source of Wealth

Some classification schemes presume that the manner in which an individual investor has acquired wealth offers insight into that investor’s probable attitude toward risk. Successful entrepreneurs, who have created their wealth by personally taking business or market risks, are assumed to exhibit a higher level of risk tolerance than those who have been more passive recipients of wealth. “Self-made” investors may have greater familiarity with risk-taking and a higher degree of confidence in their ability to recover from setbacks. Such self-made investors, however, often have a strong sense of personal control over the risks that they assume. Despite their demonstrated willingness to take entrepreneurial risk, they can be very reluctant to cede control to a third party or to accept investment volatility over which they have no influence.

In contrast, more-passive recipients of wealth may be associated with reduced willingness to assume risk. Such investors may have inherited their wealth; received a large, one-time payment; or simply accumulated savings during a period of secure employment. Because of the relatively passive nature of their wealth accumulation, these investors are assumed to have less experience with risk-taking, less understanding of what taking risk means, and less confidence that they can rebuild their wealth should it be lost.

b. Measure of Wealth

Given the subjective nature of financial well-being, it is difficult to categorize investors based on portfolio size (net worth). A portfolio whose returns do not easily support the investor’s lifestyle might be considered small. If the investor’s ongoing needs are so well covered that succession and estate planning issues have become important, the portfolio might be considered “large.”
c. Stage of Life

For the sake of illustration, an individual’s investment policy can be viewed as passing through four general phases: foundation, accumulation, maintenance, and distribution.

1) During the foundation phase of life, the individual is establishing the base from which wealth will be created. This base might be a marketable skill, the establishment of a business, or the acquisition of educational degrees and certifications. During the foundation phase, the individual is usually young, with a long time horizon, which normally would be associated with an above-average tolerance for risk. Risk tolerance should certainly be above-average in the foundation stage if the individual has inherited wealth. Lacking such wealth, the foundation phase may be the period when an individual’s investable assets are at their lowest and financial uncertainty is at its highest. A young entrepreneur may have substantial expenses in establishing a business, resulting in a liquidity need that overrides all other considerations. Marriage and the arrival of children may create a desire for more-rapid wealth accumulation that is not yet matched by either ability or willingness to assume risk.

2) In the accumulation phase, earnings accelerate as returns accrue from the marketable skills and abilities acquired during the foundation period and gradually reach their peak. In the early years of the accumulation phase, income rises and investable assets begin to accumulate. Expenses also rise during this period, through the establishment of family, purchase of homes, and care and education of children. In the middle and later years of wealth accumulation, expenses typically begin to decline as children reach adulthood, educational needs are fulfilled, and home purchases are completed. Income generally continues to rise as the individual reaches peak productivity. If an individual’s personal spending habits do not change, the gap between income and expenses may widen throughout the accumulation phase, allowing for an increase in savings.

3) During the maintenance phase, the individual has moved into the later years of life and usually has retired from daily employment or the pressures of owning a business. This phase focuses on maintaining the desired lifestyle and financial security. Preserving accumulated wealth begins to increase in importance, while the growth of wealth may begin to decline in importance. Risk tolerance will begin to decline; not only is the individual’s time horizon shortening but his confidence in the ability to replace capital or recover from losses is often diminished. In the maintenance phase, investors will typically reduce exposure to higher-volatility asset classes, such as common stocks, and increase exposure to lower-volatility investments, such as intermediate-term bonds. Because the individual now has less time to recover from poor investment results, portfolio stability becomes increasingly important. In this phase, the challenge is to achieve a desired level of portfolio stability and maintain an exposure to risky assets sufficient to preserve the portfolio’s purchasing power. Investors who become too conservative too soon after retirement may reach an elderly age with assets that have suffered significant declines in purchasing power.

4) In the distribution phase, accumulated wealth is transferred to other persons or entities. For many, this phase begins when the individual is still reaping the benefits of the maintenance
phase and retirement. For most, the phase involves a conscious decision to begin transferring wealth. Dealing with tax constraints often becomes an important consideration in investment planning, as investors seek to maximize the after-tax value of assets transferred to others. Although asset distribution may take place in the later stages of life, planning for such transfers can begin much earlier. For individuals with substantial wealth, the distribution phase should be a well-planned program executed during the course of several years. Efficient wealth transfers take advantage of market conditions, tax laws, and various transfer mechanisms. An individual may consider various transfer strategies: He might establish trusts or foundations for heirs or charities, make outright gifts of cash or assets, modify the legal ownership structure of certain assets, and make advance provisions for care in the event of health problems and to pay wealth transfer taxes.

The value of situational paradigms, lies more in their general insights into human behavior and less in their ability to fully interpret individual circumstances. Investment advisors should emphasize the process of gathering and assessing relevant situational information rather than the specific category in which an individual investor may fall. The advisor who recognizes familiar patterns is better able to anticipate areas of potential concern and to structure a discussion of portfolio policy in terms relevant to the client.

2- Psychological Profiling

Psychological profiling, sometimes referred to as personality typing, bridges the differences between “traditional finance” and what has come to be defined as “behavioral finance.”

a. Traditional Finance

In models of traditional, or standard, investment decision making, investors are assumed to:

- **Exhibit risk aversion**: investors with otherwise equivalent investment options will prefer the investment with the lowest volatility.
- **Hold rational expectations**: investors are coherent, accurate, and unbiased forecasters. Their forecasts will reflect all relevant information, and they will learn from their past mistakes
- **Practice asset integration**: to the process by which investors choose among risky investments. Investors practice asset integration by comparing the portfolio return/risk distributions that result from combining various investment opportunities with their existing holdings. Assets are evaluated in the context of their impact on the aggregate investment portfolio, not as standalone investments.

As a consequence of the traditional assumptions about individual economic behavior, traditional models of the portfolio building process have historically relied on the following tenets:

- **Asset pricing is driven by economic considerations** such as production costs and prices of substitutes.
- **Portfolios are constructed holistically**, reflecting covariances between assets and overall objectives and constraints.
b. Behavioral Finance

Behavioral finance based decision-making models attempt to incorporate the principles of behavioral finance, in which individual investors are recognized to:

- **Exhibit loss aversion;** Loss aversion is demonstrated when investors evaluate opportunities in terms of gain or loss rather than in terms of uncertainty with respect to terminal wealth. It appears to be human nature to prefer an uncertain loss to a certain loss but to prefer a certain gain to an uncertain gain.
- **Hold biased expectations;** Biased expectations result from cognitive errors and misplaced confidence in one’s ability to assess the future.
- **Practice asset segregation;** Asset segregation is the evaluation of investment choices individually, rather than in aggregate.

According to behavioral models of individual decision making, portfolio construction takes place under a more complex set of assumptions than those given previously:

- **Asset pricing** reflects both economic considerations, such as production costs and prices of substitutes, and subjective individual considerations, such as tastes and fears.
- **Portfolios are constructed as “pyramids” of assets,** layer by layer, in which each layer reflects certain goals and constraints.

Within this behavioral framework, individuals also have characteristics that either sharpen or blunt the human tendencies for risk avoidance. The process of “personality typing” seeks to identify and categorize these characteristics to facilitate the discussion of risk and risk tolerance.

c. Personality Typing

Generally, two approaches to personality classification exist:

- Often the default option within investment firms is an ad hoc evaluation by the investment advisor, who categorizes the investor based on personal interviews and a review of past investment activity. Although experienced managers may claim proficiency in their ability to profile investor personalities, subjective assessments are difficult to standardize, and their terms often mean different things to different people. Even when the assessment is generally correct, the degree of an individual investor’s risk tolerance is difficult to gauge.
- Reflecting a discomfort with this ad hoc approach, a growing number of investment firms now employ short client questionnaires to gain insight into the investor’s propensity to accept risk and the decision-making style used in pursuing investment returns. These questionnaires address investment topics but may also include self-evaluative statements that have no direct investment context.
Based on risk tolerance and decision making style questionnaires four investor types emerge. The types are consistent with distinct style/risk tradeoffs and may provide predictive insight into an individual’s ultimate investment behavior.

- **Cautious Investors:** Cautious investors are generally averse to potential losses. This aversion may be a consequence of their current financial situation or of various life experiences, but most exhibit a strong need for financial security. Cautious investors usually desire low-volatility investments with little potential for loss of principal. Although these individuals generally do not like making their own decisions, they are not easily persuaded by others and often choose not to seek professional advice. Cautious investors dislike losing even small amounts of money and seldom rush into investments. They often miss opportunities because of overanalysis or fear of taking action. Their investment portfolios generally exhibit low turnover and low volatility.

- **Methodical Investors:** This group relies on “hard facts.” Methodical investors may intently follow market analysts or undertake research on trading strategies. Even when their hard work is rewarded, they typically remain on a quest for new and better information. Their reliance on analysis and database histories generally keeps them from developing emotional attachments to investment positions, and their discipline makes them relatively conservative investors.

- **Spontaneous Investors:** Spontaneous investors are constantly readjusting their portfolio allocations and holdings. With every new development in the marketplace, they fear a negative consequence. Although spontaneous investors generally acknowledge that they are not investment experts, they doubt all investment advice and external management decisions. They are over-managers; their portfolio turnover ratios are the highest of any personality type. Although some investors in this group are successful, most experience below-average returns. Their investment profits are often offset by the commission and trading charges generated by second-guessing and frequent adjustment of portfolio positions. Spontaneous investors are quick to make decisions on investment trades and generally are more concerned with missing an investment trend than with their portfolio’s level of risk.

- **Individualist Investors:** This group has a self-assured approach to investing. Individualists gain information from a variety of sources and are not averse to devoting the time needed to reconcile conflicting data from their trusted sources. They are also not afraid to exhibit investment independence in taking a course of action. Individualist investors place a great deal of faith in hard work and insight, and have confidence that their long-term investment objectives will be achieved.
However, **a predictive link must exist from the questionnaire responses to the resulting personality typing that is derived, and to the subsequent investment behavior that occurs.** If the correlation is **high** between the personality dimensions outlined in the questionnaire and the individual’s ultimate portfolio selections, then the **exercise has predictive value**. If the results are **uncorrelated**, then the questionnaire must be revised.

**B- Investment Policy Statement**

The investment policy statement is a client-specific summation of the circumstances, objectives, constraints, and policies that govern the relationship between advisor and investor.

A well-constructed IPS presents the **investor’s financial objectives**, the **degree of risk** he or she is willing to take, and any **relevant investment constraints** that the advisor must consider. It also sets **operational guidelines for constructing a portfolio that can be expected to best meet these objectives while remaining in compliance with any constraints**. It IPS establishes a **mutually agreed-upon basis for portfolio monitoring and review**. Finally, the IPS serves as a document of understanding that protects **both the advisor and the individual investor**. If management practices or investor directions are subsequently questioned, both parties can refer to the policy statement for clarification or support. Ideally, the review process set forth in the **IPS will identify such issues before they become serious**.

**1- Setting Return and Risk Objectives**

Establishing portfolio objectives for return and risk is a systematic process applicable for institutional as well as individual investor portfolios.
a. Return Objective

The process of identifying an investor’s desired and required returns should take place concurrently with the discussion of risk tolerance. In the end, the IPS must present a return objective that is attainable given the portfolio’s risk constraints. It is important at the outset to distinguish between a return requirement and a return desire. The former refers to a return level necessary to achieve the investor’s primary or critical long-term financial objectives; the latter denotes a return level associated with the investor’s secondary goals.

Return requirements are generally driven by annual spending and relatively long-term saving goals. Historically, these goals have often been classified as income requirements and growth requirements, with the presumption that portfolio income (dividends, interest, and rent) is used for current spending, and portfolio gains (from price appreciation) are reinvested for growth. Income needs, therefore, are met with income-producing securities, primarily bonds, and growth objectives are pursued with stocks and other equity-oriented investments.

Return requirements are often first presented in real terms, without adjustment for inflation. When an investor’s current spending and long-term savings goals are expressed in terms of purchasing power, however, it becomes clear that even income-oriented portfolios require a considerable element of nominal growth.

As an alternative to “growth” and “income,” a “total return” approach to setting return requirements looks first at the individual’s investment goals and then identifies the annual after-tax portfolio return necessary to meet those goals. That required return must then be reconciled with the individual’s separately determined risk tolerance and investment constraints.

When an investor’s return objectives are inconsistent with his risk tolerance, a resolution must be found:

- If the investor’s return objectives cannot be met without violating the portfolio’s parameters for risk tolerance, he may need to modify his low- and intermediate-priority goals. Alternatively, he may have to accept a slightly less comfortable level of risk, assuming that he has the “ability” to take additional risk.
- If the investment portfolio is expected to generate a return that exceeds the investor’s return objectives, there is the luxury of dealing with a surplus. The investor must decide whether to a) protect that surplus by assuming less risk than she is able and willing to accept or b) to use the surplus as the basis for assuming greater risk than needed to meet the original return goals, with the expectation of achieving a higher return.

To calculate the required return and to fully understand the cumulative effects of anticipated changes in income, living expenses, and various stage-of-life events, an advisor may wish to incorporate a cash flow analysis.
b. Risk Objective

An individual’s risk objective, or overall risk tolerance, is a function of both ability to take risk and willingness to take risk.

**Ability to Take Risk**: Assessing an individual’s ability to take risk is suited to quantitative measurement. It is generally the investment advisor who defines the terms of the analysis and then must explain the results. Although approaches to the analysis will vary, all must address the following questions:

1) What are the investor’s financial needs and goals, both long term and short term?
2) How important are these goals? How serious are the consequences if they are not met?
3) How large an investment shortfall can the investor’s portfolio bear before jeopardizing its ability to meet major short-term and long-term investment goals?

**Willingness to Take Risk** involves a more subjective assessment. No absolute measure of willingness exists, nor does any assurance that willingness will remain constant through time. It may, in fact, be necessary that investors have personal experience with significant losses as well as gains before a productive discussion of risk tolerance with them is possible.

2. **Constraints**

The IPS should identify all economic and operational constraints on the investment portfolio.

**Portfolio constraints generally fall into one of five categories:**
- liquidity;
- time horizon;
- taxes;
- legal and regulatory environment;
- unique circumstances.

a. Liquidity

Liquidity refers generally to the investment portfolio’s ability to efficiently meet an investor’s anticipated and unanticipated demands for cash distributions. Significant liquidity requirements constrain the investor’s ability to bear risk.

Two trading characteristics of its holdings determine a portfolio’s liquidity:

- **Transaction Costs**: Transaction costs may include brokerage fees, bid–ask spread, price impact, or simply the time and opportunity cost of finding a buyer.
- **Price Volatility**: Price volatility compromises portfolio liquidity by lowering the certainty with which cash can be realized.

**Liquidity requirements** can arise for any number of reasons but generally fall into one of the following categories:
- **Ongoing Expenses**: The ongoing costs of daily living create a predictable need for cash and constitute one of the investment portfolio’s highest priorities. Because of their high predictability and short time horizon, anticipated expenses must be met using a high degree of liquidity in some portion of the investment portfolio.

- **Emergency Reserves**: As a precaution against unanticipated events such as sudden unemployment or uninsured losses, keeping an emergency reserve is highly advisable. The reserve’s size should be client specific and might cover a range from three months to more than one year of the client’s anticipated expenses. Individuals working in a cyclical or litigious environment may require a larger reserve than those in more stable settings.

- **Negative Liquidity Events**: Liquidity events involve discrete future cash flows or major changes in ongoing expenses. Examples might include a significant charitable gift, anticipated home repairs, or a change in cash needs brought on by retirement. As the time horizon to a major liquidity event decreases, the need for portfolio liquidity rises.

  - **i. Illiquid Holdings**: To ensure that all parties have a complete understanding of portfolio liquidity, the IPS should specifically identify significant holdings of illiquid assets and describe their role in the investment portfolio. Examples might include real estate, limited partnerships, common stock with trading restrictions, and assets burdened by pending litigation.

  - **b. Time Horizon**

    In many planning contexts, time horizons greater than 15 to 20 years can be viewed as relatively long term, and horizons of less than 3 years as relatively short term. Between 3 years and 15 years, there is a transition from intermediate to long term that different investors may perceive differently.

    **Stage-of-life** classifications, often assume that the investment time horizon shortens gradually as investors move through the various stages of life. Although this assumption may often be true, it is not always. Once the primary investors’ needs and financial security are secure, the process of setting risk and return objectives may take place in the context of multigenerational estate planning.

  - **c. Taxes**

    Taxation of income or property is a global reality and poses a significant challenge to wealth accumulation and transfer. Although tax codes are necessarily country specific, the following general categories are widely recognized:

    1) **Income Tax Income**: tax is calculated as a percentage of total income, often with different rates applied to various levels of income. Wages, rent, dividends, and interest earned are commonly treated as taxable income.

    2) **Gains Tax**: Capital gains (profits based on price appreciation) resulting from the sale of property, including financial securities, are often distinguished from income and taxed separately.

    3) **Wealth Transfer Tax**: A wealth transfer tax is assessed as assets are transferred, without sale, from one owner to another.
4) **Property Tax:** Property tax most often refers to the taxation of real property (real estate) but may also apply to financial assets. Such taxes are generally assessed annually, as a percentage of reported value. Although straightforward in concept, property taxes present challenges with regard to valuation and compliance.

**Tax strategies** are ultimately unique to the individual investor and the prevailing tax code. Although the details of tax planning often involve complex legal and political considerations, all strategies share some basic principles:

- **Tax Deferral:** For the long-term investor, periodic tax payments severely diminish the benefit of compounding portfolio returns. Many tax strategies, therefore, seek to defer taxes and maximize the time during which investment returns can be reinvested.

- **Loss harvesting:** focuses on realizing capital losses to offset otherwise taxable gains without impairing investment performance. Low turnover and loss harvesting strategies are representative of a general portfolio policy that strives for a low rate of capital gains realization, resulting in deferred tax payments.

- **Tax Avoidance:** The ideal solution is to avoid taxes when legally possible. A number of countries have introduced special purpose savings accounts. Tax-exempt bonds may be available as alternative investment vehicles. Estate planning and gifting strategies may allow the investor to reduce future estate taxes by taking advantage of specific tax laws.

**Wealth Transfer Taxes:** Multiple variables potentially influence the timing of personal wealth transfers, including the investor’s net worth, time horizon, and charitable intentions, as well as the age, maturity, and tax status of the beneficiaries. The possible legal structures for a wealth transfer are necessarily country specific. Timing of wealth transfers, however, involves the more universal principles of tax avoidance, tax deferral, and maximized compound returns.

*Transfer at Death:* In this scenario, the transfer tax has been deferred for as long as possible, retaining maximum financial flexibility for the individual and maximizing the final value of the investment portfolio. In a multigeneration estate plan, however, this strategy may not minimize transfer taxes.

*Early Transfers.* Accelerated wealth transfers and philanthropic gifting may be desirable when the investor wishes to maximize the amount of his or her estate, after taxes, that is passed on to individuals or organizations.

Early gifting of higher-growth assets into the hands of a younger generation may shelter the subsequent growth of those assets from transfer taxes when the investor ultimately dies. Logically, earlier transfers to younger beneficiaries offer the greatest tax deferral. Because assets transferred to children will quite possibly be taxed again when the children die, it may be advantageous to make gifts directly to grandchildren, effectively skipping a generation of transfer taxes.
Additional issues to consider before making a permanent transfer include:

1) The amount of retained wealth needed to ensure the financial security of the primary investor;
2) possible unintended consequences of transferring large amounts of wealth to younger, potentially less mature beneficiaries; and
3) the probable stability or volatility of the tax code.

d. Legal and Regulatory Environment

In the context of portfolio management for individual investors, legal and regulatory constraints most frequently involve taxation and the transfer of personal property ownership.

The Personal Trust: a trust is a legal entity established to hold and manage assets in accordance with specific instructions. Personal trusts are an important tool for implementing certain aspects of an investment strategy. The appeal of personal trusts lies in the flexibility and control with which the grantor can specify how trust assets are to be managed and distributed, both before and after the grantor’s demise.

The two basic types of personal trusts, revocable and irrevocable, differ largely with respect to the issue of control.

In a revocable trust, any term of the trust can be revoked or amended by the grantor at any time, including those terms dealing with beneficiaries, trustees, shares or interests, investment provisions, and distribution provisions. Revocable trusts are often used in place of a will or in combination with a will, because of their tax planning efficiency and the generally lower legal expenses associated with transferring ownership of personal property at the time of the grantor’s death.

In an irrevocable trust, the terms of management during the grantor’s life and the disposition of assets upon the grantor’s death are fixed and cannot be revoked or amended. The creation of an irrevocable trust is generally considered to be an immediate and irreversible transfer of property ownership, and a wealth transfer tax, sometimes called a gift tax, may have to be paid when the trust is funded. The trust, not the grantor, is responsible for tax liabilities generated by trust assets and for filing its own tax return. The grantor retains no control or ownership interest in the trust, and the trust’s assets are no longer considered part of the grantor’s estate.

The Family Foundation: Civil law countries, as found in continental Europe, are characterized by the existence of family foundations. Similar to an irrevocable trust, the foundation is an independent entity, often governed by family members. Such foundations can be part of a multigenerational estate plan and often serve as a vehicle for introducing younger family members to the process of managing family assets.

Jurisdiction: By choosing to live in a region with low tax rates, the investor may be able to reduce his tax liability. Generally speaking, however, all investment returns are subject to taxation in the investor’s
country of citizenship or residence. The same is true for trusts, which are taxed in accordance with their “situs” (locality under whose laws the trust operates). “Offshore” investments and trusts in “tax friendly” countries typically offer some measure of enhanced privacy, asset protection, and estate planning advantages, as well as possible opportunities to reduce tax liabilities. If tax reduction is the investor’s only concern, however, an alternative domestic tax strategy may prove more efficient. Again, investors are generally required to declare and pay taxes on returns received from offshore investments, regardless of whether return data are disclosed by the host country.

e. Unique Circumstances

Not surprisingly, individual investors often present their investment advisors with a wide range of unique circumstances that act to constrain portfolio choices. Such constraints might include guidelines for social or special purpose investing, assets legally restricted from sale, directed brokerage arrangements, and privacy concerns. It is also appropriate to list here any assets held outside the investment portfolio and not otherwise discussed in the IPS.

C- An Introduction to Asset Allocation

In establishing a strategic asset allocation policy, the advisor’s challenge is to find a set of asset-class weights that produce a portfolio consistent with the individual investor’s return objective, risk tolerance, and constraints. This task must be completed from a taxable perspective, taking into consideration 1) after-tax returns, 2) the tax consequences of any shift from current portfolio allocations, 3) the impact of future rebalancing, and 4) asset “location.” The issue of asset location results from the individual investor’s ownership of both taxable and tax-deferred investment accounts—clearly, nontaxable investments should not be “located” in tax-exempt accounts.

1- Asset Allocation Concepts

Investment objectives and constraints must be formulated prior to addressing asset allocation.

A Typical investment policy statement features:

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Synopsis

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Once return and risk objectives and constraints have been established, an advisor sometimes will include a statement of the client’s strategic asset allocation as part of the IPS:

The process of selecting the most satisfactory from among several potential strategic asset allocations generally consists of the following steps:

1) **Determine the asset allocations that meet the investor’s return requirements.** In carrying out this step, the investment advisor should compare expected returns for the different asset allocations on a basis consistent with the IPS.

2) **Eliminate asset allocations that fail to meet quantitative risk objectives or are otherwise inconsistent with the investor’s risk tolerance.**

3) **Eliminate asset allocations that fail to satisfy the investor’s stated constraints.**

4) **Evaluate the expected risk-adjusted performance and diversification attributes** of the asset allocations that remain after Steps 1 through 3 to select the allocation that is expected to be most rewarding for the investor.

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**2- Monte Carlo Simulation in Personal Retirement Planning**

Monte Carlo simulation is the process by which probability “distributions” are arrayed to create path-dependent scenarios to predict end-stage results. The methodology is useful when trying to forecast future results that depend on multiple variables with various degrees of volatility.

Monte Carlo simulation has certain advantages over deterministic approaches: **It more accurately portrays risk–return trade-offs, can illustrate the trade-offs between the attainment of short-term and long-term goals, provides more realistic modeling of taxes, and is better suited to assessing multiperiod effects.**

A probabilistic approach conveys several advantages to both investors and their investment advisors:

1) First, a probabilistic forecast more accurately portrays the risk–return tradeoff than a deterministic approach.

2) A second benefit of a probabilistic approach is that a simulation can give information on the possible tradeoff between short-term risk and the risk of not meeting a long-term goal. This tradeoff arises when an investor must choose between lowering short-term volatility on one hand and lowering the portfolio’s long-term growth because of lower expected returns on the other hand.

3) Third, taxes complicate investment planning considerably by creating a sequential problem in which buy and sell decisions during this period affect next-period decisions through the tax implications of portfolio changes. Monte Carlo analysis can capture the variety of portfolio changes that can potentially result from tax effects.

4) Finally, an expected value of future returns is more complicated than an expected value of concurrent returns, even in the simplest case of independent and normally distributed returns. For concurrent returns, the expected portfolio return is simply the weighted sum of the
individual expected returns, and the variance depends on the individual variances and covariances, leading to the benefits of diversification with lower covariances.

Words of caution:

1) First, any user of Monte Carlo should be wary of a simulation tool that relies only on historical data. History provides a view of only one possible path among the many that might occur in the future.

2) Second, a manager who wants to evaluate the likely performance of a client's portfolio should choose a Monte Carlo simulation that simulates the performance of specific investments, not just asset classes. Although asset class movements can explain a large proportion of, for example, mutual fund returns, individual funds can differ greatly in terms of their performance, fees, fund-specific risk, and tax efficiency.

3) Third, any Monte Carlo simulation used for advising real-world investors must take into account the tax consequences of their investments. Monte Carlo simulation must and can be flexible enough to account for specific factors such as individual-specific tax rates, the different treatment of tax-deferred versus taxable accounts, and taxes on short-term mutual fund distributions.