



How Investment Analysis & Portfolio Management greatly focuses on portfolio construction?

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Abstract: Portfolio Construction is a capstone elective that draws on previously studied investment principles, theories and techniques. Its enable synthesize that acquired financial theories and knowledge in the context of portfolio construction and asset allocation. It focuses on gaps in theory and how they can be managed in practice.

Keywords: Creating a portfolio, Implement portfolio construction, Advantage in portfolio construction, Investment Portfolios, Emerging Markets Bonds, Enhance Portfolio Construction, Application & Feedback, Rewarding Portfolio Construction Techniques and Unbiased Evaluation.

I. Introduction

It will cover such different types of investors and their objectives; dimensions of risk; asset allocation; the nature and role of various asset classes (equity, fixed income, alternative assets, FX); building multi-manager portfolios, and implementation issues. Moreover, it is about investing in a range of funds that work together to create an investment solution for investors. Building a portfolio involves understanding the way various types of investments work, and combining them to address your personal investment objectives and factors such as attitude to risk the investment and the expected life of the investment.

Subject Matter analysis:

When building an investment portfolio there are two very important considerations.

- The first is asset allocation, which is concerned with how an investment is spread across different asset types and regions.
- The second is fund selection, which is concerned with the choice of fund managers and funds to represent each of the chosen asset classes and sectors.

Both of these considerations are important, although academic studies have consistently shown that in the medium to long term, asset allocation usually has a much larger impact on the variability of a portfolio's return.

To help in choosing a suitable asset allocation we have created a Risk Profiler that helps identify your attitude to risk and therefore better identify a combination of investments to build a portfolio.

The 4 steps to creating a portfolio:

- Create risk profile – Measure your perceived level of risk for an investment (scale of 1 to 10)
- Asset Allocation – Determining the right combination of assets – the most important part of the portfolio construction process.
- Fine tune portfolio – Choose to invest in and/or review your existing portfolio to fit in with the asset allocation most suitable to you, potentially reducing your risk and increasing your returns.
- Review your portfolio regularly – Once you have constructed your portfolio, it is important to continue to review your asset allocation on a regular basis. Investors failing to do this may find they become overweight in a particular asset class, potentially increasing the overall risk of their portfolio.

Many investors have built collections of funds over their investing lifetime. As markets have developed and investing styles come in and out of fashion, it is likely that the total portfolio may be too heavily invested in a

particular asset class (e.g. equities), region (e.g. Australia), sector (e.g. technology) or even a particular share which is present in every fund but to varying degrees. In other words, your combined portfolio may no longer meet your needs or aspirations.

Planning the portfolio construction process:

The main objective of successful portfolio construction is to deliver the best possible solution for the client. Clients are retail investors at all stages of life. The portfolios that they need vary. Some want a portfolio to deliver growth, some want income portfolios, others focus on capital preservation, and then there are aggressive investors who want to use leverage to increase wealth.

This means advisers need to tailor the portfolios to each client. In tailoring, the advisers will consider, among other things:

~ the risk profile of the client — this is established using questionnaires and interviews;

~ the time horizon — sometimes part of a portfolio needs to be invested in very low capital risk assets against short-term cash requirements;

~ the return requirements; and

~ the special needs of each client — a client may want leverage or to preserve capital.

This must then be translated into a portfolio of investments.

Asset allocation

Because of the mix of clients, several asset allocation mixes are needed. These maps to the client's risk profiles and the results of the adviser/client interview process. There is flexibility built in for tailoring to a particular client request, for example overweight international shares.

The various asset allocation mixes vary from capital preservation portfolios, through balanced to aggressive portfolios.

Typically, a capital preservation portfolio will invest in cash or enhanced cash only. At the other end of the spectrum, an aggressive portfolio will invest in growth assets only.

In addition to the traditional asset classes, portfolios can include hedge funds and/or tactical asset allocation funds.

The asset allocation mixes are regularly tested against current return and risk expectations for each market. This is not a tactical exercise; it is built on medium to long-term market expectations.

Portfolio construction

For retail clients there are three main streams for portfolio construction. Advisers will often mix these in a portfolio. Multi-manager funds: Use of these funds effectively outsources the manager selection and monitoring. This is very useful for the many clients who want a robust 'set-and-forget' portfolio. Some multi-manager diversified portfolios have tactical asset allocation and alternative investments. This is also a good way to tap into smaller boutique managers and wholesale managers that do not have separate retail products.

Diversified funds: These have always been popular because they often combine benchmark allocations to traditional asset classes with fairly active tactical asset allocation. This limits risk for clients and can add alpha.

The other advantage of diversified funds is that they can invest in smaller asset classes like emerging countries and private equity. The client can get a lot of value add in terms of diversification and alternate sources of alpha from investment in single diversified funds. The downside to the use of diversified funds is that sometimes the fund is a relatively weak manager in one asset class. This is often balanced in portfolios by the addition of a strong single sector manager. Our advisers call this the 'core plus satellite' approach. Single sector fund portfolios: The use of single sector funds allows advisers to select the best managers in each asset class. It is also possible to add tactical asset allocation with a special TAA fund. In addition to the three streams for typical managed fund portfolios, advisers look at client requirements for direct equities, income, property and cash. Obviously technical and tax factors play a large part in the components of the portfolio.

Investment fund selection:

Investment funds are selected by advisers from a list of recommended funds. The research process is rigorous. Australia's regulators dictate that investments that are recommended must be well researched. The dealer group must be able to demonstrate that it has met with the obligations of section 912A and 945A of the Corporations Act and ASIC policy Statements 175 and 164. To support this regulatory requirement and to contribute to the desire of advisers to only be recommending the best products, the research division has a rigorous and structured review process for existing products on the recommended list and products considered for addition to the list.

Investments are reviewed using the following process steps:

1. Identification of the 'universe' of funds for the review.
2. Quantitative testing
3. Questionnaires
4. **Formal Review**

The qualitative factors that are look at:

- ~ corporate strength;
- ~ investment process/philosophy;
- ~ risk management;
- ~ investment team;
- ~ administration and client services; and
- ~ systems and technology;

The quantitative factors are typically looking at:

- Return; and
- ~ how the manager has performed relative to a benchmark;
 - ~ has the manager added value through security selection or tactical allocation?; and
 - ~ how have the manager's returns varied in line with movements in the market?

Risk:

- ~ what has been the manager's downside volatility of returns?
- ~ how much risk has the manager taken to achieve the excess returns?
- ~ how successful (in terms of returns) has the manager been in tilting the portfolio away from the benchmark?

The wide variety of clients means that investment products of all levels of risk may be needed. The important thing is to use investments that give good returns for the risks.

When the review is complete, the recommendations are taken to the adviser group clients. Both Retire Invest and Tandem have an Investment Selection Committee, the members of which are charged with scrutinizing and debating the recommendations and deciding whether the recommendations should go through to the recommended list.

Combining investment:

If this part of the process is done well, significant risk reduction benefits can be achieved. Our advisers take into account many investment characteristics to ensure that the portfolio is well diversified and that it meets clients' objectives. Some factors taken into account when combining investment products are:

- ~ investment style (value, growth, growth at a reasonable price, style rotational, index);
- ~ market cap (small, medium and large cap);
- ~ turnover and franking credits;
- ~ risk characteristics for fixed interest investments (duration, investment grade credit, high yield, default risk); and
- ~ currency management (active, passive, unhedged).

For the example portfolios that our research division produces, the factors above are taken into account and, in addition, the following analysis is performed:

- ~ historical correlations, portfolio returns against benchmark;
- ~ portfolio risk measurement with volatility measures and downside risk measures; and
- ~ absolute returns throughout different market cycles.

While past performance is not necessarily a good indicator of future performance, it can give insight into appropriate combinations of investments and expected alpha.

The active advantage in portfolio construction

The quest for superior equity investment strategies is typically launched from the platforms of information advantage or unique insight. But there's another important potential source of excess returns: portfolio construction — that is, how effectively an investment manager's portfolio construction converts its collection of ideas into consistent out performance. In making that assessment, we consider such metrics as a portfolio's level of concentration, position sizing, explicit and implicit risk exposures, to name a few. But let's consider, instead, the impact that "active share" — or the lack thereof — can have on portfolio construction, and ultimately on portfolio returns.

Now, what is about active share?

It's a measure of the degree to which a portfolio deviates from the benchmark. Unlike a purely passive strategy that attempts to replicate its underlying benchmark, portfolio managers that employ an active-share mindset intentionally attempt to have different exposures than the appropriate benchmark. "Active share" was coined by academics Antti Petajisto and Martijn Cremers in a seminal 2006 study, "How Active is Your Fund Manager? A New Measure That Predicts Performance."

In their paper, the authors offered a framework for analytically evaluating the impact a manager's portfolio construction decisions have on potential returns. But to understand active share it might be helpful to contrast it with a more common measure of how closely a portfolio follows an index: tracking error. Indeed, ex-post tracking error is the standard deviation of the return differential between the portfolio and the benchmark, calculated using historical returns over a very specific period.

Active share, on the other hand, is calculated based on weighted holdings (not returns) as of a specific point in time (and not over time). While tracking error statistics can be influenced — both up and down — by the changing magnitude of market returns over time, active share tends to be more stable from one period to the next.

To be sure, active share and tracking error are positively correlated: high tracking error typically corresponds to high active share. But, looking at tracking error alone can lead to some false conclusions. High active-share managers might have a low tracking error, and vice versa. With this in mind, we agree with Messrs. Petajisto and Cremers, who believe investors, are best served by looking at active share and tracking error in concert with one another.

At the extremes, according to Messrs. Petajisto and Cremers, a portfolio manager can be a "stock picker" or a "factor bettor." Stock pickers (designated as "high active share") are more likely to own stocks that are not represented in the index, or they own stocks that are in the index but at a position weight that materially differs from the benchmark.

In contrast, factor bettors (or "low active share/high tracking error") tend to focus on having specific factor exposures (style, size, sector and country, for example) that deviate from the benchmark while having individual position weights that are more in line with the index. Examples of a factor bettor might include a manager with a top-down approach or a quantitative strategy driven by desired factor exposures.

Portfolio managers with high active share have exhibited a persistent level of out performance. Using data from the CRSP mutual fund database, Mr. Petajisto examined the returns of more than 1,100 equity mutual funds during the period 1990-2009. The data showed that the best relative results came from managers that displayed a high degree of active share and low tracking error — specifically, the group defined as "diversified stock pickers." After adjusting for fees, factor bettors and closet indexers showed the worst performance.

At the same time, high active share does not reflect skill, nor does it ensure excess returns. But not incorporating active share into the evaluation process makes identifying an equity strategy that can deliver excess returns even more daunting. For example, if one assumes that 60% of a portfolio manager's strategy is explicitly or implicitly passively invested — leaving an active share, therefore, of 40% — the manager would need to earn a hefty 3.1% in excess returns on that remaining 40% of the portfolio in order to cover a 1.25% expense fee.

While we think it is important to have an appreciation for the effect active share can have on portfolio returns, we think it is also important to remember that academic research conducted over the past 30 years has yielded mixed results on the persistence of a manager's returns.

In our view, the limited evidence of performance persistence does not, however, rule out the possibility of successful active management. It simply suggests truly skillful managers are hard to find. It also suggests looking at a manager's prior performance success is not necessarily a sound strategy in identifying prospective managers. High levels of active share, on the other hand, seem to have some correlation to excess returns.

The bottom line, in our view, is that portfolio construction considerations are an important and sometimes overlooked element in equity manager identification and selection — and active share is a dependable tool for evaluating one aspect of portfolio construction.

Thus, it makes sense to consider assembling a collection of high active-share equity strategies that are also considered skillful, as evidenced by the ratings of the leading global equity manager researchers. The potential portfolio power of active share is worth a close and careful look.

A Few Examples of Investment Portfolios:

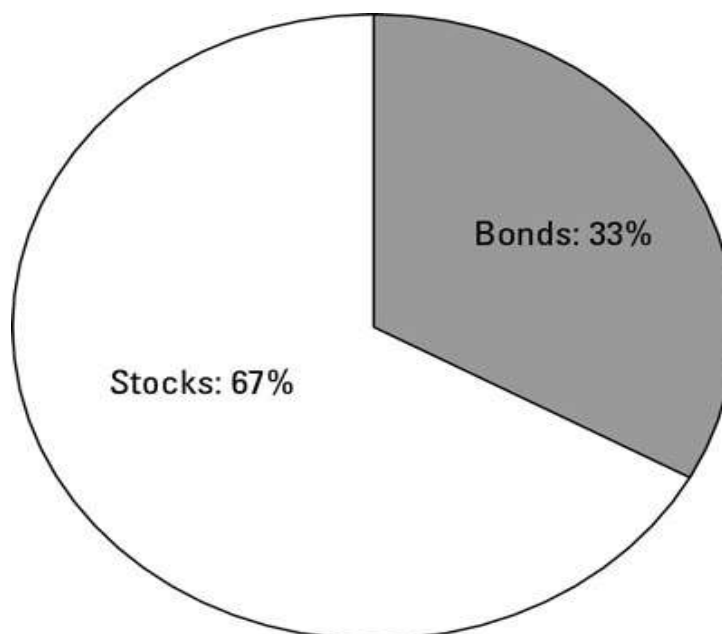
The following example investment portfolios are all based on real, live clients who with bond portfolios. All names and most identifying information have been changed to protect the identities of these good people.

Jean and Raymond, 61 and 63, financially quite comfortable

Married in 1982, Jean and Raymond raised three children; the third is just finishing up college. Jean and Raymond are both public school teachers and both will retire (he in two years; she in four) with healthy traditional pensions. Together, those pensions, combined with Social Security, should cover Jean and Raymond's living expenses for the rest of their lives. The couple will also likely bring in supplemental income from private tutoring. Jean's mother is 90. When Mom passes away, Jean, an only child, expects to receive an inheritance of at least \$1.5 million. Mom's money is invested almost entirely in bonds and CDs. So what should Jean and Raymond do with the \$710,000 they've socked away in their combined 403(b) retirement plans?

Jean and Raymond are in the catbird seat. Even if they were to invest the entire \$710,000 nest egg in stocks, and even if we were to see the worst stock market crash in history, Jean and Raymond would likely still be okay. The couple certainly doesn't need to take the risk of putting their money in stocks because they don't need to see their portfolio grow in order to accomplish their financial goals. But given their pensions, is investing in stocks really that risky? No. If Jean and Raymond desire to leave a large legacy (to their children, grandchildren, or charity), a predominantly stock portfolio may be the way to go. Because equities tend to be so much more lucrative than fixed income in the long run, a greater percentage in equities would likely generate more wealth for the future generations. Ignoring for the moment a slew of possibly complicating factors from the simple scenario above, they should feel comfortable with an aggressive portfolio: perhaps two-thirds in equity (stocks and such) and one-third in fixed income (bonds and such). This breakdown is shown below.

It's not what most people think of as appropriate for an "aging" couple, but it makes a whole lot of sense, provided Jean and Raymond are fully on board and promise not to cash out of stocks (as many investors do) the first time the market takes a dip.



Kay, 59, hoping only for a simple retirement

Kay, divorced twice, earns a very modest salary as a medical technician. She scored fairly well in her last divorce. Thanks to a generous initial cash settlement, as well as having made a good profit on the sale of her last home, Kay has a portfolio of \$875,000. Kay doesn't hate her work, but she isn't crazy about it, either; she would much rather spend her days doing volunteer work for stray animals.

After careful analysis, she figures that she can live without the paycheck quite comfortably if allowed to pull \$45,000 a year from savings. Her children are grown and self-sufficient.

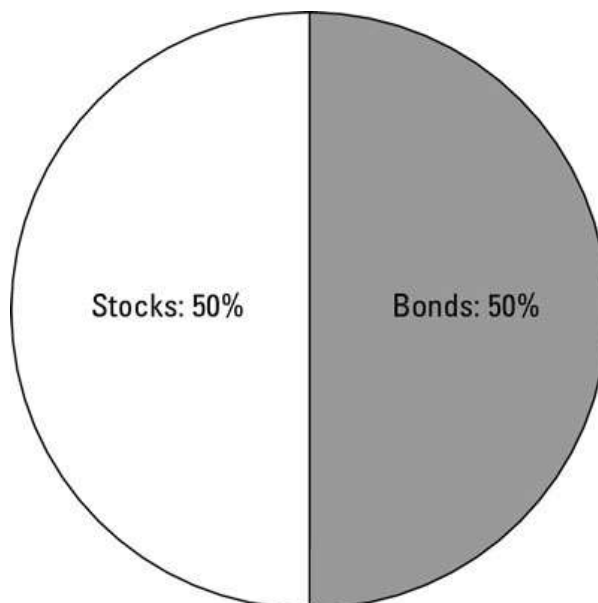
Kay's example illustrates why simple formulas (such as your age = your proper bond allocation) don't work. Kay is roughly the same age as Jean in the previous example. And Kay, like Jean, is financially comfortable. But it would be a great mistake for Kay to take the same risks with her money.

Unlike Jean, Kay does not have a spouse. Unlike Jean, Kay does not have a pension. Unlike Jean, Kay is not expecting a big inheritance. Unlike Jean and Raymond, Kay cannot afford to lose any significant portion of her nest egg. She is dependent on that nest egg to stay economically afloat.

At her current level of savings and with a fairly modest rate of growth in her portfolio, Kay should be able to retire comfortably within four to five years. In Kay's case, she has more to lose than to gain by taking

any great risk in the markets. On the other hand, if things work out as she plans, Kay may be spending 30 or more years in retirement.

So an all fixed-income portfolio, which could get gobbled up by inflation, won't work. In Kay's case, a good recommendation would be a portfolio, somewhat depending on Kay's tolerance for risk, of 50 to 55 percent stocks and 45 to 50 percent bonds, as shown.



Juan, 29, just getting started

Three years out of business school with an MBA, Juan, single and happy in his city condo, is earning an impressive and growing salary. But because he has been busy paying off loans, he has just started to build his savings. Juan's 401(k) has a current balance of \$3,700.

Juan — yet another example of why simple formulas don't work! — should probably tailor his portfolio to look something like Jean and Raymond's, despite the obvious differences in age and wealth. Juan is still many years off from retirement and doesn't see any major expenses on the horizon. Juan's budding 401(k) is meant to sit and grow for a very long time — at least three decades.

History tells us that a portfolio made up of mostly stocks will likely provide superior growth. Of course, history is history, and we don't know what the future would bring. So it would still good idea to allocate 20 to 25 percent bonds to Juan's .Before moving any money into stocks or bonds, however, Juan would want to set aside three to six months' worth of living expenses in an emergency cash fund, outside of his 401(k), just in case he should lose his job, have serious health issues, or become subject to some other unforeseen crisis.

Miriam, 53, plugging away

Never married, with no children, Miriam wants to retire from her job as a freelance computer consultant while still young enough to fulfill her dreams of world travel. Her investments of \$75,000 are growing at a good clip, as she is currently socking away a full 20 percent of her after-tax earnings — about \$20,000 a year. But she knows that she has a long way to go.

Miriam is right; she has a long way to go. To fulfill her dreams of world travel, Miriam needs considerably more than a nest egg of \$75,000. In this case, the bond allocation question is a tough one. Miriam needs substantial growth, but she isn't in a position to risk what she has, either. Cases like Miriam's require delicate balance.

She should most likely opt for a starting portfolio of mostly stocks and about 25 to 30 percent bonds (see Figure 12-6), but as Miriam gets closer to her financial goal in coming years, she could up that percentage of bonds and take a more defensive, conservative position.

How Emerging Markets Bonds Enhance Portfolio Construction

The emerging markets debt market has evolved significantly over the past two decades, growing in both size and diversity. The market's growth reflects the dynamic structural reforms that have transformed many emerging markets' economies and helped boost economic growth. Also, investor understanding and appetite for emerging markets bonds has increased significantly as more investors seem to recognize the asset class's potential income and diversification benefits.

In this different part of series, we advance the case for investing in emerging markets bonds and identify some of the potential opportunities the asset class may offer in today's market environment. Historical Performance of Emerging Markets Bonds This, the final of our five part series, concludes with a brief overview of the performance characteristics and potential opportunities available when investing in the asset class from a portfolio construction perspective. The historical performance of various sectors of emerging markets bonds is shown below compared to certain developed markets fixed income asset classes. The chart also shows emerging markets equities which have actually underperformed emerging markets bonds over the period and with much higher volatility.

Comparable 10-Year Returns: Emerging Markets and U.S. High Yield Corporate Bonds Over the 10-year time period analyzed, U.S. dollar-denominated sovereign bonds outperformed most other fixed income sectors on both an absolute and risk-adjusted basis. Local currency sovereign emerging markets bonds were more negatively impacted by events of the past few years, including slower global growth, a strong U.S. dollar, and weak commodity prices. Within emerging markets corporate bonds, those rated high yield provided returns comparable to U.S. high yield bonds over the period.

Asset Class Performance Comparison
January 2007 - December 2016



The Most Rewarding Portfolio Construction Techniques: An Unbiased Evaluation;

Portfolio construction techniques based on predicted risk, without expected returns, have become quite popular within the last couple of years. Especially on Seeking Alpha, great articles have been published by fellow contributors, covering the full range of modern portfolio theory and other different kind of tactical asset allocation concepts.

However, most of those published articles are based on back testing, whereas limited historical data as well as highly unlikely similar future performances of certain asset classes (e.g. the 30-year bull market in bonds or the very nice trend structure of equities between 2000 and 2010) are making an evaluation or comparisons of different kind of portfolio construction techniques quite difficult. Of course, this issue has led to many questions by fellow readers, how a certain portfolio would have performed, if there had been a huge decline in the bond market or if other tail-events would have happened. Since many of these questions have not been answered yet, we would like to analyze and compare ten popular portfolio construction techniques by applying an advanced Monte Carlo simulation to avoid using historical data. Therefore, we will be able to get an unbiased view of the pros and cons of each single portfolio construction technique.

In terms of asset selection, we are reviewing the following concepts:

- Global Minimum Variance Portfolio ("GMV"):
This portfolio construction technique has only the objective of lowering risk, rather than aiming to optimize the risk/reward ratio. It creates a portfolio with the lowest possible risk (volatility), which mostly leads to pronounced concentration in low volatility asset classes.
- Minimum Correlation Portfolio ("MCP"):
Asset classes with low correlations and volatility relative to other asset classes within the portfolio receive higher weighting. So in the end, the weightings will lead to the effect that all underlying asset classes have the

lowest volatility weighted average correlation coefficient to each other. We have used the simple version of the construction technique since the advanced one involves also parts from the Inverse Volatility concept, which is being evaluated separately.

- **Most Diversified Portfolio ("MDP"):**
In contrast to the MCP, the MDP is focused on maximizing the diversification benefits within the portfolio (instead on minimizing the average correlation), by maximizing the diversification ratio, which is defined as the ratio of the portfolio's weighted average volatility to its overall volatility. Therefore, the MDP will utilize the highest degree of diversification benefits.
- **Risk Parity Portfolio ("RPP"):**
- The concept is quite straightforward: each asset class should contribute the same amount of risk (volatility) to the overall portfolio. Therefore, assets with lower risk, such as bonds, will get a larger part of the portfolio than risky ones.
- **Inverse Volatility Portfolio ("IVP"):**
Each asset is weighted in inverse proportion to its volatility and then all assets are rescaled to sum up to 1. Therefore, lower weights are given to high volatility assets and higher weights to low volatility securities. Misleadingly, this concept is often being mixed-up with the risk parity approach, since they are quite similar. Nevertheless, since the overall portfolio volatility is not an additive function of the underlying volatilities, each asset class is not contributing exactly the same amount of risk to the overall portfolio!
- **Minimum Tail Dependent Portfolio ("MTP"):**
Quite unknown so far, this concept is weighting asset classes according to their tail-dependencies. In the first step, it measures the correlation of each asset class during tail events (by using copulas) and then the weights are set to get a minimum tail dependent portfolio.
- **Classic Balanced Portfolio ("CBP"):**
A standard portfolio where 60 percent is being invested in equities and 40 percent in bonds.
- **Momentum Based Portfolio ("MBP"):**
- This strategy owns the best two out of four asset classes (equally weighted), which performed the best in the trailing one-month and holds that asset class forward for one additional month.

The strategy calculates a 10-month moving average for each underlying asset class. If the current price is above its long-term average, the specific asset class will be added within the portfolio otherwise its whole exposure is moved to cash.

- **Permanent Portfolio ("PEP"):**
Harry Browne's "Permanent Portfolio" is investing 25% in stocks, 25% in cash, 25% in gold, and 25% in long-term treasury bonds as a way to cover each of the four economic stages (prosperity, recession, inflation, and deflation).

Innovative content about portfolio construction:

Key acceptances of investment analysis and portfolio management which are explained from an applied perspective emphasizing the individual investors decision making issues. It also can use on quantitative methods of investment analysis and portfolio formation, stocks and bonds analysis and valuation for investment decision making, options pricing and using as investments, asset allocation, portfolio rebalancing & restructuring, and portfolio performance measures.

II. Conclusion

In today's financial marketplace, a well-maintained portfolio is vital to any investor's success. As an individual investor, we need to know how to determine an asset allocation that best conforms to our personal investment goals and strategies. In other words, our portfolio should meet our future needs for capital and give us peace of mind. Investors can construct portfolios aligned to their goals and investment strategy by a systematic approach. With such a vast number of investment funds to choose from, spanning the full range of asset classes and world markets it is easy to become confused when choosing which investments to make. It is even more difficult to choose the right combination of investment to potentially meet your investment goals.

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