

Asset Allocation

共享题干题

【题干】Megan Beade and Hanna Müller are senior analysts for a large, multi-divisional money management firm. Beade supports the institutional portfolio managers, and Müller does the same for the private wealth portfolio managers. Beade reviews the asset allocation in Exhibit 1, derived from a mean-variance optimization (MVO) model for an institutional client, noting that details of the MVO are lacking.

Exhibit 1. Asset Allocation and Market Weights (in percent)		
Asset Classes	Asset Allocation	Investable Global M
Cash	0	—
US bonds	30	17
US TIPS	0	3
Non-US bonds	0	22
Emerging market equity	25	5
Non-US developed equity	20	29
US small- and mid-cap equity	25	4
US large-cap equity	0	20

The firm's policy is to rebalance a portfolio when the asset class weight falls outside of a corridor around the target allocation. The width of each corridor is customized for each client and proportional to the target allocation. Beade recommends wider corridor widths for high-risk asset classes, narrower corridor widths for less liquid asset classes, and narrower corridor widths for taxable clients with high capital gains tax rates. One client sponsors a defined benefit pension plan where the present value of the liabilities is \$241 million and the market value of plan assets is \$205 million. Beade expects interest rates to rise and both the present value of plan liabilities and the market value of plan assets to decrease by \$25 million, changing the pension plan's funding ratio. Beade uses a surplus optimization approach to liability-relative asset allocation based on the objective function $U_m^{LR} = E(R_{s,m}) - 0.005 \lambda \sigma^2(R_{s,m})$ where $E(R_{s,m})$ is the expected surplus return for portfolio m , λ is the risk aversion coefficient, and $\sigma^2(R_{s,m})$ is the variance of the surplus return. Beade establishes the expected surplus return and surplus variance for three different asset allocations, shown in Exhibit 2. Given $\lambda = 1.50$, she chooses the optimal asset mix. Client Haunani Kealoha has a large fixed obligation due in 10 years. Beade assesses that

Exhibit 2. Expected Surplus Return and Volatility for Three Portfolios		
	Return	Standard Deviation
Portfolio 1	13.00%	24%
Portfolio 2	12.00%	18%
Portfolio 3	11.00%	19%

Kealoha has substantially more funds than are required to meet the fixed obligation. The client wants to earn a competitive risk-adjusted rate of return while maintaining a high level of certainty that there will be sufficient assets to meet the fixed obligation. In the private wealth area, the firm has designed five subportfolios with differing asset allocations that are used to fund different client goals over a five-year horizon. Exhibit 3 shows the expected returns and volatilities of the subportfolios and the probabilities that the subportfolios will exceed an expected minimum return. Client Luis Rodríguez wants to satisfy two goals. Goal 1 requires a conservative portfolio providing the highest possible minimum return that will be met at least 95% of the time. Goal 2 requires a riskier portfolio that provides the highest minimum return that will be exceeded at least 85% of the time.

Müller uses a risk parity asset allocation approach with a client's four-asset class portfolio. The expected return of the domestic bond asset class is the lowest of the asset classes, and the returns of the domestic bond asset class have the lowest covariance with other asset class returns. Müller estimates the weight that should be placed on domestic bonds. Müller and a client discuss other approaches to asset allocation that are not based on optimization models or goals-based models. Müller makes the following comments to the client:

Comment 1: An advantage of the "120 minus your age" heuristic over the 60/40 stock/bond heuristic is that it incorporates an age-based stock/bond allocation.

Comment 2: The Yale model emphasizes traditional investments and a commitment to active management.

Comment 3: A client's asset allocation using the 1/N rule depends on the investment characteristics of each asset class.

1. 【单项选择题】The asset allocation in Exhibit 1 most likely resulted from a mean-variance optimization using:

- A. historical data.
- B. reverse optimization.
- C. Black-Litterman inputs.

参考答案: A

【莽学解析】The allocations in Exhibit 1 are most likely from an MVO model using historical data inputs. MVO tends to result in asset allocations that are concentrated in a subset of the available asset classes. The allocations in Exhibit 1 have heavy concentrations in four of the asset classes and no investment in the other four asset classes, and the weights differ greatly from global market weights. Compared to the use of historical inputs, the Black-Litterman and

Exhibit 3.Characteristics of Subportfolios

Subportfolio	A	B	C	D	
Expected return, in percent	4.60	5.80	7.00	8.20	9
Expected volatility, in percent	3.46	5.51	8.08	10.80	13
Required Success Rate	Minimum Expected Return for Success				
99%	1.00	0.07	−1.40	−3.04	−4
95%	2.05	1.75	1.06	0.25	−0
90%	2.62	2.64	2.37	2.01	1
85%	3.00	3.25	3.26	3.19	3
75%	3.56	4.14	4.56	4.94	5

reverse-optimization models most likely would be less concentrated in a few asset classes and less distant from the global weights.

2. 【单项选择题】For clients concerned about rebalancing-related transactions costs, which of Beade' s suggested changes in the corridor width of the rebalancing policy is correct? The change with respect to:

- A.high-risk asset classes.
- B.less liquid asset classes.
- C.taxable clients with high capital gains tax rates.

参考答案: A

【莽学解析】Theoretically, higher-risk assets would warrant a narrow corridor because high-risk assets are more likely to stray from the desired strategic asset allocation. However, narrow corridors will likely result in more frequent rebalancing and increased transaction costs, so in practice corridor width is often specified to be proportionally greater the higher the asset class' s volatility. Thus, higher-risk assets should have a wider corridor to avoid frequent, costly rebalancing costs. Her other suggestions are not correct. Less-liquid asset classes should have a wider, not narrower, corridor width. Less-liquid assets should have a wider corridor to avoid frequent rebalancing costs. For taxable investors, transactions trigger capital gains in jurisdictions that tax them. For such investors, higher tax rates on capital gains should be associated with wider (not narrower) corridor widths.

3. 【单项选择题】Based on Beade' s interest rate expectations, the pension plan' s funding ratio will:

- A. decrease.
- B. remain unchanged.
- C. increase.

参考答案: A

【莽学解析】The original funding ratio is the market value of assets divided by the present value of liabilities. This plan' s ratio is \$205 million/\$241 million = 0.8506. When the assets and liabilities both decrease by \$25 million, the funding ratio will decrease to \$180 million/\$216 million = 0.8333.

4. 【单项选择题】Based on Exhibit 2, which portfolio provides the greatest objective function expected value?

- A. Portfolio 1
- B. Portfolio 2
- C. Portfolio 3

参考答案: B

【莽学解析】

The objective function expected value is $U_m^{LR} = E(R_{s,m}) - 0.005\lambda\sigma^2(R_{s,m})$, 1.5, and the expected value of the objective function is shown in the right column below.

Portfolio	$E(R_{s,m})$	$\sigma^2(R_{s,m})$	$U_m^{LR} = E(R_{s,m}) - 0.005\lambda\sigma^2(R_{s,m})$
1	13.00	576	8.64
2	12.00	324	9.54
3	11.00	361	8.24

Portfolio 2 generates the highest value, or utility, in the objective function.

5. 【单项选择题】The asset allocation approach most appropriate for client Kealoha is best described as:

- A. a surplus optimization approach.
- B. an integrated asset - liability approach.
- C. a hedging/return-seeking portfolios approach.

参考答案: C

【莽学解析】The hedging/return-seeking portfolios approach is best for this client. Beade should construct two portfolios, one that includes riskless bonds that will pay off the fixed obligation in 10 years and the other a risky portfolio that earns a competitive risk-adjusted return. This approach is a simple two-step process of hedging the fixed obligation and then investing the balance of the assets in a return-seeking portfolio.

6. 【单项选择题】Based on Exhibit 3, which subportfolios best meet the two goals expressed by client Rodríguez?

- A. Subportfolio A for Goal 1 and Subportfolio C for Goal 2.
- B. Subportfolio B for Goal 1 and Subportfolio C for Goal 2.
- C. Subportfolio E for Goal 1 and Subportfolio A for Goal 2.

参考答案: A

【莽学解析】Goal 1 requires a success rate of at least 95%, and Subportfolio A has the highest minimum expected return (2.05%) meeting this requirement. Goal 2 requires the highest minimum expected return that will be achieved 85% of the time. Subportfolio C meets this requirement (and has a minimum expected return of 3.26%).

7. 【单项选择题】In the risk parity asset allocation approach that Müller uses, the weight that Müller places on domestic bonds should be:

- A. less than 25%.
- B. equal to 25%.
- C. greater than 25%.

参考答案: C

【莽学解析】

$$w_i \times \text{Cov}(r_i, r_p) = \frac{1}{n} \sigma_p^2$$

where

w_i = weight of asset i

$\text{Cov}(r_i, r_p)$ = covariance of asset i with the portfolio

n = number of assets

σ_p^2 = variance of the portfolio

In this example, there are four asset classes, and the variance of the total portfolio is assumed to be 25%; therefore, using a risk parity approach, the allocation to each asset class is expected to contribute $(1/4 \times 25\%) = 6.25\%$ of the total variance. Because bonds have the lowest covariance, they must have a higher relative weight to achieve the same contribution to risk as the other asset classes.

8. 【单项选择题】Which of Müller' s comments about the other approaches to asset allocation is correct?

A. Comment 1

B. Comment 2

C. Comment 3

参考答案: A

【莽学解析】Comment 1 is correct because the “120 minus your age” rule reduces the equity allocation as the client ages, while the 60/40 rule makes no such adjustment. Comments 2 and 3 are not correct. The Yale model emphasizes investing in alternative assets (such as hedge funds, private equity, and real estate) as opposed to investing in traditional asset classes (such as stock and bonds). The 1/N rule allocates an equal weight to each asset without regard to its investment characteristics, treating all assets as indistinguishable in terms of mean returns, volatility, and correlations.

【题干】Meg and Cramer Law, a married couple aged 42 and 44, respectively, are meeting with their new investment adviser, Daniel Raye. The Laws have worked their entire careers at Whorton Solutions (WS), a multinational technology company. The Laws have two teenage children who will soon begin college. Raye reviews the Laws’ current financial position. The Laws have an investment portfolio consisting of \$800,000 in equities and \$450,000 in fixed-income instruments. Raye notes that 80% of the equity portfolio consists of shares of WS. The Laws also own real estate valued at \$400,000, with \$225,000 in mortgage debt. Raye estimates the Laws’ pre-retirement earnings from WS have a total present value of \$1,025,000. He estimates the Laws’ future expected consumption expenditures have a total present value of \$750,000. The Laws express a very strong desire to fund their children’s college education expenses, which have an estimated present value of \$275,000. The Laws also plan to fund an endowment at their alma mater in 20 years, which has an estimated present value of \$500,000. The Laws tell Raye they want a high probability of success funding the endowment. Raye uses this information to prepare an economic balance sheet for the Laws. In reviewing a financial plan written by the Laws’ previous adviser, Raye notices the following asset class specifications. Equity: US equities; Debt: Global investment-grade corporate bonds and real estate; Derivatives: Primarily large-capitalization foreign equities. The previous adviser’s report notes the asset class returns on equity and derivatives are highly correlated. The report also notes the asset class returns on debt have a low correlation with equity and derivative returns. Raye is concerned that the asset allocation approach followed by the Laws’ previous financial adviser resulted in an overlap in risk factors among asset classes for the portfolio. Raye plans to address this by examining the portfolio’s sensitivity to various risk factors, such as inflation, liquidity, and volatility, to determine the desired exposure to each factor. Raye concludes that a portfolio of 75% global equities and 25% bonds reflects an appropriate balance of expected return and risk for the Laws with respect to a 20-year time horizon for most moderately important goals. Raye recommends the Laws follow a goals-based approach to asset allocation and offers three possible portfolios for the Laws to consider. Selected data on the three portfolios are presented in Exhibit 1.

Raye uses a cost-benefit approach to rebalancing and recommends that global equities have a wider rebalancing range than the other asset classes.

9. 【单项选择题】Using the economic balance sheet approach, the Laws’ economic net worth is closest to:

A. \$925,000.

Exhibit 1. Proposed Portfolio Allocations for the Law Family				
	Cash	Fixed Income	Global Equities	Diversifying St
Portfolio 1	35%	55%	10%	0%
Portfolio 2	10%	15%	65%	10%
Portfolio 3	10%	30%	40%	20%
* Diversifying strategies consists of hedge funds				

B. \$1, 425, 000.

C. \$1, 675, 000.

参考答案： A

【莽学解析】

Assets		Liabilities and Net Worth	
<i>Financial Assets</i>		<i>Financial Liabilities</i>	
	450,000	Mortgage debt	225
	400,000		
Equity	800,000		
<i>Extended Assets</i>		<i>Extended Liabilities</i>	
Human capital	1,025,000	Children’s education	275
		Endowment funding	500
		Present value of consumption	750
<i>Total Economic Assets</i>	2,675,000	<i>Total Economic Liabilities</i>	1,7
		Economic Net Worth	925

Economic net worth is equal to total economic assets minus total economic liabilities (\$2, 675, 000 - \$1, 750, 000 = \$925, 000).

10. 【单项选择题】Using an economic balance sheet, which of the Laws' current financial assets is most concerning from an asset allocation perspective?

- A. Equities.
- B. Real estate.
- C. Fixed income.

参考答案: A

【莽学解析】The Laws' equity portfolio is heavily concentrated in WS stock (80% of the equity portfolio), and both Laws work at WS. Should WS encounter difficult economic circumstances, the investment value of WS stock and the Laws' human capital are both likely to be adversely affected. Thus, their investment in WS should be reviewed and their equity portfolio diversified further.

11. 【单项选择题】Raye believes the previous adviser' s specification for debt is incorrect given that, for purposes of asset allocation, asset classes should be:

- A. diversifying.
- B. mutually exclusive.
- C. relatively homogeneous.

参考答案: C

【莽学解析】In order to effectively specify asset classes for the purpose of asset allocation, assets within an asset class should be relatively homogeneous and have similar attributes. The previous adviser' s specification of the debt asset class includes global investment-grade corporate bonds and real estate. This definition results in a non-homogeneous asset class.

12. 【单项选择题】Raye believes the previous adviser' s asset class specifications for equity and derivatives are inappropriate given that, for purposes of asset allocation, asset classes should be:

- A. diversifying.
- B. mutually exclusive.
- C. relatively homogeneous.

参考答案: A

【莽学解析】For risk control purposes, an asset class should be diversifying and should not have extremely high expected correlations with other classes. Because the returns to the equity and the derivatives asset classes are noted as being highly correlated, inclusion of both asset classes will result in duplication of risk exposure. Including both asset classes is not diversifying to the asset allocation.

13. 【单项选择题】To address his concern regarding the previous adviser' s asset allocation approach, Raye should assess the Laws' portfolio using:

- A. a homogeneous and mutually exclusive asset class-based risk analysis.
- B. a multifactor risk model to control systematic risk factors in asset allocation.
- C. an asset class-based asset allocation approach to construct a diversified portfolio.

参考答案: B

【莽学解析】Raye believes the Laws' previous financial adviser followed an asset allocation approach that resulted in an overlap in risk factors among asset classes. A multifactor risk model approach can be used to address potential risk factor overlaps. Risk factor approaches to
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asset allocation focus on assigning investments to the investor's desired exposures to specified risk factors. These methods are premised on the observation that asset classes often exhibit some overlaps in sources of risk.

14. 【单项选择题】Based on Exhibit 1, which portfolio best meets the Laws' education goal for their children?

- A. Portfolio 1
- B. Portfolio 2
- C. Portfolio 3

参考答案: A

【莽学解析】Portfolio 1 best meets the Laws' education goal for their children. The estimated present value of the Laws' expected education expense is \$275,000. Given that the children will be starting college soon, and the Laws have a very strong desire to achieve this goal, Portfolio 1, which stresses liquidity and stability, is most appropriate to meet the Laws' short-term education goal.

15. 【单项选择题】Based on Exhibit 1, which portfolio best meets the Laws' goal to fund an endowment for their alma mater?

- A. Portfolio 1
- B. Portfolio 2
- C. Portfolio 3

参考答案: B

【莽学解析】Portfolio 2 best meets the Laws' goal to fund an endowment for their alma mater in 20 years. In present value terms, the gift is valued at \$500,000, with the Laws desiring a high probability of achieving this goal. Although slightly more conservative than the 75/25 global equity/bond mix, Portfolio 2 has a greater growth emphasis compared with Portfolios 1 and 3. Therefore, Portfolio 2 is best for funding the endowment at their alma mater given the goal's long-term horizon and the Laws' desire for a high probability of achieving it.

16. 【单项选择题】Raye's approach to rebalancing global equities is consistent with:

- A. the Laws' being risk averse.
- B. global equities' having higher transaction costs than other asset classes.
- C. global equities' having lower correlations with other asset classes.

参考答案: B

【莽学解析】Using the cost-benefit approach, higher transaction costs for an asset class imply wider rebalancing ranges. Raye's recommendation for a wider rebalancing range for global equities is consistent with the presence of higher transaction costs for global equities.

【题干】Elsbeth Quinn and Dean McCall are partners at Camel Asset Management (CAM). Quinn advises high-net-worth individuals, and McCall specializes in retirement plans for institutions. Quinn meets with Neal and Karina Martin, both age 44. The Martins plan to retire at age 62. Twenty percent of the Martins' \$600,000 in financial assets is held in cash and earmarked for funding their daughter Lara's university studies, which begin in one year. Lara's education and their own retirement are the Martins' highest-priority goals. Last week, the Martins learned that Lara was awarded a four-year full scholarship for university. Quinn reviews how the scholarship might affect the Martins' asset allocation strategy. The Martins

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have assets in both taxable and tax-deferred accounts. For baseline retirement needs, Quinn recommends that the Martins maintain their current overall 60% equity/40% bonds ($\pm 8\%$ rebalancing range) strategic asset allocation. Quinn calculates that given current financial assets and expected future earnings, the Martins could reduce future retirement savings by 15% and still comfortably retire at 62. The Martins wish to allocate that 15% to a sub-portfolio with the goal of making a charitable gift to their alma mater from their estate. Although the gift is a low-priority goal, the Martins want the sub-portfolio to earn the highest return possible. Quinn promises to recommend an asset allocation strategy for the Martins' aspirational goal. Next, Quinn discusses taxation of investments with the Martins. Their interest income is taxed at 35%, and capital gains and dividends are taxed at 20%. The Martins want to minimize taxes. Based on personal research, Neal makes the following two statements: Statement 1: The after-tax return volatility of assets held in taxable accounts will be less than the pre-tax return volatility. Statement 2: Assets that receive more favorable tax treatment should be held in tax-deferred accounts. The equity portion of the Martins' portfolios produced an annualized return of 20% for the past three years. As a result, the Martins' equity allocation in both their taxable and tax-deferred portfolios has increased to 71%, with bonds falling to 29%. The Martins want to keep the strategic asset allocation risk levels the same in both types of retirement portfolios. Quinn discusses rebalancing; however, Neal is somewhat reluctant to take money out of stocks, expressing confidence that strong investment returns will continue. Quinn's CAM associate, McCall, meets with Bruno Snead, the director of the Katt Company Pension Fund (KCPF). The strategic asset allocation for the fund is 65% stocks/35% bonds. Because of favorable returns during the past eight recession-free years, the KCPF is now overfunded. However, there are early signs of the economy weakening. Since Katt Company is in a cyclical industry, the Pension Committee is concerned about future market and economic risk and fears that the high-priority goal of maintaining a fully funded status may be adversely affected. McCall suggests to Snead that the KCPF might benefit from an updated IPS. Following a thorough review, McCall recommends a new IPS and strategic asset allocation. The proposed IPS revisions include a plan for short-term deviations from strategic asset allocation targets. The goal is to benefit from equity market trends by automatically increasing (decreasing) the allocation to equities by 5% whenever the S&P 500 Index 50-day moving average crosses above (below) the 200-day moving average.

17. 【单项选择题】 Given the change in funding of Lara's education, the Martins' strategic asset allocation would most likely decrease exposure to:

- A. cash.
- B. bonds.
- C. equities.

参考答案: A

【莽学解析】 The changing character of liabilities through time affects the asset allocation to fund those liabilities. The Martins' investment horizon for some of their assets has changed. The amount of liquidity needed for Lara's near-term education has been greatly reduced owing to the receipt of the scholarship. The Martins will likely still have to pay for some university-related expenses; however, a large part of the \$120,000 in cash that is earmarked for Lara's expenses can now be allocated to the Martins' long-term goal of early retirement. Retirement is 18 years away, much longer than the one- to five-year horizon for university expenses. Therefore, the Martins' allocation to cash would likely decrease.

18. 【单项选择题】The most appropriate asset allocation for the Martins' new charitable gift sub-portfolio is:

- A. 40% equities/60% bonds.
- B. 70% equities/30% bonds.
- C. 100% equities/0% bonds.

参考答案: C

【莽学解析】The Martins' sub-portfolio is aspirational and a low priority. Investors are usually willing to take more risk on lower-priority, aspirational portfolios. The charitable gift will be made from their estate, which indicates a long time horizon. In addition, the Martins want the highest return possible. Therefore, the highest allocation to equities is most appropriate.

19. 【单项选择题】Which of Neal's statements regarding the taxation of investments is correct?

- A. Statement 1 only.
- B. Statement 2 only.
- C. Both Statement 1 and Statement 2.

参考答案: A

【莽学解析】Taxes alter the distribution of returns by both reducing the expected mean return and muting the dispersion of returns. The portion of an owner's taxable assets that are eligible for lower tax rates and deferred capital gains tax treatment should first be allocated to the investor's taxable accounts.

20. 【单项选择题】Given the Martins' risk and tax preferences, the taxable portfolio should be rebalanced:

- A. less often than the tax-deferred portfolio.
- B. as often as the tax-deferred portfolio.
- C. more often than the tax-deferred portfolio.

参考答案: A

【莽学解析】The Martins wish to maintain the same risk level for both retirement accounts based on their strategic asset allocation. However, more frequent rebalancing exposes the taxable asset owner to realized taxes that could have otherwise been deferred or even avoided. Rebalancing is discretionary, and the Martins' also wish to minimize taxes. Because after-tax return volatility is lower than pre-tax return volatility, it takes larger asset-class movements to materially alter the risk profile of a taxable portfolio. This suggests that rebalancing ranges for a taxable portfolio can be wider than those of a tax-exempt/tax-deferred portfolio with a similar risk profile; thus, rebalancing occurs less frequently.

21. 【单项选择题】During the rebalancing discussion, which behavioral bias does Neal exhibit?

- A. Framing bias.
- B. Loss aversion.
- C. Representative bias.

参考答案: C

【莽学解析】Representative, or recency, bias is the tendency to overweight the importance of the most recent observations and information relative to a longer-dated or more comprehensive set of long-term observations and information. Return chasing is a common result of this bias, 莽学教育官网 www.mangxuejy.com 版权所有

and it results in overweighting asset classes with strong recent performance.

22. 【单项选择题】 Given McCall' s IPS recommendation, the most appropriate new strategic asset allocation for the KCPF is:

- A. 40% stocks/60% bonds.
- B. 65% stocks/35% bonds.
- C. 75% stocks/25% bonds.

参考答案: A

【莽学解析】 McCall recommends a new IPS. Changes in the economic environment and capital market expectations or changes in the beliefs of committee members are factors that may lead to an altering of the principles that guide investment activities. Because the plan is now overfunded, there is less need to take a higher level of equity risk. The Pension Committee is concerned about the impact of future market and economic risks on the funding status of the plan. Katt Company operates in a cyclical industry and could have difficulty making pension contributions during a recession. Therefore, a substantial reduction in the allocation to stocks and an increase in bonds reduce risk. The 40% stocks/60% bonds alternative increases the allocation to bonds from 35% to 60%. Increasing the fixed-income allocation should moderate plan risk, provide a better hedge for liabilities, and reduce contribution uncertainty.

23. 【单项选择题】 The proposal for short-term adjustments to the KCPF asset allocation strategy is known as:

- A. de-risking.
- B. systematic tactical asset allocation.
- C. discretionary tactical asset allocation.

参考答案: B

【莽学解析】 Using rules-based, quantitative signals, systematic tactical asset allocation (TAA) attempts to capture asset-class-level return anomalies that have been shown to have some predictability and persistence. Trend signals are widely used in systematic TAA. A moving-average crossover is a trend signal that indicates an upward (downward) trend when the moving average of the shorter time frame, 50 days, is above (below) the moving average of the longer time frame, 200 days.