

portfolio management

The Importance of the Investment Policy Statement

flashcard concepts

- **Investment Policy Statements (IPS):** If you know nothing else for the Level III exam, be able to CAREFULLY prepare an investment policy statement for an individual. The Investment Policy Statement consists of **objectives** (*Return Requirements & Risk Tolerance*) and **constraints** (*time horizon, liquidity, laws & regulations, taxes & unique circumstances*). The Old Question Review Book & the Sample Exam Workbook are the best ways to prepare for this portion of the exam. The Peavy & Sherrard casebook continues to be part of the curriculum, but their allocations are typically much more conservative than is commonly accepted in more current readings
- **Asset Allocation:** Be prepared to use a multi-asset class approach to select an asset allocation on the test and justify its selection. The asset allocation question will appear somewhere in the vicinity of the investment policy statement question just mentioned
- **What is Risk:** Definitely know the four definitions of risk for individual investors and how they differ from your modern finance theory definitions of risk. Much of what appears in this reading ties into the behavioral finance readings. The four definitions presented in this reading are:
 - *Losing Money*
 - *Unfamiliar Instruments*
 - *Previous Losses in Familiar Instruments*
 - *Contrary Investing*
 - *Historical v. Potential Levels of Risk*
- **Psychographics:** You should at least know what psychographics is. Don't worry too much about memorizing the endless details of the 2 models presented in the chapter, but definitely understand the concept. Psychographics is the classification of individuals for investment management purposes based on their personality traits. You should note that in 1998, questions from this section of material appeared on the Level III exam
- **Life Cycle of Wealth Accumulation:** This material presents a framework for analyzing client objectives in the development of an investment policy statement. Acknowledgement of the stage in the life cycle can only enhance your response to an IPS question
 - *Accumulation*
 - *Consolidation*
 - *Spending*
 - *Gifting*
- **Trusts:** Know the Prudent Man Rule and how it differs from the Prudent Expert Rule, as well as the more recently introduced prudent investor rule (from Level II). Remember that state law governs the management of trusts. Finally, make sure you can discuss the inherent conflict between the income beneficiary of the trust and the remainderman

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Problem Set: The importance of the investment policy statement by Maginn & Tuttle

1. Discuss Four ways that individual Investors define risk

Losing Money - Individuals typically measure risk by money that has been lost. These losses are measured against the original cost of the stock or bond. Individuals sometimes feel money has been lost only when the security is sold

Unfamiliar Instruments - Unknown or complex securities may seem riskier

Previous Losses in Familiar Instruments - A stock that has lost money for the individual in the past is considered unattractive

Contrary Investing - Not “following the crowd” may appear risky to an individual

Historical v Potential Levels of Risk - Many individuals regard past levels of volatility as more important than projected levels of risk

2. The Barnwell Two-way model of investor psychographics defines individuals as active or passive investors. DEFINE the characteristics of an Active Investor and Passive Investor

PASSIVE Investors are those individuals who have accumulated their wealth through inheritance or other passive means

- Require Greater Levels of Security
- Typically corporate executives and lawyers associated with large, regional firms

ACTIVE Investors are those who have earned their own money over their lifetime

- Higher risk tolerances
- Involved in the Investing Process
- Typically small business owners, independent lawyers and entrepreneurs

3. DESCRIBE the following subgroup classifications noted in the Bailard, Biehl, & Kaiser investor psychographics model. Be sure to note a portfolio management strategy for each type

i. Adventurer -

- Confident & Impetuous
- Tend to be difficult clients
- Portfolio managers should convince the adventurer that his ‘financial independence’ portfolio should be managed systematically

ii. Celebrity -

- Anxious & Impetuous
- Tend to have a ‘follow the crowd’ mentality
- portfolio managers should try to run the celebrity’s core portfolio systematically

iii. Individualists -

- Confident & Careful
- Tend to be ‘do-it-yourselfers’ and value investors

iv. Guardian -

- Careful & Anxious
- Very Risk Averse
- Portfolio strategy should include CDs, Income Funds, Balanced funds, etc

v. Straight Arrow -

- Do not fall into one specific category

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4. Willy Wannabe is a 25 year old account executive at a major brokerage firm. Willy hopes to marry next year and start a family. Discuss 4 phases that Willy will go through during his life regarding Wealth Accumulation

Accumulation Phase - Willy's priorities are his children's education, larger living quarters, and hopefully to commence investing. Portfolio strategy should be High Risk, High Expected Return

Consolidation Phase - Willy will be in his late 40s to mid-50s during this phase. The kids have started graduating from college. Thus, income will exceed expenses. Willy should really concentrate on his investment portfolio. A shift into less risky assets should occur here

Spending Phase - Willy has just retired and expenses are now exceeding income. Low risk assets should be given priority

Gifting Phase - Willy realizes he has accumulated more wealth than he can use. He begins gifting his assets to his heirs

5. When individual investors attempt to outline their portfolio policies, three types of policies are typically discussed. Describe 2 of these portfolio policies

No Policy - Issue by Issue selection. Investors typically just pick the best securities available and haphazardly collect a portfolio

Traditional Policy -

Income - concentrate on bonds

Growth - Equity & Real Estate

Income/Growth - bonds and stocks

Aggressive Growth - VC, small-cap stocks

Multi-Asset, Total Return Policy - here, there is a well defined policy statement including:

- Asset Classes
- Risk Characteristics of Individual Securities
- Manager Discretion
- Re-investment policy

6. William & Elizabeth Elam recently inherited \$500,000 from Elizabeth's father Abraham and have come to your firm for assistance. Both William & Elizabeth are 30 years old. William is employed as a factory worker with a salary of \$40,000. Elizabeth is a teacher's aid and has a salary of \$18,000. They have 4 children ages 6,5,4, and 3. They have no other investments. They currently have credit card debt of \$10,000.

In your interview with William, he made the following statements to you:

- "I love being on top of the latest trends in investing"
- "My friend, Barney, told me that the really smart investor holds stocks for no more than a month. After that, if you haven't made a profit, you probably won't"
- "Technology stocks is where it's at. Everyone has been buying them"
- "Can you believe that my Mother still has the same portfolio she had a year ago. How boring"

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A.) Based on the statements above, describe the appropriate classification for William Elam in the Bailard, Biehl & Kaiser (BB&K) Five-way Model

BB&K focus their classification on Two Personality Traits: CONFIDENCE (Anxiety) and Method of ACTION (Careful / Impetuous). Based on these personality traits, BB&K classify individuals into 1 of 5 sub-groups: Adventurers, Celebrities, Guardians, Individualists & Straight Arrows.

Based on the quotes, he would be classified as a CELEBRITY - having the following characteristics:

- Anxious & Impetuous
- 'Follow the Crowd' mentality

Portfolio managers should try to run the celebrity's core portfolio systematically, essentially saving celebrity's from themselves

B.) Using the template below, Develop an investment Policy statement for the Elams

OBJECTIVES

Return Objectives - The Elams are in the ACCUMULATION phase of the life cycle of wealth accumulation. With a long time-horizon, the Elams should focus their portfolio on capital-gain, growth oriented investments

Risk Tolerance - Due to the long time-horizon, the Elams have the ability to tolerate an above average level of risk

CONSTRAINTS

Time Horizon - The Elam's time horizon is long. Should they decide to retire at age 60, their pre-retirement time horizon would be 30 years

Liquidity - The main liquidity constraint presented in the case is the \$10,000 credit card debt. It is recommended that the Elam's eliminate this liability from the inheritance funds immediately

Laws & Regulations - No special legal or regulatory problems are apparent

Taxes - Since dividends are taxed at a higher rate than capital gains, from a tax perspective, their long-term, growth orientation is preferable to taxable investment income

Unique Circumstances - No special unique circumstances are apparent

7. Bonnie DuBois, age 60, recently retired from her position as an international fashion designer. She has accumulated \$2,000,000 for retirement. She supports her son Barry, age 40, and his wife and 3 children (ages 14, 12, and 10). Neither Barry nor his wife have work outside their home. Bonnie estimates that she will need \$60,000 annually to live comfortable in today's dollars. Inflation is expected to increase at 3% annually. She plans to continue supporting her son and his family on \$30,000 indexed for inflation. However, she has informed them that should she die, a gift fund will be established with the local museum and that her son's family will only receive \$20,000 in interest from a gift account she has established at the local museum. Otherwise, the fund will be managed for the benefit of the museum. Thus, another goal is to maintain her principal in the retirement fund for her gift account with the museum. Bonnie has a desire to travel to Australia for four month as a retirement present to herself and requires \$50,000 for her travel expenses.

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A.) Using the template below, develop an investment policy statement for Bonnie Dubois
OBJECTIVES

Return Objectives - In order to meet here income objectives, Bonnie should pursue a TOTAL Return approach. Her portfolio must provide for distributions equal to the difference between nominal returns and the 3% rate of inflation in order to maintain its real value

Risk Tolerance - Bonnie is in the spending phase of the life cycle of wealth accumulation. Her need for income exceeds her need for portfolio growth. Her risk tolerance would be classified as moderate with a mix of income-producing and capital growth oriented investments

CONSTRAINTS

Time Horizon - The portfolio has 2 horizons. First, which could be 20 years or more is her remaining lifetime. The second occurs post-mortem- after the portfolio passes to the museum. At that point, the portfolio would have an indefinite life

Liquidity - Other than consideration for some immediate funds for travel to Australia, there do not appear to be many special liquidity requirements

Laws & Regulations - No special legal or regulatory problems are apparent at this time. Bonnie needs to make sure that at the time of her death, the necessary paperwork is in place to make her gift to the local museum and guarantee that the required income allocation is established for her son's family

Taxes - Taxes are not specifically mentioned as an area of concern for Bonnie. The largest portion of her return is income that is taxable at a higher rate than capital gains

Unique Circumstances - Bonnie wishes to maintain her standard of living while protecting herself against the future impact of inflation

B.) Based on the information presented in the case, Select & Justify one of the following portfolios for Bonnie Dubois

<i>Asset Class</i>	<i>Allocation A</i>	<i>Allocation B</i>	<i>Allocation C</i>	<i>Allocation D</i>
US Lg Cap	50%	30%	20%	10%
US Sm Cap	10	20	10	--
Int'l Dev. Mkt	5	5	5	--
Int'l Em Mkt	5	10	5	--
US Corp FI	10	30	20	50
US Gov FI	--	--	10	20
Real Estate	--	--	5	--
VC	20	--	10	--
Cash	--	5	15	20
E(R) _{after-tax}	10.0%	9.0%	7.0%	5.0%
Yld. _{after-tax}	1.5%	2.5%	7.0%	5.0%

Select Allocation B. It has a high expected return, a respectable income component, and an acceptable cash allocation. Plus, it is broadly diversified and at an appropriate level of risk given her individual characteristics - in the spending phase of the life cycle. A is too risky with 70% equity and 20% VC; C has low total return, high VC allocation and high cash allocation; D does not meet the return requirement and is not too diversified

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Tax Considerations in Investing

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- Considering the tax implications in developing investment policy is important for several reasons:
 - Increasingly, clients are not tax-exempt
 - More accountability exists in justifying high costs associated with extensive trading activity
 - Return for active portfolio management strategies (alpha) often does not offset costs (when taxes are included in the cost)
 - More clients are demanding products geared toward both the minimization of taxes and achieving portfolio objectives
 - For most taxable clients, taxes will be the primary cost to manage
- Investors, in their desire to minimize current taxes, may overlook capital gains, which can be more expensive because they are applied to accumulated appreciation on all holdings at the time of disposal
- Most of the tax damage to clients occurs at low levels of turnover (0-20%)
- Some turnover may be required to meet investor's spending needs, particularly in retirement, which increases turnover. This turnover is beyond the control of a professional manager
- Active portfolio management, on an after-tax basis, can still add value by maximizing the building of unrealized (and untaxed) capital gains
- The realization of capital losses in a portfolio produces tax advantages in offsetting realized capital gains. However, these benefits are tempered because of transaction costs and wash sale restrictions
- "Tax Swapping" strategies involve the liquidation of a current position and the simultaneous purchase of a different issue in its place with similar but not identical characteristics. The strategy is used in bond portfolio but because of wash sale restrictions, is less frequently used in equity management
- Derivative strategies can be used to minimize taxes, but can result in higher non-tax costs, additional turnover, conflict with portfolio objectives, and the scrutiny of the IRS
- Tax-deferred retirement plans allow investments to compound without taxes assessed until withdrawn. These benefits may be diminished by high fees, early withdrawals, and potentially higher tax rates at the time of withdrawal
- The IRS permits 2 methods for the determination of capital gains taxes for holdings other than mutual funds. The "Specific Lot" method allows meticulous record keepers to select higher cost securities for identification of capital gains. The "FIFO" method requires investors to calculate capital gains taxes on securities sold against the costs of the first securities purchased. This usually results in higher taxes.

Problem Set: tax considerations in investing by jeffrey

1. Discuss why taxes should be considered in defining investment policy

- An increasing number of clients are NOT tax-exempt
- More accountability is needed in justifying high costs associated with extensive trading activity
- The return for active portfolio management strategies (alpha) often does not offset costs (when taxes are included with the costs)
- More clients are demanding products geared toward both the minimization of taxes and achieving portfolio objectives

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- For most taxable clients, taxes will be the primary cost to manage

2. Describe the concept of “riding the winners”. Explain the challenge this provides to managers

Riding the Winners involves holding securities that have greatly increased in value. This causes the security to become a larger portion of the portfolio, either in market value or in its percentage of portfolio value

Advisers have a special challenge of determining whether the increased value of a particular security presents a threat to diversification and overall portfolio performance. Diversification needs alone are an insufficient rationale for making a change. Overall portfolio performance will be affected should the security take a sudden drop in price. Advisers must assess whether the threat of such a decline is great enough to warrant the additional costs associated with its removal. They must avoid the temptation to eliminate the security solely to preserve a threat to their record.

3. Outline the conditions in which active portfolio management makes sense

Active portfolio management makes sense if the portfolio returns on an after-cost basis (including taxes) exceed the returns of a passively managed portfolio. In general, the ‘alpha’ (reward of active management) should be greater than all costs involved. Active portfolio management, on an after-tax basis, can still add value by maximizing the building of unrealized (and untaxed) capital gains

4. Describe how capital gains can be minimized for tax purposes.

The realization of capital losses in a portfolio produces tax advantages in offsetting realized capital gains. However, these benefits are tempered because of transactions costs and wash-sale restrictions

Capital Gains can be minimized by several methods:

- “*Tax Swapping*” - involve the liquidation of a current position and the simultaneous purchase of a different issue in its place with similar, but not identical characteristics. The strategy is used in bond portfolio management, but with wash sale restrictions, it is used less frequently in equity portfolio management
- *Derivative* strategies can be used to minimize taxes, but can result in higher non-tax costs, additional turnover, conflicts to portfolio objectives, and scrutiny by the IRS
- *Tax-deferred Retirement Plans* allow investments to compound without taxes assessed until withdrawn. These benefits may be diminished by high fees, early withdrawals, and potentially higher rates when withdrawn
- *Specific Lot Accounting* allows meticulous record keepers to select higher cost securities for identification of capital gains, to minimize such gains
- Capital gains can be avoided all together by eliminating portfolio turnover and passing the portfolio to heirs at death. Current law allows “stepped up” cost basis at owner’s death meaning unrealized capital gains are forgiven at death

5. Compare the “specific lot” method to the “FIFO” method of recognizing capital gains

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The 'Specific Lot' method requires substantial records to be kept regarding the cost bases for every purchase. Under this method, capital gain recipients can match the sale of a security with a specific lot of holdings within the portfolio. In order to minimize capital gains, the lot chosen is the one with the highest costs, producing lower capital gains

The FIFO method is used by default. This assumes that the portion of securities sold were the first ones purchased. In a period of rising markets, this works to the investors disadvantage by causing higher tax payments

6. Given the following information, Calculate the Total Return. Analyze differences in portfolio performance at a 25% turnover v. a 5% turnover.

Total Return = 8%, Dividend Yield = 2%, Capital Appreciation = 6%, Tax Rate on Dividends = 45%, Tax Rate on Cap Gains = 34%, Turnover Rate = 25%, Beginning Market value and a beginning cost of \$100

<i>Dividend Income</i>	$(\$100)(.02) = \2	
<i>Tax on Dividend Income</i>		$(\$2)(.45) = \0.90
<i>Capital Appreciation</i>	$(\$100)(.06) = \6	
<i>Market Value with Appreciation</i>	$(100)+(6) = \$106$	
<i>Sales</i>	$(106)(.25) = \$26.50$	
<i>Cost of Sales</i>	$(100)(26.50/106) = 25$	
<i>Realized Cap Gains</i>	$(26.50) - (25) = 1.50$	
<i>Tax on Cap Gain</i>		$(1.50)(.34) = \$0.51$
<i>Purchases</i>	$(2.00) - (.90) + (26.50) - (.51) = 27.09$	
<i>Ending Market Value</i>	$100 + 6 - 26.50 + 27.09 = 106.59$	
<i>Ending Cost</i>	$100 - 25 + 27.09 = 102.09$	
 <i>Cost/Market %</i>	 $102.09 / 106.59 = 95.78$	
<i>Total Return</i>	$106.59/100 - 1 = 6.59$	

The total return at 25% turnover is 6.59 which is lower than the 6.99% with only 5% turnover. There is a widening gap between cost and market values at lower turnover rates

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FACTORS AFFECTING POLICIES OF INSTITUTIONAL INVESTORS

IPS COMPONENT

INSTITUTIONAL INVESTOR TYPE

	<i>Pension Funds</i>	<i>Endowment Funds</i>	<i>Insurance Cos.</i>	<i>Non-Life Ins. Cos.</i>	<i>Commercial Banks</i>
RETURN	<i>Actuarial Rate</i> - A Capital Gains focus when the fund has low liquidity needs and younger workers. An Income Focus (duration matching) when there are high liquidity needs and older workers	<i>Total Return Approach</i> - The return must be balanced between a need for high current income and long-term protection of principle	<i>Fixed Income Segment</i> - "Spread Management" and actuarial assumptions <i>Surplus Segment</i> - Capital Gains	<i>Fixed Income</i> - maximize the return for meeting claims <i>Equity Segment</i> - Grow the surplus / supplement funds for liability claims	Maximize the interest spread (banks must purchase money and reinvest that money at a higher rate of return than it purchased the funds for
RISK	Depends on surplus, age of workforce, time horizon, and company balance sheet	Moderate to high, depending on spending needs	<i>Fixed Income Segment</i> - conservative <i>Surplus Segment</i> - aggressive	<i>Fixed Income Segment</i> - conservative <i>Surplus Segment</i> : aggressive	Depends on size and nature of liabilities. Goal is to minimize the interest rate risk
LIQUIDITY	Depends on age of workforce	Low- usually only for emergencies and spending	<i>Fixed Income Portion</i> : Relatively Low <i>Surplus</i> : Nil	<i>Fixed Income Portion</i> : Relatively High <i>Surplus</i> ; Nil	High primarily to meet depositor withdrawals
Time Horizon	Long, if going-concern	Long, usually infinite	Getting shorter	Short, due to nature of claims	Short-term due to nature of most deposits
Legal/Reg.	ERISA / Prudent Expert Rule	Low - Prudent INVESTOR rule usually applies	HIGH - especially on the state level/prudent INVESTOR rule	Moderate: but increasing (AVR and RBC requirements) prudent Investor Rule	↓, but regulators have increased capital adequacy ratios
TAXES	None	None	VERY HIGH	Moderate	Moderate
Unique	Surplus, Age of workforce, time-horizon, and company balance sheet	Restrictions on certain securities / asset class common due to nature of funds	Must distinguish between strategies for the fixed-income segment and the surplus segment	The financial status of the firm, the management of investment risk, and liquidity requirements influence IPS	Size, location and mix of liabilities dictate the role of portfolio management

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Portfolio Policies: Institutional Investors

flashcard concepts

- **Pensions** - Most everything that you will see on the test will be relative to *Defined Benefit* plans. Key concepts to know are
 - Role of ERISA
 - Role of Plan Sponsor
 - Pension Insurance (PBGC)
 - Need for Inflation Protections
 - Plan investment policy should be approached from a balance sheet perspective. The key here is to note that the Correlation between the PLAN and the Firm's core activities should be analyzed
 - The IPS objectives & constraints of a defined-benefit plan are critically linked to the age of plan participants. The older plan participants get, the more risk averse the plan
 - Also, discuss defined contribution plans and how they contrast with defined benefit plans
 - Employees Own the Plan Assets
 - Defined Benefit Plans are Costlier to Administer
 - Company simply deposits a matching sum into the employee's account
- **Endowments**
 - TOTAL RETURN is the key word. Also, the link between the endowment's spending rate and the total return is critical
 - Endowments have long time-horizons, are non-taxable (if spending requirements are met), and are governed by state law in the US
 - Liquidity requirements are typically low and predictable (depends on spending rates)
 - If the endowment relies heavily on current income, risk tolerance will be low. However, most endowments can take more risk due to their long-term time horizon
- **Life Companies**
 - Spread Management is the Spread between the return on assets and policy returns. Therefore, investment management occurs in an asset/liability context
 - Policy forms such as universal & variable life have changed the time and liquidity constraints for most life companies
 - The behavior and growth of the surplus is important. As the surplus grows, new policy volume can expand
 - Liquidity requirements have been increasing in recent years due to changes in policy forms, increased competition and disintermediation
 - Due to the fixed-income bias of life companies, interest rate risk and credit rate risk are extremely important
- **Non-Life Companies**
 - Also employ asset/liability management, but tend to be more cyclical than life companies
 - Liquidity requirements are relatively high because of the unpredictability of policy claims
 - Inflation protection is important because many of the policies are inflation indexed
 - Time horizons are usually shorter
 - In the mid-90s, regulatory governance increased as ASSET VALUATION RESERVE (AVR) and RISK-BASED CAPITAL (RBC) requirements were imposed

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Problem Set: Portfolio policies: institutional investors by maginn & tuttle

1. Alexander Ellington, President of Ellington Foods, has contacted your firm to discuss the company's defined benefit pension plan. He has provided the following information about the company and its pension plan:

Annual Sales of \$300 M

Annual Payroll = \$100 M

Average Age of Work Force = 48 years

30% of plan participants are now retired

Profits were \$10 M last year and have been growing at 10% annually. The Pension Plan has \$80 M in assets and is currently over-funded by 10%

Duration of Plan's Liabilities is 15 years

Discount Rate applied to liabilities is 6%

Ellington would like to achieve a rate of return of 7% on its pension fund (which is less than the 9% the plan has historically received). Ellington would like to be able to reduce contributions to the pension fund and possibly increase employee benefits

A.) Formulate & Justify Investment Policy Objectives for the Ellington Food Pension Plan using the following 3 areas:

i. **Return Objective** - The return requirement must at least equal the actuarial assumption of 7%.

The fund is currently over-funded by 10% which allows the company to either reduce its contributions or increase employee benefits. Should the fund earn above 7%, further reductions in contributions or further increases in company benefits could follow

ii. **Risk Tolerance** - The risk tolerance would be average to above-average. Several factors support this. The rate of return assumption of 7.0% is reasonable relative to historic results of 9.0%. Plus, Ellington's average employee age is relatively low, and its long time horizon allow the Plan to take above average risk. However, caution should be noted as 30% of plan participants are currently retired. A need for a stable real income stream is present

iii. **Time Horizon** - The company's liquidity requirement is Average. 30% of the plan participants are retired. Income is required to meet payments of retirees, but contributions are available for longer term investments. The company's time horizon is relatively long. It is certainly longer than the normal market cycle.

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B.) State whether the original allocation to each asset class (as shown) should be lower, the same, or higher for the Ellington Foods Pension Plan. JUSTIFY your response with reference to each of these asset classes

<u>Asset Class</u>	<u>Allocation</u>	<u>E(R)</u>	<u>Lower/Same/Higher? Why</u>
Cash	5%	4%	SAME → A small allocation to Treasury securities is necessary. Although the average age of the workforce is young, 30% of plan participants are retired, warranting a reserve in the event of a market downturn
US Int. Bond 5yr D	30%	6%	LOWER → Intermediate term bonds tend to be less volatile than longer term bonds and should represent a substantial portion of the pension fund allocation. However, with a younger workforce producing a longer-term liability stream, a shift away from assets with a shorter duration is warranted
US Long Bd 20yrD	15%	7%	HIGHER → With a younger workforce producing a longer term liability stream, a higher allocation is recommended for assets with a longer duration
US Equ.	50%	12%	LOWER → Although a substantial portion of the portfolio should contain equities in order to achieve the goals of reducing company contributions and possible enhancing employee benefits, the equity portion of the portfolio should be distributed across categories within the equity asset class in order to achieve maximum diversification and possibly enhance returns
Int'l Dev Eq.	0%	13%	HIGHER → Developed Market equities offer the opportunity for enhanced returns and should be represented in the pension portfolio. In addition, diversification benefits are gained by their inclusion
Em. Mkt Eq.	0%	16%	HIGHER → Emerging Market equities are expected to return 16% and should be included in the portfolio. Emerging markets usually share a lower correlation with the domestic market which helps provide enhanced diversification benefits

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2. Ellington appreciates your advice, but decided to handle the situation “in house”. They also decided to stay with the original allocation. Assume 10 years have passed and Ellington has returned to you for advice. The average age of the workforce is now 57. 60% of the plan participants are now retired. The duration of the plan’s liabilities is 4 years. The fund is currently under-funded by 20%. The discount rate applied to the liabilities is 9%. Company profits have declined in the past 2 years, but are expected to turn around in the upcoming year.

A.) Formulate & Justify investment policy objectives for the Ellington Foods Pension Plan in the following three areas:

- i. **Return Objective** - The fact that the fund is currently underfunded by 20% would ordinarily call for enhanced returns to the fund. However, the work force is aged and a majority of the plan participants are now retired. Plus, company profits have been declining. This may indicate a strain in the company’s ability to increase employer contributions. A heavier focus toward income producing assets is essential. The company may have to increase contributions over the upcoming years which may be possible as the company is expected to turn around in the upcoming year
- ii. **Risk Tolerance** - The risk tolerance of the plan has decreased dramatically over the past 10 years. A surplus has been replaced with a deficit while the average age of the workforce has increased, a larger portion of the participants are now retired, and the duration of the plan’s liabilities has decreased significantly. Thus, a moderate to low risk tolerance is warranted
- iii. **Time-Horizon** - The time horizon has decreased due to the shortening of the duration of the plan’s liabilities (aging workforce). The plan remains a going concern, which requires a focus on the longer-term, while addressing the shorter-term needs which are currently a major concern for the pension plan

B.) State whether the original allocation to each asset class should be lower the same, or higher for Ellington Foods Pension Plan. Justify your response with reference to each of the asset classes.

<u>Asset Class</u>	<u>Allocation</u>	<u>E(R)</u>	<u>Lower/Same/Higher? Why</u>
Cash	5%	4%	HIGHER → Because of the underfunding of the pension fund and the more immediate needs for cash, the allocation to US T-Bills should be increased slightly to cover short-term needs. Without such an increase, the fund could find itself in a difficult position should a market downturn occur
US Int. Bond 5yr D	30%	6%	SAME → The duration of plan liabilities has decreased significantly warranting a high allocation to intermediate term bonds. In addition, these bonds tend to be less volatile than longer term issues
US Long Bd 20yrD	15%	7%	HIGHER → Though more volatile than intermediate issues, the longer term issues have a slightly higher income stream which is needed in order to meet liability obligations

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US Equ.	50%	12%	LOWER → The pension plan is currently under-funded with a shorter time horizon caused by an aging workforce and a larger proportion of retired participants in the plan. Thus, high income needs dictate a considerable reduction in the proportion of US equities held. The lower income component and higher volatility of US equities warrant a much smaller allocation
Int'l Dev Eq.	0%	13%	HIGHER → The enhanced return and diversification benefits of int'l developed markets equities argue for at least a small allocation to this category
Em. Mkt Eq.	0%	16%	HIGHER → The enhanced return and substantial diversification benefits of emerging markets equities argue for a very small allocation to this category

3. Describe a Defined Benefit Pension Plan. Be sure to Discuss all Aspects of such a plan.

- A Defined Benefit plan Pays pension benefits to employees based on specific formulas that take into account the particular employee's length of service and level of earnings. For example, your annual retirement benefit may be calculated as 60% of your average salary over the past 5 years
- Plan sponsors bear all investment risk since they have promised a given level of benefits. Any investment return in excess of what is needed to pay employee benefits reverts back to the firm
- Plan assets must be managed in the sole interest of plan participants according to ERISA

4. Describe a Defined Contribution Pension Plan. Be sure to Discuss all Aspects of such a plan.

- Employers make regular contributions on behalf of qualified employees. Employees are sometimes required to match a certain percentage of the employer's contribution. For example, your employer may contribute 5% of your gross annual salary to the plan. You are typically required to contribute 2.5% of your gross annual salary. Your 2.5% contribution is typically handled as a pre-tax payroll deduction
- Employers like defined contribution plans because all investment risk is shifted to employees
- Plan participants typically make their own portfolio decisions. They are offered a menu of investment options from which they can create a portfolio

5. The Cassidy Foundation is a non-profit organization to aid the homeless. They have an annual budget of \$3,000,000 and have just established an endowment with assets totaling \$5,000,000. the endowment anticipates a spending rate of 6%. Inflation is expected to be 3% annually.

A.) Formulate and Justify Investment Policy Objectives for the Cassidy Foundation Endowment Fund in the following three areas.

- Return Objectives** - The fund's return objective should focus on a Total Return Approach. Return should equal the max. spending rate plus an adjustment for expected inflation. Here, the return requirement would be 9% in order to achieve a 6% spending rate and protect future contributions from the 3% inflation forecast

portfolio management

- ii. **Risk Tolerance** - Fund's risk tolerance is Moderate. Here, a 6% income requirement calls for moderate risk tolerance in order to generate the necessary income for supporting current spending requirements
- iii. **Time-Horizon** - The time horizon is Indefinite. Most endowment funds are established to perpetually support the budget of the sponsoring organization. The case indicates that Cassidy's endowment fund will continue indefinitely

B.) Select from the following asset allocations the One Allocation that best serves the needs of the Endowment Fund and Justify its selection by maximizing the following three criteria simultaneously.

<u>Asset Class</u>	<u>Total Return</u>	<u>Yld</u>	<u>Mix A</u>	<u>Mix B</u>	<u>Mix C</u>	<u>Mix D</u>
US Stocks	12%	2.0%	20%	40%	35%	20%
Non US Stocks	15%	1.5%	15%	20%	15%	0%
US Corp. Bonds	8%	8.0%	20%	0%	25%	40%
US Treas Bonds	7%	7.0%	5%	0%	20%	35%
Real Estate	10%	4.0%	10%	20%	0%	0%
US T-Bills	4%	4%	30%	20%	5%	5%

Portfolio E(R)	8.8%	10.6%	10.1%	8.3%
E(Yld)	4.2%	2.7%	4.5%	6.3%
Sharpe Measure	0.20	0.21	0.26	0.27

Choose Portfolio C

- i. **Return Objectives** - In order to achieve the total return objective, Portfolio C does a good job of addressing both the spending rate and achieving inflation protection for real returns in the future. Portfolio C offers an overall rate of return of 10.1% of which 4.5% represents an income component. Additional income can be generated from newly acquired principal while still retaining inflation protection estimated at 3%. Portfolios A & D fail to meet the 9% total return requirement. Portfolio D achieves the spending target, but fails to protect future contributions from the effects of inflation
- ii. **Diversification** - Portfolio C best achieves the diversification goal. Allocations to both domestic and non-domestic stocks as well as corporate and treasury bonds are present. Portfolios A & D also show promise from a diversification standpoint, though each excludes a vital asset class. B does not contain any debt securities, which is the most efficient way to produce income
- iii. **Efficiency (Sharpe Measure)** - Efficiency is measured through the use of the Sharpe Measure, which measures the excess return to total risk. From an efficiency standpoint, Portfolio C has the 2nd highest Sharpe measure, only slightly surpassed by Portfolio D. A & B have efficiency measures much lower than C & D.

portfolio management

6. Liles Insurance Co. has recently decided to segment their portfolio in those assets that are used to meet liabilities and those assets that are considered surplus. George Baxter, CFO, has drafted his proposal for the asset allocation of the surplus portfolio which appears below. They have contacted your firm to establish an investment policy statement and to review the proposed asset allocation for their surplus portfolio. The surplus portfolio contains \$200 M of the \$800 M total assets of the firm.

Proposed Allocation		
Liles Life Insurance Surplus Portfolio		
<u>Asset Class</u>	<u>Proposed Allocation (%)</u>	<u>Expected Return (%)</u>
Cash	10	4
US Int. Bond (5 yr D)	5	6
US LT Bond (20 yr D)	45	7
US Eq	25	12
Int'l Dev Eq	15	13
Equity REITs	0	14
VC	0	22

A.) Formulate and Justify Investment Policy Objectives and Constraints for Liles Insurance Co. Surplus Portfolio in the following three areas:

- i. **Return Objectives** - The return objective is to achieve growth. The primary requirement for the surplus portfolio is to achieve higher returns through portfolio growth. Equity-oriented investments, including VC, are typically used to achieve this objective
- ii. **Risk Tolerance** - Relatively High. Since these funds are not supporting a specific liability, the risk tolerance for the surplus portfolio is relatively high. This higher risk tolerance, if rewarded with higher returns, allows life insurance companies to expand insurance volume
- iii. **Liquidity Requirements** - Very Low. The purpose of the portfolio is to generate growth. Liquidity needs are typically met though the segment of the portfolio used to meet liabilities.

B.) State whether the current allocation to each asset class as shown should be Lower, the Same, or Higher for the Surplus Portfolio of Lile's Insurance Co. Justify your responses with references to each of the asset classes

<u>Asset Class</u>	<u>Allocation</u>	<u>E(R)</u>	<u>Lower/Same/Higher? Why</u>
Cash	10%	4%	LOWER → The need for cash in the Surplus Segment of the life insurance company is very low. The goal of the surplus segment is to earn competitive returns which is not typically accomplished by holding cash
US Int. Bond 5yr D	5%	6%	SAME → Having a small presence of fixed income securities would be wise in the surplus segment for diversification purposes. The current level seems reasonable
US Long Bd 20yrD	45%	7%	LOWER → Longer-term bonds provide higher returns than intermediate term bonds. However, the lower proportion is

portfolio management

US Equ.	25%	12%	recommended given that the main objective of the surplus portfolio is to grow the principal HIGHER → The surplus portfolio should be geared toward equity-type investments. The proportion of domestic equities should be increased in order to generate additional growth in principal. The company may want to consider using a proportion of this increased allocation toward higher risk US equities in a diversified setting
Int'l Dev Eq.	15%	13%	SAME → The developed market equities are expected to produce slightly higher returns than US equities and may provide diversification benefits. An allocation of 15% seems reasonable for achieving the objectives of the surplus portfolio. The company may want to consider currency hedging should it decide to retain or increase this allocation
EREITS	0%	14%	HIGHER → Equity REITs provide diversification benefits and an opportunity for enhanced return. The asset class is currently not included in the current asset allocation and should be added.
VC	0%	22%	HIGHER → VC is an appropriate part of a surplus segment investment strategy. The current allocation does not include VC. Given its high expected return, the company should consider VC as part of the surplus segment portfolio

Pension Investing & Corporate Risk Management

flashcard concepts

- This article should really be viewed in conjunction with the risk management readings
- The key to this reading is that pension risk management should focus on the fund's SURPLUS. Investing in assets that are highly correlated with the fund's liabilities minimizes surplus risk. Interest Rate Sensitive stock & bond portfolios can be used to minimize surplus risk and maximize the expected return of the fund
- Diversify plan assets so that pension contributions are highly correlated with corporate cash flows. As cash flows rise, pension contributions should also rise
- There are 2 pension risk management techniques (a) Immunization & (b) Diversification

Problem Set: Pension investing & corporate risk management by haugen

1. Identify & Briefly Describe 2 Risk Management techniques that pension funds can use
 - Preserving Pension Fund Assets in relation to the Pension Liability (Immunization) . For example, dedicated or immunized bond portfolios
 - Diversify pension investments so that the firm will be in a position to continue to fund contributions even if the firm falls on hard times. Example: seek investments that have cash flows with low correlations to the firm's basic business activities (e.g. foreign securities)

2. Define the concept of a pension surplus. Describe how to minimize surplus risk

portfolio management

The Surplus is the difference between the fund's assets and the Present Value of its projected liabilities. Investing in assets that are positively correlated with potential changes in fund liabilities minimizes surplus risk. Since the pension liability is highly interest rate sensitive, then it only makes sense to invest in interest rate sensitive securities. However, we want to find assets that strike a careful balance between increased expected return and this positive interest rate correlation

3. Discuss how interest rate sensitive stocks are an improvement over the use of bonds or common stock in minimizing surplus risk

In terms of surplus risk, a trade-off exists between the use of long-term bonds (which reduces surplus risk in the short-term because of lower volatility, but increases risk in the long-term because of lower returns), and the use of stock (which reduces surplus risk in the long-term because of its higher returns, but increases surplus risk in the short-term because of higher volatility). Interest-rate sensitive stocks offer much higher correlation with pension liabilities, thus reducing volatility risk. Also, interest rate sensitive stocks offer returns that are comparable to a broad universe of common stocks

4. Describe the relationship between a defined benefit pension plan and the firm's net worth. Discuss the potential winners from effective pension plan management

Suppose that the risk of the pension plan assets is increased. This should lead to a decline in the value of plan liabilities since the probability of default is now higher. Since the balance sheet must always balance, a decline in the pension liability forces an increase in share-holder wealth. However, labor should be able to renegotiate the terms of its compensation to increase the value of the pension liability to its former level. Hence, if labor markets are efficient, it is generally accepted that corporate risk management does not have a material effect on the wealth of stockholders (i.e., the net worth of the firm). However, corporate risk management is potentially beneficial to the firm's customers, suppliers & employees. Why? Because customers want the firm's products, suppliers want a stable on-going relationship with the firm, and employees desire job security & stability

Asset Allocation

flashcard concepts

- The asset allocation decision is the most important determinant of portfolio performance. 95% of the variance of mutual fund returns can be attributed to asset allocation
- Investment management can be broken down into a 3-stage process (a) Asset Allocation (b) Manager Selection (c) Security Selection
- You should remember the formulas for expected asset & portfolio returns. These are the most probable calculations on the Level III Test

$$E(R) = \sum P_i r_i$$
$$E(R_m) = \sum x_i E(R_i)$$

- Make sure you remember all Level I & II material on efficient frontiers and MPT. Calculations usually aren't required, but a solid description is. The correlation between assets and asset classes is the key to MPT

portfolio management

- Investor preferences are quantified through indifference curves. You always want to invest on the highest possible indifference curve (max. utility)
- **Tactical Asset Allocation** - Take advantage of perceived inefficiencies in relative securities prices. This is a contrarian investment strategy. Tactical allocation typically takes a short run view. Risk tolerance is assumed to be a constant
- **Strategic Asset Allocation** - longer-term, policy level decision. The strategic asset mix is that allocation that would prevail under 'normal' market conditions. Strategic allocation can also be thought of as a constant mix strategy
- **Individual v. Society or Average Risk Tolerance** -
 - If your individual risk tolerance moves in tandem with changes in the average risk tolerance of all investors, then a buy-and-hold strategy is best
 - If your risk tolerance is more sensitive than average to changes in wealth, then Portfolio Insurance (CPPI) is optimal
 - If your risk tolerance is constant relative to the average, then tactical allocation should be used

Problem Set: Asset Allocation by Maginn & Tuttle

1. As portfolio manager for Quantum Step, Inc., you are in charge of creating an overall investment forecast for the next year. Your firm always has a 60% stock, 40% bond portfolio mix. Based on the returns information below, what is the expected return and standard deviation of Quantum's Portfolio mix?

	<u>Optimistic (40%)</u>	<u>OK (30%)</u>	<u>Disaster (30%)</u>
Stocks	30%	8%	-25%
Bonds	8%	12%	18%

First - Calculate the Expected Return for Each Component

$$\text{STOCKS: } E(R_{\text{stocks}}) = (.4)(.3) + (.3)(.08) + (.3)(-.25) = .069 \text{ or } 6.9\%$$

$$\text{BONDS: } E(R_{\text{bonds}}) = (.4)(.08) + (.3)(.12) + (.3)(.18) = .122 \text{ or } 12.2\%$$

Second - To calculate the standard deviation of the mix, we must calculate the individual standard deviations and the correlation coefficient between stocks & bonds. To do this, use the formulas

$$\sigma_i = [\sum P(r_i - E(r))^2]^{1/2} \text{ and}$$

$$\text{COV}_{SB} = \sum P(r_{si} - E(r_s))(r_{bi} - E(r_b))$$

$$\sigma_S = [(.4)(.3-.069)^2 + (.3)(.08-.069)^2 + (.3)(-.25-.069)^2]^{1/2} = .2278$$

$$\sigma_B = [(.4)(.08-.122)^2 + (.3)(.08-.122)^2 + (.3)(.18-.122)^2]^{1/2} = .0414$$

$$\text{COV}_{SB} = (.4)(.30-.069)(.08-.122) + (.3)(.08-.069)(.12-.122) + (.3)(-.25-.069)(.18-.122) = -.0094$$

Also recall:

$$\rho_{SB} = \text{COV}_{SB} / \sigma_S \sigma_B \quad \text{Correlation Coefficient between Returns of Stocks \& Bonds}$$

$$\rho_{SB} = -.0094 / (.2278)(.0414) = -.99$$

Third - Calculate the Portfolio Mix σ

$$\sigma_{m(a,b)}^2 = (w_A)^2(\sigma_A)^2 + (w_B)^2(\sigma_B)^2 + 2w_A w_B \sigma_A \sigma_B \rho_{AB}$$

$$\sigma_m^2 = (.6)^2(.2278)^2 + (.4)^2(.0414)^2 + 2(.6)(.4)(.2278)(.0414)(-.99) = .014474, \text{ hence}$$

$$\sigma_m = (.014474)^{1/2} = .1203 \text{ or } 12.03\%$$

portfolio management

2. Bob & Jim are both risk averse. If Jim has a risk tolerance of 75 while Bob has a risk tolerance of 100, who gains the most utility from an investment with expected return of 10% and variance of 25%?

According to Sharpe, utility can be quantified by the following formula

$$U_{Mk} = E(R_m) - (\sigma_m^2 / t_k)$$

where t_k = investor k's risk tolerance

$$U_{Bob} = .10 - (.25/100) = .0975$$

$$U_{Jim} = .10 - (.25/75) = .0966$$

Thus, Bob derives the most utility from this investment. In other words, Bob is less risk averse

3. List 3 features of investor indifference curves

- An investor is indifferent between any 2 portfolios that lie on the same indifference curve
- Investors want to be on the highest possible indifference curve
- Indifference curves do not intersect
- Less risk averse individuals have flatter indifference curves
- The y-intercept is called the certainty equivalent rate of return

4. Discuss the similarities and differences between strategic & tactical asset allocation strategies

- Strategic Asset Allocation is a constant mix strategy whereas tactical asset allocation changes its exposure to certain market sectors depending upon changing capital market expectations
- Long-run capital market expectations are used in strategic management whereas short-term projections are used in tactical management. Tactical management attempts to take advantage of perceived market inefficiencies
- Investor risk tolerance remains constant, independent of investor wealth for both methods
- Both Tactical & Strategic strategies can be thought of as 'contrarian' in nature. The Tactical strategy is contrarian because as prices rise, expected returns fall and the strategic approach is contrarian because as prices rise, the portfolio weight associated with an asset class needs to be reduced. Thus, both approaches sell in rising markets and buy in falling markets

5. For Each of the Four main asset allocation strategies, Comment on their relative level of performance in a market environment that is characterized by rapidly changing market conditions

- **Integrated Asset Allocation** - Like all asset allocation techniques, IAA involves a feedback loop where current capital market conditions are fed back into the optimizer f to recompute the optimal asset allocation. If market conditions are changing rapidly, then transaction costs may outweigh the benefits of continual rebalancing
- **Strategic Asset Allocation** - In a constant mix strategy, the portfolio needs to be rebalanced periodically to maintain the constant proportions. The performance of a constant mix strategy depends on the behavior of the market and the decision rule regarding when the portfolio is to be rebalanced. For example, if the stock market rises rapidly and the fund is to be rebalanced annually, the fund's asset allocation will be severely out of alignment (the stocks will be weighted too heavily in the portfolio). Note that there is a definite tradeoff cost between the number of rebalancing points and transactions costs

portfolio management

- **Tactical Asset Allocation** - Since tactical asset management is designed to take advantage of perceived inefficiencies in the asset markets, tactical allocation is better equipped to deal with rapidly changing market conditions. The performance of a tactical system in a rapidly changing market environment depends on the ability of the asset manager to correctly take advantage of perceived market inefficiencies
- **Insured Asset Allocation** - (portfolio insurance) depends on the ability to quickly move into and out of risky assets if the market conditions move in adverse directions. The October 1987 crash showed that portfolio insurance strategies are subject to failure when the market swings wildly in short periods of time

Monitoring & Rebalancing the Portfolio

flashcard concepts

- Costs of NOT trading include (a) Holding an over-priced asset, (b) holding an inefficient portfolio and (c) holding a portfolio that does not meet client needs
- Costs of Trading are (a) commissions, (b) market impact, and (c) lost client confidence from excessive trading
- Perold & Sharpe's constant mix asset allocation strategy is the same as the DISCIPLINED Rebalancing Strategy employed in this chapter. On average, a constant mix beats a drifting mix (i.e., a buy & hold comprised of both stocks & bonds)
- Disciplined rebalancing also typically beats a momentum strategy. Recall from Perold that CPPI is a type of momentum strategy that buys as the market rises and sells as the market falls. Bottom line: a 60/40 constant mix strategy may be superior to other rebalancing strategies
- A Tactical Asset allocation strategy that employed futures contracts (in a simulation) outperformed the constant mix strategy. Using futures reduced transactions costs considerably
- Key Point: Transactions costs are not simply composed of brokerage fees and these costs must be considered when developing a portfolio rebalancing strategy

Problem Set: monitoring & rebalancing the portfolio by Maginn & Tuttle

1. List three costs of portfolio rebalancing. Also list three costs of not rebalancing a portfolio

Costs of Portfolio Rebalancing:

- Commissions
- Potential Impact on Market Prices
- Lost Client Confidence if he perceives excessive trading

Costs of Not Rebalancing

- Holding an over-priced asset
- Holding an inefficient portfolio
- Holding a portfolio that no longer fits the clients' needs

2. List & Describe 4 factors that may force an individual to rebalance his portfolio

- Change in Wealth : Theoretically, an increase in wealth brings an increased tolerance for risk. However, in practice, the result may be the opposite
- Changing Time Horizons : Usually, as the time horizon shortens, the investment mix becomes more conservative
- Changing Liquidity Requirements
- Tax Circumstances

portfolio management

- Laws & Regs.
- Unique Circumstances & Preferences

3. Compare the simulated investment performance of a ‘disciplined rebalancing strategy’ with a tactical asset allocation strategy

Simulated results for TACTICAL rebalancing significantly outperformed a disciplined rebalancing strategy

4. Compare the simulated investment performance of market timing rebalancing strategies (e.g., momentum) relative to a disciplined rebalancing strategy

Disciplined rebalancing also beat a *Momentum* based rebalancing strategy. The momentum-based strategy shifted funds into stocks when the stock market was moving up relative to bonds and into bonds when bonds were going up relative to stocks

Market-timing strategies tend to perform poorly relative to a disciplined rebalancing strategy

Asset Allocation Optimization Models

flashcard concepts

- All possible portfolio combinations of asset classes are referred to as the **Investment Opportunity** or Feasible Set
- All possible portfolio combinations of asset classes that yield the highest level of return for the lowest level of risk are referred to as the **Efficient Set**
- Investors will select the portfolio on the Efficient Set that best matches their preferences
- The Shape of the Efficient Frontier is determined by the Correlation between Stocks & Bonds
- The Main difference between the 2 Asset Class Analysis and the N-Asset Class Analysis is that the interior points in the opportunity or feasible set are also possible in the N-Asset Class
- Risk-of-Loss is defined as the probability of not achieving a portfolio expected return
- Analyzing the output of multiple return, risk, and/or correlation scenarios requires information on the probability that a given scenario will occur
- For longer time horizons, there is significant shift downward for the risk-of-loss in the optimal asset allocation analysis. Return increases at a greater rate than risk over longer time horizons

Problem Set: Asset allocation optimization models by fong & fabozzi

1. Describe how the efficient frontier is affected by variations in the correlations between assets in a two-asset optimal asset allocation analysis

The correlation between two asset classes also has an impact on the shape of the efficient frontier

- The lower the correlation, the more to the northwest the line will appear on the graph. A lower level of correlation provides greater diversification benefits and a higher return for a given level of risk
- The higher the correlation, the more to the southeast the line will appear on the graph. A higher level of correlation provides reduced diversification benefits and a lower return for a given level of risk

2. Define “risk-of-loss” in an asset allocation optimization model

portfolio management

The 'risk-of-loss' is defined as the probability of not achieving a portfolio expected return

3. Given the following optimal asset allocation, analyze and evaluate the output when risk is defined as 'risk-of-loss' for an expected annual return of 7.5%

<i>Optimal Asset Allocation</i>									
<u>E(R)</u>	<u>σ</u>	<u>Yld</u>	<u>P E(R) <</u>				<u>Min. Risk Asset Mix</u>		
			<u>0.0%</u>	<u>5.0%</u>	<u>7.0%</u>	<u>10.0%</u>	<u>Stocks</u>	<u>Bonds</u>	<u>T-Bills</u>
6.0%	0.5%	6.0%	0.0%	2.5%	97.5%	100%	0%	0%	100%
6.5%	1.0%	6.2%	0.0%	9.0%	68.0%	99.9%	5%	10%	85%
7.0%	2.0%	6.4%	0.1%	17.8%	50.0%	91.8%	10%	20%	70%
7.5%	3.0%	6.6%	1.0%	20.2%	42.7%	78.4%	15%	30%	55%

Evaluating the results for the 7.5% expected return for the scenario above is:

- There is a 1% probability that the annual return will be negative
- There is a 20.2% probability that the annual return will be less than 5%
- There is a 42.7% probability that the annual return will be less than 7%
- There is a 78.4% probability that the annual return will be less than 10%
- The optimal asset mix for an expected return of 7.5% that produces the lowest possible level of risk (standard deviation of 3.0%) consists of 15% stocks, 30% bonds and 55% T-bills
- For the 7.5% expected return, the Yield component is 6.6% which leaves 0.9% as the return attributable to capital appreciation

4. Describe how a longer time horizon affects the "risk-of-loss" in an asset allocation optimization model

For longer time horizons, there is a significant shift downward for the risk-of-loss in the optimal asset allocation analysis. Return increases at a greater rate than risk over longer time horizons. Thus, investors with longer time horizons are more likely to seek higher expected return/risk scenarios than investors with shorter time horizons. For investors with longer time horizons, a greater proportion of the portfolio should be made up of higher expected return (higher expected risk) securities that would include greater investment in common stock

The Psychology of Risk

flashcard concepts

- *Classical Decision Theory*: Here, investors are assumed to be risk-averse and Rational. The key difference between Classical & Behavior Decision theory is the assumption of rationality
- *Value Functions* are similar to traditional utility f in that they quantify how we feel about investment alternatives. Value Functions are:
 - defined in terms of changes in wealth (returns). In other words, value functions evaluate investments relative to your current wealth (reference dependence)
 - S Shaped. People are risk averse relative to gains but risk seekers relative to losses
 - Asymmetric - People are more loss averse than risk averse
- *Asset Segregation* - Investors tend to evaluate investments in isolation and not in an overall portfolio context
- *Mental Accounting & Over-confidence*: Investors tend to classify investments into different "accounts". This tends to lead investors away from thinking in terms of the impact an

portfolio management

investment has on the overall portfolio. Over-confidence tends to lead to the behavior of holding on to losers too long in an attempt to avoid the embarrassment of selling at a loss

Problem Set: The Psychology of Risk by Tversky

1. Compare & Contrast the concept of a "Value Function" with that of a traditional utility f

A traditional utility f uses the level of risk aversion for an individual to determine the person's likes and dislikes regarding risk. Value Functions are more complicated alternatives to traditional utility functions. Both types of functions try to quantify how we 'feel' about the tradeoff between risk & return

Value Functions have some essential properties:

- The f is defined in terms of differences in wealth levels. People tend to isolate their investment decisions and compare them with the status quo rather than integrating investment decisions into their overall portfolios. With investments, people think in terms of gains and losses - not in terms of terminal wealth
- The hypothetical Value f is S-shaped; people are risk-averse in terms of gains and risk-seekers in terms of losses
- The f is asymmetric: the unhappiness one feels regarding a loss is much higher than the happiness one feels after a gain. That is, people are more loss-averse than risk-averse

2. Define both Mental Accounting & Risk Aversion

Mental Accounting: Individuals tend to keep a mental account for each investment option. Using this process, individuals choose investment alternatives that may prove to be unprofitable in a portfolio context

Loss Aversion: People evaluate investment alternatives in terms of gains and losses relative to the reference point. If an investment situation is expressed in terms of losses relative to your reference point, you tend to choose the outcome that is more risky. That is, people are risk-seekers in terms of losses. Similarly, they choose the less risky outcome if the situation is expressed in terms of gains

3. Identify 3 Assumptions that underlie Classical Decision-making theory

Classical Decision Making is based on 3 Assumptions:

- *Asset Integration:* People choose between risky prospects by comparing the income distribution resulting from integrating these prospects with the rest of their assets
- *Risk Aversion:* People prefer a sure outcome over a risky prospect with the same expected value
- *Rational Expectation:* People make coherent, accurate and unbiased forecasts

Behavioral Risk: Anecdotes & Disturbing Evidence

flashcard concepts

- *Investment Manager Over-confidence:* Earnings estimates may be over-estimated as a result of the analyst's 'illusion of control' after personally visiting a firm
- *Decision Framing:* Decisions may depend on how a particular situation was 'framed' or presented (prospect theory). A common investment management decision frame is the investment time horizon. Our decisions may differ if we view a security for a short or long holding period

portfolio management

- *Agency Friction*; Investment managers may want to hold a portfolio of ‘in favor’ securities to avoid conflict with their clients. Investment managers may want to keep their jobs and clients want ‘good looking’ portfolios

Problem Set: behavioral risk: anecdotes & disturbing evidence by wood

1. Value stocks have been shown to outperform growth stocks *on average* over long periods of time. Explain why this phenomenon can be expected to continue into the future

Portfolios are managed so that losses are avoided and that the portfolio ‘looks good’ on an on-going basis. The higher returns from the Value strategy can only be captured by investors who can maintain the Value strategy for a long time period. This may mean holding ‘dogs’ in the portfolio - which is not acceptable to investors with a short-term view

2. Research has shown that investment analysts consistently miss their earnings targets and that professional portfolio managers routinely under-perform their benchmarks. Use behavioral theory to explain why these two empirical findings hold true

Wood poses 3 behavioral flaws that investment managers must overcome

- *Overconfidence*: In general, people are over-confident regarding their abilities. This overconfidence most likely spills over into investment management and securities analysis
- *Decision Framing*: Decisions for common problems and situations differ depending on the way the situation is presented. Accentuating the positive aspects of a company will most likely result in an overestimate of earnings
- *Agency Friction*: The investment manager works in a principal-agent relationship with pension plan sponsors. Since sponsors have a short-term view regarding performance and it is not acceptable to have poorly performing securities in the portfolio, the manager will most likely under-perform over the long term

Behavioral Finance v. Standard Finance

flashcard concepts

- A frame is how a situation is viewed. Different people may react differently based on how a situation is presented to them (framed)
- Standard Finance models are built on the principles of investor RATIONALITY and Market EQUILIBRIUM. In standard finance, investors will act the same way irrespective of the way a situation is framed
- Behavioral Finance also takes into consideration how individuals and institutions act & feel
- Several Theories of Behavior Finance Exist:
 - *Prospect Theory* - Behavioral Investors tend to segment their money in mental accounts
 - *Cognitive Errors* - Behavioral Investors make mistakes based on past experiences
 - *Self-Control*: Behavioral Investors lack self-control and can become caught up in the actions of ‘the crowd’
 - *Regret* - Behavioral investors are influenced by pride & pain
- Behavioral investors tend to like dividend paying stocks as this creates another mental account, one that makes it more acceptable to use for spending purposes
- Behavioral investors tend to hold onto a loser in an attempt to ‘break even’. To sell a loser would mean having to experience a realized loss - a painful thing for a behavioral investor

portfolio management

- Behavioral investors prefer stocks of good companies because they tend to think that a good company should also be a good stock (representativeness)

Problem Set: behavioral finance v standard finance by statman

1. Define the concept of a Frame and Describe why or why not frames are important to standard and behavioral finance

A frame is how a situation is viewed by an individual. For example, you can say that there is a 95% chance that an event will occur or a 5% chance that the same event will not occur. You are talking about the same event, but the frame has changed. The first description is framed in a positive manner, while the second is framed negatively.

- *Standard Finance*: Standard Finance is represented by models such as the Black-Scholes option pricing model, CAPM, APT, Miller-Modigliani, etc. Standard finance models are built on the principles of investor **Rationality** and Market **Equilibrium**. In Standard Finance, investors will act the same way irrespective of the way a situation is framed.

- *Behavioral Finance*: Behavioral Finance seeks to describe the financial world in terms of how individuals and institutions **Act & Feel**. Hence, investors may respond differently to a situation depending on how it is framed

2. Identify and Briefly Describe 4 key components of behavioral finance theory

- *Prospect Theory*: Behavioral Finance assumes that investors are NORMAL. In other words, an investor's response to a situation may depend on how the situation was framed

- *Cognitive Errors*: Behavioral Investors make mistakes. Suppose that you are an individual saving for retirement with a 20-year investment horizon. You are offered several securities that will provide excellent long-term diversification benefits to your portfolio. But, their recent performance has been poor and you decide not to buy them - you only want 'good looking stocks' in your portfolio. You have made Cognitive Error regarding portfolio choice. A rational investor would never do such a thing

- *Self-Control*: Behavioral investors also lack self-control and can become caught up in the actions of 'the crowd'. A rational, standard finance investor never has a problem with self-control

- *Regret*: A rational investor does not feel regret when she sells an investment to rebalance a portfolio - and the stock later rises 1000%. A behavioral investor would be crying if the same thing happened. Behavioral investors feel pride & pain

3. Using the concepts of behavior finance, Explain why investors tend to hold on to poorly performing securities for too long

Behavioral research has shown that investors tend to hold stocks that are falling in value too long. A rational investor views each security's role as a component of an overall larger portfolio and would not be bothered by the sale of a loser if it were for the good of the portfolio.

Alternatively, behavioral investors tend to view each asset in isolation and typically try to hold onto a loser in an attempt at 'breaking even'

This is an example of *Mental Accounting*. Investors tend to keep separate mental accounts for paper and realized gains & losses. To sell a loser would mean having to experience a realized loss- a painful thing for a behavioral investor

portfolio management

4. Using the concepts of behavior finance, Explain why investors tend to invest in the stocks of 'good companies'.

Statman uses the concept of *Representativeness* to explain why investors prefer the stock of good companies. Behavioral investors tend to think that a good company should also be a good stock. Why? Because the two concepts are similar (representative of one another). It is logical to assume that a firm with good management would also be a good stock (though empirical studies show results to the contrary)

The Active v. Passive Debate

flashcard concepts

- If the CAPM (Capital Asset Pricing Model) holds, markets are Efficient and no one can beat the market, investors are best served to invest passively since an active manager will charge fees for his work and can do no better than the average investor
- Over the past 2 decades, only about 1/3 of actively managed funds outpaced the benchmark S&P 500
- If assumptions of no taxes or trading costs, homogenous expectations, or investor rationality are relaxed, the CAPM does not hold. Markets seem inefficient and an argument for active management emerges
- Active management may also be warranted because β does not seem to explain returns, excess volatility seems to exist around company announcements, and market anomalies continue to exist
- Most anomalies can be attributed to the behavioral aspect of *Over-Confidence*. Good news causes investors to push prices too high and bad news causes investors to drive prices too low
- A manager's inability to beat the market may be attributed to poor investment decisions, poor risk control, and high fees & expenses
- The average mutual fund needs to outperform the S&P 500 by 1.45 just to break even with it

Problem Set: The Active v Passive debate by Jones

1. Using theoretical arguments, support the case for each of the following:

- Indexing** - With the introduction of the risk-free asset, the CAPM efficient frontier is created and an optimal portfolio referred to as the *Tangency Efficient Portfolio (TEP)* emerges. Investors, regardless of risk tolerance, would select some combination of the risk free asset and the TEP. Since markets are efficient and no one beats the market, investors are best served to invest passively since an active manager will charge fees for his work and can do no better than a passive investor
- Active Management** - The presence of one optimal 'market' portfolio breaks down if Taxes or Trading Costs exist assuming these costs are significant and variable, both through time and across investors. Higher (lower) taxes or trading costs will discourage (encourage) investors to make changes in portfolio composition should new information warrant such changes. The *Efficient Market Hypothesis (EMH)* is built on the assumption that investors share the Same Expectations about risk and return. This is not true since competitive advantages exist for certain investors based on technology, time, knowledge, etc. As a result, certain categories of investors would seek to outperform the rest through active portfolio management. If the markets are perfectly efficient, then securities would be fairly priced. However, if prices are always fair, there is no incentive to analyze the information which leads to market efficiency. If no one analyzes the information, then

portfolio management

efficiency breaks down and assigning a fair market price to a security becomes impossible. In order for trading to continue, a critical mass of active managers must be present drawing different conclusions about investment prospects. Some will be better at this analysis than others. For those with inferior skills to remain in the game, they must either think they are doing better than they really are or there must be enough 'noise' in the market to occasionally reward them and lead them to believe that they are better than they really are. Either outcome violates investor rationality

2. Using empirical arguments, support the case for each of the following:

- i. **Indexing** - In a study by Malkiel, in 12 of 18 years, the median active fund under-performed the passive index. These results were gross of taxes, which would only make the case for indexing even stronger. Over the past 2 decades, only about 1/3 of actively managed funds out-performed the S&P 500 benchmark
- ii. **Active Management** - There is Inconclusive Evidence that a relationship exists between the CAPM β and realized stock return. This could be caused by one of two problems. (1) The market isn't efficient - realized returns don't match expected returns or (2) the market is efficient, but the CAPM doesn't capture the relationship between risk & return. Either way, the implication is that no single index is optimal for everyone. *Excess Volatility* exists in the market. Empirical evidence indicates that not only do stock prices react more than information would warrant, but also stock prices sometimes change without any new underlying information. If markets are efficient, then anomalies shouldn't exist. The markets would recognize these anomalies and re-price securities such that these patterns would not exist in any predictable fashion. However, many anomalies continue to exist including international anomalies based on value, momentum and risk factors.

3. From a behavioral perspective, defend the use of active management

Jones argues that people are not perfectly rational, and that most anomalies can be attributed to over-confidence. Good news causes investors to push prices too high and bad news causes investors to drive prices too low. In addition, investors do not behave the way theory says they should. Investment patterns indicate that investors do not believe the market is efficient. Thus, we have another catch-22. If the market is efficient, but investors behave as though it is not, then their investment patterns would create inefficiencies. However, investors could have been right all along and the markets were inefficient. In order for markets to be efficient, investors must also believe that they are efficient. This would argue for a passive strategy for all investors, which means that investors would quit analyzing the markets - and the market would no longer reflect available information

4. Discuss why most managers fail to beat the market

Managers tend to under-perform the market because of **Poor Investment Decisions** such as forming irrational expectations, making unrealistic probability assessments, confusing good companies with good investments, over-reacting to confirming information, and under-reacting to information that doesn't confirm beliefs. Managers also exhibit **Poor Risk Control** as they tend to hold more cash than would be warranted for transactional purposes, shy away from value investments that have historically out-performed growth over longer time horizons, and shy away from exploiting the small cap effect. Managers also tend to charge **high fees** and have high expenses. Mutual fund managers encounter expenses associated with management, trading and

portfolio management

turnover. Hence, it is estimated that the average mutual fund needs to outperform the S&P 500 by 1.45% just to break even

Equity Style

flashcard concepts

- **Growth** investors focus on Earnings Growth. The main risks that the growth investor faces are that future earnings growth will not materialize and/or that the P/E ratio declines unexpectedly
- **Value** investors concentrate on price. The risks that the value investor faces are that he misreads the relative cheapness of a stock, and/or that there was no over-reaction to the bad news that forced the stock to become cheap
- Value and Growth stock investors will tend to focus on the same stock at different points within its price and earnings life cycle. Hence, value and growth investors can be seen as natural trading partners. For example, suppose that a firm had some recent bad news and that the stock becomes undervalued. This security may be attractive to the value investor. As the managers of the firm restructure or develop new products or services to counter the bad news, earnings growth prospects may improve and the stock price rises. As growth prospects continue to improve, the value investor may sense that the stock is becoming over-valued and will sell. At the same time, the growth investor might realize that the growth prospects of the firm have improved enough to make the stock attractive. Time passes and another economic shock hits the firm. The growth investor unloads his position and the cycle repeats
- Three Value Sub-styles are LOW P/E, CONTRARIAN, and HIGH Dividend YIELD
- Two Growth Sub-styles are CONSISTENT GROWTH and EARNING MOMENTUM
- A value portfolio will tend to exhibit low P/Es, low P/B ratios, low forecast earnings growth rates, low ROEs, and high Dividend Yields. Growth Portfolio Characteristics will be the opposite
- A key point to this article is that STYLE Matters. During certain periods of time, a particular style may be out of favor. Hence, it is important to measure the performance of the portfolio manager relative to benchmark portfolios that follow the same style as the manager. For example, you would not want to measure a value investor's portfolio against the S&P 500

Problem Set: equity style by christopherson & williams

1. Identify & Briefly describe 2 sub-styles for both value and growth investing

Value Sub-styles

- **Low P/E** - Low P/E strategies usually purchase defensive, cyclical or out-of-favor industry groups
- **Contrarian** - Focus on stocks with low valuations relative to book value. The contrarian investor purchases the stock of depressed firms with the hope that a firm-specific turnaround will occur. The characteristics of contrarian investing are High Leverage & Low Quality
- **Yield** - Conservative Value style focusing on firms with above average earnings or dividend yields that are expected to maintain or increase dividend payouts

Growth Sub-styles

- **Consistent Growth** - Focus on high quality firms with continually growing earnings. Consistent Growth Managers tend to focus on market leaders in consumer-oriented industries

portfolio management

- **Earnings Momentum** - Purchase stocks with anticipation of earnings acceleration. No particular industry is favored as long as earnings growth potential is superior

2. Discuss the potential attractiveness of a style rotation strategy

At any given point in time, a particular style may be in or out of favor with the investing public. This gives rise for a motivation to rotate investment styles. For the 6 years between 1987-1993, there is a very clear inverse relationship between growth and value returns. 1987-1989 favored a value strategy while 1989-1993 favored growth. Hence, style can make a difference in short-term results

3. Discuss the relationship between the CAPM & Style investing

In the world of CAPM, market risk (beta) is all that matters. All firm-specific risk can be fully diversified and stocks will be priced solely on their betas. A result of this is that in the CAPM world, different investing styles would not produce differential returns (i.e., style investing wouldn't work)

Using Trading Information to Trade

flashcard concepts

- **Implementation Shortfall** is the return difference between paper and real portfolios. Implementation shortfall is due to trading and transaction costs
- **Small Orders** represent the largest component of total trading costs
- **Value Mangers** were shown to have high transaction costs relative to growth managers
- **Patient Trading** can significantly reduce transaction costs

Problem Set: using trading information to trade by leinweber

1. How can electronic orders help reduce transaction costs

Electronic trading systems could allow the trader to exploit multiple execution channels, allow short-term volatility to work in her favor, apply the techniques simultaneously to a large number of orders and incorporate feedback from the results of trading strategies on multiple time scales to refine the performance of those strategies

2. How does patient trading reduce transaction costs

Patient trading helps to reduce impact costs and make volatility work in your favor even though implementation of an order may take several days

3. How can predictions of transactions costs be helpful in improving trading performance

Reliable transaction cost forecasts can be applied in the integration of portfolio management and trading since assumptions of transaction costs in most portfolio construction models are too simplistic. Real time measurement of costs and feedback is a valuable cost-control technique available to electronic traders

portfolio management

Implementing Investment Strategies

flashcard concepts

- **Implementation Process** consists of determining under what conditions securities are to be purchased in order to preserve their underlying value
- Wagner & Edwards outline a 6 step process necessary for effective trading:
 - *Trade Motivation*: Value motivations are based on determining intrinsic value and are less urgent. Information motivations are based on time-sensitive information trading and are more urgent
 - *Assessing Market Conditions*: Higher liquidity costs are associated with trades that represent a larger proportion of overall trading volume, less frequently traded stock and momentum-based trades
 - *Establishing Initial Trading Strategy*: Principal trades through a broker are more expensive but allow for rapid capitalization of information
 - *Probing for Liquidity and Information*: Unfilled orders give the market information on demand/supply relationships
 - *Adapting to Market Conditions*: Traders must be prepared to switch techniques quickly whenever changes occur in current market conditions
 - *Assess Effectiveness*: An on-going review process should be established
- **Trading Costs**
 - *Commission Cost* - Explicit Fee charged to execute a trade
 - *Price Impact Cost* - difference between the price when an order is executed and the price at the time the order was originally placed with the broker
 - *Trader Timing Cost* - difference between the price when an order is released to the broker and the price when the order is submitted to the trading desk
 - *Opportunity Cost* - cost associate with unexecuted orders

Problem Set: implementing investment strategies by wagner & edwards

1. Contrast trade motivations based on value with those based on information

Value motivations involve the purchase of securities based on their intrinsic value. Value trades are not usually urgent and traders can use time to their advantage in reducing trading costs. Here, minimizing impact costs takes a higher priority than minimizing timing costs. Information motivations are tied to capitalizing rapidly on emerging news or changes in expectations about a stock. Information motivations are usually timely, as the goal is making the trade before information is fully disseminated. In this case, minimizing timing costs takes a higher priority than minimizing impact costs.

2. Describe the types of trades that would tend to exhibit higher liquidity costs

Liquidity costs are positively correlated with trades that represent a greater proportion of overall trading volume, with trades that involve less frequently traded securities and with trades that follow a momentum based strategy

3. Discuss the following components of trading costs

portfolio management

- i. **Commission Cost** - explicit fees charged by broker for services
- ii. **Price Impact Cost** - costs associated with executing a trade immediately. They are defined as the difference between the execution price and the price at the time the order is revealed to the broker
- iii. **Trader Timing Cost** - costs of obtaining Liquidity. Defined as the difference between the price when an order is released to the broker and the price when the order is submitted to the trading desk
- iv. **Opportunity Cost** - cost of not trading. Costs associated with not obtaining liquidity

Dynamic Strategies for Asset Allocation

flashcard concepts

- **Buy & Hold Strategy:** Do nothing. The Floor Value is the original amount that was placed in T-bills and there is no re-balancing required
- **Constant Mix:** Here, the floor value of the portfolio is set to zero and the portfolio is re-balanced to maintain a constant stock-to-total-asset proportion
 - You sell stocks as the market rises and buy stocks as the market falls. This is a CONCAVE strategy
 - Buy & Hold always beats a constant mix strategy when no market reversals occur; however, constant mix outperforms in flat, oscillating markets
 - Risk Tolerance is proportionate to wealth levels
- **Constant Proportion Portfolio Insurance (CPPI):** The floor value of the portfolio is a positive value. As the portfolio value rises above the floor value, you invest more in stocks
 - Here, you buy stock as the market rises and sell stock as the market falls. This is a CONVEX Strategy.
 - CPPI performs well in bull markets, but performs poorly in flat, oscillating markets
 - Risk tolerance falls as the portfolio approaches the floor value
- **Options-based Portfolio Insurance (OBPI):** Similar to CPPI in that both are CONVEX. However, OBPI differs in that it:
 - The floor value is Invested in T-bills and rises at the risk-free rate over the life of the strategy
 - The cushion is invested in Call options. The result is that at the horizon date, you are either fully invested in the stock market (your calls were in-the-money) or you are fully invested in T-bills (your options were out-of-the-money and expired worthless)

Problem Set: Dynamic strategies for asset allocation by perold & sharpe

portfolio management

1. Suppose that initially, you have \$100 in stock and \$35 in T-bills so that total assets are \$135. Suppose also that the stock market index at the time (t_0) was 124 and at t_1 it rose to 135. At t_2 , the stock market had fallen back to 130. Assuming at t_0 , you are at your optimal Stock to Total Asset (S/TA) ratio. CALCULATE the following

i. **Optimal S/TA** - $100/135 = .7407$ or 74.1%

ii. **Stock Holdings at t_1 under Buy & Hold** -

% increase in market = $(135-124)/124 = .0887$ or 8.87%

hence, $s = 100 \times 1.0887 = \108.87

iii. **Optimal Stock Holdings (under Constant Mix)** -

% decrease in market = $(130 - 135)/135 = -.037$ or -3.7%

hence, $s = 108.87 \times (1-.037) = \104.84

iv. **Amount of Stock to buy or sell at t_1 (under a Constant Mix)** -

$s = \$108.87$ so solve the following for x:

$(108.87 + x) / 143.87 = .741 \rightarrow x = -2.26$

v. **Amount of Stock to buy or sell at t_2 (under a Constant Mix)** -

$s = 108.87 - 2.26 = 106.61$ at end of t_1

The drop in the market was -3.7 so

$s = (106.61)(1-.037) = 102.66$ &

TA = $143.87 - (106.61 - 102.66) = 139.92$

so solve for x:

$(102.66 + x)/139.92 = .741 \rightarrow x = 1.02$

2. Identify the relative investor risk tolerance characteristics of each of the following 4 investment strategies

Buy & Hold - The investor's tolerance for risk is zero if the value of the investor's asset falls below the floor value

Constant Mix - Investor's risk tolerance remains constant regardless of the wealth level. They will hold stocks at all levels of wealth

Constant Proportion Portfolio Insurance (CPPI) - Investor risk tolerance is similar to that of the buy & hold. Investor risk tolerance drops to zero when total assets drop below the floor value

Option-based Portfolio Insurance (OBPI) - Similar to CPPI & Buy & Hold in that the floor value denotes the level of zero risk tolerance

3. Compare & Contrast Constant Proportion Portfolio Insurance (CPPI) with Options-based Portfolio Insurance (OBPI)

Comparisons: Both CPPI & OBPI are CONVEX portfolio strategies that essentially sell stock as the stock market falls. Both methodologies rely on a predetermined floor value that denotes the investors zero risk tolerance level

Contrasts: Under CPPI, the 'cushion' is invested directly into stocks whereas under OBPI, the cushion is invested in call options on the underlying market. Also, under OBPI, the floor value is determined as of the chosen horizon date. At the horizon, the portfolio will be either entirely stock or T-bills

4. You expect the stock market to be relatively volatile over the next year. You also expect that the annual holding period return will be roughly zero. Recommend and Justify a Portfolio investment strategy given your forecast.

portfolio management

Of the 4 strategies outlined in this reading, the constant mix strategy will perform the best. Although the constant mix strategy will under-perform in a steady bull or bear market, constant mix strategies outperform in an oscillating environment because you are always buying more shares whenever the market falls. Hence, each up movement will have a slightly higher level of capital gains