F1 – Project-Stage 13: Personal Investing

TCHE322

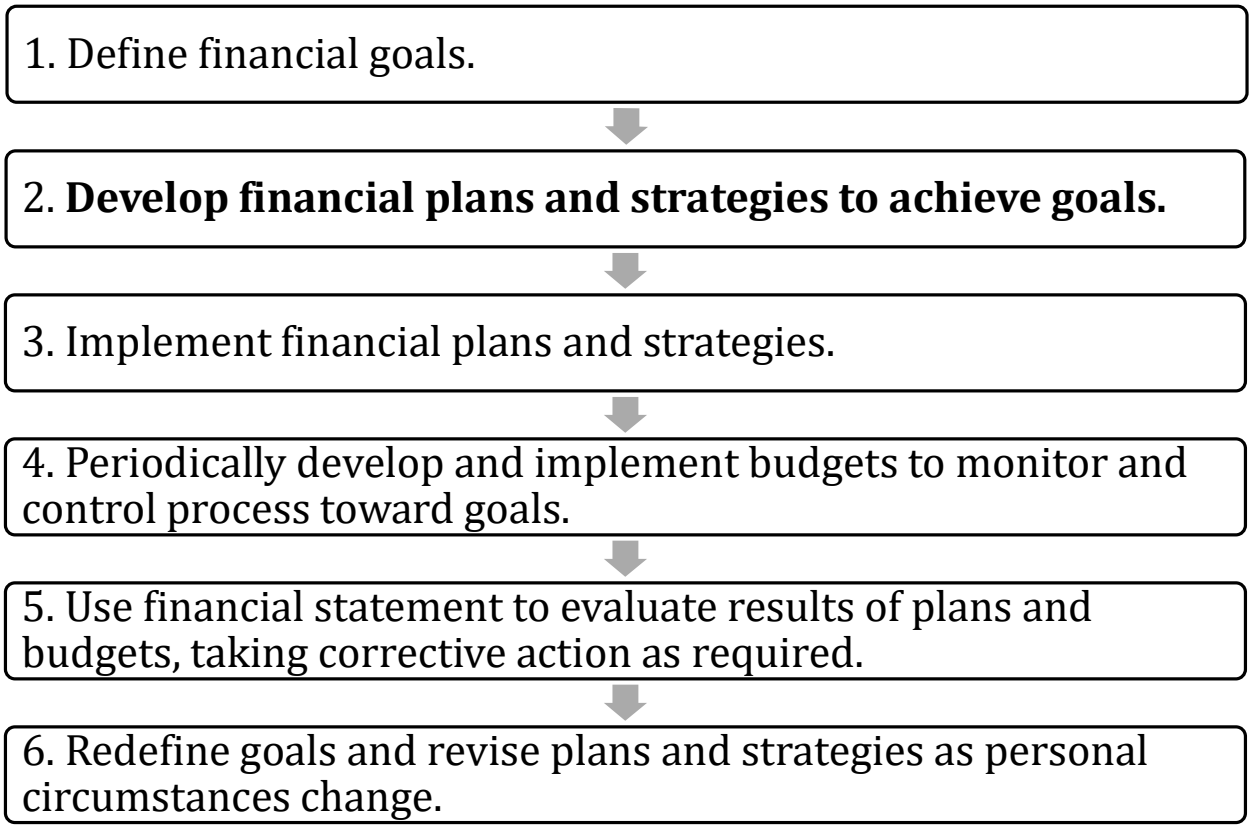
Lawrence et al (2011). Chapters 11, 12, 13

CFA Level III Volume 1, 4

Tillery & Tillery (2017). Chapter 10, 18

Personal finance planning

Personal finance planning process



Essential Information of personal financial plans *

1. A summary of the goals
2. Significant assumptions and justification
3. Estimates
4. **Recommendations**
5. A description of limitations on the work performed
6. The recommendations in the engagement should contain qualifications to the recommendations if the effects of certain planning areas on the client's overall financial picture were not considered.

- Asset acquisition
- Liability and insurance
- Savings and investment
- Employee benefit
- Tax
- Retirement and estate

** Adapted from Paragraph .35, Statement on Standards in Personal Financial Planning Services No. 1*

Schedule of lectures

Project topic covered

- Investment planning process
- Asset allocation
- Investment analysis tools
- Risk management

Groupwork project activities

- Stock/bond/other financial assets and real estate analysis
- Managing risk
- *Reasoning the appropriate one to suit your needs*

Investment planning process

Determine and prioritize client's specific financial goals

Refer to stage 4

Client's financial condition

Refer to stage 6

Assessing risk tolerance

Identify unique needs

Identify potential client investment constraints and requirements

➢ investment policy statement

Investment Policy Statement

TABLE 18-1 COMPONENTS OF AN IPS

COMPONENT	DESCRIPTION
Objectives	In addition to client-specific goals, the objectives section will also include anticipated return and risk assumptions for the investment portfolio.
Constraints	The constraints section will provide mutually agreed-upon constraints for the investment portfolio. Examples of constraints include the following: • Time horizon—short, intermediate or long-term • Liquidity—upcoming events that will require cash or cash equivalent assets not subject to market risk • Taxes—specific parameters for the amount of taxable income that can be generated by the investment portfolio • Legal issues of client's situation— irrevocable trusts, requirements for alimony and child support
Asset class allocation strategy	This includes the agreed-upon asset allocation strategy, as well as appropriate benchmarks against which to measure portfolio performance
Duties and responsibilities	The duties and responsibilities of both the client and the investment adviser are codified.
Monitoring and review policy	A specific program of monitoring and review is agreed upon. The rebalancing of the investment portfolio, as well as an update to objectives and constraints, is outlined.
Acknowledgement by all parties	Signatures attest to the mutual understanding of both parties to the investment policy statement.

Assessing risk tolerance

- Two common methods: A risk tolerance questionnaire or a psychometric test

  - A risk tolerance questionnaire is the norm for most personal financial planners.
    - ➢E.g.: Investor Profile Questionnaire from Schwab
      https://www.schwab.com/resource/investment-questionnaire

  - Another type of risk tolerance assessment tool is a psychometric test.
    - ➢Refer to Financial risk tolerance: A Psychometric Review

- Some determinants of risk tolerance
  - ➢ E.g.: Thanki & Baser (2021) (https://www.pm-research.com/content/iijwealthmgmt/24/2/48)

Assessing risk tolerance

- There are several methods to assess a client's risk tolerance. No one method is mandated. Many personal financial planners determine their client's risk tolerance through conversation. These planners are adamant that their knowledge and experience creates a better asset allocation model than the computerized tools that have been created to assess the client's attitude toward risk.
- A risk tolerance questionnaire is the norm for most personal financial planners. The typical questionnaire has between 5 and 10 questions. Basic questions address time horizon and basic knowledge of investments. Each of the questions generates a type of numeric score. The sum of the values is tabulated, and a hypothetical asset allocation is proposed.
- Another type of risk tolerance assessment tool is a psychometric test. These tests are extensive and usually require 30–40 minutes to complete. The client is measured against a demographic pool of respondents. The result is often an asset allocation model based on the *efficient frontier* and the client's *indifference curve*.

Investor Attributes

- Investors are classified into various groups based on:
  - Tolerance to risk
  - Preference for income versus capital growth
  - Investment timeframe
- Defensive investors are more risk averse and are focused on preserving capital
- Aggressive investors have more tolerance towards risk and focus on capital growth
- Financial planners use these classifications to determine the appropriate asset mix for their clients

Risk Profile

- A person's age
- Income
- Wealth
- Years to retirement
- Past financial experiences

General Investor Attributes – By Classification

Investor classification	Features	Approximate asset mix
Very conservative	■ Household income is unstable and insecure. ■ No tolerance for loss of capital. ■ Investing time frame is 2 years or less.	■ Cash 60% ■ Fixed interest 30% ■ Growth investments 10%
Conservative	■ Household income is somewhat unstable and insecure. ■ Able to tolerate no more than 5% decline in capital value. ■ Investing time frame is between 2 and 4 years.	■ Cash 20% ■ Fixed interest 40% ■ Growth investments 40%
Balanced	■ Household income is fairly stable and secure. ■ Able to tolerate a 10% decline in capital value. ■ Investing time frame is between 4 and 6 years.	■ Cash 10% ■ Fixed interest 30% ■ Growth investments 60%
Aggressive	■ Household income is substantially stable and secure. ■ Able to tolerate a 15% decline in capital value. ■ Investing time frame is between 6 and 8 years.	■ Cash 5% ■ Fixed interest 15% ■ Growth investments 80%
Very aggressive	■ Household income is very stable and secure. ■ Able to tolerate regular fluctuations of 20% or more in capital value. ■ Investing time frame is between 8 and 10 years.	■ Cash 5% ■ Fixed interest 10% ■ Growth investments 85%

Identify unique needs/unique constraints

Identify potential client investment constraints

- Liquidity: Before a client begins an investment plan, emergency reserves should be established.
- Time Horizon
- Tax status
- Human Capital Risks: are those risks unique to an investor's ability to work, or to the investor's susceptibility to premature death or disability.

  refer to stage 9: risk management for individual.

  pension benefit Morbidity (disability due to injury or illness) and mortality (premature death) need to be addressed in the IPS.

  ➢Documentation regarding sufficient insurance to address the risk of economic loss should be included.

  ➢If there is none, investment assets will have to be utilized to address the economic loss and may affect how certain assets are invested.

Identify potential client investment requirement

- Should assets be managed with consideration given to ESG issues?
- Are there any legal and regulatory factors that need to be considered?
- Are any political sensitivities relevant?

Assets allocation

Asset allocation is a strategic, and often a first or early, decision in portfolio construction.

- General Investment Strategies:
  - Gibson (2000)* argued that holding *four asset classes* in a portfolio (multiple-asset class investing) would reduce the risk of the portfolio and increase its average return.
- This happens because the four asset classes are not strongly related to each other:
  - As one asset class performs well the others are less likely to perform as well and as the better performing asset class reverses its performance the other asset classes tend to perform better.
  - The performances tend to counteract each other which provides for a better long term average return and lower level of risk of such a portfolio.

* Gibson, R. C. (2004). The rewards of multiple-asset-class investing. *Journal of Financial Planning*, *17*(7), 58.

Traditional Approaches to Asset Classification

A Liquidity-Based Approach to Defining the Opportunity Set

Exhibit 10 Major Asset Class Categories

	Equity & Equity-Like	Fixed Income & Fixed Income-Like	Real Estate
Marketable/Liquid	Public Equity Long/Short Equity Hedge Funds	Fixed Income Cash	Public Real Estate Commodities
Private/Illiquid	Private Equity	Private Credit	Private Real Estate Private Real Assets

Traditional Approaches to Asset Classification

An Approach Based on Expected Performance under Distinct Macroeconomic Regimes

Capital growth assets would be expected to benefit from healthy economic growth.

Inflation-hedging assets—so-called "real assets" such as real estate, commodities, and natural resources but also inflation-linked bonds—would be expected to outperform other asset classes when inflation expectations rise, or actual inflation exceeds expectations.

Deflation-hedging assets (e.g., nominal government bonds) would be expected to outperform most of the other asset classes when the economy slows, and inflation becomes very low or negative.

Exhibit 11 Asset Classes Grouped by the Macroeconomic Environment under Which They Would Be Expected to Generate Strong Performance

		Inflation Environment		
		Deflation	Moderate Inflation	High Inflation
Economic Environment	High Growth		Public Equity Private Equity High-Yield Bonds Private Credit	Real Estate Commodities
	Low Growth/ Recession	Government Bonds		Inflation-Linked Bonds Gold

Source: CFA Level III Volume 4

Considering diversification

- Returns on various assets are impacted by the broader economic environment in different ways
- Diversification is owning/investing in more than one particular asset, and more than one asset class.
- The goal of diversification is to minimise risk

Illustrating how diversification can reduce risk in a portfolio of shares

- The correlation coefficient shows the extent of correlation among shares
- It has a numerical value of –1 to +1 which indicates the extent of risk reduction within a portfolio:
  - Negative correlation (–1) -> Large risk reduction
  - Positive correlation (+1) -> No risk reduction

	Share C	*Share D*	*Correlation Coefficient*			
Standard deviation	4%	4%	–1.0	0.2	0.6	1.0
Portfolio risk (Standard deviation of the portfolio)			0%	3.1%	3.6%	4%

Diversification Across Asset Classes

	Cash	Fixed interest	Property (direct)	Shares	International investments
Risk (short-term volatility)	Very low	Low	Medium	High	Medium to high but excellent for diversification as natural hedge
Correlation with other asset classes	Low	Low	Low with cash, fixed interest; moderate with shares	Low with cash, fixed interest; moderate with property	Depends on asset class
Returns in the long run	Low	Low to medium	Medium to high	High	Depends on asset class
Ability to beat inflation	Very poor	Poor	Good	Very good	Depends on asset class

Selection of a strategic asset allocation

- Having objectives and other input in the planning phase
- Determine the approach to asset allocation that is most suitable for the investor.
- Specify asset classes and develop a set of capital market expectations for the specified asset classes.
- (1)Develop a range of potential asset allocation choices for consideration. These choices are often developed through optimization exercises. Specifics depend on the approach taken to asset allocation.
- Test the robustness of the potential choices. This testing often involves conducting simulations to evaluate potential results in relation to investment objectives and risk tolerance over appropriate planning horizon(s) for the different asset allocations developed in Step 7. The sensitivity of the outcomes to changes in capital market expectations is also tested.
- Iterate back to (1) until an appropriate and agreed-on asset allocation is constructed.

Assets allocation

Asset allocation is a strategic—and often a first or early—decision in portfolio construction.
Three broad approaches to asset allocation:

(1) asset-only approaches to asset allocation: focus solely on the asset side of the investor's balance sheet.

- Mean–variance optimization (MVO) is the most familiar and deeply studied asset-only Approach MVO considers only the expected returns, risks, and correlations of the asset classes in the opportunity set.

(2) liability-relative approaches to asset allocation: choose an asset allocation in relation to the objective of funding liabilities.

- Liability-driven investing (LDI) is an investment industry term that generally encompasses asset allocation that is focused on funding an investor's liabilities.

(3) goals-based approaches: involve specifying asset allocations for sub-portfolios, each of which is aligned to specified goals, are used primarily for individuals and families.

Three approaches to assets allocation

Exhibit 5 Asset Allocation Approaches: Investment Objective

Asset Allocation Approach	Relation to Economic Balance Sheet	Typical Objective	Typical Uses and Asset Owner Types
Asset only	Does not explicitly model liabilities or goals	Maximize Sharpe ratio for acceptable level of volatility	Liabilities or goals not defined and/or simplicity is important ■ Some foundations, endowments ■ Sovereign wealth funds ■ Individual investors
Liability relative	Models legal and quasi-liabilities	Fund liabilities and invest excess assets for growth	Penalty for not meeting liabilities high ■ Banks ■ Defined benefit pensions ■ Insurers
Goals based	Models goals	Achieve goals with specified required probabilities of success	Individual investors

Developing asset-only asset allocation

Mean-variance optimization

Mean–variance optimization introduced by Markowitz (1952, 1959), is perhaps the most common approach used in practice to develop and set asset allocation policy.

Mean–variance optimization: a framework for determining how much to allocate to each asset in order to maximize the *expected* return of the portfolio for an *expected* level of risk.

$$U_m = E(R_m) - 0.005\lambda\sigma_m^2$$

where

U_m = the investor's utility for asset mix (allocation) m
R_m = the return for asset mix m
λ = the investor's risk aversion coefficient
σ_m^2 = the expected variance of return for asset mix m

Note:

$E(Rm)$ and σm are expressed as percentages rather than as decimals.

Time Horizon: "single-period" framework

Mean-variance optimization: Case

John Tomb is an investment advisor at an asset management rm. He is developing an asset allocation for James Youngmall, a client of the rm. Tomb considers two possible allocations for Youngmall.

Allocation A consists of four asset classes: cash, US bonds, US equities, and global equities.

Allocation B includes these same four asset classes, as well as global bonds.

Youngmall has a relatively low risk tolerance with a risk aversion coefficient of 7. Tomb runs mean–variance optimization (MVO) to maximize the utility function to determine the preferred allocation for Youngmall.

Determine which allocation in Exhibit 1 Tomb should recommend to Youngmall. **Justify** your response.

Exhibit 1 MVO Portfolio Statistics

	Allocation A	Allocation B
Expected return	6.7%	5.9%
Expected standard deviation	11.9%	10.7%

Mean-variance optimization: Case

An investment adviser is counseling Aimee Goddard, a client who recently inherited €1,200,000 and who has above-average risk tolerance ($\lambda = 2$). Because Goddard is young and one of her goals is to fund a comfortable retirement, she wants to earn returns that will outpace inflation in the long term. Goddard expects to liquidate €60,000 of the inherited portfolio in 12 months to fund the down payment on a house. She states that it is important for her to be able to take out the €60,000 without invading the initial capital of €1,200,000. Exhibit shows three alternative strategic asset allocations.

a. Based only on Goddard's risk-adjusted expected returns for the asset allocations, which asset allocation would she prefer?
b. Recommend and justify a strategic asset allocation for Goddard.

	Investor's Forecasts	
Asset Allocation	**Expected Return**	**Standard Deviation of Return**
A	10.00%	20%
B	7.00	10
C	5.25	5

Evaluating the robustness of an asset allocation

MONTE CARLO SIMULATION

Monte Carlo simulation complements MVO by addressing the limitations of MVO as a single-period framework.

In the case in which the investor's risk tolerance is either unknown or in need of further validation, Monte Carlo simulation can help paint a realistic picture of potential future outcomes, including ***the likelihood of meeting various goals***, the distribution of the portfolio's expected value through time, and potential maximum drawdowns.

Simulation also provides a tool for investigating the effects of trading/rebalancing costs and taxes and the interaction of evolving financial markets with asset allocation.

How to run Monte Carlo simulation? Part 1 Part 2

MONTE CARLO SIMULATION: Case Malala Ali

Objectives: median value of her bequest to her children to be no less than her portfolio's current value of CAF$1 million in real terms. The median is the 50th percentile outcome.

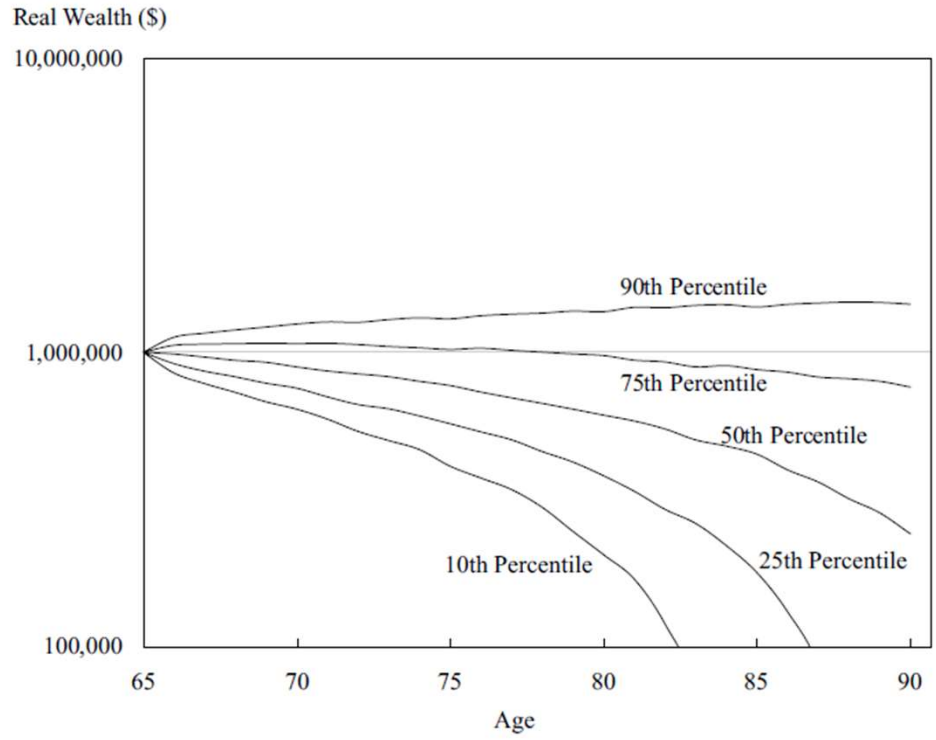
Investor's Forecasts

Asset Class	Expected Return	Standard Deviation of Return
Caflandia equities	9.4%	20.4%
Caflandia bonds	5.6%	4.1%
Inflation	2.6%	

The predicted correlation between returns of Caflandia equities and Caflandia intermediate-term government bonds is 0.15.

Is the current asset allocation expected to satisfy Ali's investment objectives?

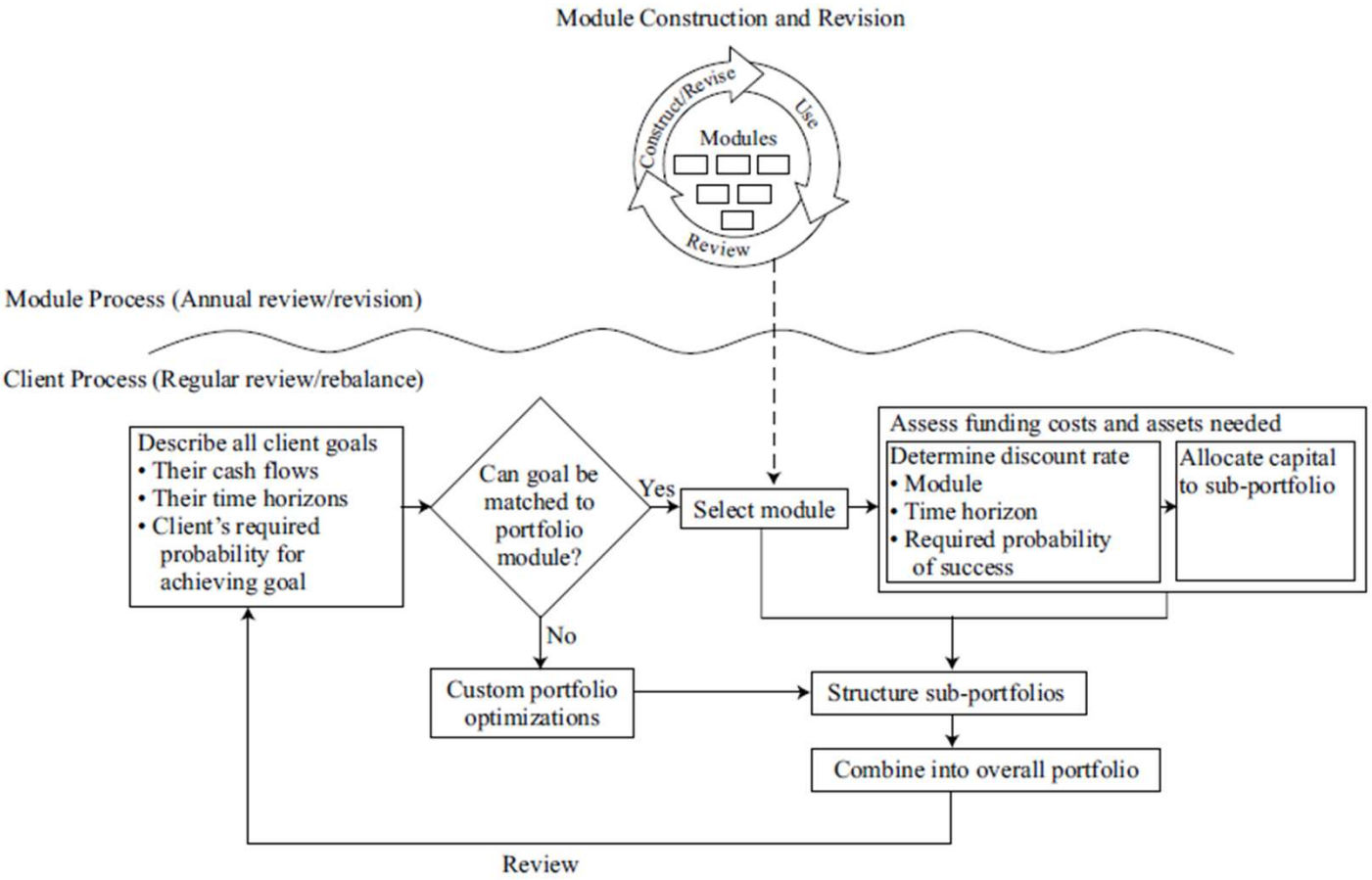
Exhibit 9 Monte Carlo Simulation of Ending Real Wealth with Annual Cash Outflows



Developing goals-based asset allocation

THE GOALS-BASED ASSET ALLOCATION PROCESS

Exhibit 35 A Stylized Representation of the Goals-Based Asset Allocation Process



Information Sources for Investment Choices

- Economic fundamentals
- Industry characteristics and reports
- Company background, prospects, annual reports
- Current market prices
- Government reports
- Analyst reports
- Using the internet as a search engine