IPS Writing

CFA三级培训项目

讲师：Bob Hong

Bob Hong

- **工作职称：**金程教育资深培训师、CFA三级通过、RFP（注册财务策划师）
- **教育背景：**英国纽卡斯尔大学国际金融分析硕士（优等学位毕业）、上海对外贸易学院商务日语学士学位
- **工作背景：**九年专业金融培训经验，深悉各类金融资格证书考试重点及行业热点。先后讲授CFA 一级40班次，二级20班次，三级30班次，RFP课程10次，CFRM课程5次等。授课范围广泛，包括权益投资、固定收益投资、财务报表分析、经济学、衍生品投资、投资组合、资产配置、个人理财、私募投资、企业估值、债券投资组合管理等，同时也进行客户指定专题的培训。授课深入浅出，逻辑清晰，备受学员喜爱。拥有丰富金融从业经验，服务于摩根大通证券研究部和毕德投资咨询公司，从事行业与公司的分析和研究。在收购兼并等方面为跨国公司提供财务顾问咨询服务。并为国内中小企业寻找战略投资者和机构投资者提供咨询服务。精通日语，曾创立并领导日语小组支持东京的投资银行部门和债券市场部门。
- **服务客户：** Areva，Lubrizal，Arkema，International Paper，Johnson Controls，Augusta、Philips、中国工商银行、中国银行、建设银行、农业银行、杭州银行、兴业证券、南京证券、湘财证券、兴业银行、杨浦区党校、太平洋保险、泰康人寿、中国人寿、人保资产管理、中国平安、华夏基金、中邮基金、富国基金、中国再保险、中国进出口银行、中信建投、北京外经贸大学、安徽省投资集团、阿里巴巴、携程等

Topic Weightings in CFA Level III

Topic	Weightings	Sessions
Ethical and Professional Standards	10-15	SS1-2
Economics	5-10	SS4
Equity Investments	10-15	SS9-10
Fixed Income	15-20	SS7-8
Derivatives	5-10	SS6
Alternative Investments	5-10	SS11
Portfolio Management	35-40	SS 3 SS 5 SS 12-16

Essay Writing in CFA level 3

Topic 1 Introduction to essay writing

Topic 2 Individual IPS writing with asset allocation

Topic 3 Institution IPS writing with asset allocation

Essay in the morning session 1

- **Essay 1 – Prepare the IPS (八股文)**
  - Individual investor 100%
  - Institutional investor 100%
- **Essay 2 – other topics**
  - Economics 90%
  - Asset allocation 80%
  - Trading, Performance Evaluation, and Manager Selection 80%
  - Derivatives 80%
  - Fixed income analysis 80%
  - Equity 70%
  - Behavioral finance 70%
  - Alternatives 30%
  - Global Investment Performance Standards (GIPS) 30%

Case book的使用

- 个人IPS与机构IPS的考纲发生较大变化。以往考试的重点Return、Liquidity的计算在今年的考纲中没有明确体现出来。但是这部分内容已经持续考了近20年，2020年作为新旧考纲的过渡年，这部分传统考法有可能依然出现。在备考过程中未雨绸缪，请考生仍然练习并且掌握最近6年（2018-2013）的真题。
- 除了以上两个科目，其它科目都在历年真题中进行了精挑细选，保留了具有备考价值的题目。
- 在使用Case book 进行备考时，年份越近的题目越具有参考价值。因为考察形式和重点会有所变化，太早年份的真题参考价值相对有限。

IPS Test History

- **Individual IPS**
  - 2005 Q7, 2006 Q1, 2007 Q1, 2008 Q1, 2009 Q1, 2010 Q1,2011 Q1,2, 2012 Q1,2, 2013 Q1,2, 2014 Q1, 2 ,2016 Q6,7,10, 2017 Q4, 6, 2018 Q5,6
- **Institute IPS**
  - Pension Plan
    - ✓ 2005 Q1, 2006 Q4, 2006 Q6, 2008 Q3, 2009 Q3, 2010 Q3，2012 Q6, 2013 Q7, 2014 Q5, 2017 Q2
  - Endowments & Foundation
    - ✓ 2009 Q3, 2011 Q3, 2013 Q7, 2014 Q6, 2016 Q1, 2018 Q3
  - Insurance Company
    - ✓ 2007 Q6, 2010 Q2

IPS Question Type

- **Calculate:** To ascertain or determine by mathematical processes.
- **Characterize:** To describe the essential character or quality of.
- **Criticize:** To consider the merits and demerits of and judge accordingly; to find fault with.
- **Describe:** To transmit a mental image, an impression, or an understanding of the nature and characteristics of.
- **Determine:** To come to a decision as the result of investigation or reasoning; to settle or decide by choice among alternatives or possibilities.
- **Explain:** To give the meaning or significance of; to provide an understanding of; to give the reason for or cause of.
- **Formulate:** To put into a systematized statement or expression; to prepare according to a formula.
- **Give:** To yield or furnish as a product, consequence, or effect; to offer for the consideration, acceptance, or use of another.

IPS Question Type

- **Identify:** To establish the identity of; to show or prove the sameness of.
- **Judge:** To form an opinion about through careful weighing of evidence and testing of premises.
- **Justify:** To prove or show to be valid, sound, or conforming to fact or reason; to furnish grounds or evidence for.
- **Prepare:** To put into written form; to draw up.
- **Recommend:** To bring forward as being fit or worthy; to indicate as being one's choice for something or as otherwise having one's approval or support.
- **Select:** To choose from a number or group–usually, by fitness, excellence, or other distinguishing feature.
- **Show:** To set forth in a statement, account, or description; to make evident or clear.
- **Support:** To provide with verification, corroboration, or substantiation.

上午问答题的答题技巧

- 计算型——中国考生的拿分点
  1. 写出公式，公式用常见字母，即用课件中的公式字母，或者老师上课时候用的常见字母。不需要解释字母代表的意思。
  2. 一一对应代入数字。
  3. 最后一步写出运算结果数字。
- 非计算型，每一个点要写两方面，指出现象+与结论的逻辑关系（两者缺一不可）
- 概念性题目有一定的重复性，往年的经典题目的答案中的经典短句可以背诵记忆。需要自己一边做题，一边记录更有效果。
- 基础课件中，一些比较重要的概念的短句也可以自己整理记录，并有一些背诵。
- 上午问答题，不对语法和拼写进行评分，以阅卷者读懂即可。不需要写出完整句子。
- 用bullet point答题更清晰，更容易得分。
- 将心比心，要让阅卷人方便判卷。

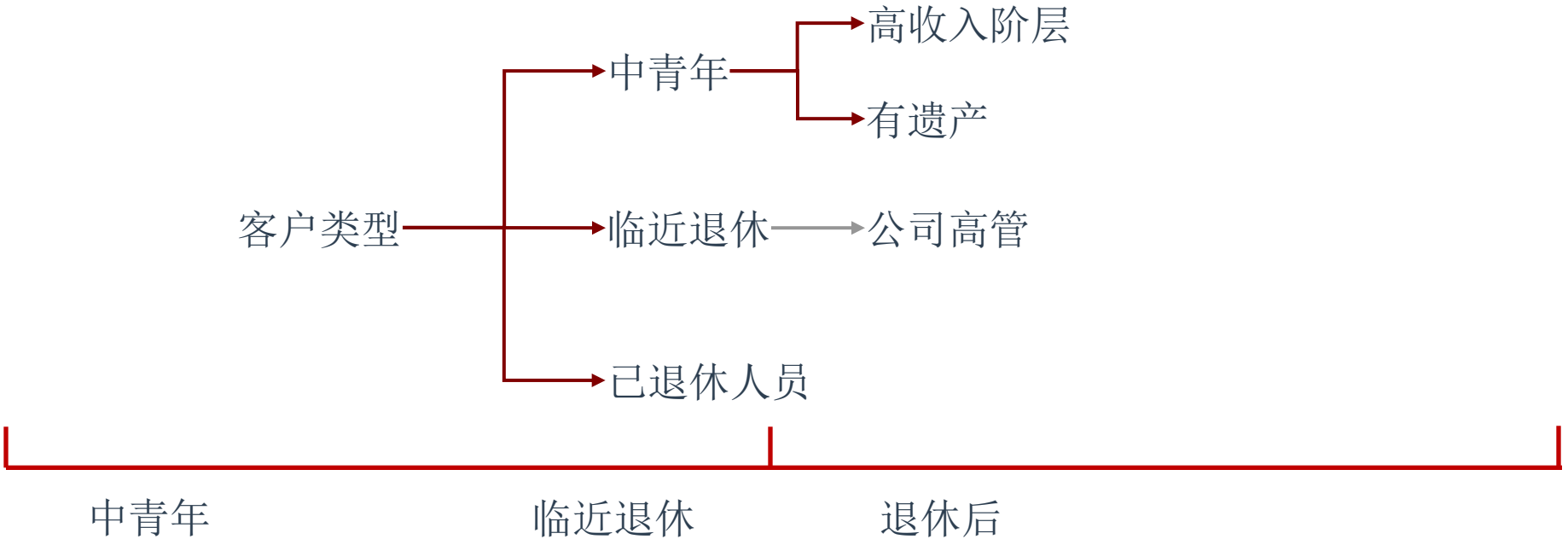
Individual Investors' IPS With Asset Allocation

Individual Investors' IPS

2008	年轻夫妇	有子女
2009	已退休夫妇	有子女
2010	年轻寡妇	寡妇，有子女
2011	退休夫妇	无子女
2012	年轻高收入	离婚单身，有子女
2013	高管退休	无子女
2014	临近退休夫妇	有子女
2015	已退休夫妇	有子女
2016	中年夫妇	无子女
2017	退休运动员	无子女
2018	中年夫妇	无子女

Individual Investors' IPS

Current Situation



Individual Investors' IPS

Individual IPS Questions				2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
IPS	Objective	Return	Calculation	√	√	√	√	√	√	√		√	√	
			Formulate	√	√	√				√		√	√	
		Risk	Tolerance				√			√				
			Ability	√	√	√		√	√	√	√	√	√	√
			Willingness		√	√								
	Constraint	Time Horizon		√	√	√	√	√			√		√	
		Tax concerns									√		√	
		Legal & Regulatory												
		Liquidity		√	√	√	√	√	√	√	√			√
		Unique											√	
others	Estate Plan								√					√
	Choosing portfolio					√	√	√	√				√	√

个人IPS中 return计算要点

- **各种解释纷繁复杂，需要考虑因素太多，但拨云见日后，计算只有两种：**
- **一型计算：一年时间段内资金有缺口，需要可投资资产产生收益弥补缺口**
  - 加总cash inflow 与cash outflow，计算出资金缺口
  - 加总可投资资产total investable assets （TIA）
  - 将资金缺口除以TIA得到收益率，为保持TIA购买力所以加上通货膨胀率
  - 一型计算有个变形：2005年与2006年考题，计算需要间隔一年
  - 加总第二年的cash inflow 与cash outflow，计算出资金缺口
  - 加总可投资资产total investable assets （TIA），其中要加入第一年的结余资金并入TIA。
  - 将资金缺口除以TIA得到收益率，为保持TIA购买力所以加上通货膨胀率
- **二型计算：大部分题型是确定年份数N、PV、PMT、FV（注意现金流方向，正负号），求解I/Y。**

资产与负债，收入与费用

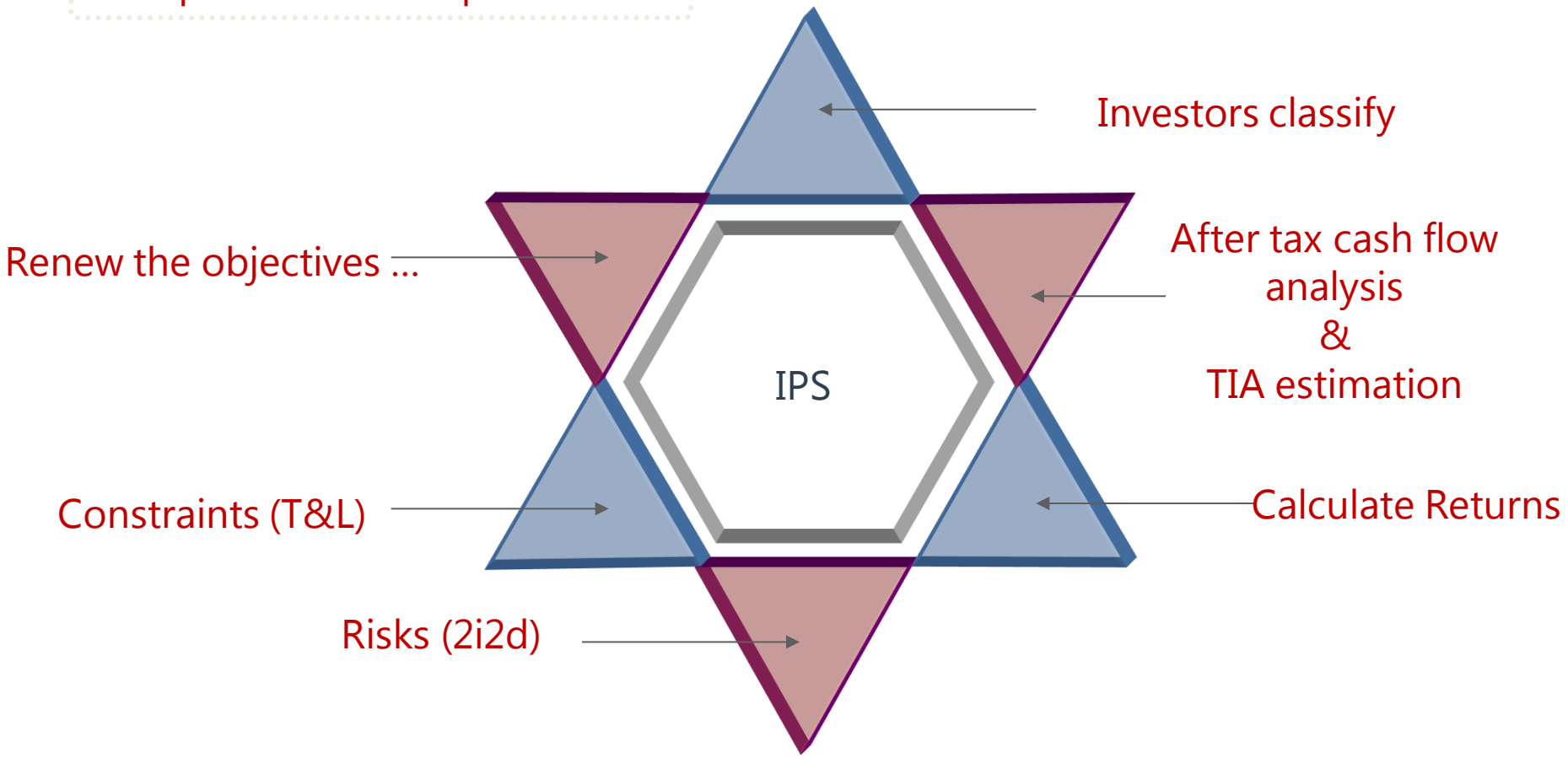
- 一次性的收入的本质是新增的资产，应计入资产。一次性的费用/一次性的支出，本质是对资产的减少，应扣减资产。
  - 一次性收入的例子有：获得的遗产，获得的gift，获得的一次性大额奖金，中奖等。
  - 一次性支出的例子有：买房首付款，购买保险趸交的一次性支付，一次性设立子女教育基金，一次性支付子女教育费，一次性慈善捐赠。
- 我们通常所说的收入，指非一次性的，持续性的收入：工资，养老金，从家族信托中的定期领取生活费等。
- 我们通常所说的费用，指非一次性的，持续性的支付：税费，生活费，对被扶养人的定期生活费的支付，每年支付的学费，房贷每期的偿付，每年定期的慈善捐赠。
- 通货膨胀的处理，要读清楚题目
  - 收入与费用通常与通货膨胀挂钩的。
  - 但房贷月供（考试可能会说年供）一定是不挂钩通货膨胀
  - 慈善捐款在CFA考试中通常是固定金额也不挂钩通货膨胀

流动性问题

- 流动性需要本质是指投资组合中需要以“现金形式”配置的资产，“现金”指流动性极好的货币市场工具或者很快到期的短期国库券，用以应对一年内需要支付的款项。
- 流动性分为持续性流动性和一次性流动性。
- 一次性的流动性，我们一般扣减资产进行匹配。
- 而持续性的流动性，我们应当用持续性收入与持续性费用相抵。
  - 如果持续性收入大于持续性费用，则无流动性需求，因为持续性收入已经足够支付持续性支出了，不需要从投资组合角度进行配置现金。
  - 如果持续性收入小于持续性费用，则有持续性流动性缺口。差额就是流动性需求，这个差额需要从投资组合角度配置现金来应对。

6 steps to formulate individual's IPS

6 steps to formulate personal IPS



IPS Structure

Objectives

- Return
  - ✓ required vs. desired
  - ✓ real vs. nominal
  - ✓ pre- vs. post-tax total
- Risk tolerance
  - ✓ ability & willingness

Constraints:

- Time horizon(s)
- Liquidity needs
- Taxes
- Legal & Regulatory needs
- Unique circumstances

IPS

R R T T L L U

Return objective

- **Return objective**
  - Required Return
    - ✓ Asset needs
      - ◆Maintain the inflation-adjusted value
      - ◆Asset appreciation
      - ◆Specific targets
    - ✓ Cash Flow needs
      - ◆Support … …
  - Desired Return
    - ✓ Non-primary Goal
      - ◆Charitable donations

4 kinds of return objectives

- **Pay attention to the return objectives**
  - Real rate of return
  - Nominal rate of return
  - Before tax rate of return
  - After tax rate of return

个人IPS – 一型计算

- **Return Calculation …**
- **TIA**
  - Current portfolio's value
  - Net CF in at T0
  - Excluding the house and other unavailable Inheritance
- **Real Return after tax / before tax ?**

$$R_r = -\frac{Net\ CFs\ at\ T_1}{TIA} \qquad R_r = -\frac{Net\ CFs\ at\ T_1/(1-t)}{TIA}$$

- **Nominal Return after tax / before tax ?**

$$\text{After-tax nominal r} = \frac{CF\ needs}{TIA} + inflation$$

$$\text{Pre-tax nominal r} = \frac{\frac{CF\ needs}{TIA} + inflation}{1 - Tax\ rate}$$

Risk Objective

Conflict between willingness & ability, follow the lower one

Investment constraints

Time Horizon

New time horizon each time an investor's

circumstances change significantly (e.g.

prior to retirement/post retirement)

Length of each time horizon is important

Other individuals can influence time horizon

Tax Considerations

Is investor a taxpayer? Whether annual portfolio returns subject to taxation

Always strive to minimize current taxes

(e.g., loss harvesting, long-term gains)

Tax-free securities attractive subject to yield types of tax: income, capital gains, wealth- transfer, wealth

If tax treatment uncertain, recommendation for legal counsel

Investment constraints

Liquidity Needs

How quickly an asset can be converted into cash without a loss in value. Focus is on need for cash in the short term in excess of cash in- flows from earnings or portfolio income.

Consider:

Ongoing expenses (living expenses, on-going medical expenses for loved ones)

Major planned outlays (vacation, new home, charitable donations…)

Emergency needs: 3-6 m living expenses (medical expense, uninsured losses, unemployment…)

Legal & Regulatory

Typically relate to tax relief and wealth transfer

Individual clients: personal trust and foundations

Prudent investor rule

Balance the interests of the income beneficiary and remaindermen

Legal counsel is encouraged

Unique Circumstances

Special investment concerns (ESG)

Special instruction

Restriction on the sale of assets

Specifically forbids or limits based on past experience

Assets held outside the investable portfolio

Desired bequests

Individual Investors' IPS -Summary

- **Return Objective**
  - [name]'s return objective is to [copy], while [copy], as well as [copy].
- **Risk Objective**
  - [name] has [below/above] average risk tolerance for the following reasons:
  - [name] has [above/below] average [ability/willingness] to take risk given:

Individual Investors' IPS -Summary

- **Ability to take risk**
  - Increase ability to take risk
    - ✓ Long time horizon
    - ✓ [name] is young and has more human capital.
    - ✓ Large asset base that is more than sufficient
    - ✓ Could pursue a second career
    - ✓ Could reduce living expenses
    - ✓ Large margin for error allows them to accommodate volatility in the portfolio.
    - ✓ [name] could change plans

Individual Investors' IPS -Summary

- **Ability to take risk**
  - Increase ability to take risk （Cont.）
    - ✓ [name] has the flexibility to stop the annual payment to [name].
    - ✓ Has a flexible retirement date.
    - ✓ Opportunities for additional income exist.
    - ✓ They will receive [trust/payment].
    - ✓ [name] will potentially inherit a large sum of money.
    - ✓ [name] has stable income.
    - ✓ [name] has no debt.
    - ✓ Current income is significantly exceeds her current level of spending.

Individual Investors' IPS -Summary

- **Ability to take risk**
  - Decrease ability to take risk
    - ✓ Only source of income is his investment portfolio.
    - ✓ Desires to maintain real value of the portfolio.
    - ✓ Could decide to increase spending needs
    - ✓ He is at his peak of his career and earning power and is unlikely to be able to achieve comparable earning power in the future.

Individual Investors' IPS -Summary

- **Ability to take risk**
  - Decrease ability to take risk （Cont.）
    - ✓ There is no assurance that [objective] will be covered and the cost could be substantial.
    - ✓ Small amount of asset base
    - ✓ No post-retirement employment income
    - ✓ [name] does not participate in any company or individual retirement plan
    - ✓ [name] has small pension relative to living expense so he must depend primarily on his investment portfolio.
    - ✓ [name] has high level of spending relative to investable assets.

Individual Investors' IPS -Summary

- **Willingness to take risk**
  - Increase willingness
    - ✓ [name] own her business
    - ✓ Plans to retire relatively early
    - ✓ [name] in confident that equity will deliver positive returns.

Individual Investors' IPS -Summary

- **Willingness to take risk**
  - Decrease willingness
    - ✓ Conservative nature of current investment.
    - ✓ Holding too much cash surpluses in a low-risk, low-return asset
    - ✓ Unwilling to sustain losses
    - ✓ Unwilling to take advantage of investment opportunities
    - ✓ Preference to avoid losses due to previous experience.
    - ✓ [name] inherited wealth which may result in a reduced willingness to take risk.

Individual Investors' IPS -Summary

- **Investment constraints …**

1. Liquidity

- The [name] need portfolio to provide [Money] for next year's [Usage].
- [name]'s portfolio is required to provide high/low liquidity to meet spending needs.
  - ✓ Pay living expense
  - ✓ Provide a home for family
  - ✓ Pay tuition for children
  - ✓ Pay of mortgage and income taxes
  - ✓ Fund education expenses for her children in [number] year.
  - ✓ Debt repayment.
  - ✓ Annual family support
  - ✓ Cash reserve ★

Individual Investors' IPS -Summary

- **Investment constraints …**

2. Time horizon

- [name] has short/long term time horizon multistage/consists of [number] of two stages for the following reasons:
  - ✓ The first stage consists of [time] until he reaches age [number]
  - ✓ The second stage encompasses the rest of the time
- In the 1st stage, the A must pay B , and also pay C for their D
- In the 2ed stage, they are in retirement, E years from now
  - ✓ A: Name B: Living expense, mortgage payment …
  - ✓ C: Education fee / health care fee D: Children / parents
  - ✓ E: How many years from now (30)

Individual Investors' IPS -Summary

- **Investment constraints …**

3. Tax

- The tax rate is … , the tax aspect should be considered
- The … 's tax treatment is uncertain, they need a legal counsel

4. Regulations

- The prudent investor rule is applied
- The … need a legal counsel to create a trust to …

5. Unique

- The … say they do not want to invest in …
- The … want to create a trust to care for …
- The … want to donate … to local charity

Summary

- **Choosing the Optimal Asset Allocation**
  - Meet the after-tax return objective
  - Violate shortfall statement
    - ✓ Shortfall Risk=μ-2σ
  - Disallowed asset classes
  - Fails to meet liquidity requirements
  - Always minimize cash (3-6 months` living expense)
  - Choose the portfolio with the largest Sharpe Ratio
- **Monte Carlo simulation**

Advantages
- path-dependent
- understanding of short-term and long-term risk
- can be considered to answer questions （例如：通过结果的分布分析多大的概率能实现财务自由，提前退休）

Disadvantages
- relies only on historical data
- lack of tax consideration
- simulates the performance of specific investments, not just asset classes

Overview of Private Wealth Management

New LOS

Private Clients versus Institutional Clients

Summary		Private clients	Institutional clients
Investment objectives		diverse investment objectives (may not be clearly defined or quantified)	specific, clearly defined investment objectives
Constraints	**Time horizon**	a shorter time horizon	theoretically infinite
	Scale ★	smaller (more limitations)	larger
	Taxes	significant and complex	taxable income may be more favored by a tax-exempt institution
Other Distinctions	**Investment Governance**	less formal governance structure	formal governance structure
	Investment Sophistication	emotional	a higher degree (more investment resources)
	Regulation	separate regulators or shared regulatory structure	
	Uniqueness and Complexity	Similar financial and objective, different investment strategies	Similar objective , similar strategies

Understanding Private Clients

Personal Information

- The client's family situation
- Proof of client identification ★
- Employment and career information
- The sources of a client's wealth
- Investment background
- Return objective (liquidity preferences or ESG)
- Financial objectives and risk tolerance

Risk-related concepts ★

- Risk tolerance
- Risk capacity
- Risk perception

different from old LOS

Technical and Soft Skills for Wealth Managers

- Technical skills: specialized knowledge and expertise
- Soft skills: interpersonal relationships

Basic Tax Strategies★

- Tax avoidance
- Tax reduction
- Tax deferral

Client Goals★

Planned Goals
(can be estimated or quantified)

- Retirement. (the most important)
- Specific purchases
- Education
- Family events
- Wealth transfer
- Philanthropy

Unplanned Goals
(unforeseen financial needs)

- Property repairs
- Medical expenses
- Other unforeseen spending

Risk-related concepts ★

- **Key terms for a set of risk-related concepts:**
  - **Risk tolerance** refers to the level of risk an individual is **willing** and **able to bear**. Risk tolerance is the inverse of risk aversion.
  - **Risk capacity** is the **ability** to **accept financial risk**. The key difference between risk capacity and risk tolerance is that risk capacity is **more objective in nature**, while risk tolerance relates to **an attitude**.
  - **Risk perception** is an individual's **subjective assessment of the risk** involved in an investment decision's outcome.
    - ✓ How a client perceives the riskiness of an investment decision or the investment climate—depends on the **circumstances** involved.

Investment Planning

- **Capital Sufficiency Analysis**
  - Deterministic Forecasting Method
  - Monte Carlo simulation
- **Retirement Planning**
  - Retirement Stage of Life
    - Human capital
    - Financial capital
  - Analyzing Retirement Goals
    - Mortality tables
    - Annuities
    - Monte Carlo simulation
  - Behavioral Considerations★
    - Heightened loss aversion
    - Consumption gaps
    - Annuity puzzle

different from old LOS

- **Monte Carlo simulation**
  - **Advantages**
    - applicability to the client's actual asset allocation
    - the overall probability of meeting retirement needs
    - flexibly model different scenarios and explore important issues
  - **Limitations**
    - cannot predict the future
    - highly sensitive to small changes in input assumptions
    - shortfall magnitude is not considered

并不冲突

Sample

- Noèmie Açor works for an international bank as a private wealth adviser. Açor speaks several regional languages in addition to her native language. She prepares for two client meetings next week. First, Açor will meet with Winifred Njau, who has recently retired. Njau has made a charitable pledge to a non-profit university endowment, the Udhamini Fund. Açor prepares a draft of the investment objectives section of an investment policy statement (IPS) for Njau using selected client information, which is presented in Exhibit 1 and 2.

Exhibit 1 Selected Client Information Items for Njau	
Liquidity needs	$500,000 charitable pledge to Udhamini payable in 15 years
Risk tolerance	Moderate
Asset allocation	40% equities and 60% fixed income

Sample

Exhibit 2 Monte Carlo Simulation Results for Charitable Pledge (adjusted for inflation)			
	Year 10 Portfolio Value ($)	**Year 15 Portfolio Value ($)**	**Year 20 Portfolio Value ($)**
25th %	501,288	729,230	1,035,373
50th %	405,927	553,803	767,448
75th %	331,056	422,746	563,039

- Based on Exhibits 1 and 2, the probability that Njau will be able to meet her charitable goal is closest to:
  - A. 25%.
  - B. 50%.
  - C. 75%.
- **B is correct**. The Monte Carlo simulation shows that Njau has a 50% probability of having an amount exceeding $553,803 in Year 15. Since Njau's charitable pledge goal to Udhamini is $500,000, she has a slightly greater than 50% probability of meeting or exceeding her charitable pledge goal in Year 15.

Investment Policy Statement

a **range** rather than a specific number of years ★

Portfolio Construction

Traditional Approach

- Constructing portfolios for private clients involves several key steps:
  - ✓ **1) Identify asset classes**.
  - ✓ **2) Develop capital market expectations**.
  - ✓ **3) Determine portfolio allocations**.
  - ✓ **4) Assess constraints**.
  - ✓ **5) Implement the portfolio**.
  - ✓ **6) Determine asset location**.

Portfolio Construction

- **Goals-Based Investing Approach**
  - The manager then performs **mean–variance optimization** for **each goal** "portfolio" rather than at the overall portfolio level.
  - Goal portfolios are optimized either to **a stated maximum level of volatility** or to **a specified probability of success**.
  - **An advantage** of the goals-based investing approach is that it may be easier for clients to express their risk tolerance on a goal-specific basis rather than at the overall portfolio level.
  - **A disadvantage** is that the combination of goal portfolio allocations may not lead to optimal mean–variance efficiency for the entire portfolio.
  - The following steps are the same as Traditional Approach：
    - ✓ asset classes, implementing the portfolio, and determining asset.

Portfolio Reporting and Review

Portfolio Reporting

Portfolio reporting involves **periodically** providing clients with information about their **investment portfolio** and **performance**.

- Reflect strategic asset allocation targets;
- Detailed performance report;
- Historical performance report;
- Contribution and withdrawal report;
- Purchase and sale report;
- Currency exposure report;
- **Inherent conflict** between the client's investment horizon and performance evaluation horizon;
- Goals-based investing → focus on the client's progress toward a goal;
- **Benchmark reports**.

Portfolio Review

Portfolio reviews provide an opportunity for the wealth manager to revisit the client's **investment plan** and reinforce the **appropriateness of the strategy**.

- Revisit the client's investment plan and reinforce the appropriateness of the strategy;
- Inquires about any changes in the client's objectives, risk tolerance, or time horizon;
- Comparison of the client's asset allocation to the target allocation.

The **key difference** between portfolio reporting and portfolio review is that the wealth manager is more actively engaged in a review.

Evaluating the Success of an Investment Program

- **Goal Achievement.**
  - A successful investment program for a private client is one that achieves the client's goals/objectives **with an acceptable amount of risk**.
  - The client should remain likely to **meet his or her long-term objectives** without meaningful adjustments to the plan.
- **Process Consistency.**
- **Portfolio Performance.**
  - absolute or relative
  - benchmark
  - actual downside risk
- **Definitions of Success.**★

Private Client Segments

Summary

Segments	Asset Level	service personnel	Characteristics
Robo-advisors	less $250,000	Robo-advisors	low-cost; small portfolio; MVO; ETF; mutual fund;
Mass Affluent	$250,000 to $1 million	professional wealth manager	build their portfolio; financial planning needs; non-customized;
High-Net-Worth	$1 million to $50 million	specialized advisers	more customized strategies; tax planning; wealth transfer issues;
Ultra-High-Net-Worth	over $50 million	a wider range of service needs	complex tax situations, estate planning, bill payment, concierge services, travel planning, and advice on acquiring high-end assets; family office.

Sample - Henlopen McZhao

- Henlopen McZhao is a private wealth manager. After a successful introductory meeting with Nescopeck Cree, she is meeting again with this new client to plan a wealth management strategy. McZhao seeks additional personal information from Cree.
- McZhao learns that Cree is 45 years old and is currently employed as an attorney. Cree has a number of specific financial goals that he wishes to achieve in the future but has no particular return objective for his portfolio. Because he has been investing for 20 years, Cree is comfortable with moderate levels of market volatility. His employment provides for his current expenses, so Cree's liquidity requirements are minimal. Cree prefers to have his environmental and social concerns reflected in his investment choices.

1. **Discuss** additional personal information that McZhao should gather from Cree in order to properly advise this new client.

Sample - Henlopen McZhao

- Cree wants to fund university expenses for his three children, with the first payment starting in 10 years. Cree does not know what to expect in terms of college costs.
- Cree plans to retire at age 62 and expects to need $80,000 per year to fund his retirement lifestyle. He is concerned that an increasing level of medical expenses for himself and his wife may reduce his financial assets.
- Cree expects to purchase an apartment building in three years and plans to use the rental income from this investment property to help fund his retirement needs.
- Cree's wife enjoys donating to philanthropic causes. She currently donates $10,000 per year, but by the time Cree retires, she hopes to increase this amount to $30,000 per year.
- Cree collects antique furniture and budgets $15,000 per year for additions to his collection. He mentions that this year's antique purchase will be his next large expense and currently has the highest priority of all his goals.

Sample - Henlopen McZhao

- **Solutions**
- McZhao should obtain the following additional personal information from Cree:
  - Family situation: Marital status, children and grandchildren, ages of family members
  - Identification: Copy of driver's license or passport
  - Additional career information: Future aspirations for career, business, and retirement
  - Investment background
  - More details on financial goals and risk tolerance
- McZhao has already learned about Cree's current employment, experience with market volatility, interest in meeting specific goals rather than a particular return objective, low current liquidity needs, and investment preferences based on his environmental and social concerns.

Sample - Henlopen McZhao

- **Solutions (Cont.)**
- Now that Cree has become a private client, a starting point of the relationship is for McZhao to learn about his client's family situation, such as marital status, children and grandchildren, and ages of family members. McZhao should also obtain proof of client identification (copy of driver's license or passport). Cree's employment and career information is important, as is discussion about his future career, business, and retirement aspirations.
- In addition, wealth managers should assess the client's investment background. As part of the investment background conversation, the wealth manager should determine whether the client has an explicit return objective or specific investment preferences. Finally, a detailed conversation about the client's financial objectives/goals and risk tolerance is part of the personal-information-gathering process.

Sample - Henlopen McZhao

2. **Discuss** the issues relating to Cree's:
   I. goal quantification.
   II. goal prioritization.

➢ McZhao continues the discussion with Cree in order to evaluate his degree of risk tolerance associated with each of the following individual goals:

Retirement:	Cree considers retirement a long-term goal and is willing to endure a 10% drop in expected retirement spending. However, he is very concerned with having sufficient funds to cover medical expenses.
Investment property:	Cree sees the investment property as a source of stable income, so it is very important to him to purchase the building. He realizes that maintenance and repair expenses will be necessary, and he also considers those very important.

Sample - Henlopen McZhao

Philanthropy:	Cree's wife strongly influences him to fund her philanthropic causes, and he wants to maintain some level of annual contribution. Cree believes that his wife would be willing to maintain her $10,000 per year contributions and not increase that amount.
Antique furniture:	Cree is willing to reduce or eliminate his spending on antique furniture.

- **Solutions**
- With respect to goal quantification, Cree has quantified his retirement spending needs, the cost to maintain his antique purchases, and his wife's philanthropic support. McZhao should work with Cree to help estimate the costs for his children's university expenses and what he expects to pay for the investment property.

Sample - Henlopen McZhao

- **Solutions (Cont.)**
- With respect to goal prioritization, even though Cree believes that his highest priority is his next big expense ($15,000 for this year's additions to his antique collection), the timing of that expense should not be the sole determinant of its priority. McZhao needs to discuss with Cree which of his goals are most important. The purchases of expensive antiques and the large philanthropic contributions may adversely affect Cree's ability to fund his retirement lifestyle. Therefore, McZhao should help Cree consider reevaluating his priorities.

Sample - Henlopen McZhao

3. **Determine** Cree's degree of risk tolerance associated with each of the following individual goals. **Justify** each response.

➢ **Solutions**

Determine Cree's degree of risk tolerance associated with each of the following individual goals. Justify each response.		
Goal	**Degree of Risk Tolerance**	**Justification**
Retirement	Lower Higher	Retirement is a long-term goal. Cree is willing to incur a moderate drop in his planned expenses, so he likely has a higher risk tolerance for that goal. Cree is concerned about paying future medical expenses in retirement, and since his retirement is still 17 years in the future, he likely has a higher risk tolerance with the medical expenses goal.

Sample - Henlopen McZhao

Solutions (Cont.)

Investment Property	Lower Higher	Because the investment property is an important near-term goal, Cree likely has a lower risk tolerance with this goal. Similarly, he likely has a lower risk tolerance with the goal of funding maintenance and repairs for the property.
Philanthropy	Lower Higher	Cree's wife's influence regarding their philanthropic giving makes Cree unwilling to stop his contributions completely, but he believes she will accept maintaining their contributions rather than increasing them substantially. As a result, Cree likely has a higher risk tolerance with this goal.
Antique Furniture	Lower Higher	Cree is likely highly risk tolerant with his goal of purchasing antique furniture, because he is willing to cut that expense altogether.

Sample - Sharfepto Zik

- Sharfepto Zik, a private wealth manager, is meeting with a client, Garbanzo Patel, in order to create an investment policy statement (IPS) for Patel's upcoming retirement. Patel estimates that he will require €200,000 per year, with annual increases for inflation, during retirement. Patel's primary spending goals during retirement are to provide for his family's needs and maintain his retirement lifestyle. His secondary goals are to fund his philanthropic activities and leave a significant inheritance to his children.
- During his retirement, Patel will receive union pension payments of €50,000 per year with annual increases for inflation. In his spare time, Patel runs a small business that provides him with an annual income of €120,000 and is valued at €1 million. He will continue running his business during retirement.

Sample - Sharfepto Zik

- Patel holds a portfolio of securities valued at approximately €4 million. The portfolio primarily contains dividend-paying stocks and interest-bearing bonds. Patel has reinvested all these distributions back into his portfolio but anticipates that after retirement he may need to use some of the distributions to fund his expenses.
- Patel plans to buy a vacation home in three years. His budget for the vacation home is approximately €1.4 million. Patel has not decided yet how he will fund this purchase.

1. **Prepare** the Investment Objectives section of Patel's IPS.

Sample - Sharfepto Zik

- **Solutions**
- Investment Objectives:
  - Purpose: Support Patel's lifestyle in retirement (higher priority), provide for family's needs (higher priority), fund philanthropic activities (lower priority), provide inheritance for children (lower priority)
  - Anticipated annual need: €200,000, with annual increases for inflation
  - Annual need met with: Income from small business (approx. €120,000), pension (€50,000 with annual inflation increases), portfolio distributions
  - Intent to purchase of €1.4 million vacation home in three years
  - Zik should assist in quantifying philanthropic and bequest goals and determining how to fund the vacation home purchase.

Sample - Sharfepto Zik

- **Solutions (Cont.)**
- The purpose of this portfolio is to support Garbanzo Patel's lifestyle in retirement, to provide for his family's needs, to fund his philanthropic activities, and to provide an inheritance for his children. Patel's primary objective is to provide for his family's needs and support his lifestyle during his retirement. The philanthropic and bequest objectives are lower priorities.
- To meet all his objectives, Patel anticipates needing €200,000 per year, with annual increases for inflation. His cash needs will be primarily satisfied through income from his small business of approximately €120,000 per year and his union pension payments of €50,000 per year. The pension payments will increase annually for inflation. Any remaining cash needs will be satisfied by taking distributions from his portfolio.
- Patel also intends to purchase a vacation home in three years and plans to pay approximately €1.4 million.
- Patel has not articulated specific amounts for his philanthropic activities or his children's inheritances. Zik should work with Patel to quantify his philanthropic and bequest goals and to decide on the best way to fund the purchase of his vacation home.

Sample - Sharfepto Zik

- Patel has been working with Zik for 10 years. At the beginning of the 10-year period, Zik forecasted that the equities in Patel's portfolio would outperform their benchmark and that the bonds would match their benchmark. Now, at the end of the 10-year period, equities have outperformed the benchmark, but with higher volatility than the benchmark. In addition, the bonds in the portfolio matched their benchmark performance, but with lower volatility than the benchmark. However, returns and volatility are within IPS specifications for both equities and bonds.
- Patel stated his goals to Zik at the beginning of the 10-year period and has not changed them. Patel's plan is to retire this year, and he wants to be able to support a specified annual spending level.

Sample - Sharfepto Zik

- Zik's original capital sufficiency analysis modeled a 6% rate of return, and Patel's portfolio has earned slightly more than that over the 10-year period. Zik's most recent capital sufficiency analysis shows that the portfolio and strategy are very likely to meet Patel's needs as he transitions into retirement.
- Zik has followed the guidelines stated in the original IPS in terms of rebalancing the portfolio, maintaining an ongoing dialog with Patel, and coordinating the strategy with Patel's retirement and philanthropic goals. Although fees have remained unchanged at 1%, Zik has been able to reduce expenses for equities by 20 bps and for bonds by 12 bps.

Sample - Sharfepto Zik

2. **Evaluate** the success of Zik's investment program for Patel in terms of:
   I. goal achievement.
   II. process consistency.
   III. portfolio performance.

- **Solutions**
- By all three criteria, Zik has been successful.
- **Goal achievement:**
  - Patel's portfolio has achieved its goals with an acceptable amount of risk; its return and volatility have remained within the original IPS specifications.
  - The portfolio remains likely to succeed as an ongoing strategy, without meaningful adjustments to the plan; the most recent capital sufficiency analysis shows that the strategy is very likely to meet Patel's retirement needs.

Sample - Sharfepto Zik

- **Solutions (Cont.)**
- **Process consistency:**
  - Zik has followed the guidelines stated in the original IPS, has maintained an ongoing dialogue with Patel, has coordinated the strategy with Patel's retirement and philanthropic goals, and has even managed to reduce expenses.
- **Portfolio performance (over the 10-year time horizon):**
  - The equity portion of Patel's portfolio outperformed its benchmark but had higher volatility than the benchmark.
  - The bond portion of the portfolio matched its benchmark but had lower volatility than the benchmark.
  - The performance of both equities and bonds remained within the original IPS specifications.
  - For the overall portfolio, Zik targeted a 6% rate of return, and the portfolio has slightly exceeded that level over the period.

Sample - Sharfepto Zik

- After every regular monthly rebalancing, Zik sends an email to Patel with a portfolio report. Zik's portfolio report contains the following:
  - An asset allocation report that reflects strategic asset allocation targets
  - A detailed performance report that includes individual asset class and security performance
  - A year-to-date performance summary report and a historical performance report starting from the inception of Patel's investment strategy

3. **Recommend** additional information that Zik could provide to enhance his portfolio reports for Patel.

Sample - Sharfepto Zik

- **Solutions**
- Zik's portfolio reporting can be made more effective by including the following items:
  - A transaction details report showing contributions, withdrawals, interest and dividends, and capital appreciation for the current period
  - A purchase and sale report for the current period
  - Currency exposure report detailing the effects of exchange rate fluctuations
  - A benchmark report that shows the performance of Patel's equity and bond portfolios relative to their respective benchmarks and the overall portfolio performance relative to a blended benchmark (based on weights that are appropriate for Patel's holdings)
  - An accompanying letter that provides market commentary, investment context, education, and other advice

Sample - Val Sili

- Val Sili, age 22, has just graduated from college and begins making ambitious future financial plans. The four stages of his plan are summarized below. Sili would like to have outside financial advice at each of these stages.

Stage 1—Age 22–26:	Sili plans to work as a software developer in a startup company, where he will earn both a salary and stock options. He will save as much as he can to invest, but his portfolio will be relatively small, and he will be willing to pay only low management fees. Sili would like to use a sophisticated mean–variance optimization technique for asset allocation, although he will limit his investments to exchange-traded funds and mutual funds.
Stage 2—Age 26–30:	Sili will have reached a more senior position in the company. He plans to have accumulated assets of $350,000, and his investment focus will be on building his portfolio. Sili will want help with his increasing financial planning needs and will be able to afford the fees of a professional wealth manager.

Sample - Val Sili

Stage 3—Age 30–36:	Sili plans to exercise his stock options to buy a large quantity of the company's stock at a price significantly below its market value. The proceeds should increase his portfolio value to $8 million. Sili will quit his job to start his own software company. Sili will be interested in more sophisticated investments with longer time horizons, greater risk, and less liquidity. He will also want specialized advisers for taxes, legal issues, and investment strategies.
Stage 4—After Age 36:	Sili will sell his software company for $200 million and retire. He will spend his retirement traveling on his private jet and collecting artwork for his collection; therefore, he will need advice on acquiring high-end assets. The substantial increase in the value of his investment portfolio will allow him to have a multi-generational time horizon. He will require a wider range of investment advisory services, including complex tax planning, estate planning, and bill payment services.

Sample - Val Sili

1. **Determine** the client segment or adviser type that is most appropriate for each stage of Sili's plan. **Justify** each response.

Stage 1 Age 22–26:	Client Segment/ Adviser Type:	Robo-Adviser (part of the mass affluent client segment)
	Justification: Robo-advisers support advanced asset allocation techniques, implement typically with exchange-traded funds or mutual funds, and are lower-cost alternatives for relatively small portfolios. During this stage, Sili's portfolio will be relatively small and he will not be able to afford to pay the fees of a traditional wealth management firm. Yet he still wants to use sophisticated analysis for his investment planning. Robo-advisers are his most appropriate option. With their primarily digital client interface and experience, robo-advisers are designed to serve investors with relatively small portfolios at a lower cost than the fees charged by traditional wealth management firms. Robo-advisers enable their clients to use advanced techniques, such as mean–variance optimization, for determining asset allocations, and they implement their strategies typically with exchange-traded funds or mutual funds.	

Sample - Val Sili

Stage 2 Age 26–30	Client Segment/ Adviser Type:	Mass Affluent Segment
	Justification: The mass affluent segment covers asset levels between $250,000 and $1 million and serves clients who are focused on building their portfolios and want help with financial planning needs. Now that Sili has a larger portfolio and is able to afford paying fees to a professional wealth manager, he belongs in the mass affluent client segment. With investment assets of $350,000, Sili's portfolio fits within the asset level range of this segment, typically $250,000–$1,000,000. Sili's characteristics during Stage 2 of being focused on building his portfolio and wanting help with his financial planning needs are typical of younger clients in the mass affluent segment.	

Sample - Val Sili

Stage 3 Age 30–36	Client Segment/ Adviser Type:	"Private Client" Range of High-Net-Worth Segment
	Justification: The private client range in the high-net-worth segment covers asset levels between $1 million and $10 million and can provide a team of specialized advisers that supports more customized strategies for more sophisticated investments with longer time horizons, greater risk, and less liquidity. Sili's higher asset level of $8 million puts him in the range of the high-net-worth segment. This segment generally consists of clients with liquid investment assets ranging from $1 million to $50 million. Since this range is so wide, firms often focus on only a portion of the segment. A client such as Sili with assets between $1 million and $10 million falls within a range that is known in some geographic markets as the "private client" segment. Sili's interest in more sophisticated investments with longer time horizons, greater risk, and less liquidity requires a more customized strategy and stronger product knowledge from the wealth manager, and he is better served by a manager that specializes in high-net-worth clients than by a manager for the mass affluent segment. Also, with a wealth manager that specializes in high-net-worth clients, Sili will likely be served by a team of people with specialized and complementary skills, including tax advisers, legal advisers, investment specialists, and a relationship manager.	

Sample - Val Sili

Stage 4 After Age 36	Client Segment/ Adviser Type:	Ultra-High-Net-Worth Segment
	Justification: The ultra-high-net-worth segment covers asset levels over $50 million for clients with multi-generational time horizons and provides a wider range of services for complex tax situations, estate planning, bill payment, concierge services, travel planning, and advice on acquiring high-end assets. At this stage, Sili's portfolio value of $200 million puts him in the ultra-high-net-worth client segment, which handles clients with liquid investment assets exceeding approximately $50 million. As is characteristic of clients in this segment, Sili now has a multi-generational time horizon, highly complex tax and estate planning considerations, and a wider range of service needs. An ultra-high-net-worth adviser can assist Sili with bill payment services, concierge services, travel planning, and advice on acquiring such assets as artwork and aircraft.	

Sample - Val Sili

- Sili next uses three approaches to analyze his retirement goals:

Approach 1	Sili considers the probability that he will live to a certain age and then predicts his inflation-adjusted retirement spending according to the probability that he will still be living in a given year. This approach allows him to estimate the present value of his retirement spending needs by assigning associated probabilities to annual expected cash outflows.
Approach 2	Sili determines that he can specify his level of annual spending during retirement and that he can model that spending as a series of fixed payments. He calculates the present value of that series of payments as of the day of his retirement, resulting in the amount of money that he will need to fund his retirement goals.
Approach 3	Sili models the uncertainty of each key variable individually by assigning each one its own probability distribution and then generates a large number of random outcomes for each variable. He aggregates the outcomes to determine an overall probability of reaching his objectives. Sili sees this as a flexible approach that allows him to explore various scenarios, including unforeseen expenses.

Sample - Val Sili

2. **Identify** each approach that Sili uses to analyze his retirement goals. Explain each response.

Approach 1	Identification:	Mortality Tables
	Explanation: A mortality table allows for estimating the present value of retirement spending needs by associating each outflow with a probability based on life expectancy. Sili uses a mortality table to determine the probability that he will live to a certain age. This information allows him to predict his anticipated inflation-adjusted retirement spending according to the probability that he will be living in a given year. A mortality table illustrates an individual's life expectancy at any given age. A wealth manager can use a mortality table to estimate the present value of a client's retirement spending needs by assigning associated probabilities to annual expected cash outflows.	

Sample - Val Sili

Approach 2	Identification:	Annuity Method
	Explanation: The calculated price of an annuity equals the present value of a series of future fixed outflows during retirement. A relatively simple way for Sili to calculate the present value of his desired retirement spending is by pricing an annuity. Annuities provide a series of fixed payments, either for life or for a specified period, in exchange for a lump sum payment.	

Sample - Val Sili

Approach 3	Identification:	Monte Carlo Simulation
	Explanation: Monte Carlo simulation yields an overall probability of meeting retirement needs by aggregating the results of many trials of probability-based estimates of key variables, and it is a flexible approach for exploring different retirement scenarios. Monte Carlo simulation can analyze the likelihood of Sili's portfolio meeting his anticipated retirement needs. This simulation models the uncertainty of the key variables and the uncertainty or variability in the future outcome. A Monte Carlo simulation uses assumptions of probability distributions for the key variables and then runs a large number of independent trials that generate many random outcomes. These outcomes are then aggregated to determine the probability of Sili reaching his investment objectives. An advantage of Monte Carlo simulation for retirement planning is its flexibility in modeling and exploring different scenarios. Typically, retirement goals are more complex than a fixed, annual cash flow need. For instance, if Sili wishes to determine the effect of a significant purchase/gift or large unforeseen expenses, he can model these scenarios with a Monte Carlo simulation.	

Institutional Investors' IPS With Asset Allocation

Institutional Investors' IPS

Institutional IPS Questions				2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
IPS	Objective	Return	calculation	√	√		√	√	√	√		√		√
			Formulate	√	√		√	√	√		√	√		
		Risk	Tolerance	√			√	√	√	√	√			
			Ability	√	√	√						√	√	√
			Willingness		√									
	Constraint	Time Horizon			√		√	√			√		√	
		Tax concerns												
		Legal & Regulatory												
		liquidity		√	√		√	√	√	√	√			
		Unique												
others	Fund status							√	√					
	PBO Investment			√										
	Effect of changing int. on PBO			√										
	Monte Carlo Simulation						√	√						
	Foundation Spending				√							√		
	Choosing Portfolio				√	√		√	√	√				
	Asset allocation										√			

Overview

- Pension plan's IPS writing
- Foundation's IPS writing
- Endowment's IPS writing
- Life insurance company's IPS writing
- Non-life insurance company's IPS writing
- Bank's IPS writing

Overview

2006	Pension Plan
2007	Insurance Company
2008	Pension Plan
2009	Pension Plan，Endowments & Foundation
2010	Pension Plan，Insurance Company
2011	Endowments & Foundation
2012	Pension Plan
2013	Pension Plan, Endowments & Foundation
2014	Pension Plan, Endowments & Foundation
2015	Pension Plan, Endowments & Foundation
2016	Endowments & Foundation
2017	Pension Plan
2018	Endowments & Foundation

Institutional Investors – Overview

Pension plans

Defined Benefit
(Risk borne by employer)

Know pros and cons

Defined Contribution
(Risk borne by employee)

Hybrid plans combine desirable features (to employee) of DC plans (portability, ease of admin, comprehensibility by participants) and DB plans (benefit guarantees, linked to years of service and salary) e.g. cash benefit plans, pension equity plans, target benefit plans, floor plans

ESOPs

- DC plans that invest all/the majority of plan assets in employer stock
- contribution is a % of pay
- value of plan for employee depends on vesting schedule, level of contributions, and change in value of stock per share

Charitable bodies

Foundations
(grant-making)

Endowments
(provide permanent funding)

Insurance Companies

Portfolios segmented to match liabilities, plus surplus

Life

Non life
(inc. health, property and casualty, and surety)

Banks

Securities portfolio is residual use of funds, after meeting loan demand but plays key role in managing risk (market & credit) & liquidity vs.liabilities

Defined Benefit Plans – Objectives

Return	• Goal is for pension plan assets to generate returns sufficient to cover pension liabilities – Specific return requirement depends on the plan's risk tolerance and constraints • at a minimum the return objective is the discount rate used to compute the present value of the future benefits • objective might include: – Future pension contributions – Pension income
Risk Tolerance (learn factors affecting level e.g., size of surplus, age of work force, ratio of active to retired lives etc.)	Risk objectives (which may overlap) may be set in terms of: – Standard deviation of the surplus (surplus volatility) – Shortfall risk with respect to plan liabilities in terms of • 100% funded status vs. ABO/PBO/total future liability • Funded status so as to avoid having to report pension liability on B/S • Funded status > some regulatory threshold level (e.g., ERISA, PBGC) • the correlation of operating results and plan results is important – Minimizing year-to-year volatility of future contributions to the plan – Minimizing the probability of making future contributions • If plan is currently over funded

DB Pension Plans: Return Objective

- **Desired Return vs. Required Return**
  - Desired/Stretch return is a return that is often desired by management and generally higher than the required return
  - Set higher than required return with the goal to reduce or eliminate future pension contributions
  - Rate maybe too high and expose assets to unnecessary risk and volatility
  - May not be in the interest of plan participants
- Return objective may be **more aggressive** when the **workforce is younger**
- Less aggressive for retired lives portion
- Return **objective may be separate** for active and retired lives portion of pension plan on the exam, examine the case carefully

- Increased risk tolerance (ability)
  - **Larger plan surplus…$PV_A > PV_L$**
  - **Greater funded status…higher** "cushion"
  - **Lower firm debt…lower** debt/equity ratio
  - **Higher profitability…higher** *expected* profitability
  - Younger average age/greater active lives...
  - Going concern plan...
  - Provisions for early retirement and **lump-sum distributions** reduce ability to take risk

- For DB plans, risk relative to liabilities is key
- The correlation between investment performance of pension assets and the operating performance of the company
- **Typical risk objectives include:**
  - Standard deviation in terms of the surplus
  - 100% funded status vs. future liability
  - Funded status to avoid reporting pension liability
  - Obtain a certain level of funding status

DB Pension Plans: Constraints

- **Liquidity**
  - **1. Workforce Mix** (retired vs. active lives)
    - ✓Greater retired lives, increased liquidity needs
  - **2. Sponsor contributions vs. benefit payments**
    - ✓Higher profitability reduces liquidity needs
  - **3. Plan features**
    - ✓Early retirement or lump sum provisions increase liquidity needs
- **Time Horizon**
  - **Determined by two factors:** Whether the plan is a **going concern** (multistage) or is a **terminated plan** (single stage)
  - The active lives portion of the plan will indicate a time horizon associated with expected term to retirement.
  - The retired lives portion will indicate a time horizon as a function of life expectancy for those currently receiving benefits.

- **Legal and Regulatory**
  - Most countries **federally** regulate pension plans
  - Manager should conform to the local regulations
  - In the U.S., ERISA requires sponsors to **exercise due diligence** when making investment decisions
  - ERISA's overriding standard is that the assets should **be managed for the plan participants, not the sponsor**
  - Consultation with appropriate legal experts is encouraged
- **Taxes and Unique Circumstances**
  - Pension plans are **tax-exempt**, no tax constraints
  - **ERISA** requires due diligence, but small sponsors may not have the plan resources or expertise to thoroughly investigate **alternative assets** (e.g., derivatives, hedge funds, etc.)
  - Pension plans may impose requirements that prohibit investment in some traditional or alternative asset choices

Foundations

Objectives

Return	*At least* 5% + expenses required *if* foundation subject to spending rule as per next page
Risk Tolerance	No "contractual" liabilities, may be more aggressive than pensions on the risk tolerance scale. The board of the foundation sets the risk tolerance

Constraints

Liquidity	Enough for annual spending, and perhaps a reserve
Time Horizon	Usually infinite, but some have specific purpose and "spend down" period
Legal/ Regulatory	UMIFA – prudent investor rule, total return perspective
Taxes	Exempt, except Private (1–2% tax) – unrelated business income fully taxable
Unique needs	Often ethical/social restrictions Also dependant on type: Independent, Company, Operating, Community

Foundations: Objective

- Foundations and endowments provide vital support for much of today's philanthropic and charitable activities.
  - Foundations are typically grant-making institutions funded by gifts and investment assets. (Ford, Rockefeller, and Gates foundations)
  - Endowments, on the other hand, are long-term funds generally owned by operating non-profit institutions such as universities and colleges, museums, hospitals, and other organizations involved in charitable activities. (Harvard, Yale and Princeton universities)

- Return
  - The return objective depends on the time horizon stated for the foundation. If the foundation was created to provide perpetual support, the preservation of real purchasing power is a goal.
  - A minimum return equal to the required payout plus expected inflation and fund expenses
- Risk
  - More fluid, creative and aggressive than pension funds because they have no contractually defined liability
    - ✓Asset-only approach to asset allocation
    - ✓The main driver is the long time horizon
  - Due to low spending requirements, they usually have above-average risk tolerance.

Foundations: Constraints

- **Liquidity**
  - **Anticipated and unanticipated needs** for cash in excess of contributions received
  - Other than the 5% minimum, foundations can choose any spending rate they desire
  - Most foundations maintain a **reserve** of 10% to 20% of annual spending to compensate for down years in financial markets
- **Time horizon**
  - Established or managed with the intent of lasting into **perpetuity,** usually very long
  - Exception is those that are required to spend down their assets
- **Taxes — Non taxable, except.,**
  - **UBIT —** Unrelated business income (donated business). is taxed at corporate income rate. (e.g., museum gift shop)
  - Investment income (Div & Int) less expenses is taxed at 2%
  - Reduced to **1%** if spending equal to or exceeds 5%

- **Legal and Regulatory**
  - Most states have adopted UMIFA (Uniform Management of Institutional Funds Act)
  - Prudent Investor Rule generally applies
    - ✓*Skill, care, prudence, diligence, defray costs, diversify, delegate expertise*
    - ✓Investments should be considered in a diversified portfolio context
    - ✓Can vary by country
- **Unique Circumstances**: issuers to look for
  - **Concentrated holdings** of a large single stock that they are prohibited by donor from selling
  - Unrelated business income — donated business
  - **Socially responsible investing**
  - With the permission of the donor derivatives can be used
  - Adequate personnel to perform due diligence

Endowments

Objectives

Return	Related to the budget the endowment is to finance Spending rules (needed to balance current and future needs): simple, rolling 3-year average, geometric spending rule
Risk Tolerance	Determined by relative importance to institution's overall budget Normally quite high (infinite time horizon)

Constraints

Liquidity	Usually low, unless some big capital expenditure is required
Time Horizon	Usually infinite
Legal/ Regulatory	UMIFA – Prudent investment rule, total return perspective Individuals prohibited from benefiting from tax breaks
Taxes	Exempt, except for unrelated business income
Unique needs	Often particular social/ethical requirements

Endowments: Return Objective

- Endowments are designed to permanently fund and provide budgetary support for universities, colleges, hospitals, etc.
  - Maintain perpetual purchasing power is key
- Creative tension exists between the need for income against preservation of purchasing power
- **3 S's = significant, stable and sustainable** cash flow to support operations
- **Total return approach** is appropriate (spend from both income and capital gains)
- The long-term spending rate must be less than the expected real rate of return
  - **Problem:** spending rate > 5% can lead to - erosion of principal
- Minimizing spending volatility using a **spending rule** is also important

- Simple spending rule
  - Spending $_t$ = S (market value $_{t-1}$)
  - where: S = the specified spending rate
- Rolling 3-year average spending rule
  - Dampen volatility that can impact the endowment's portfolio value and the sponsor's operating budget

$$\text{Spending}_t = (\text{spending rate})\left(\frac{\text{market value}_{t-1} + \text{market value}_{t-2} + \text{market value}_{t-3}}{3}\right)$$

- Geometric spending rule
  - This spending rule addresses one of the criticisms of the rolling average spending rule in that extraordinary changes in portfolio value may cause dramatic shifts in spending.
  - Spending $_t$ = (R) (Spending $_{t-1}$) (1+I $_{t-1}$)+(1-R) (S) (market value $_{t-1}$)

    where:

    ✓R = smoothing rate (0.6~0.8), I = rate of inflation, S = spending rate

Endowments: Risk Tolerance & Constraints

➢Most endowments have **high risk tolerance** due to their **long time horizon**

- **Lower ability to tolerate risk if:**
  - ✓**Higher spending rate;** Heavy reliance upon **donations, 10% or more its ability to tolerate risk is diminished;** Greater **budget dependency; No spending rule** in place; **Smaller size** of endowment

Liquidity and Time Horizon

➢**Low liquidity requirements**

- Spending needs vs. gifts and donations
- Large cash outlays may sometimes be needed for capital improvements – new library

➢Time horizon is very **long term (typically infinite)**

- Can be multistage if a major outlay is needed

Taxes and Legal and Regulatory

Tax-exempt

Dividends on non-U.S. securities withholding tax

Unrelated business income may be taxable

Most states have adopted **UMIFA —** delegation, care, prudence, maintain corpus and **respect donor restrictions. Prudent investor rules apply.**

501(c)(3) IRS regulations state that income should benefit a group not individuals

Little government oversight

Unique Circumstances

Due to their diversity, endowment funds have many unique circumstances.

Investment in alternative investments require significant resources and expertise

Social issues (e.g., defense policies and racial biases) are typically taken into consideration when deciding upon individual investments

Life Insurance Companies

Objectives

Return	Minimum required rate of return set by actuarial assumptions "Surplus" portfolio desired return the major component of firm profit
Risk Tolerance	Reinvestment risk a key exposure. Immunization techniques often useful

Constraints

Liquidity	Increasingly competitive market requires higher liquidity to ensure ability to fund "cashed in" policies
Time Horizon	Different policy segments of portfolio will have different horizons Generally long
Legal/ Regulatory	State laws govern – hence legal research always necessary NAIC "self regulates" the insurance industry
Taxes	Profit making company, hence fully taxable However, policy holder's gains are tax deferred
Unique needs	Depends on products: Term Life, Whole Life, Universal Life, Variable Life

Life Insurance Companies

- *Whole life* insurance policies provide a level death benefit for the "whole" of the insured's life. the policy provides death benefit and cash value components where the death benefit portion remains constant but the cash value portion increases with the credited rate (i.e., the interest rate credited to the policyholder).
- *Term life* insurance policies provide a level death benefit for a stated "term" of the policyholder's life. Most term life policies have no cash value, but their premiums are much lower than whole life policies.
- *Universal life* （万能险）policies are composed of a life insurance policy paying an adjustable death benefit and an attached savings account offering competitive current market returns. Income on the savings component accumulates tax deferred.
- *Variable life* （可变保费寿险）products link the death benefit and the cash value components to returns generated by a broad range of investment vehicles chosen by the policyholder.

- **Return Objective**
  - Minimum return: Rate set by actuaries based on mortality rates to meet fund accumulation rates
  - Enhanced margin: Spread management (above credited rates) used to be more competitive
    - ✓ Maximize interest earned over credited rates
  - Surplus (PV assets - PV liabilities): Focus on growth; use equity investments in real estate, venture capital, taxable account

Risk Tolerance & liquidity

- Public policy views insurance company investment portfolios as quasi-trust funds.
- Association of Insurance commissioners (NAIC) directs life insurance companies to maintain an **asset valuation reserve (AVR)** as a cushion against substantial losses of portfolio value or investment income
- Factors:
  - **Valuation concerns:** Market volatility can lead to surplus write-down, which would lower risk tolerance (ability) and create a capital adequacy problem
  - **Cash flow volatility:** Loss, delay or volatility of collecting income creates significant problems
    - ✓ Timely reinvestment of cash flow is essential to increase the surplus account
  - **Reinvestment risk:** reinvesting coupon income at a rate lower than the original coupon or purchase rate
    - ✓ If interest rates fall, profitability falls; this risk is managed using duration
    - ✓ Prevalent with annuity business
  - **Credit risk** is a major concern and is managed through diligent credit analysis and portfolio **diversification**

Three primary concerns about Liquidity:

- **Disintermediation**: as interest rates increase due to inflation, policyholders borrow against their policies or surrender policies leaving Life Insurance Companies with significant out flows
  - Consequently, **liability durations shorten**, and **liquidity becomes more important**
  - Utilize multiple scenario forecasting of interest rate exposure to manage liquidity needs
  - **Managing duration and liquidity** becomes critical
- **Asset-liability mismatch**: As interest rates increase, disintermediation occurs, and the company may have to liquidate or convert long duration assets to cash, sometimes at a loss, to meet liquidity needs
- Mismatch arises since liability durations change more slowly than asset durations
- **Asset marketability risk**: Traditionally, insurance companies have invested in less liquid assets such as:
  - Private placement debt, commercial mortgage loans, equity real estate, and venture capital
  - Liquidity is becoming increasingly important which has led to constrained commitments to these asset classes

Life Insurance Companies constraints

- **Time Horizon**
  - Traditionally, life insurance portfolios concentrated on holding periods of 20–40 years.
  - The time horizon for life insurance companies has become progressively **shorter** as the duration of liabilities has decreased due to increased interest rate volatility and competitive market factors
  - Individual segments of the overall portfolio will have their own time horizons. In general terms, time horizons have simply become shorter

Taxes:

- Two segments of the portfolio:
  - **Policyholder's share** (not taxed)
  - **Corporate share, namely funds transferred to surplus** (taxed), which accrues to shareholder's of the company

Legal and Regulatory

- Three main areas of regulation:
  - **Eligible investments**: There are quality standards and limits placed on asset classes
    - ✓Equities limited to 20%
    - ✓Non-US investments are also limited to some extent as a % of admitted assets
    - ✓Bonds interest coverage ratio must meet minimum standards or minimum credit rating
  - **Prudent Investor Rule**: Allows insurance firms increased flexibility in investment choices and options
  - **Valuation Methods: Uniform valuation** of securities is mandated by the NAIC through the use of the **Security Valuation Book**

Unique circumstances

- Concentration of product offerings, company size, and level of surplus are some of the most common factors impacting the uniqueness of life insurance companies.

Non-life Insurance Companies

Objectives

Return	Very competitive market, hence, return required to ensure premiums remain as low as possible Surplus portfolio essential to firm profitability
Risk Tolerance	Exposed to unknown claims with unknown timings Hence, ability to take risk may be reduced

Constraints

Liquidity	High – a significant "emergency reserve" is needed
Time Horizon	Underwriting cycle typically 3 to 5 years
Legal/ Regulatory	State based laws, and NAIC "self regulation" However, less stringent than for life companies
Taxes	Profit making business, hence fully taxable
Unique needs	Depends on product range (health, property, casualty, surety etc.)

Return objectives

- Asset/Liability Management
  - Liabilities of a casualty company differ from those of a life insurance company in that the claims reporting, processing, and payment process can take years to complete. This is referred to as the "**long-tail**" nature of casualty liabilities.
  - The liability structure is mainly a function of the **product mix** that a company sells.
  - **Liability durations** tend to be relatively short.
- The underwriting cycle tends to follow general business cycles.
  - The liquidity needs of a nonlife company are generally dictated by its underwriting cycle.
  - The underwriting cycle corresponds to a 3- to 5-year cycle in which underwriting losses are negligible at the outset and become progressively worse, turning into significant losses at the end of the cycle.

return objectives

- Nonlife firms face greater uncertainty than life insurance due to the possibility of higher claims frequency.
- However, they are not as interest rate sensitive since their policies do not typically pay periodic returns.
  - The primary requirement:
    - ✓ Maximize the return on their fixed-income portfolio for purposes of meeting (i.e., immunizing) claims.
    - ✓ Use returns from the equity portion of their portfolio to grow the surplus.
    - ✓ Use the surplus portfolio to provide funds for unexpected, large liability claims
  - Nonlife insurance companies hold a greater percentage of equity-type investments in their portfolios than life insurance companies hold.
  - Large stock and bond holdings are designed to provide high levels of current income, and capital appreciation to build the surplus base.

Return Objectivity & risk objectivity

➢ return objectives

➢ The main factors impacting nonlife insurance company return objectives:

- *Competitive pricing policy*. Today, most nonlife companies recognize that investment income can be used to reduce premiums and, hence, make the firm more competitive. Competition is a major influence in setting premiums.
- *Profitability*. Investment income and total return of the investment portfolio are now primary determinants of profitability. Investment return usually serves to smooth the earnings volatility of the typical underwriting cycle.
- *Growth of surplus*. Common stocks, convertibles and alternative investments are the favored investments for surplus growth. Bond portfolios are usually maintained to fund insurance reserve requirements, whereas common stocks are used to provide growth to the surplus.
- *After-tax returns*. Nonlife insurance companies are taxable entities. After-tax returns are extremely important to nonlife companies.
- *Total return*. Active bond portfolio management strategies have been adopted by many large nonlife companies in an attempt to maximize total return. A focus on yield has been shifted to income and capital gain generation.

➢ risk objectives

➢Due to the relatively high uncertainty associated with claims, risk tolerance of nonlife insurance companies must be tempered by their liquidity requirements.

➢Casualty companies generally have limited risk tolerances

➢Since most nonlife companies offer replacement cost coverage, inflation risk is also a big concern.

➢Two important considerations:

- The cash flow characteristics of nonlife companies are often erratic and unpredictable.
- The common stock-to-surplus ratio averages between one-half to three-fourths.

Nonlife Insurance Companies: Constraints

- **Liquidity: relatively high**
  - High liquidity requirements are often met through holding a portfolio of short-term securities, highly marketable U.S. Government debt, and by maintaining a balanced or laddered maturity schedule of investable assets.
- **Time horizon: shorter time horizons than life insurance companies**
  - Strangely, the average maturity of a nonlife company's bond portfolio is longer than that of a life company because of the predominance of long-term tax-exempt bonds held to maximize after-tax returns.
  - Equities are held to grow a nonlife company's surplus portfolio. the equities held tend to have growth characteristics and, on average, are held for long time periods.
- **Tax considerations. Nonlife insurance companies are taxable entities. Tax issues are complex, so frequent discussion with appropriate tax counsel are advised.**
- **Regulatory and legal constraints**
  - An asset valuation reserve (AVR) is not required, but risk-based capital (RBC) requirements have been established.
- **Unique circumstances: the current financial status of nonlife insurance companies, coupled with managing investment risk and liquidity requirements**

Commercial Banks

➢ Objectives

Return	Objective to earn positive interest spread
Risk Tolerance	Dominated by ALM considerations (risk relative to liabilities, not absolute) Below-average risk tolerance for securities portfolio

Constraints

Liquidity	Driven by deposit withdrawals & demand for loans, also regulation
Time Horizon	Liabilities are typically of lower duration than loan portfolio, hence securities portfolio constrained to balance asset and liability durations Typically 3 – 7 year range (intermediate term)
Legal/ Regulatory	Highly regulated Restrictions on holdings of common stock and sub-investment grade bonds May need to hold substantial amounts of short term govt. debt to meet legal reserve and pledging requirements Risk-based-capital requirements (e.g., Basel II)
Taxes	Securities portfolios are fully taxable
Unique needs	No common unique circumstances, but depends on question

Bank

- **Bank Security Portfolios**
  - Banks are required to classify these securities into three distinct categories: **hold to maturity, available for sale, and trading**.
- **Duration, Credit Risk, Income, and Liquidity**
  - The manner in which funds are allocated to the three classifications will determine the overall duration of the securities portfolio.
  - In this way, managers can adjust the bank's asset duration to keep it in the desired relationship to its liability duration
    - ✓ If managers forecast increasing interest rates, they can decrease the duration of the assets by decreasing the duration of the securities portfolio.
    - ✓ If interest rates are expected to decrease, they will increase the duration of the assets.
  - A bank can use its security portfolio to manage the credit risk and diversification of its assets
  - Bank securities portfolio can generate significant income
  - Since not all loans can be readily sold, banks typically use the securities portfolio as a source of liquidity for needed cash

Bank risk measures :

- **LADG=leverage adjusted duration gap**

$$\text{LADG} = \text{D}_{\text{Assets}} - (\frac{L}{A}) D_{Liabilities}$$

- $D_{Liabilities}$ **=duration of the banks' assets**
- D_{Assets} **=duration of the banks' liabilities**
- **L/A =leverage measure=market value of liabilities over market value of assets**
- **For an increase in interest rates:**
  - If LADG<0, market value of equity increase↑
  - If LADG>0, market value of equity decrease↓
  - If LADG=0, market value of equity unchanged (immunized)
- **For an decrease in interest rates:**
  - If LADG<0, market value of equity decrease↓ **同向**
  - If LADG<0, market value of equity increase ↑
  - If LADG<0, market value of equity unchanged (immunized)

Bank Objectives & constraints

- **Return: earn a positive interest spread.**
  - The interest spread is the difference between the bank's cost of funds and the interest earned on loans and other investments.
- **Risk:**
  - Risk relative to liabilities rather than absolute risk, is of primary concern.
  - Usually have a below-average tolerance for risk since they cannot let losses in the security portfolio interfere with their ability to meet their liabilities.

Bank Constraints

- **Liquidity.** A bank's liquidity position is a key management and regulatory concern. A bank's liquidity needs are driven by deposit withdrawals and demand for loans as well as regulation.
- **Time horizon.** The time horizon for the securities portfolio is driven by the average maturity of its liabilities. Since most bank liabilities are short term, the average maturity of securities in the portfolio tends to be short to intermediate term (3-7 years).
- **Taxes.** Banks are taxable entities. Bank's security portfolios are fully taxed. Taxes must be considered.
- **Legal and regulatory.** Banks in industrialized nations are highly regulated (restrictions on banks' holding of below investment grade). Risk-adjusted capital (RBC) regulations are a major regulatory development worldwide. Banks also have to pledge collateral, usually short-term treasuries, against certain uninsured public deposits.
- **Unique.** Vary from bank to bank. Loan concentrations and the inability to sell loans are examples of unique circumstances that would impact the objectives and constraints of the securities portfolio IPS.

Institutional Investors' IPS With Asset Allocation

New LOS

Institutional Investors

- **Types of institutional investors in the Level 3 curriculum:**
  - Pension plans
  - Sovereign Wealth Funds
  - University Endowments and Private Foundations
  - Banks and Insurers

	New	Old
S	**Stakeholders**	
L	**Liquidity Needs**	**Liquidity Needs**
L	**Liabilities and Investment Horizon**	**Time Horizon**
E	External Constraints	Legal, Tax, Unique
(R)	**Risk (only for DB & DC)**	**Risk (only for DB & DC)**
I	**Investment Objectives**	**Return**
A	Asset Allocation	

Investment Approach Description

- **Norway Model (sovereign wealth fund)**
  - Traditional style characterized by 60%/40% equity/fixed-income allocation, few alternatives, largely passive investments, tight tracking error limits, and benchmark as a starting position.
  - *Pros*: Low cost, transparent, suitable for large scale, easy for board to understand.
  - *Cons*: Limited value-added potential.
- **Endowment Model (university endowment，也有SWF, DB)**
  - Characterized by high alternatives exposure, active management and outsourcing.
  - *Pros*: High value-added potential.
  - *Cons*: Expensive and difficult to implement for most sovereign wealth funds because of their large asset sizes. High fees/costs

Investment Approach Description

- **Canada Model (pension plan，也有SWF)**
  - Characterized by high alternatives exposure, active management, and internally managed assets.
  - *Pros*: High value-added potential and development of internal capabilities.
  - *Cons*: Potentially expensive and difficult to manage.
- **LDI Model (banks & insurers，也包括美国的DB和部分欧洲养老金)**
  - Characterized by focus on hedging liabilities and interest rate risk including via duration-matched, fixed-income exposure. A growth component in the return-generating portfolio is also typical (exceptions being bank and insurance company portfolios).
  - *Pros*: Explicit recognition of liabilities as part of the investment process.
  - *Cons*: Certain risks (e.g., longevity risk, inflation risk) may not be hedged.

Case Study: Liquidity Profiling and Time-to-Cash Tables

➢ Time-to-Cash Table and Liquidity Budget.

Time to Cash	Liquidity Classification	Liquidity Budget (% of portfolio)
< 1 week	Highly liquid	At least 10%
< 1 quarter	Liquid	At least 35%
< 1 year	Semi-liquid	At least 50%
> 1 year	Illiquid	Up to 50%

Case study: Liquidity Profiling and Time-to-Cash Tables

➢ An excerpt of **a liquidity profiling for a portfolio**

Asset Class	Asset Class Allocation (% of portfolio)	Investment Allocation (% of overall portfolio)	Investment Vehicle	Liquidity Classification			
				Highly Liquid	Liquid	Semi-Liquid	Illiquid
Fixed income	14%	5%	Separate account	100%	0%	0%	0%
		8%	Commingled fund	100%	0%	0%	0%
		1%	Futures	100%	0%	0%	0%
Domestic equity	17%	8%	Commingled fund	0%	50%	50%	0%
		8%	Separate account	0%	100%	0%	0%
		1%	Futures	100%	0%	0%	0%

1. Pension Funds

- Pension funds are long-term saving and investment plans designed to accumulate sufficient assets to provide for the financial needs of retirees.
- There are two main types of pension plans:
  - **Defined benefit,** in which a plan sponsor commits to paying a specified retirement benefit.
  - **Defined contribution**, in which contributions are defined but the ultimate retirement benefit is not specified or guaranteed by the plan sponsor.
- Globally, there are many variations and nuances of these two broad categories of pension plans.

Types of Pension Plans

- Comparison of DB & DC Pension Plan

Characteristics	Defined Benefit Pension Plan	Defined Contribution Pension Plan
Benefit payments	Benefit payouts are defined by a contract between the **employee** and the pension plan.	Benefit payouts are determined by the **performance of investments** selected by the participant.
Contributions	The employer is the primary contributor, though the employee may contribute as well.	The employee is typically the primary contributor—although the employer may contribute as well or may have a legal obligation to contribute a percentage of the employee's salary.
Investment decision making	The pension fund determines how much to save and what to invest in to meet the plan objectives.	The employee determines how much to save and what to invest in to meet his/her objectives (from the available menu of investment vehicles selected by the plan sponsor).

Types of Pension Plans

Characteristics	Defined Benefit Pension Plan	Defined Contribution Pension Plan
Investment risk	The employer bears the risk that the liabilities are not met and may be required to make additional contributions to meet any shortfall.	The employee bears the risk of not meeting his/her objectives for this account in terms of funding retirement.
Mortality/ Longevity risk	Mortality risk is pooled. If a beneficiary passes away early, he/she typically leaves a portion of unpaid benefits in the pool offsetting additional benefit payments required by beneficiaries that live longer than expected.	The employee bears the risk of not meeting his/her objectives for this account in terms of funding retirement. The employee bears longevity risk.

DB: Stakeholders

- **Plan sponsors (employers)** must make contributions to plan assets. Poor investment performance will result in sponsors having to make extra contributions to an underfunded plan (i.e., when assets are lower than liabilities).
- **Plan beneficiaries (employees and retirees**) face the ultimate risk that an employer defaults on contributions to plan assets.
- **The investment staff, the investment committee**, and/or the board are directly impacted by the success or failure of the plan.
- **Governments** are stakeholders in that they provide tax incentives for employees to save for retirement, and taxpayers will ultimately face the costs of providing welfare for those that have failed to adequately save for retirement.
- **Shareholders** in the corporate employer are stakeholders since an underfunded plan will cause a balance sheet liability and lower income for the company. It will also lead to higher financial risk, which will likely increase share price volatility.

DB: Liabilities and Investment Horizon

- The liabilities of a DB pension plan are the **present value of the future payments** it will make to beneficiaries upon retirement disability, or death.
- In estimating future benefits, the plan sponsor must make several **key assumptions**, such as the growth rate of salaries, expected vesting, and mortality and disability assumptions.
  - **Vesting** means that employees only become eligible to receive a pension after meeting certain criteria, typically a minimum number of years of service.
- A common pension industry metric used to gauge asset sufficiency is the funded ratio, also known as the vested benefit index (**VBI**) in some countries. The **funded ratio** is defined as:

$$Funded\ ratio = fair\ value\ of\ plan\ assets / PV\ of\ Defined\ benefit\ of\ obligations$$

DB: Liabilities

Factor	Impact of Increase in Factor	Rationale
Service/tenure (years worked)	Increases liability	Benefits are usually linked directly to years of service by the employee.
Salary	Increases liability	Benefits are usually linked to final salary.
Longevity	Increases liability	Plan participants are paid benefits for every year they live in retirement. If they live longer in retirement, they will receive more years of benefits.
Additional contributions	Increases liability	Additional/matching contributions usually increases the benefits promised to employees.
Employee turnover	Lower liability	Higher employee turnover means fewer employees are likely to work the number of years of service required for vesting of benefits.
Expected investment return	Potentially Lower liability	In some cases, an increase in expected returns increases the discount rate used for liabilities, lowering liabilities.
Discount rate	Lower liability	A higher discount rate will give a lower present value of benefits, hence a lower liability.

DB: Investment Horizon

- The plans sponsor's **ability to tolerate volatility of contribution rates** may impact the investment horizon, and hence the pension plan's appetite for such illiquid investments as private equity and venture capital.
- Another important factor determining the investment horizon is the mix of **active plan participants** (i.e., current employees) versus retirees.
  - The higher the proportion of retirees relative to the proportion of active participants, the **more mature** the plan—hence, **the lower its risk tolerance**.
  - Some mature DB pension plans have been **frozen** as they typically experience negative cash flow where benefit payments exceed contributions.
- Generally, the more mature a pension fund, the **shorter its investment horizon**, which directly affects risk tolerance and the allocation between fixed-income assets and riskier assets.

DB: Risk Considerations

- 风险目标：DB plan的风险容忍度主要取决于计划的盈亏状态，发起人的财务状况和盈利能力，发起人和退休金计划基金的风险暴露共性，计划本身特征和劳动力特征等，详见下表：

Category	Variable	Explanation
Plan status	Plan funded status (surplus or deficit).	**Higher pension surplus** or higher funded status implies greater risk tolerance
Sponsor financial status and profitability	Debt to total assets; Current and expected profitability; Size of plan compared to market capitalization of sponsor company.	**Low debt ratios and higher current and expected profitability** imply greater risk tolerance. Large sponsor company size relative to pension plan size implies greater risk tolerance.

DB: Risk Considerations

Category	Variable	Explanation
Sponsor and pension fund common risk exposures	**Correlation** of sponsor operating results with pension asset returns.	**The lower the correlation**, the greater risk tolerance, all else equal.
Plan features	Provision for **early retirement;** Provision for **lump sum distribution.**	Such options tend to reduce the duration of plan liabilities, implying **lower risk tolerance**, all else equal
Workforce characteristics	**Age** of workforce; Active lives relative to retired lives.	**The younger the workforce, the greater the proportion of active lives, the greater the duration of plan liabilities** and the greater the risk tolerance.

DB: Investment Objective

- The **primary objective** for DB pension plans is to meet pension liabilities through a combination of investment returns and contributions.
- The **secondary objective** could be to minimize the present value of expected cash contributions.
- **Computation**
  - Ideally, $g_A=g_L$.
    - ✓ Where
      - ◆g_A= Long-term rate of return on plan assets
      - ◆g_L= actuarial discount rate
  - Underfunded, $g_A>g_L$;
  - When consider the risk relative to the plan sponsor's willingness and ability to raise contribution rates, $g_A=g_L$+risk premium

DB: Liquidity Needs

- Pension plans must maintain enough liquidity to pay their liabilities as they come due. **Liquidity needs are generally higher** when:
  - The **proportion of retired lives in the plan** is higher, since retired lives are receiving benefit payments. **Frozen plans** will have **higher liquidity needs** than non frozen plans due to benefits exceeding contributions.
  - The **workforce** of the employer is older, since the time to pay benefits will be shorter.
  - The plan has higher **funded status**, since this will likely lead to lower sponsor contributions and more benefit payments will need to be met from existing plan assets.
  - The plan participants have the **ability to switch or withdraw** from the plan, an event that usually triggers payments to participants.

DC: Stakeholders

- **Plan sponsors (employers): not** facing the investment risk or longevity risk of the assets, retain important fiduciary responsibilities. These include contributing to the plan, overseeing the investment of plan assets, and offering suitable investment options to plan participants.
- **Plan beneficiaries (employees and retirees)** face the investment risk of contributions and investment returns not meeting retirement needs. They also face the longevity risk of living longer than expected and outliving their savings.
- The **board** must communicate with participants to keep them well informed, and these communications must consider the participants' level of sophistication. The board may be required to select a default investment option when participants are disengaged.
- **Governments** are stakeholders in that they provide tax incentives for employees to save for retirement, and taxpayers will ultimately face the costs of providing welfare for those that have failed to adequately save for retirement.

DC: Liabilities and Investment Horizon

- In a DC plan, participants' pension benefits are based on amounts credited to their individual accounts in the form of contributions (from the employee and possibly the employer) and investment returns.
  - Consequently, the liabilities of a DC pension plan sponsor are equal only to its **required contributions**.
- The DC plan may invest in a broadly diversified portfolio that may include investments not generally offered to retail investors, such as private equity and hedge funds.
  - This is possible since **pooling of assets gives rise to scale** and the **long-term horizon** of the aggregate beneficiaries.

DC: Liabilities and Investment Horizon

- Many DC plans offer investment options that allow participants to select the investment horizon that best aligns with their own investment horizon.
  - Examples are life-cycle options or target date options, which feature a glide path that manages the asset mix based on a desired retirement date.
  - There are **two main types of life-cycle options**:
    - ✓ **Participant-switching options** automatically switch members to a more conservative asset allocation as they age.
    - ✓ **Participant/cohort option** pools the participant with other investors with a similar retirement date and the fund being managed more conservatively as the retirement date is approached.

DC: Investment Objectives

- The **main objective** of defined contribution pension plans is to prudently grow assets that will **support spending needs in retirement**.
  - The investment options offered by the DC plan sponsor can be managed either in-house or externally as well as passively or actively.
- If the plan offers funds with **active management**, **a secondary objective** may be to **outperform the long-term policy benchmark** consisting of the weighted average of individual asset class benchmarks and the policy weights defined by the strategic asset allocation.
  - For some DC plans it is important their investment options outperform those of other DC pension plans, which is particularly relevant in countries where participants can voluntarily switch between DC plan providers.

DC: Liquidity Needs

- The primary drivers of liquidity needs are the **age of the workforce** and **ability of participants to switch or withdraw from the plan**.
  - As is the case for DB schemes, if these factors are high, then liquidity needs of the fund will be high.
- It is important for pension plans to regularly perform liquidity stress tests, which may include stressing the value of their assets and modelling reduced liquidity of certain asset classes in a market downturn.
  - Such stress-testing may also help DC plans anticipate whether participants might switch out of more volatile investment options during market downturns.

DB & DC: External Constraints

- **Regulations** vary by country; however, there are similar themes in global regulation. Many regulators now require extensive reporting on fees and costs incurred by plans both internally and externally.
  - In Australia and the United States, there is a requirement for the plan to offer a diversified default option for participants.
- From a **tax perspective**, rules once again vary by country; however, pension funds are often treated favorably by governments in order to encourage individuals to save for retirement.
  - DC plans in the United States (referred to as 401(k) plans) are tax deferred. This means participants make pretax contributions and investment earnings are not taxable; however, benefits are taxed as ordinary income.
- **Accounting rules**, differ by country. In the United States, corporate DB pension plans must follow GAAP, particularly Accounting Standards Codification (ASC) 715, Compensation—Retirement Benefits, which requires that funded status be shown as an asset or liability on the balance sheet.

DB & DC: Asset Allocation

- An examination of pension fund asset allocations shows very large differences in average asset allocations by country.
- It is apparent that the allocation to equities has decreased from about 57% in 1997 to about 46% in 2017, while allocations to the 'Other' category of alternatives has increased from about 4% to 25% over the same time period.
- Note the category 'Other' includes hedge funds, private equity funds, loans, structured products, other mutual funds (i.e., not invested in equities, bonds, or cash), land, buildings, and other miscellaneous investments.
- Within equities, there is some evidence of **home bias** to domestic equity markets.

Example

- Dianna Mark is the chief financial officer of Antiliaro, a relatively mature textile production company headquartered in Italy. All of its revenues come from Europe, but the company is losing sales to its Asian competitors. Earnings have been steady but not growing, and the balance sheet has taken on more debt in the past few years in order to maintain liquidity. Mark reviews the following facts concerning the company's defined benefit (DB) pension plan:
  - The DB plan currently has €1 billion in assets and is underfunded by€100 million in relation to the projected benefit obligation (PBO) because of investment losses.
  - The company to date has made regular contributions.
  - The average employee age is 50 years, and the company has many retirees owing to its longevity.

Example

- The duration of the plan's liabilities (which are all Europe based) is 10 years.
- The discount rate applied to these liabilities is 6%.
- There is a high correlation between the operating results of Antiliaro and pension asset returns.

➢ Determine whether the risk tolerance of the DB plan is below average or above average. Justify your response with two reasons.

Example

- The duration of the plan's liabilities (which are all Europe based) is 10 years.
- The discount rate applied to these liabilities is 6%.
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➢ Determine whether the risk tolerance of the DB plan is below average or above average. Justify your response with two reasons.

Example

- **The plan is underfunded, and the discount rate being used is fairly aggressive.**
  - 1. The DB plan already has a deficit, despite regular contributions, and is suffering from investment losses. The discount rate is already aggressive and should not be increased to lower the contribution.
- **The uncertain financial condition of the company.**
  - 2. The uncertain condition of Antiliaro may constrain its ability to make contributions to the DB plan. Lack of earnings growth and increasing debt on the balance sheet over the last few years imply below- average risk tolerance.
- **The plan suffers from investment losses.**
  - 3. Often, investment losses can lead a DB plan to take on more investment risk to achieve higher returns, but the other constraints, such as the plan's underfunded status and the company's financial condition, prevent this approach.

Example

- **The older age of employees necessitates liquidity.**
  - 4. The average employee age is 50 years, and the company has many retirees because of its longevity. These characteristics generate a need for liquidity, which lowers the amount of risk the plan can assume.
- **The high correlation between the operating results of Antiliaro and pension asset returns lowers the risk tolerance of the pension plan.**
  - 5. The high correlation between the operating results of Antiliaro and the pension asset returns suggests a low risk tolerance. If Antiliaro is performing poorly as a company, this will constrain its ability to make additional contributions that may be necessary to address the shortfall in the pension's funding.

2. Sovereign Wealth Funds (SWFs)

- Sovereign wealth funds (SWFs) are state-owned investment funds or entities that invest in financial or real assets. Governments have established SWFs from budget surpluses to meet different objectives.
- The International Monetary Fund (IMF) has defined five broad types of sovereign wealth funds

Type	Objective	Examples
Budget stabilization funds	Set up to insulate the budget and economy from commodity price volatility and external shocks.	Economic and Social Stabilization Fund of Chile; Timor-Leste Petroleum Fund; Russia's Oil Stabilization Fund
Development funds	Established to allocate resources to priority socio-economic projects, usually infrastructure.	Mubadala (UAE); Iran's National Development Fund; Ireland Strategic Investment Fund

Sovereign Wealth Funds (SWFs)

Type	Objective	Examples
Savings funds	Intended to share wealth across generations by transforming non-renewable assets into diversified financial assets.	Abu Dhabi Investment Authority; Kuwait Investment Authority; Qatar Investment Authority; Russia's National Wealth Fund
Reserve funds	Intended to reduce the negative carry costs of holding reserves or to earn higher return on ample reserves.	China Investment Corporation; Korea Investment Corporation; GIC Private Ltd. (Singapore)
Pension reserve funds	Set up to meet identified future outflows with respect to pension-related contingent-type liabilities on governments' balance sheets.	National Social Security Fund (China); New Zealand Superannuation Fund; Future Fund of Australia

SWFs: Stakeholders

- **The stakeholders in an SWF are as follows:**
  - **Current and future citizens** benefit from the fund's success either directly through receiving payments or indirectly through lower taxation or increased investment in the domestic economy.
  - **Investment offices** invest SWF assets either directly in-house or appoint external managers.
  - The **board** has a **fiduciary duty** to the ultimate beneficiaries of the fund.
  - **Governments** are stakeholders in that they may rely on SWF returns to balance budget deficits.

SWFs: Liabilities and Investment Horizons

- There is a wide variety in investment objectives, liabilities, investment horizons, and liquidity needs among the five types of SWFs, so we will discuss each type separately.
- **Budget stabilization funds** are established to insulate the fiscal budget from commodity price volatility and other external shocks, particularly if a nation's revenue is tied to natural resource production or other cyclical industries.
  - These funds have **uncertain liabilities** and relatively **short investment horizons**. Their main purpose is risk management because such funds may be needed on a short-term basis to help support the government budget.
  - The investment objective is usually to deliver **returns in excess of inflation** with a low probability of a negative return in any year.

SWFs: Liabilities and Investment Horizons

- **Development funds** are established to support a nation's economic development through investing in essential infrastructure, innovation, or by supporting key industries.
  - **Liabilities** are not clearly defined and typically uncertain for development funds, but their overall objective is to **raise a country's economic growth** or to **diversify the economy**.

SWFs: Liabilities and Investment Horizons

- **Savings funds** are typically established to transform proceeds from the sale of non-renewable natural resources into long-term wealth and a diversified portfolio of financial assets.
  - The mission of a savings fund is wealth transfer to future generations after the sources of natural wealth have been depleted.
  - As such, their **liabilities are long-term**. Some savings funds have a real return **objective** or an explicit spending policy (like endowments).
  - A special case of savings funds involves government investment holding companies, which are funded from the privatization proceeds of national companies (e.g., Singapore's Temasek Holdings).
  - Savings funds should avoid investing in assets highly correlated with the non-renewable resources from which the government is trying to diversify.

SWFs: Liabilities and Investment Horizons

- **Reserve funds** are established from central bank excess foreign currency reserves.
  - The objective is to **achieve a return higher than that on FX reserves** (usually invested in low-duration, high-grade debt instruments) and to reduce the negative cost-of-carry of holding FX reserves.
  - Central banks accumulate such reserves as they print local currency to buy FX (like US dollars or euros) from local firms selling export goods. The central banks then issue **monetary stabilization bonds** to absorb the excess local currency.
- Their **investment horizons are very long**, with typically no immediate or interim payout expectation.

SWFs: Liabilities and Investment Horizons

- **Pension reserve funds** are established to help prefund contingent pension-related liabilities on the government's balance sheet. Pension reserve funds are usually funded from fiscal surpluses during economic booms.
  - The goal is to help reduce the burden on future taxpayers by prefunding social security and health care costs arising from aging populations, so these funds generally have **long-term investment horizons.**
    - ✓ There is usually an **accumulation phase (decumulation phase)** where the government predominantly contributes to (withdraws from)the fund.
  - The investment objective of pension reserve funds is to earn returns sufficient to maximize the likelihood of **meeting future pension**, social security, and/or health care costs as they arise.

SWFs: Liquidity Needs

- **Budget stabilization funds.** These must maintain the highest liquidity level and invest in assets with low risk of significant loss in the short term, in order to meet short-term deficits caused by negative economic- or commodity-related events.
- **Development funds.** Because infrastructure and research and innovation investments are long term, funds established to develop such projects generally have low liquidity needs.
- **Savings funds.** The main objective is to accumulate wealth for future generations; hence, liquidity needs are lowest. Liquidity needs increase as the nation's natural resources become depleted and the government withdraws from the fund to meet budgetary needs.
- **Reserve funds.** Liquidity needs are lower compared to stabilization funds but higher compared to savings funds. Liquid fixed-income securities are usually held that can be readily sold if there is a dramatic change in the reserves of the central bank.
- **Pension reserve funds.** Liquidity needs vary, being lower during the accumulation stage and higher during the decumulation stage.

Liquidity needs

Low

Development Funds

High

Saving Funds

Reserve Funds

Budget Stabilization Funds

Accumulation stage

Decumulation stage

Pension Reserve Funds

SWFs: External Constraints

- From a **legal and regulatory** perspective, SWFs are typically established by laws that give the SWF its mission and structure. This may involve clear rules of asset allocation, particularly in the case of a development fund with a specific socioeconomic mission.
  - The Santiago Principles, a best-practices framework established by the International Forum of SWFs (IFSWF), addresses such concerns alongside other key elements expected of a high-quality SWF, such as ethics, risk management, and regular monitoring for compliance with the principles.
- SWFs are generally **tax exempt**. This may void the SWF's ability to claim withholding taxes or tax credits that are normally available to taxable investors.

SWFs: Investment Objectives

SWF Type	Investment Objectives
Budget stabilization	● Capital preservation ● Aims to earn returns above inflation with a low probability of losses ● Should avoid assets correlated with the source of government revenues
Development	● Support a nation's economic development and increase long-run economic growth ● Implicit objective is to earn a real rate of return greater than real domestic GDP growth or productivity growth
Savings	● Maintain purchasing power of the assets over time while making ongoing spending on government budgetary needs
Reserve	● Earn a rate of return in excess of the yield the government/central bank pays on bonds it has issued
Pension reserve	● Earn returns to meet future unfunded pension and social care payments promised by the government

SWFs: Asset Allocation

- **Budget stabilization funds.** The majority of fixed income and cash is due to the defensive nature of the fund.
- **Development funds.** These are driven by the socioeconomic mission of the fund (e.g., investment in local infrastructure projects).
- **Savings funds.** A long investment horizon means relatively high allocations toward equities and alternative investments, such as private equity and real assets.
- **Reserve funds.** Allocations are similar to those of savings funds, but with lower allocation to alternatives due to the potentially higher liquidity needs.
- **Pension reserve funds.** These have high allocations to equities and alternatives due to a long investment horizon and low liquidity needs in the accumulation phase.

3. University Endowments: Stakeholders

- These endowments are typically funded through gifts and donations and are intended to help the institutions provide for some of their main services.
- Endowment funds invest in capital markets to provide a savings and growth mechanism that allows the institution to meet its mission in perpetuity.
- **Stakeholders**
  - The stakeholders of a university endowment are current and future **students**, **alumni** who contribute gifts and donations, and **university employees** whose livelihoods depend on the university.
  - Stakeholders often have representation on the endowment's board or investment committee, such as alumni who may be investment professionals

Endowments: Liabilities & Investment Horizon

- The need to maintain intergenerational equity and the unlimited life of the university mean endowments have a **perpetual investment horizon**.
- The endowment's liabilities are the **future payouts promised to the university**, presented in an official spending policy.
  - The endowment's spending policy should ensure intergenerational equity while **smoothing payouts** to insulate the university from market volatility.
  - The dollar amount of spending each year can be stated as a weighted average of the previous year's spending (adjusted for inflation) and a spending rate (usually between 4% and 6%) applied to a moving average of assets under management (AUM).

Endowments: Spending Rules (new)

- Spending rules can be summarized by the following formula:

$$Spending_{t+1} = w \times Spending_t \times (1 + Inflation) + (1 - w) \times (spending\ rate \times \text{Average } AUM)$$

  - ✓ w =weight of the prior year's spending amount

- **Constant growth rule (w = 1)**
  - ✓ While this method gives more certainty to the university of the payouts that will be received, this means the percentage of endowment value paid out periodically will fluctuate with the endowment value.
- **Market value rule (w = 0)**
  - ✓ Annual payouts are a prespecified percentage (the spending rate, usually between 4% and 6%) of the three- to five-year moving average of asset values.
- **Hybrid rule (0 < w <1)**
  - ✓ Spending is a weighted average of the previous two rules.

Endowments: Liabilities & Investment Horizon

- Other **liability-related factors** that need to be considered are as follows:
  - **Fundraising from donors.**
    - ✓ Gifts and donations coming into the endowment mean that the net spending rate is closer to 2% to 4% of assets rather than the 4% to 6% spending rate applied.
  - **Reliance of the university on the spending from the endowment.**
    - ✓ All else equal, if the endowment spending comprises a larger proportion of the university's operating budget, then the risk tolerance of the endowment is lower.
  - **Capability of the endowment or university to issue debt.**
    - ✓ Access to debt markets increases the risk tolerance of the endowment because the institution can borrow to meet spending in times of poor investment performance.

Endowments: Liquidity Needs & External Constraints

- **Liquidity Needs:** As noted previously, the endowment's annual spending net of gifts and donations is usually very low (around 2% to 4% of assets).
  - Low liquidity needs plus the perpetual time horizon mean endowments usually have a high risk tolerance and absorb relatively high volatility in the short term in pursuit of longer-term returns.
- **External Constraints:** From a legal and regulatory perspective, regulation varies by jurisdiction; however, endowments are typically subject to laws that require:
  - Investment on a total return basis (i.e., earning returns from both income and capital gains, not simply generating spending through income returns) and diversification according to modern portfolio theory (MPT).
  - Investment committees or boards and staff who have a fiduciary duty of care in overseeing investments.

Endowments: External Constraints

- **External Constraints:**
  - In the United States, the Uniform Prudent Management of Institutional Funds Act 2006 (UPMIFA) allows flexibility in spending decisions and enforces the adoption of MPT. In the U.K., the Trustee Act (2000) plays a similar role (relevant to endowments since they are often structured as trusts in the U.K.). The shift to MPT principles has **allowed endowments to allocate to a broad range of asset classes.**
  - Endowments typically have **tax-exempt status** when generating investment returns. Universities are not typically taxed on payouts from the endowment, and donors to endowments usually can deduct gifts from their taxable income.

Endowments: Investment Objectives

- The investment objective is to preserve **the purchasing power of the assets** in perpetuity (i.e., grow in line with inflation) while achieving returns adequate to **maintain the level of spending**.
  - In practice, this means the university endowment has a primary objective to **generate a real return** (i.e., after inflation measured using the HEPI) of about 5% on average over a three- to five-year period. A reasonable volatility limit is typically 10% to 15%.
  - There may be a secondary objective of **outperforming a passive benchmark** or even a tertiary objective of outperforming a peer group of similar endowments. An issue with the objective of outperforming a peer group is that it may lead to decisions becoming dislocated from the core mission of funding unique liabilities and may lead to herding by investment managers into similar investments.

Endowments: Asset Allocation

- **Asset Allocation by University Endowments**
  - Most large U.S. university endowments follow the endowment model, which involves **a majority (>50%) allocation to alternative investments**, an allocation that has increased over the past two decades.
  - Smaller U.S. university endowments tend to allocate less to alternatives and more to domestic equities and fixed income, with some evidence of **home bias** causing U.S. equities to be overweighted in these portfolios relative to non-U.S. equities.

Example

- The Prometheo University Scholarship Endowment (the Endowment) was established in 1950 and supports scholarships for students attending Prometheo University. The Endowment's assets under management are relatively small, and it has an annual spending policy of 6% of the five-year rolling asset value.
- Formulate the investment objectives section of the investment policy statement for the Endowment.

Example

- **Solution:**
  - The mission of the Prometheo University Scholarship Endowment is to provide scholarships for students attending the university.
  - In order to achieve this mission, the Endowment must maintain the purchasing power of the assets in perpetuity while achieving investment returns sufficient to sustain the level of spending necessary to support the scholarship budget.
  - Therefore, the investment objective of the endowment should be to achieve a total real rate of return (after inflation) of at least 6% with a reasonable level of risk.

Example

- Prometheo University recently hired a new chief investment officer (CIO). The CIO directs her small staff of four people to implement an investment policy review. Historically, the endowment has invested 60% of the portfolio in US equities and 40% in US Treasuries. The CIO's expectation of annual inflation for the next 10 years is 2.5%. The CIO develops nominal 10- year return assumptions for US Treasuries and US equities, which are presented in Exhibit.
- Discuss whether the current investment policy is appropriate given the Endowment's annual spending policy.

Asset Class	10- Year Return Assumptions (Nominal)
US Treasuries	4.0%
US Equities	7.4%

Example

- **Solution:**
  - The policy is not appropriate.
  - The expected real return of 3.54% is less than the spending policy rate of 6%.
  - Therefore, the current allocation and investment objectives are not sustainable.
  - The nominal expected return on the current portfolio, according to the nominal return assumptions in Exhibit, is 6.04% per year (0.6 × 7.4% + 0.4 × 4.0% = 6.04%).
  - The expected real return is approximately 3.54% (6.04% – 2.5% = 3.54%), which is below the 6% spending rate and the stated objective of a 6% real return.
  - Therefore, this real return is not sufficient to meeting the spending policy, which makes the Endowment's goals unsustainable. The Endowment will need to change its asset allocation to earn higher returns and/or lower its spending policy rate.

4. Private Foundations

- Foundations are nonprofit institutions set up to make grants to support specified charitable causes.
- The focus of this reading is on private foundations set up **by individual donors and their families**, an example of which is the Bill & Melinda Gates Foundation, with focuses on global health and poverty.
  - Foundations can also be **community** foundations set up by and for the good of the local community, **operating** foundations set up to fund a specific not-for-profit business, or **corporate** foundations set up from the profits of an existing company.

Private Foundations: Stakeholders

- The stakeholders of a private foundation may include the **founding family**, **donors** to the foundation, **recipients** of grants from the foundation, and the **wider community** that the foundation's activities may benefit.
  - The **government** could also be considered a stakeholder due to the favorable tax treatment of foundations.
- Board members of foundations are less likely to have professional investment experience than alumni on endowment boards.
  - This may affect the quality of investment decisions, particularly in more sophisticated markets such as alternative investments.
- **Mission-related investing** (also known as **impact investing**) is a technique increasingly adopted by foundations whereby investments are made into projects that promote the foundation's mission. The challenge with such investments is maintaining a sufficient return on assets to meet the foundation's long-term objectives.

Foundations: Liabilities and Investment Horizon

- Foundations typically have an investment horizon that is **perpetual**.
  - There is a trend toward **limited-life foundations** that are mandated to spend down assets within a limited time frame of the founder's death, which would shorten the investment horizon.
- In the United States, tax laws require private grant-making foundations to pay out a **minimum of 5% of assets** (on a 12-month trailing basis) plus investment expenses. Foundations must also spend any donations in the year the donation is received (known as **flow through**).
- Unlike universities, which have other sources of revenue outside the spending of their endowment, foundations are relied upon almost exclusively to meet budgets.
  - **The higher liquidity requirements of foundations, means they typically have a lower risk tolerance than university endowments.**

Foundations: Liquidity Needs & Investment Objective

- **Liquidity Needs**
  - U.S. foundations are legally required to spend 5% of assets. Foundations should **maintain sufficient liquidity** to meet near-term spending, capital calls from private limited partnership fund investments, and any margin calls on derivatives employed by the investment portfolio.
- **Investment Objectives**
  - The investment objective is to **generate a real return** over consumer price inflation of the spending rate plus investment expenses, with expected annual volatility in a reasonable range (approximately 10% to 15%) over a three- to five-year period.
  - There may be a secondary objective of **outperforming a policy benchmark** based on a tracking error budget.

Foundations: External Constraints & Asset Allocation

- **External Constraints**
  - From a **legal and regulatory** perspective, foundations are subject to similar laws, such as UPMIFA in the United States and the Trustee Act in the U.K., which demand investment on a total return basis, diversification, and a duty of care from the board and investment staff.
  - Foundations typically have similar **tax-exempt status** to endowments, but this status depends on the minimum spending rules mentioned in the previous section.
- **Asset Allocation by Private Foundations**
  - Their overall risk tolerance remains high and, with a long-term objective of beating inflation, larger U.S. foundations allocate about half of the portfolio to alternative investments. Smaller foundations tend to have a higher allocation to domestic equities and fixed-income securities.

Comparison Between Foundations and Endowments

	US Foundations	US University Endowment
Purpose	Grant-making for social, educational, and charitable purposes; principal preservation focus.	General support of institution or restricted support; principal preservation focus.
Stakeholders	Founding family, donors, grant recipients, and broader community that may benefit from foundation's activities.	Current/future students, alumni, university faculty and administration, and the larger university community.
Liabilities/ Spending	Legally mandated to spend 5% of assets + investment expenses + 100% of donations (flow-through).	Flexible spending rules (headline spending rate between 4% and 6% of assets) with smoothing.

Comparison Between Foundations and Endowments

	US Foundations	US University Endowment
Other liability considerations	Future gifts and donations, or just one-time gift?	Gifts and donations, percentage of operating budget supported by endowment, and ability to issue debt.
Investment time horizon	Very long-term/perpetual (except limited-life foundations).	Perpetual
Risk	High risk tolerance with some short-term liquidity needs.	High risk tolerance with low liquidity needs.
Liquidity needs	Annual net spending is at least 5% of assets.	Annual net spending is typically 2% to 4% of assets, after alumni gifts and donations.

5. Banks: Stakeholders

- They are financial intermediaries that are run for profit. It is important to remember throughout this discussion that we are advising the institution on its **investment portfolio**, not on its core business of being a bank or an insurance company.
- **Stakeholders**
  - Most major large international banks are publicly listed, making **shareholders** a key external stakeholder with an interest in maximization of profits. **Customers** of a bank, such as depositors and **borrowers,** are also key external stakeholders. Other external stakeholders include creditors, credit rating agencies, regulators, and communities where the bank operates.
  - **Internal stakeholders** include the bank's employees, managers, and directors.

Banks: Liabilities and Investment Horizon

- **Deposits** constitute the majority of a bank's liabilities. This includes **demand deposits** which can be withdrawn without notice and are therefore deemed short term in duration—and **time/term deposits** that require advance notice before withdrawal.
  - Other liabilities include short-term wholesale funding from other financial institutions, long-term debt, and trading/securities payables and repo finance payables.
- The investment horizon for a bank portfolio is influenced by the difference between the **long-term illiquid assets (mortgage and commercial loans)** and the **short-term liquid liabilities** of the bank.
  - Although banks are perpetual organizations, the instruments held in the investment portfolio of a bank are likely to be **very short in nature**, such that the bank can manage the volatility of shareholder capital on a medium-to short-term basis.

Banks: Liquidity Needs

- **Liquidity Needs**
  - **Liquidity management is a core consideration** in the management of bank portfolios. Banks must have the ability to liquidate their investment portfolios within a certain period to generate adequate cash in the event of a crisis.
  - Since the 2007-2009 financial crisis, regulations have been introduced that require banks to have sufficiently liquid assets to cover near-term expected cash outflows (liquidity coverage ratios, or **LCRs**) and to have adequate levels of capital from stable sources (net stable funding ratios, or **NSFRs**).
  - In general, contrasting commercial banks and retail-oriented banks, commercial banks have a higher cost of funds and lower liquidity. **Retail banks** have a lower cost of funds and better liquidity because their retail deposits are relatively low cost and tend to be more stable.

Banks: Investment Objectives

- **Investment Objectives**
  - The primary objective of a bank's investment portfolio is to **manage liquidity** and **reduce risk mismatches** between the bank's noninvestment assets and liabilities.
  - Banks establish an asset and liability management committee (ALMCo) to oversee investment activities.
    - ✓ The ALMCo will set the IPS, monitor performance, and set risk limits regarding market, credit, liquidity, and solvency risks, with the authority to require changes on the asset and liability sides of the balance sheet. Having established these objectives, the investment team sets policy benchmarks, monitors performance, and reports to the bank's management and board.

Banks: External Constraints

- From a **legal and regulatory** perspective, the risks that a systemic bank failure pose to critical economic functions such as payment processing and extension of credit mean that regulators are intensely focused on capital adequacy, liquidity, and leverage levels.
  - The main goal of regulators is to make sure that banks **have adequate capitalization to absorb losses** rather than the losses having to be faced by customers, creditors, or taxpayers.
- Banks typically are **fully taxable entities**; hence, they must consider the after-tax returns of their investment programs.

Banks: External Constraints

- Economies of scale and the benefits of diversification encourage banks to increase their size, with the largest banks regarded by regulators as systemically important financial institutions (SIFIs). Since the global financial crisis, regulations for these SIFIs have:
  - Increased capital required to absorb losses on assets.
  - Placed limits on the amount of dividends and share buy backs since these payouts to shareholders. effectively increase the leverage of the institution.
  - Restricted the ability of subordinated debt holders and preferred shareholders to exert their claims in a bankruptcy, forcing them to bear more of the risk of the bank's activities.
  - Restricted the use of derivatives, proprietary trading, and the use of off-balance sheet liabilities and guarantees.

Banks: External Constraints

- From an **accountancy perspective**, three different accounting systems apply to financial institutions:
  - Standard financial reporting (GAAP or IFRS) is used to communicate results to shareholders. Due to the accruals process of accounting, this provides the smoothest reporting of income.
  - Statutory accounting is utilized by regulators and is comprised of a series of adjustments to make the accounts more conservative
  - True economic accounting uses market value for all assets and liabilities. This is likely to give the most volatile measure of income.

6. Insurers

- **Insurers can be divided into the following two broad categories:**
  - **Life insurers.** They write insurance relating to whole life or term insurance with fixed payments, variable life insurance (with payouts linked to returns of investment funds chosen by the policyholder), annuity products, health insurance, and universal life insurance (with flexible premiums and benefit payouts).
  - **Property and casualty (P&C) insurers.** They write insurance relating to commercial property and liability, home ownership, marine insurance, surety, and legal liabilities.

Insurers: Stakeholders

- Insurers tend to be organized as either publicly listed companies or mutual companies.
  - For **publicly listed companies**, key external stakeholders are shareholders who require long-term maximization of the value of their capital while simultaneously honoring obligations to policyholders.
  - **Mutual companies** are owned by their policyholders, either retaining profits as a surplus against potential losses or distributing them to policyholders through dividends or premium reductions. Other external stakeholders include derivatives counterparties, creditors, regulators, and rating agencies.

Insurers: Stakeholders

- For traditional life insurance and annuity policies (including universal life), life insurers maintain a **general account** to fund the liabilities because the **insurer** bears the investment risk associated with meeting claims under these contracts.
- For variable life policies, the insurer operates a **separate account** in which assets are invested according to the investment choices of policyholders. For these policies, the **policyholder** bears the investment risk.
- Internal stakeholders include an insurer's employees, management, and board of directors.

Insurers: Liabilities and Investment Horizon

- Insurance companies manage their investments with a focus on asset and liability management.
  - **Life insurers** generally face a long duration liability stream through their contract payouts. Life insurance companies have historically set investment horizons of 20 to 40 years.
  - **P&C insurers** generally face a liability stream with a shorter duration and higher uncertainty because claims are relate to unlikely, unpredictable events with high payouts, such as natural disasters.
- The institution has a **perpetual time horizon**, the nature and timing of policy claims will strongly affect the time horizon of investments held. A key consideration for both life and P&C insurers is the frequently occurring underwriting cycle, which causes fluctuations in profitability driven by changes in the level of competition at different points of the insurance business cycle.

Insurer: Liquidity Needs

- An insurer needs to manage both **internal liquidity** (cash from operations and investing activities) and **external liquidity** (ability to borrow in debt markets).
  - Liquidity needs are affected by the level of interest rates. In times of high interest rates, policyholders with historically low-yielding contracts may surrender (i.e., cash in) their policies in order to invest at higher yields in other investments, thereby increasing the net cash outflows of the life insurer.
- As noted previously, P&C insurers face **significant cash flow uncertainty** due to the nature of their liabilities; hence, portfolios require the ample liquidity of high proportions of cash or cash equivalents and short-term fixed-income securities.

Insurer: Liquidity Needs

- Insurers divide general account investments into two major components: the reserve portfolio and the surplus portfolio.
  - Regulations require the insurer to maintain a ***reserve portfolio*** capable of **meeting policy liabilities**, and this is therefore managed conservatively.
  - The ***surplus portfolio*** is used to **generate higher returns**, often by assuming liquidity risk and allocating to alternative investments.

Insurer: External Constraints

- From a **legal and regulatory** perspective, insurers, like banks, carry out crucial financial intermediary roles and can become large enough to be classified by regulators as SIFIs. Similar to banks, regulators will aim to ensure that insurers have sufficient capital to absorb losses in the business and losses from investments.
- In the United States, the National Association of Insurance Commissioners (NAIC) is an association of state regulators that set accounting and reporting policies. In Europe, Solvency II is a framework being used to standardize regulation across member states.
- From an **accountancy** perspective, standard financial reporting, statutory reporting, and true economic accounting rules apply to insurers just as they do to banks. Insurers typically are **fully taxable entities** and must run their investment programs with consideration of after-tax returns.

Insurer: Investment Objectives

- The primary objective of an insurer's investment portfolio is to **manage liquidity** and **reduce risk mismatches** between the institution's assets and liabilities.
  - This process must therefore consider the general business conditions of the insurer and the expected external economic conditions.
- The investment oversight function of an insurer is typically carried out by a board committee that is responsible for all investment policies and procedures and reports to regulators and external stakeholders.

Banks & Insurers: Balance Sheet Management

- **liability driven investing**

$$\frac{\Delta E}{E} = \frac{\Delta A}{A}\left(\frac{A}{E}\right) - \frac{\Delta L}{L}\left(\frac{A-E}{E}\right) = \frac{\Delta A}{A}\left(\frac{A}{E}\right) - \frac{\Delta L}{L}\left(\frac{A}{E} - 1\right)$$

$$D_E^* = \left(\frac{A}{E}\right) D_A^* - \left(\frac{A}{E} - 1\right) D_L^* \left(\frac{\Delta i}{\Delta y}\right)$$

i: yields of liabilities
y: yields of assets

$$\sigma^2_{\Delta E/E} = (\frac{A}{E})^2\, \sigma^2_{\Delta A/A} + (\frac{A}{E} - 1)^2 \sigma^2_{\frac{\Delta L}{L}} - 2(\frac{A}{E})(\frac{A}{E} - 1)\boldsymbol{\rho}\sigma_{\frac{\Delta A}{A}}\sigma_{\frac{\Delta L}{L}}$$

资产的权重为**A/E;**
负债的权重为**–(A/E - 1)**

Banks & Insurers: Balance Sheet Management

Strategy	Impact on Factor	Impact on $\sigma_{\Delta E/E}$	Comments
Hold diversified fixed-income investments	Lowers σ_A	Falls	Diversified fixed income has a lower standard deviation than other riskier asset classes.
Hold high-quality fixed-income investments	Lowers σ_A	Falls	There's a lower chance of significant loss in asset value.
Maintain similar asset and liability durations, and match asset/liability exposure to borrower and claimant options	Increases ρ	Falls	Regulators penalize institutions with high asset/liability mismatches.
Hold common stock investments	Increases σ_A; Lowers ρ	Rises	Most regulators require reserves of 100% to be held against investments in common stock.
Derivatives transparency and collateralization	Lowers σ_A and σ_L; Increases ρ	Falls	The more understood and protected against counterparty default the institution is, the less chance there is of unexpected losses.
Hold more liquid portfolio investments	Lowers σ_A	Falls	

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Banks & Insurers: Balance Sheet Management

Strategy	Impact on Factor	Impact on $\sigma_{\Delta E/E}$	Comments
Surrender penalties for insurance contracts	Lowers σ_L	Falls	Penalties cushion losses when policyholders cash in after interest rates have risen.
Prepayment penalties on debt investments	Increases ρ	Falls	Prepayments will occur in a low interest rate environment. Penalties on prepayments help offset rising liabilities in a falling rate environment.
Catastrophic insurance risk	Increases σ_L	Rises	Such losses are large and unpredictable and will cause regulators to demand higher reserves, investment in more liquid assets, and more robust reinsurance agreements.
Predictability of underwriting losses	Decreases σ_L	Falls	Total insurance liabilities are less uncertain.
Diversifying insurance business	Decreases σ_L	Falls	Total insurance liabilities are less uncertain.
Variable annuities	Increases ρ	Falls	Asset investment gains and losses are passed through to policyholders due to the nature of the contract.

Banks & Insurers: Asset Allocation

- In the case of banks and insurers, optimal investment management simultaneously focuses on the investment portfolio and the liabilities of the business, all within the context of external economic conditions and regulatory reserve requirements.
- The investment manager also needs to be conscious of the factors that affect the volatility of shareholders' equity and optimal levels of leverage as discussed previously.

问题反馈

- 如果您认为金程**课程讲义/题库/视频**或其他资料中**存在错误，欢迎您告诉我们**，所有提交的内容我们会在最快时间内核查并给与答复。
- **如何告诉我们？**
  - 将您发现的问题通过电子邮件告知我们，具体的内容包含：
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    - ✓ 所在班级（eg.1906CFA一级长线无忧班）
    - ✓ 问题所在科目（若未知科目，请提供章节、知识点）和页码
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