



Class: SY BSc

Subject : Portfolio Theory and Security Analysis

Subject Code:

Chapter: Unit 2 Chapter 1

Chapter Name: Portfolio Management – An overview

Agenda

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2. Modern portfolio Theory
3. Steps in the Portfolio Management Process
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6. Characteristics of Different Types of Investors

0 Activity

Consider a portfolio consisting of equal holding of two securities, S_x and S_y where:

- the return on S_x is equally likely to be 5% or 10% pa
- the return on S_y is equally likely to be 10% or 20% pa
- i. Calculate the means and variances of return on each individual security
- ii. Calculate the mean and variance of the return on the portfolio as a whole, given that the correlation coefficient of the 2 securities is:
 - a. 1
 - b. 0
 - c. -1
 - d. 0.7
- iii. Comment on your results

0 Discuss



- One of the biggest challenges faced by individuals and institutions is to decide how to invest for future needs?
- Should we invest in individual securities, evaluating each in isolation, or should we take a portfolio approach?

1 The portfolio approach to investing



- The approach means that you evaluate individual investments by their contribution to the risk and return of an investor's portfolio.
- A “portfolio approach,” means evaluating individual securities in relation to their contribution to the investment characteristics of the whole portfolio



“Don’t put all your eggs in one basket”

1.1 Why to use the portfolio approach to investing?

The portfolio approach provides investors with a way to reduce the risk associated with their wealth without necessarily decreasing their expected rate of return.



Investors could avoid disastrous outcomes.



Investors could reduce risk without compromising returns.

1.2 Diversification Ratio

A simple measure of the value of diversification is calculated as the ratio of the standard deviation of the equally weighted portfolio to the standard deviation of the randomly selected security. This ratio may be referred to as the diversification ratio.

	Mean annual return	Annual standard deviation
Asset A	+22%	38%
Asset B	+16%	21%
Asset C	+7%	13%
AVERAGE	+15%	24%
Equal weighted	=	>
PORTFOLIO	+15%	18%

Measure of
diversification benefit

Diversification Ratio

$$\frac{\text{Std dev of equal weighted portfolio}}{\text{Std dev of randomly selected security}}$$
Avg std dev of all securities in portfolio

A lower diversification ratio is better

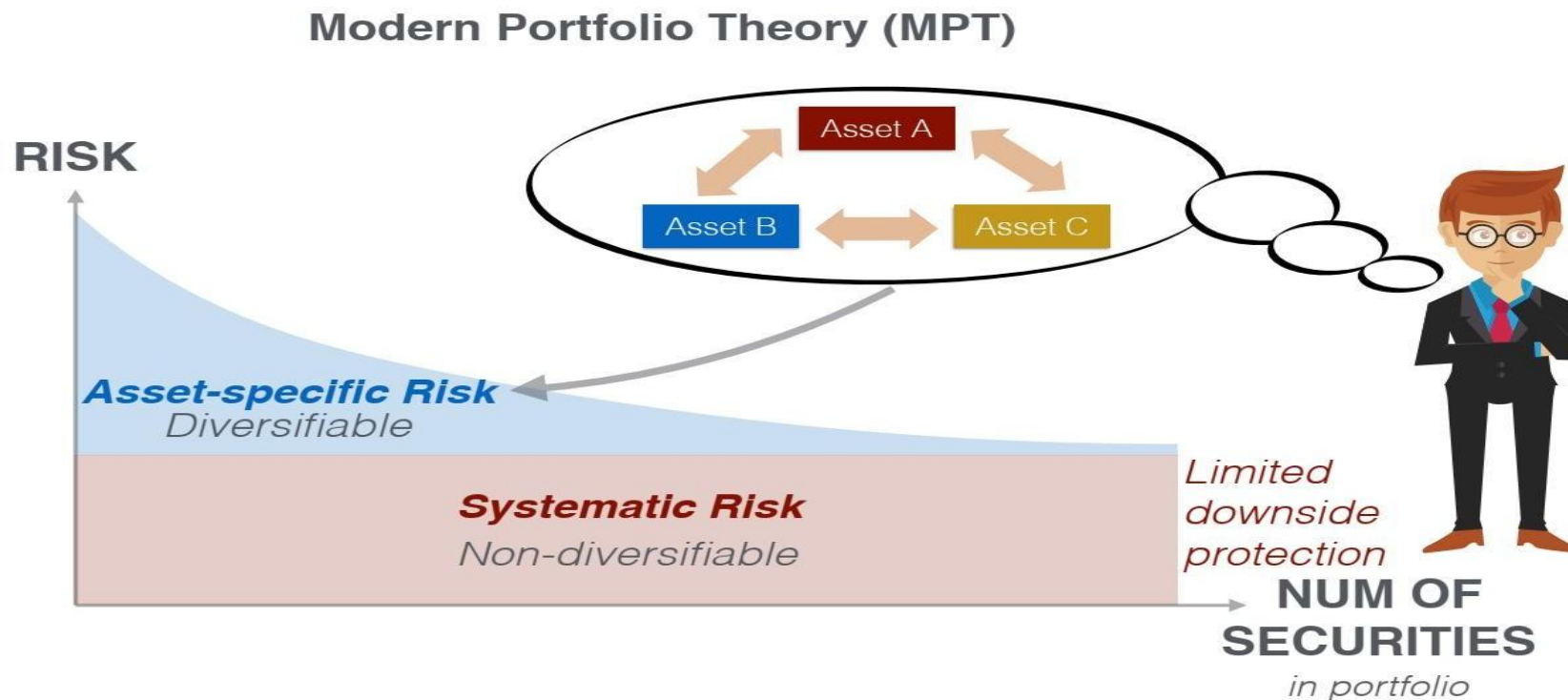
$\dots \rightarrow \text{Diversification ratio} = \frac{18}{24} = 0.75$

1.2 Benefits of diversification

A major reason that portfolios can effectively reduce risk is that combining securities whose returns do not move together provides diversification. Sometimes a subset of assets will go up in value at the same time that another will go down in value. The fact that these may offset each other creates the potential diversification benefit we attribute to portfolios.

2 Modern Portfolio Theory

The main conclusion of MPT is that investors should not only hold portfolios but should also focus on how individual securities in the portfolios are related to one another.



3 Steps in the Portfolio Management Process

Planning

- Understanding the client's needs
- Preparation of an Investment Policy Statement (IPS)

Execution

- Asset Allocation
- Security Analysis
- Portfolio Construction

Feedback

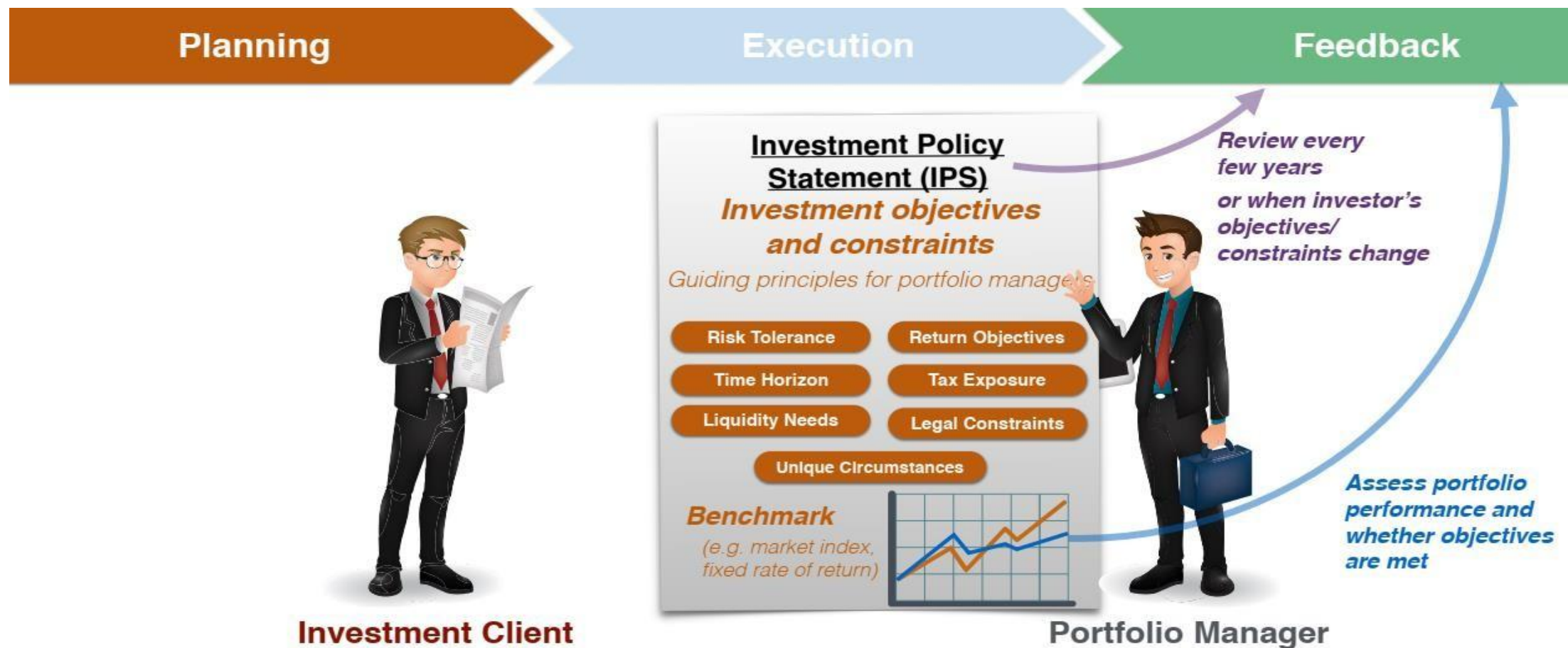
- Portfolio Monitoring and rebalancing
- Performance measurement and reporting

3.1 Planning Stage

- The first step in the investment process is to understand the client's needs (objectives and constraints) and develop an investment policy statement (IPS).
- A portfolio manager is unlikely to achieve appropriate results for a client without a prior understanding of the client's needs.



3.1.1 Formation of IPS



3.1.1 Planning Stage

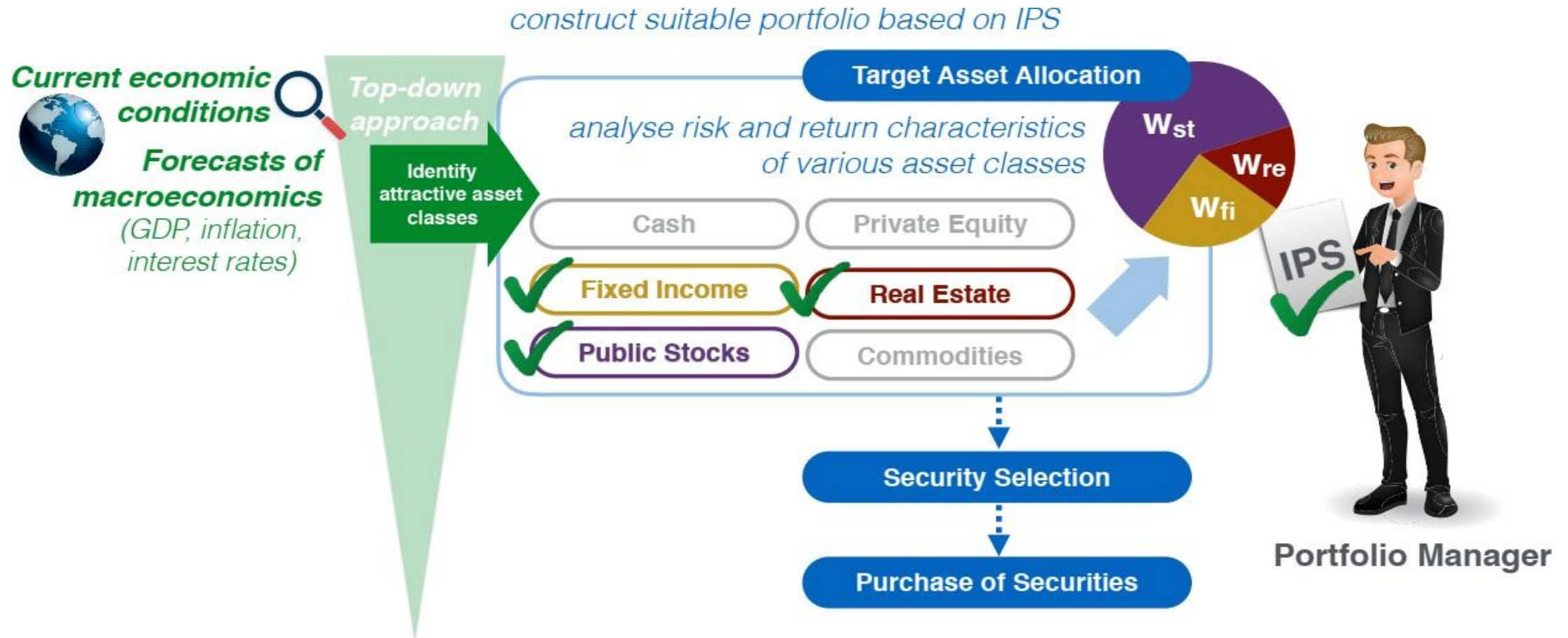
- The IPS is a written planning document that describes the client's investment objectives and the constraints that apply to the client's portfolio.
- The IPS may state a benchmark—such as a particular rate of return or the performance of a particular market index—that can be used in the feedback stage to assess the performance of the investments and whether objectives have been met.
- The IPS should be reviewed and updated regularly (for example, either every three years or when a major change in a client's objectives, constraints, or circumstances occurs).

3.2 Execution Stage

construct suitable portfolio based on IPS



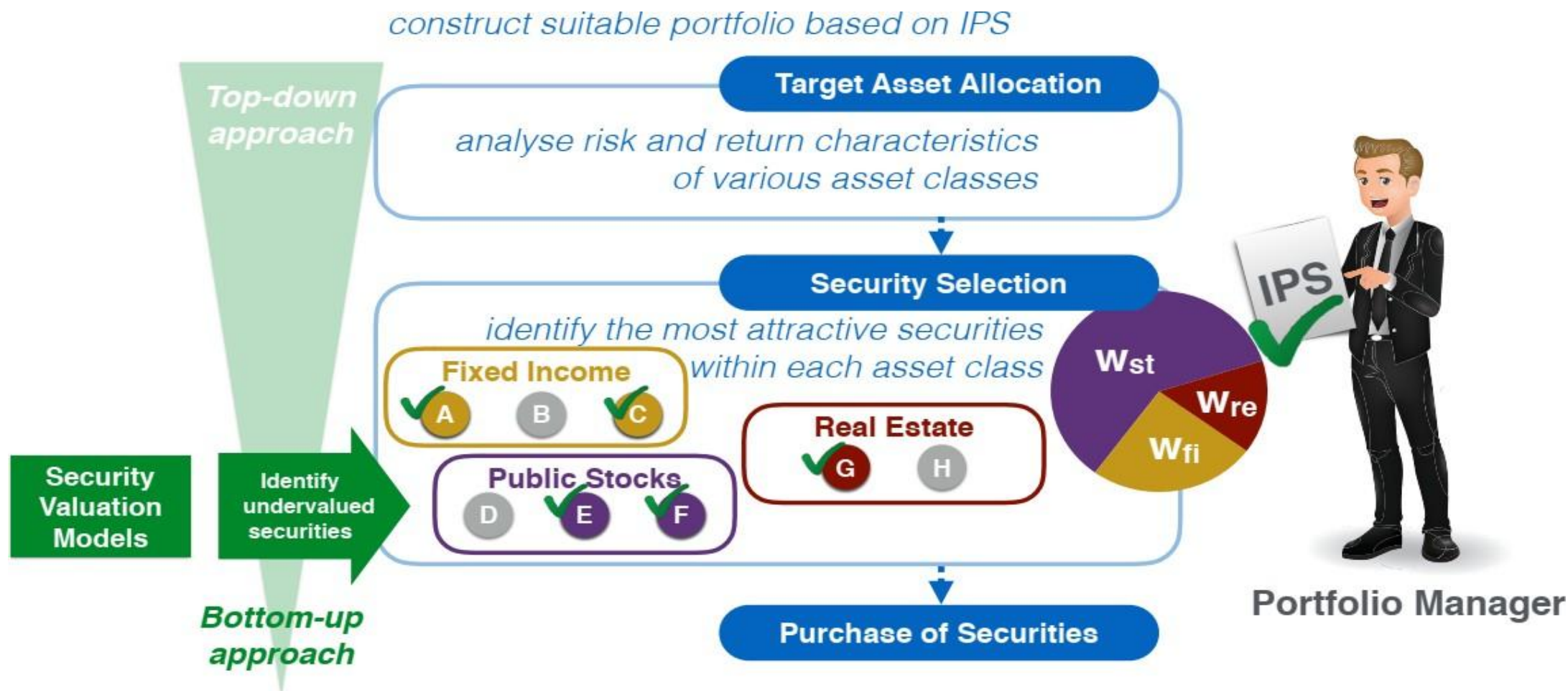
3.2.1 Execution Stage – Target Asset Allocation



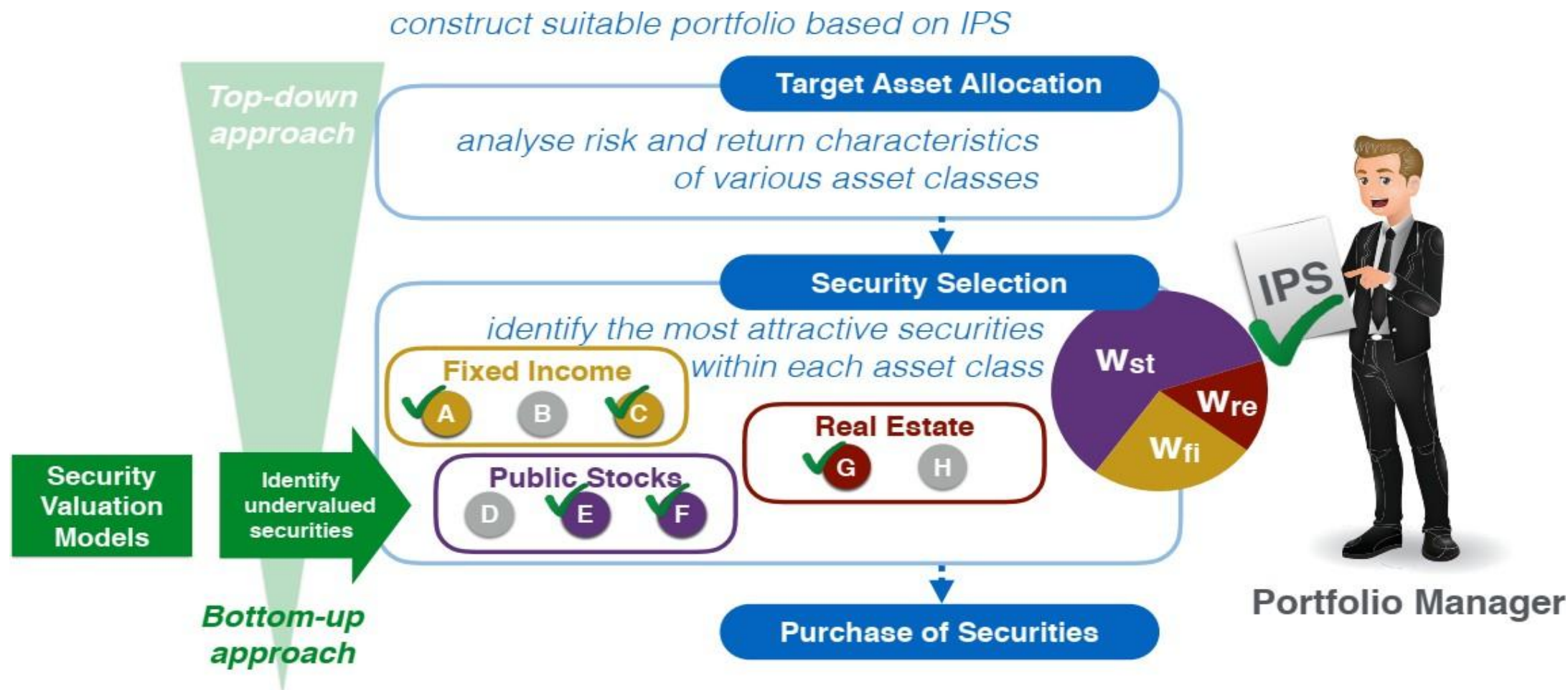
3.2.1 Execution Stage – Target Asset Allocation

- The next step in the process is to assess the risk and return characteristics of the available investments.
- The analyst forms economic and capital market expectations that can be used to form a proposed allocation of asset classes suitable for the client.
- Decisions that need to be made in the asset allocation of the portfolio include the distribution between equities, fixed- income securities, and cash; sub- asset classes, such as corporate and government bonds; and geographical weightings within asset classes.
- Economists and market strategists may set the top down view on economic conditions and broad market trends. The returns on various asset classes are likely to be affected by economic conditions; for example, equities may do well when economic growth has been unexpectedly strong whereas bonds may do poorly if inflation increases. The economists and strategists will attempt to forecast these conditions.

3.2.2 Execution Stage – Security Selection



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- There are two types of security analysis –
 1. Top down: A top- down analysis begins with consideration of macroeconomic conditions.
 2. Bottom -up: Rather than emphasizing economic cycles or industry analysis, a bottom- up analysis focuses on company- specific circumstances, such as management quality and business prospects.
-
- The top- down view can be combined with the bottom- up insights of security analysts who are responsible for identifying attractive investments in particular market sectors.
- They will use their detailed knowledge of the companies and industries they cover to assess the expected level and risk of the cash flows that each security will produce. This knowledge allows the analysts to assign a valuation to the security and identify preferred investments.

3.2.3 Execution Stage – Portfolio Construction



3.2.3 Execution Stage – Portfolio Construction

- The portfolio manager will then construct the portfolio, taking account of the target asset allocation, security analysis, and the client's requirements as set out in the IPS.
- A key objective will be to achieve the benefits of diversification (i.e., to avoid putting all the eggs in one basket).
- Decisions need to be taken on asset class weightings, sector weightings within an asset class, and the selection and weighting of individual securities or assets. The relative importance of these decisions on portfolio performance depends at least in part on the investment strategy selected.
- Although all decisions have an effect on portfolio performance, the asset allocation decision is commonly viewed as having the greatest impact.
- The portfolio construction phase also involves trading. Once the portfolio manager has decided which securities to buy and in what amounts, the securities must be purchased.

3.3 Feedback stage

Once the portfolio has been constructed, it needs to be monitored and reviewed and the composition revised as the security analysis changes because of changes in security prices and changes in fundamental factors.

maintenance stage

**Investor's
circumstances
change**



Investment Client

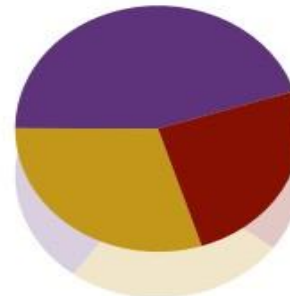
**Risk/return
characteristics
change**

Fixed Income

Public Stocks

Real Estate

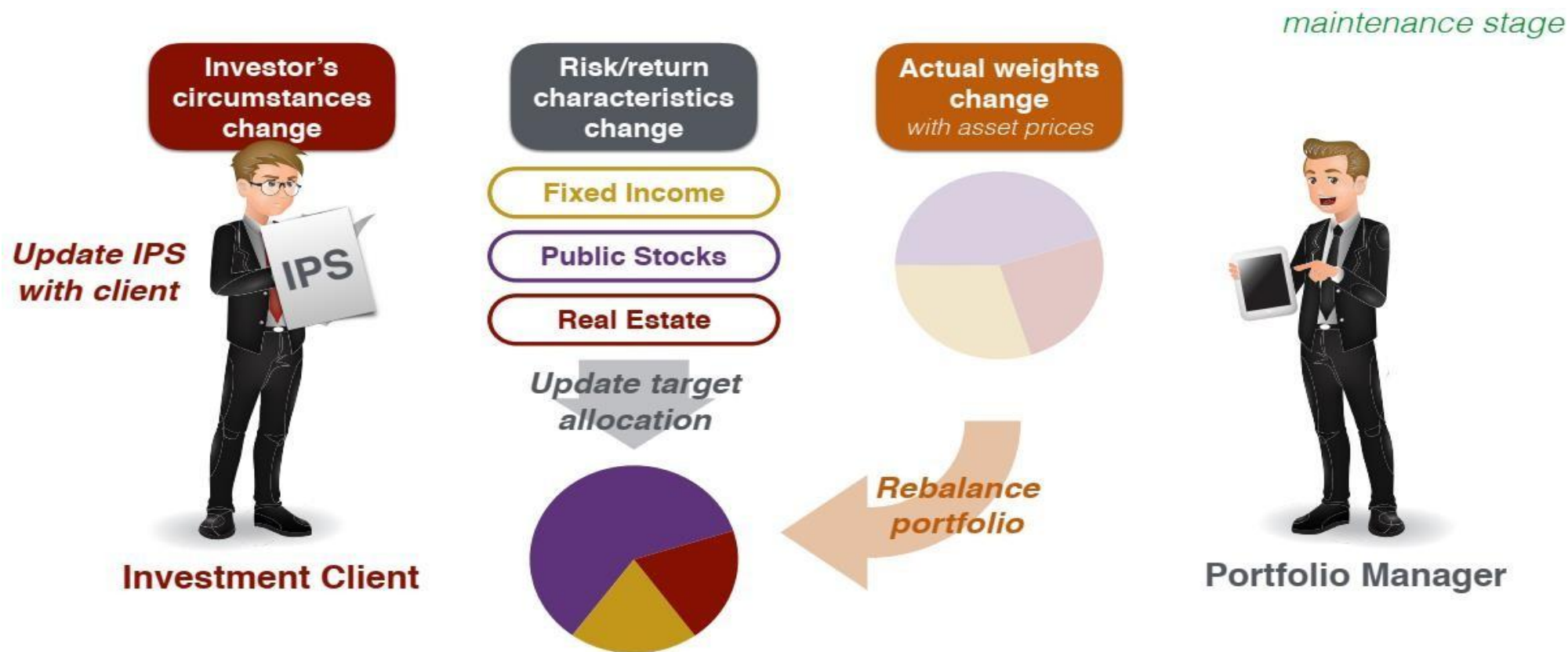
**Actual weights
change**
with asset prices



Portfolio Manager

3.3 Feedback stage

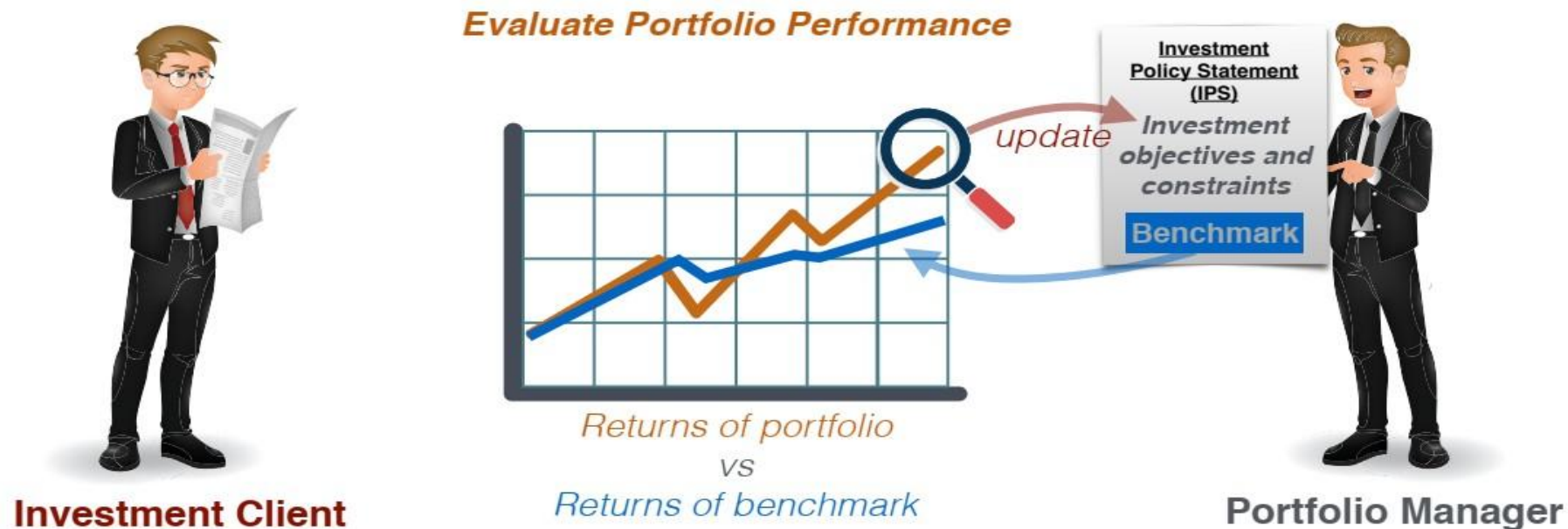
When security and asset weightings have drifted from the intended levels as a result of market movements, some rebalancing may be required.



3.3 Feedback stage

Finally, the performance of the portfolio must be evaluated, which will include assessing whether the client's objectives have been met. . Analysis of performance may suggest that the client's objectives need to be reviewed and perhaps changes made to the IPS.

maintenance stage



4 Distinguishing Characteristics of Investors

Distinguishing Characteristics that Defines an Investor



Risk Tolerance

degree of variability in returns that the investor is able and willing to withstand



5 Types of Investors



Individual Investors



Institutional Investors

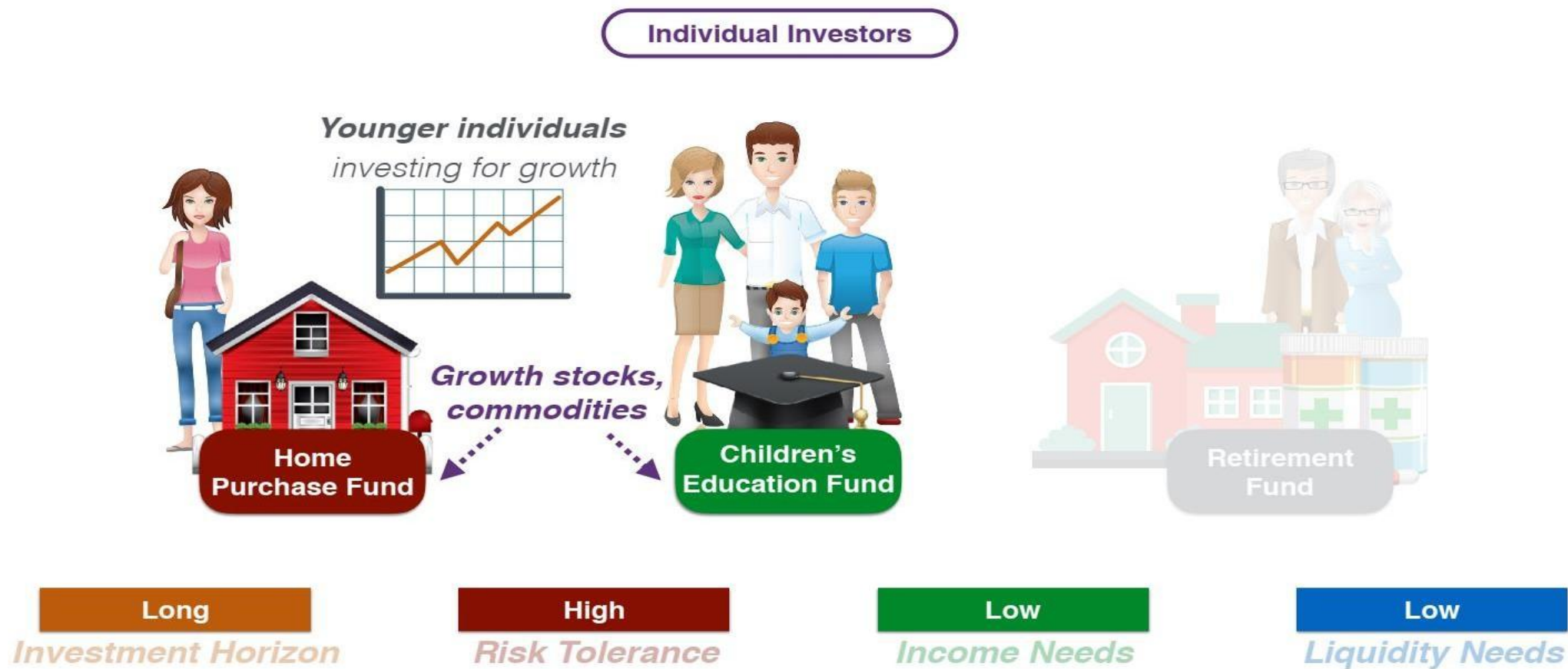
5.1 Individual Investors

Motives for investing :

- Short- term goals can include providing for children's education, saving for a major purchase (such as a vehicle or a house), or starting a business.
- The retirement goal— investing to provide for an income in retirement—is a major part of the investment planning of most individuals.

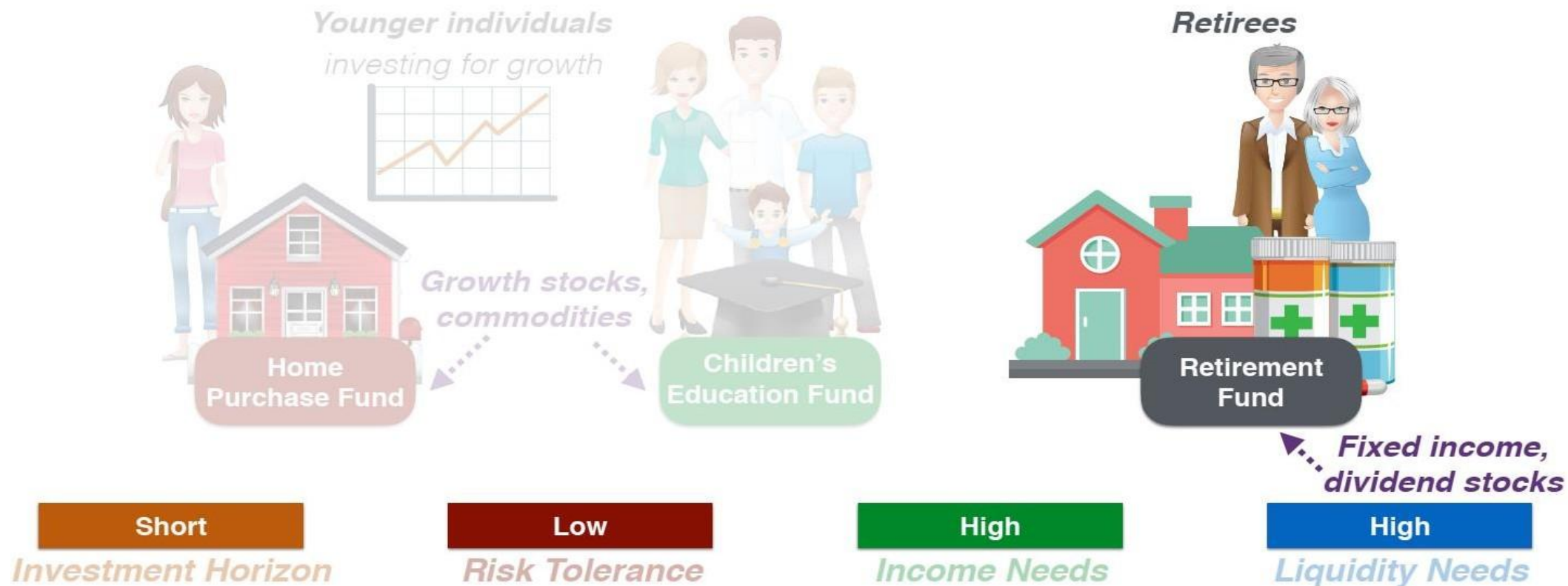


5.1 Individual Investors



5.1 Individual Investors

Individual Investors



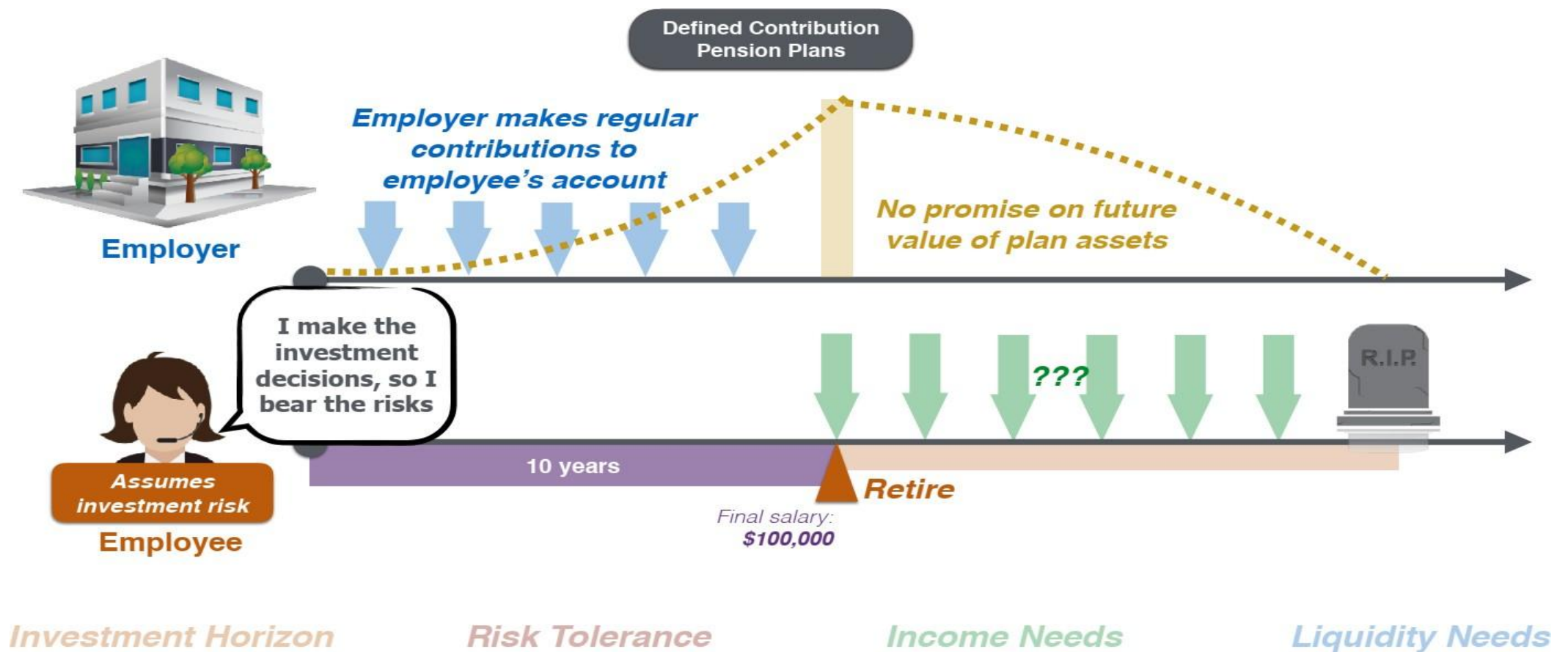
5.1 Individual Investors

- Some individuals will be investing for growth and will therefore seek assets that have the potential for capital gains.
- Others, such as retirees, may need to draw an income from their assets and may therefore choose to invest more in fixed- income and dividend- paying shares.

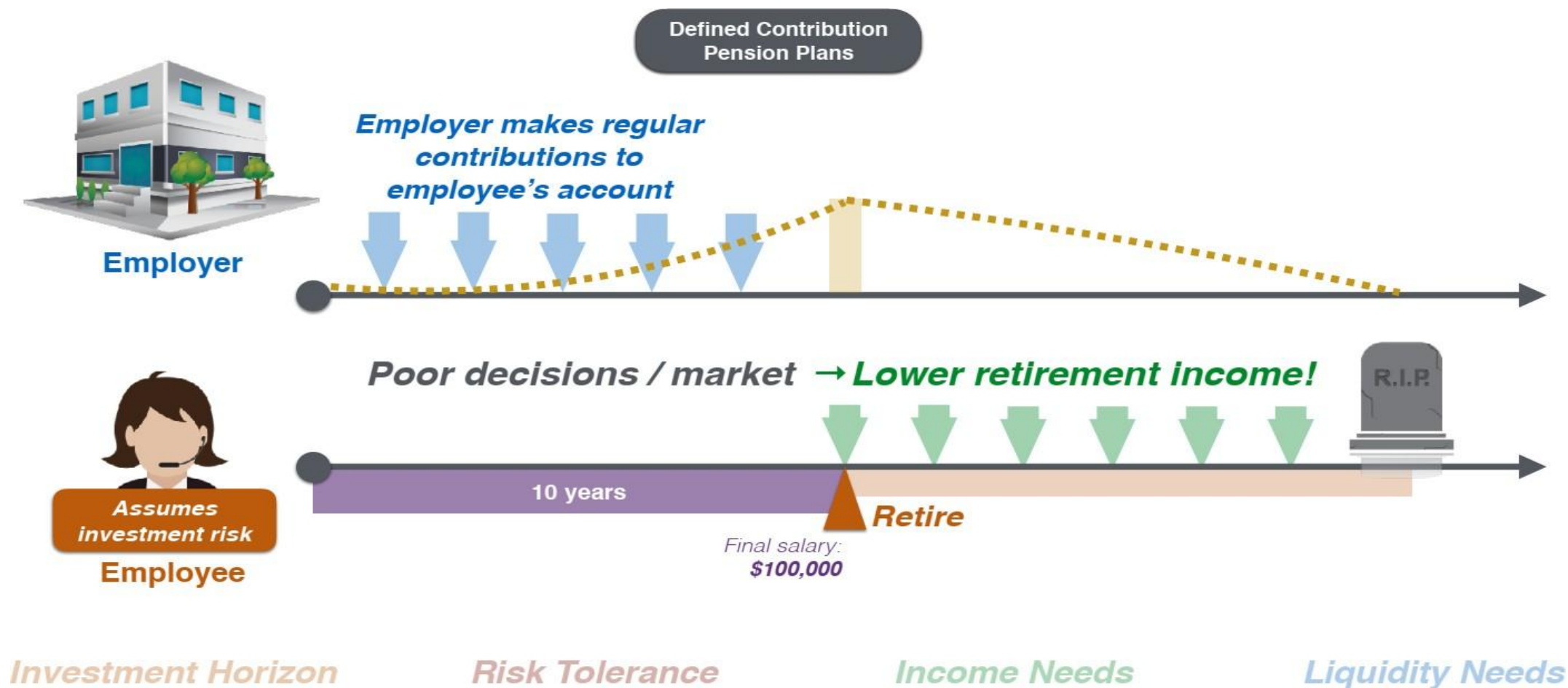
5.1.1 Defined Contribution Pension Plans

- DC plans are retirement plans in the employee's name usually funded by both the employee and the employer.
- DC plans, individuals will invest part of their wages while working, expecting to draw on the accumulated funds to provide income during retirement or to transfer some of their wealth to their heirs.
- The key to a DC plan is that the employee accepts the investment and inflation risk and is responsible for ensuring that there are enough assets in the plan to meet their needs upon retirement

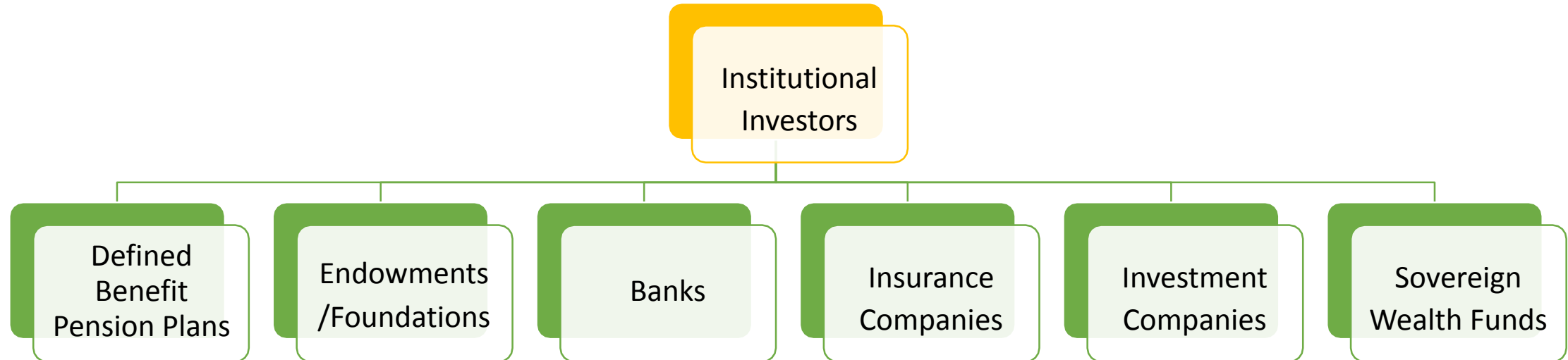
5.1.1 Defined Contribution Pension Plans



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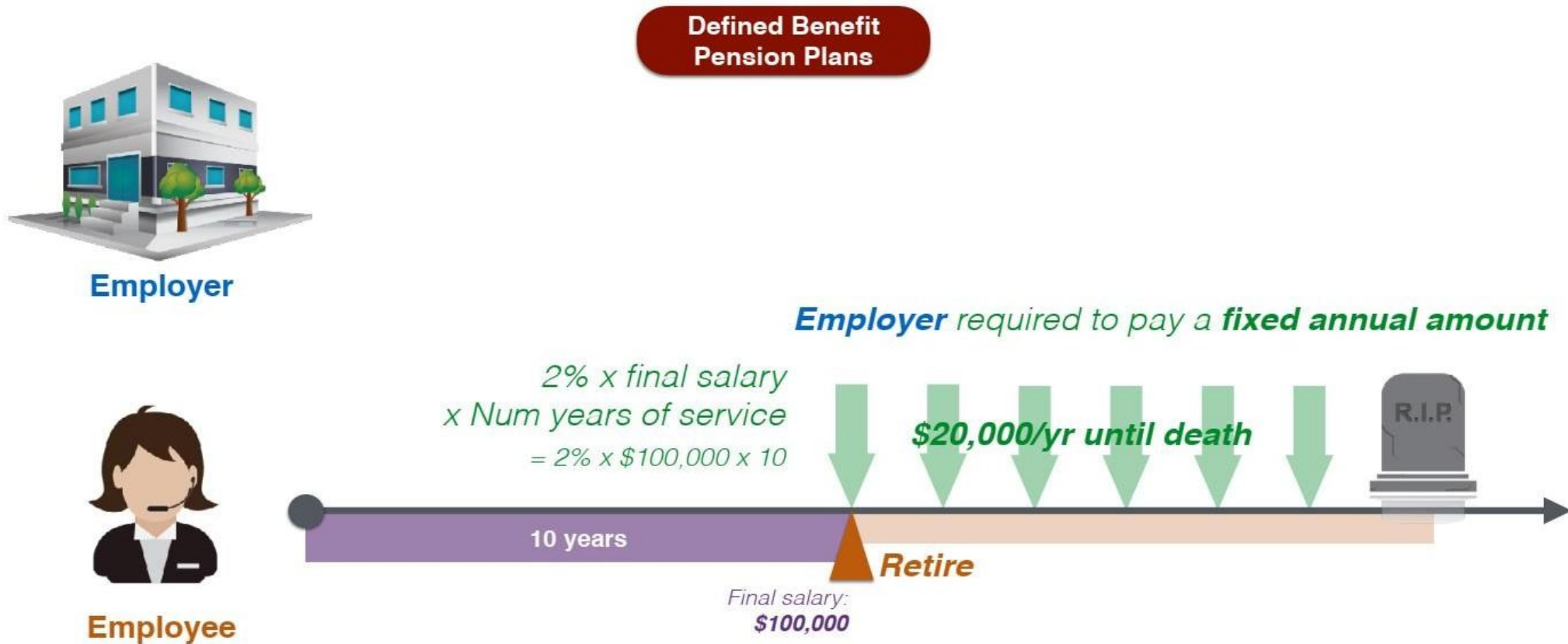
5.2 Institutional Investors



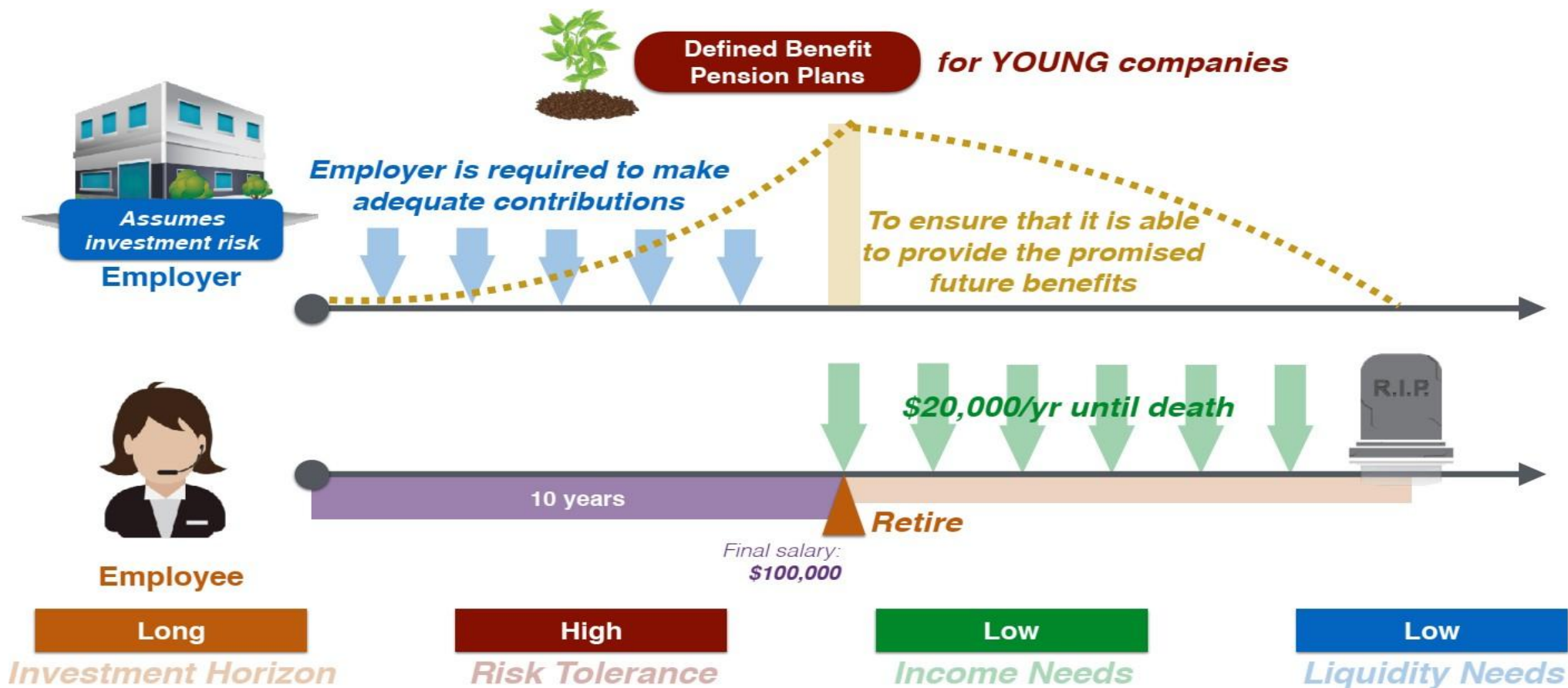
5.2.1 Defined Benefit Pension Plans

- Defined benefit pension plans (DB plans) are company- sponsored plans that offer employees a predefined benefit on retirement. The future benefit is defined because the DB plan requires the plan sponsor to specify the obligation stated in terms of the retirement income benefits owed to participants.
- Employers are responsible for the contributions made to a DB plan and bear the risk associated with adequately funding the benefits offered to employees.
- Plans are committed to paying pensions to members, and the assets of these plans are there to fund those payments.
- The plan may have an indefinitely long time horizon if new plan members are being admitted or a finite time horizon if the plan has been closed to new members.

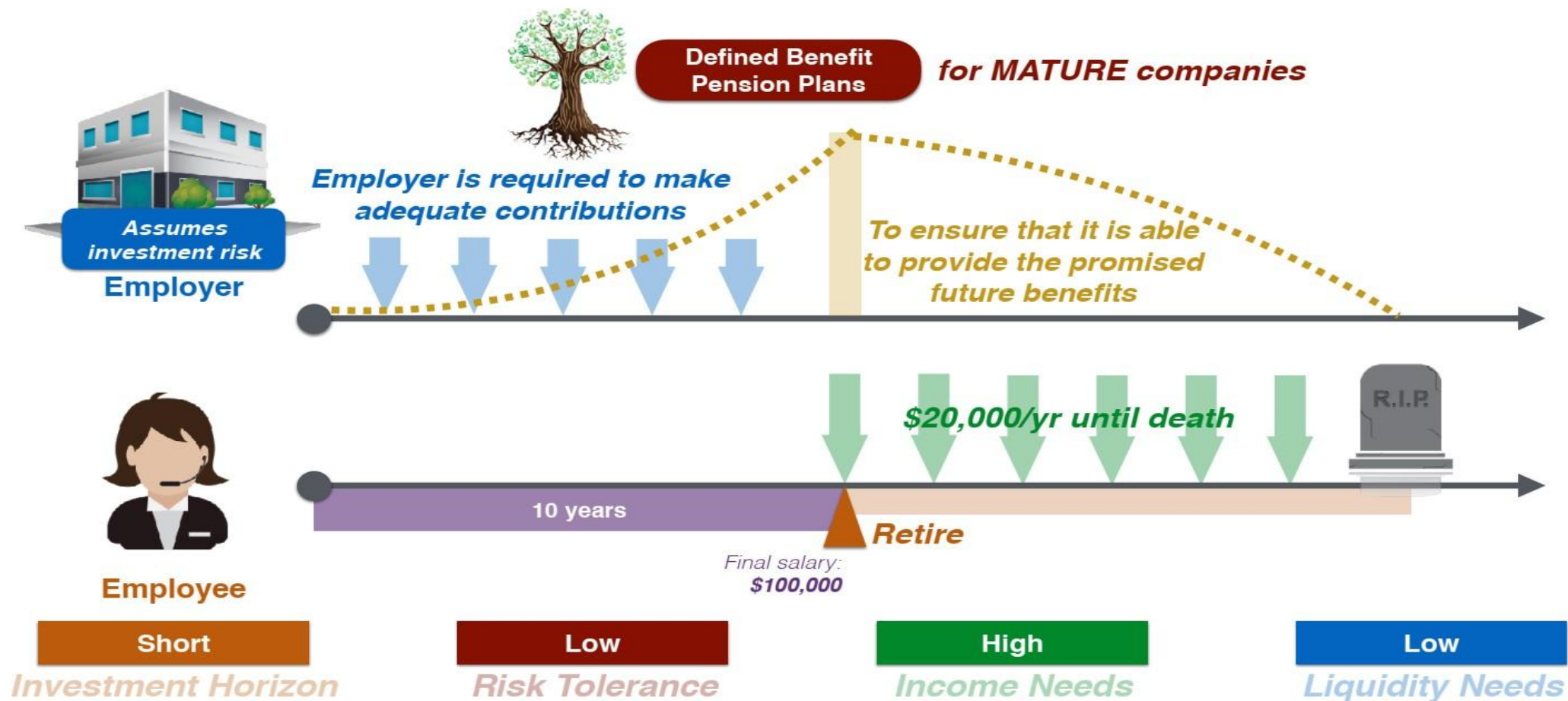
5.2.1 Defined Benefit Pension Plans



5.2.1 Defined Benefit Pension Plans: Young Companies



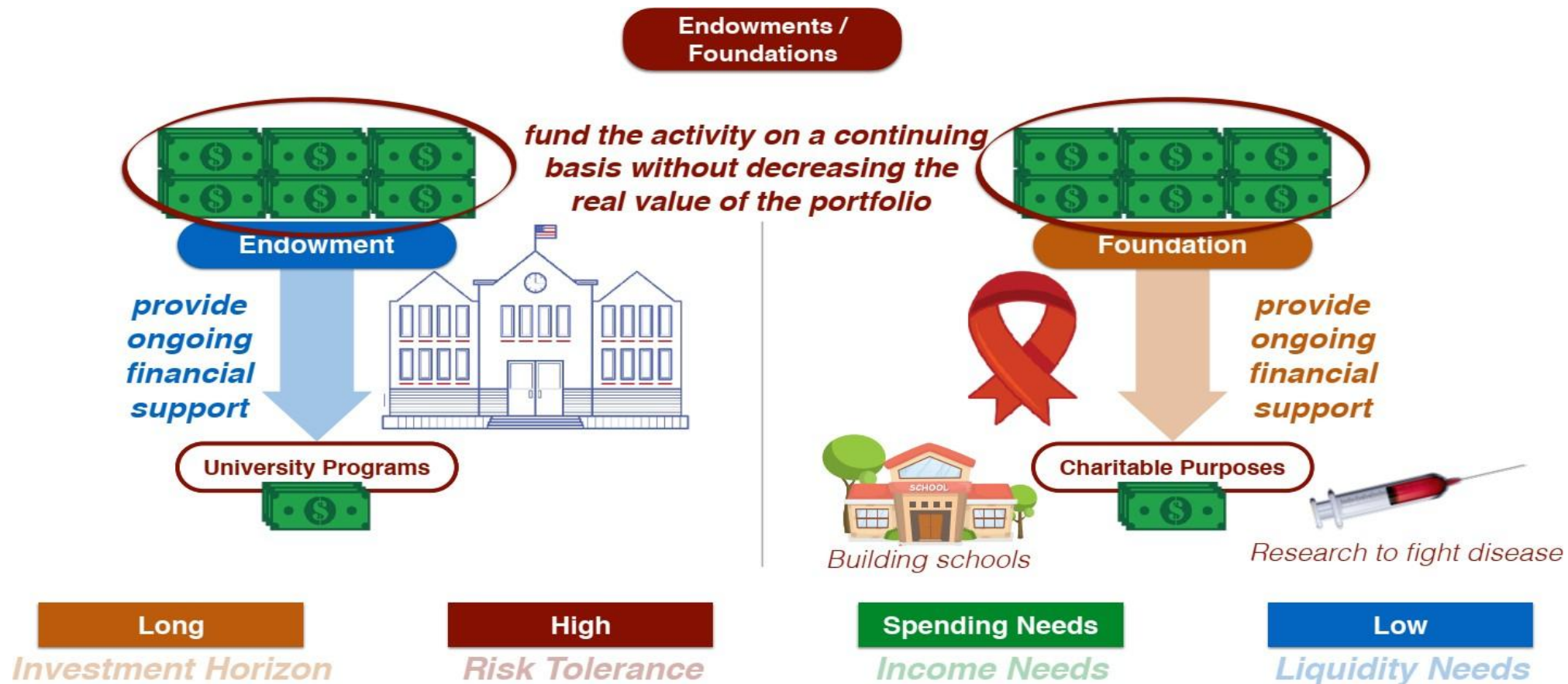
5.2.1 Defined Benefit Pension Plans: Mature Companies



5.2.2 Endowments/Foundations

- Endowments are funds of non- profit institutions that help the institutions provide designated services. In contrast, foundations are grant- making entities.
- A typical investment objective of an endowment or a foundation is to maintain the real (inflation- adjusted) capital value of the fund while generating income to fund the objectives of the institution.

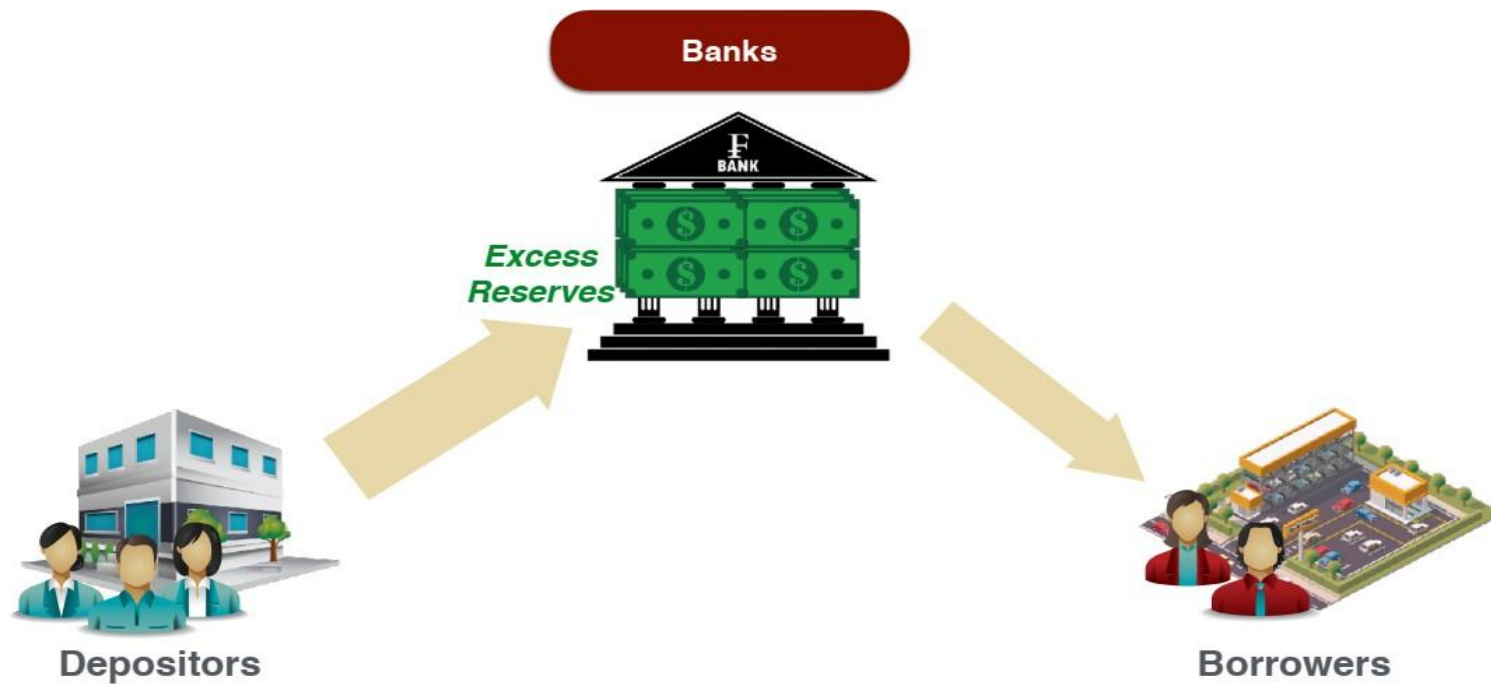
5.2.2 Endowments/Foundations



5.2.3 Banks

- Banks are financial intermediaries that accept deposits and lend money.
- Banks often have excess reserves that are invested in relatively conservative and very short- duration fixed- income investments, with a goal of earning an excess return above interest obligations due to depositors.
- Liquidity is a paramount concern for banks that stand ready to meet depositor requests for withdrawals.
- Many large banks have asset management divisions that offer retail and institutional products to their clients.

5.2.3 Banks



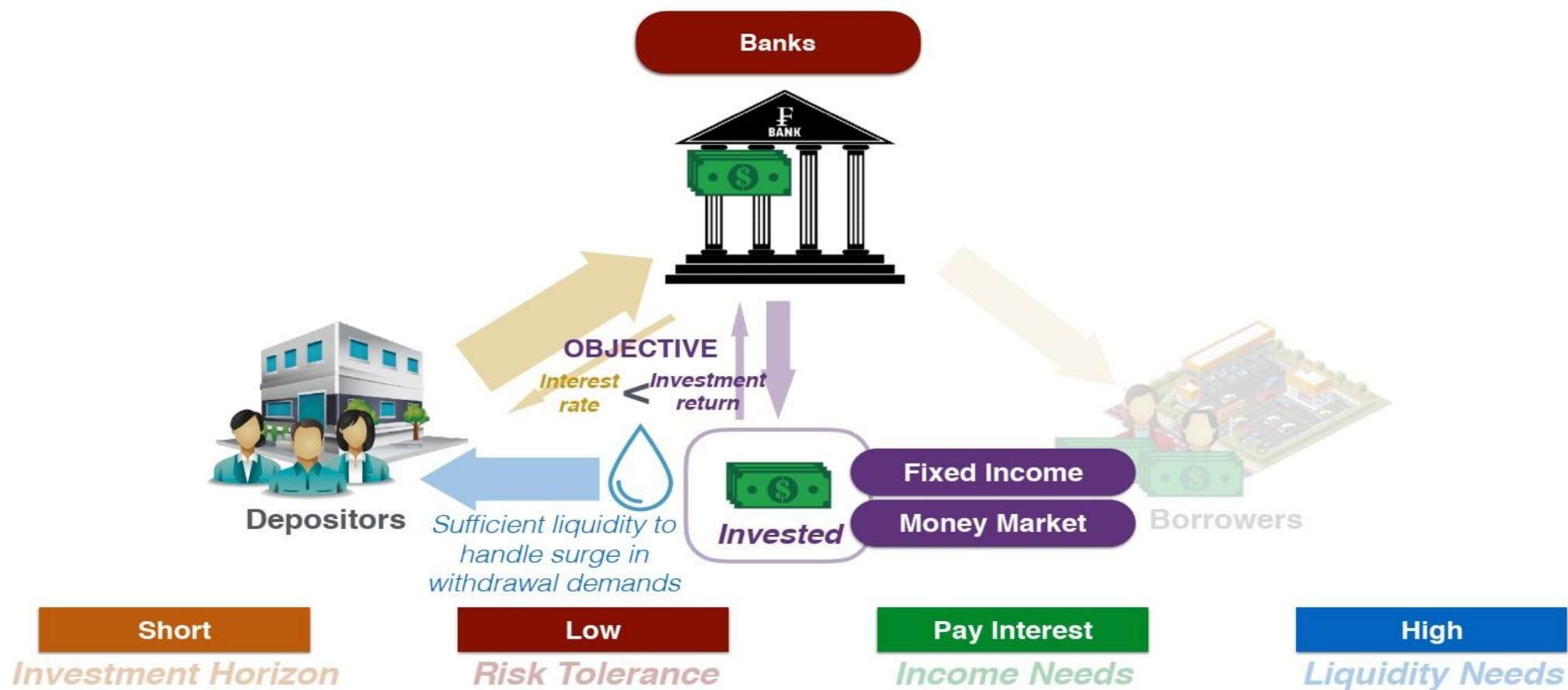
Investment Horizon

Risk Tolerance

Income Needs

Liquidity Needs

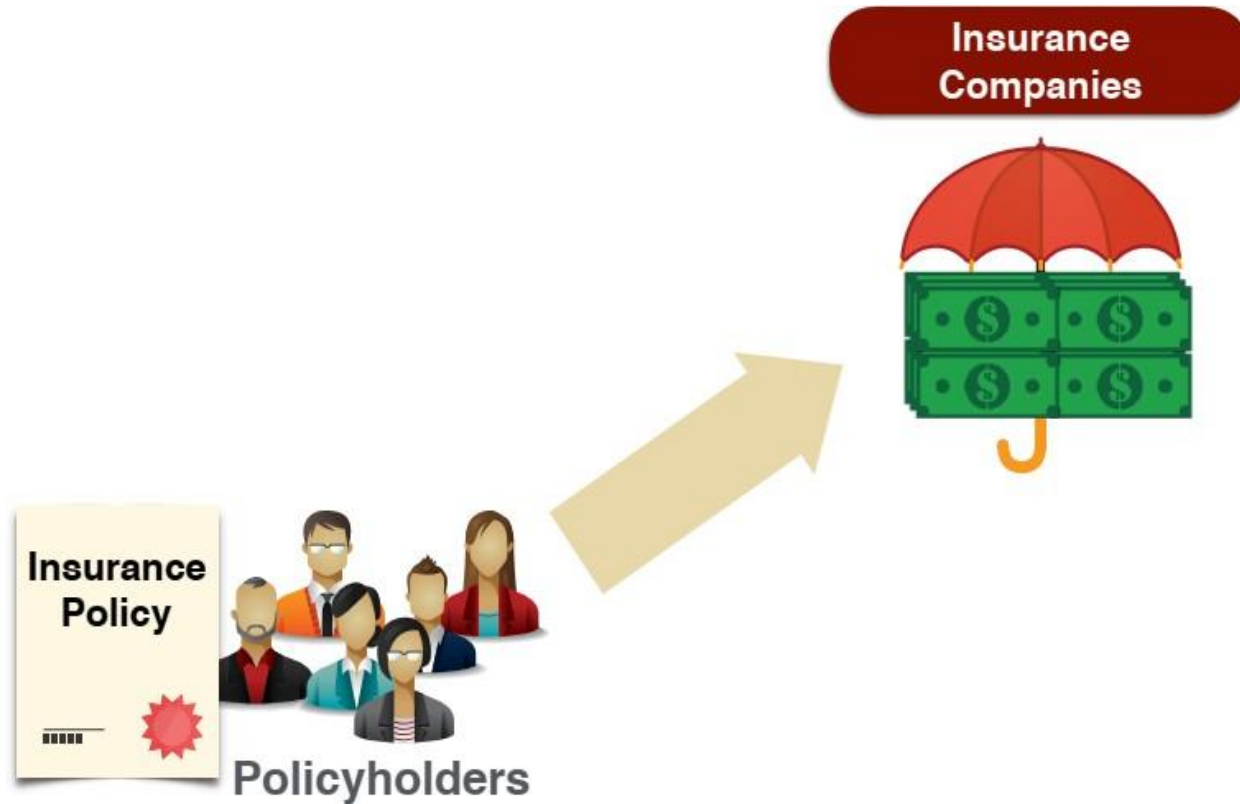
5.2.3 Banks



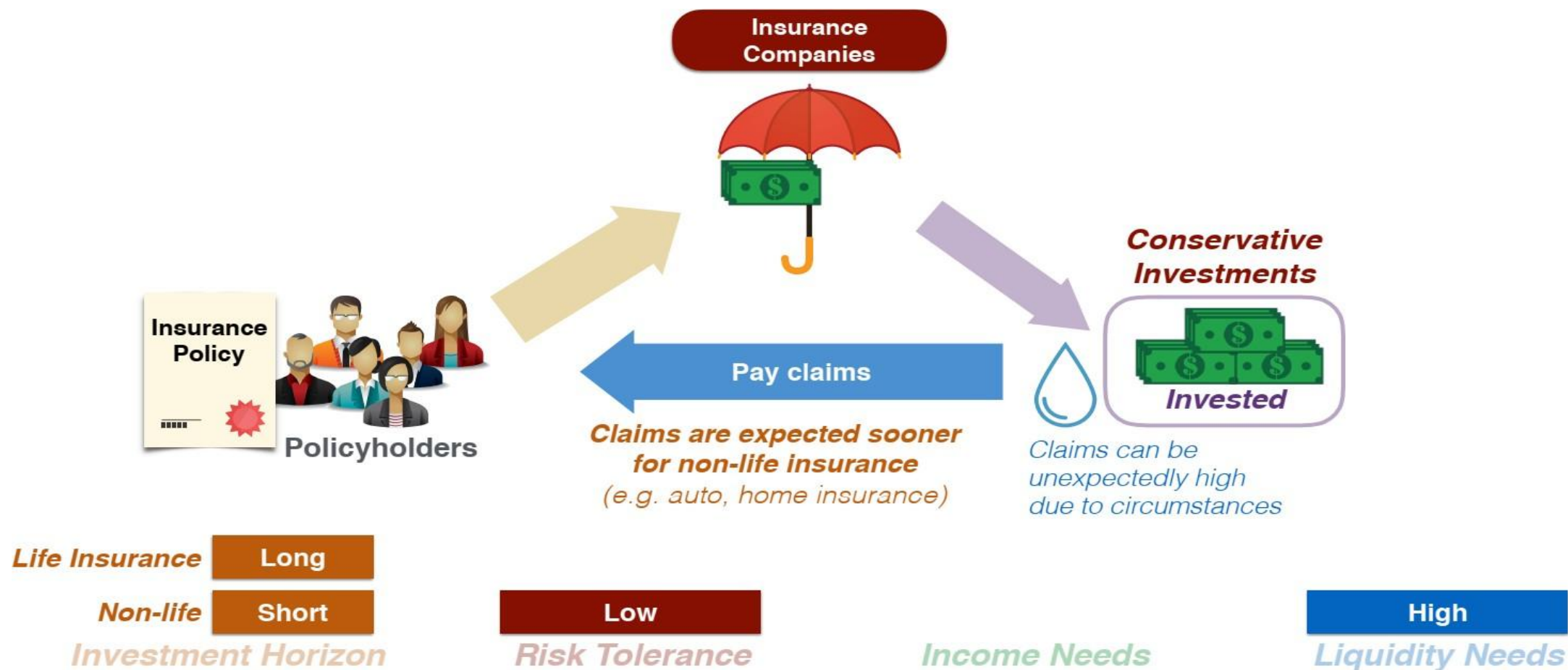
5.2.4 Insurance Companies

- Insurance companies receive premiums for the policies they write, and they need to invest these premiums in a manner that will allow them to pay claims.
- Insurance premiums from policyholders comprise an insurance company's general account. To pay claims to policyholders, regulatory guidelines maintain that an insurance company's general account is typically invested conservatively in a diverse allocation of fixed- income securities.
- In contrast to the general account, an insurer's surplus account is the difference between its assets and liabilities. An insurer's surplus account typically targets a higher return than the general account and thus often invests in less- conservative asset classes, such as public and private equities, real estate, infrastructure, and hedge funds.

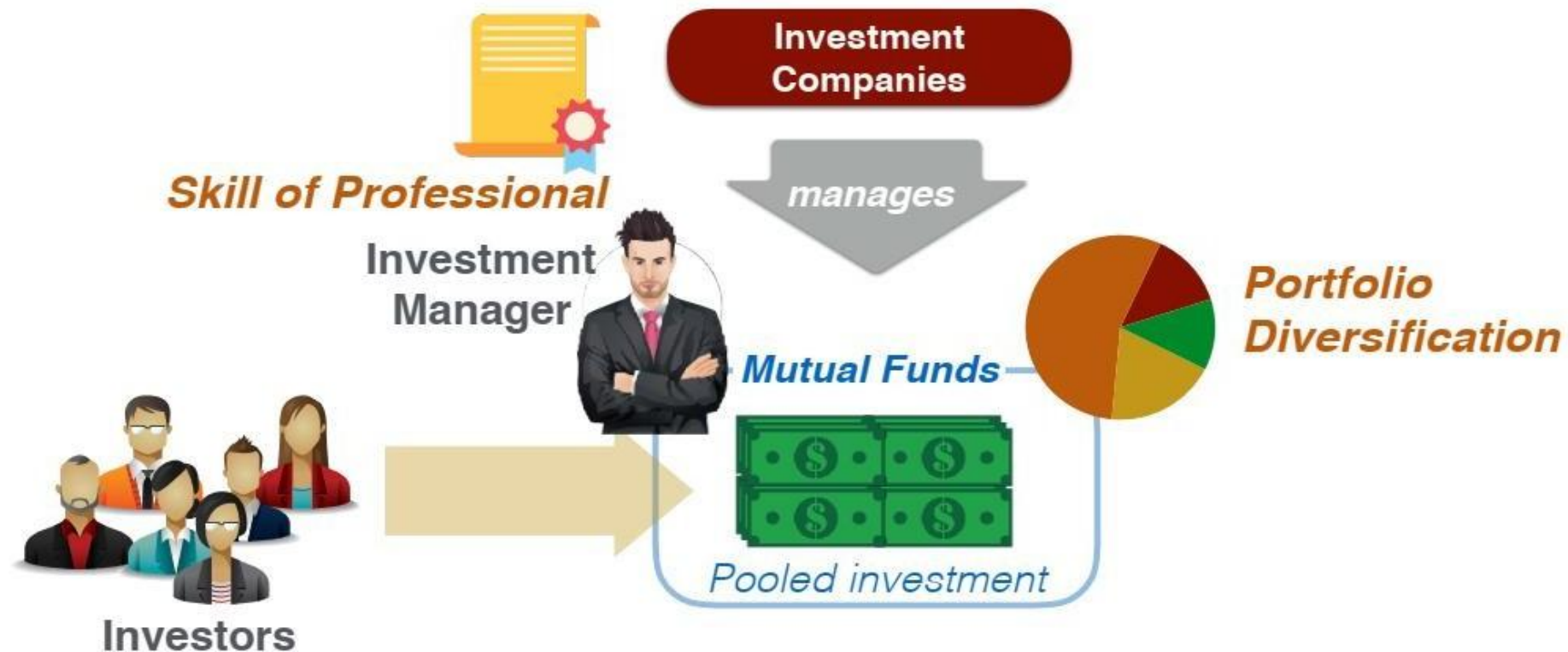
5.2.4 Insurance Companies



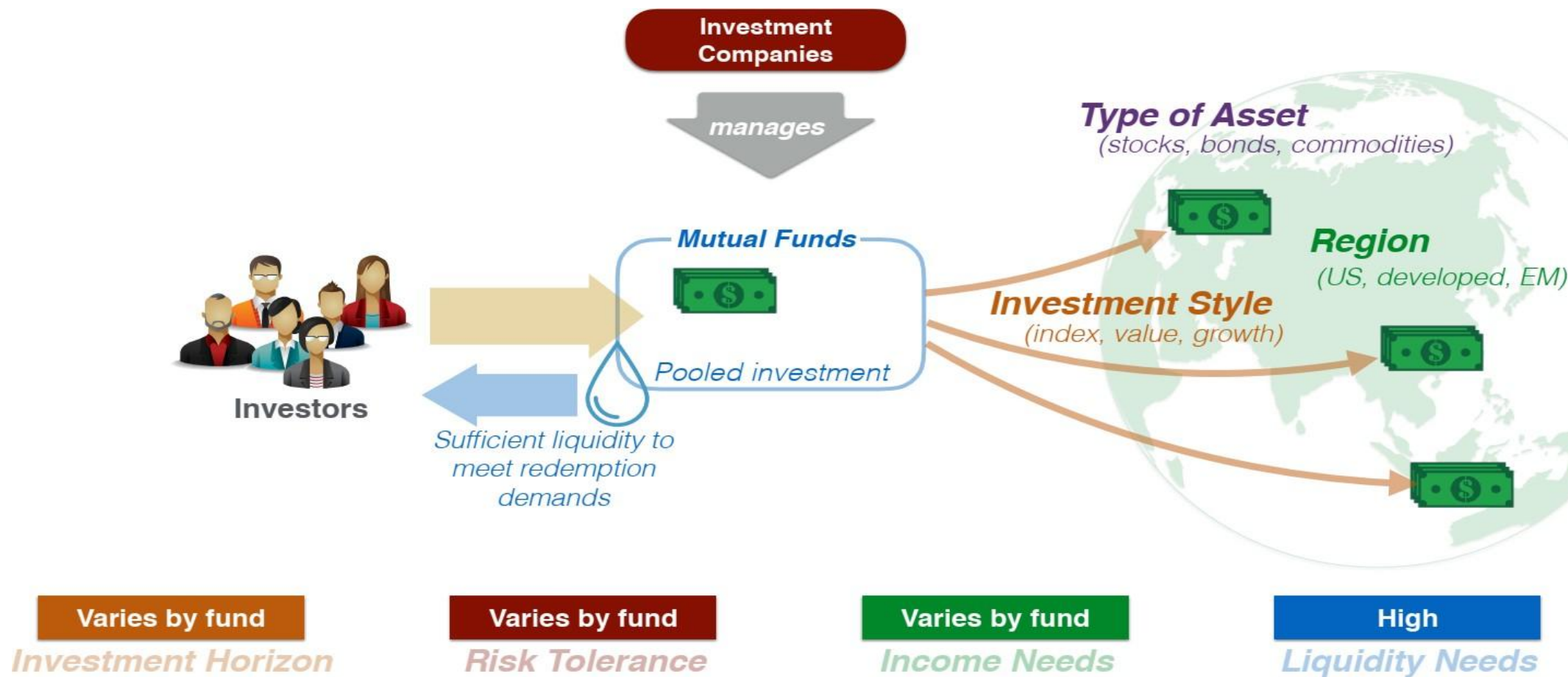
5.2.4 Insurance Companies



5.2.5 Investment Companies



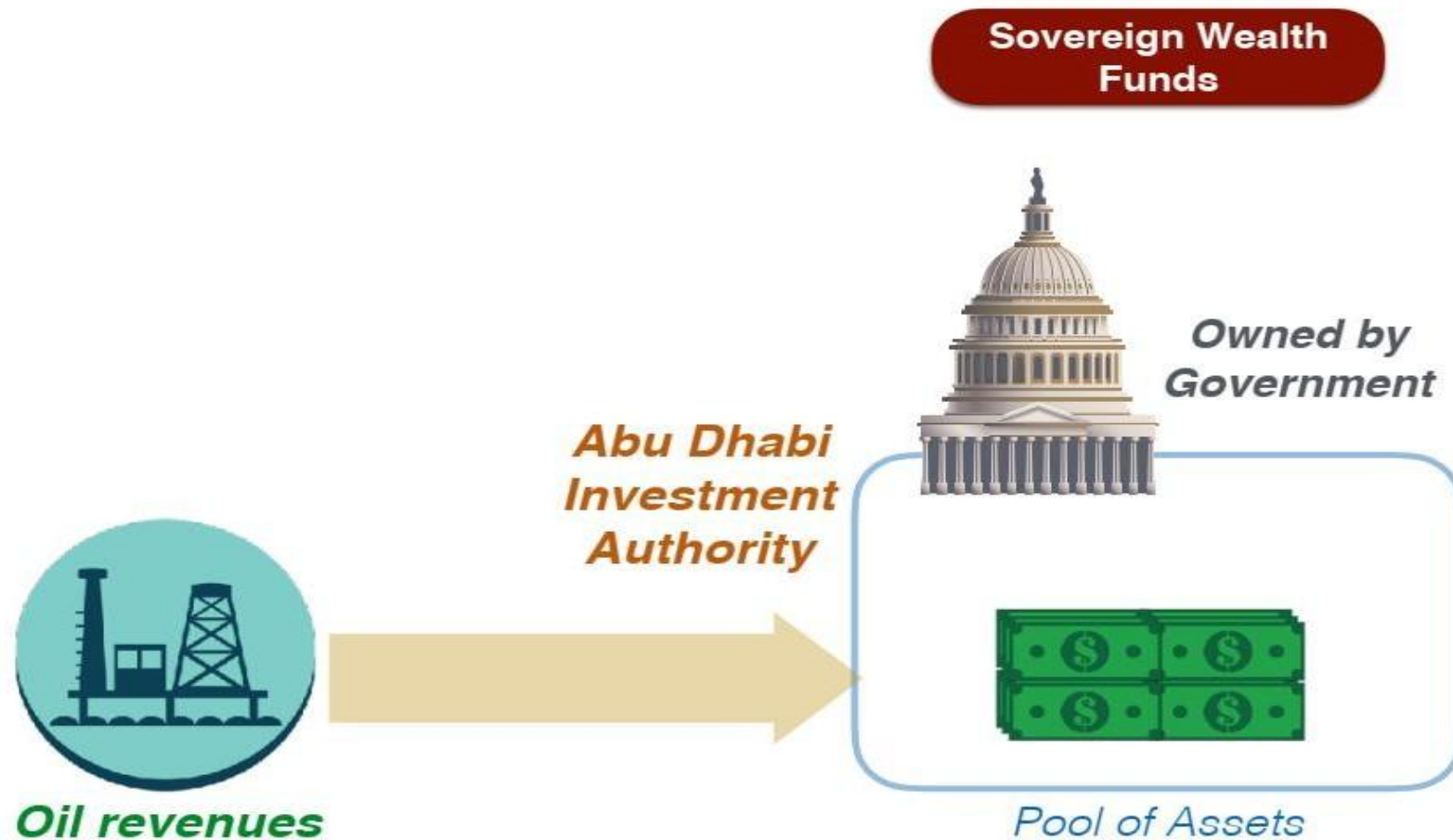
5.2.5 Investment Companies



5.2.6 Sovereign Wealth Funds

- Sovereign wealth funds (SWFs) are state- owned investment funds or entities that invest in financial or real assets.
- SWFs do not typically manage specific liability obligations, such as pensions, and have varying investment horizons and objectives based on funding the government's goals (for example, budget stabilization or future development projects).

5.2.6 Sovereign Wealth Funds



6 Characteristics of Different Types of Investors

Investor Type	Investment Horizon	Risk Tolerance	Income Needs	Liquidity Needs
Individuals	<i>Depends</i>	<i>Depends</i>	<i>Depends</i>	<i>Depends</i>
Defined Benefit Pension Plans	Short	Low	High	Low
Endowments / Foundations	Long	High	Spending Needs	Low
Banks	Short	Low	Pay Interest	High
Insurance Companies	Life Insurance: Long	Low	Depends on Products	High
	Non-life: Short			
Investment Companies	Varies by fund	Varies by fund	Varies by fund	High
	<i>Investment Horizon</i>	<i>Risk Tolerance</i>	<i>Income Needs</i>	<i>Liquidity Needs</i>

6 Question

1. Which of the following institutions will on average have the greatest need for liquidity?
 - A. Banks
 - B. Investment companies
 - C. Non-life companies

2. Which of the following institutional investors will most likely have the longest time horizon?
 - A. Defined benefit plan
 - B. University endowment
 - C. Life insurance company

3. A defined benefit plan with a large number of retirees is likely to have a high need for:
 - A. Income
 - B. Liquidity
 - C. Insurance

4. Which of the following institutional investors will most likely to manage investments in mutual funds?
 - A. Insurance companies
 - B. Investment companies
 - C. University endowments

Solution

1. A
2. B
3. A
4. B

Summary



Summary

Characteristics of investors: risk tolerance, income needs, liquidity needs and investment horizon.

Types of investors:

- Individual investors, example: home purchase fund, retirement fund
 - Institutional investors, example: defined benefit pension plans, banks, insurance company, etc.
1. A defined benefit pension plan is a type of pension plan in which an employer/sponsor promises a specified pension payment, lump-sum or combination thereof on retirement that is predetermined by a formula based on the employee's earnings history, tenure of service and age, rather than depending directly on individual investment returns.
 2. The defined-contribution plan differs from a defined-benefit plan, also called a pension plan, which guarantees participants receive a certain benefit at a specific future date. Defined contribution plans take pre-tax dollars and allow them to grow in capital market investments on a tax-deferred basis.

Summary

- **Endowment** is a fund held by public/ private institution. It funds the activity on a continuous basis without decreasing the real value of the portfolio.
- A **bank** is a financial institution licensed to receive deposits and make loans.
- An **insurance company** is a financial institution which underwrites the risk of loss of, or damage to, personal and business assets (general insurance) and life and limb (life and accident insurance). Example- LIC
- An **investment company** is a corporation or trust engaged in the business of investing the pooled capital of investors in financial securities.
- A **sovereign wealth fund** is a state-owned investment fund comprised of money generated by the government, often derived from a country's surplus reserves. Example- Abu Dhabi Investment Authority.