# Investment Vehicles and Structures

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# Learning Outcome Statements

1. Explain the purpose of security market indices and identify their types.
2. Compare and contrast investing through direct investments in securities and assets with investing through indirect investments.
3. Distinguish among closed-end funds, open-end funds, exchange traded funds, and unit investment trusts and identify their relative advantages.
4. Explain the differences between separate accounts and commingled accounts.
5. Describe the characteristics of hedge funds.
6. Describe the characteristics of fund of funds.
7. Describe structured investment products, including linked notes, equity-linked annuities, and exchange traded notes.
8. Compare investment in taxable and tax-advantaged accounts.
9. Compare defined contribution and defined benefit pension schemes.

# Introduction

Investment professionals have created a myriad of finance products and services to help their clients solve the investment and risk management problems that they face. The great variety of products and services reflects the many different problems that their clients face.

Understanding these products and how they are structured is necessary to appreciate how the investment industry creates value for its clients. With this knowledge, investment professionals can better serve their clients, and support personnel can better contribute to the value creation process.

This chapter is about investment vehicles and structures. *Investment vehicles* are the assets that investors use to move money from the present to the future. These assets include securities such as stocks, bonds, and warrants, and real assets such as gold, railroad cars, and real estate parcels. Many investment vehicles are entities that own other investment vehicles. For example, an equity mutual fund is an investment company that owns stocks.

*Investment structure* refers to how investors hold their investments and how those investments are managed, that is, it refers to the *structure* of investment vehicles. An equity mutual fund represents one type of investment structure: a pooled investment with undivided interests managed by a professional investment manager. A separate account is another type of investment structure: an investment account that serves a single entity, which may be self-directed or professionally managed. Practitioners have developed many types of investment structures to serve investors with various needs. They employ these structures to create useful investment vehicles, many of which they construct from other vehicles.

*Investment products* are the investment vehicles that the investment industry provides to investors. This reading introduces the most important investment products and explains how they are structured, and how those structures serve investors. Understanding these products and how they benefit clients is a primary goal of this curriculum.

Security market indices play essential roles in the structure, management, and evaluation of most investment products. Accordingly, the discussion starts with security market indices.

# Security Market Indices

A *security market index* is a series of numbers that show how the value of an asset class or a market for an asset class has changed over time. Many indices such as the FTSE 100, the Dow Jones Industrial Average (DJIA), and the Nikkei 225 are widely published. Practitioners also create many indices for private use.

Indices are computed from the prices of assets chosen by the *index sponsor* to represent the asset class for which the sponsor wants to characterize values. The list of assets included in the index is the *index list*.

The percentage change in the value of an index over some time interval is the *index return*. Analysts focus more on index returns than on index values because index levels are arbitrary. For example, the value of the FTSE 100 was arbitrarily set to a base value of 1,000 on January 3, 1984 when the Financial Times and London Stock Exchange created the index.

## How indices are computed

The DJIA may be the best known security market index. When Charles Dow first created the DJIA in 1896, it was a simple average of the prices of 12 large American industrial stocks that he chose to broadly represent the performance of the largest industrial companies then traded at the New York Stock Exchange. The DJIA thus rose or fell as the prices of these stocks rose or fell.

Dow and his business associate Edward Jones observed that their price index would drop when stocks split. For example, when companies distribute an additional share to their shareholders for every share that they hold, their stock prices drop by half. Without an adjustment, an average price index would fall even though the split does not affect the investment values of the index stocks.

To deal with this problem, Dow and Jones decided to adjust the formula for computing the DJIA whenever stocks split to ensure that the split does not change the index value. In particular, on every day following the post-split price drop (called the x-date of the split), the average price is multiplied by a factor appropriately chosen to restore its former value.

Similar adjustments also are necessary when a low price stock is removed from the index and a high priced stock is added to replace it, or vice versa. The process of adding or removing stocks from the index list is called *index reconstitution*. Following a reconstitution, the factor used to adjust the average price is constant until the next split or reconstitution takes place.

The DJIA now represents the price performance of 30 large stocks that the current owner of the index—Dow Jones Indices—has chosen to represent the entire US equity market. Although the index list now includes non-industrial stocks and stocks traded at other stock exchanges, the DJIA index value is still proportional to the average price of the 30 listed stocks.

Since high priced stocks have more influence over the value of the index than do low priced stocks, the DJIA is a *price-weighted index*. The Nikkei 225 is an example of another price-weighted index.

Many security market indices are capitalization-weighted indices. *Capitalization-weighted indices*, which are also known as *value-* or *cap-weighted indices*, are computed by summing up the total market capitalization (for a stock, price times total shares owned by investors) of all securities on the index list. This extremely large number then is divided by a constant denominator to arrive at the index value. The denominator generally only changes when the index is reconstituted. Cap-weighted indices thus provide direct measures of the aggregate values of the securities upon which they are based.

Some indices are regularly rebalanced. An index is *rebalanced* when the index sponsor changes the weights given to the index securities. Note that rebalancing differs from reconstitution. An index is reconstituted when the index list is changed. Reconstitutions often require rebalancing.

An equal-weighted index is an example of an index that is regularly rebalanced. *Equal-weighted indices* show what returns would be made if an equal value were invested in each security on the index list. Index sponsors must rebalance these indices periodically as security prices change. To equalize values, they reduce the weights given to securities whose prices have increased and increase the weights given to the securities whose prices have fallen.

Index sponsors choose generally choose weekly, monthly, or quarterly intervals to rebalance those indices that regularly need to be rebalanced.

## Index funds

Many investment products are based on security market indices. The most important of these products are index funds. An *index fund* is a portfolio of securities designed to replicate the returns of a particular index.

Creating portfolios to replicate price-weighted and cap-weighted indices is quite easy:

* To replicate a price-weighted index, a portfolio must hold an equal number of units (for example, shares or bonds) of each index security. The value of such a portfolio thus is proportional to the sum of the security prices, just as is the price-weighted index value. Note that when a stock in the index splits, price-weighted index funds must sell most shares that they receive and use the proceeds to purchase additional shares in the other index securities to *rebalance* their portfolios.
* To replicate a value-weighted index, a portfolio must hold an equal percentage of all shares outstanding of each index security. The total value of the portfolio thus is exactly that same percentage of the aggregate value of all index securities, which is proportional to the value-weighted index value.

Index funds are very popular because they are easy to manage. In particular, once set up, index funds based on price- and value-weighted indices do not need to trade securities until the next index reconstitution or, in the case of a price-weighted equity index, until the next stock split.

Index funds represent a *passive investment strategy* because they simply buy and hold securities. Many investors like passive investment strategies because they generate minimal transaction costs, they are inexpensive to implement, and they produce returns that closely track market returns.

In contrast, managers of *actively managed portfolios* try to select securities that will outperform the market. Since the majority of active portfolio managers cannot beat the market, investors are very interested in identifying those who manages are most likely to outperform.

## Common analyses that depend on indices

To evaluate investment managers, investors often use indices as benchmarks against which to measure portfolio performance. This comparison is particularly meaningful to investors who would invest in index funds if they could not confidently identify active managers who will outperform the market.

More generally, practitioners use indices to attribute portfolio performance to various factors. For example, suppose that an equity portfolio outperformed the market by holding financial stocks when financial stocks performed well. Using an index of financial stocks, an analyst can determine to what extent the outperformance of the portfolio was due to exposure to the financial sector as opposed to selection of outperforming stocks within the financial sector. Answers to performance attribution questions such as these help investors identify the strengths of their investment managers.

*Performance evaluation and attribution* is the area of investments concerned with these questions. Since indices measure price performance, they are of fundamental importance to analysts working in this area.

Practitioners also analyze indices to characterize the risks associated with securities and portfolios. Most security values are correlated with the values of various indices. Risk analysts characterize these relations to predict how security and portfolio values will change when market or sector valuations change.

Indices vary by whether they are price indices or total return indices. A *price index* (not to be confused with a price-weighted index) only measures security values. The indices discussed above are price indices. In contrast, practitioners use *total return indices* to measure the total returns that investors would obtain if they bought and held the index securities.

The difference between price and total return indices is due to the income—generally dividends and interest—that securities pay to their owners. These payments increase the values of total return indices relative to price indices. In particular, the return to a total return index is equal to the price index return plus the income yield (percentage of total value returned as income) of the index securities.

Analysts generally use total return indices for most performance evaluation, attribution, and risk management problems because investors receive investment income in addition to price returns from their investments.

## The index universe

Analysts have created indices to measure the values of almost every imaginable market, asset class, country, and sector:

* *Broad* *market* *indices* cover an entire asset class, for example stocks or bonds, generally within a single country or region.
* *Multi-market indices* cover an asset class across many countries.
* *Sector indices* cover broad economic sectors—sets of industries related by common products or common customers.
* *Industry indices* cover single industries.
* *Style indices* provide benchmarks for common styles of investment management. Examples of equity style indices include indices of value and growth stocks; of small, mid, and large capitalization stocks; and of combinations of these classifications such as small growth.

Fixed-income (debt) indices also vary by characteristics of the underlying securities and by characteristics of the issuers. For example, separate indices are available for government or corporate credits, short-, mid-, or long-term bonds, investment grade and junk bonds, inflation-protected bonds, and convertible bonds.

Indices also exist that track the performance of alternative investments such as hedge funds, real estate investment trusts, and commodities.

## Other index products and strategies

In addition to index funds, indices play important roles in many other investment and risk management products. For example, the values of many futures, options, and swap contracts depend on index values as do the values of various contracts such as equity-linked annuity contracts.

The widespread availability of these financial products makes it easy for investors to employ *tactical asset allocation strategies* in which they shift risk from one asset class, market, sector, or country to another based on their expectations of future returns. In many cases they form these expectations by analyzing relations among various indices or the dynamics of particular markets.

# Investment Vehicles and Structures

## Direct and indirect investments

Investors make *direct investments* when they buy securities issued by corporations, governments, and individuals, and when they buy real assets such as real estate or timber.

Investors make *indirect investments* when they buy the securities of corporations, trusts, and partnerships that make direct investments. Examples of indirect investment vehicles include shares in mutual funds, exchange traded funds, real estate investment trusts (REITs); limited partnership interests in hedge funds, oil wells, and leasing companies; asset-backed securities such as mortgage-backed securities (MBSs), collateralized mortgage obligations (CMOs) and student loan asset-backed securities (SLABs); and interests in pension funds, pooled foundation funds, and pooled endowment funds.

Most indirect investment vehicles are *collective investment schemes* (also known as *pooled investments*) in which investors pool their money together to obtain the advantages of working together as part of a large group. The resulting economies of scale often significantly improve investment returns.

Indirect investments vehicles provide many advantages to investors in comparison to direct investments:

* They are professionally managed. Professional management is particularly important when direct investments are hard to find and when direct investments must be managed.
* They allow small investors to obtain the services of professional managers who they otherwise could not afford.
* They allow investors to share in the purchase and ownership of large assets such as skyscrapers. This advantage is especially important to small investors who cannot afford to buy large assets by themselves.
* They allow investors to own diversified pools of risks and thereby obtain more predictable returns. Many indirect investment vehicles represent ownership in many different assets, each of which typically is subject to some specific risks not shared by the others. For example, an important risk of owning a home mortgage is that the homeowner may default on the mortgage. Defaults on individual mortgages are highly unpredictable, which makes holding an individual mortgage quite risky. In contrast, the average default rate among a large set of mortgages is much more predictable so that investing the same dollar amount in shares of a large mortgage pool is much less risky than investing that same amount in a single mortgage.
* Finally, indirect investment vehicles often are substantially less expensive to trade than the underlying assets. This cost advantage is especially significant for publicly traded investment vehicles such as real estate investment trusts (REITs) that own highly illiquid assets. Although their assets may be very difficult to trade, ownership shares in these vehicles may trade in very liquid markets.

Indirect investments also present some disadvantages to investors in comparison to direct investments:

* Direct investors can exercise much more control over their investments than can investors who hold indirect investments. The latter generally must accept all decisions made by the investment managers, and they often cannot provide input into those decisions.
* Direct investors can choose when to buy or sell their investments to minimize their tax liabilities. In contrast, although the managers of indirect investments often try to minimize the collective tax liabilities of their investors, they generally cannot simultaneously best serve all investors when those investors face diverse tax situations.
* Large investors often can obtain high quality investment advice cheaper when investing directly rather than indirectly.
* Direct investors do not suffer as much from agency problems associated with their investment managers as do indirect investors. Agency problems arise when people employ (or contract with others) to work on their behalf. Unfortunately, agents sometimes are not as careful, conscientious, or honest as their employers would like. These problems can lead to investment losses due to missed opportunities or outright fraud. In general, agency problems increase the further removed the agents are from the control of their clients. Direct investors who hire their investment managers thus often can better control agency problems than those who obtain investment manage services indirectly by investing in indirect investment vehicles.

# Structured Investment Products

*Structured investment products* are securities typically issued by investment banks and other large credit-worthy financial institutions such as insurance companies. These instruments encompass a wide variety of features. The issuers design them to provide returns with various properties that investors cannot easily obtain from direct investments in other securities or contracts.

## Equity-linked securities

For example, a common structured product is an equity-linked note. *Equity-linked notes* are bonds for which the final payout depends upon the performance of an underlying equity, which may be a stock, a stock portfolio, or a stock index.

Most equity-linked notes are principal-protected. A *principal-protected* note is a note that, at maturity, will return to the investor the original amount invested regardless of market conditions. In particular, if the linked equity drops in value, the equity-linked note will simply return the original principal to the investor when it matures.

If the market rises during the life of the note, at maturity, the investor will receive the principal plus a *participation rate* (specified in the note) times the equity return times the original principal. For example, if the participation rate is 80% and the equity return during the investment period is 50%, the note will pay 1.4 times its original principal amount.

Equity-linked notes are attractive to risk-averse investors who want exposure to the stock market but who are unwilling to lose money. The investors give up interest in exchange for a principal-protected equity upside.

Equity-linked notes perform identically to a portfolio consisting of a zero-coupon bond and an option to buy the underlying equity at a strike price equal to the principal value of the note. This combination might be difficult for a retail investor to construct or even to understand. The equity-linked bonds allow such investors to obtain risk exposure that they can easily understand in a form that they can easily acquire.

Another popular example of a structured investment product is the *equity-linked annuity*, which is also known as an *equity-indexed annuity*. These securities earn interest at rates that depend on the performance of a stock or a stock index. Like equity-linked notes, they usually are principal-protected. Insurance companies are the most common issuers of equity-linked annuities.

Equity-linked annuities are popular with investors who are saving for retirement or who recently retired. In comparison to fixed annuities, they provide exposure to equity risk, but the investors give up interest if the linked equity returns are low. In some countries, these annuities provide a means of deferring taxes on investment income as do standard annuities.

## Exchange traded notes

*Exchange traded notes* (ETNs) are another popular class of structured investment products, though they are rarely recognized as such. ETNs are senior unsecured unsubordinated debt securities issued by investment banks. The banks design these notes to pay the value of an index when they mature, less fees paid to the bank. The notes thus closely replicate the returns to the index. ETNs are listed on many exchanges where they often trade quite actively. ETNs generally are not principal-protected.

Managed portfolios of futures contracts can replicate the returns to many ETNs. For example, the VelocityShared Daily 2x VIX Short-term ETN tracks the S&P 500 VIX Short-term Futures Index ER, which is a constant maturity index of VIX futures contracts. Holding, and appropriately trading, VIX futures contracts can replicate the returns to this ETN. This ETN is popular with investors because it allows them to easily purchase S&P 500 volatility risk exposure to hold in their security accounts.

## Advantages and disadvantages of structured products

In general, structured products are securities whose returns replicate the returns to complex combinations of financial instruments that may include equities, bonds, futures contracts, options contracts, and swap contracts. The issuers structure these products to meet the needs of their investors.

Besides providing risk and return profiles that appeal to certain investors, structured products also may provide tax benefits to their investors that they could not obtain if they constructed the products themselves. Any such benefits depend on the local tax regime and, in particular, on how returns to the structured products are taxed relative to returns to the contracts and other securities involved. Alternatively, tax advantages may accrue to the investment bank. In either event, in competitive markets, the products will be priced so that both sides typically share any tax benefits.

Structured investment products have several serious disadvantages for investors:

* With the exception of ETNs, most structured investment products do not trade in secondary markets. They therefore cannot easily be sold to others, and no market prices for these products exist.
* Structured investment products are hard to value. At best, analysts can value these products by identifying the portfolio of instruments that produce the same returns, assuming, of course, that values for these instruments are available. At worst, valuation of the structured investment product requires the specification and analysis of complex financial engineering models. These valuation methods are beyond the abilities of almost all retail investors and most institutional investors. Investors thus often overpay for these products, especially if they cannot easily comparison shop, which is generally the case.
* Structured products have credit risk. If the bank that offers the product fails, investors will become general creditors of the bank and may lose much or all of their investments.

# Investment companies

Investment company shares are among the most common indirect pooled investment vehicles. Investment companies include investment trusts or closed-end mutual funds, open-end mutual funds, exchange traded funds (ETFs), and unit investment trusts (UITs). The sole purpose of these companies is to own investment securities and assets. They in turn are owned by their investors who share in the companies’ profits and losses in proportion to their ownership shares.

Investment companies may be organized as corporations, business trusts, master limited partnerships, or limited liability corporations. Depending on their form of organization, their ownership shares are known as shares, units, or partnership interests.

Note that the investors in an investment company do not share ownership of the investment securities and assets held by the investment company. Instead, they share in the ownership of the investment company that owns these securities and assets. They are the *beneficial owners* of the investment company’s assets, but not the legal owners.

Depending on their form of legal organization, investment companies are overseen by a board of directors, a board of trustees, a general partner, or a single trustee. The overseer hires professional investment managers who generally work for the company on a contractual basis in exchange for a management fee paid by the company from its assets. The investment managers choose the securities held by the company. The company also pays fees to the directors (or trustees) for their service. Most investment companies have no employees.

In some countries, investment company directors or trustees must be independent of the investment managers. In other countries, the managers may also serve as directors.

The four main types of investment companies differ primarily in how investors trade them and in how they are managed. Closed-end funds, unit investment trusts, and ETFs trade in organized secondary markets just like common stocks. Open-end funds are redeemable securities that the funds sell to and redeem from their investors. ETFs are also redeemable securities, but only authorized participants can trade (purchase or redeem) these securities directly with the investment companies. Everyone else must trade them in secondary markets.

Investment companies also vary by whether their managers employ active or passive investment strategies. Almost all closed-end funds employ active management strategies. In contrast, unit investment trusts are not managed at all. They simply hold a fixed portfolio of securities that the sponsor chooses it organizes and funds the trust. Open-end mutual funds employ active or passive investment strategies, depending on the fund. Most actively traded ETFs employ passive indexing strategies, but some are actively managed.

## Closed-end funds

Among the various fund types, *closed-end funds* are most like standard corporations. They sell shares to the public in initial public offerings soon after they are first organized, and then use the proceeds to purchase investment securities or other assets. These shares generally remain outstanding for the life of the fund. Closed-end funds also may sell additional shares to the public in secondary offerings or through rights offerings, but these events are uncommon. Once their shares are issued, closed-end funds almost never repurchase them. Accordingly, the total number of shares outstanding for most closed-end funds rarely changes.

Following the initial public offering, investors who want to buy or sell a closed-end fund trade its shares at exchanges and through dealers. The closed-end fund does not participate in these transactions besides registering the resulting ownership changes. Investors buy and sell the shares at whatever prices they can arrange.

Closed-end funds generally trade at discounts or premiums to their net asset values. The *net asset value* (NAV) of a mutual fund is the value per share of its investments after subtracting off any liabilities.

Discounts are more common than premiums because many closed-end investment managers have been unable to add more value to their funds through their investment strategies than the funds lose through the various operational costs that they incur. The investment management fee typically is the largest of these costs. Other costs include portfolio transaction costs and fees for accounting and other administrative services.

## Open-end mutual funds

*Open-end funds* issue or redeem their shares when investors want to buy or sell shares. When investors buy fund shares, the fund issues new shares in exchange for cash that the investors deposit. When existing investors sell their shares, the fund redeems (repurchases) those shares by paying the investors cash for their shares. From the fund’s point of view, investor purchases and sales are deposits and redemptions.

### Distribution

Mutual funds contract with distributors to market fund shares and to help investors buy and sell their shares. The distributors typically work for a subsidiary of the investment manager. The distributors generally are compensated for the sales—purchases made by investors—that they bring in.

The funds also contract with transfer agents who keep track of who owns their shares. Like the distributor, the transfer agent usually works for a subsidiary of the investment manager.

A *mutual fund complex* is a set of funds that the same investment manager manages and distributes. The manager, or a designated sub-advisor—chooses the securities in which the various funds invest. Typically, the same set of directors (or trustees) serves on the boards of each mutual fund in the complex.

Many mutual fund investors buy and sell shares directly through the fund distributor. The fund’s transfer agent, who works with the distributor, keeps accounts for these customers.

Mutual fund investors also may trade fund shares through their securities brokers. Each broker who arranges fund trades on behalf of its customers has an *omnibus account* with the fund complex through which it routes all its customer trades in the funds of that complex. The broker then places the fund shares in its clients’ brokerage accounts. These brokers typically enter into contractual relationships with the mutual fund distributors to act as sub-distributors.

Investors often must pay *sales loads* when buying or selling open-end mutual funds. A sales load is a fee paid to buy a fund. The investor may pay the load at the time of purchase, at the time of redemption, or over time. The fund distributor receives the load. It typically forwards part to the investment manager and part to any agents who helped arrange the trade. The agents may include sales personnel who work for the distributor or financial advisors who work for other entities.

Sales loads are computed as a fraction of the purchase price and may be as high as nine percent. The actual load generally depends on the total amount invested or committed to invest. Loads typically are around three percent. Distributors collect smaller loads for larger investments.

Some distributors also collect contingent deferred sales charges, which are also known as back-end loads. *Contingent deferred sales charges* are fees that investors may have to pay when they sell a fund that they have not held for more than some pre-specified period, typically a year or more.

Many funds offer several classes of shares for a given fund. The share classes differ according to whether the investors must pay front- or back-end sales loads, or *level loads* spread over time.

*No-load funds* do not charge sales loads. However, these funds may pay annual distribution fees to their distributors to market the funds. These payments are taken from the assets of the fund. Although not paid directly by the investors, these fees are essentially level sales loads paid by all investors. In the US, these distribution fees are known as 12b-1 fees.

Fund complexes generally permit investors to exchange funds within the complex. In an exchange, the investor sells one fund and buys another with the proceeds. Most exchanges are exempt from further sales loads so that once an investor has paid a sales load to buy one fund in a complex, all subsequent transfers among funds in the complex are not subject to further load payments. In effect, investors pay loads only when moving money into the complex.

Some funds also charge purchase or redemption fees. Unlike sales loads, investors pay these fees to the fund as opposed to the distributor. These fees help compensate existing shareholders for costs imposed upon the fund when other shareholders buy and sell their shares. These costs primarily consist of the costs of trading portfolio securities to invest cash received from investor purchases and to raise cash for redemptions.

### Net asset values

The managers of open-end funds set the prices at which deposit and redemption transactions occur. No-load funds that do not collect deposit or redemption fees set the same price for deposit and redemption transactions on any given day.

This price is called the *net asset value* (NAV) of the fund. It is the manager’s best estimate of the value of a share in the mutual fund. Managers compute NAV by dividing the total net value of the fund (the value of all assets minus the value of all liabilities) by the current total number of mutual fund shares outstanding.

Managers compute fund NAVs following the normal close of trading at the local exchange markets. They use last reported trade prices to value their portfolio securities. They thus compute NAVs as of the end of the trading day. Funds usually publish their net asset values a few hours after the market close.

If the fund manager believes that the last observed price of a security held by the fund does not fairly represent its current value, the manager may specify a different price. This process is called *fair valuation*. Fair valuation is necessary to ensure that fund purchases and redemptions occur at prices that are fair to the purchasers, the redeemers, and the existing shareholders.

Distributors add sales loads and purchase fees, if applicable, to NAVs when pricing fund purchases. They likewise subtract back-end sales loads and redemption fees, if applicable, for fund redemptions.

Distributors execute open-end mutual funds trades after the normal close of the local stock and bond markets. Traders must submit their orders before the close to ensure that they cannot buy or sell shares based on any information revealed after the close that may change the value of the fund’s portfolio and thus its NAV. Distributors hold orders submitted after the close for execution on the next trading day.

### Fund prospectuses

Open-end mutual funds disclose their investment policies, deposit and redemption procedures, loads and fees, and past performance statistics in a *prospectus*. Investors use this information to make informed decisions about their investments. Funds also may disclose additional information through other mandated regulatory filings or on their websites.

### Money market funds

*Money market funds* are a special class of open-end mutual funds that for most purposes appear to investors as essentially the same as uninsured interest paying bank accounts. Unlike regular open-end funds, regulators permit money market funds to accept deposits and satisfy redemptions at a constant price per share (typically one unit of the local currency, for example, a dollar per share in the United States) if they meet certain conditions. In particular, they may only hold money market securities—generally very short term bills and notes issued by entities with very high quality credit that they reasonably expect to pay off in full. In which case, regulators also allow the funds to pay daily income distributions to their shareholders that they typically distribute at the end of the month. These arrangements ensure that money market fund NAVs always will be very near their constant reported values.

If the portfolio held by a money market fund substantially decreases in value, as may happen when an issuer is experiencing financial distress, the money market fund must price deposits and redemptions at the actual NAV of the fund.

Like banks, money market funds are subject to runs. In particular, if investors expect that the value of their money market funds will decline in the near future, they will try to redeem their shares before the NAV falls. These actions can be very destabilizing since they force funds to sell portfolio securities when the market for them is weakest.

## Exchange traded funds

*Exchange traded funds* are pooled investment vehicles that investors trade like common stocks on exchanges or through dealers. They generally are organized by investment managers who provide investment managerial and administrative services. ETF organizers are called *ETF sponsors*.

In contrast to standard open-end mutual funds that set trade prices for their shares, traders determine the prices at which ETF shares trade in the markets. These market prices occasionally deviate significantly from fund NAVs. The deviations depend on supply and demand conditions.

Most ETFs are organized as trusts so that their ownership interests are known formally as trust units. In practice, most practitioners simply refer to the units as shares. The units represent undivided ownership interests in the trust.

To help investors value their ETFs, ETF sponsors continuously publish indicative net asset values (iNAV) for their funds. They compute the fund iNAVs from the most recently reported market prices of their portfolio securities. iNAVs generally are not fair value adjusted to reflect the effect of new information on the values of securities for which prices have not recently been observed. iNAVs thus are just reference prices that often do not accurately value funds or reflect current market prices.

### In-kind deposits and redemptions

Unlike closed-end funds that cannot be redeemed, ETFs allow certain qualified financial institutions—called *authorized participants*—to deposit and redeem trust units, but only in large blocks of tens of thousands of units called *creation units*. The creation units generally are deposited and redeemed in-kind.

In an *in-kind* transaction, the depositor or redeemer delivers or receives a portfolio of securities. The creation portfolio for a passively managed ETF is an index portfolio with nearly the same composition as the index portfolio held by the ETF. Any differences in portfolio weights typically are due to the inability to transfer fractional shares. Cash payments are used to compensate for these small differences.

For actively managed portfolios, the creation portfolio is a pre-specified portfolio of securities and cash that is highly correlated with the portfolio held by the ETF. The exact portfolio usually is not delivered because active investment managers are unwilling to reveal their holdings. Doing so would reveal their proprietary strategies and could allow sharp traders to front-run trades that the active managers have not yet completed.

In-kind transactions eliminate many costs of buying and selling securities within the trust. Open-end funds must buy securities when they receive cash deposits and they must sell securities to deliver cash when they redeem shares. Passively managed ETFs avoid these transactions through in-kind deposits and redemptions. Actively managed ETFs minimize these transactions by specifying creation portfolios that are similar to their actual portfolios.

Managers of passive ETF do have to trade securities when the indices that they track are reconstituted or rebalanced.

ETFs that hold index portfolios essentially serve as warehouses for these portfolios. The trust units that depositors receive when they deliver a portfolio are in effect tradable warehouse receipts. Indeed, the first major US ETF, popularly known as the Spider (ticker symbol SPY), is formally named the S&P 500 Depository Receipt (SPDR). Passively managed ETFs thus serve as a mechanism for converting an index portfolio to a single security and vice versa.

### ETF pricing

The ability to do deposits and redemptions places economic limits on the discounts and premiums at which ETFs trade relative to their NAVs. These limits exist because authorized participants compete with each other to create trading profits. Their profits depend on the spread between the ETF unit price and the underlying NAV. When the difference is large, the profits will be great, and many authorized participants will compete for these profits. Their trading keeps the spread small.

### Leveraged ETFs

ETF sponsors design *leveraged ETFs* to provide levered returns, inverse returns, or levered inverse returns to their investors. For example, the ETFX DAX 2X Long ETF is a daily double-levered fund designed to return twice the daily German DAX equity index return. The fund produces these returns by holding a DAX index portfolio that is twice larger than the capital in the fund. The fund finances the portfolio with its capital and by borrowing an equal amount of money. Alternatively, the fund may hold futures contracts to increase exposure to the DAX. Inverse and levered inverse ETFs hold short positions in their portfolios.

Leveraged ETFs are popular with investors and speculators because they provide substantial exposure to underlying index risks without much cost. That exposure makes them very risky, however.

Inverse and inverse leveraged ETFs are popular with investors because they allow investors to buy short positions for their accounts when they otherwise might not be allowed to sell securities or contracts short. They also are popular because unlike short positions for which potential losses are unbounded, the maximum loss than an investor can have holding a long position in an inverse or levered inverse ETF is 100 percent (assuming that the investor does not borrow to acquire the inverse ETF).

## Unit Investment Trusts

Unit investment trusts (UITs) are funds that are not actively managed. Instead, UITs simply hold a fixed portfolio of securities or assets until the trust expires. Upon expiration, the trust liquidates any remaining positions and distributes the proceeds to its unit holders in proportion to their ownership.

UITs are set up by sponsors—typically large investment managers—who sell them to the public through brokerage firms in an initial public offering. Some UITs will redeem their units from investors at NAV. Sponsors often are willing to buy their sponsored UITs units and resell them to other investors.

Unlike the other investment companies, UITs do not have boards of directors, officers, or investment advisors.

## Advantages and disadvantages of investment company structures

Each investment company structure has some advantages and disadvantages to investors. The main differences involve management accountability, costs, taxes, and risks.

### Management accountability

Since all investment companies are indirect investment vehicles, investors cannot directly choose who will manage their investments. However, they can choose the funds in which they invest, and thus can invest in funds with managers that they trust and withdraw from funds that they believe are not well managed.

Among the various investment company structures, management issues are of least concern for the unit investment trusts that hold unmanaged portfolios. Concerns are also small for ETFs that employ passive investing strategies because their managers have little effect on portfolio performance in comparison to active portfolio managers.

The managers of actively managed open-end mutual funds and ETFs are particularly sensitive to shareholder concerns because shareholders will remove their money from these funds if they are unhappy with management. When shareholders redeem shares of open-end funds, the fund assets under management decrease, which decreases compensation paid to the investment managers.

In contrast, the managers of closed-end funds are largely insulated from their shareholders. Shareholders can sell their shares to new investors, but the assets under management remain the same. The managers are accountable to their boards, but board members may be more loyal to their managers than to their shareholders. This problem often causes closed-end funds to trade at substantial discounts to their net asset values.

### Managerial and administrative costs

The costs that investment companies incur are removed from their assets and thus decrease their performance. The most important costs are those associated with management, distribution and account maintenance.

Management fees depend primarily on the type of asset management. Passively managed funds have low management fees regardless of their organizational structure. Management fees for actively managed funds are much higher.

Open-end funds pay fees to their distributors and their transfer agents to market their funds, maintain their shareholder accounts, and handle cash transactions. These processes often require large organizations that can correspond with shareholders by mail, phone, and over the Internet.

In contrast, the shares and units of closed-end funds, ETFs, and UITs trade in organized security markets. These investment companies therefore do not need to provide many services to their investors. Instead, the investors’ brokers account for their holdings, and arrange and settle their trades.

### Liquidity and trading costs

Investors can trade the exchange traded products—closed-end funds, ETFs, and UITs—anytime they can find counterparties to take the other sides of their trades. In contrast, investors in open-end mutual funds can trade only at the end of the day.

Investors who trade the exchange traded products can control to some extent the prices that they will receive. They may use limit orders to restrict the prices that they will accept and they generally can predict the prices at which market orders will execute if their orders are not too large. In contrast, open-end fund investors must accept the NAV prices determined by their funds, and they must submit their orders before they know these prices.

Investors trading the exchange traded products generally must pay commissions to their brokers to arrange trades. Depending on how impatient they are, they may also have pay dealers or other traders for the opportunity to trade quickly. In particular, impatient traders generally pay offer prices when buying that are higher than the bid prices they receive when they want to sell quickly.

The costs of arranging large trades in these products can be particularly high if the desired shares or units are not readily available in the market. In which case, buyers must raise prices to encourage sellers to sell to them, and sellers must lower prices to encourage buyers to buy from them. These *price concessions* can make trading large blocks of fund shares very expensive.

Investors in open-end mutual funds generally do not face these costs, although they may have to pay purchase or redemption fees to the fund if the fund has such fees. For funds without such fees, the complete absence of transaction costs can be very attractive to investors, especially large investors.

In fact, these open-end funds do incur transaction costs when they issue shares or redeem shares for cash. The funds incur these costs when they buy additional securities for their portfolios following cash deposits and sell securities from their portfolios to generate cash for redemptions. Fortunately, on any given day, deposits often offset redemptions so that the fund may not have to trade its portfolio much. Funds also maintain cash balances so that deposits and redemptions received one day may offset redemptions and deposits received the next day.

The portfolio transaction costs associated with net investor cash flows are borne by all shareholders. To protect their shareholders from these costs, open-end funds generally prohibit frequent trading. In contrast, investors in exchange traded products can trade as frequently as they desire with no effect on the value of the portfolio.

Finally, investors in loaded open-end funds often pay sales loads to support the marketing efforts of the funds. Although these fees can make investments in these funds expensive, they often pay for valuable financial planning and advisory services that the investors’ financial advisors provide to them.

### Distributions and taxes

Investment companies generally distribute the income (typically interest and dividends) that they receive from holding securities as cash dividends to their investors. They also distribute any short- and long-term capital gains realized on their portfolio security trades as cash dividends. They distribute the same amount of dividends per share to all investors regardless of how long they have held their shares.

Assuming no change in portfolio security values, following a distribution, the fund NAV will decrease by the per-share amount of the distribution. Investors thus receive cash from distributions but lose an equal amount in the NAV value of their shares.

These distributions impose tax liabilities on taxpaying investors. Taxpaying investors thus must be careful that they do not buy funds just before they distribute dividends lest they immediately acquire current tax liabilities that will be offset by reduced capital gains in the future.

Most open-end mutual funds allow their investors to reinvest dividends in their funds. Mutual fund distributors and the brokers that often help distribute mutual funds generally will arrange automatic reinvestment transactions for those clients that want to reinvest dividends. Shareholders usually choose whether to reinvest dividends when they open their accounts, and they can change these instructions anytime.

Brokers also can arrange for the reinvestment of dividends from closed-end funds, UITs, and ETFs, but these arrangements are less common. These reinvestments generally require open-market purchases of the traded funds.

ETFs generally are more tax efficient than are the other types of investment companies. Their greater efficiency is due to their in-kind deposits and redemptions. Since the ETFs do not need to trade portfolio securities to accommodate deposits and redemptions, they do not incur capital gains on these transactions. Moreover, whenever they do an in-kind redemption, they deliver security lots that have the lowest tax basis so that if they ever have to trade those securities in the future, they will minimize the capital gains incurred. ETFs managed as index funds trade securities when their indices are reconstituted or rebalanced. Actively-managed ETFs trade whenever their managers want to adjust their portfolios.

### Risks

The risks of holding investment companies primarily depend on the investment securities and assets that they hold in their portfolios. These risks vary much more by fund than by how the funds are organized. In general, funds that are index funds are less risky than actively managed funds that invest in the same asset class because investors in actively managed funds risk that their managers will underperform the market.

Closed-end funds generally are riskier than similar open-end funds because the managers often are entrenched. These funds generally trade at discounts, and occasionally at premiums, to their NAVs. Uncertainty in the variation of these discounts and premiums increase the risks of holding closed-end funds.

ETFs sometimes also trade at discounts and premiums to their NAVs, but these variations tend to be small because these securities are redeemable. If the discounts or premiums grow large, authorized participants create or redeem shares while taking offsetting positions in the portfolio securities. Their trading keeps discounts and premiums from growing large.

Investors in open-end mutual funds risk that their fund managers and distributors will not be able to effectively control frequent trading by other investors. These activities reduce the value of their investments through portfolio transaction costs. If the frequent traders sometimes can value the fund more accurately than the managers, they will buy the fund when it is undervalued and sell it when it is overvalued. Any profits from these *market-timing* trades come at the expense of the existing shareholders.

Investors in non-redeemable funds risk that the costs of arranging secondary market trades in their funds will rise and, in particular, that they will not be able to easily find buyers when they want to sell their securities. This risk is greatest for small closed-end funds in which few other investors may have any interest.

# Hedge Funds

Hedge funds are private investment pools that investment managers organize and manage. As a group, hedge funds pursue extraordinarily diverse strategies. However, most funds only employ a single strategy.

The term “hedge” once referred to the practice of buying one asset and selling a correlated asset to speculate on their difference in values. Now, although many hedge funds do engage in some hedging, hedging is no longer the distinguishing characteristic of hedge funds, if it ever was.

Hedge funds primarily are distinguished from other pooled investment products by their availability only to a limited number of select investors, by agreements that lock up their investors’ capital for fixed periods, and by the performance-based schemes by which they compensate their managers.

Hedge funds are private investment pools available only to accredited investors. The investors must meet various wealth, income, and sophistication criteria that regulators set. The criteria try to ensure that these lightly regulated investment products are suitable for their investors. Most money invested in hedge funds comes from large institutions such as pension funds, university endowments, and sovereign wealth funds, and from high net worth individuals.

Most hedge funds lock up their investor’s capital for various periods that depend on how much time the managers expect they will need to successfully implement their strategies. Funds that engage in high frequency strategies generally have shorter lock-up periods than do funds that engage in strategies that may take much more time to bear fruit, such as strategies that involve reforming corporate governance.

Perhaps the most distinguishing characteristic of hedge funds is the managerial compensation scheme that they use. Hedge fund managers generally receive an annual management fee plus a performance fee that is a specified percentage of the returns that they produce in excess of a *hurdle rate*. For example, a manager who receives “2 and 20 over 3-month LIBOR” compensation will receive 2 percent of the fund assets per year, generally payable quarterly, and 20 percent of the return on the fund assets that exceeds the short-term LIBOR interest rate.

Common hurdle rates are LIBOR rates, Treasury bill rates, and rates of return on various debt or equity indices. The hurdle rate generally depends on the type of risk exposure that the fund provides to its shareholders.

*Absolute return funds* are funds that strive to produce the highest possible return to investors without much correlation to any other asset classes. The hurdle rates for these funds typically are short-term interest rates.

Hedge fund managers earn the performance fee only if the fund is above its current high water mark. The *high water mark* is the maximum level of the fund upon which performance fees were paid in the past. The high water mark provision ensures that investors pay the managers only for net returns calculated from the initial investment and not for returns that recoup previous losses. This provision is also called the *loss carryback provision*.

High water marks are tracked for every new investment into a hedge fund. In any given year, managers thus may receive performance fees from some investors but not others depending on when the investors first invested in the fund.

The loss carryback provision causes many managers to terminate their funds and start over when they have significant losses. Restarting gives them a new high water mark. Otherwise they would receive no performance fee until they raised the value of the fund over the previous high water mark. Of course, managers who have performed poorly often cannot raise new funds.

Investors pay high performance fees because the fees provide strong incentives to managers to perform well. These incentives work when the fund is near its high water mark. They are much less powerful when the fund has performed poorly.

Although many hedge funds are not particularly risky, the high performance fee encourages many fund managers to take substantial risks. Hedge funds typically increase their risk exposure through leverage: They borrow funds and invest the proceeds in their strategies. If their speculations are successful, the performance fee can make the managers extremely wealthy. But if the hedge fund has poor returns, the investors lose and the managers only lose the opportunity to stay in business. This asymmetry in their compensation encourages risk taking.

Hedge fund investment managers often also participate as investors in their hedge funds. Their co-investments help assure their investors that the managers’ interests are well aligned with theirs. Such assurances help managers raise funds.

Most hedge funds are open-end investment vehicles that allow new investors to buy in, and existing investors to leave, at net asset value. However, most funds only allow investors to withdraw funds following a lock up period and then only at a few times during the year.

The legal structure and legal domicile of hedge funds generally depend on their investors’ tax situations. Most hedge funds serving US investors are organized as limited partnerships domiciled in offshore financial centers where tax rates may be lower. The manager is the general partner and the investors are the limited partners. Non-US investors often are better served by corporate or unit trust forms of organizations.

# Funds of Funds

*Funds of funds* are investment vehicles that invest in other funds. Most are organized as hedge funds that invest primarily in other hedge funds or as mutual funds that invest only in other mutual funds within the same mutual fund complex.

Funds of funds may be actively managed or passively managed.

## Actively managed funds of funds

Two main investment strategies characterize most actively managed funds of funds. Some managers try to identify funds with managers that they believe will outperform the market. They then invest in their funds. Others use various proprietary models to predict which investment strategies most likely will be successful in the future. They then invest in funds that implement those strategies. Both types of managers try to hold well diversified portfolios of funds to reduce the overall risks of their funds.

The costs of investing in actively managed funds of funds can be very high. Investors pay management and performance fees directly to their managers, and they also indirectly pay these fees to the managers of the funds in which their funds of funds invest. Fund of funds investors thus pay these fees twice.

Perversely, diversification across many hedge funds can substantially decrease performance. This result is due to hedge fund performance fees. It is best seen through a simple example:

Suppose a fund of funds invests in a hedge fund that has long exposure to equity risk and in another hedge fund that has short exposure to similar equity risk. Suppose further that both hedge funds have 20 percent performance fees. Although the managers of both hedge funds may outperform reasonable benchmarks against which they should be measured, the fund of funds investor may not receive the benefits of their expertise. The portfolio of these two hedge funds will have low risk because losses experienced by the long fund when equity values drop will be offset by gains produced by the short fund. A similar result will be obtained when equity values rise. This diversification normally is attractive because it lowers the overall portfolio risk.

However, note the effects that the performance fees have on the overall performance of this fund of funds: To the hedge fund that rose in value, this fund of funds will pay 20 percent of the gain so that it will retain only 80 percent of the appreciation. But it will bear 100 percent of the loss for the hedge fund that fell. If the two hedge funds employ similar leverage, on average this fund of funds will lose 10 percent of the unsigned returns generated by these two funds. This loss may be very large if the two funds employ substantial leverage to increase their risk exposure. Diversification of this fund of hedge funds almost guarantees that the fund will lose value!

## Passively managed funds of funds

Many mutual fund complexes offer target date funds and other funds designed to meet specific investor needs. *Target date funds* are mutual funds of funds that invest in equity and fixed income mutual funds with weights that vary through time. The mutual funds held in the portfolio often are index funds.

Target date funds appeal to retail investors who are saving for their retirement and who wish to increase their exposure to fixed income as they approach retirement. Fund complexes typically offer a different target date fund for every future year in which their various investors expect to retire.

Fund complexes also may offer other specialized funds designed to meet other investor needs. For example, Vanguard offers mutual funds of funds designed for investors saving for college, and for investors who need to generate monthly retirement income. Like target date funds, these funds invest in other mutual funds based on time-varying weights that reflect the special needs of their investors.

The fees of most passively managed mutual funds of funds are very low, but their investors also indirectly pay the fees of the funds in which these funds invest.

# Managed Accounts

Many investors contract with investment advisors to help manage their investments. The advisors generally promise to implement specific strategies in exchange for an advisory fee or for commissions on the trades that they recommend. Investors increasingly are using fee-based advisors to ensure that their advisors will not profit from recommending excessive trades.

Institutional investors that do not manage investments in-house use fee-based advisors.

Retail traders often obtain the services of fee-based investment advisors through wrap accounts. In a *wrap account*, the charges for investment services such as brokerage, investment advice, financial planning, and investment accounting are all wrapped into a single flat fee. The fee typically ranges between 1 and 3 percent of total assets per year and usually is paid quarterly or annually.

## Separate versus commingled accounts

Investment advisors may hold their clients’ investments in separate accounts or in comingled accounts. In a *comingled account*, the funds of two or more investors are pooled together and jointly managed. In contrast, funds and securities in a separate account are always kept separate from those of other investors, even if the manager employs identical investment strategies for several such accounts.

When funds are comingled, the advisors must keep track of the ownership interests of each investor. They account for ownership using the same methods as do open-end funds. In particular, they divide ownership of the account into shares. Whenever investors contribute cash or securities to the comingled account, the advisors compute the NAV of the account and allocate new shares to the investors in proportion to the current market values of their contributions. They do similar calculations when investors withdraw cash or securities.

A comingled account solves a serious problem that arises when many separate accounts are under common management employing a common investment strategy. The advisor must allocate all trades fairly to every account. This objective can be difficult to achieve when accounts have insufficient funds to pay for a purchase or when the allocation would result in fractional shares, as may occur frequently for many small adjustments. These problems ensure that a set of separate accounts all managed to the same strategy will not all perform equally. These problems do not arise with commingled accounts because the commingling of the assets ensures that all investors receive equal treatment.

Although comingled accounts solve the allocation problem, they present other problems. In particular, they are not appropriate for investors with substantially different objectives or cash flow needs. The problem associated with different objectives is obvious: A single account cannot be managed to simultaneously meet multiple objectives.

Comingled accounts face the same cash flow problem as do open-end mutual funds that permit frequent trading. Unless investors compensate their co-investors for the portfolio costs associated with accommodating their cash flows, the co-investors will be harmed. Like mutual funds, commingled accounts control these problems by imposing deposit and redemption fees, by requiring that deposits and redemptions be done in-kind, or simply by prohibiting frequent cash flows into and out of the account. They also may impose lock-up agreements that require investors to remain in the account for certain periods.

Another serious problem with commingled accounts involves tax issues. When investors leave a commingled account, they may impose tax liabilities upon the other participants if the account must sell an appreciated asset to distribute cash to the departing investor. This tax liability problem can be mitigated if the account sells assets that have depreciated. But selling assets with high bases lowers the tax basis of the account so that the commingled accountholders will have to pay higher taxes in the future. The tax liability problem can be avoided if the departing shareholder receives an in-kind distribution of securities instead of cash.

Accounts with substantial unrealized capital gains are said to have substantial *tax overhangs*. Taxable investors should avoid buying into any pooled investments with substantial tax overhangs lest they pay higher taxes in the future on gains that they did not earn. Accordingly, comingled accounts work best when all investors are tax-exempt or when all investors enter and exit the account at the same time.

To avoid these problems, many investors prefer to hold separate accounts.

# Tax-advantaged Accounts

To promote savings for retirement income, educational expenses, and health expenses, many countries give tax advantages to certain accounts. In general, *tax-advantaged accounts* allow investors to avoid paying taxes on investment income as they earn it. In addition, contributions made to these accounts or distributions received from them also may have tax advantages. In exchange for these privileges, investors must accept strong restrictions on when the money can be withdrawn from the account, and sometimes on the use of the money.

Many countries allow contributions made to certain tax-advantaged accounts to be tax-deductible, which means that they reduce the income upon which taxes are paid. Tax-deductible contributions are common for retirement accounts. In most countries, contributions made to pension plans by employers or employees, as well as contributions made by individuals to *individual retirement accounts* (IRAs) are tax-deductible up to certain limits. These accounts are allowed to grow tax free, so that any income or capital gains earned by the account will not be taxed if left in the account. However, taxes may be due when the money ultimately is withdrawn. For most retirement accounts, all distributions from the account are taxed as ordinary income.

Some countries also allow investors to contribute after-tax funds to tax-advantaged accounts. *After-tax funds* are the funds that remain after income and gifts are received and taxed. When placed in tax-advantaged accounts, the funds grow tax free. When withdrawn, taxes, if any, are collected only on the accumulated investment income and capital gains earned during the period of the investment. The original principal, which was taxed once, is not taxed again.

Many countries allow all distributions from certain tax-advantaged accounts to be tax-free if the money is used for higher education or for healthcare. Distributions from retirement accounts generally are taxed as ordinary income.

Governments usually prohibit early withdrawals or withdrawals for unauthorized purposes from tax-advantaged accounts. When such withdrawals are permitted, they generally incur penalties and immediate taxes. In some countries for some accounts, investors can circumvent these restrictions by borrowing against the values of their accounts.

## Advantages of taxable accounts

Saving in tax-advantaged accounts from which distributions are not taxed is unambiguously advantageous to investors if they are certain that they will ultimately use the money for its authorized purpose. For example, investors always will be better off saving in tax-advantaged accounts if the withdrawals used to fund educational expense are not taxed. However, if the money would be lost if not used for educational expenses, investors need to weigh the potential tax advantage against the probability of loss when deciding whether to use these accounts.

The benefits of deferring taxes are less obvious. Whether deferral is advantageous depends on the tax rates at which the principal and investment income would otherwise be taxed, and on the rates at which the deferred income is taxed. If future tax rates will be lower than current tax rates, deferral is obviously advantageous.

Deferral also is unambiguously advantageous if all rates are the same because, in addition to earning income on invested principal, investors generally also earn income on any income received during the period of the investment. Paying taxes as income is earned effectively reduces the rate of return received on the account so that it does not grow so quickly. Paying more tax at the end of the investment is better than paying taxes as you earn income because you can use the money that will ultimately pay taxes to earn more money during the period of the investment.

Deferring taxes may not be beneficial if tax rates will be higher in the future. Future rates may be higher because tax rates may change during the period of the investment, the investor may be wealthier in the future and thus subject to higher tax rates, or the investor may pay ordinary income tax rates on distributions from a tax-advantaged account whereas she might have paid lower rates on capital gains or investment income earned on the investment had the money been invested in a taxable account.

Whether investors should defer income depends on the tax regime, their expectations of future tax rates (including estate tax rates), and the probability that they will need money that they cannot access if placed in a tax-advantaged account. Financial planners help investors work through these issues.

## Managing taxable accounts

Investors in taxable accounts often can minimize their tax liabilities through careful investment management decisions. In particular, most countries do not tax capital gains until they are realized by the sale of a purchased security, or the repurchase of a security sold short. Investors who have unrealized capital gains because their purchased assets rose in value or their short sold assets fell in value can avoid paying taxes by simply not closing their positions. If they need cash, rather than selling appreciated securities, they can borrow money using their appreciated securities as collateral, or simply withdraw it from accounts with profitable short positions.

Most countries allow taxpayers to offset their capital gains with capital losses so that they are taxed only on the net gain. Accordingly, investors frequently realize losses (sell losing positions) so that they can use them to offset realized capital gains.

Many countries tax capital gains at lower rates than they tax investment income such as interest and dividends. Tax-paying investors in these countries can minimize their taxes by holding securities that do not pay investment income. For example, many corporations distribute cash by repurchasing shares instead of paying dividends. Investments in these corporations tend to rise over time as the share repurchases reduce their total shares outstanding. Investors who retain their shares thus earn long-term capital gains rather than current investment income. These corporations provide more tax efficient investments than do otherwise similar corporations that pay dividends.

The mutual fund industry has created many funds to serve taxable investors seeking tax-efficient investments. These funds avoid realizing capital gains, they realize losses to match against any gains that they do realize, and they avoid securities that produce investment income. Investors who hold these funds defer their taxes into the future, and in many cases, past their deaths.

Many countries give insurance products—especially those used to save for retirement such as annuities and certain life insurance policies—similar tax advantages. Investors who buy these tax-advantaged securities effectively obtain many of the same advantages that they could obtain using tax-advantaged accounts.

Some governments also give tax advantages to government debt securities. For example, in the United States, interest from most municipal debt issues is exempt from federal income taxes and from state taxes in the state in which the municipality is located. Also, interest paid by the federal government is exempt from state income taxes. Many taxpaying investors hold municipal securities to minimize their tax burdens. Tax-exempt investors avoid them because the tax advantages to taxpaying investors cause these investors to bid up their prices and thereby lower their yields.

# Pension Plans

In most countries, pension funds are the largest institutional investors. World-wide, they collectively hold more than $20 trillion dollars of assets, more than any other class of investor. Understanding pension funds thus is essential to understanding the investment industry, the financial markets in which they operate, and the welfare of their beneficiaries. This section briefly examines the structure of pension investments.

*Pension plans* are arrangements that provide income to people in their retirements. Pension plans may be sponsored by the companies that employ workers, by governments on behalf of their citizens, or by individuals for their own benefit. The people who ultimately receive payments are called *beneficiaries*.

Some plans are *pay-as-you-go-plans* in which the sponsors pay pension benefits out of current revenues. Most company plans are *funded plans* to which the sponsors make periodic *contributions* long before the benefits are paid. These contributions are responsible for the enormous assets that pension funds hold.

Funded plans are much better for their beneficiaries than pay-as-you-go plans because payments from pay-as-you-go plans depend on the continued viability of their sponsors. Moreover, since pay-as-you-go sponsors do not fund their obligations upfront, they have a tendency to promise more than they can afford in the future. Repeated problems with pay-as-you-go plans have caused many countries to require that employers fund their pension plans.

Pension funds differ by whether they are defined benefit plans or defined contribution plans. A *defined benefit plan* (DB plan) promises certain pension benefits to their beneficiaries. Defined benefit pension plan sponsors must pay those benefits. In contrast, the sponsors of *defined contribution plans* (DC plans) make certain contributions to their pension plans on behalf of their beneficiaries. The beneficiaries ultimately receive whatever benefits the accumulated contributions and associated investment returns can fund at retirement. The two different plan types have very different risk characteristics for sponsors and beneficiaries.

## Defined benefit plans

A *defined benefit plan* promises certain benefits to their beneficiaries, for example, specified payments of real income per year. *Real income* is income adjusted for the effects of inflation. These promises are called *pension liabilities,* and the pension sponsor is ultimately responsible for them.

The pension promises of most employer-sponsored defined benefit programs increase with the total time that the employee has worked for the company. They also generally are larger for high salary employees than for low wage workers.

The right to receive pension benefits often does not vest until an employer has worked for the company for some period specified by the pension plan. When their rights are *vested*, employees are entitled to receive benefits even if they do not continue to work for the firm.

The sponsors of funded pension plans generally must make contributions to their plans soon after their pension liabilities are created and as these liabilities grow larger over time. A *fully funded plan* has sufficient assets to pay all currently vested pension liabilities when due.

Determining whether a plan is fully funded requires a very complex computation that depends on many factors. Actuaries generally do these calculations. An *actuary* is a financial analyst who also has substantial training in probability and statistics as they apply to demography.

To determine the funding status of a plan, actuaries first estimate the value of future pension benefits. These benefits depend on how long the beneficiaries will live, what fraction of the beneficiaries will quit before their benefits vest (and thus extinguish pension liabilities), and what fraction will quit before they retire (and thus qualify for smaller benefits).

Since the pension benefits all occur in the future, actuaries also must choose appropriate rates for discounting future payments to express them in present values. Pension sponsors prefer high discount rates because high rates produce low present values for their pension liabilities, which imply smaller current contributions. The beneficiaries prefer low rates. Low rates imply higher contributions that increase the probability that their plans will pay their benefits.

The discount rate issue is very contentious because small differences in rates can imply large differences in contributions. Sponsors argue that the discount rates should reflect the expected returns to the pension fund portfolios. However, these expected returns include premiums for risk because the funds typically invest in risky assets. The beneficiaries argue that risk-free rates should be used to discount the pension liabilities because the benefits are employment compensation promises made by the sponsor and therefore should be risk free. They note that if the plan assets drop in value, the probability that the plan will be able to fund all their liabilities will decrease, and especially so if the cause of the decline in plan assets also weakens the financial strength of the plan sponsor. They also note that if the discount rates are based on the portfolio expected returns, plan sponsors may invest in riskier assets to raise the expected returns and lower their contributions. In effect, they will gamble with the beneficiaries’ future financial security.

Given the importance of the discount rate issue and the huge interests aligned on both sides of the issue, many governments have intervened to regulate these rates and associated funding requirements. The results may not always best serve the interests of the beneficiaries.

After actuaries estimate the present value of the future liabilities, they compare them to the plan assets to determine whether the plan is fully funded. Companies with underfunded plans generally must increase their contributions to catch up. Regulators set the catch-up rates. In some countries they are quite low.

## Defined contribution plans

The problems associated with defined benefit pension plans have led to substantial growth in defined contribution plans. The sponsors of *defined contribution plans* make defined (specified) contributions to their plans on a periodic basis. Employers with defined contribution plans usually contribute to their plans in proportion to the earnings of their employees. The plans or regulations may limit these contributions. Sometimes the employees also contribute to these plans.

The contributions go into separate accounts for each beneficiary. When the beneficiaries retire, these retirement accounts pay their retirement benefits.

The beneficiaries of defined contribution plans generally are responsible for how their account balances are invested. Plan sponsors usually allow them to choose among a short list of investment managers who in turn allow the beneficiaries to choose among investments in a variety of mutual funds or annuities.

In many countries, workers can transfer the vested balances of their accounts to another plan if they quit working for their employer or after they retire from the firm.

## Comparative risks of the two pension schemes

The primary risk that defined benefit plan beneficiaries face is funding risk. Their pensions depend on the ability of their pension sponsors to pay all pension liabilities when due.

The primary risk that the sponsors face is investment risk. If their plan portfolio returns are lower than expected, they will have to make greater future contributions.

Investment risk is the primary risk that defined contribution plan beneficiaries face. Their benefits ultimately depend on the investment performance of their accounts.

In many defined contribution plans, the beneficiaries are responsible for the asset mix in their accounts. The asset mix generally is the single most important determinant of investment performance in the long run. Unfortunately, most beneficiaries are poorly qualified to make well-informed asset allocation decisions.

Increasingly, defined benefit plan sponsors provide financial guidance to their beneficiaries or arrange for financial planners to help guide them. Without such assistance, beneficiaries often choose very conservative asset allocations that often produce poor returns. Beneficiaries also tend to equally allocate among the investment alternatives presented to them, especially when the list of alternatives is short.