# Chapter 30: Investment Process, Operations, and Risk

## Demonstrate knowledge of investment strategy and process

### Contrast a fund’s stated investment strategy and actual investment strategy

**Stated investment strategy**

**Actual investment strategy**

**Permitted** **strategies**

**Investment** **mandate**: explicit or implicit statement of allowable and intended strategy, goals, and or risks of an investment program; typically disclosed in various documents provided to investors prior to their decision to invest in this vehicle; lengthy and specific

### Contrast style drift with operational errors and fraud

Def **style** **drift** (or strategy drift): change through time of a fund’s investment strategy based on purposeful decisions by fund manager to improve risk-adjusted performance in light of changing market conditions

**Operational** **errors** can cause unintentional changes to an investment strategy through human error, including poor risk management systems and controls.

**Fraud** regarding investment strategies ranges from deception regarding the actual implementation of an investment strategy to misstating returns or even blatant theft

### Describe the components and stages of the investment process

Def investment process includes the methods a manger uses to formulate, execute, and monitor investment decisions, and spans the range of investment activities, from design of investment strategy, through the implementation of ideas into decisions, and ultimately to the plcin and execution of trading orders

Investment process includes the following components

1. Sourcing of ideas
2. Determination of transactions
3. Setting of leverage
4. Execution of allocation of trades

Stages

1. Conception, development, and specification of stated investment strategy
2. Application and implementation of actual investment strategy

Def **investment** **management** **governance** **process**: explicit or implicit set of procedures through which investment decisions are made. For example, assemble talented managers who function independently in an entrepreneurial culture and compete to persuade a centralized lear or committee that their decisions have merit

## Demonstrate knowledge of investment process and market risk

### Contrast the general and narrower definitions of market risk

**Market** **risk** (general): systematic or idiosyncratic dispersion in economic outcomes attributable to changes in market prices and rates <- definition in this chapter

**Market** **risk** (narrow): same as systematic risk, referring to portion of asset’s total risk that s attributable to changes in value of market portfolio or to a return factor that drives general market returns

### Discuss the causes of investment process risk and how it’s detected

Def **investment** **process** **risk**: economic dispersion caused by imperfect application of stated investment strategy by the investment team. Risk sourced from difference in stated investment strategy and actual investment strategy

The detection can involve quantitative analysis: historical and current investment returns of a fund should be analyzed against the returns of market indices and similar funds to infer the extent to which the fund’s returns are consistent with market environment

The detection can also involve qualitative analysis. The key to optimal control of investment process risk is a sound, well-defined, well-designed investment process

Def **Well**-**defined** **investment** **process**: clearly defines functions of investment team

Def **Well**-**designed** **investment** **process**: max potential benefits of stated investment strategy while min costs of investment process risk

### Describe the relationship between investment process risk and leverage

Starting point for risk analysis: precisely identify the nature of fund’s investment strategy, including active and highly hedged strategy (quant equity market-neutral HF), more passive and unhedged strategy (FoF)

Accessing the stability and reliability of a fund manager’s investment process is essential to assessing risk

Given transparency, the way to manage the risk is to carefully examine and understand the details of investment process => the investor must understand the structure of the algorithms, instead of detailed programming codes

Leverage is a key factor in risk, and therefore leverage management is a key factor in understanding and controlling investment process risk

Another major concern of a leveraged fund: risk from following an investment strategy that generates a portfolio that is shared by other leveraged and active traders. For example, if numerous highly leveraged funds are pursuing similar strategies. If one fund liquidates or deleverages its positions quickly, the market impact of such trading may trigger liquidations and deleveraging by other funds, which can spiral into rapid, large losses

### Describe how style drift relates to investment process risk

Style drift shifts the actual investment strategy of the fund away from stated or mandated strategy of fund. It may allow a fund manager to stray into markets where fund manager has limited expertise in search of attractive investment opportunities when manager’s previous investment strategy is no longer generating attractive opportunities

Style drift is a major component of investment process risk

### Discuss potential interactions of market risk with other investment risks

Market risk emanates both from stated investment strategy of a fund and from tendency of market risk to cause and interact with other types of risk brought on by divergence of actual investment strategy from stated investment strategy

Improperly implemented investment process are especially problematic when they occur during periods of high market volatility => should include analysis of ability of fund to avoid and rectify investment process errors during turbulent market conditions

## Demonstrate knowledge of the three internal fund activities

A fund’s activities or functions are often classified into 3 categories: investment, operational, and business. The best way to differentiate between the investment, operational and business activities or functions of a fund is by the people involved in the activities and whether they are identified as investment personnel, operations personnel, or business personnel.

54% of fund failures can be attributed to operational risk; another 38% attributed solely to investment risk; the final 8% attributed to business risk

### Define investment activities

Def **investment** **activities (38%)**: span the investment process, involving all aspects of determining and implementing investment decisions.

### Define operational activities

Def **operational** **activities (54%)**: direct support of investment activities, often described as middle office operations. It includes data entry, data processing, data management, record keeping, and trade reconciliation and documentation.

6% due to inadequate resources; 14% due to unauthorized trading and style drift; 30% de to theft of investor assets; 41% due to fraud, and 9% due to other operational failures

Operational risk as excluding the investment process and business side of fund (recycled box, narrow view)

The goal of an investor is to detect unacceptable levels of potential operational risk before investing in a fund

Operational risk of a fund may be viewed as having 3 sources: operational error, agency conflicts, and operational fraud

### Define business activities

Def **business** **activities (8%)**: indirect support of the investment activities of the fund, including all of normal activities of running any similarly sized organization, such as human resources management, technology, infrastructure, and facility maintenance

### Discuss how these three internal fund activities impact a fund in combination

Synergistic risk effect: potential for combination of >=2 risks to have a greater total risk than sum of individual risks

## Demonstrate knowledge of operational risk.

### Identify and describe operational errors

Def **operational** **errors**: inadvertent mistakes made in process of executing a fund’s investment strategy. It ranges from minor errors with inconsequential losses to major error that can cause a fund to fail

For example, executing trades in wrong size or direction

### Identify and describe types of agency conflicts

Operational risk includes intentional actions of fund employees that are contrary to the interests of investors.

An extreme example of a conflict of interest is a **rogue** **trader**: intentionally establishes substantial positions well outside the investment mandate; caused by strong incentives or pressures to generate performance, combined with losses the jeopardize a trader’s career if no recouped

In less extreme cases than rogue traders, operational risk can be caused by insufficient incentives, leading to lackadaisical management, or overly strong incentives, leading to gaming of compensation structure

Gaming refers to strategic behavior to gain benefits from circumventing the intention of rules of a system

### Identify and describe operational fraud

Def **operational** **fraud**: intentional, self-serving, deceptive behavior in the operational activities of a fund that is generally harmful to the investors

## Demonstrate knowledge of methods for controlling the operational risk of an investment

* Explain how incentives can increase operational risk

There are 3 major components to control operational risk: prevention, detection, and mitigation

Prevention: development of sound systems and proper hiring, training, and retention of personnel

The desire of portfolio managers, traders and all employees is to retain existing assets, attract new assets and increase revenues

The incentive motivates fund managers to reduce investment risks when substantial profits have accrued to lock in an acceptable level performance and continued opportunities to manage assets

There is incentive for manager to increase risks when substantial losses have accrued to increase chance of recouping losses and reaching an acceptable level of performance to sustain retention of assets

The call-option like nature of performance-based fees also provides fund managers with incentive to take high risks

* Discuss how internal control procedures can detect and reduce operational risk

Detection of operational risk relies on strong risk management and risk monitoring systems; should constant monitor 1) current market values of positions; 2) recent financial performance of positions; 3) market risks of current positions

The portfolio manager and risk manager need to agree on measurement of risk, risk limits and methods of ensuring positions NOT cause risk limits to be exceeded

Def **risk** **limits**: max levels of measured risk allowed in the portfolio

Def **position** **limit**: specific restriction on size of holdings of a security or combination of securities

All trades should be entered and managed in an electronically monitored system that enforces position limits and assists in the control of risk limits

The ongoing monitoring of financial performance, risks, and current market values of portfolios and positions allow early detection of investment process problems and other operational problems

* Explain the importance of valuation procedures and independence in the valuation process

It’s imperative that traders and portfolio managers do not value (i.e. price) their own positions for risk management and reporting purposes

These conflicts of interest may provide incentive for fund manager to

1. Obscure losses
2. Smooth returns by shifting performance between reporting period
3. Vary risks to recoup losses or lock in profits

Managers may have an incentive to obscure losses to avoid reporting inferior performance and provide time to recoup losses

Fund managers have an incentive to vary risks to game performance evaluation. A fund manager with a benchmark has an incentive to lock in profits by lowering risk when profits have already exceeded the benchmark

Systems of valuation, performance reporting, and risk measurement that permit ambiguity or subjectivity are fertile ground for operational risk

* Define custody, and explain how it relates to operational risk

Def **custody:** safekeeping of the cash and securities of a fund

Managed accounts, or separate accounts, can provide safest and most transparent arrangement for investors. In a managed account, the assets managed by the fund manager remain in investors’ account at a brokerage firm. The investor retains custody of the assets, so it’s virtually impossible for fund manager to withdraw funds

* Identify and describe the concept of fund culture and how it affects operational risk

Def **fund** **culture** is a generally shared set of priorities and values within the fund’s

Organization

One of the strongest protections against operational risk is a fund culture that fosters competence, honesty, and diligence. Evidence of true culture of a fund can be found by examining its systems of risk management and methods of performance valuation, performance reporting, and employee compensation

## Demonstrate knowledge of methods for controlling the risk of portfolios with options

* Describe how put-call parity can be applied to hedge a position

Put-call parity: +Stock + Put − Call = +Bond

* Discuss how options can be used as a bet on volatility

The claim that calls and puts are the same makes sense from the perspective of a trader who maintains delta neutrality

Def **slack** **variable**: variable in an optimization problem that takes on whatever value is necessary to allow an optimum to be feasible but, while doing so, does not directly alter value of objective function

Use options to place directional bets on underlying assets, long positions in options provide leverage, positive skews, and limited downside risk => especially attractive to aggressive investors