CFA Institute

CFA® PROGRAM CHANGES

A Member's Primer—Five Key Curriculum Updates since 2008

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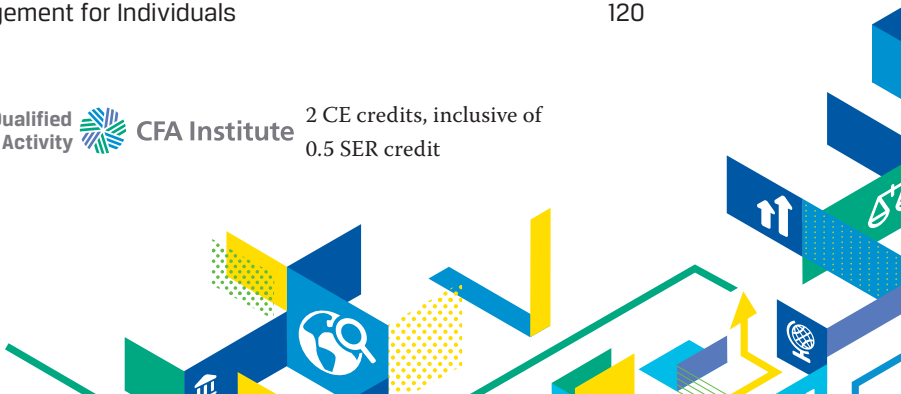
CE Qualified Activity CFA Institute 2 CE credits, inclusive of 0.5 SER credit



Foreword: A Decade of Industry Change

It's been a full 10 years since Apple introduced its very first iPhone. Most of us recall a very different world before that transformative innovation. It's also been a decade since we experienced the calm before the storm caused by the financial crisis, which also seems like a very different world.

As an investment professional who earned your CFA charter a decade ago, you have seen firsthand how the global financial markets, investment products, strategies, risk factors, and regulatory requirements have changed and evolved. So, too, has the CFA Program curriculum progressed.

As a seasoned CFA charterholder, you understand the need to continually upgrade and refresh your skillset to stay relevant and competitive in today's ever-changing world. You strive to help those you serve be ready for today's (and prepare for tomorrow's) most important investment management challenges and opportunities.

The fundamental knowledge required of investment professionals in the last decade has evolved with the industry and is reflected in CFA Program curriculum updates.

To help you stay current in our rapidly evolving industry, CFA Institute has created this 10-year class guide specifically for you as a framework for your continued professional development and knowledge enhancement. In the guide, we have curated a reading list from the CFA Program based on five key topical areas where the curriculum has undergone significant changes since 2008: **Financial**

You have seen firsthand how the global financial markets, investment products, strategies, risk factors, and regulatory requirements have changed and evolved.

Reporting and Analysis, **Fixed Income**, **Alternative Investments**, **Economics**, and **Risk Management**. In all, we have included 15 suggested readings.

We encourage you to read, digest, absorb, and learn all that you can so that you can continue to do what you do best—from an enhanced foundational base.

Thank you, and wishing you continued success!

Stephen Horan, CFA, CIPM
Managing Director, Credentialing

Financial Reporting and Analysis

Applicable Readings

Financial Analysis Techniques (Level I)

by Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and Jan Hendrik van Greuning, DCom, CFA
2.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/financial_analysis_techniques__2018_.aspx

Financial Reporting Quality (Level I)

by Jack T. Ciesielski, Jr., CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/financial_reporting_quality__2018_.aspx

Evaluating Quality of Financial Reports (Level II)

by Jack T. Ciesielski, Jr., CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA
2.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/evaluating_quality_of_financial_reports__2018_.aspx

What Has Changed in the CFA Program Curriculum?

Since 2008, International Financial Reporting Standards (IFRS) have been the reference point for accounting standards discussed within the CFA Program curriculum. However, while IFRS are used in many parts of the world, the size of the US capital markets makes knowledge of US generally accepted accounting principles (US GAAP) professionally important. Members and their clients are likely to invest in companies that report under US GAAP as well as IFRS. The CFA Program curriculum readings are regularly updated to reflect periodic changes made to IFRS and US GAAP, all of which can affect reported data and critical analysis.

The CFA Program curriculum developed within this topic is more analysis focused than previous materials. More has been done to provide investment professionals with insights as to the key things they need to look at and cull from corporate financial reports. Financial analysis focuses on using past information to develop forward-looking assessments.

Since the 2012 curriculum update, credit analysis (credit risk, credit ratings, credit ratios) has become a key component and been explored within the financial statement analysis section. Also, within the past three years, the curriculum has been refreshed to discuss the quality of financial reporting in greater detail so that investment professionals can assess where corporate data faithfully represent economic events and are relevant and sustainable.

The updated CFA Program curriculum has also increased emphasis on looking at the notes included in financial reports, which can include important information often being hidden in plain sight. Savvy investment professionals have come to learn that "the bodies are often buried in the notes."

Why Has It Evolved?

The global investment management world has changed dramatically over the past decade. Accounting standards for use in financial reporting, those from the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB), have evolved and been updated as markets and needs change. Investment professionals need a broader and deeper understanding of today's generally accepted accounting principles as well as how to determine whether the quality of financial reports is high or hijinks, fact or fiction.

Why Does It Matter to Me?

As past corporate scandals have shown, improper accounting—whether through accidental deviation, dereliction of duty, or devious actions—can have huge and extremely negative implications. High-quality financial reporting allows investment professionals to assess past performance and generally predict future company performance and sustainability. Low-quality financial reporting, which can include inaccurate, misleading, incomplete, or purposefully masked information, may result in incorrect assumptions. Strategies and recommendations that are based on poor analysis can harm investors. A well-conducted analysis of the condition of a company can help mitigate or prevent losses.

It's also important for CFA charterholders to fully understand the motivations and mechanisms of corporate executives and common ways that organizations can improperly report data. This includes spotting the warning signs of misreporting, manipulation, and fiscal irresponsibility—all of which are demonstrated in the curriculum through real-world examples.

Financial Analysis Techniques

by Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and Jan Hendrik van Greuning, DCom, CFA

Elaine Henry, PhD, CFA, is at Stevens Institute of Technology (USA). Thomas R. Robinson, PhD, CFA, is at AACSB International (USA). Jan Hendrik van Greuning, DCom, CFA, is at FirstRand Bank (South Africa) and BIBD (Brunei).

Note: New rulings and/or pronouncements issues after the publication of the readings in financial reporting and analysis may cause some of the information in these readings to become dated. Candidates are expected to be familiar with the overall analytical framework contained in the study session readings, as well as the implications of alternative accounting methods for financial analysis and valuation, as provided in the assigned readings. Candidates are not responsible for changes that occur after the material was written.

Learning Outcomes

The candidate should be able to:

a. describe tools and techniques used in financial analysis, including their uses and limitations;

b. classify, calculate, and interpret activity, liquidity, solvency, profitability, and valuation ratios;

c. describe relationships among ratios and evaluate a company using ratio analysis;

d. demonstrate the application of DuPont analysis of return on equity and calculate and interpret effects of changes in its components;

e. calculate and interpret ratios used in equity analysis and credit analysis;

f. explain the requirements for segment reporting and calculate and interpret segment ratios;

g. describe how ratio analysis and other techniques can be used to model and forecast earnings.

Introduction

Financial analysis tools can be useful in assessing a company's performance and trends in that performance. In essence, an analyst converts data into financial metrics that assist in decision making. Analysts seek to answer such questions as: How successfully has the company performed, relative to its own past performance and relative to its competitors? How is the company likely to perform in the future? Based on expectations about future performance, what is the value of this company or the securities it issues?

A primary source of data is a company's annual report, including the financial statements and notes, and management commentary (operating and financial review or management's discussion and analysis). This reading focuses on data presented in financial reports prepared under International Financial Reporting Standards (IFRS) and United States generally accepted accounting principles (US GAAP). However, financial reports do not contain all the information needed to perform effective financial analysis.

Although financial statements do contain data about the *past* performance of a company (its income and cash flows) as well as its *current* financial condition (assets, liabilities, and owners' equity), such statements do not necessarily provide all the information useful for analysis nor do they forecast *future* results. The financial analyst must be capable of using financial statements in conjunction with other information to make projections and reach valid conclusions. Accordingly, an analyst typically needs to supplement the information found in a company's financial reports with other information, including information on the economy, industry, comparable companies, and the company itself.

This reading describes various techniques used to analyze a company's financial statements. Financial analysis of a company may be performed for a variety of reasons, such as valuing equity securities, assessing credit risk, conducting due diligence related to an acquisition, or assessing a subsidiary's performance. This reading will describe techniques common to any financial analysis and then discuss more specific aspects for the two most common categories: equity analysis and credit analysis.

Equity analysis incorporates an owner's perspective, either for valuation or performance evaluation. Credit analysis incorporates a creditor's (such as a banker or bondholder) perspective. In either case, there is a need to gather and analyze information to make a decision (ownership or credit); the focus of analysis varies because of the differing interest of owners and creditors. Both equity and credit analyses assess the entity's ability to generate and grow earnings, and cash flow, as well as any associated risks. Equity analysis usually places a greater emphasis on growth, whereas credit analysis usually places a greater emphasis on risks. The difference in emphasis reflects the different fundamentals of these types of investments: The value of a company's equity generally increases as the company's

earnings and cash flow increase, whereas the value of a company's debt has an upper limit.

The balance of this reading is organized as follows: Section 2 recaps the framework for financial statements and the place of financial analysis techniques within the framework. Section 3 provides a description of analytical tools and techniques. Section 4 explains how to compute, analyze, and interpret common financial ratios. Sections 5 through 8 explain the use of ratios and other analytical data in equity analysis, credit analysis, segment analysis, and forecasting, respectively. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the reading.

Summary

Financial analysis techniques, including common-size and ratio analysis, are useful in summarizing financial reporting data and evaluating the performance and financial position of a company. The results of financial analysis techniques provide important inputs into security valuation. Key facets of financial analysis include the following:

- Common-size financial statements and financial ratios remove the effect of size, allowing comparisons of a company with peer companies (cross-sectional analysis) and comparison of a company's results over time (trend or time-series analysis).
- Activity ratios measure the efficiency of a company's operations, such as collection of receivables or management of inventory. Major activity ratios include inventory turnover, days of inventory on hand, receivables turnover, days of sales outstanding,

payables turnover, number of days of payables, working capital turnover, fixed asset turnover, and total asset turnover.

- Liquidity ratios measure the ability of a company to meet short-term obligations. Major liquidity ratios include the current ratio, quick ratio, cash ratio, and defensive interval ratio.
- Solvency ratios measure the ability of a company to meet long-term obligations. Major solvency ratios include debt ratios (including the debt-to-assets ratio, debt-to-capital ratio, debt-to-equity ratio, and financial leverage ratio) and coverage ratios (including interest coverage and fixed charge coverage).
- Profitability ratios measure the ability of a company to generate profits from revenue and assets. Major profitability ratios include return on sales ratios (including gross profit margin, operating profit margin, pretax margin, and net profit margin) and return on investment ratios (including operating ROA, ROA, return on total capital, ROE, and return on common equity).
- Ratios can also be combined and evaluated as a group to better understand how they fit together and how efficiency and leverage are tied to profitability.
- ROE can be analyzed as the product of the net profit margin, asset turnover, and financial leverage. This decomposition is sometimes referred to as DuPont analysis.
- Valuation ratios express the relation between the market value of a company or its equity (for example, price per share) and some fundamental financial metric (for example, earnings per share).
- Ratio analysis is useful in the selection and valuation of debt and equity securities and is a part of the credit rating process.

- Ratios can also be computed for business segments to evaluate how units within a business are performing.
- The results of financial analysis provide valuable inputs into forecasts of future earnings and cash flow.

The full reading, worth 2.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/financial_analysis_techniques__2018_.aspx

Financial Reporting Quality

by Jack T. Ciesielski, Jr., CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA

Jack T. Ciesielski, Jr., CPA, CFA, is at R.G. Associates, Inc., publisher of The Analyst's Accounting Observer *(USA). Elaine Henry, PhD, CFA, is at Stevens Institute of Technology (USA). Thomas I. Selling, PhD, CPA, is at the Cox School of Business, Southern Methodist University (USA).*

Learning Outcomes

The candidate should be able to:

a. distinguish between financial reporting quality and quality of reported results (including quality of earnings, cash flow, and balance sheet items);

b. describe a spectrum for assessing financial reporting quality;

c. distinguish between conservative and aggressive accounting;

d. describe motivations that might cause management to issue financial reports that are not high quality;

e. describe conditions that are conducive to issuing low-quality, or even fraudulent, financial reports;

f. describe mechanisms that discipline financial reporting quality and the potential limitations of those mechanisms;

g. describe presentation choices, including non-GAAP measures, that could be used to influence an analyst's opinion;

h. describe accounting methods (choices and estimates) that could be used to manage earnings, cash flow, and balance sheet items;

i. describe accounting warning signs and methods for detecting manipulation of information in financial reports.

Introduction

Ideally, analysts would always have access to financial reports that are based on sound financial reporting standards, such as those from the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB), and are free from manipulation. But, in practice, the quality of financial reports can vary greatly. High-quality financial reporting provides information that is useful to analysts in assessing a company's performance and prospects. Low-quality financial reporting contains inaccurate, misleading, or incomplete information.

Extreme lapses in financial reporting quality have given rise to high-profile scandals that resulted not only in investor losses but also in reduced confidence in the financial system. Financial statement users who were able to accurately assess financial reporting quality were better positioned to avoid losses. These lapses illustrate the challenges analysts face as well as the potential costs of failing to recognize practices that result in misleading or inaccurate financial reports. Examples of misreporting can provide an analyst with insight into various signals that may indicate poor-quality financial reports.

It is important to be aware, however, that high-profile financial scandals reflect only those instances of misreporting that were identified. Although no one can know the extent of undetected misreporting, some research suggests that it is relatively widespread. An Ernst & Young 2013 survey of more than 3,000 board members, executives, managers, and other employees in 36 countries across

Europe, the Middle East, India, and Africa indicates that 20% of the respondents had seen manipulation (such as overstated sales and understated costs) occurring in their own companies, and 42% of board directors and senior managers were aware of some type of irregular financial reporting in their own companies (Ernst & Young, 2013). Another survey of 169 chief financial officers of public US companies found that they believed, on average, that "in any given period, about 20% of companies manage earnings to misrepresent economic performance, and for such companies 10% of EPS [earnings per share] is typically managed" (Dichev, Graham, Harvey, and Rajgopal, 2013).

This reading addresses *financial reporting quality*, which pertains to the quality of information in financial reports, including disclosures in notes. High-quality reporting provides decision-useful information, which is relevant and faithfully represents the economic reality of the company's activities during the reporting period as well as the company's financial condition at the end of the period. A separate but interrelated attribute of quality is *quality of reported results* or *earnings quality*, which pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition. The term "earnings quality" is commonly used in practice and will be used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items. High-quality earnings result from activities that a company will likely be able to sustain in the future and provide a sufficient return on the company's investment. The concepts of earnings quality and financial reporting quality are interrelated because a correct assessment of earnings quality is possible only when there is some basic level of financial reporting quality. Beyond this basic level, as the quality of reporting increases, the ability of financial statement users to correctly assess earnings quality and to develop expectations for future performance arguably also increases.

Section 2 provides a conceptual overview of reporting quality. Section 3 discusses motivations that might cause, and conditions that might enable, management to issue financial reports that are not high quality and mechanisms that aim to provide discipline to financial reporting quality. Section 4 describes choices made by management that can affect financial reporting quality—presentation choices, accounting methods, and estimates—as well as warning signs of poor-quality financial reporting.

Conclusion

Financial reporting quality varies across companies. The ability to assess the quality of a company's financial reporting is an important skill for analysts. Indications of low-quality financial reporting can prompt an analyst to maintain heightened skepticism when reading a company's reports, to review disclosures critically when undertaking financial statement analysis, and to incorporate appropriate adjustments in assessments of past performance and forecasts of future performance.

- Financial reporting quality can be thought of as spanning a continuum from the highest (containing information that is relevant, correct, complete, and unbiased) to the lowest (containing information that is not just biased or incomplete but possibly pure fabrication).
- *Reporting quality*, the focus of this reading, pertains to the information disclosed. High-quality reporting represents the economic reality of the company's activities during the reporting period and the company's financial condition at the end of the period.

- *Results quality* (commonly referred to as earnings quality) pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition, relative to expectations of current and future financial performance.
- An aspect of financial reporting quality is the degree to which accounting choices are conservative or aggressive. "Aggressive" typically refers to choices that aim to enhance the company's reported performance and financial position by inflating the amount of revenues, earnings, and/or operating cash flow reported in the period; or by decreasing the amount of expenses reported in the period and/or the amount of debt reported on the balance sheet.
- Conservatism in financial reports can result from either (1) accounting standards that specifically require a conservative treatment of a transaction or an event or (2) judgments necessarily made by managers when applying accounting standards that result in more- or less-conservative results.
- An example of conservatism in the oil and gas industry is the revenue recognition accounting standard. This standard permits recognition of revenue only at time of shipment rather than closer to the time of actual value creation, which is the time of discovery.
- Managers may be motivated to issue less than high quality financial reports in order to mask poor performance, to boost the stock price, to increase personal compensation, and/or to avoid violation of debt covenants.
- Conditions that are conducive to the issuance of low-quality financial reports include cultural environment attributes that result in fewer or less transparent financial disclosures,

book/tax conformity that shifts emphasis toward legal compliance and away from fair presentation, and limited capital markets regulation.

- Mechanisms that discipline financial reporting quality include the free market and incentives for companies to minimize cost of capital, auditors, contract provisions specifically tailored to penalize misreporting, and enforcement by regulatory entities.
- Pro forma earnings (also commonly referred to as non-GAAP or non-IFRS earnings) adjust earnings as reported on the income statement. Pro forma earnings that exclude negative items are a hallmark of aggressive presentation choices.
- Companies are required to make additional disclosures when presenting any non-GAAP or non-IFRS metric.
- Managers' considerable flexibility in choosing their companies' accounting policies and in formulating estimates provides opportunities for aggressive accounting.
- Examples of accounting choices that affect earnings and balance sheets include inventory cost flow assumptions, estimates of uncollectible accounts receivable, estimated realizability of deferred tax assets, depreciation method, estimated salvage value of depreciable assets, and estimated useful life of depreciable assets.
- Cash from operations is a metric of interest to investors that can be enhanced by operating choices, such as stretching accounts payable, and potentially by classification choices.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/financial_reporting_quality__2018_.aspx

Evaluating Quality of Financial Reports

by Jack T. Ciesielski, Jr., CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA

Jack T. Ciesielski, Jr., CPA, CFA, is at R.G. Associates, Inc., publisher of The Analyst's Accounting Observer *(USA). Elaine Henry, PhD, CFA, is at Stevens Institute of Technology (USA). Thomas I. Selling, PhD, CPA, is at the Cox School of Business, Southern Methodist University (USA).*

Learning Outcomes

The candidate should be able to:

a. demonstrate the use of a conceptual framework for assessing the quality of a company's financial reports;

b. explain potential problems that affect the quality of financial reports;

c. describe how to evaluate the quality of a company's financial reports;

d. evaluate the quality of a company's financial reports;

e. describe the concept of sustainable (persistent) earnings;

f. describe indicators of earnings quality;

g. explain mean reversion in earnings and how the accruals component of earnings affects the speed of mean reversion;

h. evaluate the earnings quality of a company;

i. describe indicators of cash flow quality;

j. evaluate the cash flow quality of a company;

k. describe indicators of balance sheet quality;

l. evaluate the balance sheet quality of a company;

m. describe sources of information about risk.

Introduction

The ability to assess the quality of reported financial information can be a valuable skill. An analyst or investor who can recognize high-quality financial reporting can have greater confidence in analysis based on those financial reports and the resulting investment decisions. Similarly, an analyst or investor who can recognize poor financial reporting quality early—before deficiencies become widely known—is more likely to make profitable investment decisions or to reduce or even avoid losses.

An example of early recognition of an ultimate financial disaster is James Chanos's short position in Enron in November 2000 (Chanos 2002)—more than a year before Enron filed for bankruptcy protection (in December 2001). Despite Enron's high profile and reputation, Chanos had a negative view of Enron based on both quantitative and qualitative factors. Chanos noted that Enron's return on capital was both lower than comparable companies' return on capital and lower than the company's own cost of capital. Qualitative factors contributing to Chanos's view included the company's aggressive revenue recognition policy, its complex and difficult-to-understand disclosures on related-party transactions, and one-time

earnings-boosting gains. Later events that substantiated Chanos's perspective included sales of the company's stock by insiders and the resignation of senior executives.

Another example of early recognition of eventual financial troubles is June 2001 reports by analyst Enitan Adebonojo. These reports highlighted questionable accounting by Royal Ahold, a European food retailer. The questionable accounting included "claiming profits of acquired firms as 'organic growth,' booking capital gains from sale-and-leaseback deals as profit, and keeping billions in debt off its balance sheet." In 2003, Royal Ahold announced that it had significantly overstated its profits in the prior two years. The CEO and CFO resigned, various regulators announced investigations, and Royal Ahold's market value dropped significantly.

This reading focuses on reporting quality and the interrelated attribute of results quality. *Reporting quality* pertains to the information disclosed in financial reports. High-quality reporting provides decision-useful information—information that is relevant and faithfully represents the economic reality of the company's activities during the reporting period and the company's financial condition at the end of the period. A separate, but interrelated, attribute of quality is *results* or *earnings quality*, which pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition relative to expectations of current and future financial performance. Note that the term "earnings quality" is more commonly used in practice than "results quality," so throughout this reading, earnings quality is used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items.

High-quality earnings reflect an adequate level of return on investment and are derived from activities that a company will likely be able to sustain in the future. Thus, high-quality earnings increase the value of a company more than low-quality earnings. When reported earnings are described as being high quality, it means that

the company's underlying economic performance was good (i.e., value enhancing), and it also implies that the company had high reporting quality (i.e., that the information that the company calculated and disclosed was a good reflection of the economic reality).

Earnings can be termed "low quality" either because the reported information properly represents genuinely bad performance or because the reported information misrepresents economic reality. In theory, a company could have low-quality earnings while simultaneously having high reporting quality. Consider a company with low-quality earnings—for example, one whose only source of earnings in a period is a one-off settlement of a lawsuit without which the company would have reported huge losses. The company could nonetheless have high reporting quality if it calculated its results properly and provided decision-useful information. Although it is theoretically possible that a company could have low-quality earnings while simultaneously having high reporting quality, experiencing poor financial performance can motivate the company's management to misreport.

This reading begins in Section 2 with a description of a conceptual framework for and potential problems with financial reporting quality. This is followed in Section 3 with a discussion of how to evaluate financial reporting quality. Sections 4, 5, and 6 focus on the quality of reported earnings, cash flows, and balance sheets, respectively. Section 7 covers sources of information about risk. A summary and practice problems in the CFA Institute item set format complete the reading.

Conclusion

Assessing the quality of financial reports—both reporting quality and results quality—is an important analytical skill.

- The quality of financial reporting can be thought of as spanning a continuum from the highest quality to the lowest.
- Potential problems that affect the quality of financial reporting broadly include revenue and expense recognition on the income statement; classification on the statement of cash flows; and the recognition, classification, and measurement of assets and liabilities on the balance sheet.
- Typical steps involved in evaluating financial reporting quality include an understanding of the company's business and industry in which the company is operating; comparison of the financial statements in the current period and the previous period to identify any significant differences in line items; an evaluation of the company's accounting policies, especially any unusual revenue and expense recognition compared with those of other companies in the same industry; financial ratio analysis; examination of the statement of cash flows with particular focus on differences between net income and operating cash flows; perusal of risk disclosures; and review of management compensation and insider transactions.
- High-quality earnings increase the value of the company more than low-quality earnings, and the term "high-quality earnings" assumes that reporting quality is high.
- Low-quality earnings are insufficient to cover the company's cost of capital and/or are derived from non-recurring, one-off activities. In addition, the term "low-quality earnings" can be

used when the reported information does not provide a useful indication of the company's performance.

- Various alternatives have been used as indicators of earnings quality: recurring earnings, earnings persistence and related measures of accruals, beating benchmarks, and after-the-fact confirmations of poor-quality earnings, such as enforcement actions and restatements.
- Earnings that have a significant accrual component are less persistent and thus may revert to the mean more quickly.
- A company that consistently reports earnings that exactly meet or only narrowly beat benchmarks can raise questions about its earnings quality.
- Cases of accounting malfeasance have commonly involved issues with revenue recognition, such as premature recognition of revenues or the recognition of fraudulent revenues.
- Cases of accounting malfeasance have involved misrepresentation of expenditures as assets rather than as expenses or misrepresentation of the timing or amount of expenses.
- Bankruptcy prediction models, used in assessing financial results quality, quantify the likelihood that a company will default on its debt and/or declare bankruptcy.
- Similar to the term "earnings quality," when reported cash flows are described as being high quality, it means that the company's underlying economic performance was satisfactory in terms of increasing the value of the firm, and it also implies that the company had high reporting quality (i.e., that the information calculated and disclosed by the company was a good reflection of economic reality). Cash flow can be described as "low quality"

either because the reported information properly represents genuinely bad economic performance or because the reported information misrepresents economic reality.

- For the balance sheet, high financial *reporting* quality is indicated by completeness, unbiased measurement, and clear presentation.
- A balance sheet with significant amounts of off-balance-sheet debt would lack the completeness aspect of financial reporting quality.
- Unbiased measurement is a particularly important aspect of financial reporting quality for assets and liabilities for which valuation is subjective.
- A company's financial statements can provide useful indicators of financial or operating risk.
- The management commentary (also referred to as the management discussion and analysis, or MD&A) can give users of the financial statements information that is helpful in assessing the company's risk exposures and approaches to managing risk.
- Required disclosures regarding, for example, changes in senior management or inability to make a timely filing of required financial reports can be a warning sign of problems with financial reporting quality.
- The financial press can be a useful source of information about risk when, for example, a financial reporter uncovers financial reporting issues that had not previously been recognized. An analyst should undertake additional investigation of any issue identified.

The full reading, worth 2.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/evaluating_quality_of_financial_reports__2018_.aspx

Fixed Income

Applicable Readings

Fundamentals of Credit Analysis (Level I)

by Christopher L. Gootkind, CFA
2.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/fundamentals_of_credit_analysis__2018_.aspx

Credit Default Swaps (Level II)

by Brian Rose and Don M. Chance, PhD, CFA
1 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/credit_default_swaps__2018_.aspx

Fixed-Income Active Management: Credit Strategies (Level III)

by Campe Goodman, CFA, and Oleg Melentyev, CFA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/fixed-income_active_management__credit_strategies__2018_.aspx

What Has Changed in the CFA Program Curriculum?

Since 2007, the CFA Program curriculum has increased the material related to both credit analysis and managing credit risk. It has also discussed the issues associated with credit ratings issued by third-party organizations. The goal is to teach investment professionals to better understand credit risk and be able to form an opinion independently about a company's or an organization's creditworthiness.

The many aspects of credit risk, default risk, debt pricing issues, and other issues are in the spotlight, as is assessment of government-issued debt. As we have seen bond failures, a key understanding of the different elements of credit risk and the skills necessary to evaluate such risk have become much more important.

New topics covered within the fixed-income active management credit strategies material also include discussions of environmental, social, and governance (ESG) operational issues, credit strategies that incorporate structured financial instruments/structured products as alternative investments (e.g., mortgage-backed securities), credit instruments for emerging market countries, and techniques for managing both liquidity risk and tail risk within credit portfolios.

Why Has It Evolved?

The global financial crisis of 2007–2009 saw a large buildup of public debt worldwide and major changes in markets for private debt. Central banks' policy of quantitative easing in response to the crisis led to unprecedented low interest rate conditions in many world markets. No other major market with the possible exception of real estate was as deeply affected by the crisis as the debt market. These

developments made it imperative to develop new skills in credit and yield curve analysis.

In the wake of the 2008–09 financial crisis, several large broker/dealers (fixed-income market-making counterparties) failed and some were acquired by others. The total capital available for making markets and the willingness of participants to buy/sell credit-risky bonds were reduced in the crisis. The crisis also put well-known and well-respected bond-rating agencies under the microscope. They were blamed for contributing to the subprime mortgage debacle because of their overly optimistic ratings of tranches of these debt securities. Alleged conflicts of interest and loss of confidence in their ratings resulted in enactment of new rules, regulations, and legislation.

Credit risks can be fluid and can change and evolve over the life of a debt security. Organizations continually reach into the debt capital markets to finance projects, programs, expansion, and even acquisitions. Evaluating the risk attached to a corporate or government bond is critically important.

Why Does It Matter to Me?

Just as equity analysis has been at the core of the CFA Program curriculum, many professionals now view credit analysis and fixed-income risk management analysis techniques as hyper-crucial to both investors and financial markets. The CFA Program curriculum has consistently evolved in response.

Investment professionals, even those with an equity focus, may at some point have to engage in credit analysis across a wide array of debt securities. Within the broad fixed-income market, it's important for investment professionals to understand the various subcategories

and their particular characteristics as well as benefits and drawbacks across the risk spectrum. It's also important for investment professionals to understand how external events, cycles, and environments can affect the risk profile and performance of individual debt securities, and they must also be able to comprehend the priority of claims during a bankruptcy.

Credit default swaps (CDSs) emerged in the global financial crisis as a major category of credit derivative security. CDSs allow investors to hedge or speculate on a change in a debt issuer's credit risk. They may be referenced to a single-name bond or a bond index, are created through counterparty credit derivative contracts, and are traded in the over-the-counter market. Investment professionals should understand how and why CDSs are used, including standard requirements, broader markets, and specific credit events (e.g., bankruptcy). The valuation and pricing of these instruments are also important to understand.

Fundamentals of Credit Analysis

by Christopher L. Gootkind, CFA

Christopher L. Gootkind, CFA, is at Loomis Sayles & Company, LP (USA).

The author would like to thank several of his Fixed Income Research colleagues at Loomis, Sayles & Company for their assistance with this reading: Paul Batterton, Diana Leader-Cramer, Diana Monteith, Shannon O'Mara, CFA, and Laura Sarlo, CFA.

Learning Outcomes

The candidate should be able to:

a. describe credit risk and credit-related risks affecting corporate bonds;

b. describe default probability and loss severity as components of credit risk;

c. describe seniority rankings of corporate debt and explain the potential violation of the priority of claims in a bankruptcy proceeding;

d. distinguish between corporate issuer credit ratings and issue credit ratings and describe the rating agency practice of "notching";

e. explain risks in relying on ratings from credit rating agencies;

f. explain the four Cs (Capacity, Collateral, Covenants, and Character) of traditional credit analysis;

g. calculate and interpret financial ratios used in credit analysis;

h. evaluate the credit quality of a corporate bond issuer and a bond of that issuer, given key financial ratios of the issuer and the industry;

i. describe factors that influence the level and volatility of yield spreads;

j. explain special considerations when evaluating the credit of high yield, sovereign, and non-sovereign government debt issuers and issues.

Introduction

With bonds outstanding worth many trillions of US dollars, the debt markets play a critical role in the global economy. Companies and governments raise capital in the debt market to fund current operations; buy equipment; build factories, roads, bridges, airports, and hospitals; acquire assets, and so on. By channeling savings into productive investments, the debt markets facilitate economic growth. Credit analysis has a crucial function in the debt capital markets—efficiently allocating capital by properly assessing credit risk, pricing it accordingly, and repricing it as risks change. How do fixed-income investors determine the riskiness of that debt, and how do they decide what they need to earn as compensation for that risk?

This reading covers basic principles of credit analysis, which may be broadly defined as the process by which credit risk is evaluated. Readers will be introduced to the definition of credit risk, the interpretation of credit ratings, the four Cs of traditional credit analysis, and key financial measures and ratios used in credit analysis. The

reading explains, among other things, how to compare bond issuer creditworthiness within a given industry as well as across industries and how credit risk is priced in the bond market.

The reading focuses primarily on analysis of corporate debt; however, credit analysis of sovereign and non-sovereign, particularly municipal, government bonds will also be addressed. Structured finance, a segment of the debt markets that includes securities backed by pools of assets, such as residential and commercial mortgages as well as other consumer loans, will not be covered here.

The key components of credit risk—default probability and loss severity—are introduced in the next section along with such credit-related risks as spread risk, credit migration risk, and liquidity risk. Section 3 discusses the relationship between credit risk and the capital structure of the firm. Credit ratings and the role of credit rating agencies are addressed in Section 4. Section 5 focuses on the process of analyzing the credit risk of corporations, whereas Section 6 examines the impact of credit spreads on risk and return. Special considerations applicable to the analysis of (i) high-yield (low-quality) corporate bonds and (ii) government bonds are presented in Section 7. Section 8 gives a brief summary, and a set of review questions concludes the reading.

Summary

In this reading, we introduced readers to the basic principles of credit analysis. We described the importance of the credit markets and credit and credit-related risks. We discussed the role and importance of credit ratings and the methodology associated with assigning ratings, as well as the risks of relying on credit ratings. The

reading covered the key components of credit analysis and the financial measure used to help assess creditworthiness.

We also discussed risk versus return when investing in credit and how spread changes affect holding period returns. In addition, we addressed the special considerations to take into account when doing credit analysis of high-yield companies, sovereign borrowers, and non-sovereign government bonds.

- Credit risk is the risk of loss resulting from the borrower failing to make full and timely payments of interest and/or principal.
- The key components of credit risk are risk of default and loss severity in the event of default. The product of the two is expected loss. Investors in higher-quality bonds tend not to focus on loss severity because default risk for those securities is low.
- Loss severity equals (1 – Recovery rate).
- Credit-related risks include downgrade risk (also called credit migration risk) and market liquidity risk. Either of these can cause yield spreads—yield premiums—to rise and bond prices to fall.
- Downgrade risk refers to a decline in an issuer's creditworthiness. Downgrades will cause its bonds to trade with wider yield spreads and thus lower prices.
- Market liquidity risk refers to a widening of the bid–ask spread on an issuer's bonds. Lower-quality bonds tend to have greater market liquidity risk than higher-quality bonds, and during times of market or financial stress, market liquidity risk rises.
- The composition of an issuer's debt and equity is referred to as its "capital structure." Debt ranks ahead of all types of equity with

respect to priority of payment, and within the debt component of the capital structure, there can be varying levels of seniority.

- With respect to priority of claims, secured debt ranks ahead of unsecured debt, and within unsecured debt, senior debt ranks ahead of subordinated debt. In the typical case, all of an issuer's bonds have the same probability of default due to cross-default provisions in most indentures. Higher priority of claim implies higher recovery rate—lower loss severity—in the event of default.
- For issuers with more complex corporate structures—for example, a parent holding company that has operating subsidiaries—debt at the holding company is structurally subordinated to the subsidiary debt, although the possibility of more diverse assets and earnings streams from other sources could still result in the parent having higher effective credit quality than a particular subsidiary.
- Recovery rates can vary greatly by issuer and industry. They are influenced by the composition of an issuer's capital structure, where in the economic and credit cycle the default occurred, and what the market's view of the future prospects are for the issuer and its industry.
- The priority of claims in bankruptcy is not always absolute. It can be influenced by several factors, including some leeway accorded to bankruptcy judges, government involvement, or a desire on the part of the more senior creditors to settle with the more junior creditors and allow the issuer to emerge from bankruptcy as a going concern, rather than risking smaller and delayed recovery in the event of a liquidation of the borrower.
- Credit rating agencies, such as Moody's, Standard & Poor's, and Fitch, play a central role in the credit markets. Nearly every bond

issued in the broad debt markets carries credit ratings, which are opinions about a bond issue's creditworthiness. Credit ratings enable investors to compare the credit risk of debt issues and issuers within a given industry, across industries, and across geographic markets.

- Bonds rated Aaa to Baa3 by Moody's and AAA to BBB– by Standard & Poor's (S&P) and/or Fitch (higher to lower) are referred to as "investment grade." Bonds rated lower than that—Ba1 or lower by Moody's and BB+ or lower by S&P and/or Fitch—are referred to as "below investment grade" or "speculative grade." Below-investment-grade bonds are also called "high-yield" or "junk" bonds.
- The rating agencies rate both issuers and issues. Issuer ratings are meant to address an issuer's overall creditworthiness—its risk of default. Ratings for issues incorporate such factors as their rankings in the capital structure.
- The rating agencies will notch issue ratings up or down to account for such factors as capital structure ranking for secured or subordinated bonds, reflecting different recovery rates in the event of default. Ratings may also be notched due to structural subordination.
- There are risks in relying too much on credit agency ratings. Creditworthiness may change over time, and initial/current ratings do not necessarily reflect the creditworthiness of an issuer or bond over an investor's holding period. Valuations often adjust before ratings change, and the notching process may not adequately reflect the price decline of a bond that is lower ranked in the capital structure. Because ratings primarily reflect the probability of default but not necessarily the severity of loss given default, bonds with the same rating may

have significantly different expected losses (default probability times loss severity). And like analysts, credit rating agencies may have difficulty forecasting certain credit-negative outcomes, such as adverse litigation, leveraging corporate transactions, and such low probability/high severity events as earthquakes and hurricanes.

- The role of corporate credit analysis is to assess the company's ability to make timely payments of interest and to repay principal at maturity.
- Credit analysis is similar to equity analysis. It is important to understand, however, that bonds are contracts and that management's duty to bondholders and other creditors is limited to the terms of the contract. In contrast, management's duty to shareholders is to act in their best interest by trying to maximize the value of the company—perhaps even at the expense of bondholders at times.
- Credit analysts tend to focus more on the downside risk given the asymmetry of risk/return, whereas equity analysts focus more on upside opportunity from earnings growth, and so on.
- The "4 Cs" of credit—capacity, collateral, covenants, and character—provide a useful framework for evaluating credit risk.
- Credit analysis focuses on an issuer's ability to generate cash flow. The analysis starts with an industry assessment—structure and fundamentals—and continues with an analysis of an issuer's competitive position, management strategy, and track record.
- Credit measures are used to calculate an issuer's creditworthiness, as well as to compare its credit quality with peer companies. Key credit ratios focus on leverage and interest coverage and use

such measures as EBITDA, free cash flow, funds from operations, interest expense and balance sheet debt.

- An issuer's ability to access liquidity is also an important consideration in credit analysis.
- The higher the credit risk, the greater the offered/required yield and potential return demanded by investors. Over time, bonds with more credit risk offer higher returns but with greater volatility of return than bonds with lower credit risk.
- The yield on a credit-risky bond comprises the yield on a default risk–free bond with a comparable maturity plus a yield premium, or "spread," that comprises a credit spread and a liquidity premium. That spread is intended to compensate investors for credit risk—risk of default and loss severity in the event of default—and the credit-related risks that can cause spreads to widen and prices to decline—downgrade or credit migration risk and market liquidity risk.

  Yield spread = Liquidity premium + Credit spread.

- In times of financial market stress, the liquidity premium can increase sharply, causing spreads to widen on all credit-risky bonds, with lower-quality issuers most affected. In times of credit improvement or stability, however, credit spreads can narrow sharply as well, providing attractive investment returns.
- Credit curves—the plot of yield spreads for a given bond issuer across the yield curve—are typically upward sloping, with the exception of high premium-priced bonds and distressed bonds, where credit curves can be inverted because of the fear of default, when all creditors at a given ranking in the capital structure will receive the same recovery rate without regard to debt maturity.

- The impact of spread changes on holding period returns for credit-risky bonds are a product of two primary factors: the basis point spread change and the sensitivity of price to yield as reflected by (end-of-period) modified duration and convexity. Spread narrowing enhances holding period returns, whereas spread widening has a negative impact on holding period returns. Longer-duration bonds have greater price and return sensitivity to changes in spread than shorter-duration bonds.

$$\text{Price impact} \approx -(\text{MDur} \times \Delta\text{Spread}) + \tfrac{1}{2}\text{Cvx} \times (\Delta\text{Spread})^2$$

- For high-yield bonds, with their greater risk of default, more emphasis should be placed on an issuer's sources of liquidity, as well as on its debt structure and corporate structure. Credit risk can vary greatly across an issuer's debt structure depending on the seniority ranking. Many high-yield companies have complex capital structures, resulting in different levels of credit risk depending on where the debt resides.
- Covenant analysis is especially important for high-yield bonds. Key covenants include payment restrictions, limitation on liens, change of control, coverage maintenance tests (often limited to bank loans), and any guarantees from restricted subsidiaries. Covenant language can be very technical and legalistic, so it may help to seek legal or expert assistance.
- An equity-like approach to high-yield analysis can be helpful. Calculating and comparing enterprise value with EBITDA and debt/EBITDA can show a level of equity "cushion" or support beneath an issuer's debt.
- Sovereign credit analysis includes assessing both an issuer's ability and willingness to pay its debt obligations. Willingness to pay

is important because, due to sovereign immunity, a sovereign government cannot be forced to pay its debts.

- In assessing sovereign credit risk, a helpful framework is to focus on five broad areas: (1) institutional effectiveness and political risks, (2) economic structure and growth prospects, (3) external liquidity and international investment position, (4) fiscal performance, flexibility, and debt burden, and (5) monetary flexibility.
- Among the characteristics of a high-quality sovereign credit are the absence of corruption and/or challenges to political framework; governmental checks and balances; respect for rule of law and property rights; commitment to honor debts; high per capita income with stable, broad-based growth prospects; control of a reserve or actively traded currency; currency flexibility; low foreign debt and foreign financing needs relative to receipts in foreign currencies; stable or declining ratio of debt to GDP; low debt service as a percent of revenue; low ratio of net debt to GDP; operationally independent central bank; track record of low and stable inflation; and a well-developed banking system and active money market.
- Non-sovereign or local government bonds, including municipal bonds, are typically either general obligation bonds or revenue bonds.
- General obligation (GO) bonds are backed by the taxing authority of the issuing non-sovereign government. The credit analysis of GO bonds has some similarities to sovereign analysis—debt burden per capita versus income per capita, tax burden, demographics, and economic diversity. Underfunded and "off-balance-sheet" liabilities, such as pensions for public employees and retirees, are debt-like in nature.

- Revenue-backed bonds support specific projects, such as toll roads, bridges, airports, and other infrastructure. The creditworthiness comes from the revenues generated by usage fees and tolls levied.

The full reading, worth 2.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/fundamentals_of_credit_analysis__2018_.aspx

Credit Default Swaps

by Brian Rose and Don M. Chance, PhD, CFA

Brian Rose (USA). Don M. Chance, PhD, CFA, is at Louisiana State University (USA).

Learning Outcomes

The candidate should be able to:

a. describe credit default swaps (CDS), single-name and index CDS, and the parameters that define a given CDS product;

b. describe credit events and settlement protocols with respect to CDS;

c. explain the principles underlying, and factors that influence, the market's pricing of CDS;

d. describe the use of CDS to manage credit exposures and to express views regarding changes in shape and/or level of the credit curve;

e. describe the use of CDS to take advantage of valuation disparities among separate markets, such as bonds, loans, equities, and equity-linked instruments.

Introduction

A credit derivative is a derivative instrument in which the underlying is a measure of a borrower's credit quality. Four types of credit derivatives are (1) total return swaps, (2) credit spread options, (3) credit-linked notes, and (4) credit default swaps, or CDS. The first three are not frequently encountered. CDS have clearly emerged as the primary type of credit derivative and, as such, are the topic of this reading. In a CDS, one party makes payments to the other and receives in return the promise of compensation if a third party defaults.

In any derivative, the payoff is based on (*derived from*) the performance of an underlying instrument, rate, or asset that we call the underlying. For a CDS, the underlying is the credit quality of a borrower. At its most fundamental level, a CDS provides protection against default, but it also protects against changes in the market's perception of a borrower's credit quality well in advance of default. The value of a CDS will rise and fall as opinions change about the likelihood of default. The actual event of default might never occur.

Derivatives are characterized as *contingent claims*, meaning that their payoffs are dependent on the occurrence of a specific event or outcome. For an equity option, the event is that the stock price is above (for a call) or below (for a put) the exercise price at expiration. For a CDS, the credit event is more difficult to identify. In financial markets, whether a default has occurred is sometimes not clear. Bankruptcy would seem to be a default, but many companies declare bankruptcy and some ultimately pay all of their debts. Some companies restructure their debts, usually with creditor approval but without formally declaring bankruptcy. Creditors are clearly damaged when debts are not paid, not paid on time, or paid in a form different from what was promised, but they are also damaged when there is simply an increase in the likelihood that the debt will not be paid. The extent of damage

to the creditor can be difficult to determine. A decline in the price of a bond when investors perceive an increase in the likelihood of default is a very real loss to the bondholder. Credit default swaps are designed to protect creditors against such credit events. As a result of the complexity of defining what constitutes default, the industry has expended great effort to provide clear guidance on what credit events are covered by a CDS contract. As with all efforts to write a perfect contract, however, no such device exists and disputes do occasionally arise. We will take a look at these issues later.

This reading is organized as follows: Section 2 explores basic definitions and concepts, and Section 3 covers the elements of valuation and pricing. Section 4 discusses applications. Section 5 provides a summary.

Summary

This reading on credit default swaps provides a basic introduction to these instruments and their markets. The following key points are covered:

- A credit default swap (CDS) is a contract between two parties in which one party purchases protection from another party against losses from the default of a borrower for a defined period of time.
- A CDS is written on the debt of a third party, called the reference entity, whose relevant debt is called the reference obligation, typically a senior unsecured bond.
- A CDS written on a particular reference obligation normally provides coverage for all obligations of the reference entity that have equal or higher seniority.

- The two parties to the CDS are the credit protection buyer, who is said to be short the reference entity's credit, and the credit protection seller, who is said to be long the reference entity's credit. The seller (buyer) is said to be long (short) because the seller is bullish (bearish) on the financial condition of the reference entity.
- The CDS pays off upon occurrence of a credit event, which includes bankruptcy, failure to pay, and, in some countries, restructuring.
- Settlement of a CDS can occur through a cash payment from the credit protection seller to the credit protection buyer as determined by the cheapest-to-deliver obligation of the reference entity, or by physical delivery of the reference obligation from the protection buyer to the protection seller in exchange for the CDS notional.
- A cash settlement payoff is determined by an auction of the reference entity's debt, which gives the market's assessment of the likely recovery rate. The credit protection buyer must accept the outcome of the auction even though the ultimate recovery rate could differ.
- CDS can be constructed on a single entity or as indexes containing multiple entities.
- The fixed payments made from CDS buyer to CDS seller are customarily set at a fixed annual rate of 1% for investment-grade debt or 5% for high-yield debt.
- Valuation of a CDS is determined by estimating the present value of the protection leg, which is the payment from the protection seller to the protection buyer in event of default, and the present value of the payment leg, which is the series of payments made from the protection buyer to the protection seller. Any

difference in the two series results in an upfront payment from the party having the greater present value to the counterparty.

- An important determinant of the value of the expected payments is the hazard rate, the probability of default given that default has not already occurred.
- CDS prices are often quoted in terms of credit spreads, the implied number of basis points that the credit protection seller receives from the credit protection buyer to justify providing the protection.
- Credit spreads are often expressed in terms of a credit curve, which expresses the relationship between the credit spreads on bonds of different maturities for the same borrower.
- CDS change in value over their lives as the credit quality of the reference entity changes, which leads to gains and losses for the counterparties, even though default may not have occurred or may never occur.
- Either party can monetize an accumulated gain or loss by entering into an offsetting position that matches the terms of the original CDS.
- CDS are used to increase or decrease credit exposures or to capitalize on different assessments of the cost of credit among different instruments tied to the reference entity, such as debt, equity, and derivatives of debt and equity.

The full reading, worth 1 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/credit_default_swaps__2018_.aspx

Fixed-Income Active Management: Credit Strategies

by Campe Goodman, CFA, and Oleg Melentyev, CFA

Campe Goodman, CFA, is at Wellington Management (USA). Oleg Melentyev, CFA (USA).

Learning Outcomes

The candidate should be able to:

a. describe risk considerations in investment-grade and high-yield corporate bond portfolios;

b. compare the use of credit spread measures in portfolio construction;

c. discuss bottom-up approaches to credit strategies;

d. discuss top-down approaches to credit strategies;

e. discuss liquidity risk in credit markets and how liquidity risk can be managed in a credit portfolio;

f. describe how to assess and manage tail risk in credit portfolios;

g. discuss considerations in constructing and managing portfolios across international credit markets;

h. describe the use of structured financial instruments as an alternative to corporate bonds in credit portfolios.

Introduction

This reading covers strategies used in the construction and management of credit portfolios. A credit portfolio consists primarily of securities for which credit risk is an important consideration. The credit market is the component of the fixed-income market that includes both publicly traded debt securities (such as corporate bonds, sovereign and non-sovereign government bonds, supranational bonds, and commercial paper) and non-publicly traded instruments (such as loans and privately placed securities). The credit market also includes structured financial instruments—such as mortgage-backed securities, asset-backed securities, and collateralized debt obligations—that may be traded publicly or non-publicly.

Corporate bonds are the largest portion of the credit market. Section 2 compares investment-grade and high-yield corporate bonds and highlights implications of differences in these bonds for portfolio construction and management. Section 3 describes basic measures used to evaluate credit securities, including credit spread measures and excess returns from credit securities. Section 4 discusses two main approaches to credit strategy—bottom-up and top-down—used in constructing and managing credit portfolios. Section 5 discusses examines how to manage two important non-credit risks—liquidity risk and tail risk—in credit portfolios.

When managing international credit portfolios, portfolio managers need to consider various global implications. Section 6 discusses issues and risks that are particularly relevant for international credit portfolios. In addition to corporate bonds, credit investors may consider structured financial instruments such as mortgage-backed securities, asset-backed securities, collateralized debt obligations, and covered bonds. Section 7 covers the use of structured financial instruments in credit portfolios. The final section summarizes the reading.

Summary

This reading covers strategies and risk considerations in the construction and management of credit portfolios. Key points include the following:

- Credit risk is usually the most important consideration for high-yield portfolio managers. For investment-grade portfolio managers, interest rate risk, spread risk, and credit migration (or credit downgrade) risk are typically the most relevant considerations.
- The risk in a portfolio of investment-grade bonds is typically measured in terms of spread duration.
- Credit spreads tend to be negatively correlated with risk-free interest rates.
- When default losses are low and credit spreads are relatively tight, high-yield bonds tend to behave more like investment-grade bonds; that is, with greater interest rate sensitivity.
- High-yield bonds tend to be less liquid than investment-grade bonds because of higher return volatility in the high-yield bond market; smaller inventories of high-yield bonds than of investment-grade bonds held by broker/dealers; and smaller size of the high-yield market compared with the investment-grade market.
- Reflecting differences in liquidity between high-yield and investment-grade bonds, bid–offer spreads are larger for high-yield bonds.
- Credit spread measures include spread over the benchmark, the G-spread, the I-spread, the Z-spread, and option-adjusted spread. Each measure has advantages and disadvantages in use.

- Excess return is the compensation that a bond investor receives for assuming credit risk. When considering excess return, credit portfolio managers typically manage interest rate risk separately.
- A bottom-up approach to credit strategy involves selecting the individual bonds or issuers that the investor views as having the best relative value from among a set of bonds or issuers with similar characteristics (usually the same industry and often the same country of domicile).
- A spread curve is the fitted curve of credit spreads for each bond of an issuer plotted against either the maturity or duration of each of those bonds. A spread curve may be useful in conducting bottom-up relative value analysis.
- A top-down approach to credit strategy involves the investor formulating a view on major macroeconomic trends, such as economic growth and corporate default rates, and then selecting the bonds that she expects to perform best in the expected environment.
- Top-down portfolio managers commonly use several measures to gauge the credit quality of their portfolios: (1) average credit quality; (2) average OAS; (3) average spread duration; (4) duration multiplied by spread.
- In practice, investors often employ a combination of a top-down and bottom-up approach to credit strategy.
- Some fixed-income mandates include a requirement that the portfolio consider environmental, social, and governance factors in the investment process. ESG factors are particularly relevant to the credit component of fixed-income portfolio mandates.

- Liquidity risk is prominent in the credit markets, particularly following the global financial crisis. Measures of secondary market liquidity include trading volume, spread sensitivity to fund outflows, and bid–ask spreads.
- Liquidity management tools used by credit portfolio managers include cash, position sizing, credit default swap index derivatives, exchange-traded funds, and liquid bonds outside the benchmark.
- Scenario analysis is a common tool for assessing tail risk in credit portfolios. Two principal tools that investors use to manage tail risk include portfolio diversification and tail risk hedges.
- Many investors manage bonds that are issued in multiple countries and currencies and therefore need to consider international (global) implications.
- Credit portfolio managers can improve returns through geographic diversification (investing across various countries and regions). Risks of geographic diversification include geopolitical risk, elevated liquidity risk, currency risk, and legal risk.
- Credit investors sometimes use structured financial instruments as alternatives to corporate bonds. Common types of structured financial instruments include mortgage-backed securities, asset-backed securities, collateralized debt obligations, and covered bonds.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/fixed-income_active_management__credit_strategies__2018_.aspx

Alternative Investments

Applicable Readings

Introduction to Alternative Investments (Level I)

by Terri Duhon, George Spentzos, CFA, FSIP, and Scott D. Stewart, CFA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/introduction_to_alternative_investments__2018_.aspx

Publicly Traded Real Estate Securities (Level II)

by Anthony Paolone, CFA, Ian Rossa O'Reilly, CFA, and David Kruth, CFA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/publicly_traded_real_estate_securities__2018_.aspx

Commodities and Commodity Derivatives: An Introduction (Level II)

by David Burkart, CFA, and James Alan Finnegan, RMA, CFA
1.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/commodities_and_commodity_derivatives__an_introduction__2018_.aspx

What Has Changed in the CFA Program Curriculum?

The inclusion of so-called alternative investments within the current CFA Program curriculum is a reflection of the increasing importance of alternative investments within many institutional and high-net-worth investors' portfolios. Consequently, we have purposefully added materials that explain the characteristics of and strategies for multiple alternative investments, including potential benefits, risks, and returns. Alternative investments discussed include hedge funds, funds of hedge funds, private equity, real estate, commodities, and infrastructure. The discussions also include their structures and fees, analyzing the advantages and disadvantages of such investments, and their integration within portfolios.

We also educate investment professionals on methods for valuations, risk/return assessment, and management issues specific to alternative investments. These readings also describe practices surrounding the due diligence process.

Why Has It Evolved?

Investors of all types seek investment choices that go beyond just equity and fixed-income securities. These investment choices are broadly described as alternative investments (alternatives to long-only investment in fixed-income and equity securities). An advantage of many of these alternatives is that they may help mitigate the risk of equities and offer opportunities to exploit market inefficiencies.

The increasing importance of alternative investments is evidenced by the asset class's relative size. As of December 2014, equities represented approximately 36%, fixed-income securities

represented approximately 39%, and alternative investments represented approximately 25% of all global assets under management, according to data from Boston Consulting Group and DTZ Research.

As the demand for positive performance increases for pensions, endowments, and other investors, investment professionals will need to have at least a basic understanding of these alternative investments, how they act and react, how and why to use them within a portfolio, and other factors that can impact their very existence.

Why Does It Matter to Me?

Staying relevant and competitive in the changing investment management industry requires exploring new trends in investment products and strategies. Today's investors are looking for investment choices and may not be at all opposed to reaching into the alternative investment universe. They may be seeking uncorrelated positive performance, but they are also concerned about the effects of volatility and unconventional risk components. It has become a key portfolio tenet that investors have largely embraced, making alternative investments an enticing universe to explore.

Of course, investing in real estate and commodities is not new. However, it now extends beyond simply buying a property to include such alternatives as real estate investment trusts (REITs). For those investing across multiple asset classes, commodity sectors (energy, grains, base/industrial and precious metals, livestock, and cash crops, such as cotton, sugar, and coffee) have become rather appealing alternative areas to consider. However, understanding the life cycle of each and how they act in certain market environments and under supply and demand forces (e.g., contango and backwardation) can be extremely important.

It behooves you, as an astute analyst, to be able to offer investors information and guidance as to the many alternative investment choices that can be deployed within portfolios. Whether you are a firm believer in the power and benefits of alternative investments, a relative novice, or an agnostic—or even if you are fundamentally opposed—these curriculum updates will become a valuable resource that you can refer to again and again along your career journey.

Introduction to Alternative Investments

by Terri Duhon, George Spentzos, CFA, FSIP, and Scott D. Stewart, CFA

Terri Duhon, is at B&B Financial Markets; Said Business School, Oxford University; CHAPS Co; and Morgan Stanley International (United Kingdom). George Spentzos, CFA, FSIP (United Kingdom). Scott D. Stewart, CFA, is at Cornell University (USA).

CFA Institute acknowledges the research assistance of John W. Stewart, CFA, on the data analysis in this reading.

Learning Outcomes

The candidate should be able to:

a. compare alternative investments with traditional investments;

b. describe categories of alternative investments;

c. describe potential benefits of alternative investments in the context of portfolio management;

d. describe hedge funds, private equity, real estate, commodities, infrastructure, and other alternative investments, including, as applicable, strategies, sub-categories, potential benefits and risks, fee structures, and due diligence;

e. describe, calculate, and interpret management and incentive fees and net-of-fees returns to hedge funds;

f. describe issues in valuing and calculating returns on hedge funds, private equity, real estate, commodities, and infrastructure;

g. describe risk management of alternative investments.

Introduction

Assets under management in vehicles classified as alternative investments have grown rapidly since the mid-1990s. This growth has largely occurred because of interest in these investments by institutions, such as endowment and pension funds, as well as high-net-worth individuals seeking diversification and return opportunities. Alternative investments are perceived to behave differently from traditional investments. Investors may seek either absolute return or relative return.

Some investors hope alternative investments will provide positive returns throughout the economic cycle; this goal is an absolute return objective. Alternative investments are not free of risk, however, and their returns may be negative and/or correlated with other investments, including traditional investments, especially in periods of financial crisis. Some investors in alternative investments have a relative return objective. A relative return objective, which is often the objective of portfolios of traditional investment, seeks to achieve a return relative to an equity or fixed-income benchmark.

This reading is organized as follows. Section 2 describes alternative investments' basic characteristics and categories; general strategies of alternative investment portfolio managers; the role of alternative investments in a diversified portfolio; and investment structures used to provide access to alternative investments. Sections 3 through 7 describe features of hedge funds, private equity, real estate, commodities, and infrastructure, respectively, along with issues in calculating returns to and valuation of each. Section 8 briefly describes other alternative investments. Section 9 provides an overview of risk management, including due diligence, of alternative investments. A summary and practice problems conclude the reading.

Summary

This reading has provided an overview of the characteristics, potential benefits, and risks of alternative investments. It also described features of some categories of alternative investments. Including alternative investments in an investor's portfolio may result in benefits, such as diversification benefits. These benefits do not come without associated risks, however. It is important that investors understand these risks before including alternative investments in their portfolios. Some key points of the reading are summarized as follows:

- Alternative investments are alternatives to long-only positions in stocks, bonds, and cash. Alternative investments include investments in assets such as real estate and commodities as well as investments in special vehicles such as private equity and hedge funds.
- Alternative investment strategies are typically active, return-seeking strategies.
- Characteristics common to many alternative investments, compared with traditional investments, include lower liquidity, less regulation, lower transparency, higher fees, and limited and potentially problematic historical risk and return data.
- Alternative investments often have unusual legal and tax considerations and may be highly leveraged.
- Alternative investments are attractive to investors because of the potential for diversification (reduced risk) and/or higher returns when added to a portfolio of traditional investments.
- The risks associated with alternative investments must be factored into the investment decision-making process.

- Many alternative investments are valued for performance-reporting purposes, including reporting to index providers, using estimated values rather than actual market prices. As a result, the volatility of returns and correlation of returns with the returns to traditional investments will tend to be underestimated. It is important to identify and understand how alternative investments are valued.
- Indexes for alternative investments may be subject to a variety of biases, including survivorship and backfill biases.
- Many alternative investments, such as hedge and private equity funds, use a partnership structure with a general partner that manages the business and limited partners (investors) who own fractional interests in the partnership.
- The general partner typically receives a management fee based on assets under management or committed capital (the former is common to hedge funds and the latter is common to private equity funds) and an incentive fee based on realized profits.
- Hurdle rates, high-water marks, lockup and notice periods, and clawback provisions may also be specified in a partnership agreement.
- The fee structure affects the returns to investors (limited partners) in alternative investments such as hedge and private equity funds.
- Hedge funds are typically classified by strategy. One such classification includes four broad categories of strategies: event-driven, relative value, macro, and equity hedge.
- Primary private equity fund strategies include leveraged buyouts, venture capital, development capital, and distressed

investing. Leveraged buyouts and venture capital are the dominant strategies.

- Real estate investing includes direct and indirect ownership of real estate property and lending against real estate properties.
- Real estate property has some unique features, including basic indivisibility, heterogeneity (no two properties are identical), and fixed location.
- The required amount to directly invest in real estate may be large, and the investment may be relatively illiquid. Different investment forms, such as REITs and mortgage securitizations, partially address these issues.
- Commodity investments may involve investing in actual physical commodities or in producers of commodities, but more typically, these investments are made using commodity derivatives.
- Returns to commodity investing are based on changes in price and do not include an income stream such as dividends, interest, or rent.
- Infrastructure assets are capital intensive, long-lived, real assets that are intended for public use and provide essential services. Investors expect these assets to generate stable cash flows, which adjust for economic growth and inflation, and they may also expect capital appreciation.
- Category, stage of development, and geographic location of underlying assets and the form of infrastructure investment affect risks and expected returns of infrastructure investments.
- Managing risks associated with alternative investments can be challenging because these investments are often characterized

by asymmetric risk and return profiles, limited portfolio transparency, and illiquidity.

- Traditional risk and return measures (such as mean return, standard deviation of returns, and beta) may provide an inadequate picture of alternative investments' risk and return characteristics. Moreover, these measures may be unreliable or not representative of specific investments.
- Operational, financial, counterparty, and liquidity risks may be key considerations for those investing in alternative investments.
- It is critical to perform due diligence to assess whether (a) the manager can effectively pursue the proposed investment strategy; (b) the appropriate organizational structure and policies for managing investments, operations, risk, and compliance are in place; and (c) the fund terms appear reasonable.
- The inclusion of alternative investments in a portfolio, including the amounts to allocate, should be considered in the context of an investor's risk–return objectives, constraints, and preferences.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/introduction_to_alternative_investments__2018_.aspx

Publicly Traded Real Estate Securities

by Anthony Paolone, CFA, Ian Rossa O'Reilly, CFA, and David Kruth, CFA

Anthony Paolone, CFA (USA). Ian Rossa O'Reilly, CFA (Canada). David Kruth, CFA (USA).

Learning Outcomes

The candidate should be able to:

a. describe types of publicly traded real estate securities;

b. explain advantages and disadvantages of investing in real estate through publicly traded securities;

c. explain economic value determinants, investment characteristics, principal risks, and due diligence considerations for real estate investment trust (REIT) shares;

d. describe types of REITs;

e. justify the use of net asset value per share (NAVPS) in REIT valuation and estimate NAVPS based on forecasted cash net operating income;

f. describe the use of funds from operations (FFO) and adjusted funds from operations (AFFO) in REIT valuation;

g. compare the net asset value, relative value (price-to-FFO and price-to-AFFO), and discounted cash flow approaches to REIT valuation;

h. calculate the value of a REIT share using net asset value, price-to-FFO and price-to-AFFO, and discounted cash flow approaches.

Introduction

This reading provides an overview of the publicly traded real estate securities, focusing on equity real estate investment trusts (REITs) and their valuation.

Real estate investments may play several roles in a portfolio. Investment in commercial real estate property—also called income-producing, rental, or investment property—may be either in the form of direct ownership investment or indirect investment by means of equity securities. They can provide an above-average current yield compared with other equity investments and may provide a degree of protection against inflation, especially when rental rates are inflation-indexed, rise periodically by pre-determined amounts, or are easily adjusted. Real estate investment can be an effective means of diversification in many investment portfolios.

REITs are the most widely held type of real estate equity security. The valuation of REITs is similar in some respects to the valuation of other kinds of equity securities, but also takes into account unique aspects of real estate and sometimes uses specialized measures. This reading introduces and describes REIT valuation.

The reading is organized as follows: Section 2 provides an overview of publicly traded real estate securities. Section 3 describes publicly traded equity REITs in detail, including their structure, investment characteristics, and analysis and due diligence considerations. Section 4 presents real estate operating companies (REOCs). Sections 5, 6, and 7 present net asset value, relative valuation, and

discounted cash flow valuation for REIT shares, respectively. After a mini case study in Section 8, Section 9 summarizes the reading.

Summary

This reading has presented publicly traded real estate securities, including their structure, economic drivers, investment characteristics, and valuation. Among the important points made by the reading are the following:

- The principal types of publicly traded real estate securities available globally are real estate investment trusts, real estate operating companies, and residential and commercial mortgage-backed securities.
- Publicly traded equity real estate securities offer investors participation in the returns from investment real estate with the advantages of superior liquidity in small and large amounts; greater potential for diversification by property, geography, and property type; access to a superior quality and range of properties; the benefit of management services; limited liability; the ability to use shares as tax-advantaged currency in making acquisitions; protection accorded by corporate governance, disclosure, and other securities regulations; and, in the case of REITs, exemption from income taxation within the REIT if prescribed requirements are met.
- Disadvantages include the costs of maintaining a publicly traded corporate structure, pricing determined by the stock market and returns that can be volatile, potential for structural conflicts of

interest, and tax differences compared with direct ownership of property that can be disadvantageous under some circumstances.

- Compared with other publicly traded shares, REITs offer higher than average yields and greater stability of income and returns. They are amenable to a net asset value approach to valuation because of the existence of active private markets for their real estate assets. Compared with REOCs, REITs offer higher yields and income tax exemption but have less operating flexibility to invest in a broad range of real estate activities as well as less potential for growth from reinvesting their operating cash flows because of their high income-to-payout ratios.
- In assessing the investment merits of REITs, investors analyze the effects of trends in general economic activity, retail sales, job creation, population growth, and new supply and demand for specific types of space. They also pay particular attention to occupancies, leasing activity, rental rates, remaining lease terms, in-place rents compared with market rents, costs to maintain space and re-lease space, tenants' financial health and tenant concentration in the portfolio, financial leverage, debt maturities and costs, and the quality of management.
- Analysts make adjustments to the historic cost-based financial statements of REITs and REOCs to obtain better measures of current income and net worth. The three principal figures they calculate and use are (1) funds from operations or accounting net earnings excluding depreciation, deferred tax charges, and gains or losses on sales of property and debt restructuring; (2) adjusted funds from operations, or funds from operations adjusted to remove straight-line rent and to provide for maintenance-type capital expenditures and leasing costs, including leasing agents' commissions and tenants' improvement allowances; and (3) net

asset value or the difference between a real estate companies' assets and liabilities ranking prior to shareholders' equity, all valued at market values instead of accounting book values.

- REITs and REOCs are valued using a net asset value per share, price-to-FFO, price-to-AFFO, price-to-NAV, or a discounted cash flow approach, or combinations of these approaches. Three important factors influencing the P/FFO and P/AFFO of REITs and REOCs are expectations for growth in FFO/AFFO, risks associated with the underlying real estate, and risks associated with companies' capital structure and access to capital. The P/NAV approach to valuation can be used as either an absolute basis of valuation or a relative valuation approach. NAV reflects, however, the estimated value of a REIT's assets to a private market buyer, which may or may not be the same as the value that public equity investors ascribe to the business; this fact is one of the reasons for the wide historical premium/discount range at which REITs trade relative to NAV estimates.
- REITs and REOCs generally return a significant portion of their income to their investors and as a result tend to pay high dividends. Thus, dividend discount or discounted cash flow models for valuation are also applicable. These valuation approaches are applied in the same manner as they are for shares in other industries. Most typically, investors utilize two- or three-step dividend discount models with near-term, intermediate-term, and/or long-term growth assumptions. In discounted cash flow models, investors will often use intermediate-term cash flow projections and a terminal value based on historical cash flow multiples.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/publicly_traded_real_estate_securities__2018_.aspx

Commodities and Commodity Derivatives: An Introduction

by David Burkart, CFA, and James Alan Finnegan, RMA, CFA

David Burkart, CFA, is at Coloma Capital Futures, LLC (USA). James Alan Finnegan, RMA, CFA (USA).

Learning Outcomes

The candidate should be able to

a. compare characteristics of commodity sectors;

b. compare the life cycle of commodity sectors from production through trading or consumption;

c. contrast the valuation of commodities with the valuation of equities and bonds;

d. describe types of participants in commodity futures markets;

e. analyze the relationship between spot prices and expected future prices in markets in contango and markets in backwardation;

f. compare theories of commodity futures returns;

g. describe, calculate, and interpret the components of total return for a fully collateralized commodity futures contract;

h. contrast roll return in markets in contango and markets in backwardation;

i. describe how commodity swaps are used to obtain or modify exposure to commodities;

j. describe how the construction of commodity indexes affects index returns.

Introduction

This reading presents the characteristics and valuation of commodities and commodity derivatives. Given that investment in commodities is conducted primarily through futures markets, the concepts and theories behind commodity futures is a primary focus of the reading. In particular, the relationship between spot and futures prices, as well as the underlying components of futures returns, are key analytical considerations.

What do we mean when we talk about investing in commodities? A basic economic definition is that a commodity is a physical good attributable to a natural resource that is tradable and supplied without substantial differentiation by the general public.

Commodities trade in physical (spot) markets and in futures and forward markets. Spot markets involve the physical transfer of goods between buyers and sellers; prices in these markets reflect current (or very near term) supply and demand conditions. Global commodity futures markets constitute financial exchanges of standardized futures contracts in which a price is established in the market today for the sale of some defined quantity and quality of a commodity at a future date of delivery; execution of the contract may be focused on cash settlement or physical delivery.

Commodity futures exchanges allow for risk transfer and provide a valuable price discovery mechanism that reflects the collective views of all market participants with regard to the future supply and demand prospects of a commodity. Given the financial (versus physical) nature of

their contract execution, commodity exchanges allow important parties beyond traditional suppliers and buyers—speculators, arbitrageurs, private equity, endowments, and other institutional investors—to participate in these price discovery and risk transfer processes. Standardized contracts and organized exchanges also offer liquidity (i.e., trading volumes) to facilitate closing, reducing, expanding, or opening new hedges or exposures as circumstances change on a daily basis.

Forward markets exist alongside futures markets in certain commodities for use by entities that require customization in contract terms. Forwards are largely outside the scope of this reading and discussed only briefly. Exposure to commodities is also traded in the swap markets for both speculative and hedging purposes. Investment managers may want to establish swap positions to match certain portfolio needs, whereas producers may want to adjust their commodity risk (e.g., the origin of their cattle or the chemical specifications of their crude oil).

Commodities offer the potential for diversification benefits in a multi-asset class portfolio because of historically low average return correlation with stocks and bonds. In addition, certain academic studies (e.g., Gorton and Rouwenhorst 2006; Erb and Harvey 2006) demonstrate that some commodities have historically had inflation hedging qualities.

This reading is organized as follows: Section 2 provides an overview of physical commodity markets, including the major sectors, their life cycles, and their valuation. Section 3 describes futures market participants, commodity futures pricing, and the analysis of commodity returns, including the concepts of contango and backwardation. Section 4 reviews the use of swap instruments rather than futures to gain exposure to commodities. Section 5 reviews the various commodity indexes given their importance as benchmarks for the asset class and investment vehicles. Finally, Section 6 concludes with a summary of the major points of the reading.

Summary

- Commodities are a diverse asset class comprised of various sectors: energy, grains, industrial (base) metals, livestock, precious metals, and softs (cash crops). Each of these sectors has a number of characteristics that are important in determining the supply and demand for each commodity, including ease of storage, geo-politics, and weather.
- The life cycle of commodities varies considerably depending on the economic, technical and structural (i.e., industry, value chain) profile of each commodity as well as the sector. A short life cycle allows for relatively rapid adjustment to outside events, whereas a long life cycle generally limits the ability of the market to react.
- The valuation of commodities relative to that of equities and bonds can be summarized by noting that equities and bonds represent financial assets whereas commodities are physical assets. The valuation of commodities is not based on the estimation of future profitability and cash flows but rather on a discounted forecast of future possible prices based on such factors as the supply and demand of the physical item.
- The commodity trading environment is similar to other asset classes, with three types of trading participants: (1) informed investors/hedgers, (2) speculators, and (3) arbitrageurs.
- Commodities have two general pricing forms: spot prices in the physical markets and futures prices for later delivery. The spot price is the current price to deliver or purchase a physical commodity at a specific location. A futures price is an exchange-based price agreed on to deliver or receive a defined quantity and often quality of a commodity at a future date.

- The difference between spot and futures prices is generally called the basis. When the spot price is higher than the futures price, it is called backwardation, and when it is lower it is called contango. Backwardation and contango are also used to describe the relationship between two futures contracts of the same commodity.
- Commodity contracts can be settled by either cash or physical delivery.
- There are three primary theories of futures returns.
    - In Insurance Theory, commodity producers who are long the physical good are motived to sell the commodity for future delivery to hedge their production price risk exposure.
    - The Hedging Pressure Hypothesis describes when producers along with consumers seek to protect themselves from commodity market price volatility by entering into price hedges to stabilize their projected profits and cash flow.
    - The Theory of Storage focuses on supply and demand dynamics of commodity inventories, including the concept of "convenience yield."
- The total return of a fully collateralized commodity futures contract can be quantified as the spot price return plus the roll return plus the collateral return (risk-free rate return).
- The roll return is effectively the weighted accounting difference (in percentage terms) between the near-term commodity futures contract price and the farther-term commodity futures contract price.
- A commodity swap is a legal contract calling for the exchange of payments over multiple dates as determined by several reference prices or indexes.

- The most relevant commodity swaps include excess return swaps, total return swaps, basis swaps, and variance/volatility swaps.
- The five primary commodity indexes based on assets are (1) the S&P GSCI; (2) the Bloomberg Commodity Index, formerly the Dow Jones–UBS Commodity Index; (3) the Deutsche Bank Liquid Commodity Index; (4) the Thomson Reuters/CoreCommodity CRB Index; and (5) the Rogers International Commodities Index.
- The key differentiating characteristics of commodity indexes are
  - the breadth and selection methodology of coverage (number of commodities and sectors) included in each index, noting that some commodities have multiple reference contracts.
  - the relative weightings assigned to each component/commodity, and the related methodology for how these weights are determined.
  - the methodology and frequency for rolling the individual futures contracts.
  - the methodology and frequency for rebalancing the weights of the individual commodities and sectors.
  - the governance that determines which commodities are selected.

The full reading, worth 1.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/commodities_and_commodity_derivatives__an_introduction__2018_.aspx

Economics

Applicable Readings

Understanding Business Cycles (Level I)

by Michele Gambera, PhD, CFA, Milton Ezrati, and Bolong Cao, PhD, CFA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/understanding_business_cycles__2018_.aspx

Currency Exchange Rates (Level I)

by William A. Barker, PhD, CFA, Paul D. McNelis, and Jerry Nickelsburg
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/currency_exchange_rates__2018_.aspx

International Trade and Capital Flows (Level I)

by Usha Nair-Reichert, PhD, and Daniel Robert Witschi, PhD, CFA
2 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/international_trade_and_capital_flows__2018_.aspx

What Has Changed in the CFA Program Curriculum?

The CFA Program curriculum continues to morph and change as the global world of economics twists and turns. This information provides investment professionals with a better and richer learning experience than previous CFA Program material. The three Level I readings within the economics topic will provide a good foundation upon which your knowledge can build.

When it comes to business cycles—expansions, contractions (recessions), and recoveries—all phases are explained. The updated curriculum also covers the characteristics and the interactive effects on economic activity, employment/unemployment/underemployment, consumer and business spending, inflation/deflation/disinflation and their factors and implications, monetary policy changes, and external trade and financial markets.

The first reading explains different, commonly accepted theories behind the ups and downs of business cycles and showcases the debate over which governmental-led policies can have an impact. These are all useful issues for a general understanding, for making forecasts, and for investment decision-making purposes.

Also explained are the differences among consumer price indexes, as representative of the market baskets of goods and services for consumers across the world, as well as the spectrum of economic indicators (leading, lagging, and coincident).

Additionally, our updates include a stronger discussion of the 24/7 foreign exchange (FX) market—the world's largest market. The exchange rate (nominal and real) refers to the price of one currency in terms of a different currency. Besides facilitating the global trade in goods and services, FX markets are critical to the majority of investors who hold nondomestic securities in their portfolios. Such investors face the decision of whether to hedge or not hedge

positions and must understand the risks involved. Also explained in greater detail are spot and forward FX markets and the roles of market participants.

To the global economy, as well as large businesses, international trade is vital, as is understanding trade balance surpluses and deficits as well as currency devaluations or depreciations. The last of these readings includes in-depth details about what reported trade numbers mean and imply. Further, governmental regulations, including tariffs, quotas, export subsidies, and domestic content restrictions, are explained. These will affect the repatriation of capital for companies and investors. Also explained are trade agreements and presiding trade organizations.

Why Has It Evolved?

Economists' understanding of business cycles has evolved somewhat since 2007. In early 2007, no one could have predicted the depth and breadth of what came to be known as the Great Recession, although most had studied the 1929 market crash and the ensuing Great Depression and some may have lived through the recessions following the oil shocks of 1973 and 1978. The Great Recession put a spotlight on the connections between financial markets and economic activity, and most recessions have had novel aspects. Studying business cycle fluctuations produces an appropriate caution that although some characteristics of economic expansions and contractions are typical, specifics can deviate greatly from what has historically taken place.

In addition, investments in foreign currencies, as opposed to those in one's own domestic currency, have become a growing strategy used by investors. But risks, markets, and participants, as well as

underlying investment instruments, are also changing. Staying up to date on the enormous FX market and its currency exchange regimes is important for any analyst.

Why Does It Matter to Me?

Understanding fluctuations in economic activity and the factors that affect it has become more crucial today than ever. Consequently, the economic material presented here has a very high general relevance.

Investors are increasingly looking to tap into the FX market for a variety of reasons. What's more, the FX market can be more complicated than other markets you may have experience with. Understanding the relative complexities, intricacies, and risks associated with the currency market, as well as the spectrum of financial instruments available, can allow you to showcase your talents more broadly.

International trade and capital flows are critical for an array of countries. Their benefits, costs, and resulting economic implications are vital inputs for economic forecasting and some international asset allocation strategies.

Understanding Business Cycles

by Michele Gambera, PhD, CFA, Milton Ezrati, and Bolong Cao, PhD, CFA

Michele Gambera, PhD, CFA, is at UBS Asset Management (Americas), Inc. (USA). Milton Ezrati (USA). Bolong Cao, PhD, CFA, is at Ohio University (USA).

Learning Outcomes

The candidate should be able to:

a. describe the business cycle and its phases;

b. describe how resource use, housing sector activity, and external trade sector activity vary as an economy moves through the business cycle;

c. describe theories of the business cycle;

d. describe types of unemployment and compare measures of unemployment;

e. explain inflation, hyperinflation, disinflation, and deflation;

f. explain the construction of indexes used to measure inflation;

g. compare inflation measures, including their uses and limitations;

h. distinguish between cost-push and demand-pull inflation;

i. interpret a set of economic indicators and describe their uses and limitations.

Introduction

Agricultural societies experience good harvest times and bad ones. Weather is a main factor that influences crop production, but other factors, such as plant and animal diseases, also influence the harvest. Modern diversified economies are less influenced by weather and diseases but, as with crops, there are fluctuations in economic output, with good times and bad times.

This reading addresses changes in economic activity and factors that affect it. Some of the factors that influence short-term economic movements—such as changes in population, technology, and capital—are the same as those that affect long-term sustainable economic growth. Other factors, such as money supply and inflation, are more specific to short-term economic fluctuations.

This reading is organized as follows. Section 2 describes the business cycle and its phases. The typical behaviors of businesses and households in different phases and transitions between phases are described. Section 3 provides an introduction to business cycle theory, in particular how different economic schools of thought interpret the business cycle and their recommendations with respect to it. Section 4 introduces basic concepts concerning unemployment and inflation, two measures of short-term economic activity that are important to economic policymakers. Section 5 discusses variables that demonstrate predictable relationships with the economy, focusing on variables whose movements have value in predicting the future course of the economy. A summary and practice problems conclude the reading.

Summary

This reading has summarized business cycle analysis. Among the points made are the following:

- Business cycles are a fundamental feature of market economies but their amplitude and length varies considerably.
- Business cycles have four phases: trough, expansion, peak, and contraction.
- Keynesian theories focus on fluctuations of aggregate demand (AD). If AD shifts left, Keynesians advocate government intervention to restore full employment and avoid a deflationary spiral. Monetarists argue that the timing of government policies is uncertain and it is generally better to let the economy find its new equilibrium unassisted, but ensure that the money supply is kept growing at an even pace.
- New Classical and Real Business Cycle (RBC) theories also consider fluctuations of aggregate supply (AS). If AS shifts left because of an input price increase or right because of a price decrease or technical progress, the economy will gradually converge to its new equilibrium. Government intervention is generally not necessary because it may exacerbate the fluctuation or delay the convergence to equilibrium. New Keynesians argue that frictions in the economy may prevent convergence and government policies may be needed.
- The demand for factors of production may change in the short run as a result of changes in all components of GDP: consumption (e.g., households worry about the future, save more, and thus shift AD left), investment (e.g., companies expect customers to increase demand and buy new equipment, thus shifting

AD right; another example is that companies introduce new technologies, thus shifting long-term AS right), government (e.g., fiscal and monetary policies shift AD), and net exports (e.g., faster growth in other countries generates higher demand for the home country's products, thus shifting AD, or higher prices of imported inputs shift AS left). Any shifts in AD and AS will affect the demand for the factors of production (capital and labor) that are used to produce the new level of GDP.

- Unemployment has different subcategories. Frictional (people that are not working because they are in between jobs); structural (people that are unemployed because they do not have the skills required by the openings or reside far away from the jobs); discouraged workers are unemployed people who have given up looking for jobs because they do not believe they can find one (they are considered outside the labor force in unemployment statistics); and voluntarily unemployed are people who do not wish to work, for example because they are in school, retired early, or very rich (they are also considered outside the labor force in unemployment statistics).
- There are different types of inflation. Hyperinflation indicates a high (e.g., 100% annual) and increasing rate of inflation; deflation indicates a negative inflation rate (prices decrease); imported inflation is associated with increasing cost of inputs that come from abroad; demand inflation is caused by constraints in production that prevent companies from making as many goods as the market demands (it is sometimes called wartime inflation because in times of war, goods tend to be rationed).
- Economic indicators are statistics on macroeconomic variables that help in understanding which stage of the business cycle an economy is at. Of particular importance are the leading

indicators, which suggest where the economy is likely to be in the near future. No economic indicator is perfect, and many of these statistics are subject to periodic revisions.

- Price levels are affected by real factors and monetary factors. Real factors include aggregate supply (an increase in supply leads to lower prices) and aggregate demand (an increase in demand leads to higher prices). Monetary factors include the supply of money (more money circulating, if the economy is in equilibrium, will lead to higher prices) and the velocity of money (higher velocity, if the economy is in equilibrium, will lead to higher prices).
- Inflation is measured by many indexes. Consumer price indexes reflect the prices of a basket of goods and services that is typically purchased by a normal household. Producer price indexes measure the cost of a basket of raw materials, intermediate inputs, and finished products. GDP deflators measure the price of the basket of goods and services produced within an economy in a given year. Core indexes exclude volatile items, such as agricultural products and energy, whose prices tend to vary more than other goods.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/understanding_business_cycles__2018_.aspx

Currency Exchange Rates

by William A. Barker, PhD, CFA, Paul D. McNelis, and Jerry Nickelsburg

William A. Barker, PhD, CFA (Canada). Paul D. McNelis is at Gabelli School of Business, Fordham University (USA). Jerry Nickelsburg (USA).

Learning Outcomes

The candidate should be able to:

a. define an exchange rate and distinguish between nominal and real exchange rates and spot and forward exchange rates;

b. describe functions of and participants in the foreign exchange market;

c. calculate and interpret the percentage change in a currency relative to another currency;

d. calculate and interpret currency cross-rates;

e. convert forward quotations expressed on a points basis or in percentage terms into an outright forward quotation;

f. explain the arbitrage relationship between spot rates, forward rates, and interest rates;

g. calculate and interpret a forward discount or premium;

h. calculate and interpret the forward rate consistent with the spot rate and the interest rate in each currency;

i. describe exchange rate regimes;

j. explain the effects of exchange rates on countries' international trade and capital flows.

Introduction

Measured by daily turnover, the foreign exchange (FX) market—the market in which currencies are traded against each other—is by far the world's largest market. Current estimates put daily turnover at approximately USD4 trillion for 2010. This is about 10 to 15 times larger than daily turnover in global fixed-income markets and about 50 times larger than global turnover in equities. Moreover, volumes in FX turnover continue to grow: Some predict that daily FX turnover will reach USD10 trillion by 2020 as market participation spreads and deepens.

The FX market is also a truly global market that operates 24 hours a day, each business day. It involves market participants from every time zone connected through electronic communications networks that link players as large as multibillion-dollar investment funds and as small as individuals trading for their own account—all brought together in real time. International trade would be impossible without the trade in currencies that facilitates it, and so too would cross-border capital flows that connect all financial markets globally through the FX market.

These factors make foreign exchange a key market for investors and market participants to understand. The world economy is increasingly transnational in nature, with both production processes and trade flows often determined more by global factors than by domestic considerations. Likewise, investment portfolio performance increasingly reflects global determinants because pricing in financial markets responds to the array of investment opportunities available worldwide, not just locally. All of these factors funnel through, and are reflected in, the foreign exchange market. As investors shed their "home bias" and invest in foreign markets, the exchange rate—the price at which foreign-currency-denominated

investments are valued in terms of the domestic currency—becomes an increasingly important determinant of portfolio performance.

Even investors adhering to a purely "domestic" portfolio mandate are increasingly affected by what happens in the foreign exchange market. Given the globalization of the world economy, most large companies depend heavily on their foreign operations (for example, by some estimates about 40 percent of S&P 500 Index earnings are from outside the United States). Almost all companies are exposed to some degree of foreign competition, and the pricing for domestic assets—equities, bonds, real estate, and others—will also depend on demand from foreign investors. All of these various influences on investment performance reflect developments in the foreign exchange market.

This reading introduces the foreign exchange market, providing the basic concepts and terminology necessary to understand exchange rates as well as some of the basics of exchange rate economics.

The reading is divided up as follows. Section 2 describes the organization of the foreign exchange market and discusses the major players—who they are, how they conduct their business, and how they respond to exchange rate changes. Section 3 takes up the mechanics of exchange rates: definitions, quotes, and calculations. This section shows that the reader has to pay close attention to conventions used in various foreign exchange markets around the world because they can vary widely. Sometimes exchange rates are quoted in the number of domestic currency units per unit of foreign currency, and sometimes they are quoted in the opposite way. The exact notation used to represent exchange rates can vary widely as well, and occasionally the same exchange rate notation will be used by different sources to mean completely different things. The notation used here may not be the same as that encountered elsewhere. Therefore, the focus should be on understanding the underlying

concepts rather than relying on rote memorization of formulas. We also show how to calculate cross-exchange rates and how to compute the forward exchange rate given either the forward points or the percentage forward premium or discount. In Section 4, we discuss alternative exchange rate regimes operating throughout the world. Finally, in Section 5, we discuss how exchange rates affect a country's international trade (exports and imports) and capital flows. A summary and practice problems conclude the reading.

Summary

Foreign exchange markets are crucial for understanding both the functioning of the global economy as well as the performance of investment portfolios. In this reading, we have described the diverse array of FX market participants and have introduced some of the basic concepts necessary to understand the structure and functions of these markets. The reader should be able to understand how exchange rates—both spot and forward—are quoted and be able to calculate cross exchange rates and forward rates. We also have described the array of exchange rate regimes that characterize foreign exchange markets globally and how these regimes determine the flexibility of exchange rates, and hence, the degree of foreign exchange rate risk that international investments are exposed to. Finally, we have discussed how movements in exchange rates affect international trade flows (imports and exports) and capital flows.

The following points, among others, are made in this reading:

- Measured by average daily turnover, the foreign exchange market is by far the largest financial market in the world. It has

important effects, either directly or indirectly, on the pricing and flows in all other financial markets.

- There is a wide diversity of global FX market participants that have a wide variety of motives for entering into foreign exchange transactions.
- Individual currencies are usually referred to by standardized three-character codes. These currency codes can also be used to define exchange rates (the price of one currency in terms of another). There are a variety of exchange rate quoting conventions commonly used.
- A direct currency quote takes the domestic currency as the price currency and the foreign currency as the base currency (i.e., $S_{d/f}$). An indirect quote uses the domestic currency as the base currency (i.e., $S_{f/d}$). To convert between direct and indirect quotes, the inverse (reciprocal) is used. Professional FX markets use standardized conventions for how the exchange rate for specific currency pairs will be quoted.
- Currencies trade in foreign exchange markets based on nominal exchange rates. An increase (decrease) in the exchange rate, quoted in indirect terms, means that the domestic currency is appreciating (depreciating) versus the foreign currency.
- The real exchange rate, defined as the nominal exchange rate multiplied by the ratio of price levels, measures the relative purchasing power of the currencies. An increase in the real exchange rate ($R_{d/f}$) implies a reduction in the relative purchasing power of the domestic currency.
- Given exchange rates for two currency pairs—A/B and A/C—we can compute the cross-rate (B/C) between currencies B and C.

Depending on how the rates are quoted, this may require inversion of one of the quoted rates.

- Spot exchange rates are for immediate settlement (typically, T + 2), while forward exchange rates are for settlement at agreed-upon future dates. Forward rates can be used to manage foreign exchange risk exposures or can be combined with spot transactions to create FX swaps.
- The spot exchange rate, the forward exchange rate, and the domestic and foreign interest rates must jointly satisfy an arbitrage relationship that equates the investment return on two alternative but equivalent investments. Given the spot exchange rate and the foreign and domestic interest rates, the forward exchange rate must take the value that prevents riskless arbitrage.
- Forward rates are typically quoted in terms of forward (or swap) points. The swap points are added to the spot exchange rate in order to calculate the forward rate. Occasionally, forward rates are presented in terms of percentages relative to the spot rate.
- The base currency is said to be trading at a forward premium if the forward rate is above the spot rate (forward points are positive). Conversely, the base currency is said to be trading at a forward discount if the forward rate is below the spot rate (forward points are negative).
- The currency with the higher (lower) interest rate will trade at a forward discount (premium).
- Swap points are proportional to the spot exchange rate and to the interest rate differential and approximately proportional to the term of the forward contract.

- Empirical studies suggest that forward exchange rates may be unbiased predictors of future spot rates, but the margin of error on such forecasts is too large for them to be used in practice as a guide to managing exchange rate exposures. FX markets are too complex and too intertwined with other global financial markets to be adequately characterized by a single variable, such as the interest rate differential.
- Virtually every exchange rate is managed to some degree by central banks. The policy framework that each central bank adopts is called an exchange rate regime. These regimes range from using another country's currency (dollarization), to letting the market determine the exchange rate (independent float). In practice, most regimes fall in between these extremes. The type of exchange rate regime used varies widely among countries and over time.
- An ideal currency regime would have three properties: (1) the exchange rate between any two currencies would be credibly fixed; (2) all currencies would be fully convertible; and (3) each country would be able to undertake fully independent monetary policy in pursuit of domestic objectives, such as growth and inflation targets. However, these conditions are inconsistent. In particular, a fixed exchange rate and unfettered capital flows severely limit a country's ability to undertake independent monetary policy. Hence, there cannot be an ideal currency regime.
- The IMF identifies the following types of regimes: arrangements with no separate legal tender (dollarization, monetary union), currency board, fixed parity, target zone, crawling peg, crawling band, managed float, and independent float. Most major currencies traded in FX markets are freely floating, albeit subject to occasional central bank intervention.

- A trade surplus (deficit) must be matched by a corresponding deficit (surplus) in the capital account. Any factor that affects the trade balance must have an equal and opposite impact on the capital account, and vice versa.
- A trade surplus reflects an excess of domestic saving (including the government fiscal balance) over investment spending. A trade deficit indicates that the country invests more than it saves and must finance the excess by borrowing from foreigners or selling assets to foreigners.
- The impact of the exchange rate on trade and capital flows can be analyzed from two perspectives. The elasticities approach focuses on the effect of changing the relative price of domestic and foreign goods. This approach highlights changes in the composition of spending. The absorption approach focuses on the impact of exchange rates on aggregate expenditure/saving decisions.
- The elasticities approach leads to the Marshall–Lerner condition, which describes combinations of export and import demand elasticities such that depreciation (appreciation) of the domestic currency will move the trade balance toward surplus (deficit).
- The idea underlying the Marshall–Lerner condition is that demand for imports and exports must be sufficiently price-sensitive so that an increase in the relative price of imports increases the difference between export receipts and import expenditures.
- In order to move the trade balance toward surplus (deficit), a change in the exchange rate must decrease (increase) domestic expenditure (also called absorption) relative to income. Equivalently, it must increase (decrease) domestic saving relative to domestic investment.

- If there is excess capacity in the economy, then currency depreciation can increase output/income by switching demand toward domestically produced goods and services. Because some of the additional income will be saved, income rises relative to expenditure and the trade balance improves.
- If the economy is at full employment, then currency depreciation must reduce domestic expenditure in order to improve the trade balance. The main mechanism is a wealth effect: A weaker currency reduces the purchasing power of domestic-currency-denominated assets (including the present value of current and future earned income), and households respond by reducing expenditure and increasing saving.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/currency_exchange_rates__2018_.aspx

International Trade and Capital Flows

by Usha Nair-Reichert, PhD, and Daniel Robert Witschi, PhD, CFA

Usha Nair-Reichert, PhD, is at Georgia Institute of Technology (USA). Daniel Robert Witschi, PhD, CFA (Switzerland).

Learning Outcomes

The candidate should be able to:

a. compare gross domestic product and gross national product;

b. describe benefits and costs of international trade;

c. distinguish between comparative advantage and absolute advantage;

d. compare the Ricardian and Heckscher–Ohlin models of trade and the source(s) of comparative advantage in each model;

e. compare types of trade and capital restrictions and their economic implications;

f. explain motivations for and advantages of trading blocs, common markets, and economic unions;

g. describe common objectives of capital restrictions imposed by governments;

h. describe the balance of payments accounts including their components;

i. explain how decisions by consumers, firms, and governments affect the balance of payments;

j. describe functions and objectives of the international organizations that facilitate trade, including the World Bank, the International Monetary Fund, and the World Trade Organization.

Introduction

Global investors must address two fundamentally interrelated questions: where to invest and in what asset classes? Some countries may be attractive from an equity perspective because of their strong economic growth and the profitability of particular domestic sectors or industries. Other countries may be attractive from a fixed income perspective because of their interest rate environment and price stability. To identify markets that are expected to provide attractive investment opportunities, investors must analyze cross-country differences in such factors as expected GDP growth rates, monetary and fiscal policies, trade policies, and competitiveness. From a longer term perspective investors also need to consider such factors as a country's stage of economic and financial market development, demographics, quality and quantity of physical and human capital (accumulated education and training of workers), and its area(s) of comparative advantage.

This reading provides a framework for analyzing a country's trade and capital flows and their economic implications. International trade can facilitate economic growth by increasing the efficiency of resource allocation, providing access to larger capital and product markets, and facilitating specialization based on comparative advantage. The flow of financial capital (funds available

for investment) between countries with excess savings and those where financial capital is scarce can increase liquidity, raise output, and lower the cost of capital. From an investment perspective, it is important to understand the complex and dynamic nature of international trade and capital flows because investment opportunities are increasingly exposed to the forces of global competition for markets, capital, and ideas.

This reading is organized as follows. Section 2 defines basic terminology used in the reading and describes patterns and trends in international trade and capital flows. It also discusses the benefits of international trade, distinguishes between absolute and comparative advantage, and explains two traditional models of comparative advantage. Section 3 describes trade restrictions and their implications and discusses the motivation for, and advantages of, trade agreements. Section 4 describes the balance of payments and Section 5 discusses the function and objectives of international organizations that facilitate trade. A summary of key points and practice problems conclude the reading.

Summary

This reading provides a framework for analyzing a country's trade and capital flows and their economic implications. It examines basic models that explain trade based on comparative advantage and provides a basis for understanding how international trade can affect the rate and composition of economic growth as well as the attractiveness of investment in various sectors.

- The benefits of trade include
  - gains from exchange and specialization;

  - gains from economies of scale as companies add new markets for their products;
  - greater variety of products available to households and firms; and
  - increased competition and more efficient allocation of resources.

- A country has an absolute advantage in producing a good (or service) if it is able to produce that good at a lower absolute cost or use fewer resources in its production than its trading partner. A country has a comparative advantage in producing a good if its *opportunity cost* of producing that good is less than that of its trading partner.
- Even if a country does not have an absolute advantage in the production of any good, it can gain from trade by producing and exporting the good(s) in which it has a comparative advantage and importing good(s) in which it has a comparative disadvantage.
- In the Ricardian model of trade, comparative advantage and the pattern of trade are determined by differences in technology between countries. In the Heckscher–Ohlin model of trade, comparative advantage and the pattern of trade are determined by differences in factor endowments between countries. In reality, technology and factor endowments are complementary, not mutually exclusive, determinants of trade patterns.
- Trade barriers prevent the free flow of goods and services among countries. Governments impose trade barriers for various reasons including: to promote specific developmental objectives, to counteract certain imperfections in the functioning of markets, or to respond to problems facing their economies.

- For purposes of international trade policy and analysis, a small country is defined as one that cannot affect the world price of traded goods. A large country's production and/or consumption decisions do alter the relative prices of trade goods.
- In a small country, trade barriers generate a net welfare loss arising from distortion of production and consumption decisions and the associated inefficient allocation of resources.
- Trade barriers can generate a net welfare gain in a large country if the gain from improving its terms of trade (higher export prices and lower import prices) more than offsets the loss from the distortion of resource allocations. However, the large country can only gain if it imposes an even larger welfare loss on its trading partner(s).
- An import tariff and an import quota have the same effect on price, production, and trade. With a quota, however, some or all of the revenue that would be raised by the equivalent tariff is instead captured by foreign producers (or the foreign government) as quota rents. Thus, the welfare loss suffered by the importing country is generally greater with a quota.
- A voluntary export restraint is imposed by the exporting country. It has the same impact on the importing country as an import quota from which foreigners capture all of the quota rents.
- An export subsidy encourages firms to export their product rather than sell it in the domestic market. The distortion of production, consumption, and trade decisions generates a welfare loss. The welfare loss is greater for a large country because increased production and export of the subsidized product reduces its global price—that is, worsens the country's terms of trade.

- Capital restrictions are defined as controls placed on foreigners' ability to own domestic assets and/or domestic residents' ability to own foreign assets. In contrast to trade restrictions, which limit the openness of goods markets, capital restrictions limit the openness of financial markets.
- A regional trading bloc is a group of countries who have signed an agreement to reduce and progressively eliminate barriers to trade and movement of factors of production among the members of the bloc.
    - They may or may not have common trade barriers against those countries that are not members of the bloc. In a free trade area all barriers to the flow of goods and services among members are eliminated, but each country maintains its own polices against non-members.
    - A customs union extends the FTA by not only allowing free movement of goods and services among members but also creating a common trade policy against non-members.
    - A common market incorporates all aspects of a customs union and extends it by allowing free movement of factors of production among members.
    - An economic union incorporates all aspects of a common market and requires common economic institutions and coordination of economic policies among members.
    - Members of a monetary union adopt a common currency.
- From an investment perspective, it is important to understand the complex and dynamic nature of trading relationships because they can help identify potential profitable investment

opportunities as well as provide some advance warning signals regarding when to disinvest in a market or industry.

- The major components of the balance of payments are the
  - current account balance, which largely reflects trade in goods and services.
  - capital account balance, which mainly consists of capital transfers and net sales of non-produced, non-financial assets.
  - financial account, which measures net capital flows based on sales and purchases of domestic and foreign financial assets.
- Decisions by consumers, firms, and governments influence the balance of payments.
  - Low private savings and/or high investment tend to produce a current account deficit that must be financed by net capital imports; high private savings and/or low investment, however, produce a current account surplus, balanced by net capital exports.
  - All else the same, a government deficit produces a current account deficit and a government surplus leads to a current account surplus.
  - All else the same, a sustained current account deficit contributes to a rise in the risk premium for financial assets of the deficit country. Current account surplus countries tend to enjoy lower risk premiums than current account deficit countries.

- Created after WWII, the International Monetary Fund, the World Bank, and the World Trade Organization are the three major international organizations that provide necessary stability to the international monetary system and facilitate international trade and development.
    - The IMF's mission is to ensure the stability of the international monetary system, the system of exchange rates and international payments that enables countries to buy goods and services from each other. The IMF helps to keep country-specific market risk and global systemic risk under control.
    - The World Bank helps to create the basic economic infrastructure essential for creation and maintenance of domestic financial markets and a well-functioning financial industry in developing countries.
    - The World Trade Organization's mission is to foster free trade by providing a major institutional and regulatory framework of global trade rules without which today's global multinational corporations would be hard to conceive.

The full reading, worth 2 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/international_trade_and_capital_flows__2018_.aspx

Risk Management

Applicable Readings

Risk Management: An Introduction (Level I)

by Don M. Chance, PhD, CFA, and Michael E. Edleson, PhD, CFA
1.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/risk_management__an_introduction__2018_.aspx

Measuring and Managing Market Risk (Level II)

by Don M. Chance, PhD, CFA, and Michelle McCarthy Beck
1.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/measuring_and_managing_market_risk__2018_.aspx

Risk Management for Individuals (Level III)

by David M. Blanchett, PhD, CFP, CFA, David M. Cordell, PhD, CFP, CFA, Michael S. Finke, PhD, and Thomas Idzorek, CFA
2.5 CE credits (including 0 SER)
Access to full reading:
https://www.cfainstitute.org/learning/products/publications/readings/Pages/risk_management_for_individuals__2018_.aspx

What Has Changed in the CFA Program Curriculum?

Although the exploration of risk is not new, a series of crises and catastrophes made it clear that risk management is an essential area of investment knowledge, so CFA Institute moved an overview of the field into the Level I CFA Program curriculum in 2016. Previously, coverage of risk management appeared mainly within the Level III curriculum.

The Level I reading provides the foundation for the two subsequent readings in the CFA Program curriculum. The material explores the variations of tail risk measures of value at risk (VaR) and its advantages and limitations in increasing depth. Also covered are techniques of simulation (e.g., Monte Carlo) and scenario analysis.

Risk manifests in many areas of economic activity. The current introductory reading in risk management defines relevant terminology and explains objectives, issues, and processes, with a major focus on enterprise risk management. The risk management process includes a top-level system for setting objectives and policy, including risk budgets, and involves steps for identifying, measuring, and managing risks. Examples are drawn from both institutional and private wealth management contexts.

The Level II reading takes the topic of risk one step further and goes into greater detail about measuring and managing market risk—the risk related to changes in asset prices and currency exchange (FX) rates.

Finally, risk management for individuals is included in Level III. This reading discusses broad treatments for all aspects of risk management across life stages and includes introductions to insurance planning (e.g., life, disability, property, auto, and medical insurance and the advantages and disadvantages of fixed and variable annuities). The need for, benefits of, and ways to develop a personal balance sheet for clients are also included.

Why Has It Evolved?

Many of the original topics of discussion surrounding risk were born out of the needs of institutional investors to identify and deal with various risks. But the need for risk management has broadened in recent years to increasingly include individual and high-net-worth investors, as well as businesses and organizations of all kinds. Risk is something inherent in investing and asset management. Consequently, we have refocused on risk topics in acknowledgement of the new risk realities.

What's more, life-cycle finance has become a mainstay topic and a critical approach to financial planning. Risk management for individuals is now a key element that recognizes that as investors age, the fundamental nature of their total wealth evolves, as do the multiple forms of risk that they face. This logically includes current mortality expectations amid the growing concerns of older individuals that they may outlive their assets.

Why Does It Matter to Me?

Risk exposures vary across asset classes—equity, fixed income, options—and a comprehensive understanding and an ability to assess and manage/mitigate risk are necessary in today's world. Risk is no longer the worry of institutional investors alone; it impacts businesses and organizations of all types, as well as individuals and their portfolios. Moreover, advanced thinking and analysis of both human capital and financial capital have made permanent inroads into the private client wealth management process that must include considerations of risk.

Secular trends play into this topic as well; increasing numbers of millennials stand to inherit significant wealth from their baby boomer parents over the next several years. Astute wealth managers will want to be ready to help next-generation clients manage assets and understand/mitigate risks. The implementation of an array of risk management techniques will be key.

Risk is an integral part of the investment process, and understanding it is crucial to any investment professional's training. The fact is that good risk management results in sound decision making and leads to a keen assessment of the many important trade-offs in business and investing, helping managers to maximize value. Good risk managers will want to use a comprehensive set of quality risk tools and must have the knowledge to understand the uses, implications, and limitations of each.

Risk Management: An Introduction

by Don M. Chance, PhD, CFA, and Michael E. Edleson, PhD, CFA

Don M. Chance, PhD, CFA, is at Louisiana State University (USA). Michael E. Edleson, PhD, CFA, is at the University of Chicago (USA).

Learning Outcomes

The candidate should be able to:

a. define risk management;

b. describe features of a risk management framework;

c. define risk governance and describe elements of effective risk governance;

d. explain how risk tolerance affects risk management;

e. describe risk budgeting and its role in risk governance;

f. identify financial and non-financial sources of risk and describe how they may interact;

g. describe methods for measuring and modifying risk exposures and factors to consider in choosing among the methods.

Introduction

Risk—and risk management—is an inescapable part of economic activity. People generally manage their affairs in order to be as happy and secure as their environment and resources will allow. But regardless of how carefully these affairs are managed, there is risk because the outcome, whether good or bad, is seldom predictable with complete certainty. There is risk inherent in nearly everything we do, but this reading will focus on economic and financial risk, particularly as it relates to investment management.

All businesses and investors manage risk, whether consciously or not, in the choices they make. At its core, business and investing are about allocating resources and capital to chosen risks. In their decision process, within an environment of uncertainty, these entities may take steps to avoid some risks, pursue the risks that provide the highest rewards, and measure and mitigate their exposure to these risks as necessary. Risk management processes and tools make difficult business and financial problems easier to address in an uncertain world. Risk is not just a matter of fate; it is something that organizations can actively control with their decisions, within a risk management framework. Risk is an integral part of the business or investment process. Even in the earliest models of modern portfolio theory, such as mean–variance portfolio optimization and the capital asset pricing model, investment return is linked directly to risk but requires that risk be managed optimally. Proper identification and measurement of risk, and keeping risks aligned with the goals of the enterprise, are key factors in managing businesses and investments. Good risk management results in a higher chance of a preferred outcome—more value for the company or portfolio or more utility for the individual.

Portfolio managers need to be familiar with risk management not only to improve the portfolio's risk–return outcome, but also because of two other ways in which they use risk management at an enterprise level. First, they help to manage their own companies that have their own enterprise risk issues. Second, many portfolio assets are claims on companies that have risks. Portfolio managers need to evaluate the companies' risks and how those companies are addressing them.

This reading takes a broad approach that addresses both the risk management of enterprises in general and portfolio risk management. The principles underlying portfolio risk management are generally applicable to the risk management of financial and nonfinancial institutions as well.

The concept of risk management is also relevant to individuals. Although many large entities formally practice risk management, most individuals practice it more informally and some practice it haphazardly, oftentimes responding to risk events after they occur. Although many individuals do take reasonable precautions against unwanted risks, these precautions are often against obvious risks, such as sticking a wet hand into an electrical socket or swallowing poison. The more subtle risks are often ignored. Many individuals simply do not view risk management as a formal, systematic process that would help them achieve not only their financial goals but also the ultimate end result of happiness, or maximum utility as economists like to call it, but they should.

Although the primary focus of this reading is on institutions, we will also cover risk management as it applies to individuals. We will show that many common themes underlie risk management—themes that are applicable to both organizations and individuals.

Although often viewed as defensive, risk management is a valuable offensive weapon in the manager's arsenal. In the quest for preferred outcomes, such as higher profit, returns, or share price,

management does not usually get to choose the outcomes but does choose the risks it takes in pursuit of those outcomes. The choice of which risks to undertake through the allocation of its scarce resources is the key tool available to management. An organization with a comprehensive risk management culture in place, in which risk is integral to every key strategy and decision, should perform better in the long-term, in good times and bad, as a result of better decision making.

The fact that all businesses and investors engage in risky activities (i.e., activities with uncertain outcomes) raises a number of important questions. The questions that this reading will address include the following:

- What is risk management, and why is it important?
- What risks does an organization (or individual) face in pursuing its objectives?
- How are an entity's goals affected by risk, and how does it make risk management decisions to produce better results?
- How does risk governance guide the risk management process and risk budgeting to integrate an organization's goals with its activities?
- How does an organization measure and evaluate the risks it faces, and what tools does it have to address these risks?

The answers to these questions collectively help to define the process of risk management. This reading is organized along the lines of these questions. Section 2 describes the risk management process, and Section 3 discusses risk governance and risk tolerance. Section 4 covers the identification of various risks, and Section 5 addresses the measurement and management of risks. Section 6 provides a summary.

Summary

Success in business and investing requires the skillful selection and management of risks. A well-developed risk management process ties together an entity's goals, strategic competencies, and tools to create value to help it both thrive and survive. Good risk management results in better decision making and a keener assessment of the many important trade-offs in business and investing, helping managers maximize value.

- Risk and risk management are critical to good business and investing. Risk management is *not* only about avoiding risk.
- Taking risk is an active choice by boards and management, investment managers, and individuals. Risks must be understood and carefully chosen and managed.
- Risk exposure is the extent to which an entity's value may be affected through sensitivity to underlying risks.
- Risk management is a process that defines risk tolerance and measures, monitors, and modifies risks to be in line with that tolerance.
- A risk management framework is the infrastructure, processes, and analytics needed to support effective risk management; it includes risk governance, risk identification and measurement, risk infrastructure, risk policies and processes, risk mitigation and management, communication, and strategic risk analysis and integration.
- Risk governance is the top-level foundation for risk management, including risk oversight and setting risk tolerance for the organization.

- Risk identification and measurement is the quantitative and qualitative assessment of all potential sources of risk and the organization's risk exposures.
- Risk infrastructure comprises the resources and systems required to track and assess the organization's risk profile.
- Risk policies and processes are management's complement to risk governance at the operating level.
- Risk mitigation and management is the active monitoring and adjusting of risk exposures, integrating all the other factors of the risk management framework.
- Communication includes risk reporting and active feedback loops so that the risk process improves decision making.
- Strategic risk analysis and integration involves using these risk tools to rigorously sort out the factors that are and are not adding value as well as incorporating this analysis into the management decision process, with the intent of improving outcomes.
- Employing a risk management committee, along with a chief risk officer (CRO), are hallmarks of a strong risk governance framework.
- Governance and the entire risk process should take an enterprise risk management perspective to ensure that the value of the entire enterprise is maximized.
- Risk tolerance, a key element of good risk governance, delineates which risks are acceptable, which are unacceptable, and how much risk the overall organization can be exposed to.
- Risk budgeting is any means of allocating investments or assets by their risk characteristics.

- Financial risks are those that arise from activity in the financial markets.
- Non-financial risks arise from actions within an entity or from external origins, such as the environment, the community, regulators, politicians, suppliers, and customers.
- Financial risks consist of market risk, credit risk, and liquidity risk.
- Market risk arises from movements in stock prices, interest rates, exchange rates, and commodity prices.
- Credit risk is the risk that a counterparty will not pay an amount owed.
- Liquidity risk is the risk that, as a result of degradation in market conditions or the lack of market participants, one will be unable to sell an asset without lowering the price to less than the fundamental value.
- Non-financial risks consist of a variety of risks, including settlement risk, operational risk, legal risk, regulatory risk, accounting risk, tax risk, model risk, tail risk, and sovereign or political risk.
- Operational risk is the risk that arises from within the operations of an organization and includes both human and system or process errors.
- Solvency risk is the risk that the entity does not survive or succeed because it runs out of cash to meet its financial obligations.
- Individuals face many of the same organizational risks outlined here but also face health risk, mortality or longevity risk, and property and casualty risk.

- Risks are not necessarily independent because many risks arise as a result of other risks; risk interactions can be extremely nonlinear and harmful.
- Risk drivers are the fundamental global and domestic macroeconomic and industry factors that create risk.
- Common measures of risk include standard deviation or volatility; asset-specific measures, such as beta or duration; derivative measures, such as delta, gamma, vega, and rho; and tail measures such as value at risk, CVaR and expected loss given default.
- Risk can be modified by prevention and avoidance, risk transfer (insurance), or risk shifting (derivatives).
- Risk can be mitigated internally through self-insurance or diversification.
- The primary determinants of which method is best for modifying risk are the benefits weighed against the costs, with consideration for the overall final risk profile and adherence to risk governance objectives.

The full reading, worth 1.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/risk_management__an_introduction__2018_.aspx

Measuring and Managing Market Risk

by Don M. Chance, PhD, CFA, and Michelle McCarthy Beck

Don M. Chance, PhD, CFA, is at Louisiana State University (USA). Michelle McCarthy Beck is at Nuveen Investments (USA).

Learning Outcomes

The candidate should be able to:

a. explain the use of value at risk (VaR) in measuring portfolio risk;

b. compare the parametric (variance–covariance), historical simulation, and Monte Carlo simulation methods for estimating VaR;

c. estimate and interpret VaR under the parametric, historical simulation, and Monte Carlo simulation methods;

d. describe advantages and limitations of VaR;

e. describe extensions of VaR;

f. describe sensitivity risk measures and scenario risk measures and compare these measures to VaR;

g. demonstrate how equity, fixed-income, and options exposure measures may be used in measuring and managing market risk and volatility risk;

h. describe the use of sensitivity risk measures and scenario risk measures;

i. describe advantages and limitations of sensitivity risk measures and scenario risk measures;

j. describe risk measures used by banks, asset managers, pension funds, and insurers;

k. explain constraints used in managing market risks, including risk budgeting, position limits, scenario limits, and stop-loss limits;

l. explain how risk measures may be used in capital allocation decisions.

Introduction

This reading is an introduction to the process of measuring and managing market risk. Market risk is the risk that arises from movements in stock prices, interest rates, exchange rates, and commodity prices. Market risk is distinguished from credit risk, which is the risk of loss from the failure of a counterparty to make a promised payment, and also from a number of other risks that organizations face, such as breakdowns in their operational procedures. In essence, market risk is the risk arising from changes in the markets to which an organization has exposure.

Risk management is the process of identifying and measuring risk and ensuring that the risks being taken are consistent with the desired risks. The process of managing market risk relies heavily on the use of models. A model is a simplified representation of a real world phenomenon. Financial models attempt to capture the important elements that determine prices and sensitivities in financial markets. In doing so, they provide critical information necessary to

manage investment risk. For example, investment risk models help a portfolio manager understand how much the value of the portfolio is likely to change given a change in a certain risk factor. They also provide insight into the gains and losses the portfolio might reasonably be expected to experience and the frequency with which large losses might occur.

Effective risk management, though, is much more than just applying financial models; it requires the application of judgment and experience not only to know how to use the models appropriately, but also to appreciate the strengths and limitations of the models and to know when to supplement or substitute one model with another model or approach.

Financial markets operate more or less continuously and new prices are constantly being generated. As a result, there is a large amount of data on market risk and a lot of collective experience dealing with this risk, making market risk one of the easier financial risks to analyze. Still, market risk is not an easy risk to capture. Although a portfolio's exposures can be identified with some certainty, the potential losses that could arise from those exposures are unknown. The data used to estimate potential losses are generated from past prices and rates, not the ones to come. Risk management models allow the experienced risk manager to blend that historical data with their own forward-looking judgment and they provide a framework within which to test that judgment.

This reading is organized as follows: Section 2 lays a foundation for understanding value at risk, discusses three primary approaches to estimating value at risk, and covers the primary advantages and limitations as well as extensions of value at risk. Section 3 addresses the sensitivity measures used for equities, fixed-income securities, and options and also covers historical and hypothetical scenario risk measures. Section 4 describes various applications and limitations of risk measures as used by different types of market participants.

Section 5 discusses the use of constraints in risk management, such as risk budgeting, position limits, scenario limits, stop-loss limits, and capital allocation as risk management tools. Section 6 provides a summary of the reading.

Summary

This reading on market risk management models covers various techniques used to manage the risk arising from market fluctuations in prices and rates. The key points are summarized as follows.

- Value at risk (VaR) is the minimum loss in either currency units or as a percentage of portfolio value that would be expected to be incurred a certain percentage of the time over a certain period of time given assumed market conditions.
- VaR requires the decomposition of portfolio performance into risk factors.
- The three methods of estimating VaR are the parametric method, the historical simulation method, and the Monte Carlo simulation method.
- The parametric method of VaR estimation typically provides a VaR estimate from the left tail of a normal distribution, incorporating the expected returns, variances, and covariances of the components of the portfolio.
- The parametric method exploits the simplicity of the normal distribution but provides a poor estimate of VaR when returns are not normally distributed, as might occur when a portfolio contains options.

- The historical simulation method of VaR estimation uses historical return data on the portfolio's current holdings and allocation.
- The historical simulation method has the advantage of incorporating events that actually occurred and does not require the specification of a distribution or the estimation of parameters, but it is only useful to the extent that the future resembles the past.
- The Monte Carlo simulation method of VaR estimation requires the specification of a statistical distribution of returns and the generation of random outcomes from that distribution.
- The Monte Carlo simulation method is extremely flexible but can be complex and time consuming to use.
- There is no single right way of estimating VaR.
- The advantages of VaR include the following: It is a simple concept; it is relatively easy to understand; it is easily communicated, capturing much information in a single number; it can be useful in comparing risks across asset classes, portfolios, and trading units and, as such, it facilitates capital allocation decisions; it can be used for performance evaluation; it can be verified by using backtesting; it is widely accepted by regulators.
- The primary limitations of VaR are that it is a subjective measure and highly sensitive to numerous discretionary choices made in the course of computation; it can underestimate the frequency of extreme events; it fails to account for the lack of liquidity; it is sensitive to correlation risk; it is vulnerable to trending or volatility regimes; it is often misunderstood as a worst-case scenario; it can oversimplify the picture of risk; it focuses heavily on the left tail.

- There are numerous variations and extensions of VaR, including conditional VaR (CVaR), incremental VaR (IVaR), and marginal VaR (MVaR) that can provide additional useful information.
- Conditional VaR is the average loss conditional on exceeding the VaR cutoff.
- Incremental VaR measures the change in portfolio VaR as a result of adding or deleting a position from the portfolio or if a position size is changed relative to the remaining positions.
- MVaR measures the change in portfolio VaR given a small change in the portfolio position. In a diversified portfolio, MVaRs can be summed to determine the contribution of each asset to the overall VaR.
- *Ex ante* tracking error measures the degree to which the performance of a given investment portfolio might deviate from its benchmark.
- Sensitivity measures quantify how a security or portfolio will react if a single risk factor changes. Common sensitivity measures are beta for equities; duration and convexity for bonds; and delta, gamma, and vega for options. Sensitivity measures do not indicate which portfolio has greater loss potential.
- Risk managers can use deltas, gammas, vegas, durations, convexities, and betas to get a comprehensive picture of the sensitivity of the entire portfolio.
- Stress tests apply extreme negative stress to a particular portfolio exposure.
- Scenario measures, including stress tests, are risk models that evaluate how a portfolio will perform under certain high-stress market conditions.

- Scenario measures can be based on actual historical scenarios or on hypothetical scenarios.
- Historical scenarios are scenarios that measure the portfolio return that would result from a repeat of a particular period of financial market history.
- Hypothetical scenarios model the impact of extreme movements and co-movements in different markets that have not previously occurred.
- Reverse stress testing is the process of stressing the portfolio's most significant exposures.
- Sensitivity and scenario risk measures can complement VaR; they do not need to rely on history, and scenarios can be designed to overcome an assumption of normal distributions.
- Limitations of scenario measures include the following: Historical scenarios are unlikely to re-occur in exactly the same way; hypothetical scenarios may incorrectly specify how assets will co-move and may get the magnitude of movements wrong; and it is difficult to establish appropriate limits on a scenario analysis or stress test.
- The degree of leverage, the mix of risk factors to which the business is exposed, and accounting or regulatory requirements influence the types of risk measures used by different market participants.
- Banks use risk tools to assess the extent of any liquidity and asset/liability mis-match, the probability of losses in their investment portfolios, their overall leverage ratio, interest rate sensitivities, and the risk to economic capital.

- Asset managers' use of risk tools focus primarily on volatility, probability of loss, or the probability of underperforming a benchmark.
- Pension funds use risk measures to evaluate asset/liability mismatch and surplus at risk.
- Property and casualty insurers use sensitivity and exposure measures to ensure exposures remain within defined asset allocation ranges, economic capital and VaR measures to estimate the impairment in the event of a catastrophic loss, and scenario analysis to stress the market risks and insurance risks simultaneously.
- Life insurers use risk measures to assess the exposures of the investment portfolio and the annuity liability, the extent of any asset/liability mis-match, and the potential stress losses based on the differences between the assets in which they have invested and the liabilities resulting from the insurance contracts they have written.
- Constraints are widely used in risk management in the form of risk budgets, position limits, scenario limits, stop-loss limits, and capital allocation.
- Risk budgeting is the allocation of the total risk appetite across sub-portfolios.
- A scenario limit is a limit on the estimated loss for a given scenario, which, if exceeded, would require corrective action in the portfolio.
- A stop-loss limit requires a reduction in the size of a portfolio, or its complete liquidation, when a loss of a particular size occurs in a specified period.

- Position limits are limits on the market value of any given investment.
- Risk measurements and constraints in and of themselves are not restrictive or unrestrictive; it is the limits placed on the measures that drive action.

The full reading, worth 1.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/measuring_and_managing_market_risk__2018_.aspx

Risk Management for Individuals

by David M. Blanchett, PhD, CFP, CFA, David M. Cordell, PhD, CFP, CFA, Michael S. Finke, PhD, and Thomas Idzorek, CFA

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Learning Outcomes

The candidate should be able to:

a. compare the characteristics of human capital and financial capital as components of an individual's total wealth;

b. discuss the relationships among human capital, financial capital, and net wealth;

c. discuss the financial stages of life for an individual;

d. describe an economic (holistic) balance sheet;

e. discuss risks (earnings, premature death, longevity, property, liability, and health risks) in relation to human and financial capital;

f. describe types of insurance relevant to personal financial planning;

g. describe the basic elements of a life insurance policy and how insurers price a life insurance policy;

h. discuss the use of annuities in personal financial planning;

i. discuss the relative advantages and disadvantages of fixed and variable annuities;

j. analyze and critique an insurance program;

k. discuss how asset allocation policy may be influenced by the risk characteristics of human capital;

l. recommend and justify appropriate strategies for asset allocation and risk reduction when given an investor profile of key inputs.

Introduction

Risk management for individuals is a key element of life-cycle finance, which recognizes that as investors age, the fundamental nature of their total wealth evolves, as do the risks that they face. Life-cycle finance is concerned with helping investors achieve their goals, including an adequate retirement income, by taking a holistic view of the individual's financial situation as he or she moves through life. Individuals are exposed to a range of risks over their lives: They may become disabled, suffer a prolonged illness, die prematurely, or outlive their resources. In addition, from an investment perspective, the assets of individuals could decline in value or provide an inadequate return in relation to financial needs and aspirations. All of these risks have two things in common: They are typically random, and they can result in financial hardship without an appropriate risk management strategy. Risk management for individuals is distinct from risk management for corporations given the distinctive characteristics of households, which include the finite and unknown lifespan of individuals, the frequent preference for stable spending among individuals, and the desire to pass on wealth

to heirs (i.e., through bequests). To protect against unexpected financial hardships, risks must be identified, market and non-market solutions considered, and a plan developed and implemented. A well-constructed plan for risk management will involve the selection of financial products and investment strategies that fit an individual's financial goals and mitigate the risk of shortfalls.

In this reading, we provide an overview of the potential risks to an individual or household, an analysis of products and strategies that can protect against some of these risks, and a discussion regarding the selection of an appropriate product or strategy. Following the introduction, Section 2 provides an overview of human and financial capital. Section 3 addresses the process of risk management, the financial stages of life for an individual, the economic (or holistic) balance sheet, and individual risks and risk exposures. Section 4 discusses the types of products relevant to financial planning, including insurance and annuities. Section 5 contains an insurance program case study and insights on implementing risk management solutions for individuals. Section 6 summarizes the key points of the reading.

Summary

The risk management process for individuals is complex given the variety of potential risks that may be experienced over the life cycle and the differences that exist across households. In this reading, key concepts related to risk management and individuals include the following:

- The two primary asset types for most individuals can be described broadly as human capital and financial capital. Human capital is the net present value of the individual's future

expected labor income, whereas financial capital consists of assets currently owned by the individual and can include such items as a bank account, individual securities, pooled funds, a retirement account, and a home.

- Net wealth is an extension of net worth that includes claims to future assets that can be used for consumption, such as human capital, as well as the present value of pension benefits.
- There are typically four key steps in the risk management process for individuals: Specify the objective, identify risks, evaluate risks and select appropriate methods to manage the risks, and monitor outcomes and risk exposures and make appropriate adjustments in methods.
- The financial stages of life for adults can be categorized in the following seven periods: education phase, early career, career development, peak accumulation, pre-retirement, early retirement, and late retirement.
- The primary goal of an economic (holistic) balance sheet is to arrive at an accurate depiction of an individual's overall financial health by accounting for the present value of all available marketable and non-marketable assets, as well as all liabilities. An economic (holistic) balance sheet includes traditional assets and liabilities, as well as human capital and pension value, as assets and includes consumption and bequests as liabilities.
- The total economic wealth of an individual changes throughout his or her lifetime, as do the underlying assets that make up that wealth. The total economic wealth of younger individuals is typically dominated by the value of their human capital. As individuals age, earnings will accumulate, increasing financial capital.

- Earnings risk refers to the risks associated with the earnings potential of an individual—that is, events that could negatively affect someone's human and financial capital.
- Premature death risk relates to the death of an individual, such as a family member, whose future earnings (human capital) were expected to help pay for the financial needs and aspirations of the family.
- Longevity risk is the risk of reaching an age at which one's income and financial assets are insufficient to provide adequate support.
- Property risk relates to the possibility that one's property may be damaged, destroyed, stolen, or lost. There are different types of property insurance, depending on the asset, such as automobile insurance and homeowner's insurance.
- Liability risk refers to the possibility that an individual or other entity may be held legally liable for the financial costs of property damage or physical injury.
- Health risk refers to the risks and implications associated with illness or injury. Health risks manifest themselves in different ways over the life cycle and can have significant implications for human capital.
- The primary purpose of life insurance is to help replace the economic value of an individual to a family or a business in the event of that individual's death. The family's need for life insurance is related to the potential loss associated with the future earnings power of that individual.
- The two main types of life insurance are temporary and permanent. Temporary life insurance, or term life insurance, provides

insurance for a certain period of time specified at purchase, whereas permanent insurance, or whole life insurance, is used to provide lifetime coverage, assuming the premiums are paid over the entire period.

- Fixed annuities provide a benefit that is fixed (or known) for life, whereas variable annuities have a benefit that can change over time and that is generally based on the performance of some underlying portfolio or investment. When selecting between fixed and variable annuities, there are a number of important considerations, such as the volatility of the benefit, flexibility, future market expectations, fees, and inflation concerns.
- Among the factors that would likely increase demand for an annuity are the following: longer-than-average life expectancy, greater preference for lifetime income, less concern for leaving money to heirs, more conservative investing preferences, and lower guaranteed income from other sources (such as pensions).
- Techniques for managing a risk include risk avoidance, risk reduction, risk transfer, and risk retention. The most appropriate choice among these techniques often is related to consideration of the frequency and severity of losses associated with the risk.
- The decision to retain risk or buy insurance is determined by a household's risk tolerance. At the same level of wealth, a more risk-tolerant household will prefer to retain more risk, either through higher insurance deductibles or by simply not buying insurance, than will a less risk-tolerant household. Insurance products that have a higher load will encourage a household to retain more risk.
- An individual's total economic wealth affects portfolio construction through asset allocation, which includes the overall

allocation to risky assets, as well as the underlying asset classes, such as stocks and bonds, selected by the individual.

- Investment risk, property risk, and human capital risk can be either idiosyncratic or systematic. Examples of idiosyncratic risks include the risks of a specific occupation, the risk of living a very long life or experiencing a long-term illness, and the risk of premature death or loss of property. Systematic risks affect all households.

The full reading, worth 2.5 CE credits, can be found at https://www.cfainstitute.org/learning/products/publications/readings/Pages/risk_management_for_individuals__2018_.aspx