CFA Institute

Practice Analysis Annual Review

Contents

Background

Each year, CFA Institute reviews and updates the Candidate Body of Knowledge (CBOK) of the CFA® Program to ensure its relevance to investment practitioners. The process we use to engage practitioners and research the broad investment market to identify the evolving knowledge and skill requirements is called Practice Analysis.

During 2021, we convened a task force of senior practitioners to undertake a broad review of the overall CFA Program CBOK. We undertook deep-dive research on specific topic areas, including Environmental, Social, and Governance (ESG); Quantitative Methods; and Financial Statement Analysis. We also revised our Career Skills Framework and integrated an ESG Panel into our activities. This report provides a summary of the key findings from this process and outputs identified in 2021.

Who Will Benefit from This Report

This report will be of use to anyone interested in the evolving skills and competencies needed by investment professionals to be proficient in their roles. This includes investment practitioners, those managing and leading teams, learning and development professionals, and universities.

Section 1: Developing the CFA Program Candidate Body of Knowledge

The CFA Program provides investment professionals with competence in investment analysis, portfolio management, and wealth planning, ensuring they possess the knowledge and skills that are (1) foundational to roles relating to investment analysis and portfolio management and wealth planning, and (2) expected to be possessed by investment professionals with four years of experience regardless of the setting in which they work.

In recent years, the CFA Program has evolved to incorporate additional coverage of a range of curriculum readings. This has included increased coverage on ESG investing; enhanced readings and case studies on Quantitative Methods (e.g., Backtesting and Simulation, Regression, and ML); a refreshed focus on the relevance of corporate issuers to valuation considerations; and updates to the coverage of Real Estate and Private Equity in Alternative Investments in the CFA Level II exam. Details are available on our website.

Developing the CFA Program Credential

We continually review how the CFA Program will evolve to maintain its relevance. During 2021, we surveyed investment professionals on the current CFA Program Candidate Body of Knowledge (CBOK) and proposed developments to it. The CBOK provides the high level framework to the curriculum and contains more than 80 items. The version for 2024 is included in the appendix and the 2022 CBOK is available online here.

In 2021, we undertook three main activities. Firstly, we obtained qualitative input, including interviews and focus groups with practitioners in three key areas: ESG, Financial Statement Analysis, and Quantitative Methods. Secondly, we obtained quantitative input from a survey of members on the importance of current areas of the CFA Program. In the final stage, we reviewed the findings, and decisions were made on developments to the CBOK for 2024. This was undertaken by a task force of practitioners across the three regions.

During the year, we also surveyed over 700 members within the Practice Analysis Working Body to inform development of our Career Skills Framework. Input from this informed the activities and skills necessary for performance across a wide range of occupations in the investment profession.

Outcomes from 2021 Analysis

The input from our member survey acted as an initial filter for identifying the topic areas investment professionals view as being most important for foundational competence. More than 3,000 practitioners globally reviewed the CBOK and provided feedback. Table 1 lists the highest scoring areas:

Table 1. The Most Important Topic Areas for Foundational Competence

Topic Area	Importance (1 to 5)	CBOK Domain
Time Value of Money	3.8	Quantitative Methods
Asset Allocation	3.8	Portfolio Management and Wealth Planning
Ethical Practices	3.8	Ethical & Professional Standards
Analysis of Financial Statements	3.7	Financial Statement Analysis
Types of Fixed Income Securities	3.7	Fixed Income
Portfolio Construction and Revision	3.7	Portfolio Management & Wealth Planning
Equity Portfolio Management	3.7	Equity Investments
Valuation of Individual Equity Securities	3.7	Equity Investments
Fundamental Fixed Income Analysis	3.6	Fixed Income
Analysis of Credit Risk	3.6	Fixed Income

Competencies in ethics, financial mathematics, financial statement analysis, valuation, and portfolio management continue to be central to the practice of investment professionals. Many developments are taking place in data analytics and sustainability, and some aspects of these cross over the topic areas listed previously. We continue to recognize the ongoing relevance of these areas of core knowledge and skills within the CBOK.

Areas that score lower in terms of importance to foundational competence include those in more specialized areas, or areas in which we hypothesize respondents are less involved. These include Technical Analysis (2.6); Analysis of Pensions, Stock Compensation, and Other Employee Benefits (2.9); Real Assets [Infrastructure, Timber, and Farmland] (3.0); Valuation of Swaps (3.0); and Currency Management (3.1). Interestingly, Artificial Intelligence (AI)/Machine Learning (ML) and Big Data Analysis and Applications (3.1) also ranked relatively low but scored highly in regard to feedback on future trends.

Convening the Test Specification Task Force

In November 2021, we convened a group of practitioners—the Test Specification Task Force (TSTF; see the appendix for members)—to review the survey results, along with qualitative research undertaken by Practice Analysis during the year. Practitioners from a range of regions and at different stages in their career participated in this activity. At the end of this process, developments to the CFA Program CBOK and the future direction for future exam domain weights were agreed upon.

Key Recommendations

The main recommendations of the TSTF were to include additional coverage of ESG considerations within the investment process. It was agreed that this is an area in which practitioners need increasing amounts of knowledge and awareness to appropriately address client demand, manage risks, analyze opportunities, and integrate ESG considerations. As a result, the following four topics are to be included:

- ESG Considerations in Financial Statement Analysis
- ESG Considerations in Equity Investments
- ESG Considerations in Fixed Income
- ESG Considerations in Alternative Investments

A number of other planned developments were also made to the CBOK. These developments included expansion of Simulation Analysis to "Backtesting, Simulation, and Scenario Analysis"; de-emphasizing analysis of pensions in "Financial Statement Analysis"; and combining "Analysis of Intercorporate Investments" with "Business Combinations."

In regard to future exam development, the TSTF stressed the increasing importance of Alternative Investments and proposed an increase in exam weighting toward this topic area.

Section 2: Key Themes in ESG, Financial Statement Analysis, and Quantitative Methods

To support the work of the TSTF, our practitioner research over 2021 focused on three areas: (1) ESG, (2) Quantitative Methods, and (3) Financial Statement Analysis. We held 20 deep-dive panels across the Americas, Asia Pacific, and EMEA. The nature and focus of these panels were to understand the day-to-day activities undertaken by practitioners and the knowledge and skills required to be effective.

The outputs and key themes from this research were provided to the TSTF. In addition, a number of other recommendations were made to the curriculum team. We included these recommendations because they provide additional information on the recurring themes we identified when engaging with practitioners.

Focus Area 1: Environmental, Social, and Governance

ESG is not a specific topic area within the CFA Program, as it is integrated across the full curriculum. Practitioner feedback across the Americas, APAC, and EMEA highlighted and emphasized the following themes. All of these are addressed to varying degrees within the CFA Program, but we have summarized the most frequently recurring themes and observations.

ESG Data, ESG Ratings, and Materiality Frameworks

(i) Data Sources, Availability, and Limitations

Practitioners need to develop knowledge of the range of data sources available and their limitations (such as lack of historical data), understand the challenges associated with obtaining ESG data, recognize the lack of harmonization in how information is reported, and know how to source—and realize the potential benefits of obtaining—primary data rather than relying on secondary sources. Developing judgment in determining what data are relevant and material is critical. An understanding of the limitations and variability of private company ESG disclosures (e.g., self-disclosure, level of auditing) is increasingly important.

(ii) ESG Ratings and Scores

Practitioners need to develop an understanding of the process by which ESG scores are created by ratings agencies, their limitations, and why differences exist among the ratings from providers. Potential use cases for ratings and materiality frameworks, such as explaining the role of ESG ratings or materiality maps, act as a starting point in the analysis process. It is also important to understand challenges in using them, such as when undertaking cross-sector analysis or in cases in which an investment time horizon differs significantly from that of the rating agency analysis.

Regulatory Developments

Practitioners need to be alert to the increasing amount of regulation and how this is affecting ESG disclosure and reporting requirements, and subsequently, the impact it has on firm activities. It is important to understand the relevance of Sustainable Finance Disclosure Regulation (SFDR) for fund providers in classification and reporting (Articles 6, 8, and 9). Of increasing relevance and focus are the regulatory requirements relating to climate and net zero targets and how this is driving behavior. Practitioners also need to be aware of valuable ESG data relating to risk measurement and scenario modeling that is coming out of the increased disclosure and reporting requirements.

Engagement

Engagement is an increasingly important tool, including for smaller asset managers. It is important to understand its potential value with both private and public market investments, as well as how engagement policies are developed and activities undertaken. Practitioners should be able to describe the continuum from divestment to engagement, be aware of time considerations, and recognize the potential value and benefits as they relate to a better understanding of material ESG considerations, estimates, and communicating narratives to clients. This domain was explored in our Future of Sustainability in Investment Management report (2020; n=304) where 57% of expert respondents (CIOs, CEOs, and CFOs) viewed engagement as most effective in supporting a sustainable economy, 5% favoured divestment, and 23% viewed them as equally effective approach. Understanding the importance of having a thoughtful engagement policy, which clarifies their position on divestment versus engagement, and understanding the challenges of engagement with passive funds, is important.

Climate

Practitioners should be able to describe how to integrate climate considerations into investment strategies, be aware of processes for constructing portfolios that are aligned with the Paris Agreement or that meet other regulatory targets, and describe the types of resources used to enable this effort. For example, it is essential to understand how other data provider resources can be used to assess key performance indicators (KPIs) relating to climate, carbon transition scores, carbon emission data, and stress testing.

Valuation and Portfolio Construction

Practitioners increasingly need to understand how quantitative techniques, such as screening, discriminate analysis, and AI, can be used when integrating ESG considerations into the investment process. It is important to be aware of the challenges of comparing companies' ESG criteria across different sectors and of evaluating private versus public companies. Understanding opportunities to further integrate ESG considerations into the asset allocation and stock selection process are essential competencies. Practitioners must remain alert to emerging asset classes (e.g., green bonds, green derivatives).

Focus Area 2: Quantitative Methods

Quantitative Methods is a discrete topic area within the CFA Program at Level I and II. It is also integrated into a range of other areas and therefore taught across topic areas of the curriculum. A key point made by many practitioners in our roundtables was that quantitative methods cannot act in a vacuum and that these tools must be connected to their application, including, for example, how to apply techniques such as data visualization or probability distributions. This topic is particularly important in security valuation, asset allocation, portfolio construction, and factor and quantamental investing. The following sections address the specific areas practitioners identified in their feedback.

Factor Models

Practitioners need to be alert to how both exploratory and confirmatory factor models are being used widely for strategy formulation, validation, and testing both equity, fixed income, commodities, FX, and alternative investment strategies. They also need to be aware of possible risks, such as factor models being overly specified to capture complex relationships. Practitioners stressed how factor models are complementary to risk and performance attribution models. Several examples were given, including (1) a multifactor model (arbitrage pricing theory) used for equity-based portfolio factors, such as value, quality, growth, size, and momentum; (2) a fundamental approach, including risk premium, rate (carry), inflation, and credit components as utilized for fixed-income securities; and (3) statistical models, such as principal components analysis, being used to decompose return and risk attribution. Trading signals and strategies using various backtesting approaches are important throughout the portfolio management process from selection, through construction, to monitoring.

Quantamental

Practitioners highlighted how 'quantamental' approaches are increasingly relevant in the portfolio selection and construction process. Portfolio managers and quantitative analysts are working to define various quantitative and fundamental selection criteria, which then feed into the portfolio selection and optimization processes. We focused on this combination of human and alternative intelligence in our research "AI Pioneers in Investment Management." Most portfolio managers

are fundamentally driven; however, they increasingly appreciate the additional insight provided by quantitatively driven analytical models. Quantamental strategies provide scope for portfolio managers to still exercise judgment when making a portfolio decision.

Modeling Tools

Modeling tools increasingly are being integrated throughout the steps of the investment management workflow. This quantification is directly affecting the day-to-day work of the analyst and portfolio manager as these models are used to balance considerations and make complex judgment calls. Practitioners also stressed the importance of understanding concepts and assumptions used in quantitative models, validating these models, thinking probabilistically, and being able to explain models and model risk to clients.

Big Data Analytics Including Machine Learning

Practitioners recognized that big data and machine learning (ML) are potentially meaningful tools to add alpha, but the current usefulness of these methodologies was felt to be limited, particularly when validating investment themes. Because the inner workings of these models are not always easily interpretable and explainable, modelers we spoke to shied away from using them directly in their investment themes. The focus on and exploration of big data and ML approaches, however, are increasing. ML analysis was viewed as being more suitable for short-term or medium-term investment strategies. In the long run, portfolio managers still need to conduct fundamental analysis. A general enabler, ML applications include optimization, factor analysis, fraud detection, scoring model, and security selection with supervised and unsupervised approaches. Systematic and ML investment approaches may help remove emotions from the investment process, but they come with challenges of communicating systematic (as well as black-box) approaches to clients. The importance of being able to explain and interpret such approaches was a recurring theme.

Alternative Data

Alternative data continues to present many opportunities for the investment manager. Specific use cases given included credit card receipts, semantic analytics, and satellite imagery. Processes of triangulating alternative data with existing data to identify market opportunities were also highlighted.

Determining what constitutes early foundational knowledge and skills versus more specialist competencies is a specific challenge when developing the CFA Program. In recent years, the Quantitative Methods part of the curriculum has been revised to present new and more complex techniques in ML, Factor Modeling, Backtesting, and Simulation in a visual and intuitive manner. This content has been developed at a high level. Many details underlying these techniques, however, rely on matrix algebra and advanced calculus, which are not prerequisites for candidates. Therefore, a pedagogical challenge exists in regard to the depth of understanding that can be truly achieved by candidates who do not have the quantitative backgrounds at these higher level areas.

Focus Area 3: Financial Statement Analysis

Financial Statement Analysis is a discrete topic domain within the CFA Program curriculum at Level I and II. It also links closely to other areas of the program. This topic provides a foundation for areas such as Equity Investments, Financial Modeling, and Corporate Issuers, which in turn inform Portfolio Management. Feedback from practitioners also revealed that asset managers, especially larger ones, are seeking to increase productivity by combining fundamental analysis with quantitative tools, and thus support areas such as modeling. One reason affecting this support is that growth in the scope of investments has outpaced growth in the size of investment teams.

Intangible Assets and Valuation

The increasing amount of intangible assets within modern, high-growth businesses presents an increasing need to evaluate these assets. An analytical challenge remains to effectively evaluate intangible assets that are typical of companies in large sections of the economy.

Stock Compensation

Stock compensation is increasingly relevant in the context of start-up firms and the increasing size of private markets. It is important to focus on the impact on comparability across firms with different compensation trajectories.

Discounted Cash Flow Analysis

Practitioners stressed the importance of cross-checking discounted cash flow analysis with other methods. Understanding "what's priced in?" was a refrain we heard on several occasions. The business and financial statement impact of supply chain issues, particularly in light of COVID, are important to understand, and an area of focus for Practice Analysis over 2022.

Drivers

Understanding revenue drivers and unit economics is at the heart of Financial Statement Analysis and valuation. It is important for CFA Program candidates to be equipped to think in these terms. It is critical to establish correlations based on observations and then link that information to a balance sheet, income statement, or cash flow line with a macro- or micro-driver in which there is some visibility (e.g., commodity prices, inflation).

Summary

Many of these insights validate what we have added to the curriculum in recent years and provide additional guidance into what areas will be developed going forward. For further information on recent developments to the curriculum please see the guide to 2022 CFA Program Curriculum Changes here.

Section 3: Career Skills Framework

The Career Skills Framework identifies the activities practitioners undertake within the investment process, and the knowledge and skills needed to succeed. It approaches competence from a different dimension to the taxonomy used in the CFA Program. Instead of a topic taxonomy, it uses an activity lens to examine knowledge and skill requirements. It is structured by occupation and enables identification of (1) the activities and skills needed in a current occupation; and (2) the activities and skills needed to transition from one occupation to another. The latter competencies include both the technical skills needed as well as the personal and business competencies needed for success. Note that practitioner feedback often highlighted the critical importance of these soft skill competencies to career success.

Career Zones

To better visualize how the wide range of occupations within the investment profession can be grouped by competency area, we identified six career skill zones involved in differing aspects of the investment process. These occupations combine particular attributes and competencies and include the following:

- Investment Decision-Making
- Analytical
- Advisory
- Sales & Client Management
- Risk & Oversight
- Leadership

Personal and Business Skills

The Importance of the Three C's

Whatever occupation you are in, there are six personal and business skills that practitioners tell us are the most important for career success. This year, we surveyed members to prioritize these skills.

Communication

Communication, defined as "Listening, presenting, influencing, negotiating, and facilitating discussions," is ranked as the most important skill across our respondents. This was particularly notable for

professionals in advisory (e.g., Investment/Strategy Consulting; Merger and Acquisition [M&A] Advisory), sales, and client service roles, but also by many people across a range of analytical roles (e.g., Investment Analyst; Data Scientist) and core investment decision-making functions too (e.g., Portfolio Manager, Private Wealth Manager, and Trader). It ranked most highly by those in leadership roles (e.g., CEO, CFO) and by many people in compliance, regulatory, and accounting functions.

Collaboration

Collaboration, defined as "supporting colleagues, sharing knowledge, being a team player, and building trust" as well as "identifying, building, and managing stakeholder relationships," was rated most highly by those working as Quantitative Analysts, Private Equity Analysts/Managers, and Treasurers. It was most commonly paired with communication as one of the top two personal and business skills.

Curiosity

Curiosity was rated closely behind collaboration in importance. Defined as "open mindedness, problem solving, and exercising professional skepticism," it was top rated by Economists, Investment Strategists, and Risk Analysts.

Leadership

Leadership, defined as "demonstrating vision, thinking strategically, and motivating colleagues," rated fourth, although it was the top-rated skill for CIOs. It rated in the top two areas for CEOs and CFOs and also rated highly with M&A Advisers and Regulators.

Personal Effectiveness

Defined as "time management, attention to detail, and proactivity," personal effectiveness competencies are frequently requested on job specifications and specified in firm competency frameworks. It received high ratings from those working in Sales and Technology roles.

Emotional Intelligence

Defined as "empathizing, self-awareness, and resilience," emotional intelligence rated the lowest of the six competency areas with 12 of our 29 occupations rating it at this level. It did, however, score more highly among those in Relationship Management and Sales roles.

Technical Activities and Skills Across the Career Zones

1. Analysts

Occupations: Investment Analyst, Quantitative Analyst, Economist, Investment Strategist, Corporate Development and Strategy, Data Scientist, and Performance Analyst.

Roles: Analytical roles are more focused on building competencies in idea generation, data analysis, industry & company analysis, ESG integration, financial modeling, and valuation. Research report writing is also an important skill for some occupations. A small number of analytical roles also are involved in the investment decision-making process, in particular Investment Strategists and Quantitative Analysts.

2. Investment Decision Makers

Occupations: Chief Investment Officer (CIO), Manager of Managers, Portfolio Manager, Private Equity Investment Analyst/Manager, Private Wealth Manager/Financial Adviser/Financial Planner, Trader, and Treasurer.

Roles: Investment decision-making roles require the greatest breadth of skills in the broad analytical, investment decision making, risk & oversight, and business development areas. Beyond the core knowledge and skill requirements, these roles require building competencies in idea generation, valuation, investment strategy, investment process, ESG integration, portfolio construction, and trade execution. Financial modeling and valuation, often thought of as being primarily an analyst function, both remain important for many of these roles too.

3. Advisers

Occupations: Institutional Investment Consultant, M&A/Corporate Finance Adviser, and Strategy Consulting.

Roles: Advisory roles are largely focused on building competencies in business development and analytical activities. This includes data analysis, industry & company analysis, financial modeling, and valuation.

Structuring and due diligence is an important skill set for the M&A Adviser. Advisory functions are frequently client-focused, and business development and client relationship skills are critical for many people as firms look to identify new client relationships and build on existing ones.

4. Relationship Managers

Occupations: Institutional Sales, Relationship Manager, and Product Specialist/Manager.

Roles: Relationship manager roles are focused on building competencies in client profiling and business development. Deep technical knowledge and skills are often needed to understand the needs of the client and the suitability of the firm's product set. Generating investment ideas, knowing how to analyze and use data, and having an in-depth knowledge of investment strategy are important skill sets.

5. Risk and Oversight

Occupations: Accountant/Auditor, Compliance Analyst/Officer, Regulators, and Risk Manager/Analyst.

Roles: Although typically not being involved in executing the day-to-day investment process, risk & oversight roles do require a deep understanding of the process to deliver their functions effectively. These roles may be less involved in the process of analysis and investment-decision making, but a deep understanding of these areas often is needed to inform business decisions and manage risks.

6. Leadership

Occupations: Chief Executive Officer (CEO) and Chief Financial Officer (CFO).

Roles: CEOs and CFOs focus on the importance of firm management and governance, risk management, and business development. Many company leaders still feel the need to be close enough to the investment process, as well as developments in ESG and data analytics, in order to make good strategic decisions. Competencies in valuation and financial modeling remain relevant, as are those in due diligence and structuring. Communication ranks as the key personal and business skill.

CFA Institute
Career Skills Framework

To request an interactive version of the Career Framework, please email us at practiceanalysis@cfainstitute.org.

Column group headers:

- Ethics
- Core Knowledge & Skills
- Client
- Analysis
- Investment Management
- Oversight
- Personal & Business

Column headers:

- Ethical Behaviour
- Industry Awareness
- Instruments & Products
- Economics & Markets
- Behavioral Awareness
- Business Development
- Client Profiling
- Investment Idea Generation
- Data Analysis & Visualisation
- Industry & Company Analysis
- ESG Integration
- Financial Modelling
- Valuation
- Research Report Authoring
- Financial Planning & Analysis
- Investment Strategy & Process
- Manager / Fund Selection
- Portfolio Construction
- Trade Execution
- Perf Measurement, Evaluation & Reporting
- Deal Structuring & Due Diligence
- Regulatory Compliance
- Risk Management
- Firm Management & Governance
- Collaboration
- Communication
- Curiosity
- Emotional Intelligence
- Leadership
- Personal Effectiveness

Row groups and roles:

Analytical
- Credit Analyst
- Investment Analyst
- Quantitative Analyst
- Economist
- Investment Strategist
- Corporate Development & Strategy Analyst
- Data Scientist
- Performance Analyst

Investment Decision Making
- Chief Investment Officer (CIO)
- Manager of Managers
- Portfolio Manager
- Private Equity Investment Analyst / Manager
- Private Wealth Manager; Financial Adviser / Planner
- Trader
- Treasurer

Advisory
- Institutional Investment Consultant
- M&A / Corporate Finance Adviser
- Strategy Consulting

Sales & Client
- Institutional Sales
- Relationship Manager
- Product Specialist / Manager

Risk & Oversight
- Accountant / Auditor
- Compliance Analyst / Officer
- Regulator
- Risk Analyst / Manager

Leaders
- CEO
- CFO

Assessments of whether these are activities practitioners do, may do, or are unlikely to do, are based on feedback from a survey of the Practice Analysis Working body (n=730) and serve as a guide.

Key

- Will **typically do** and require when working in the specified job role
- **May** do and require when working in the specified job role
- Is **unlikely** to do and require when working in the specified job role
- Represent the top 3 ranked Personal & Business Skills
- Represent the bottom 3 ranked Personal & Business Skills

Section 4: Future Competency Developments

In developing the CFA Program content outline, we look to the future and areas which will become, or are becoming, mainstream to investment practice. Engaging with practitioners for this process took place through feedback from our roundtables, the Education Advisory Committee, and Test Specification Task Force. Our goal is to identify developing trends in skills and competencies and guide our areas of research in 2022 and 2023. When practitioners talk about trends, they do so in an interconnected manner, frequently connecting domains together. Below is an assimilation of the key feedback received and their implications for knowledge and skill development. We have also included the survey results from the TSTF.

1. The Integration of Private Market Assets and ESG Considerations into the Portfolio Construction Process

There is a growing need and emphasis on being able to integrate and combine private assets into the asset allocation and portfolio construction process. In parallel, practitioners are and will also need to integrate ESG considerations. This will require the knowledge and skills to implement such processes, and understand how to undertake relevant analysis (e.g., relative value and total portfolio analysis). This is not straight forward. Asset owners have been at the forefront of developments, but it is of growing importance for asset managers, insurance companies, and pension funds in developed and emerging markets.

The integration of ESG considerations into asset allocation adds another layer of complexity. Understanding what ESG integration implies for portfolio construction across all asset classes, how it differs by asset class, how regulations will drive activities, and the implications for risks (e.g., concentration) and performance will be increasingly important. As stated earlier in this report, ESG is a fast developing area of focus for many portfolio managers. Developments will continue apace with growing demand for specialist and deep skills in areas such as stewardship, impact investing, and climate modeling. Investment professionals will need capability in ESG scenario construction for risk modeling purposes given the presence of non-financial risk factors, as well as long-term and non-linear risks.

Integrating engagement and stewardship approaches into the work of the investment teams will increasingly be an area of focus, as will distinctions between ESG and Impact Investing and implications for portfolio construction. There will be an ongoing need to assess the nature of physical and transition risks and how these are translated into financial factors. Investment professionals will require sufficient analytical skills to assess the robustness of the information sourced from external providers as an input into investment decision making.

2. The (Continued) Rise of Quantitative Methods in the Investment Process

The investment industry is increasingly recognizing the benefits of quantitative analysis and big data technologies, which will increasing include AI. 'Quantamental' approaches and statistical methodologies will become increasingly dominant. Companies are adjusting their investment philosophies and processes to better integrate quantitative tools into the investment process. Building portfolios will evolve to quantamental approaches and fundamental analysts will blend greater statistical methodologies into valuations. This may result in more focus on top-down asset allocations and a greater reliance on sell-side analysts for stock analysis. Understanding the intuition and assumptions behind models will remain key.

The investment professional will need to be able to synthesize quantitative information from diverse sources and communicate effectively to internal (e.g., investment committee; risk committee) and external stakeholders (e.g., clients; asset owners). The ability to connect qualitative with quantitative work, and communicate and connect seamlessly with data scientists and data analysts in organizations will be a core skill.

As clients demand more tailored solutions requiring greater statistical input, asset managers are expected to increase the size of their quant teams. As highlighted in our report on 'T-shaped Teams: Organizing to Adopt AI and Big Data at Investment Firms', cost, talent,

and technology are significant hurdles in adopting such quantitative approaches, but the most critical factor for success is leadership vision, including developing an appropriate organizational structure and culture to enable change to take place.

3. The Analysis and Integration of Digital Assets into Portfolios

There will be an increasing need to understand and analyze the evolving domain of digital assets (e.g., coins, tokens, NFTs, ETFs), assess their appropriate allocation and role within a portfolio, and do this with awareness of the regulatory landscape. Investment professionals will need to understand the risks, benefits, and opportunities presented by digital assets, as well as keep alert to the efficiencies blockchains bring to market infrastructure. The sector is developing as authorities are taking measures to regulate it. Institutional investors are entering the sector. Retail clients are also investing or wanting to discuss the risks and opportunities it presents. It will be increasingly important for investment professionals to understand the characteristics of digital assets (instruments, markets, issuers), be alert to approaches and challenges in valuation, be able to determine an appropriate allocation, and select relevant digital assets.

4. The Impact of Regulatory, Economic, and Geopolitical Developments on Markets

Regulatory development will continue to have a significant impact on markets. There is increasing influence by governments on ESG and climate policy. It will be increasingly important for practitioners to keep alert to regulatory agendas, assess how these will affect asset classes and valuations, and ensure the effective integration of policy and regulatory compliance into investment processes.

Macroeconomic cycles are coming back to the fore with high inflation. This is negatively impacting fixed income portfolios and creating challenges to generating and protecting wealth. Geopolitical challenges will remain front and center, and investment professionals will need to develop their understanding of the implications of sanctions, their implementation (for financial institutions), capital controls, and challenges to supply chains. Practitioners will need to revise and enhance their understanding and analysis of economic cycles and have an appreciation of the types of investments, both
across and within asset classes, that perform best in given market environments.

Test Specification Task Force: Future Trends Survey

As part of the TSTF process, in November 2021 we surveyed over 3,000 members and asked them to rate 20 trends likely to affect the investment management profession. Respondents were asked to score the degree to which they thought each stated trend will impact investment management practice over the next three years, where 1 is no impact and 4 is significant impact. The top trends included:

Inflation Risk & Protection	3.38
AI and Big Data Applications in Investment	3.30
Low/Negative Interest Rates	3.23
Systemic Risk Factors & Considerations	3.22
Impact of Regulation on the Investment Process	3.20

Core macro-economic concerns around inflation, interest rates, and financial stability dominate the feedback. It is interesting to note how quickly the interest rates environment has evolved since the survey was taken. AI and Big Data analysis scored less highly on its importance for foundational knowledge in the core TSTF analysis but is seen as an area that will have a significant impact over the coming years. The remainder of the top 50% were mostly covered by ESG and private market developments:

Developments and Opportunities in Private Capital (Private Equity and Private Debt)	3.15
ESG Integration into the Investment Process	3.02
Developments in ESG Regulations and Standards	3.02
Developments and Opportunities in Real Assets	2.98
Impact Investment Strategies and Approaches	2.95

Private Equity and Debt are incorporated into the Alternative Investments topic domain within CFA Program. ESG factors and considerations are integrated across the CFA Program, and we continue to review and update this fast growing area.

'Cryptocurrencies as an asset class' (2.88) was included in our list and rated in the third quartile. The same applied to the 'integration and measurement of climate considerations within the investment process' (2.91) , and the 'analysis and valuation of intangible assets' (2.93). We recognize these are dynamic areas with fast-paced developments taking place.

Conclusion

The CFA Program is focused on developing the professional competence of investment professionals. The significant developments taking place in ESG and Data Analytics are presenting opportunities for practitioners, as well as challenges in maintaining and revising knowledge and skills. These are educational megatrends, developing rapidly in terms of the information and approaches being developed. The challenge for the investment professional is to be able to discern what is most important, understand where to deepen expertise, and recognize how, where, and when to rely on third-party input. Because ESG and Data Analytics are competency areas that cannot be viewed in a vacuum and must be seen in context, they have been integrated across the CFA Program curriculum. This more holistic and system-wide approach is needed for good judgment and appears to be valued by the marketplace. We continue to work hard to integrate these considerations into the CFA Program to support more robust learning and application.

Looking ahead, there are several areas in which we are either proceeding or considering undertaking additional Practice Analysis. This includes how investment professionals are factoring private market and digital assets into the investment process. Supply chain analysis is critical for analysts to understand. We will continue to review areas related to the fast developing field of ESG and quantitative methods.

Finally, it is important to recognize the importance of soft skills to career development. In our frequent discussions with practitioners, we continue to hear more about the importance of these soft skills than technical skills. This is particularly the case for individuals who are at least five to seven years into their careers.

Recognition

We have received and continue to receive feedback from a large number of practitioners and volunteers from all corners of the globe. We would like to thank all those who have contributed information and suggestions for us to assimilate into this report. In particular the members of the Practice Analysis working body, who continue to a respond to a range of surveys and contributed significantly to our deep-dive research; the members of the TSTF, who gave significant time to reviewing survey results and finalising the CBOK; the Education Advisory Committee, who advise and input on all areas of Practice Analysis activities; and the ESG Advisory Panel, who play a central role in ensuring the ongoing relevancy of the Certificate in ESG Investing.

Education Advisory Committee

Name	Country
Cristina Brizido, CFA, CESGA	Portugal
Adrian Codirlasu, CFA, PhD	Romania
Anubhuti Gupta, CFA, CIPM, CAIA	Singapore
Fan Huang, CFA	China
Isaiah Schulze, CFA	USA
Kampoleak Pal, CFA	USA
Lautaro Espeche, CFA	Argentina
Marie Winters, CFA, CAIA	USA
Patrick Ranzijn, CFA, FRM, CAIA	Switzerland
Srivathsan Ramachandran, CFA	India
Stefan Whitwell, CFA, CIPM	USA
Joanna Chang, CFA	Australia
Brishni Mukhopadhyay, CFA	United Kingdom

ESG Advisory Panel Members

Name	Country
Brishni Mukhopadhyay, CFA	United Kingdom
Sylvia Solomon, ASIP	United Kingdom
Maxine Wille, CFA	United Kingdom
Monica Filkova, CFA	United Kingdom
Vincent Piscaer	United Kingdom
Shuen Chan	United Kingdom
Claudia Gollmeier, CFA	Singapore
Fionnuala O'Grady	United Kingdom
Matyas Horak, CFA	United Kingdom
With the globalisation of the Certificate in ESG Investing, the ESG Advisory Panel is in the process of being expanded to include representation from AMER and APAC.	

Test Specifications Task Force Members

Name	Country
Peter Baksh, CFA	USA
Venkatesh Bangaruswamy, CFA, CIPM	India
Cristina Brizido, CFA	Portugal
Adrian Codirlașu, CFA, PhD	Romania
Gerry Fowler, CFA	United Kingdom
Joanne Hill, PhD	USA
Madiha Javed, CFA	Canada
Nina Keleman, CFA	Slovenia
Jennifer Kizilbash, CFA	Singapore
Jean-Paul Kachour	UAE
Wei Lin, Ph.D, MBA, CFA	China
Mark Luo, CFA	Canada
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Appendix

Test Specification Task Force Methodology

Central to the Test Specification Task Force process is the member survey. This survey provides information on the importance of the various Candidate Body of Knowledge (CBOK) line items to practitioners from different regions and at different levels of experience within their career.

We sent an email inviting members to participate in an online survey. A random sample of 76,232 global members was invited to participate in the CBOK survey. The survey was conducted from 11–25 October 2021, and one reminder email was sent to nonrespondents on 14 October 2021. In total, 3,085 valid responses were received, for a response rate of 4% and a margin of error of ±1.7%.

Environmental, Social, and Governance Panel

During 2021, we were pleased to bring the Environmental, Social, and Governance (ESG) Panel established by CFA Society United Kingdom into the governance framework of CFA Institute. The members of this panel (see Recognition) have been instrumental in developing the body of knowledge and syllabus for the qualification. The current ESG syllabus can be found on our website and the version 4 syllabus is in the process of being developed.

Developments to the ESG Syllabus

A key challenge in developing the syllabus is the significant number of developments taking place, in particular in relation to regulations and climate. The ESG Panel continues to focus on the foundations necessary to give investment professionals the knowledge and skills they need to integrate ESG considerations into the investment process.

Current Occupation of Survey Participants	
Portfolio Manager	14%
Private Wealth Manager/Financial Adviser/Financial Planner	7%
Chief Investment Officer (CIO)	5%
Risk Analyst/Manager	5%
Equity Analyst	4%
Credit Analyst	4%
Chief Executive Officer (CEO)	4%
Private Equity Investment Analyst/Manager	3%
Investment Strategist	3%
Chief Financial Officer (CFO)	3%
Product Specialist/Manager	3%
M&A Adviser	3%
Corporate Development & Strategy Analyst	3%
Trader	3%
Relationship Manager	2%
Institutional Sales	2%
Manager of Managers	2%
Institutional Investment Consultant	2%
Accountant/Auditor	2%
Quantitative Analyst	2%
Professor/Academic	2%
Treasurer	2%
Strategy Consulting	2%
Information Technology (e.g., Business Analyst)	1%
Regulator	1%
Performance Analyst	1%
Data Scientist	1%
Economist	1%
Compliance Analyst/Officer	1%
Investor Relations Officer	1%
Debt Capital Markets Analyst	1%

2024 CFA Program: Candidate Body of Knowledge (CBOK)

The CBOK represents the core knowledge, skills, and abilities (competencies) generally accepted and applied by investment professionals globally. The CBOK is grounded in practice, meaning that panels and surveys of thousands of investment professionals have had input into the curriculum through our practice analysis.

CBOK Topic Areas

I. Ethical and Professional Standards

A. Professional Standards of Practice

B. Ethical Practices

C. Asset Manager Code of Professional Conduct

D. Presentation of Performance Results (GIPS)

II. Quantitative Methods

A. Time Value of Money

B. Data Visualization and Descriptive Statistics

C. Probability Distributions and Concepts

D. Sampling and Estimation

E. Regression Analysis

F. Artificial Intelligence/Machine Learning and Big Data Analysis and Applications

G. Time-Series Analysis

H. Back-testing, Simulation, and Scenario Analysis

III. Economics

A. Market Forces of Supply and Demand

B. The Firm and Industry Organization

C. Business Cycles

D. Inflation and Deflation

E. International Trade and Capital Flows

F. Currency Exchange Rates

G. Monetary System, Monetary and Fiscal Policy

H. Economic Growth and Development

I. Effects of Regulations

J. Economic Analysis and Setting Capital Market Expectations

K. Effects of Geopolitics on Economies and Investment Markets

L. Applications of Economic Factors in the Investment Process

IV. Financial Statement Analysis

A. Analysis of Financial Statements

B. Financial Reporting Quality

C. Analysis of Off-Balance-Sheet Assets and Liabilities

D. Analysis of Stock Compensation and Other Employee Benefits

E. Analysis of Inter-Corporate Investments

F. Analysis of Business Combinations

G. Analysis of Global Operations

H. Building a Company Financial Model

I. Ratio and Financial Analysis

J. Financial Analysis of Banks and Insurance Companies

K. ESG considerations in Financial Statement Analysis

V. Corporate Issuers

A. Corporate Structures and Strategies

B. Corporate Ownership and Governance

C. Risk Factors (including environmental and social)

D. Business and Financial Risk

E. Corporate Financing Decisions

F. Corporate Actions, Combinations, and Restructuring

VI. Equity Investments

A. Types of Equity Securities and Markets

B. Fundamental Equity Analysis

C. Valuation of Individual Equity Securities

D. Equity Market Valuation

E. Equity Portfolio Management

F. ESG considerations in Equity Investments

VII. Fixed Income

A. Types of Fixed Income Securities and Markets

B. Fundamental Fixed Income

C. Term Structure Determination and Yield Spreads

D. Valuation of Individual Fixed Income Securities

E. Analysis of Interest Rate Risk

F. Analysis of Credit Risk

G. Valuing Bonds with Embedded Options

H. Structured Products

I. Fixed Income Portfolio Management Strategies

J. ESG considerations in Fixed Income

VIII. Derivatives

A. Types of Derivative Instruments and Markets

B. Valuation of Forwards and Futures Contracts

C. Valuation of Option Contracts

D. Valuation of Swap Contracts

E. Uses of Derivatives in Portfolio Management

IX. Alternative Investments

A. Types of Alternative Investments

B. Real Estate

C. Real Assets (including Infrastructure, Timber and Farm Land)

D. Private Capital (including Private Equity, Private Credit and Venture Capital)

E. Hedge Funds

F. Commodities

G. Alternative Investments Portfolio Management

H. ESG considerations in Alternative Investments

X. Portfolio Management and Wealth Planning

A. The Investment Policy Statement

B. Modern Portfolio Management Concepts

C. Investment Vehicles (including ETFs and Mutual Funds)

D. Market Efficiency and Passive Investing

E. Market Indexes

F. Behavioral Finance

G. Technical Analysis

H. Environmental, Social, and Governance (ESG) Investing

I. Management of Individual/Family Investor Portfolios

J. Tax Impact of Investment Decisions

K. Management of Institutional Investor Portfolios

L. Investment Manager Selection

M. Asset Allocation

N. Portfolio Construction and Revision

O. Currency Management

P. Liability – Driven Investments (including Asset Liability Management and Goal-Based Investing)

Q. Risk Management (including environmental risk)

R. Market Indexes

S. Execution of Portfolio Decisions (including Trading and Market Microstructure)

T. Performance Attribution and Appraisal

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