Corporate Finance and Enterprise Risk Management (CFE)
Course Overview Study Note for the Foundations of CFE Exam

This note is designed to provide an overview of the CFE Track and this exam. Candidates should read it prior to beginning preparation for the exam. While it can be a valuable aid in preparation, the material in this note will not be tested.

1. The Track's Purpose

The Corporate Finance and Enterprise Risk Management (CFE) track was borne out of a vision to create a body of study to prepare actuaries to work within the offices of the Chief Risk Officer (CRO) or Chief Financial Officer (CFO) in **any** industry.

The track is engineered to focus on a broad spectrum of industries and to demonstrate the unique value of the actuarial tool kit in risk evaluation and strategic decision-making. The CFE track is focused on advanced application of Enterprise Risk Management (ERM) and business management within a case study framework. The strengths of actuarial risk management are blended together with the essentials of an MBA Finance program and other Risk Management/Investment programs such as the Chartered Financial Analyst (CFA) program offered by the CFA Institute.

The CFE curriculum approach is innovative and unique amongst actuarial accreditations. It addresses:

- Capital management
- Finance
- Risk management
- Business acumen
- Communication
- Organizational behavior
- Managerial skills
- Strategic thinking skills
- Risk modeling and data analysis skills

The purpose is to develop a solid foundation of business management fundamentals, leadership, communication, and strategic thinking skills in the risk management space to prepare candidates to succeed in their careers.

2. The Case Study: A global conglomerate

The Foundations Exam Case Study (referred to hereafter as the "Case Study") is intended to be an integral part of the syllabus. It is purposely constructed to be a global conglomerate with businesses in several industries and various forms of risk-taking enterprises. For instance, Blue

Jay Air is in the transportation industry. Blue Jay Tire is a manufacturer. Frenz Corporation is in the specialty eateries industry. Darwin Life Insurance Company and Blue Ocean P&C Company are in the insurance industry. Big Ben Bank is in the banking industry. All these industries have business management and risk management issues. The Case Study provides the context from which candidates can internalize the study materials. As an example, a strong candidate will gain insights on how credit and counterparty risk management from the finance industry can be useful for a coffee house that's dependent on the price of coffee beans in the commodity market.

In general, the syllabus study materials were written from the context of the home industry of its authors. For example, the material for capital measures and financial risk management is likely to be written from the context of the finance industry. In the CFE track, the insights from the study material are applied within the context of the Case Study's conglomerate RPPC (which includes both financial and non-financial companies). Moreover, the Case Study also provides background narration of the companies' strategies, competencies, and obstacles as further context when their executives decide on risk management approaches.

The Case Study also provides a platform to have multi-dimensional business problems for candidates to demonstrate the application of risk and business toolkits. For example, the Case Study enables management subjectivity or cultural considerations besides the purely technical aspects of business problems.

Also, exam questions on the Case Study may not have all the pertinent intelligence, may have conflicting intelligence, or different managers may be advocating different courses of action. This mirrors reality. But companies and managers still have to make decisions. Our recommended study approach is to first read the syllabus descriptions of the Learning Objectives and Learning Outcomes; then read the Case Study and lastly the study materials. The recommended order is purposeful.

Keep in mind that each exam question is created by starting first with one or a combination of the Learning Objectives and Learning Outcomes. Each question will consider a context (likely one from the Case Study) that entails a business situation or conflict. The insights or lessons learned from the syllabus study materials are there to help the candidate develop and apply a solution that best fits within the context of the exam question. Note that a solution to a given problem presented within the study materials is appropriate for the context used within those study materials, but not necessarily appropriate for the context of the exam question (often the context is that of a company from RPPC and its risk management practices). Since the exam is focused on the demonstration of critical thinking, the candidate must learn how to take the learnings from one situation and apply them to a different situation. In creating such questions, this exam seeks to emulate real-world situations which, most of the time, do not have solutions that conveniently appear within any textbook. Candidates are expected to apply the techniques or insights that they learn from the study materials to new real-world problems. The candidate uses the study material as a tool to gain insights about the Learning Objectives and Learning Outcomes. These insights expressed in a solution to an exam question demonstrate critical thinking.

3. Foundations Exam Syllabus Learning Objectives and Learning Outcomes

For any business, there must be willing customers who are attracted to its product (or service). A business is also known as a commercial enterprise, which is an undertaking with some scope, complication, and risk. For a business to be viable and to make sustainable profits, the business must extract the price that is appropriate for the risk that it undertakes. Therefore, the price includes (1) the cost of operations to manufacture, administer, and sell the product, (2) the cost of any required risk management for the product (3) the cost of risk capital for the product as well as (4) appropriate profit margin for the risk taken.

Candidates in this exam are evaluated on their ability to apply risk management practices, risk evaluation methods, and capital management concepts that originally arose in one industry to another industry in an appropriate manner that provides new insights to the management of the new industry. For instance, candidates will learn about a variety of risk evaluation approaches such as deterministic or stochastic modelling, simulation method, and multi-criteria linear programming analysis. Candidates must decide whether these are appropriate and/or sufficiently accurate to demonstrate viability to the investors who provide the capital for the business.

One of the goals of the CFE track is to prepare candidates to work and to thrive in industries that might have not traditionally hired actuaries. Therefore, this exam is about applying and expanding the use of the traditional actuarial toolkit to a myriad of business situations and a variety of risks; hence to create greater awareness of its value-creation capability to **any** commercial enterprise and to properly evaluate the financial reports of these enterprises. Another goal is to expand proficiency in risk assessment by exposure to techniques or practices common to non-traditional actuarial practice areas.

The objective of Section 1 is to explore key considerations of an enterprise on the why and how to source its capital funding. Capital is acquired for a particular purpose involving taking certain risks. The cost of capital must be justified by the anticipated returns from these risk takings. Various sources of capital can be acquired at different levels of cost and repayment durations and for different business situations. Candidates should be able to connect the needs of the conglomerate businesses for capital and the insights of the learning in this section.

Section 2 expands the candidates' knowledge on financial reporting. It is pertinent in today's business world that the candidates be able to measure an enterprise's financial performance by analyzing the accounting practices and quality of the financial reports. Candidates should be able to identify and analyze unusual or questionable accounting practices. Furthermore, candidates should be able to analyze the impact of tax accounting and policies, local regulations, and foreign exchange rates.

In Section 3, the objective is to enhance candidates' knowledge of risk management strategies for any industry, in particular for non-financial companies. Well-prepared candidates will be able to apply best practices and concepts in risk measurement, modeling and risk mitigation or risk transfer strategies used in financial industries and non-financial industries. Candidates should also understand the differences in risk profiles between financial and non-financial industries, which in turn, would lead to different ERM strategies being employed. This section also focuses on best practices that would lead to operational excellence.

Section 4 focuses on the application of quantitative methods and processes to quantify and manage risks within any business enterprise. Well-prepared candidates will appreciate how model risk, model stress testing, and back-testing should be used to improve the risk evaluation framework for any business enterprise that uses modelling tools. This section also introduces machine learning techniques for risk management purposes.

Section 5 provides some key insights on some techniques or approaches used to identify, evaluate and manage complex, and not easily transferrable (non-hedgeable) risks. Well-prepared candidates will realize that these techniques can be applied to both financial and many non-financial risk contexts and can also be instructive to risk management strategies.

4. Critical Thinking Outcomes

The CFE track is intended to prepare candidates for roles that demand critical thinking about a diverse set of complex real-world business problems. Such problems are multi-dimensional and will go beyond the study material content. The goal of the syllabus and learning journey is to provide candidates a foundation:

- To apply the appropriate risk assessment concepts and their insights to real-world business problems;
- To differentiate successful strategies from less successful strategies;
- To improve their understanding of business and corporate environments;
- To formulate problems, develop strategic alternatives, select (and justify) the "best" approach, and propose an implementation plan of their strategy;
- To think strategically regarding problem definition and anticipation of competitors' reactions;
- To concisely get their ideas across to top management;
- To improve communication skills, including persuasion, and thinking "on their feet;" and
- To identify and manage hidden risks;
- To develop better sustainable company policies and effective sustainable solutions to complex business issues;
- To strive for optimal business decisions that create and improve corporate value.

Like in the real world, some exam questions do not have "one" right answer and are not black and white. Instead there is a spectrum of acceptable answers. Well-prepared candidates will be able to take a position with regard to an analysis, a recommendation, or a course of action, and will be able to convincingly defend their position with sound reasoning.

Exam questions are designed to assess critical thinking skills that require a deeper understanding of the syllabus study materials, specifically how the key insights can be applied in new contexts. The following paragraphs describe some examples of how candidates are expected to demonstrate their critical thinking skills. These examples mimic situations that actuaries face in the real world every day, situations that often don't have a simple answer in a text book.

Mapping

Well-prepared candidates will be able to read about the success, failure, or best practices in a commercial endeavor, determine the key insights and lessons learned, and understand how those insights might usefully apply to another commercial endeavor. For example, an Executive team might study situations that arose within another industry where a given risk or financial management approach was applied; they will seek to extract meaningful lessons for application to their own company's risk and financial decisions. Well-prepared candidates will be able to map the why, how, and what lessons can be drawn from one context to a new context, whether that be at the industry level, geographical region, or company level. This might occur in an unrelated industry or entirely different risk type. For example, how can the best practice of regulated insurers for identifying, measuring, and managing their own risks and solvency assessment be applied to an airline company?

Analogy / Parallel thinking

Similarly, well-prepared candidates will also be able to apply a risk or business management technique that proved useful in one context to an entirely new context. For example, the key understanding from expanding the mismatch risk metric Duration to the Partial Duration metric is to recognize that the risk varies over different time horizons. This understanding can be applied to the hedging of the cost of gasoline for an airline or coffee beans for a coffee retailer over its five-year business plan. Well-prepared candidates will be able to understand how the techniques described in the study material can be used to assess and evaluate other risks that are not mentioned in the study material.

Some study materials might appear to be very technical or formula intense. The goal of the CFE education journey is not to teach candidates how to punch numbers into a risk equation or statistical formula. Instead the goal is to extract the key understanding that was discovered by the research or mathematics that led to the formula/technique. For example, well-prepared candidates will appreciate that the word "apply" means to think outside of the context in which the study material was presented, because new types of risk emerge every day in the real world.

Interpretation and Inference

With regard to risk models, formulas, and numerical results, the CFE track syllabus and exam are focused on the understanding required by a CFO or CRO in the review of the application of these techniques. The finance staff or risk staff in a company are not likely (nor often even allowed) to be involved in model building or implementation that are used directly by the business operations staff. Instead the CFO and CRO and their staff play a critical oversight role in the following:

- evaluation of the appropriateness of models;
- review of assumptions;
- model governance;
- reasonableness of the model results; and
- critique of the decisions arising from models.

Well-prepared candidates will be able to internalize the insight of each model construct explored in the study material, from which they will form their impressions of the types of uses and model result outcomes that are expected when a risk technique is used appropriately. For example, well-prepared candidates will appreciate which stochastic models promote heavy tail scenarios and what those scenarios might look like under different model assumptions and what might be inferred within the business context.

The staff of the CFO or CRO is unlikely to program models. Instead, they are called upon to read reports, to review results of models created by the business operations, and to evaluate the results for risk and financial management purposes. Well-prepared candidates will be able to spot errors by their understanding of what the results “should” look like given the model type and input assumptions. Candidates may benefit from assuming the viewpoints of regulators, auditors, and peer-reviewers Likewise, the exam questions focus on the review, critique, interpretation, and inference skills from model results. For example, if one receives a report with several tables of numerical results, can one evaluate whether the methods or risk assessment techniques are properly applied and the inferences are reasonable?

Deterministic vs Stochastic

Every company will from time to time present a business plan. In the normal course of business management, these plans are often presented as a deterministic future. They contain a single set of assumptions such as anticipated sales revenue, customer growth, operational expenses, cost of hedges, investment income, and taxation to name a few. These are often management’s best estimate of the most likely future business outcomes. However, good risk and financial management practice requires an evaluation of uncertainty and the potential for adverse outcomes. Well-prepared candidates will be able to identify whether the business case captures the essence of the risks, to make transparent any potential variances, and to assess the impact on decision-making and value-creation.

Critique the status quo

In many organizations, the executive team has a strong belief in its current processes and systems. Often, there is also a cost for altering operational systems. Therefore, both culturally and cost-wise, the status quo is often an easy recommendation. The effective risk manager is one who can identify the types of situations or outcomes that are occurring because they are not fully considered within the existing risk management framework. These could be risk processes, risk metrics, governance structures, risk policies, risk limits, or risk models. Well-prepared candidates will be able to recognize whether an existing or a new solution has failed to account for any material risks. They will also recognise that “best practices” are constantly evolving due to new emerging risk factors, technology advancement, changing economy, new industries etc. and to evaluate whether what worked well in the past might not work right now and for the future.

Qualitative vs Quantitative

Well-prepared candidates will also recognize that human factors or qualitative aspects have an effect on decision-making in risk and business management with both good and bad consequences. Risk culture differences among organizations or levels of management within an organization will result in various degrees of interpretation of the same risk or business issue. Companies with a sales culture or a hierarchical command structure or a creative mindset and flat organizational chart will all respond differently to the same empirical market data due to their own human biases. The inferences drawn from technical analysis and the degree of action will depend on the risk culture. The Case Study attempts to add this human nature context to the risk evaluation process.

Actions and Consequences

In addition to the technical and qualitative aspects of risk evaluation and financial decisions, there is a further dimension of related decisions through a cascade of consequences. This is similar to how a strong chess player will evaluate many possible future moves as a set of potential scenarios. The staff employed within the offices of the CFO and CRO are active in evaluating alternatives and bringing to light the future consequences of current and follow-on decisions and risk exposures. Furthermore, once a decision is made, there is also the question of how to adapt and respond when its actual result emerges.

Root cause vs symptom

Finally, when we review many of the past business failures, we note that the executive management teams were extremely talented and often had the right intentions. There were strong risk policies in place; and proper incentives were enabled to avoid their eventual collapse. But what transpired was a failure to identify the “root cause,” because only “symptoms” were being monitored. The risk management apparatus of any organisation is a collective of technical measurement tools, qualitative inferences/interpretation, and human will to act or not to act. The apparatus is not static. It evolves due to changes in risk measurement techniques (e.g., GAAP vs STAT reporting, economic capital model vs cash flow testing, ORSA vs economic capital), degrees of inference due to available reports or changes in risk personnel, and changes in leadership. Well-prepared candidates will appreciate that business context is dynamic and the risk system is always evolving in its attempt to more accurately identify the “root causes” of potential failure before they occur.

Moreover, a perfectly valid support of one risk-taking activity under one risk assessment approach could be shown to be detrimental under another analytical framework. Well-prepared candidates will be aware of the possibility of conflicting analyses and must be able to explain the insights from various approaches and to eventually decide whether to support a business decision. Also, well-prepared candidates will be able to recommend how appropriate risk information will be monitored on an ongoing basis that might trigger a re-evaluation of a current decision and what risk triggers must be put in place to mitigate the tail risk from a current decision. This would include situations where there isn't enough information or appropriate risk measurement tools to definitively say "yes" or "no" on a current decision.

5. Conclusion

The CFE track is a learning journey that allows fellowship candidates to grapple with a variety of risk types within a myriad of situational contexts. This journey is designed to mimic the complexity of the real world. As in the real world, the solutions to problems when they present themselves are never neatly fitted to a mathematical framework or a perfect risk distribution or heuristic model. Models are always wrong, but a few are helpful.

The FD Exam is focused on expanding and deepening proficiency in the application of risk management concepts to both financial and non-financial entities.

In addition, the CFE track learning objectives and learning outcomes are designed to teach candidates that risk assessment and business management always involves an element of judgement and subjectivity. In real life, many companies face the same set of constraints, opportunities and have similar resources, but make very different assessments of risk and pursue different strategies.

Which is the more valuable skill set? The ability to restate the risk and business concepts, methods, and analysis in the text? Or the ability to adapt the concepts and techniques to new contexts and diverse industries? The ability to cite different decision-making styles, team formation considerations, and communication styles as described in the syllabus? Or the ability to discern the pertinent pros and cons in a given context? The ability to retell lessons learned contained in the Business Case Studies? Or the ability to apply the lessons? The ability to describe the principles of a risk appetite statement? Or the ability to assess whether a proposed action aligns with company strategy and risk appetite?

One of the above skill sets captures what a CRO or CFO needs to be able to do which is the ability to constantly reinvent oneself in changing environments.