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CAIA®

EXAM PREP

SchweserNotes™

Private Debt, Hedge Funds, and Digital Assets

Level I Book 3

KAPLAN® SCHWESER

Book 3: Private Debt, Hedge Funds, and Digital Assets

SchweserNotes™ 2027

CAIA Level I



SCHWESERNOTES™ 2027 CAIA® LEVEL I BOOK 3: PRIVATE DEBT, HEDGE FUNDS, AND DIGITAL ASSETS

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Readings and Learning Objectives

TOPIC 5

CAIA Association. *CAIA Curriculum Level I Volume II*. Self-published, CAIA Association, 2026.

Reading 5.1: Private Credit and Cash Based Strategies

5.1.1: Demonstrate knowledge of private credit strategies as well as private credit performance and diversification.

Including:

- Define private credit and distressed debt.
- Discuss funds with a loan-to-own objective.
- Discuss fulcrum securities and reorganization.
- Evaluate private credit performance.

5.1.2: Demonstrate knowledge of credit risk analysis and the bankruptcy process.

Including:

- Explain the underpinnings of credit risk.
- Understand credit ratings, yields, and financial ratios.
- Interpret credit spreads and credit risk.
- Discuss credit risk and its relationship to risk of default.
- Discuss covenants on debt.
- Explain the five ways that covenants can control risk.
- Describe capital structure and the priority of payment.
- Discuss recovery rates.
- Explain distressed debt and how it relates to the bankruptcy process.

5.1.3: Demonstrate knowledge of bonds and leveraged loans.

Including:

- Describe the three key differences between bonds and loans.
- Understand the basics of leveraged loans.
- Discuss growth in leveraged loans.
- Explain liquidity and how it relates to the demand for leveraged loans.

5.1.4: Demonstrate knowledge of direct lending.

Including:

- Discuss the process and implications of direct lending.

5.1.5: Demonstrate knowledge of mezzanine debt.

Including:

- Identify structures of mezzanine debt.
- Understand how mezzanine debt can lower the weighted average cost of capital.
- Compare mezzanine debt financing to other forms of financing.
- Understand basic examples of mezzanine financing.
- Discuss major types of investors in mezzanine debt.
- Identify characteristics of mezzanine debt.

5.1.6: Demonstrate knowledge of mezzanine debt.

Including:

- Describe subordinated debt with step-up rates.
- Understand and apply subordinated debt with payment-in-kind (PIK) interest.
- Describe subordinated debt with profit participation.
- Interpret subordinated debt with warrants.

5.1.7: Demonstrate knowledge of venture debt.
Including:

- Describe the characteristics of venture debt.
- Describe the terms of venture debt.
- Explain why a startup firm would issue venture debt in addition to accepting venture capital investments.
- Describe the risks and rewards of venture debt.

5.1.8: Demonstrate knowledge of distressed debt.
Including:

- Understand the basics of distressed debt.
- Identify the supply of distressed debt capital.
- Identify the demand for distressed debt capital.
- Calculate expected default losses and credit spreads on distressed debt.
- Discuss three broad strategic categories of distressed debt investment.
- Identify risks of investing in distressed debt.

5.1.9: Demonstrate knowledge of infrastructure debt.
Including:

- Identify the drivers of infrastructure debt growth.
- Explain the types and characteristics of infrastructure debt.
- Understand bank development loans.
- Contrast infrastructure debt with corporate direct lending and real estate debt.

Reading 5.2: Private Credit and Asset Based Strategies

5.2.1: Demonstrate knowledge of asset-based lending.
Including:

- State the characteristics of a typical borrower in asset-based lending.
- Explain why borrowers select asset-based lending.
- Identify features of asset-based lending.
- Discuss discount rates for various assets in asset-based lending.
- Describe the use of asset-based lending proceeds.
- Identify asset-based loan structures and collateral.
- Understand and apply covenants in asset-based lender protection.

5.2.2: Demonstrate knowledge of the risks involved in asset-based loans.
Including:

- Understand collateral valuation risk of asset-based loans and lender remedies.
- Identify risks regarding process and people in asset-based loans.
- Understand risks regarding hedging of asset-based loans.
- Describe the legal risks of asset-based loans.
- Explain risks in exit timing from asset-based loans.

5.2.3: Demonstrate knowledge of asset-backed securities.
Including:

- Understand how asset-backed securities are created.
- Interpret models showing the growth of various types of asset-backed securities.
- Define auto loan-backed securities and describe their roles.

- Understand how prepayments affect auto loan-backed securities.
- State the role and effect of credit card receivables.
- Understand credit card receivables credit enhancements.

5.2.4: Demonstrate knowledge of mortgage-backed securities.
Including:

- Describe types of mortgage-backed securities.
- Discuss prepayment options within residential mortgages.
- Discuss and apply methods of measuring unscheduled prepayment rates such as conditional prepayment rates (CPRs) and the resulting Public Securities Association (PSA) benchmark.
- Describe prepayment factors not associated with changing interest rates.
- Describe commercial mortgage-backed securities as compared with residential mortgage-backed securities.

5.2.5: Demonstrate knowledge of residential mortgages.
Including:

- Discuss and calculate payments of fixed-rate mortgages.
- Discuss and calculate payments of interest-only mortgages.
- Discuss and calculate payments of variable-rate mortgages.
- Identify and discuss other variations of mortgages and apply balloon payments to mortgage valuation.
- Explain default risk in residential mortgages.

5.2.6: Demonstrate knowledge of observations regarding historical returns of mortgage REITs.
Including:

- Summarize the key observations on historical mortgage REIT returns that are consistent with economic reasoning.

Reading 5.3: Insurance Linked Strategies

5.3.1: Demonstrate knowledge of catastrophe bonds.
Including:

- Define catastrophe bonds.
- Understand the mechanics of catastrophe bonds.
- Describe the risk and returns of catastrophe bonds.
- Understand the role of catastrophe bonds in managing risk.

5.3.2: Demonstrate knowledge of four trigger types of catastrophe bonds.
Including:

- Define indemnity as a trigger.
- Define industry loss as a trigger.
- Define parametric as a trigger.
- Define modeled as a trigger.

5.3.3: Demonstrate knowledge of catastrophe bond valuation, performance, and drawbacks.
Including:

- Analyze how the coupon rate on catastrophe bonds is constructed.
- Identify catastrophe bond index returns over a recent historical period.
- Understand potential drawbacks and alpha of investing in catastrophe bonds.
- Discuss catastrophe-related derivative securities.

Reading 5.4: Introduction to Structuring

5.4.1: Demonstrate knowledge of the overview of financial structuring, the major types of structuring, and the primary role of structure.
Including:

- Describe the most common structuring of assets within the corporate form.

- Understand the key elements of a structured product.
- Describe hedging with credit derivatives.
- Describe structuring with tranches.
- Understand how structured products are created.
- Understand the economic role of a structured product.
- Describe market completion as an economic role.
- Understand the concept of a state of the world within structured products.
- Describe how structured products can complete the market.

5.4.2: Demonstrate knowledge of collateralized mortgage obligations.
Including:

- Describe a simplified collateralized mortgage obligation structure.
- Describe sequential pay structuring.
- Contrast extension risk with contraction risk as it pertains to structuring.
- Apply a sequential pay tranche to a collateralized mortgage obligation.
- Describe other types of collateralized mortgage obligations through the structuring of their cash flows.
- Understand the motivations behind structuring mortgage products.
- Understand how prepayment speeds can change the valuation of collateralized mortgage obligations.
- Understand how systematic risk can change the valuation of collateralized mortgage obligations.
- Describe default risk within commercial collateralized mortgage obligations.

5.4.3: Demonstrate knowledge of collateralized debt obligations.
Including:

- Define a collateralized debt obligation.
- Describe the simplified collateralized debt obligation structure and calculate the waterfall of cash flows.
- Understand default risk within a collateralized debt obligation and calculate the waterfall of cash flows in the presence of default.
- Describe how option collars are similar to the mezzanine tranche of a pool.
- Describe mezzanine tranches and option spreads.

5.4.4: Demonstrate knowledge of collateralized debt obligations (CDOs).
Including:

- Describe credit-related motivations for CDOs.
- Describe investor motivations for CDOs.
- Describe the general structure and life cycle of a CDO.
- Explain the terminology and details of CDOs.

5.4.5: Demonstrate knowledge of cash flow and market value CDOs.
Including:

- Describe the characteristics of cash flow CDOs.
- Describe the characteristics of market value CDOs.

5.4.6: Demonstrate knowledge of new developments in CDOs.
Including:

- Describe distressed debt CDOs.
- Describe hedge fund CDOs.
- Describe single-tranche CDOs.

Reading 5.5: Credit Risk and Credit Derivatives

5.5.1: Demonstrate knowledge of the risks of CDOs.
Including:

- Understand the risk of the underlying collateral.
- Understand the financial engineering risk.
- Discuss the implications of high correlations among the underlying assets.
- Define risk shifting and discuss its implications for CDOs.
- Describe other risks inherent in CDOs.
- Describe how CDO credit risk can be modeled.

5.5.2: Demonstrate knowledge of credit risk and enhancement of CDOs.
Including:

- Define and discuss subordination as an internal credit enhancement.
- Discuss and apply overcollateralization.
- Describe excess spread as an internal credit enhancement.
- Discuss reserve accounts as a credit enhancement.
- Describe external credit enhancements to CDOs.

5.5.3: Demonstrate knowledge of credit derivatives markets and the five risks of credit derivatives.
Including:

- Discuss the three economic roles of credit derivatives.
- Identify the three major methods for grouping credit derivatives.
- Describe the four stages of the evolution of credit derivative activity.
- Discuss the risks of excessive credit exposure using off-balance-sheet derivatives, pricing risk of over-the-counter derivatives, and liquidity risk of over-the-counter derivatives.
- Discuss the counterparty risk of over-the-counter credit default swaps and the basis risk of credit default swaps.

5.5.4: Demonstrate knowledge of credit default swaps.
Including:

- Contrast credit default swaps and total return swaps.
- Discuss the standard ISDA agreement as a template for negotiated credit agreements.
- Explain the mechanics of credit default swaps.
- Calculate the mark-to-market adjustment when valuing credit default swap contracts.
- Explain three methods for unwinding credit default swap transactions.
- Identify typical credit default swap market participants and their swap transactions.
- Explain five typical motivations for using credit default swaps.

5.5.5: Demonstrate knowledge of credit default swap indices.
Including:

- Describe credit default swap index products.

5.5.6: Demonstrate knowledge of credit options and credit-linked notes.
Including:

- Contrast credit default swaps and credit options.
- Identify the terms of credit call and credit put options.
- Explain the credit put option on a bond.
- Explain call options on credit default swaps.
- Describe credit-linked notes.

TOPIC 6

CAIA Association. *CAIA Curriculum Level I Volume III*. Self-published, CAIA Association, 2026.

Reading 6.1: The Hedge Fund Industry

6.1.1: Demonstrate knowledge of the distinguishing features of hedge funds and their growth and concentration over time as well as various types of hedge funds.

Including:

- Describe the primary elements of hedge funds.
- Summarize the investment flexibilities offered by hedge funds.
- Discuss the reasons for hedge fund industry growth and concentration.
- List hedge fund strategies.
- Contrast single-manager hedge funds, funds of funds, and multistrategy funds.

6.1.2: Demonstrate knowledge of short-selling processes and mechanics.

Including:

- Explain the mechanics of institutional short selling.
- Explain the mechanics of short selling to the short seller.
- Calculate the total return of a short position.
- Understand special situations involving short selling.

6.1.3: Demonstrate knowledge of arbitrage-free financial models.

Including:

- Describe arbitrage-free models.
- State a key externality of arbitrage activities.
- Discuss applications of arbitrage-free models.
- Describe arbitrage-free pricing in spot markets.
- Describe hedged and unhedged carry trades.

6.1.4: Demonstrate knowledge of hedge fund returns and asset allocation.

Including:

- Discuss the process of analyzing a hedge fund program.
- Identify strategies grouped by systemic risk.
- Discuss equity strategies in hedge funds.
- Discuss event-driven and relative value strategies in hedge funds.
- Discuss event risk and volatility strategies in hedge funds.
- Discuss event risk and insurance-type strategies in hedge funds.
- Discuss absolute return strategies in hedge funds.
- Discuss diversified fund strategies in hedge funds.

6.1.5: Demonstrate knowledge of investing in multistrategy funds.

Including:

- Evaluate fee-related advantages of multistrategy funds.
- Evaluate flexibility and transparency in the context of multistrategy funds.
- Evaluate potential advantages related to manager selection and operational risk management by funds of funds.

6.1.6: Demonstrate knowledge of research studies on hedge funds.

Including:

- Discuss the evidence regarding findings on hedge fund performance.
- Discuss the evidence regarding the market impact of hedge funds during the Asian currency crisis of 1997.
- Discuss the evidence regarding the market impact of quantitative hedge funds during the crisis of 2007.

6.1.7: Demonstrate knowledge of hedge fund indices.

Including:

- Describe hedge fund indices.

- Understand the structure of management and incentive fees on hedge fund indices.
- Contrast asset weighted hedge fund indices and equally weighted hedge fund indices.
- Understand representativeness and data biases in hedge funds.
- Understand and apply strategy definition and style drift.
- Discuss index investability of hedge funds.

Reading 6.2: Macro and Managed Futures Funds

6.2.1: Demonstrate knowledge of macro and managed futures strategies.
Including:

- Contrast discretionary and systematic trading.
- Contrast fundamental and technical analysis.

6.2.2: Demonstrate knowledge of macro hedge fund strategies.
Including:

- Define macro trading strategies.
- Understand macro strategies based on foreign exchange.
- Understand macro strategies based on sovereign bonds.
- Understand macro strategies based on economic policy.
- Understand macro strategies based on thematic investing.
- Understand macro strategies based on both micro and macro economic changes.
- Identify primary risks of macro investing.

6.2.3: Demonstrate knowledge of managed futures.
Including:

- Describe futures contracts.
- Understand the structure of the managed futures industry.
- Define the purpose of the managed futures industry.
- Explain the organization and regulation of the managed futures industry.
- Discuss three ways to access managed futures.

6.2.4: Demonstrate knowledge of systematic trading.
Including:

- Understand systematic trading rules.
- Identify three key questions in evaluating a systematic trading system.
- Understand validation and the potential degradation of systematic trading rules.
- Explain various systematic trading strategies.
- Calculate simple moving averages in systematic trading strategies.
- Calculate weighted and exponential moving averages in systematic trading strategies.
- Interpret moving average strategies.
- Discuss breakout strategies.

6.2.5: Demonstrate knowledge of trend-following strategies.
Including:

- Analyze trend-following strategies as being long volatility.
- Analyze non-trend-following strategies as pattern recognition systems.
- Discuss relative value strategies and technical analysis.

6.2.6: Demonstrate knowledge of the core dimensions of managed futures investment strategies.
Including:

- Discuss fundamental and technical data sources as core managed futures strategies.
- Discuss systematic and discretionary implementation styles as core managed futures strategies.
- Discuss a strategy focus as core managed futures strategies.
- Discuss time horizon as core managed futures strategies.

6.2.7: Demonstrate knowledge of systematic futures portfolio construction.

Including:

- Understand core decisions of a futures trading system.
- Discuss data processing in futures portfolio construction.
- Understand position sizing and calculate the number of futures contracts to hold to meet portfolio objectives.
- Explain market allocation in futures portfolio construction.
- Discuss trading execution in futures portfolio construction.

6.2.8: Demonstrate knowledge of various core benefits of managed futures for investors.
Including:

- Discuss the benefits of managed futures for investors.

6.2.9: Demonstrate knowledge of evidence on managed futures returns.
Including:

- Discuss evidence on alpha generation from managed futures strategies.
- Discuss evidence on downside risk protection offered from managed futures strategies.
- Explain mechanical managed futures indices.
- Discuss why managed futures may provide superior returns.
- Discuss six potential risks of managed futures funds.
- Understand managed accounts and the platforms of managed futures funds used to create a diversified portfolio of CTAs.
- Discuss the structure of multi-manager funds.
- Discuss the structure of managed futures products with managed accounts.
- Explain the structure of managed futures products with platforms.

6.2.10: Demonstrate knowledge of benefits of managed futures funds.
Including:

- Discuss research examining the benefits of managed futures funds.
- Identify sources of return for managed futures funds.
- Summarize the key observations on historical macro and systematic diversified fund returns that are consistent with economic reasoning.

Reading 6.3: Event-Driven Hedge Funds

6.3.1: Demonstrate knowledge of the sources of most event strategy returns.
Including:

- Define corporate event risk.
- Understand event strategies as selling insurance.
- Discuss event strategy returns through the lens of binary options.
- Evaluate event strategies as binary call options.

6.3.2: Demonstrate knowledge of activist investing.
Including:

- Understand the relationship between corporate governance and activist investing.
- Define proxy battle.
- Explain the five dimensions of shareholder activists.
- Identify strategies of shareholder activists.
- Explain agency theory and why managers are not viewed as maximizing shareholder wealth.
- Discuss consequences of misalignment between shareholders and managers.

6.3.3: Demonstrate knowledge of goals and objectives of activism.
Including:

- Understand corporate governance battles.
- Discuss the three activist agendas.

- Summarize the key observations on historical activist fund returns that are consistent with economic reasoning.

6.3.4: Demonstrate knowledge of merger arbitrage.
Including:
- Identify the different types of corporate mergers.
- Apply a stock-for-stock merger arbitrage deal.
- Discuss third-party bidders and bidding wars.
- Understand the risks of merger arbitrage.
- Identify regulatory risk within the context of mergers.
- Identify financing risk within the context of mergers.
- Summarize the key observations on merger arbitrage fund returns that are consistent with economic reasoning.

6.3.5: Demonstrate knowledge of distressed securities hedge funds.
Including:
- Define distressed debt hedge funds.
- Explain the bankruptcy process.
- Discuss short sales of equity as writing naked call options.
- Discuss the process of searching for distressed undervalued securities.
- Calculate returns from investing in undervalued securities.
- Understand activist investors in distressed securities.
- Explain capital structure arbitrage.
- Discuss the process of buying a firm using distressed securities.
- Summarize the key observations on distressed returns that are consistent with economic reasoning.

6.3.6: Demonstrate knowledge of event-driven multistrategy funds.
Including:
- Contrast event-driven multistrategy funds with special situation funds.
- Summarize the key observations on event-driven special situations funds returns that are consistent with economic reasoning.

Reading 6.4: Relative Value Hedge Funds

6.4.1: Demonstrate knowledge of relative value strategies.
Including:
- Understand the relative value strategy.
- Describe the classic relative value strategy trade.

6.4.2: Demonstrate knowledge of convertible bond arbitrage.
Including:
- Describe the classic convertible bond arbitrage trade.
- Define convertible bonds.
- Apply the unbundling approach for pricing convertible bonds.
- Apply the concept of delta, gamma, and theta and how they relate to the convertible arbitrage position.
- Explain and determine the effects of gamma and volatility on the profitability of a delta-neutral position.
- Understand the role of a complexity premium to convertible bond arbitrage.
- Identify the four reasons that issuers may continue to offer convertible bonds at attractive prices.

6.4.3: Demonstrate knowledge of return drivers of convertible bond arbitrage.
Including:

- Understand the specifics of delta hedging, including the potential profit on a delta-hedged position.
- Discuss return drivers and risks of convertible bond arbitrage.
- Summarize the key observations on historical convertible arbitrage returns that are consistent with economic reasoning.

6.4.4: Demonstrate knowledge of volatility arbitrage.
Including:

- Understand volatility arbitrage strategies.
- Explain instruments used by volatility arbitrage funds.
- Calculate the payoffs to variance swaps.
- Discuss risks contained in over-the-counter traded instruments relative to exchange-traded derivatives.
- Understand and apply the challenges of estimating dispersion.
- Understand the dispersion trade.
- Explain profit and loss on dispersion trades.

6.4.5: Demonstrate knowledge of volatility arbitrage.
Including:

- Distinguish between the categories of volatility hedge funds.
- Describe relative value of volatility funds.
- Describe short volatility funds.
- Describe long volatility and tail risk funds.
- Describe the historical performance of volatility fund strategies.
- Understand market-neutral volatility funds.
- Explain tail risk strategies.
- Summarize the key observations on relative value volatility funds returns that are consistent with economic reasoning.

6.4.6: Demonstrate knowledge of fixed-income arbitrage.
Including:

- Understand the core of fixed-income arbitrage strategies.
- Describe types and characteristics of fixed-income arbitrage strategies.
- Apply the concept of modified duration to bond returns and volatility.
- Describe the characteristics of asset-backed and mortgage-backed securities strategies.
- Determine the effects of prepayment risk and option-adjusted spreads on asset-backed and mortgage-backed securities strategies.
- Analyze the five risks of asset-backed and mortgage-backed securities arbitrage.
- Summarize the key observations on fixed-income arbitrage returns that are consistent with economic reasoning.

6.4.7: Demonstrate knowledge of relative value multistrategy funds.
Including:

- Discuss the rationale of relative value multistrategy funds.
- Summarize the key observations on multistrategy fund returns that are consistent with economic reasoning.

Reading 6.5: Equity Hedge Funds

6.5.1: Demonstrate knowledge of commonalities between equity hedge funds.
Including:

- Discuss commonalities of equity hedge funds.

6.5.2: Demonstrate knowledge of sources of return for equity hedge funds.
Including:

- Discuss providing liquidity as a source of return for equity hedge funds.
- Discuss providing informational efficiency as a source of return for equity hedge funds.
- Discuss how quantitative equity hedge funds evaluate equity return drivers.

6.5.3: Demonstrate knowledge of market anomalies.
Including:

- Define market anomalies.
- Discuss how market efficiency tests are tests of joint hypotheses.
- Identify issues involved in predicting persistence of market anomalies.
- Describe and apply accounting accruals as potential predictors of ex ante alpha.
- Define price momentum and recognize its potential role in generating ex ante alpha.
- Define earnings momentum and recognize its potential role in generating ex ante alpha.
- Define net stock issuance and recognize its potential role in generating ex ante alpha.
- Define insider trading and recognize its potential role in generating ex ante alpha.

6.5.4: Demonstrate knowledge of implementing anomaly strategies.
Including:

- Understand the process of integrating anomalies using factor models.
- Understand the process of integrating anomalies using pairs trading.
- Contrast short selling and reducing risk with increasing alpha.
- Discuss the limits to arbitrage.

6.5.5: Demonstrate knowledge of various applications of shorts in equity hedge funds.
Including:

- Contrast single stock shorts with market-based shorts.
- Understand the role of an alpha short.
- Discuss the goals and risks of pair trades.
- Explain the advantage of basket shorts.
- Evaluate the use of index shorts in an equity hedge fund portfolio.

6.5.6: Demonstrate knowledge of various (three) equity strategies.
Including:

- Define the mechanics of short selling.
- Understand the basics of short-bias funds.
- Summarize the key observations on historical short bias fund returns that are consistent with economic reasoning.
- Understand the basics of equity long/short funds.
- Summarize the key observations on historical equity long/short fund returns that are consistent with economic reasoning.
- Discuss the basics of equity market-neutral funds.
- Summarize the key observations on historical equity market neutral fund returns that are consistent with economic reasoning.
- Understand equity hedge fund risks.

TOPIC 7

CAIA Association. *CAIA Curriculum Level I Volume III*. Self-published, CAIA Association, 2026.

Reading 7.1: Distributed Ledger Technology

7.1.1: Demonstrate knowledge of distributed ledgers and blockchain technology.
Including:

- Explain how a simple distributed ledger works.
- Describe how blockchains offer immutable data storage.
- Compare the different types of blockchains.
- Understand the infrastructure of a decentralized network.
- Illustrate how transactions are added and verified on a blockchain.
- Explain the double spending problem and how modern blockchains solve it.
- Compare consensus mechanisms PoW, PoS, and DPoS.
- Describe how SHA-256 hashing works in a PoW system.
- Understand how blockchains can update with hard and soft forks.
- Understand the blockchain trilemma and the compromises of different systems.
- Explain the advantages of a decentralized system.

7.1.2: Demonstrate knowledge of how smart contracts are used to build decentralized finance applications.
Including:

- Explain how smart contracts execute within a virtual machine.
- Describe how third-party code is deployed on a blockchain.
- Explain how dApps are created and connected to smart contracts.
- Explain how assets can be tokenized in digital form.
- Compare fungible and non-fungible tokens (NFTs).
- Discuss examples of common services in decentralized finance.
- Describe how a DAO (decentralized autonomous organization) operates.

7.1.3: Demonstrate knowledge of the history and design of Bitcoin.
Including:

- Discuss the relevance and influence global economic conditions had on the creating and timing of Bitcoin.
- Explain the original motivations cited in the Bitcoin whitepaper for creating a decentralized currency.
- Understand the unspent transaction output model.
- Explain the process of a Bitcoin transaction.
- Discuss Bitcoin’s monetary policy.
- Analyze the effect of Bitcoin’s monetary policy on the value of Bitcoin.
- Explain the Bitcoin mining process.
- Evaluate the likelihood and impact of a 51% attack on the Bitcoin network.

7.1.4: Demonstrate knowledge of the history and design of Ethereum.
Including:

- Discuss the history/creation of Ethereum.
- Contrast the Ethereum blockchain with the Bitcoin blockchain.
- Explain smart contracts.
- Describe the Ethereum Virtual Machine.
- Understand the origins of Ethereum Classic.
- Evaluate the decision to hard fork the Ethereum blockchain following the DAO hack.
- Explain gas.
- Distinguish between native and non-native tokens.
- Contrast fungible from non-fungible tokens.
- Understand the Proof of Stake (PoS) consensus mechanism.

- Evaluate the decision for the Ethereum blockchain to transition from Proof of Work (PoW) to PoS.
- Describe staking.
- Assess the value proposition of Ethereum.

7.1.5: Demonstrate knowledge of Payments & Token Currencies.
Including:

- Distinguish between the four major digital asset categories.
- Understand the major applications of digital payments, including stablecoins, CBDCs, and credit cards.
- Evaluate the role of stablecoins within the digital asset ecosystem.
- Discuss the current state of central bank digital currencies.
- Contrast fungible and non-fungible tokens.
- Discuss the various types of tokens and their use cases.

7.1.6: Demonstrate knowledge of decentralized finance and Web 3.0.
Including:

- Understand the major applications of decentralized finance (DeFi) and DAOs.
- Describe decentralized exchanges.
- Explain the role of blockchain oracles.
- Contrast DeFi lending and borrowing with traditional financial lending and borrowing.
- Discuss DeFi insurance.
- Understand yield farming.
- Understand the applications of Web 3.0 and its interactions with other applications, including gaming, social media, and financial services.

Reading 7.2: Allocating to Cryptocurrencies

7.2.1: Demonstrate knowledge of institutional investment in digital assets.
Including:

- Summarize the roles of digital assets in institutional investment portfolios.
- Discuss methods institutional investors can follow when starting a digital assets allocation.
- Discuss the potential innovations in blockchain technology that could impact institutional investors in the coming years.

7.2.2: Demonstrate knowledge of the potential roles of digital assets in diversified investment portfolios.
Including:

- Understand the importance of diversification and the impact of asset correlations on portfolio performance.
- Discuss the key considerations for investors when adding crypto to their portfolios.
- Explain the Monte Carlo approach to modeling a Bitcoin allocation within a 60/40 portfolio.

7.2.3: Demonstrate knowledge of cryptocurrency and blockchain technology risks.
Including:

- Distinguish between risks related to blockchain technology and risks related to digital assets.
- Evaluate liquidity risk of digital assets.
- Assess counterparty risk in digital assets.
- Assess systemic risk in cryptocurrencies.
- Discuss technology/coding risk.
- Discuss obsolescence risk.
- Analyze governance factors.
- Understand the 51% attack.
- Understand how future issuance influences inflation.

- Explain the issue of scalability.
- Evaluate interoperability risk.
- Discuss the risk of fraud, hacks, and other scams.

The following is a review of the Private Debt principles designed to address the learning objectives set forth by CAIA Association®. Cross-reference to CAIA Association Reading 5.1.

READING 5.1

PRIVATE CREDIT AND CASH BASED STRATEGIES

Topic 5

EXAM FOCUS

This reading focuses on private credit and cash-based strategies. For the exam, understand private credit, distressed debt, loan-to-own strategies, fulcrum securities, and the basic risk and return characteristics of private credit. Also know credit risk analysis, including credit spreads, default risk, covenants, the capital stack, recovery rates, and bankruptcy. Be familiar with bonds versus loans, leveraged loans, direct lending, mezzanine debt, venture debt, and distressed debt strategies. Finally, understand infrastructure debt, including its growth drivers, senior and subordinated structures, alternative financing approaches, and how it compares with corporate direct lending and real estate debt.

PRIVATE CREDIT STRATEGIES

LO 5.1.1: Demonstrate knowledge of private credit strategies as well as private credit performance and diversification.

Including:

- **Define private credit and distressed debt.**
- **Discuss funds with a loan-to-own objective.**
- **Discuss fulcrum securities and reorganization.**
- **Evaluate private credit performance.**

Private Credit and Distressed Debt

Alternative asset managers will often focus fixed-income investing strategies on assets with high return potential. One such category is **private credit**, which is a collection of leveraged loans and direct lending that is not offered on public markets. Another option is **distressed debt**, which involves companies in financial duress or potentially in or near bankruptcy. Distressed debt has an equity-like component because these debts will sometimes convert into an equity stake under certain circumstances. Both private credit and distressed debt are relatively illiquid, which means that access through traditional (i.e., open-end) mutual funds is not common. These assets are mostly offered through pooled investments like hedge funds, private equity funds, and business development companies (BDCs). Because of the illiquid nature of these asset classes, BDC prices are often very volatile and trade at a discount/premium to net asset value (NAV).

The market for private credit and distressed debt grew from $200 billion in 2007 to $600 billion just one decade later. However, approximately one-third of this amount has been held as **dry powder**, which is money committed for investment but not yet called by the fund manager. When there is an oversupply of dry powder, credit spreads tend to be reduced and covenants tend to be very issuer friendly. Conversely, if there is an undersupply of dry powder, then loan rates could go up, funding could be lacking for buyout activity, and some smaller firms could have a difficult time securing the necessary funding.

Funds With a Loan-to-Own Objective

Some private credit investors operate under a **loan-to-own investment** in which they heavily scrutinize the assets owned by potential borrowers because the intention is to become an equity owner in the event of bankruptcy. In some cases, lenders actually want the firm to default on its payments so that they can assume an equity position and gain control of a desired resource (e.g., unique talent, real estate holdings, intellectual property).

Fulcrum Securities

A **fulcrum security** is the claim at the valuation break in a restructuring—typically the most senior class that is not expected to be paid in full and is therefore likely to receive equity in the reorganized company. For these securities, conversion from debt to equity is very likely. For example, a fulcrum security might be the second-lien debt of a security trading at 25% of par due to

bankruptcy concerns. It could have a conversion feature that exchanges the debt security for an equity stake in the firm equal to 35% of the par value. Because the firm is in distress, it is likely that it will shed some of its debt, which would be converted into equity at a discounted price. The appreciation potential could be very high if the firm recovers from its distressed situation.

Many insurance companies and pension funds have prohibitions against owning more than a small amount (i.e., 5%) of noninvestment-grade debt and a complete prohibition against owning nonperforming debt or firms in bankruptcy. They will need to sell any securities that they own if the firm encounters financial distress. Hedge funds and private equity funds step in to provide these sellers with liquidity, albeit at very low prices. Because of the very public distress of the firm and the selling pressure, both debt prices and equity prices are likely to be depressed. If this downward pressure is temporary and the firm is able to turn things around with less debt on the books (due to conversion to equity stakes), then fulcrum investors could make a substantial profit. There is always the chance that the business continues its decline or enters bankruptcy a second time, in which case the fulcrum investor could lose their capital.



PROFESSOR'S NOTE

Some hedge fund and private equity investors are not pursuing long-term returns with fulcrum securities. They are looking for short-term trading profits to capitalize on low bids and the potential for the perception of a fast turnaround.

Private Credit Performance

It is important for alternative asset managers to understand the risk and return profiles of the various private credit securities. This is necessary to consider how these assets might fit into their asset allocation mix. Munday has evaluated these characteristics, which are presented in Figure 5.1A and throughout this section.[1]

Figure 5.1A: Observed Risk and Return Characteristics for Private Credit Securities From 2004 to 2016

	Less Liquid			More Liquid		
	Mezzanine Debt	Direct Credit Ex-Mezzanine	Distressed Debt	High-Yield Debt	BDCs	Leveraged Loans
Adjusted Standard Deviation	5.1%	6.7%	13.5%	11.5%	29.8%	11.0%
Average Returns	7.7%	11.8%	8.9%	8.2%	N/A	5.5%

Figure 5.1A shows that direct credit ex-mezzanine and distressed debt have the two highest average returns. Direct credit ex-mezzanine also has relatively low adjusted volatility, while distressed debt has a higher adjusted standard deviation than high-yield debt and leveraged loans. These standard deviations were adjusted using autocorrelation techniques because the less-liquid assets trade infrequently and traditional standard deviations are less useful. The presence of illiquidity and complexity makes standard deviation a potentially unfair comparison, but the returns do favor private credit ex-mezzanine and distressed debt.

Correlation is also a key consideration for asset allocation. The pairwise correlations for distressed debt, BDCs, leveraged loans, and high-yield bonds were in the range of 0.8 to 0.9. However, direct credit ex-mezzanine had pairwise correlations between 0.2 and 0.3 relative to high-yield bonds, leveraged loans, and BDCs. Lower correlations mean better diversification.

An analysis of the risk and return characteristics of private credit securities reinforces that the most successful investors buy low and sell high. Investors in private credit who provide liquidity for forced sellers (i.e., pension funds, insurance companies, and other investment companies that need to sell nonperforming debt securities) have the potential to earn superior returns. Munday also finds that the maximum drawdown for mezzanine debt was 15% during the financial crisis of 2007–2009, while it was 50% for BDCs. The level of downside risk is minimized when investors buy at a low price.

CREDIT RISK ANALYSIS

LO 5.1.2: Demonstrate knowledge of credit risk analysis and the bankruptcy process.

Including:

- **Explain the underpinnings of credit risk.**
- **Understand credit ratings, yields, and financial ratios.**
- **Interpret credit spreads and credit risk.**

- **Discuss credit risk and its relationship to risk of default.**
- **Discuss covenants on debt.**
- **Explain the five ways that covenants can control risk.**
- **Describe capital structure and the priority of payment.**
- **Discuss recovery rates.**
- **Explain distressed debt and how it relates to the bankruptcy process.**

Credit risk is the variability in financial outcomes related to firm failure or default. Unlike market risk, which is a systematic risk, credit risk contains idiosyncratic (firm-specific) risk. Idiosyncratic risk leads to performance issues for individual securities. The return distribution for market risk is relatively symmetric, with opportunities on both the upside and downside. Credit risk, on the other hand, is skewed to the left. That is, exposure to credit risk in a corporate bond yields a limited upside (the receipt of promised interest payments and the recovery of principal), while the downside risk is the loss of the entire investment from bankruptcy or default.

Default risk is the risk that the issuer of a bond (or debtor on a loan) will not meet the obligations of the issue. The borrower is deemed to be in default if it fails to make a scheduled interest or principal payment. Note that default can be partial or complete. In a partial default, a portion of the outstanding debt is recoverable by the lender. In a complete default, the debtor does not repay any of the amount owed.

A credit spread is an asset's yield over the yield of a risk-free benchmark with a similar time-to-maturity. An increase in an asset's spread indicates that the asset will underperform. For example, if the risk-free benchmark trades at 6%, and a credit-risky security trades at 8%, the credit spread is 2%. If the credit spread subsequently increases to 2.5%, the price of the credit-risky asset must have fallen relative to the benchmark security. A credit spread increase is the result of the market reacting to a perceived deterioration in credit quality.

Both macroeconomic and idiosyncratic changes affect credit spreads. Periods of economic slowdown are associated with larger credit spreads as revenues and earnings decrease, lowering interest coverage ratios. During liquidity crises, credit spreads increase as investors demand greater compensation for holding less-liquid securities. Firm-specific issues that result in declining revenues and earnings will also cause credit spreads to increase as the credit quality of the firm worsens. In the United States, the credit-risky fixed income market is commonly called the spread product market because these securities trade at yields that include a credit spread.

Much of the private credit market is not considered to be investment grade. For this reason, credit risk analysis is a very important skill for alternative asset managers.

Credit Ratings, Yields, and Financial Ratios

Bond rating agencies (e.g., Moody's and S&P) are paid to assign letter ratings to bonds and some large loans. Debt rated as *investment-grade* (i.e., Moody's rating of Baa or higher and S&P rating of BBB or higher) will enjoy lower default rates and lower credit spreads. Many smaller (and private) loans are not rated. This presents a challenge to fixed-income investors in private markets. They need an alternative method for assessing credit risk and applying appropriate credit spreads over risk-free assets.

Investment-grade issuers tend to have some common traits. They often have higher profit margins, lower leverage, and lower interest expense. Firms with lower volatility in revenue and profit margins are also usually listed in this category.

One common method to assess credit risk for privately traded fixed-income securities is to follow the same process used by Moody's and S&P and manually assign a credit rating. This process could enhance estimates of credit spreads and make the pricing of private assets more scientific. Consider the data presented in Figure 5.1B. In this data, interest coverage is measured by earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by interest expense, and leverage is measured as total debt divided by EBITDA.

Figure 5.1B: Leverage and Interest Coverage by Assigned Credit Rating

Moody's	S&P	Interest Coverage	Leverage
Aaa	AAA	11.5	1.9
Aa	AA	13.9	1.8
A	A	10.7	2.3
Baa	BBB	6.3	2.9
Ba	BB	3.7	3.7
B	B	1.9	5.2
Caa	CCC	0.7	8.1

Source: Moody's Financial Metrics

In this context, an alternative asset manager investing in the private credit markets could calculate the interest coverage and leverage for a private loan

issuer. Perhaps the interest coverage for the issuer is 6.8, and the leverage is 2.45. This falls between a rating of A and BBB in Figure 5.1B. An analyst could assign this private loan a rating of BBB because it is very close to the metrics for that rating and assign a credit spread based on comparable publicly traded issuers with the same credit rating level.

Credit Spreads and Credit Risk

A **credit spread** is the difference in yield demanded between risk-free bonds and bonds with varying levels of default risk. This spread is measured only for bonds with the same maturity. For example, if a 10-year Treasury bond's yield is 1.85% and a 10-year corporate bond's yield is 3.00%, then the credit spread is 1.15% (= 3.00% – 1.85%). By definition, the credit spread on a risk-free bond will be zero, but the value will increase as default risk increases.



PROFESSOR'S NOTE

The credit spread is directly related to the amount of credit risk exposure embedded into a bond issue. Higher credit spreads equate to higher credit risk. Investment-grade bonds will have a positive credit spread that is relatively small.

In 2018, US investment-grade bonds typically had a credit spread of 1.0%. However, a BBB-rated bond will have a higher credit spread than an A-rated bond because there is an incrementally higher likelihood of default. Noninvestment-grade bonds (i.e., high-yield, speculative, or junk bonds) have considerably higher credit spreads because their probability of default is much higher than for investment-grade alternatives.

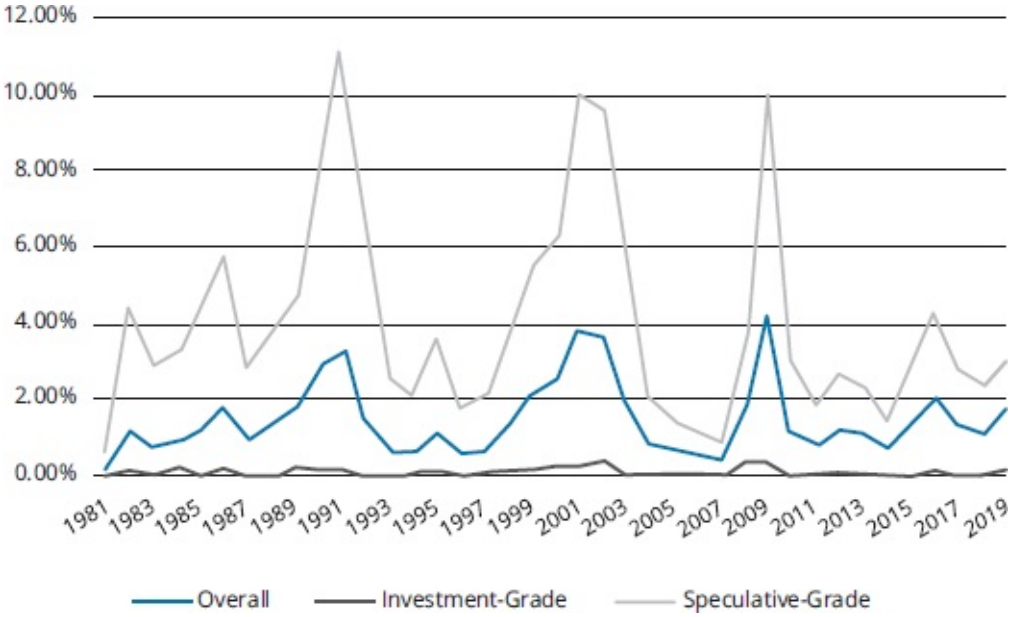
Using credit spreads to build projections can be challenging. Credit spreads on speculative-grade bonds are highly uncertain and volatile. Estimates of credit spreads in this area are very unreliable, and they become even more so as time increases. For this reason, most estimations of speculative-grade credit spreads are very short term in nature, and most speculative-grade bonds also have short-term maturities.

Relationship Between Credit Risk and Risk of Default

The amount of perceived credit risk is directly related to the amount of perceived default risk present. Historically, investment-grade bonds have had considerably

less default risk than speculative-grade debt. Consider the default rate data presented in Figure 5.1C.

Figure 5.1C: Default Rates on Investment-Grade and Speculative-Grade Debts[2]



In Figure 5.1C, it is apparent that speculative-grade bonds have substantially higher default risk, which will translate into higher credit spreads. There were three spikes that occurred during this time period. During 1991, defaults on speculative-grade debt jumped to 11.05%, while it was only 0.14% on investment-grade debt. During 2001 and 2002, defaults averaged 9.68% on speculative-grade bonds and only 0.32% on the less risky investment-grade issues. The financial crisis of 2007–2009 also produced a spike. In 2009, default rates reached 9.94% on speculative-grade debt, while investment-grade bonds only hit 0.33%.

This data also displays the cyclical nature of default risk (and, by default, credit spreads). If an analyst used the average default rate on speculative-grade bonds from 1996 through 1998 as a measure of a reasonable default risk, then they could have been significantly hurt during the next few years as default rates spiked. This reality simply means that forecasting default rates is very challenging. Analysts should limit forecasts to short-term time periods.

Debt Covenants

A **debt covenant** is a series of written promises made by a borrower to a lender. These promises become more restrictive as a borrower’s creditworthiness