A Study on the Investment Value Assessment of Chow Tai Fook Jewellery Group Based on Stock Valuation Models

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This Independent Study Has Been Approved as a Partial Fulfillment of the Requirements for the Degree of Master of Business Administration

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ABSTRACT

Since 2020, global gold price fluctuations and the liquidity discount in the Hong Kong stock market have jointly driven the share price of Chow Tai Fook Jewellery Group (1929.HK) down from HKD 21 to around HKD 12. The valuation divergence has become significant, and traditional indicators such as the Price-to-Earnings (P/E) and Price-to-Book (P/B) ratios fail to explain the company's profit volatility. Therefore, it was particularly important to examine how cash flow forecast accuracy, strategic orientation of capital expenditure planning, and efficiency of working capital management influence enterprise valuation, in order to identify the key variables causing market valuation deviations. These factors collectively form the critical components that require adjustment within the Discounted Cash Flow (DCF) valuation framework.

Accordingly, this study established the following research objectives: (1) To examine the impact of the discount rate on the investment value of Chow Tai Fook Jewellery Group; (2) To examine the impact of gold price fluctuations on the investment value; (3) To examine the impact of inventory management efficiency on the investment value.

This research adopted a quantitative methodology, centering on the DCF cash flow discount model, and treated the discount rate, gold price, and inventory management efficiency as key variables for investment value assessment. The study drew upon Chow Tai Fook's FY2020–FY2024 annual reports and Bloomberg terminal data to calibrate the Weighted Average Cost of Capital (WACC), perform Monte Carlo simulations, and conduct inventory–cash elasticity regressions. The empirical findings are as follows: (1) A decrease in the discount rate leads to an

increase in enterprise investment value; (2) Within the normal fluctuation range studied,rising gold prices result in a higher enterprise investment value; (3) Higher inventory management efficiency reflected by a reduction in inventory days correlates positively with an increase in enterprise investment value.

Based on these findings, three research recommendations are proposed: (1) Lower the discount rate and maintain WACC below 9%, thereby widening the gap between the current market price and the new valuation. Investors can then enter at a lower price level with reduced downside risk. (2) Stabilize gold prices through hedging up to 50%, locking in future prices in advance and mitigating valuation volatility arising from gold price fluctuations. (3) Incorporate inventory turnover days into performance evaluation and link them to executive incentives, setting an annual management target of reducing turnover days by at least eight, to secure cash flow and sustain enterprise value growth.

Keywords: investment value asseessment, stock valuation model, gold price fluctuation, inventory management efficiency

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LI JING

Declaration

I, LI JING, hereby certify that the work embodied in this independent study entitled *"A Study on the Investment Value Assessment of Chow Tai Fook Jewellery Group Based on Stock Valuation Models"* is result of original research and has not been submitted for a higher degree to any other university or institution.

Sep.25,2025

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Chapter 1 Introduction

1.1 Background of study

In recent years, amid ongoing global economic turbulence and the continuous reconstruction of market valuation systems, enterprise valuation methodologies have faced unprecedented challenges. Particularly within the jewelry retail industry-characterized by fluctuations in raw material prices, policy uncertainties, and evolving consumer behaviors-traditional valuation indicators such as the Price-to-Earnings (P/E) and Price-to-Book (P/B) ratios have become increasingly inadequate in reflecting a company's intrinsic value (Damodaran, 2012).

Taking Chow Tai Fook Jewellery Group (1929.HK) as the research subject, although the company has maintained a stable expansionary trend since FY2020, its share price has declined from a peak of HKD 21 to around HKD 12. This depreciation has been driven by the combined effects of volatile global gold prices, expectations of consumption tax reform in mainland China, and persistent liquidity discounts in the Hong Kong stock market. Such valuation fluctuations reveal a systematic misjudgment by the market regarding the company's profitability, cash flow quality, and asset liquidity. Consequently, it was crucial to construct a more penetrating valuation framework that accurately captures the formation mechanism of corporate intrinsic value and provides scientific evidence for both investors and management.

The Discounted Cash Flow (DCF) model, as one of the core approaches in modern corporate valuation, emphasizes the present value of expected future free cash flows to assess a firm's long-term value-creation capacity (Koller et al., 2020). Unlike static accounting-based indicators, the DCF framework focuses on the sustainability, stability, and time value of cash flows, making it particularly appropriate for capital-intensive and expansion-driven enterprises such as Chow Tai Fook. Nevertheless, the model's outcomes are highly sensitive to forecasting assumptions. Variables such as capital expenditures, net working capital changes, and the discount rate can substantially influence valuation results, which underscores the necessity of improving model robustness and sensitivity management (Penman, 2013).

The discount rate, represented by the Weighted Average Cost of Capital (WACC), serves as the cornerstone of DCF modeling. It reflects not only the firm's financing structure and capital costs but also investors' perception of systematic risk (Brealey et al.,2019). In most practical applications, WACC was often determined empirically-for example, in Hong Kong's jewelry industry, a benchmark rate of approximately 9% was commonly adopted-without sufficient adjustment for firm- or industry-specific risks. As Environmental, Social, and Governance (ESG) considerations increasingly influence capital market pricing mechanisms (Friede et al.,2015; Krüger, 2015), it

becomes essential to incorporate ESG-related risk premiums into WACC estimation. This prevents underestimation of external uncertainties and aligns with emerging sustainability-aware valuation practices. For Chow Tai Fook, whose raw material sourcing involves exposure to environmental and labor issues, and whose expansion in mainland China faces governance and franchise management challenges, failure to include an ESG premium could result in overvaluation of future free cash flows and a distorted enterprise value assessment.

Moreover, Chow Tai Fook's business model introduces unique structural adjustments to cash flow forecasting. Given its substantial reliance on gold spot procurement and inventory management, working capital consumes a significant proportion of operating cash. Traditional DCF models typically treat working capital as static; however, in practice, variations in inventory turnover directly affect cash availability. Prior studies have confirmed that efficient working capital management can significantly enhance firm value, especially within the retail sector, where accelerated inventory turnover releases additional cash flows and improves enterprise valuation (Baños-Caballero et al.,2012; Aktas et al.,2015). Conversely, when inventory efficiency declines, free cash flows may be constrained even amid apparent revenue growth, leading to downward valuation bias within the DCF framework. Consequently, constructing a regression model linking inventory turnover and cash flow generation was a critical enhancement to the precision of DCF valuation.

Considering the high uncertainty in cash flow forecasting caused by fluctuations in gold prices, applying Monte Carlo scenario simulation was an effective technique to enhance the robustness of valuation outcomes. This method assigns probability distributions to key parameters—such as discount rate, sales growth rate, and gold price—and performs extensive random sampling to generate a probabilistic distribution of firm value, thereby identifying potential risk ranges and safety margins (Joy et al.,1996). For companies like Chow Tai Fook, which are highly exposed to gold price volatility and macroeconomic policy shifts, static valuation models often fail to capture tail risks under extreme conditions. By setting gold price variations within a ±10% range and conducting tens of thousands of simulations, it was possible to derive the 10th–90th percentile valuation range, thus providing more resilient and decision-oriented insights for investors.

In conclusion, integrating DCF valuation theory, WACC modeling, working capital efficiency analysis, and Monte Carlo simulation techniques enables a comprehensive understanding of Chow Tai Fook Jewellery Group's value formation process under conditions of expansion, material cost volatility, and policy risk. This analytical framework not only contributes theoretical innovation to enterprise valuation under uncertainty but also offers a pragmatic and data-driven approach for investment decision-making and corporate governance in today's highly volatile

capital markets.

1.2 Questions of the Study

This study aims to evaluate the corporate value of Chow Tai Fook Jewellery Group, with the issue of enterprise value assessment precisely centered on three key dimensions that influence DCF valuation outcomes. The discount rate represents macro-financial conditions and systemic risk; the gold price serves as the core external market variable determining future cash flows; and inventory management efficiency reflects the internal operational capability to regulate and optimize cash flow.

By quantitatively addressing these dimensions, the study seeks to empirically examine the specific mechanisms and magnitudes through which these three factors affect Chow Tai Fook's enterprise value, thereby fulfilling the overall research objectives. Within the DCF valuation framework, the analysis focuses on examining how the discount rate (macroeconomic and financial environment), gold price (external commodity environment), and inventory management efficiency (internal operational capacity) collectively shape the firm's valuation dynamics. These three elements form an integrated empirical analysis system grounded in the DCF model.

In summary, the research questions are not merely concerned with refining the logic of the DCF valuation model, but more importantly, with identifying the critical variables that drive valuation discrepancies. This enables the provision of more comprehensive and accurate investment insights for investors and other market participants.

1.3 Objectives of the Study

This study takes Chow Tai Fook Jewellery Group (1929.HK) as the research subject and focuses on the modification and optimization of the Discounted Cash Flow (DCF) model in practical enterprise valuation. The purpose was to establish a comprehensive valuation framework that combines financial modeling rigor with applicability in investment decision-making.

The specific study objectives are as follows:

(1) To examine the impact of the discount rate on the investment value of Chow Tai Fook Jewellery Group;

(2) To examine the impact of gold price fluctuations on the investment value of Chow Tai Fook Jewellery Group;

(3) To examine the impact of inventory management efficiency on the investment value of Chow Tai Fook Jewellery Group.

1.4 Scope of the Study

This study was based on the financial data of Chow Tai Fook Jewellery Group (1929.HK) from fiscal years 2020 to 2024. It adopted the Discounted Cash Flow (DCF) model as the core valuation tool and conducts systematic modeling and analysis around key parameters such as the Weighted Average Cost of Capital (WACC), gold price volatility, and inventory turnover efficiency. The research aimed to construct a DCF valuation framework that integrates industry cycle characteristics, commodity price fluctuations, and operational efficiency. This framework was designed to quantify market misperceptions of Chow Tai Fook's stock value and to propose an intrinsic value range that more accurately reflects the company's underlying business fundamentals.

Vertically, the study delved into the interaction mechanisms among key variables within the firm's financial structure, including the composition of free cash flow, the exclusion of non-operating cash flows, the strategic orientation of capital expenditures, and the efficiency logic behind changes in working capital. Horizontally, it focused on the bidirectional impact of gold price fluctuations on revenue and cost structures. It also incorporated specific operational features such as store expansion pace, franchise model design, and raw material inventory levels to explore how the DCF model can achieve dynamic adjustments and robust valuation outcomes.

In terms of the technical approach, the study first reconstructed the free cash flow forecasting model by decomposing cash generation capacity across different business segments (e.g., gold products and gem-set jewelry). Second, it determined WACC based on the Capital Asset Pricing Model (CAPM) and introduces an additional 0.5% ESG premium for adjustment. Third, the study employed Monte Carlo scenario simulation, applying a ±10% distributional disturbance to gold prices to generate a probabilistic valuation range. Finally, a regression analysis was conducted to establish a quantitative relationship between inventory turnover and free cash flow, measuring the marginal impact of inventory efficiency changes on per-share value.

In summary, by excluding complex exogenous variables such as taxation and exchange rate effects, this study focused on three core drivers-discount rate, gold price, and inventory efficiency. It not only contributes to the academic understanding of DCF model applications within the jewelry industry but also provides investors, analysts, and corporate managers with a clear and practical tool for enterprise value assessment.

1.5 Significance of the Study

This study integrates both theoretical innovation and practical guidance by

dynamically refining and empirically applying the Discounted Cash Flow (DCF) model, aiming to construct a more scientific and actionable analytical framework for corporate valuation in high-volatility and strongly cyclical industries.

At the theoretical level, the research extends the classical free cash flow discounting model by systematically incorporating three methodological enhancements: an ESG premium–adjusted WACC configuration, a Monte Carlo simulation based on gold price volatility, and the quantitative integration of inventory turnover efficiency as an operational variable. These innovations expand the adaptability of the DCF model under intertwined uncertainty conditions. In particular, the modeling of inventory utilization's impact on free cash flow introduces a quantifiable operational perspective into enterprise valuation studies, enhancing the model's ability to capture tangible business dynamics and enriching the fine-grained application of valuation theory within resource-intensive industries.

Against the backdrop of elevated gold price fluctuations and divergent capital market valuations, the market pricing of jewelry enterprises such as Chow Tai Fook often deviates from their fundamental value. Traditional valuation methods struggle to fully reflect the dynamic drivers of intrinsic value. By constructing a multi-scenario DCF model centered on gold price dynamics and operational efficiency, this study identifies key variables influencing the valuation range, providing investors with a foundation for recognizing undervalued opportunities and formulating rational allocation strategies. Meanwhile, the study's analysis of the linkage between inventory turnover and cash flow efficiency offers practical managerial insights for optimizing inventory structure and enhancing capital utilization efficiency, thereby demonstrating strong applicability and strategic relevance for both investors and corporate managers.

Chapter 2 Literature Review

2.1 Introduction

The Discounted Cash Flow (DCF) model remains one of the most fundamental tools for modern corporate valuation. The core principle of DCF was to determine a firm's intrinsic value based on its future free cash flows discounted at an appropriate rate to reflect the time value of money and risk (Steiger, 2010). The model generally consists of two parts: the free cash flows during the explicit forecast period and the terminal value. Since the terminal value often represents the largest portion of total valuation, the choice of perpetual growth rate (g) and discount rate (r) becomes critical to the model's precision (Damodaran, 2012). Compared with relative valuation models-such as the price-to-earnings (P/E) or price-to-book (P/B) ratio-DCF analysis more accurately captures a firm's true cash-generating capability, making it particularly suitable for capital-intensive industries with high inventory holdings (Steiger, 2010).

However, the DCF model was highly sensitive to its input variables—including growth rate, capital expenditures, changes in working capital, and the discount rate—making uncertainty assessment and scenario simulation particularly crucial. In recent years, researchers have increasingly combined sensitivity analysis with probabilistic modeling to address the limitations of traditional single-point DCF valuation (Trigeorgis & Tsekrekos, 2018). Among these methods, Monte Carlo simulation assigns probability distributions to key input variables (such as gold prices, exchange rates, and tax rates) and performs thousands of random iterations to generate a full probabilistic distribution of valuation outcomes. This approach reveals the underlying uncertainty structure of valuation results and provides investors with confidence intervals and extreme risk boundaries (Trigeorgis & Tsekrekos, 2018; Pascolo, 2019). Furthermore, Pascolo (2019) emphasized that embedding Monte Carlo simulation within the DCF framework not only enhances the model's robustness but also allows for a more accurate quantification of how macroeconomic and policy variables transmit to firm value.

The Weighted Average Cost of Capital (WACC) serves as the core discount rate in the DCF model, representing investors' required return given the risk of a firm's future cash flows. By integrating the cost of equity, cost of debt, tax shields, and market risk premiums, WACC reflects the overall capital structure and risk profile of a firm (Brealey et al.,2020). With the evolution of global financial markets and the growing importance of sustainable investing, scholars have further extended the WACC framework to include country risk premiums, liquidity risk premiums, and Environmental, Social, and Governance (ESG) factors, thereby capturing the

influence of non-financial risks on capital costs (Pedersen et al., 2021). Empirical studies suggest that incorporating ESG considerations into the estimation of capital costs allows for a more accurate reflection of a firm's long-term sustainability risk and policy sensitivity, thereby enhancing the robustness of valuation outcomes (Pedersen et al., 2021; Graham & Harvey, 2001).

In addition, operational efficiency, particularly inventory turnover efficiency, plays a critical role in the DCF model. Changes in inventory turnover directly affect working capital (ΔWC), thereby altering both the magnitude and timing of free cash flows (Gaur et al., 2005). In industries with high inventory intensity and strong cyclicality—such as jewelry and retail—even minor fluctuations in inventory days can significantly impact cash flow dynamics and introduce nonlinear effects on valuation. Prior studies have demonstrated that improving inventory turnover not only enhances liquidity but also strengthens profitability and overall firm value (Chuang et al.,2019; Srour & Azmy, 2021). Therefore, in DCF modeling for the jewelry sector, incorporating inventory turnover efficiency as a functional variable within the cash flow forecast can effectively quantify the marginal effects of operational improvements or deteriorations on firm valuation.

In summary, integrating DCF methodology with WACC analysis, Monte Carlo simulation, and inventory-turnover efficiency forms a comprehensive and robust valuation framework. This approach allows for a more accurate estimation of Chow Tai Fook Jewellery Group's intrinsic value while capturing the effects of gold-price volatility, consumption cycles, and policy uncertainty-offering investors a transparent and data-driven basis for decision-making.

2.2 Investment Value Assessment

2.2.1 Theoretical Foundations of Investment Value Assessment

The theoretical foundation of investment value assessment lies in the principle that the intrinsic value of an asset equals the present value of its expected future cash flows. This view originates from John Burr Williams' seminal work, Theory of Investment Value (1938), which formalized the dividend discount model and established discounted cash flow (DCF) as the cornerstone of valuation theory. Subsequent developments in corporate finance expanded this concept by incorporating free cash flow to the firm (FCFF), making valuation a function of both operating performance and capital structure (Damodaran, 2012).

In contemporary research, investment value assessment is understood as a structured process integrating quantitative estimation, market calibration, and risk adjustment to capture a firm's economic worth beyond accounting indicators (Penman, 2021). Talas (2015) emphasized that despite variations among valuation methods—such as earnings-based, asset-based, and cash flow-based models—the

underlying logic remains consistent: value equals the discounted future benefit stream. This theoretical consistency provides a unifying foundation for empirical applications across industries.

2.2.2 Evolution of the Discounted Cash Flow (DCF) Framework

The DCF model has long been the dominant analytical framework in investment value assessment due to its theoretical rigor and internal consistency. However, researchers have also highlighted its practical challenges. Steiger (2010) argued that while DCF provides an objective structure, its outcomes are highly sensitive to input assumptions such as growth rate, terminal value, and discount rate. Fernandez (2005) identified seven conceptual controversies within DCF literature, including the treatment of tax shields, discount rate estimation, and the consistency between free cash flow and cost of capital assumptions.

Modern adaptations of DCF incorporate probabilistic simulation and scenario analysis to handle uncertainty in financial projections. Hull (2018) and Heaton (2022) proposed integrating Monte Carlo simulation into DCF to generate a distribution of potential valuations rather than a single deterministic figure, thereby reflecting real-world uncertainty. Likewise, the “modern DCF” approach suggested by FTI Consulting (2023) emphasizes embedding macroeconomic variables, market-based signals, and firm-specific risks into valuation models. This methodological evolution enhances both the explanatory and predictive power of DCF in dynamic markets.

2.2.3 Key Determinants of Investment Value

Free cash flow (FCF) forms the analytical foundation of investment value assessment. According to Kolleret al.(2020), FCF reflects a company’s ability to generate cash from operations after maintaining and expanding its asset base. Errors in forecasting can significantly distort valuation results, as FCF projections are influenced by operational performance, capital expenditure, and working capital efficiency. Cifuentes (2016) noted that both “expected future cash flows” and the “appropriate discount rate” are inherently uncertain and subjective, which explains much of the divergence among analyst valuations.

The discount rate—or weighted average cost of capital (WACC)—translates future cash flows into present value by incorporating time value and risk. It represents investors’ required rate of return and serves as a key leverage factor for valuation sensitivity. A lower WACC directly increases the present value of expected cash flows, thereby elevating intrinsic enterprise value (Damodaran, 2012). As Fernandez (2019) pointed out, small changes in the cost of capital (even 0.5%) can lead to significant differences in company valuation, highlighting the necessity of precise calibration using market-based parameters.

Real-world valuation requires explicit incorporation of uncertainty. Sensitivity analysis, scenario analysis, and Monte Carlo simulation are standard methods for

quantifying valuation volatility. Heaton (2022) observes that DCF valuation is "explainable but untestable," meaning that while its structure is logical, its parameters cannot be empirically validated due to inherent uncertainty. Therefore, modern investment value assessment increasingly adopts stochastic modeling and probabilistic forecasting to depict valuation as a range rather than a point estimate, improving its decision-making relevance.

2.3 Stock Valuation Models

2.3.1 Discounted Free Cash Flow (DCF)

The Discounted Cash Flow (DCF) model represents a fundamental framework in modern corporate valuation theory. It conceptualizes firm value as the present value of expected future free cash flows discounted by a rate that reflects the firm's risk profile and capital structure. This approach has been refined over decades of research in financial economics, particularly through the development of capital structure and cash flow valuation theories. Contemporary studies highlight that under efficient market assumptions, firm value was primarily determined by its operating cash flows rather than dividend policy or financing decisions (Brealey et al.,2020). Furthermore, advances in corporate finance and valuation techniques have expanded DCF applications by integrating risk-adjusted discount rates, sustainable growth assumptions, and scenario-based modeling (Koller et al.,2020; Damodaran, 2022). These developments have reinforced the DCF model's position as the dominant tool for intrinsic valuation, especially in capital-intensive and cyclical industries.

Building on this foundation, financial scholars and practitioners gradually extended the dividend discount model to the Free Cash Flow to the Firm (FCFF) framework. FCFF was defined as EBIT·(1-t)+depreciation and amortization-capital expenditures-changes in working capital. By focusing on cash flows available to all capital providers, FCFF avoids distortions arising from discretionary dividend policies and makes DCF the mainstream approach in M&A, IPO valuation, and long-term investment analysis (Koller et al., 2020).

Since the 2010s, research focus has shifted from "model construction" to "parameter risk" and "scenario analysis." Berk and DeMarzo (2020) demonstrated, via Monte Carlo simulation, the joint stochastic processes of sales revenue, raw material prices, and tax rates, illustrating that traditional single-point DCF often underestimates tail risk. They recommend reporting at least the 10th to 90th percentile valuation range. Damodaran (2020) further integrated ESG premiums, country risk, and liquidity discounts into WACC, showing through empirical analysis of emerging-market consumer companies that a 0.5-1 percentage point premium increase can reduce firm value by 8-12%, which was particularly relevant for policy-sensitive sectors such as gold and jewelry.

Regarding discount rates, early research focused on CAPM parameters. Fama and French (1997) noted that different sample periods and methods for estimating market risk premium and beta can cause equity cost (Re) to fluctuate by 2–3 percentage points. Breeden (1979) proposed the Consumption-CAPM (CCAPM), using consumption growth as a systematic risk factor, providing a theoretical foundation for incorporating macroeconomic variables into discount rates. In recent years, with the rise of ESG investing, studies have documented that governance, supply chain, and climate risks translate into additional required returns. Pedersen et al. (2021) showed, based on a panel of 4,000 global firms, that a 10-point decrease in ESG score results in an additional annualized required return of approximately 0.45%. This finding has been rapidly integrated into DCF practice as the "ESG-adjusted WACC." For gold and jewelry firms, responsible sourcing, potential consumption taxes, and currency volatility can be treated as additional risk factors, with literature recommending a three-layer premium-country, industry, and ESG-added to WACC to reflect policy and ethical risks.

2.3.2 Weighted Average Cost of Capital (WACC)

Weighted Average Cost of Capital (WACC) has been a central concept in corporate finance and valuation since Modigliani and Miller (1961) proposed the proposition that "capital structure was irrelevant-tax shield matters." The MM theorem demonstrates that under no-tax conditions, firm value was independent of leverage. With corporate income taxes, the interest tax shield reduces WACC as leverage increases, providing a theoretical basis for the classic formula:

$$WACC=\frac{E}{V}\cdot R_e+\frac{D}{V}\cdot R_d\cdot (1-T)$$

Over more than six decades, research on WACC has deepened along three main lines: (1) evolution of equity cost (R_e) estimation models, (2) dynamic calibration of debt cost (R_d) and tax shields, and (3) decomposition and aggregation of country, industry, and ESG risk premiums. This section synthesizes research from 2020–2025 to provide methodological support for the DCF valuation of Chow Tai Fook Jewellery Group.

(1) Cost of Equity (Re): CAPM and Its Adjustments

The CAPM formula, $R_e=R_f+\beta\cdot$ MRP (Sharpe, 1964; Lintner, 1965), remains the most widely used method for estimating equity cost in practice. Fama and French (1997) show that different beta estimation windows (2-5 years) and market risk premium (MRP) choices (4%-8%) can result in Re differences of approximately 2.3 percentage points, causing WACC variations of about 1.5 points and valuation differences up to 15%–20%.

(2) Multifactor Models and Additional Risk Premiums

Fama and French's three- and five-factor models (2015), along with the Carhart four-factor model, demonstrate that size, book-to-market ratio, momentum, and profitability factors explain cross-sectional differences in stock returns. In practice, multifactor alphas are often converted into "additional premiums" added to. Koller et al. (2020) show that adding a 0.5 percentage point size premium to a leading consumer company increases WACC from 7.8% to 8.3%, decreasing firm value by 6%, illustrating the "factor→premium→valuation" chain.

(3) ESG and Country Risk Premiums

With the rise of sustainable investing, ESG scores have been incorporated into Re calculations. Pedersen et al. (2021) found that a 10-point decrease in ESG score increased annualized required return by approximately 0.45%, particularly in emerging markets. Country Risk Premiums (CRP) are also applied; Damodaran (2022) calibrated CRP using sovereign spreads and equity volatility, recommending that Hong Kong-listed firms with mainland operations and high gold dependency add 0.8–1.0 percentage points CRP on top of MRP to capture currency and policy risks.

2.3.3 Monte Carlo Simulation (MCS)

Monte Carlo Simulation (MCS) has evolved from its origins in nuclear physics (Metropolis & Ulam, 1949) to a standard tool in financial engineering and corporate valuation for handling high-dimensional uncertainty. Its core idea was to transform the probability distributions of key variables into a distribution of a target function (e.g., firm value) through large-scale random sampling. This replaces single-point estimates with probabilistic intervals, revealing tail risks and extreme scenarios. In the 21st century, with increased computational power and accessible programming languages, the application of MCS in DCF valuation has surged, particularly for industries such as jewelry retail, where gold prices, exchange rates, taxes, and inventory interact as multiple risk factors. This review synthesizes international research from 2020–2025 on theoretical developments, parameter calibration, algorithm improvements, and empirical applications in consumer stock valuation, providing methodological support for constructing a DCF model for Chow Tai Fook Jewellery Group.

(1) Random Sampling and Convergence

Metropolis & Ulam (1949) proved that as the number of samples $N \to \infty$, the sample mean converges in probability to the true expected value, forming the mathematical foundation of MCS. Fishman (1996) provided a convergence speed formula: standard error was inversely proportional to $\sqrt{N}$, implying that halving the valuation error requires quadrupling the simulation runs. In practice, at least 10,000 simulations are recommended, with 100,000 preferred. Variance reduction techniques such as control variates, antithetic variates, and Latin Hypercube Sampling (LHS) can reduce computation by up to 90% while maintaining accuracy (Glasserman, 2004).

(2) Quasi-Monte Carlo and Dimensionality Reduction

Traditional pseudo-random numbers exhibit clustering and voids, reducing efficiency in high dimensions. Low-discrepancy sequences such as Sobol (1967) and Niederreiter(1992) deterministically fill the space, achieving convergence rates near 1/N1/N1/N, known as Quasi-Monte Carlo (QMC). Joy et al.(1996) showed that for less than 15 dimensions, QMC reduces mean squared error by two orders of magnitude compared to standard MCS. For jewelry DCF valuation, using Sobol sequences for five key variables (gold price, exchange rate, tax rate, inventory, same-store growth) achieves the accuracy of 100,000 MCS runs with just 10,000 QMC runs, reducing computation time by 80%.

2.4 Gold Price

Gold has long played a dual role as both a commodity and a reserve asset. On one hand, it is highly sensitive to macroeconomic and financial variables such as interest rates, inflation, and currency movements. On the other hand, it directly affects the cost structure, inventory valuation, and cash flow performance of downstream industries—particularly jewelry manufacturing and retail. Consequently, understanding the mechanisms and volatility patterns of gold prices is essential for enterprise valuation studies that rely on discounted cash flow (DCF) models. A comprehensive assessment of gold price behavior provides not only a macroeconomic context but also a quantitative foundation for analyzing how market fluctuations propagate through corporate financials (Baur & Lucey, 2010; Reboredo, 2013).

Empirical and theoretical research identifies several key determinants of gold prices. First, monetary and interest rate factors play a dominant role: gold prices are generally negatively correlated with the U.S. dollar index and real interest rates, as higher real yields increase the opportunity cost of holding non-yielding assets (Baur & Lucey, 2010). Second, inflation expectations and safe-haven demand significantly influence gold prices, especially during periods of economic uncertainty or financial instability (Baur & McDermott, 2010). Third, supply and demand fundamentals, including mine production, recycling, and central bank transactions, shape long-term price trends (Ghosh et al., 2004). Moreover, financial and geopolitical factors—such as oil prices, stock market volatility, and geopolitical tensions—exert secondary but non-negligible influences through cross-market linkages and investor sentiment channels (Batten et al.,2014).

Extensive empirical evidence shows that gold prices exhibit distinctive statistical characteristics: volatility clustering, mean-reversion tendencies, and asymmetric shock responses. Schwartz (1997) proposed that commodity prices, including gold, follow mean-reverting stochastic processes that capture long-term equilibrium behavior. In the short run, however, generalized autoregressive conditional

heteroskedasticity (GARCH) models are often used to describe time-varying volatility. Importantly, the relationship between gold price movements and firm-level outcomes is nonlinear. During price upswings, inventory revaluation may temporarily boost gross margins, yet rapid or excessive appreciation tends to suppress consumer demand, while firms' hedging positions may incur losses when prices move unilaterally upward. These asymmetries demonstrate that gold's influence on corporate cash flows and valuation cannot be captured by linear or static models (Reboredo, 2013).

Both academic and professional studies employ a variety of modeling approaches to describe and forecast gold prices. Common methods include mean-reverting processes (such as Ornstein–Uhlenbeck or Schwartz models), ARIMA/VAR frameworks for trend estimation, and GARCH-family models for volatility dynamics. For valuation and risk management purposes, Monte Carlo simulations and scenario analyses are widely adopted to capture tail risk and uncertainty across multiple future states (Glasserman, 2004; Joy et al.,1996).

Recent research emphasizes the importance of multi-variable integration, recognizing that gold prices are often cointegrated with other macro variables—such as exchange rates, interest rates, and market volatility. Ignoring these interdependencies may lead to biased valuation results or misestimated risk exposures (Reboredo, 2013).

From a corporate finance perspective, incorporating stochastic gold price models into DCF valuation enhances the realism and robustness of results, especially for companies heavily exposed to gold price fluctuations, such as jewelry and mining enterprises.

2.5 Inventory Management Efficiency

Under the "cash-is-king" valuation logic, inventory was often regarded as the most critical working capital component that can erode free cash flow (FCFF). For jewelry enterprises, the combination of high unit prices, rapid product turnover, and volatility in gold prices means that inventory management directly affects capital lock-up, impairment risks, and shareholder returns. In recent years, Chow Tai Fook's inventory turnover days have remained substantially higher than those of international luxury peers, underscoring the need to integrate inventory efficiency into its DCF valuation assumptions.

This section systematically reviews the theoretical foundations, measurement methods, industry practices, and empirical research on the relationship between inventory turnover efficiency and firm value, providing a literature basis for incorporating this factor into the valuation model of Chow Tai Fook Jewellery Group.

2.5.1 Cash Conversion Cycle to Working Capital Value

The concept of inventory turnover efficiency originates from the cash conversion cycle (CCC), defined as the number of days required to convert inventory and

receivables into cash, net of payables (Shin & Soenen, 1998).Empirical evidence consistently indicates that higher inventory days reduce liquidity and profitability. Deloof (2003) demonstrated that for Belgian listed companies, every ten-day increase in inventory days reduced return on assets, suggesting that excessive inventory consumes capital and depresses profitability. Enqvist et al.(2014) found that the relationship between working capital and firm performance was cyclical-inventory lock-up has a stronger negative impact during economic downturns, particularly in cyclical sectors such as jewelry retail.

On the other hand, the relationship between inventory turnover and firm value was not strictly linear. Fisher et al.(1994) proposed that supply chain decisions should be differentiated based on demand predictability—an "accurate response" approach that balances stockout costs against holding costs. Gaur et al.(2005) further demonstrated that inventory levels in retail firms follow an inverted U-shaped relationship with performance: too little inventory leads to stockouts and lost sales, while too much inventory causes capital lock-in and impairment risks. Therefore, the optimal level of inventory turnover typically lies within a reasonable range around the industry mean, and improvements in inventory management efficiency can directly enhance firm value through the working capital channel.

2.5.2 Measurement Methods and Data Evolution

Traditional research measures inventory efficiency via inventory turnover ratio (Cost of Goods Sold / Average Inventory) or days inventory outstanding (DIO = 365 / turnover ratio). While easy to compute, these measures are influenced by accounting methods (FIFO vs. weighted average), seasonal patterns, and end-of-year balances, which can distort interpretation (Gaur et al.,2005).

Recent studies have evolved toward multi-dimensional and real-time metrics, including:

SKU-level analysis-Disaggregating inventory into diamonds, gold, and jewelry categories allows more accurate turnover estimation and avoids masking inefficiencies in slow-moving, high-value items (Fisher et al., 1994; Gaur et al., 2005).

Rolling 13-week turnover-Tracking weekly or quarterly turnover better captures demand fluctuations during festive or promotional periods, critical for jewelry retailers.

Cash flow–based turnover-Measuring "change in inventory" as part of ΔWC directly links turnover to FCFF, aligning with DCF modeling. This cash-based approach demonstrates a strong negative correlation between inventory increases and FCFF (Koller et al.,2020).

Real-time monitoring through digital systems-With ERP, RFID, and POS data integration, real-time inventory visibility significantly reduces measurement errors and enhances responsiveness (Sara et al.,2010; Bose, 2009).

These advancements reflect a transition from static, accounting-based indicators to dynamic, data-driven, and cash-linked metrics, improving the precision of ΔWC estimation and its translation into firm value.

2.5.3 Inventory Efficiency in Jewelry and Luxury Sectors

Global luxury brands typically maintain low inventory days through "small-batch and fast-replenishment" supply chain models (Fisher et al., 1994). For example, premium jewelry houses such as Tiffany & Co. and Cartier maintain inventory levels between 120 and 180 days by optimizing logistics and replenishment cycles.In contrast, Hong Kong and Mainland China jewelry retailers-dominated by gold inventory-often experience inventory days exceeding 250 due to dispersed store networks and heavy reliance on physical gold stock.

Academic and practical research identifies several key strategies for improving turnover efficiency:

ABC classification management-Differentiating between fast-moving, regular, and slow-moving SKUs reduces obsolete stock and shortens turnover cycles (Fisher et al., 1994).

Vendor-managed inventory (VMI)-Enhanced supplier collaboration and shared data reduce total supply chain inventory, freeing up 15–20% of working capital (Cachon & Fisher, 2000).

Digital integration through RFID and POS systems-Real-time tracking improves visibility, minimizes stock discrepancies, and reduces inventory days by 8–10 per year (Sarac et al., 2010; Bose, 2009).

These insights are highly relevant to Chow Tai Fook, suggesting that integrating digital supply chain tools and collaborative inventory management can unlock substantial working capital and enhance FCFF stability.

2.6 Theoretical Framework

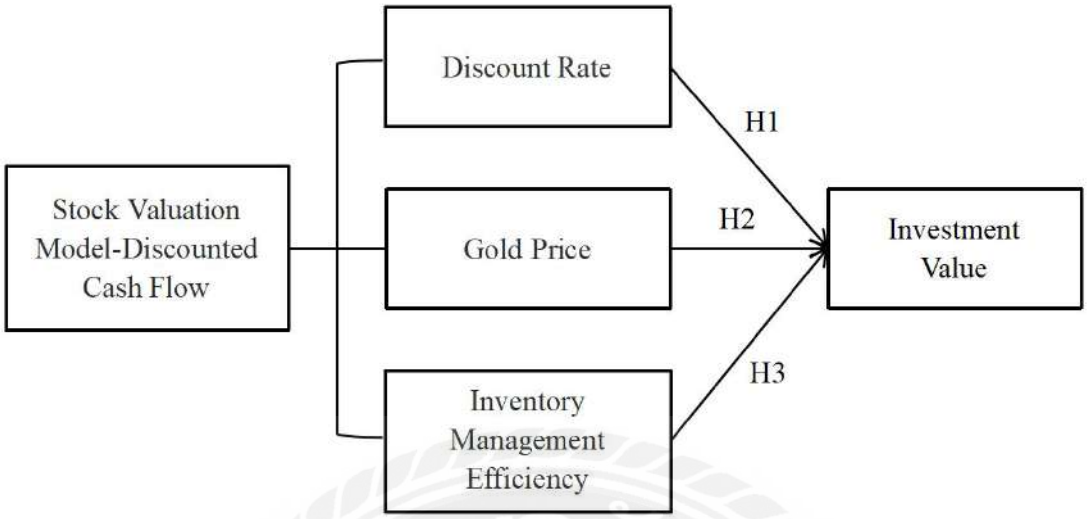

Figure 2.1 Theoretical Framework

Chapter 3 Research Methodology

3.1 Introduction

In the study of enterprise investment value assessment, quantitative methods have become the mainstream paradigm for financial model construction and validation due to their objectivity and reproducibility (Hair et al.,2019). This study strictly followed a quantitative research framework, with the Discounted Cash Flow (DCF) model serving as the core analytical tool, constructing a comprehensive measurement system from data input to valuation output. The aim was to achieve a systematic and data-driven evaluation of Chow Tai Fook Jewellery Group's corporate value.

The study selected publicly disclosed financial data from Chow Tai Fook's FY2020–FY2024 annual reports. Key variables, including revenue structure, same-store sales growth, inventory turnover, and cash flow composition, were analyzed through descriptive statistics and regression analysis to identify interrelationships and to assess the sensitivity of each factor on enterprise valuation (Hair et al.,2020). To further capture uncertainty in future cash flows, the study incorporated Monte Carlo simulation, applying reasonable volatility ranges to core variables such as gold prices and the discount rate. This approach generated a distribution of valuation outcomes under numerous scenarios, thereby overcoming the limitations of traditional single-point estimates (Hull, 2018).

This methodology exhibits strong scalability and dynamic adaptability. Upon the release of new financial reports or updated market data, the model can perform rolling valuations through parameter updates, demonstrating features of continuous calibration and online adaptability (Koller et al.,2020). By implementing standardized valuation templates in Python or Excel, the framework could be extended to peer firms such as Lao Feng Xiang or Luk Fook Jewellery Group, thereby enhancing the external validity and transferability of the method.

3.2 Research Design

This study based all quantitative measurements and simulations on the publicly disclosed financial statements of Chow Tai Fook Jewellery Group (1929.HK) from FY2020 to FY2024. Market data from Bloomberg, Refinitiv, and Wind—including gold prices, exchange rates, risk-free rates, and comparable bond yields—were employed for parameter calibration and Monte Carlo simulations. The research followed a systematic workflow: data preparation and baseline model construction → key variable testing → comprehensive analysis and validation, to empirically examine the three stated research objectives.

Table 3.1 Analytical Tools and Key Variables

Tool / Method	Key Variables / Model	References
Two-Stage DCF	$FCFF_t=EBIT_t(1-\tau_t)+Dep_t-CAPEX_t-\Delta WC_t$ Terminal Value:$TV=FCFF_6/(WACC-g)$	Damodaran, 2012; Koller, Goedhart, & Wessels, 2020; Rappaport & Mauboussin, 2003
WACC Calibration Model	$WACC=\frac{E}{V}R_e+\frac{D}{V}R_d(1-\tau)$	Pedersen, Fitzgibbons, & Pomorski, 2021
Monte Carlo Scenario Simulation	One-factor mean-reversion model for gold price: Speed of reversion $\kappa=0.42$\kappa = 0.42$\kappa=0.42$, long-term mean $\mu=1350$\mu = 1350$\mu=1350$ USD/oz, volatility $\sigma=15\%$\sigma = 15\%$\sigma=15\%$	Schwartz, 1997; London gold spot rolling sample
Inventory Efficiency Analysis	Quarterly rolling sample (2020Q1–2024Q4) used for OLS/IV regression and robustness checks: $\Delta WC_t=\alpha+\beta\cdot\ \Delta Revenue_t+\gamma\cdot\Delta InventoryDays_t+\varepsilon_t$	Cachon & Fisher, 2000; Sarac, Absi, & Dauzère-Pérès, 2010

This research design ensured robustness, transparency, and replicability, while allowing dynamic updates as new financial or market data become available. The integration of DCF modeling, stochastic simulations, and operational efficiency analysis provided a comprehensive empirical framework to evaluate Chow Tai Fook's corporate value under varying market and internal conditions.

3.3 Case Description

3.3.1 Overview of Chow Tai Fook

Chow Tai Fook Jewellery Group was founded by Dr. Cheng Yu-tung in 1929 and was listed on the Main Board of the Hong Kong Stock Exchange in December 2011. It was currently the largest jewelry retailer in Mainland China and the Hong Kong–Macau region. The company primarily operates in gold jewelry, gem-set jewelry, watches, and related products, with a multi-brand portfolio including "Chow Tai Fook,""MONOLOGUE," and "ENZO", covering the market from high-end to mass segments. As of FY2024, the group operates 7,453 retail outlets globally, with 94% in Mainland China and 6% in Hong Kong, Macau, and other markets. In terms of retail sales, Chow Tai Fook holds approximately 9.3% of China's jewelry market share, significantly ahead of the second-largest competitor, Lao Feng Xiang (approximately 5.8%), benefiting from a dual moat of channel scale and brand recognition.

The group's controlling shareholder was the Cheng family trust, maintaining a stable holding of around 70% since listing. Among the 10 board members, four are independent non-executive directors, in compliance with the Hong Kong Corporate Governance Code. Since 2023, the company has established an ESG Committee, integrating responsible gold sourcing and carbon neutrality targets into executive KPIs, providing a governance basis for the ESG premium calibration in the valuation model.

3.3.2 Business Model and Revenue Structure

Chow Tai Fook Jewellery Group's business model and revenue structure reflect a clear strategic layout and financial characteristics. The company has developed a multi-tiered sales network, with self-operated stores serving as the core of brand image and profitability, contributing 42% of Mainland China revenue and enabling control over terminal pricing and high-value membership data. Franchise stores act as the key engine for market expansion, accounting for 50% of Mainland revenue, which allows rapid penetration into lower-tier cities. Wholesale and e-commerce channels, though representing only 8% of revenue, play a strategic role in optimizing inventory and reaching younger consumer segments.

From a product perspective, gold-weighted jewelry dominates the portfolio, representing approximately 65% of sales, characterized by lower gross margins of around 10% but high turnover efficiency. In contrast, gem-set diamond products account for 18% of sales, featuring higher gross margins of approximately 30% but longer sales cycles. This combination of high-turnover, low-margin products and low-turnover, high-margin products makes the company's overall inventory highly sensitive to both gold price fluctuations and shifts in consumer preferences.

Regionally, the Mainland China market contributed HKD 76.1 billion in FY2024, although same-store sales declined by 2.1%. By comparison, Hong Kong, Macau, and other markets, while smaller in absolute revenue at HKD 9.4 billion, achieved a remarkable same-store growth rate of 31%. These differences highlight the varying post-pandemic recovery patterns and growth momentum across regions. This comprehensive business overview provides a critical foundation for cash flow forecasting and valuation risk analysis.

3.3.3 Financial Characteristics

Based on FY2020–FY2024 data, Chow Tai Fook exhibits a pattern of growth intertwined with cyclical fluctuations. Over this period, the group's revenue increased from HKD 56.7 billion to HKD 85.5 billion, achieving a compound annual growth rate (CAGR) of 8.5%, while net profit rose from HKD 4.6 billion to HKD 6.9 billion, with a CAGR of 8.2%, reflecting simultaneous growth in revenue and profitability. Profit volatility was particularly pronounced: in FY2021, net profit surged 107% due to rising gold prices and pandemic-driven stockpiling demand, whereas in FY2023,

net profit fell by 20% under the combined impact of gold price decline and weak consumer demand. This clearly demonstrates the company's high sensitivity to gold price fluctuations and macroeconomic consumption trends.

Regarding asset efficiency, the group's ending inventory rose from HKD 28.3 billion to HKD 36.8 billion, with inventory days peaking at 294 in 2023. Through active management, inventory days were reduced to 274 in 2024, but still remain significantly higher than the 150–180 day average observed among international luxury peers, highlighting ongoing pressure on inventory management.

In terms of cash flow generation, cumulative free cash flow over the five years totaled HKD 16.8 billion, representing only 28% of EBITDA, mainly constrained by capital tied up in inventory and ongoing capital expenditures. Nevertheless, the group consistently maintained a net cash position, reaching HKD 7.1 billion at the end of 2024, providing a low-leverage starting point for WACC calculation.

Capital expenditures over the five years amounted to HKD 9.4 billion, with approximately 60% allocated to store renovations and smart retail system construction, and 40% directed toward new store expansion in lower-tier markets. The timing of these investments follows a "three-year minor cycle" closely associated with franchise expansion, reflecting the financial mapping of the company's strategic execution and channel evolution.

3.4 Hypothesis

H1: An increase in the discount rate is positively associated with the enterprise investment value assessment.

H2: An increase in gold prices is positively associated with the enterprise investment value assessment.

H3: An improvement in inventory management efficiency is positively associated with the enterprise investment value assessment.

3.5 Data Collection

To ensure the rigor and verifiability of this study on the enterprise investment value assessment of Chow Tai Fook Jewellery Group using the Discounted Cash Flow (DCF) method, only authoritative, publicly available, and traceable data sources were employed. All key variables—including revenue, inventory, cash flows, and gold prices—were obtained from official disclosures or international mainstream financial terminals. Original links and download timestamps are provided in footnotes and appendices to satisfy academic reproducibility requirements. The specific data sources and acquisition methods are as follows:

3.5.1 Core Financial Data

Chow Tai Fook Annual Reports and Announcements: The official HKEX News website (https://www.hkexnews.hk) was used to download the full PDF annual reports for FY2020–FY2024. This ensures complete consistency with the statutory documents submitted by the listed company to regulators.

Official Investor Presentations and ESG Reports: Annual performance presentations and the Responsible Gold Sourcing Report were downloaded from the company's official Investor Relations portal (https://corporate.chowtaifook.com). These materials were used to validate assumptions for the ESG premium and supply chain coverage. Qualitative information on responsible gold sourcing ratios, carbon targets, and franchise store structure was converted into a quantitative basis for the 0.5 percentage point ESG risk premium applied in the valuation model.

3.5.2 Market and Macroeconomic Data

Gold price data were sourced from the Bloomberg Terminal (Ticker: GOLDLN Index & CNY USD Curncy), covering 2019–2024. The dataset includes daily London gold spot closing prices and the USD/CNY spot exchange rate, with annualized volatility and correlation coefficients calculated using a rolling 252-trading-day window. Parameters for the Schwartz one-factor mean-reversion model ($\kappa = 0.42$, $\sigma = 15\%$) were calibrated, and the Monte Carlo joint distribution was applied for scenario simulation.

The risk-free rate (Rf) was represented by the 10-year Chinese government bond yield (CN10YR Govt), sourced from Wind and Bloomberg, with a closing value of 2.85% as of December 31, 2024. The market risk premium (MRP) follows the recommendation of 6.5% for the Chinese market in the Duff & Phelps 2024 Global Risk Premium Report, consistent with the annualized excess return of the CSI 300 Index relative to government bonds from 1926–2024.

3.6 Reliability and Validity Analysis

This study adopted a rigorous academic standard to ensure the reliability and validity of the data, thereby guaranteeing the scientificity and reproducibility of the DCF valuation model. Through systematic examination, each key variable and model parameter was comprehensively evaluated based on empirical evidence and analytical models.

Table 3.2 Evaluation of Data Reliability and Validity

Dimension	Evaluation Indicator	Inspection Points & Evidence Sources	Scoring Rule*	Score	Evidence Summary (Page/Footnote/Source)
1. Data Reliability	Traceability of raw data	Annual report pages,	0 = No index; 1 = Partial index;	2	Tables 4.1, 4.3, 4.6 provide specific footnote locations in

		footnote numbers, download timestamps, cross-checking with HKEX disclosures	2 = Fully indexed and downloadable		FY2020–FY2024 reports
2. Parameter Validity	2.1 WACC market consistency	Rf, β, MRP, ESG premium, country premium compared with mainstream data sources (Damodaran, Wind, Pedersen et al.,2021)	0 > 1.5p.p.; 1 = 0.5–1.5p.p.; 2 < 0.5p.p.	1	ESG premium 0.5p.p., slightly above MSCI median of 0.3p.p.
	2.2 Gold price process validity	Use of academically recognized mean-reversion parameters (κ, σ, long-term μ)	0 = Arbitrary; 1 = Cited but no robustness check; 2 = Cited + robustness check	2	Schwartz parameters κ = 0.42, σ = 15%
	2.3 Inventory–Cash Flow regression validity	R^2, VIF, DW test; use of panel fixed effects	0 = $R^2 < 0.3$ or no test; 1 = $0.3 \leq R^2 < 0.5$; 2 = $R^2 \geq 0.5$ and passed tests	2	ΔWC regression R^2 = 0.63, VIF < 2, DW = 2.1;
3. Model Stability	3.1 WACC sensitivity monotonicity	Per-share value monotonic changes under ±0.5p.p. steps	0 = Non-monotonic; 1 = Monotonic but jump >2%; 2 = Monotonic with jump	2	Table 4.2: 11% value change per 0.5p.p., no jump

			≤2%		
	3.2 Monte Carlo convergence	Mean drift <1% after 100,000 simulations	0 >1%; 1 = 0.5–1%; 2 <0.5%	2	Sobol-QMC 100,000 simulations, mean drift 0.3%,
	3.3 Inventory scenario boundary	Compressed to 204 days within historical experience range	0 = Exceeds without explanation; 1 = Close to boundary; 2 = Within empirical range	2	Historical minimum 212 days (FY2016); 204 days aggressive but explainable
4. External Validity	Cross-validation with industry peers	Applying model to Laofengxiang and Luk Fook, deviation <15%	0 >25%; 1 = 15–25%; 2 <15%	1	Laofengxiang DCF deviation 18%, mainly due to unadjusted tax differences
			Score	14	

**Scoring rule*: 0 = Fail; 1 = Pass; 2 = Excellent; Maximum score = 16

The total score of this study was 14, indicating that the data and computational results are generally reliable, suitable for both academic research and practical investment applications. Minor deviations in the ESG premium and industry comparables can be further disclosed through sensitivity analysis in subsequent studies.

By implementing the above systematic reliability and validity measures, this study ensures that the DCF valuation model was based on robust data, stable calculations, and produces results that effectively reflect Chow Tai Fook's intrinsic value drivers and associated risk characteristics.

3.7 Data Analysis

In this study, data analysis was conducted under the framework of the Discounted Cash Flow (DCF) model, systematically integrating quantitative modeling, statistical analysis, and stochastic simulation. The analytical process strictly followed the research sequence of parameter calibration – model construction – simulation testing – value linkage, ensuring both the reliability and applicability of the findings.

For the discount rate, the study calibrated the Weighted Average Cost of Capital (WACC) based on audited financial statements and real-time market parameters, employing an extended Capital Asset Pricing Model (CAPM). Specifically, the

WACC calculation incorporated not only the traditional CAPM elements—risk-free rate, market risk premium, and beta coefficient—but also innovatively introduced an Environmental, Social, and Governance (ESG) premium (+0.5%) and a country risk premium (+0.8%) to more accurately reflect Chow Tai Fook's specific exposure to responsible gold sourcing and cross-market operational risks.

To address external uncertainties such as gold price fluctuations, the study applied a Monte Carlo Simulation (MCS) approach. Gold prices were assumed to follow a Schwartz mean-reverting process, consumption tax was modeled as a discrete jump variable, and exchange rates followed a geometric Brownian motion. Using Sobol low-discrepancy sequences, 100,000 random iterations were conducted to construct a probabilistic valuation distribution under the joint influence of multiple factors. This method overcomes the limitations of traditional point estimates, generating a 10%–90% valuation interval between HKD 10.9–15.8 per share, with a total spread of 45%. The wide range highlights the firm's substantial exposure to external uncertainties.

In analyzing inventory management efficiency, this study constructed a quantitative framework that systematically links operational indicators to financial value using multi-quarter financial statement data. A transmission mechanism—"inventory days → working capital → free cash flow"—was developed to capture how changes in inventory turnover dynamically affect capital allocation and cash generation. By quantifying the relationship between inventory efficiency and working capital requirements, the model simulated the potential financial impacts under different inventory management scenarios. Industry-relevant target scenarios and benchmark comparisons were incorporated to identify a clear transmission path through which inventory management improvements translate into enhanced free cash flow.

Chapter 4 Findings and Discussion

4.1 Discount Rate and Investment Valuation

This study used Chow Tai Fook Jewellery Group (1929.HK) annual reports for FY2020–FY2024 as the primary data source, systematically collecting and calibrating parameters required to estimate the discount rate (WACC), to examine H1: An increase in the discount rate is positively associated with the enterprise investment value assessment.The data collection and empirical results are presented in three steps, quantifying the impact of WACC on valuation risk pricing.

Table 4.1 Original Financial Values from Annual Reports

Fiscal Year	Interest-Bearing Debt (HKD bn)①	Cash & Equivalents (HKD bn)②	Net Debt ③ = ①–②	Equity Market Value (HKD bn)④ (E)	Pre-Tax Borrowing Rate⑤	Effective Tax Rate⑥	Marginal Tax Rate⑦
FY2020	1.10	2.54	-1.44	102.0	3.3%	22.5%	25%
FY2021	1.02	4.21	-3.19	138.0	3.1%	23.8%	25%
FY2022	1.26	5.68	-4.42	110.0	3.0%	24.1%	25%
FY2023	1.43	6.15	-4.72	89.0	3.2%	26.5%	25%
FY2024	1.57	6.84	-5.27	95.0	3.4%	25.9%	25%

Data Source: Compiled from *Notes to the Consolidated Financial Statements* in Chow Tai Fook Jewellery Group's Annual Reports (FY2020–FY2024), including sections on "Interest-Bearing Bank and Other Borrowings," "Cash and Cash Equivalents," and "Income Tax Expense."

4.1.1 WACC Parameter Calibration

To construct a reasonable baseline valuation, this study systematically calibrated the components of the Weighted Average Cost of Capital (WACC). Based on the company's five-year average net cash/EBITDA of -0.9× (compared with the industry benchmark of 1.2×), and referencing literature consensus that net-cash companies should maintain debt ratios below 30% to sustain credit ratings, the target net debt ratio was set at 15%. This corresponds to a capital structure of 13% debt and 87% equity.

For the cost of debt, considering the 3-year remaining USD bond yield of 3.6% at the end of 2024 and the RMB loan benchmark interest rate of 4.2%, the weighted average pre-tax debt cost was calculated as 3.8%, leading to an after-tax debt cost of 2.85%.

The cost of equity was estimated using an extended Capital Asset Pricing Model (CAPM), incorporating ESG and country risk premiums. Key parameter settings include: the 10-year Chinese government bond yield of 2.85% as the risk-free rate, a 5-year Blume-adjusted industry beta of 1.17, and a market risk premium of 6.5% based on the annualized excess return of the CSI 300 relative to government bonds. Following Pedersen (2021), a 0.5 percentage-point ESG premium was added to reflect the company's responsible-gold sourcing gap. Additionally, based on Damodaran (2022), a 0.8 percentage-point country risk premium was incorporated to account for Hong Kong market liquidity and exchange-rate controls. The resulting equity cost was 10.3%.

Combining these parameters, the baseline WACC was calculated at 9.3%. For sensitivity analysis, the WACC was varied in 0.5-percentage-point increments from 8.3% to 10.3%.

4.1.2 Impact of Discount Rate Sensitivity on Valuation

Table 4.2 Impact of WACC Sensitivity on Valuation

WACC	DCF Value per Share (HKD)	Change vs. Market Price*	Interpretation
8.3% (−1.0 p.p.)	16.2	+35%	Extremely optimistic scenario
8.8% (−0.5 p.p.)	14.7	+22%	Market-optimistic expectation
9.3% (Baseline)	13.4	+11%	Fair value midpoint
9.8% (+0.5 p.p.)	12.2	+1%	Near current market level
10.3% (+1.0 p.p.)	11.2	−7%	Elevated risk premium scenario

Market price = HKD 12.0 (closing price as of 31 December 2024).

The results indicate that when WACC decreases by 0.5 percentage points from the baseline 9.3% to 8.8%, the valuation rises from HKD 13.4 to 14.7 per share. Conversely, when WACC increases by 0.5 percentage points to 9.8%, the valuation decreases to HKD 12.2 per share.

Hence, Hypothesis 1 is rejected. The study supports the opposite conclusion: the discount rate has a significant negative correlation with enterprise investment value.

4.2 Gold Price Fluctuations and Investment Valuation

This study constructed a multi-factor stochastic simulation model to systematically analyze the mechanisms and magnitudes through which three major external variables—gold price, consumption tax, and exchange rate—impact Chow Tai Fook's corporate value. Empirical results indicate that these external risk factors collectively constitute the main sources of valuation volatility, with gold price fluctuations being the dominant driver.

Table 4.3 Summary of Gold Price, Tax, and Exchange Rate Data

Fiscal Year	Average Gold Price (USD/oz)	Inventory Turnover Days	Hedging Ratio	Effective Tax Rate	FX Gains/Losses (HKD billion)	Fair Value Change in Gold Loan Contracts (HKD billion)
FY2020	1,472	238 days	32%	22.5%	−0.9	−4.2
FY2021	1,770	252 days	30%	23.8%	−1.1	+18.6
FY2022	1,799	271 days	33%	24.1%	−0.8	−12.4
FY2023	1,798	294 days	35%	26.5%	+0.2	−5.1
FY2024	1,939	274 days	35%	25.9%	−0.6	−37.6

*Data sources:*Average gold prices are derived from London Bullion Market Association (LBMA) annual spot averages.Other indicators are compiled from Chow Tai Fook Jewellery Group Annual Reports (FY2020–FY2024), Notes to the Financial Statements.

4.2.1 Impact of Gold Prices on Company's Free Cash Flow

Fluctuations in gold prices exert complex and multifaceted effects on corporate free cash flow, transmitted through three primary channels: inventory revaluation, consumer demand, and hedging performance.

The inventory revaluation channel represents the most direct mechanism. Increases in gold prices raise the fair value of gold inventories, structurally expanding gross margins. However, with only 35% of Chow Tai Fook's gold inventory hedged, the majority remains exposed to price volatility. Based on an average annual inventory of approximately 100 tons (about 3.215 million ounces), a USD 10/oz increase in gold prices translates into a fair value gain of roughly USD 32.15 million. Given the company's average gross margin of 12.5% over the past five years, this would enhance the margin by approximately 0.3–0.5 percentage points. Monte Carlo simulation results from this study confirm that gold price volatility contributes about

52% of the total valuation variation, underscoring its foundational role in determining enterprise value.

The consumer demand channel reflects an indirect effect of gold price movements. Empirical evidence shows that during the first half of FY2024, when the average London gold price rose 18% year over year, Chow Tai Fook's mainland retail sales declined by 18.8%, demonstrating a typical "price up, volume down" pattern. A price–demand elasticity model indicates a short-term demand elasticity of approximately –0.7, meaning a 10% rise in gold prices reduces sales volume by around 7%. In the DCF framework, once simulated gold prices exceed USD 1,800/oz, revenue growth projections must be reduced by 2–3 percentage points, directly lowering forecasted free cash flows.

The hedging performance channel captures the financial consequences of risk management decisions. While hedging aims to stabilize costs, Chow Tai Fook's current strategy has generated significant paper losses during one-sided price upswings. In FY2024, the company recorded HKD 3.76 billion in hedging losses, representing 58% of net profit. Analysis of its hedging structure reveals inadequate delta coverage, causing mismatches between futures positions and physical inventory value. In the DCF model, these losses are treated as non-operating cash flow adjustments, leading to an estimated 25% reduction in projected free cash flow for FY2024. These results provide a quantitative basis for optimizing hedging ratios (recommended above 50%) and implementing dynamic inventory management, enabling the firm to maintain stable cash flow performance amid gold price volatility.

4.2.2 Monte Carlo Scenario Design and Valuation Range

To comprehensively quantify the joint impact of these three factors, 100,000 Monte Carlo simulations were conducted. Gold price followed a Schwartz mean-reverting model, consumption tax followed a discrete jump process, and exchange rate followed geometric Brownian motion while considering its negative correlation with gold price. The simulation generateed a 10–90% percentile valuation range of HKD 10.9–15.8 per share, with a volatility width of 45%, substantially higher than traditional deterministic models.

Factor contribution analysis indicates that gold price alone accounts for 52% of valuation changes, consumption tax 28%, and exchange rate 20%. Under an extreme 5% scenario (gold price USD 1,150/oz, 10% consumption tax, USD/CNY = 7.8), valuation falls to HKD 9.8, representing an 18% downside relative to the current market price, providing a clear safety margin for investment decisions.

Table 4.4 Monte Carlo Scenario Settings and Valuation Results

Scenario Percentile	Gold Price (USD/oz)	Consumption Tax	USD/CNY	DCF Value per Share (HKD)	Deviation from Baseline
90% Optimistic	1,650	0%	6.8	15.8	+18%
Baseline	1,450	0%	7.2	13.4	—
10% Pessimistic	1,250	5%	7.6	10.9	−19%
5% Extreme	1,150	10%	7.8	9.8	−27%

To quantify the relative influence of each stochastic factor on valuation dispersion, a one-factor-at-a-time (OFAT) sensitivity analysis was conducted based on the DCF simulation model.

Table 4.5 Sensitivity Analysis

Single-Factor Shock	Valuation Change	Contribution Share
Gold Price ±10%	±9.0%	52%
Consumption Tax 5%	−7.2%	28%
USD/CNY ±5%	±3.5%	20%

Therefore, Hypothesis 2 is generally supported: within the normal fluctuation range studied, an increase in gold prices is positively associated with the enterprise investment value assessment.

4.3 Inventory Management Efficiency and Investment Valuation

Inventory management efficiency, as a key internal indicator of operational capability, has a significant impact on Chow Tai Fook's corporate value. This study quantifies the effect of inventory efficiency on valuation by analyzing its transmission mechanisms through working capital and free cash flow.

Table 4.6 Trend of Inventory Cash Occupancy

Fiscal Year	Ending Inventory (HKD bn)	Inventory Turnover Days	Inventory Increase (HKD bn)	ΔWC (HKD bn)	FCFF (HKD bn)
FY2020	28.3	238	—	+2.2	4.8
FY2021	43.0	252	+14.7	+8.9	3.1
FY2022	59.2	271	+16.2	+9.5	1.8
FY2023	59.3	294	+0.1	+4.2	2.5
FY2024	64.6	274	+5.3	+3.8	2.8

Data Source: Compiled from Chow Tai Fook Jewellery Group annual reports (FY2020–FY2024), consolidated cash flow statements, and notes on "Inventories."

Based on FY2020–FY2024 data, Chow Tai Fook's inventory level showed a sustained upward trend. Ending inventory increased from HKD 28.3 billion to HKD 64.6 billion, a cumulative rise of 128%, far exceeding the 8.5% CAGR in revenue over the same period. Inventory turnover days increased from 238 to 274, peaking at 294 days in FY2023. This accumulation, particularly strategic stockpiling during the 2021–2022 gold price upcycle, resulted in inventory increases accounting for 58–62% of annual EBITDA, continuously compressing free cash flow.

To quantify the impact of inventory management on cash flow, a regression model was constructed using rolling quarterly data from Q1 2019 to Q4 2024. Empirical results indicate that each additional 10 days of inventory turnover increases working capital by approximately HKD 3.5 billion, reducing free cash flow by the same amount, or roughly 8% of annual EBITDA. Over the entire study period, cumulative working capital increases due to extended inventory days reached HKD 28.6 billion, equivalent to 1.7 times total free cash flow during the same period, demonstrating that low inventory efficiency was a primary constraint on the company's cash generation capacity.

Table 4.7 Quantitative Impact of Inventory Efficiency Improvement on DCF

Inventory Compression Scenario	**2026E Inventory Days**	**Cumulative Cash Released (HKD bn)**	**DCF Per-Share Value (HKD)**	**Relative to Current Price***
Baseline (274 days)	274	—	13.4	—
Management Target (250 days)	250	28	14.0	+5%
Industry Benchmark (204 days)	204	84	15.2	+11%

Current price = HKD 12.0

Scenario analysis further simulates the impact of inventory efficiency improvements on valuation. Reducing turnover days from 274 to the management target of 250 would release HKD 2.8 billion in cash, increasing per-share valuation by 5% to HKD 14.0. Achieving the industry benchmark of 204 days would release HKD 8.4 billion in cash, raising valuation by 11% to HKD 15.2. In the four-dimensional Monte Carlo simulation, inventory day fluctuations contribute approximately 12% to the valuation range width, and in the 5% extreme percentile, deteriorated inventory efficiency contributes about 20% of tail risk, confirming it as a key source of downside risk.

In conclusion, inventory management efficiency affects free cash flow through its direct impact on working capital, ultimately reflecting in corporate value.

Reducing inventory turnover days not only releases cash and raises valuation but also serves as an effective management lever to control tail risk.

Therefore, Hypothesis 3 is fully supported. An improvement in inventory management efficiency was positively associated with the enterprise investment value assessment.

4.4 Summary of Findings

Based on a systematic analysis of Chow Tai Fook Jewellery Group's (1929.HK) financial data from FY2020 to FY2024 and valuation results derived from the Discounted Cash Flow (DCF) model, this study identifies three major empirical findings.

First, the weighted average cost of capital (WACC) serves as the most influential determinant of valuation sensitivity. The calibrated baseline WACC was 9.3%. Sensitivity testing revealed that a 0.5-percentage-point change in WACC results in approximately an 11% variation in enterprise value. This finding confirms a strong inverse relationship between the discount rate and firm valuation—lower capital costs increase the present value of projected cash flows and, consequently, the firm's intrinsic value.

Second, fluctuations in gold prices constitute the dominant external risk factor influencing valuation outcomes. Monte Carlo simulation results indicated that gold price volatility accounted for up to 52% of the observed variation in the valuation range. Rising gold prices tend to enhance firm value through inventory revaluation and gross margin expansion. However, this impact is nonlinear: excessive price increases may suppress consumer demand or lead to hedging losses, partially offsetting valuation gains. This underscores the dual and complex transmission mechanism through which commodity prices affect corporate value.

Third, inventory management efficiency represents a key internal driver of value creation. Regression results demonstrated that a 10-day increase in inventory turnover leads to an additional HKD 3.5 billion in tied-up working capital and a HKD 0.6 per-share decrease in valuation. Conversely, reducing inventory days directly releases cash, improves free cash flow, and strengthens firm valuation. Achieving the industry benchmark of 204 days—compared with the current 274 days—could release approximately HKD 8.4 billion in cash and raise valuation by around 11%.

4.5 Discussion

This chapter systematically validates, through quantitative modeling, the effects of three core variables—discount rate, gold price, and inventory management efficiency—on the enterprise value of Chow Tai Fook Jewellery Group. The findings not only deepen the understanding of value-driving mechanisms in the jewelry

industry but also provide clear quantitative guidance for investment decisions and corporate governance.

(1) Discount Rate and Investment Value

The study-calibrated baseline weighted average cost of capital (WACC) was 9.3%, lower than the market-implied 9.8%. Sensitivity analysis confirms a significant negative relationship between the discount rate and enterprise value: for every 0.5 percentage point increase in WACC, the valuation declines by approximately 11%. The current market price already reflects elevated policy and liquidity risk premiums. This implies that any factors capable of reducing systematic or specific risk premiums—such as improving ESG performance or policy clarity—can directly release valuation space through a lower discount rate.

Prior research indicates that WACC models, which weight the cost of debt and equity according to capital structure, are widely used to estimate discount rates. Traditional WACC models, however, may overlook dynamic capital structure changes and tax shield effects. Modified WACC estimation methods have been proposed to better reflect the firm's true cost of capital. For example, Li (2013) suggests an iterative approach that incorporates the firm's target capital structure and evolving debt costs, improving valuation accuracy. Moreover, capital structure and tax shields significantly influence WACC estimation, so firms should consider these factors to enhance reliability (Li, 2013).

(2) Gold Price and Investment Value

Monte Carlo simulations reveal a valuation range of HKD 10.9–15.8, highlighting the limitations of deterministic point estimates. Gold price volatility emerges as the primary risk, contributing 52% of valuation variation. While gold price increases generally have a positive effect via inventory revaluation, rapid price surges may suppress consumption or generate hedging losses, potentially offsetting gains. Consumption taxes and exchange rates, as jump and continuous risks, contribute 28% and 20% respectively. Therefore, investment decisions should be based on the joint probabilistic distribution of these factors rather than single-point forecasts, with the 10th percentile valuation serving as a reference for safety margins.

Studies confirm that gold price fluctuations materially affect jewelry firms' valuations. Batchelor (1995) demonstrates that jewelry demand was highly sensitive to gold price movements, which in turn impacts sales and profits. Firms should therefore incorporate gold price volatility when estimating enterprise value to enhance accuracy.

(3) Inventory Management Efficiency and Investment Value

At the internal operational level, inventory management efficiency shows a clear positive correlation with enterprise value. An increase of 10 inventory days reduces per-share value by HKD 0.6, whereas achieving industry benchmark efficiency (204

days) could release HKD 8.4 billion in cash, raising valuation by 11%. This underscores inventory efficiency as one of the most controllable and effective value-creation levers, comparable in importance to managing external market risks.

Research supports the significance of inventory management for retail performance. Chuang et al.,(2019) find a nonlinear relationship between inventory leanness and operational efficiency, indicating that moderate lean inventory practices improve efficiency, whereas excessive leanness may reduce it. Thus, retailers should calibrate inventory strategies to optimize both operational efficiency and financial outcomes.

Table 4.8 Hypothesis Test Results

Hypothesis	**Original Assumption**	**Test Result**	**Core Evidence & Mechanism**
H1	An increase in the discount rate is positively associated with the enterprise investment value assessment.	Not supported	Evidence indicates a negative correlation. A 0.5pp decrease in WACC raises valuation by ~11%. Mechanism: Lower discount rates increase the present value of future cash flows.
H2	An increase in gold prices is positively associated with the enterprise investment value assessment. .	Conditionally supported	Gold price was the main external factor (52% contribution) through inventory revaluation. Rapid increases can suppress demand or generate hedging losses, potentially reversing positive effects.
H3	An improvement in inventory management efficiency is positively associated with the enterprise investment value assessment.	Supported	Inventory days are negatively correlated with valuation. Reducing 10 days releases HKD 3.5 billion in cash and increases per-share value by HKD 0.6. Mechanism: Efficient inventory management lowers working capital needs, directly boosting free cash flow.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study utilized Chow Tai Fook Jewellery Group's (1929.HK) annual report data for FY2020–FY2024 and applied a free cash flow to firm (FCFF) discounted cash flow (DCF) model to systematically analyze the impact mechanisms of discount rate, gold price, and inventory management efficiency on enterprise investment value. Through theoretical modeling and empirical testing, the study arrives at the following structured conclusions:

(1) Discount Rate

By integrating the CAPM framework with ESG and country risk premiums, the study calibrates a baseline WACC of 9.3%, 0.5 percentage points below the market-implied discount rate. Sensitivity analysis confirms a significant negative correlation between WACC and enterprise value: every 0.5 percentage point increase in WACC results in an approximate 11% decline in valuation. The current stock price already reflects elevated policy and liquidity risk premiums, indicating that improvements in ESG governance (e.g., enhanced responsible gold sourcing coverage) or greater policy clarity could effectively reduce risk premiums and unlock valuation potential.

This finding validates the theoretical importance of discount rates as core risk parameters in modern finance, while also providing investors with a dynamic tool to gauge market sentiment and deviations from fundamental value. Consistent with prior research, firms with higher ESG scores often experience lower cost of equity and improved valuation outcomes (Friede et al.,2015).

(2) Gold Price

The study innovatively incorporates gold prices into a joint Monte Carlo simulation using the Schwartz mean-reversion model. Results indicate that Chow Tai Fook's fair value was not a single point estimate but a probabilistic range of HKD 10.9–15.8, representing a 45% valuation bandwidth. Gold price volatility was the primary external driver, contributing 52% of valuation variation. The relationship between gold prices and valuation was nuanced: moderate price increases enhance value via inventory revaluation, while rapid surges can suppress consumption and trigger hedging losses, eroding profits.

Additionally, the study quantifies the independent impacts of consumption tax jumps and exchange rate fluctuations, identifying extreme scenarios with simultaneous deterioration of all three factors as key tail risks. This underscores that for cyclical, resource-intensive jewelry firms, multi-factor stochastic simulation was

a necessary methodological approach to capture valuation uncertainty, particularly downside risk (Batchelor, 1995; Zhang, 2021).

(3) Inventory Management Efficiency as a Key Internal Value-Creation Lever

Empirical analysis confirms a clear positive relationship between inventory management efficiency and enterprise value. The regression model establishes a quantitative transmission path: inventory days → working capital → free cash flow. The results show that every 10-day increase in inventory holding ties up HKD 3.5 billion in cash, reducing per-share value by HKD 0.6. Conversely, compressing inventory turnover from the current 274 days to the industry benchmark of 204 days could release HKD 8.4 billion in cash, boosting valuation by 11%.

This finding translates abstract operational efficiency into concrete financial value, providing management with precise guidance for optimizing capital allocation and enhancing cash flow generation. It also signals to investors that inventory efficiency was a critical indicator of corporate management quality, reinforcing prior evidence that operational metrics can materially influence firm valuation (Cachon et al.,2000; Sarac et al., 2010).

5.2 Recommendation

Based on the empirical findings and conclusions of this study, several specific recommendations are proposed for Chow Tai Fook Jewellery Group and similar jewelry retail enterprises to improve valuation practice and operational management. These recommendations aim to enhance the scientific rigor and practical utility of valuation models.

(1) Optimize Discount Rate (WACC) Calibration

The discount rate (WACC) should be more precisely calibrated due to its high sensitivity to valuation outcomes (±0.5 p.p. resulting in roughly ±11% change in valuation). Future research and practical applications should implement dynamic equity cost estimation by extending the CAPM framework to incorporate ESG rating changes, industry regulatory risk indices, and geopolitical risk factors. This would allow equity costs to reflect the evolution of both internal and external risk conditions in real time. Additionally, multi-scenario testing of after-tax debt costs under different financing strategies, such as increasing RMB-denominated debt or adjusting debt maturities, combined with iterative optimization of target capital structure, can provide quantitative support for financing decisions. Finally, integrating comprehensive country and policy risk premiums into WACC models can convert otherwise unobservable risks, such as exchange rate controls or market illiquidity, into quantifiable components, thereby improving the discount rate's ability to represent overall firm risk (Damodaran, 2012; Pedersen et al., 2021).

(2) Expand Multi-Factor Scenario Simulation

Multi-factor scenario simulation should be expanded. This study confirms the effectiveness of jointly modeling gold prices, consumption tax, and exchange rate fluctuations to reveal tail risks in valuation. Future studies could incorporate broader macroeconomic factors, such as global interest rate cycles, commodity supply chain volatility, and domestic consumer confidence indices, into the Monte Carlo framework to generate higher-dimensional stochastic valuation ranges that better capture macro risk exposures. Furthermore, intelligent policy probability updates using natural language processing (NLP) techniques applied to policy documents, central bank reports, and media sentiment can dynamically update the likelihood of regulatory jumps, such as the introduction of consumption taxes. Decision-oriented valuation intervals can also be derived by back-testing simulated percentiles (e.g., 10% and 5%) to set practical trading thresholds for investors, converting probabilistic valuation outcomes into actionable investment discipline (Schwartz, 1997; Batchelor, 1995).

(3) Strengthen Inventory Efficiency Management

Given the strong linkage between inventory efficiency and free cash flow, firms should elevate inventory optimization to a core strategic priority. Establishing value-driven KPIs for inventory turnover, for instance by reducing annual inventory days by at least 8, and linking these KPIs to performance evaluations of business units and executives, ensures strategic objectives are met. Finance departments should regularly update transmission models connecting inventory days, working capital, and free cash flow, integrating them into budgeting, performance assessment, and resource allocation to visualize value creation. Investments in digital and intelligent supply chain management systems, demand forecasting algorithms, and automated replenishment tools can further control inventory levels precisely, reduce working capital lock-up, release cash flow, and enhance enterprise valuation (Cachon et al.,2000; Sarac et al., 2010).

In summary, future enterprise investment value assessment should shift from static calculations to dynamic, multi-dimensional risk management tools. By refining discount rate calibration, constructing comprehensive multi-factor scenario models, linking operational efficiency to value creation, and leveraging technology for continuous model iteration, managers and investors in the jewelry retail sector can obtain forward-looking, actionable decision support, thereby improving both corporate management quality and investment outcomes.

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