Stellantis and Walmart Financial Analysis

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Abstract—This project analyzes the financial structure and market performance of Stellantis and Walmart, selected for their contrasting industry profiles and global significance. Stellantis, a major player in the automotive sector, offers insight into a capital-intensive, cyclical industry, while Walmart, a leading global retailer, represents a stable, consumer-driven business model. By comparing these two companies, we aim to explore how different financial strategies and market dynamics influence stock and bond valuation, risk exposure, and overall financial health.

1. Introduction to our companies

1.1. Walmart

Walmart was founded in 1962 by Sam Walton, who opened the first store in Rogers, Arkansas, at the age of 44. Born in 1918 in Kingfisher, Oklahoma, Sam led the company to rapid growth, helped by its commitment to low prices and the dedication of its associates. When Walmart went public in 1970, the proceeds fueled steady expansion throughout the country. Walmart's main competitors are Amazon in e-commerce and cloud services, Costco and Target in physical retail and Alibaba in international markets. In particular, in recent years, Walmart has undergone a significant transformation to enhance its competitiveness, particularly against e-commerce giants like Amazon. The company reported $681 billion in annual sales, with a revenue increase of over $121 billion in the past four years. In particular, e-commerce now accounts for 30% of Walmart's total sales, a major shift from its traditional in-store dominance: customers now opt for expedited delivery services, reflecting the company's investment in its online and logistics capabilities. Furthermore, Walmart's adoption of advanced technologies, including AI-enabled tools, has improved operational efficiency, saving developers approximately 4 million hours in the past year, and allowing the rise of direct-to-consumer brands reducing reliance on big-box retailers. The retail industry is characterized by rapid technological advancements and shifting consumer preferences. Walmart's strategic focus on integrating its physical and digital assets positions it well to navigate the evolving market landscape and maintain its leadership position.

The company's stock has outperformed retail competitors, as its mix of in-store and digital sales provides resilience. Today Dough McMillon is the president and CEO of Walmart Inc, a position he held since February 1st, 2014.

1.2. Stellantis

Stellantis, a multinational automotive group, is currently undergoing significant executive changes: Carlos Tavares, CEO since its formation in 2021 through the merger of Fiat Chrysler Automobiles (FCA) and PSA Group, departed in late 2024 due to disagreements with major shareholders. Tavares played a pivotal role in the early growth of Stellantis, overseeing cost synergies and EV (electric vehicle) strategy. In 2023, he received €36.5 million in total compensation, including performance incentives tied to EV development and global expansion, a 56% increase from the previous year, largely due to long-term performance incentives. Stellantis is actively searching for a new CEO, and the transition is expected to impact strategic priorities, including potential shifts in EV production and adjustments to the global brand portfolio. The Stellantis Board of Directors is chaired by John Elkann, who has initiated the search for Tavares' successor and oversees strategic planning and major financial decisions. The board consists of members of diverse backgrounds, reflecting the company's multinational heritage, including representatives of the former Fiat Chrysler Automobiles and PSA Group. This diverse composition aims to provide a balanced perspective on the company's strategic direction. In particular, the board comprises a mix of former PSA and FCA executives, balancing European and North American market interests. Key board members include Robert Peugeot (represents the influence of the Peugeot family), Henri de Castries (former CEO of AXA, bringing financial expertise), Andrea Agnelli (member of Italy's influential Agnelli family), Ann Godbehere (an independent director with a background in risk management and insurance). As we can see, the governance structure remains highly European-centric, despite Stellantis' large presence in North America.

2. Valuation of stocks and bonds

The objective of stock and bond valuation is to provide investors with a reliable estimate of the fair market value of a company's securities, enabling well-informed investment decisions. To determine stock prices, we apply a range of valuation methodologies, including the Discounted Dividend Model (DDM) and the Peer Comparable Approach. A comprehensive explanation of these techniques, along with detailed calculations, can be found in the Annexes section.

2.1. Betas calculation

Beta (β) is a key financial metric that quantifies a security's systematic risk, measuring how sensitive an asset's returns are to movements in the broader market. A beta of 1.0 indicates that the security's price moves in line with the market, while values above 1.0 suggest greater volatility than the market, and values below 1.0 indicate less volatility. Mathematically, beta represents the slope coefficient in the Capital Asset Pricing Model (CAPM) regression equation, calculated as the covariance between the security's returns and the market returns, divided by the variance of market returns:

$$\beta_i = \frac{\mathrm{Cov}(R_i, R_m)}{\mathrm{Var}(R_m)}$$

To compute the beta coefficients for Walmart and Stellantis, we used the S&P 500 as the market benchmark and collected monthly return data over the past five years. After sorting historical prices by date, we converted them into monthly returns, aligned the datasets, and ran an Ordinary Least Squares (OLS) regression of each company's returns against the S&P 500's returns. The resulting beta values measure each stock's sensitivity to market movements. Our analysis produced a beta of 0.67 for Walmart and 1.51 for Stellantis.

When compared to the beta values reported on Yahoo Finance — 0.69 for Walmart and 1.22 for Stellantis — our estimates are closely aligned for Walmart but significantly higher for Stellantis. The slight difference for Walmart can be attributed to minor variations in the data source or frequency of returns. However, the higher beta for Stellantis in our analysis may reflect its greater exposure to cyclical market factors, as the automotive industry is typically more volatile and sensitive to macroeconomic conditions. This elevated beta suggests that Stellantis' stock reacts more strongly to overall market movements compared to Walmart, which operates in the more stable and defensive retail sector.

The practical implications of these beta values are significant for portfolio construction and risk management. Walmart's beta of 0.67 suggests that for every 1% change in the S&P 500, Walmart's stock price would be expected to move approximately 0.67% in the same direction. This lower beta classifies Walmart as a defensive stock, making it potentially attractive during market downturns. Conversely, Stellantis' beta of 1.51 indicates that its stock would be expected to move approximately 1.51% for every 1% change in the market, amplifying both gains in bull markets and losses in bear markets. This higher systematic risk helps explain why investors typically

demand a higher return premium for holding Stellantis compared to Walmart.

2.2. Growth calculation

In order to estimate the **growth rate** g to use for the fair valuation of the two companies' stock prices, we first analyzed their **dividend policies** over the past five years. During this period, Walmart's dividend per share increased on average by approximately **5% per year**, with a significantly higher growth in the last two years, ranging between **9% and 12% annually**. In contrast, Stellantis experienced a **negative average dividend growth**, mainly due to a substantial decline in recent years. Moreover, as detailed in the appendix, Stellantis' dividend distribution pattern appears irregular compared to Walmart's consistent quarterly payments. Given these observations, and considering Stellantis' ongoing operational challenges, we did not attempt to estimate a sustainable growth rate for Stellantis. Instead, we set its growth rate to **0%**, which will be used later in our valuation calculations as a conservative assumption. For Walmart, the situation is more nuanced. The sharp acceleration in dividend growth during the past two years could distort the estimation of a sustainable long-term growth rate. As previously noted, Walmart announced its largest dividend increase of the decade in 2024, followed by an even larger increase in 2025. Thus, two alternative approaches can be considered:

(i) Use the **five-year average** growth rate (approximately 5%), adopting a more conservative stance;
(ii) Use the **two-year average** growth rate (approximately 10%), though this seems overly optimistic given historical trends.

To cross-check, applying the Fisher equation and assuming an expected **inflation rate between 3% and 4%** (lower than in recent years and partially explaining the recent dividend boosts), the implied **real growth rate** would need to be around **6%–7%**. Such a level appears ambitious but plausible considering Walmart's recent performance and strategic initiatives.

$$G_n = G_r + \mathbb{E}[\pi]$$

Therefore, we decided to adopt a **growth rate of 6%** for Walmart in our valuation model, as it represents a **reasonable and balanced estimate**, avoiding both excessive conservatism and unrealistic optimism.

2.3. Capital asset pricing model

The Capital Asset Pricing Model (CAPM) is a foundational financial model used to estimate the expected return of an asset by relating its level of systematic risk—measured by beta—to the excess return of the market over the risk-free rate. This model helps investors evaluate whether an asset offers adequate compensation for its risk compared to a benchmark, typically the broader market.

In our analysis, we applied the CAPM framework to two companies: Walmart, operating in the U.S. retail sector, and Stellantis, a multinational automotive manufacturer with strong European roots. To begin the process, we retrieved five years of historical daily price data for Walmart (WMT), Stellantis (STLA), and the S&P 500 index, which we used as a proxy for the overall market. The data was sourced from Yahoo Finance. After calculating daily returns for each asset and aligning the datasets by date, we estimated each company's beta by regressing its returns against those of the market. This regression yielded beta values of approximately 0.6732 for Walmart and 1.5136 for Stellantis, indicating that Walmart is less sensitive to market movements, while Stellantis exhibits considerably more volatility in response to market fluctuations.

Using these beta values, we computed the expected return for each stock using the CAPM formula. We assumed a risk-free rate of 4.27%, based on U.S. Treasury yields, and a market risk premium of 5.5%. Under these assumptions, Walmart's expected return was calculated at 7.97%, reflecting its lower market sensitivity. Stellantis' expected return, on the other hand, came out to be 12.59%, driven by its high beta. However, it is important to clarify that this expected return for Stellantis was obtained by applying a U.S.-based risk-free rate to maintain consistency in the comparison with Walmart, which is a U.S.-listed company.

Given that Stellantis is headquartered in Europe and generates a significant portion of its revenue from European markets, one could argue that it would be more appropriate to use a European risk-free rate, such as the yield on German Bonds or eurozone treasuries. If we were to use a European risk-free rate—closer to 2.575%—instead of the U.S. Treasury yield, Stellantis' CAPM-implied return would drop significantly, to approximately 7.7%, aligning more closely with a European investor's perspective. This difference highlights how the choice of benchmark inputs in CAPM can significantly influence the expected return calculation, depending on the geographic and market context of the firm and the investor.

To complement the quantitative findings, we visualized the relationships between individual stock returns and market returns using scatter plots. **See Figure 3 of the Appendix**.In Walmart's plot, the trendline was relatively flat and the data points were closely clustered, reflecting the company's stable, predictable behavior typical of defensive stocks. Stellantis' plot, however, showed a much steeper line and more dispersed data, consistent with a riskier, more volatile asset influenced heavily by broader market conditions. These visuals reinforce the numerical insights from the CAPM, illustrating the contrasting risk-return profiles of the two companies.

In conclusion, the CAPM analysis revealed that Walmart is a lower-risk, stable investment, while Stellantis offers higher potential returns but with significantly greater risk. The case of Stellantis also underscores how regional context matters: expected returns are not only influenced by company-specific risk, but also by the assumptions about market environment—specifically the risk-free rate. Using a U.S.-based rate yields a higher return estimate, but for a European-based evaluation, a lower return would be more appropriate. This distinction is crucial when making cross-market comparisons or constructing global portfolios.

2.4. Dividend Discount Model

The **Dividend Discount Model (DDM)** provides a valuation perspective by estimating a stock's intrinsic value based on the present value of its expected future dividend payments. We applied the *Gordon Growth Model*, a simplified DDM assuming a constant dividend growth rate in perpetuity, to both Walmart and Stellantis.

Walmart Analysis

For Walmart, the DDM analysis yielded an intrinsic value of approximately **$61.68 per share**, using the calculated cost of equity (R_e) of **7.11%** and the estimated sustainable long-term dividend growth rate (g) of **6.58%**. This calculated value stands significantly below Walmart's recent market price of $98.61, suggesting a *potential overvaluation* based solely on this dividend-centric model. The discrepancy highlights the challenge of justifying Walmart's current market premium using only its projected dividend stream, even with a reasonably optimistic growth assumption.

Recent large dividend increases, potentially influenced by higher inflation periods reflected in the financial data, might not represent the sustainable long-term trajectory captured by the Gordon Growth model. The market valuation likely incorporates broader factors beyond constant dividend growth, such as:

- Walmart's dominant market position in the stable retail sector
- Its significant share repurchase programs
- Overall earnings growth potential
- Potentially a lower discount rate or higher growth expectations held by market participants

Stellantis Analysis

Conversely, the DDM valuation for Stellantis resulted in an intrinsic value estimate of **$16.69 per share**. This figure is notably higher than its recent market price of $13.05, indicating *potential undervaluation* according to the model. This outcome is primarily driven by:

- Stellantis' substantial current dividend yield (stemming from a high Dividend Per Share relative to its stock price)
- A conservative growth assumption ($g = \mathbf{0.0\%}$) as discussed in our growth analysis
- A higher cost of equity ($R_e = \mathbf{10.69\%}$) due to its greater systematic risk (beta $\approx \mathbf{1.50}$)

The DDM, in this case, emphasizes the appeal of the current dividend payout relative to the share price. However, this apparent undervaluation warrants careful consideration. The market may be pricing in significant risks not fully captured by the simple DDM's parameters, including:

- The inherent cyclicality of the automotive industry
- Substantial capital investment required for the transition to electric vehicles (EVs)
- Recent uncertainties surrounding executive leadership
- Concerns regarding the sustainability of future earnings and dividends, which are also suggested by its low P/E ratio and recent financial performance

In summary, the Dividend Discount Model offers **contrasting insights** for the two companies:

- **Walmart** appears *overvalued* when assessed strictly through the lens of sustainable dividend growth relative to its high market price
- **Stellantis**, conversely, appears *undervalued* due to its high current dividend yield relative to its depressed share price

These findings underscore the DDM's inherent sensitivity to assumptions about long-term growth (g) and the discount rate (R_e), and its limitation in capturing value derived from sources other than dividends, such as share buybacks or reinvested earnings not immediately paid out. Therefore, while informative, the DDM results must be interpreted within the broader context of each company's specific situation and validated against other valuation methodologies, such as the Free Cash Flow approach and peer comparables, to form a comprehensive investment perspective.

2.5. Valuation by Comparables

The valuation by comparables method is a relative valuation technique that involves comparing the target company to similar firms operating in the same industry or sector.

(i) The first step is to identify a group of comparable companies that operate in the same industry or sector as the target company. These companies should exhibit similar business models, growth prospects, and risk profiles.
(ii) The second step is to select appropriate valuation multiples for comparison. In this analysis, the chosen valuation multiples are the price-to-earnings **(P/E)** ratio and the price-to-book **(P/B)** ratio.

For Walmart, the selected comparable companies are Costco, Ross Stores, and Kroger, as they all emphasize discount retailing and cater to value-conscious customers. Costco operates a bulk wholesale model characterized by low prices and high volumes, aligning closely with Walmart's strategy. Kroger, as a major grocery chain, significantly overlaps with Walmart's food and essentials business. Ross Stores targets budget shoppers through off-price retailing, resonating with Walmart's focus on affordability.

However, the analysis reveals the uniqueness of Walmart. Starting with the price-to-earnings ratio, the competitors display notable differences. Both Ross and Kroger exhibit lower **P/E** ratios (23.75 and 20.79, respectively) and higher **P/B** ratios (9.44 and 3.69, respectively) compared to Walmart, whose **P/E** and **P/B** ratios are 38.8 and 3.08, respectively. This suggests that Ross and Kroger may have weaker growth prospects and higher business risks relative to Walmart. Consequently, investors are less willing to pay as much for future earnings and demand a higher reward to compensate for the increased perceived risk, largely because Kroger and Ross operate in narrower market segments.

Conversely, Costco's **P/E** ratio (55.68) is significantly higher than that of Walmart. This is not unexpected: Costco has a distinct business model centered around memberships, offering exceptionally low prices with minimal markups, and providing an efficient, streamlined shopping experience. As a result, Costco has cultivated exceptionally strong customer loyalty, translating into highly reliable cash flows. Additionally, Costco emphasizes high-quality product offerings, further distinguishing its business model.

For Stellantis, we applied the same valuation by comparables methodology as described for Walmart, selecting peer companies that operate in the automotive industry with similar business models and market exposure.

In our analysis of Stellantis, we selected General Motors (GM), Ford (F), and Toyota (TM) as the most relevant comparable companies. These automotive manufacturers share key characteristics with Stellantis, including global market presence, exposure to similar market cycles, and facing comparable industry challenges such as electrification, supply chain complexities, and regulatory pressures. General Motors and Ford are particularly relevant as they compete directly with Stellantis in the North American market, while Toyota provides perspective as a leading global manufacturer with strong positions in both developed and emerging markets.

The analysis revealed significant differences in valuation between Stellantis and its peers. Stellantis trades at a P/E ratio of 6.39, which is below the peer group average of 7.37. This discount suggests that investors have lower expectations for Stellantis' future earnings growth or perceive greater risk in its business model. Stellantis' P/B ratio of 0.43, is substantially below the peer average of 0.92, indicating that the market values Stellantis' assets at less than half of their book value. This could be due to market skepticism about Stellantis' assets quality and profitability sustainability, investors appear uncertain about wether Stellantis can mantain this profitability with the intensification in the automotive industry for EV transition investments.

When examining individual competitors, General Motors trades at a P/E of 7.61 and a P/B of 0.81, positioning it between Stellantis and Toyota in terms of market valuation. Ford shows the closest valuation profile to Stellantis with a P/E of 6.78 and a P/B of 0.87, though still commanding somewhat higher multiples. Toyota demonstrates the strongest valuation metrics among the group with a P/E of 7.71 and a P/B of 1.08, reflecting the market's greater confidence in its operational stability and future prospects.

The relatively lower valuation multiples for Stellantis can be attributed to several factors. First, the company is still in the process of realizing synergies from the 2021 merger between FCA and PSA Group, creating uncertainty about future operational efficiency. Second, Stellantis faces significant challenges in its transition to electric vehicles, with some analysts questioning whether its EV strategy is as robust as competitors'. Third, the recent executive leadership changes, particularly the departure of CEO Carlos Tavares, have created additional uncertainty about the company's strategic direction. Finally, Stellantis has substantial exposure to European markets, which have shown slower growth and higher regulatory pressures compared to other regions.

Based on the peer average P/E multiple of 7.37 and Stellantis' 2024 EPS of $2.04, the implied share price would be approximately $15.03, suggesting a potential undervaluation of about 62% compared to its current market price of $9.26. Similarly, applying the peer average

P/B ratio of 0.92 to Stellantis' book value per share of $30.42 yields an implied price of $27.99.

However, these implied valuations must be interpreted with caution. The significant discount at which Stellantis trades compared to peers likely reflects valid market concerns about company-specific risks rather than a simple mispricing. The automobile industry is highly cyclical and capital-intensive, with manufacturers frequently trading below book value during periods of market uncertainty or anticipated industry disruption. Additionally, Stellantis' recent financial performance has shown concerning trends, with projected negative earnings growth of -8.7% that justifies a lower P/E multiple.

In conclusion, while the comparable analysis suggests that Stellantis may be undervalued relative to its industry peers, the magnitude of this discount likely reflects legitimate market concerns about the company's future prospects. Investors should consider these valuation metrics alongside other factors such as the company's strategic positioning, operational execution, and industry headwinds when evaluating Stellantis as a potential investment opportunity.

2.6. Bond valuation

In this section, we carried out a comprehensive valuation of a Walmart Inc. bond maturing on September 22, 2031, which carries an **annual coupon rate of 1.80%**. The goal was to estimate the **bond's fair value** using standard present value techniques and **assess its performance** relative to the current market environment. Additionally, we evaluated the bond's **yield to maturity (YTM)** and **duration metrics** to understand its interest rate sensitivity and investment appeal.

We began by applying the classical bond valuation formula, which discounts all future coupon payments and the face value back to present value using a given discount rate. For this analysis, we used a **risk-free rate of 4.27%**, reflective of prevailing U.S. Treasury yields. The bond makes **semi-annual coupon payments**, and based on its time to maturity (approximately 6.43 years), we calculated a total of **13 payment periods** remaining.

Using these inputs, we determined the bond's **fair value** to be **$861.09**. We then compared this result to the bond's **current market** price of **$859.90**. The minimal **difference**, a discount **of** just **$1.19 or 0. 14%**, suggests that the bond is trading very close to its theoretical value at the current risk-free rate. This small discrepancy implies that the **market is pricing** Walmart's credit risk and cash flow reliability **efficiently**, with only a **minor premium required** over the assumed risk-free benchmark.

Next, we estimated the bond's yield to maturity (YTM) using a **bisection method** to iteratively find the interest rate that equates the bond's current market price with the present value of its cash flows. The resulting **YTM** is **approximately 4.29%**, slightly above the risk-free rate. This modest risk premium reflects investor expectations of being compensated for the time value of money and Walmart's corporate risk, albeit low. The difference between the YTM and the coupon rate—a spread of 2.49 percentage points—is the primary reason why the bond trades significantly below par (about 14% lower than its face value of $1,000).

We further analyzed the bond's interest rate risk using duration metrics. The **Macaulay duration**, which measures the weighted average time to receive all cash flows, **is** approximately **6.13 years**. The **modified duration**, which estimates the percentage price change in response to a 1% change in interest rates, **is 6.00**. This implies that if interest rates rise by 1 percentage point, the bond's price would **decline by** roughly **6%, or about $51.68.** These duration values are consistent with the bond's intermediate maturity and the relatively low coupon rate, both of which increase sensitivity to interest rate fluctuations.

The bond's behavior in the current interest rate context is particularly relevant. Because its coupon rate is low compared to prevailing yields, the bond's fixed income stream is less competitive, and thus its market price adjusts downward to compensate. This adjustment ensures that new buyers still receive a yield aligned with market conditions. The bond's characteristics—low coupon, high credit quality, and moderate duration—make it **attractive to investors seeking stability** and predictable income over a medium-term horizon.

From an investment perspective, the Walmart bond is a conservative fixed-income instrument. Its strong credit profile, derived from the financial resilience of one of the largest and most stable global retailers, makes it **relatively safe from a default risk standpoint.** Its current yield adequately compensates for its interest rate risk, particularly for investors who plan to hold the bond to maturity and are less concerned with short-term price volatility.

In conclusion, the Walmart bond analyzed here represents a **well-priced**, **relatively low-risk** investment with **moderate interest rate exposure** and **predictable income**. Its small discount to fair value, stable issuer, and reasonable yield to maturity combine to make it a sound option for income-focused portfolios, especially under assumptions of stable or falling interest rates. This analysis also demonstrates how valuation models, when coupled with sensitivity metrics like duration, offer critical insight into the market behavior and attractiveness of fixed-income securities.

3. Capital Structure

Capital structure represents the specific combination of debt and equity that a company uses to finance its operations and growth. This fundamental financial decision affects not only a firm's risk profile but also determines its **weighted average cost of capital (WACC)** — the average rate a company must pay to all its security holders to finance its assets. Together, these elements create a financial framework that significantly impacts a company's ability to create value and compete effectively.

Walmart maintains total assets of **260.82 billion** with **97.69 billion** in equity and **60.11 billion** in debt. This translates to a capital structure comprising **61.91% equity** and **38.09% debt**, with a **debt-to-equity ratio of 61.53%**. These figures reflect Walmart's substantial asset base and strategic approach to financial leverage.

Stellantis, a major automotive manufacturer, holds **207.61 billion** in total assets, with **82.12 billion** in equity and **37.23 billion** in debt. Its capital structure shows **68.81% equity** financing and **31.19% debt**financing, resulting in a **debt-to-equity ratio of 45.34%**. Surprisingly, Stellantis maintains a more conservative debt position than typically expected in the capital-intensive automotive industry.

The **industry context** provides essential insights into these capital structure decisions. Retail typically generates relatively stable cash flows with lower volatility, allowing companies like Walmart to comfortably service moderate debt levels while benefiting from debt's tax advantages. The **automotive sector** faces greater cyclicality, substantial R&D requirements, and significant capital investment needs, which explains Stellantis's preference for higher equity financing to maintain financial flexibility during industry downturns and fund major technological transitions.

These capital structure choices represent deliberate **financial strategies**. Walmart's moderate leverage optimizes its capital costs while preserving financial stability. Stellantis's more conservative debt approach provides a buffer against the automotive industry's inherent volatility and supports the substantial investments required for electrification and autonomous driving technologies.

The companies' capital structures directly influence their **cost of capital**. For the **cost of equity** calculation, we employed the Capital Asset Pricing Model with a risk-free rate of **4.27%** and market risk premium of **5.5%**. Walmart's **beta of 0.673** yields a cost of equity of **7.97%**, while Stellantis's higher **beta of 1.514** results in a substantially higher cost of equity of **12.59%**. This significant difference reflects the market's perception of relative business risk between retail and automotive manufacturing.

For **debt costs**, Walmart's pre-tax cost of debt is **5.8%**, reducing to **4.44%** after applying the 23.4% corporate tax rate. Stellantis faces a higher pre-tax cost of debt at **8.8%**, or **6.74%** after tax. This premium represents lenders' assessment of the automotive industry's greater financial risk compared to retail.

Combining these components according to their proportions in each company's capital structure produces a **WACC of 6.63%** for Walmart and **10.77%** for Stellantis. This **4.14 percentage point difference** represents the cumulative effect of industry characteristics, business risk profiles, and financial strategies.

The WACC differential creates distinct **competitive dynamics** for these companies. Walmart's lower cost of capital enhances its ability to:

- Fund expansion and growth initiatives more economically
- Invest in digital transformation with lower hurdle rates
- Weather economic downturns with greater financial resilience
- Create shareholder value from projects that would be unprofitable for higher-cost competitors

For Stellantis, the higher cost of capital necessitates:

- Greater operational efficiency to achieve acceptable returns
- More selective capital allocation to higher-return projects
- Potentially higher pricing strategies to generate sufficient returns
- Focus on operational excellence to offset financial disadvantages

This analysis demonstrates how capital structure reflects both **strategic financial decisions** and **industry characteristics**. Walmart's moderate leverage and lower cost of capital align perfectly with its high-volume, low-margin retail business model, providing financial flexibility while optimizing capital costs. Stellantis's more conservative debt position accommodates the automotive industry's cyclicality and substantial investment requirements, helping to mitigate financial risk despite increasing its overall cost of capital.

While operating in different sectors with distinct financial profiles, both companies have developed capital structures that appear well-calibrated to their respective business models and competitive environments. This comparison highlights how effective financial strategy must align with a company's operational reality and industry dynamics to create sustainable competitive advantage.

4. Portfolio management and risk-return analysis

Portfolio optimization remains a fundamental tool in investment analysis, even when considering just two assets. In this section, we examine the risk-return trade-offs and diversification potential of a portfolio composed of Walmart (WMT) and Stellantis (STLA). These two companies operate in distinct sectors—retail and automotive—and therefore offer interesting contrasts in terms of volatility, correlation, and overall performance.

In order to effectively compute the returns of the portfolio composed of two stocks, we employed the Capital Asset Pricing Model (CAPM) to estimate the expected market returns. The analysis further computes the standard deviations and the covariance between the two stocks. The covariance value of approximately 0.00172 indicates a weak positive relationship, meaning that while both stocks may rise or fall together at times, they do so with enough independence to make diversification beneficial.

We tested a wide range of portfolio weight combinations to identify the one that maximizes the Sharpe ratio, our measure of risk-adjusted return, using a risk-free rate of 4.27%. For each portfolio, we calculated the expected return and risk using the following formulation, which accounts for the individual asset variances and their covariance:

$$E(R_p) = w_W E(R_W) + w_S E(R_S) + \sigma_W^2 w_W^2 + w_S^2 \sigma_S^2 + 2 w_W w_S \mathrm{Cov}(R_W, R_S)$$

This expression captures the fact that portfolio risk is not just a weighted average of individual risks, but also depends on how the assets co-move. The most efficient configuration was found to be a portfolio composed of 66% Walmart and 34% Stellantis, which resulted in an expected return of 9.54%, a standard deviation of 19.55%, and a Sharpe ratio of 0.2698. This mix effectively captures the higher return potential of Stellantis while dampening its risk through Walmart's stabilizing influence. The **50-50 portfolio** provided a slightly higher return of 10.28%, but also higher volatility at 23.30%, leading to a lower Sharpe ratio of 0.2581. A **Walmart-only portfolio**, while exhibiting the lowest volatility at 20.24%, also produced the lowest return at 7.97% and a Sharpe ratio of 0.1830. The **Stellantis-only portfolio**, though achieving the highest return at 12.60%, had extreme volatility of 41.96%, reducing its Sharpe ratio to 0.1984.

The results are illustrated in the appendix, with the portfolio curve defined by the efficient frontier. The endpoints of the curve represent the individual stocks (that indeed coincide with the Walmart-only portfolio and the Stellantis-only portfolio: Walmart, with an expected return of 7.97% and a standard deviation of 20.24%, and Stellantis, with an expected return of 12.60% and a substantially higher standard deviation of 41.96%. Although mathematical theory suggests diversification leads to better portfolio performance, in practice, this must be carefully weighed against qualitative considerations. Stellantis exhibits high volatility and is susceptible to macroeconomic and sector-specific risks, which may not be fully captured by quantitative models. Thus, while the 34% allocation to Stellantis statistically enhances the portfolio's return profile, its real-world inclusion should be approached with caution. It could expose the investor to undesirable downside risk, particularly in economic downturns or sector-specific disruptions.

These results demonstrate that the optimal portfolio is not necessarily the one with the highest return, but the one that offers the best balance between return and risk. The **efficient frontier** constructed from all combinations clearly shows this trade-off, and the optimal portfolio lies exactly at the point where the Capital Market Line—representing the best achievable Sharpe ratio—touches the curve. A portfolio heavily weighted toward Stellantis could appear more attractive during a bull market, but would likely suffer greater losses in the event of a downturn. Conversely, portfolios leaning toward Walmart would be more resilient in economic slowdowns, offering downside protection at the cost of higher return potential. In a rising interest rate environment or under automotive sector disruptions, Walmart's defensive profile would help absorb shocks, while Stellantis may be more exposed due to its capital intensity.

In conclusion, the 66% Walmart and 34% Stellantis portfolio offers the most efficient allocation under current market conditions. It balances return and volatility in a way that improves overall performance compared to single-stock and equal-weighted portfolios. This analysis reinforces the value of diversification and quantitative portfolio construction, showing how tools like covariance and the Sharpe ratio can guide investors toward smarter, more resilient investment strategies.

5. Dividend Policy

In this section, we analyzed and compared the dividend policies of Walmart and Stellantis to better understand their approaches to shareholder returns, business strategy, and financial positioning. Dividend policy reflects how a company allocates profits—whether by distributing earnings to shareholders or reinvesting them in future growth. It offers critical insight into a firm's maturity, risk profile, and growth outlook.

To begin, we collected key financial data for both companies, including earnings per share (EPS), dividend per share, stock price, and return on equity (ROE). These metrics were used to calculate several indicators of dividend strategy: dividend yield, payout ratio, retention ratio, estimated dividend growth, and price-to-earnings (P/E) ratio.

For Walmart, the **dividend per share is $0.94**, which results in a modest **dividend yield of 0.96%** based on its current share price. However, Walmart exhibits a relatively low **payout ratio of 38.8%,** meaning that it **retains 61.2% of its earnings**—a signal that it prioritizes reinvestment while still maintaining a commitment to dividends. The company's **ROE of 21.41%** indicates strong capital efficiency, enabling it to generate substantial value from retained earnings. When combining this ROE with its retention ratio, we calculated an **estimated dividend growth rate of 6%.** This suggests that Walmart, while not currently offering high dividend income, may continue to increase its dividends over time. The company's **P/E ratio of 40.56** further supports its classification as a growth-oriented stock, with investors pricing in high future expectations.

By contrast, Stellantis has a **dividend per share of $1.65**, translating into a much higher **dividend yield of 12.66%.** Stellantis has a **payout ratio of 88.34%**, its **ROE** is significantly **lower at 6.72%**. This limits the company's ability to grow dividends organically through retained earnings. Its estimated **dividend growth rate is a staggering 0.0**, and its **P/E ratio is a low 6.91**, reflecting the market's skepticism about its long-term earnings potential. More concerning, Stellantis is currently projected to experience **negative earnings growth** (-8.7%), which puts its high dividend yield at risk if profitability continues to decline.

These differences highlight two fundamentally different approaches to dividend policy. Walmart's strategy focuses on long-term value creation through reinvestment, maintaining modest current payouts with strong potential for future increases. This is typical of a mature but growth-focused company operating in a stable sector like retail. Stellantis, on the other hand, adopts an income-focused model, offering immediate and attractive dividend income to shareholders. However, this comes with greater risk, given its lower capital efficiency, earnings decline, and exposure to the highly cyclical and capital-intensive automotive industry.

From an investment perspective, Walmart appeals to growth-oriented investors who prioritize long-term capital appreciation and dividend reliability, even if current income is modest. Its consistent earnings, high ROE, and sound financial discipline support a sustainable and rising dividend profile. Stellantis, in contrast, caters to income-seeking investors, offering high current yields, but with less certainty about future dividend growth or stability. Its dividend payout may face pressure in the future unless earnings improve and the company successfully navigates industry challenges such as electrification and regulatory shifts.

In conclusion, the dividend policy analysis of Walmart and Stellantis reveals two companies at different ends of the **dividend strategy spectrum**. These strategies reflect broader differences in industry structure, financial health, and strategic priorities. Our analysis clearly positions these companies at **opposite ends of the growth-value spectrum**. Walmart exhibits **classic growth characteristics** with its high P/E ratio (**40.56**), substantial retention ratio (**61.2%**), strong ROE (**21.41%**), and modest dividend yield (0.96%). These metrics, combined with its significant investments in e-commerce and technology, reflect market expectations of continued *above-average earnings growth*. Conversely, Stellantis displays **quintessential value attributes** through its low P/E ratio (**6.98**), high dividend yield (**12.66%**), and significantly discounted P/B ratio (**0.43** versus industry average of 0.92). This valuation suggests the market is primarily pricing Stellantis for its *current assets and cash flows* rather than future growth potential, particularly amid automotive industry disruption and leadership uncertainty. For investors, choosing between these stocks depends on preferences for current income versus growth potential, and tolerance for business risk and earnings volatility.

6. Appendix

The appendix includes all supporting tables, graphs, and portfolio plots used throughout the analysis. For those interested in reviewing the detailed computations and underlying reasoning, the full code and dataset are available at the following GitHub repository: [https://github.com/simonefilosofi/STLA-and-WMT-financial-analysis]

6.1. Return Distribution

Fig. 1 shows the distributed returns.

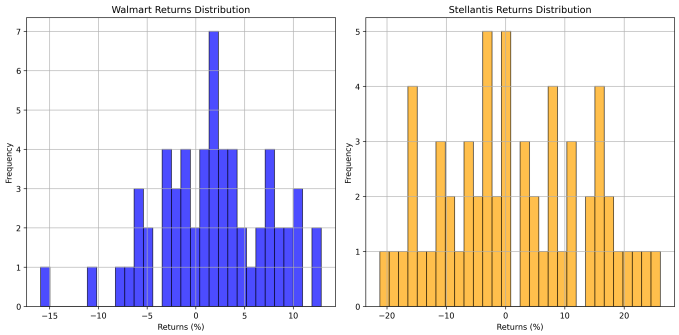

Figure 1. Returns Distribution

6.2. Valuation By Comparables: Tables

Table 1. Walmart and Comparables

	P/E	P/B
Walmart	38.8	3.08
Costco	55.68	16.40
Kroger	20.79	3.69
Ross	23.75	9.44

Note: Refer to the GitHub Repository to see complete calculation

Table 2. Stellantis and Comparables

	P/E	P/B
GM	7.61	0.81
Ford	6.78	0.87
Toyota	7.71	1.08

Note: All values based on USD currency and 2024-12-31 financial data

6.3. Stock vs Market Returns

Fig. 1 shows a visual representation of the betas

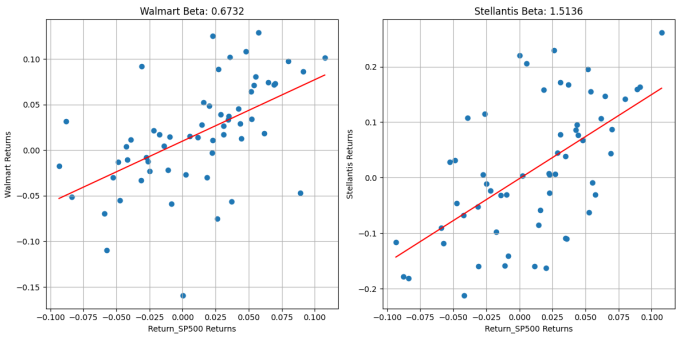

Figure 2. Beta: Walmart vs Stellantis

6.4. Dividend Policy Analysis

Table 3. Dividends and Percentage Change (By Date) - Walmart

Date	Dividends	% Change
2020-05-01	0.720	—
2021-03-01	0.733	1.85%
2022-03-01	0.747	1.82%
2023-03-01	0.760	1.79%
2024-03-01	0.832	9.47%
2025-03-01	0.940	12.98%

Table 4. Annual Dividends and Year-over-Year Change - Stellantis

Year	Dividends	% Change
2021	2.736	—
2022	1.122	-58.99%
2023	1.473	31.28%
2024	1.652	12.15%

Table 5. Walmart Dividend Policy Analysis

Metric	Value
Dividend Yield	0.96%
Payout Ratio	38.8%
Retention Ratio	61.2%
Return on Equity (ROE)	21.41%
Estimated Dividend Growth Rate	13.1%
P/E Ratio	40.52
Expected Earnings Growth	4.38%

Table 6. Stellantis Dividend Policy Analysis

Metric	Value
Dividend Yield	12.66%
Payout Ratio	88.34%
Retention Ratio	59.23%
Return on Equity (ROE)	6.72%
Estimated Dividend Growth Rate	3.98%
P/E Ratio	6.91
Expected Earnings Growth	-8.7%

6.5. Metrics

Table 7. Profitability and Market Metrics (2023–2025) for Walmart

Metric	2025-01-31	2024-01-31	2023-01-31
Total Assets	260.38B	252.39B	243.20B
Average Assets	256.61B	247.79B	244.43B
Total Liabilities	191.96B	186.13B	176.95B
Current Liabilities	96.58B	92.42B	92.19B
Total Shareholders' Equity	97.69B	95.71B	83.99B
Stockholders Equity	91.03B	83.61B	70.76B
Debt to Equity	61.53%	67.70%	70.15%
Total Debt	61.04B	64.14B	58.23B
Current Ratio	0.82	0.83	0.79
Net Income	19.43B	15.51B	11.68B
Consolidated Net Income	20.15B	16.72B	11.29B
Diluted EPS	2.41	1.91	1.42
Basic EPS	2.42	1.92	1.43
Total Revenue	680.90B	643.12B	611.29B
Return on Equity (ROE)	18.96%	17.13%	13.96%
Return on Assets (ROA)	8.71%	6.57%	4.63%

Table 8. Profitability and Market Metrics (2022–2024) for Stellantis

Metric	2024-12-31	2023-12-31	2022-12-31
Total Assets	207.61B	202.13B	186.16B
Average Assets	204.87B	194.14B	178.97B
Total Liabilities	125.49B	120.01B	113.78B
Current Liabilities	751.86B	739.4B	668.25B
Total Shareholders' Equity	821.15B	821.2B	723.82B
Debt to Equity	45.34%	35.88%	37.51%
Total Debt	372.27B	294.63B	271.53B
Current Ratio	1.08	1.24	1.27
Net Income	547.3B	185.96B	167.99B
Consolidated Net Income	552B	186.25B	167.79B
Diluted EPS	1.84	5.94	5.31
Basic EPS	1.87	5.98	5.35
Total Revenue	156.88B	189.54B	179.59B
Return on Equity (ROE)	6.66%	22.64%	23.21%
Return on Assets (ROA)	2.69%	9.59%	9.38%

6.6. Portfolio management

Table 9. Portfolio Return, Risk, and Sharpe Ratio

Portfolio	Return (%)	Standard Deviation (%)	Sharpe Ratio
Walmart	7.97	20.24	0.1830
Stellantis	12.60	41.96	0.1984
50-50	10.28	23.30	0.2581
Optimal	9.54	19.55	0.2698

Fig. 1 shows a visual representation of the betas

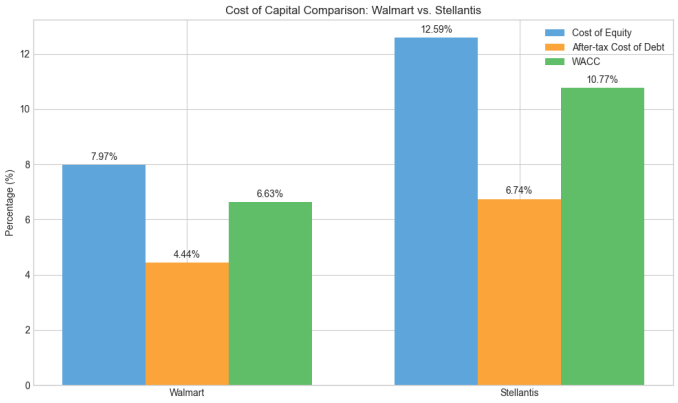

Figure 4. Walmart vs Stellantis

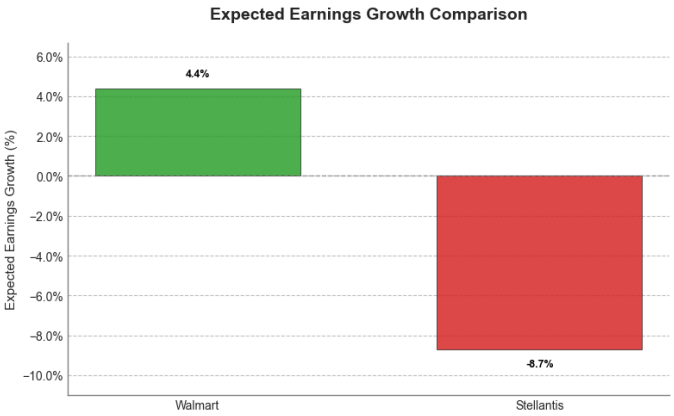

Figure 6. Growth vs Value - Classification

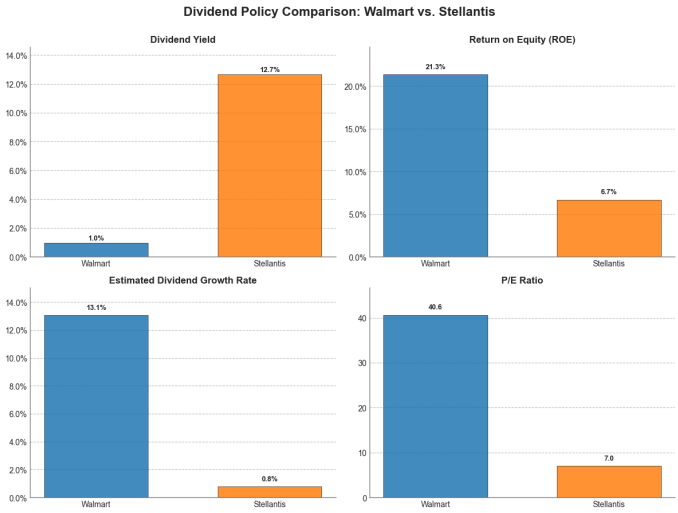

Figure 5. Dividend Policy Comparison

Table 10. Retail Stock Valuations

Company	Price ($)	Price to Book	P/E Ratio
Costco	923.65	16.40	55.68
Target	135.50	4.66	15.29
Kroger	61.53	3.69	20.79
Ross	150.07	9.44	23.75
Average	—	9.84	33.40

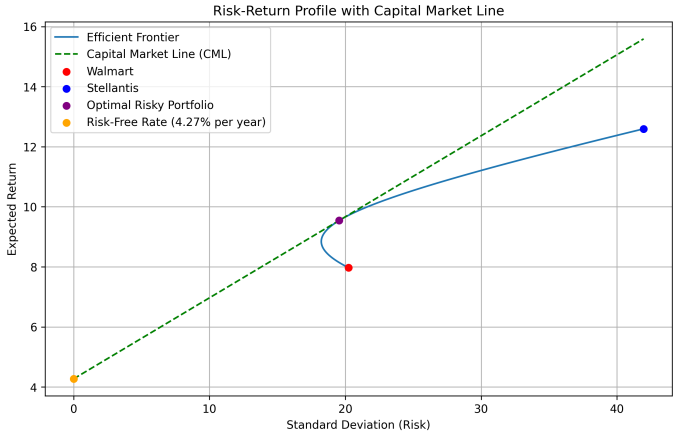

Figure 3. Efficient Frontier

Table 11. Automotive Stock Valuations

Company	Price ($)	Price to Book	P/E Ratio
General Motors	53.27	0.81	7.61
Ford	9.90	0.87	6.78
Toyota	194.61	1.08	7.71
Average	—	0.92	7.37

Note: All values based on USD currency and 2024-12-31 financial data

6.7. Cost of Capital - Comparison

Fig. 1 shows a visual representation of the comparison

Table 12. CAPM Expected Return Calculations

Parameter	Walmart	Stellantis
Beta (β)	0.6732	1.5136
Risk-free rate (R_f)	0.0427	0.0427
Market risk premium ($E(R_m) - R_f$)	0.0550	0.0550
Beta × Risk premium ($\beta(E(R_m) - R_f)$)	0.0370	0.0832
Expected return ($E(R_i)$)	0.0797 (7.97%)	0.1259 (12.59%)

Table 13. STELLANTIS 24/34 MTN Analysis (As of 2025-04-19)

Parameter	Value
Face Value	€1,000.00
Coupon Rate	4.00%
Risk-Free Rate	4.27%
Years to Maturity	8.91 years
Payment Frequency	Annual
Fair Value (using risk-free rate)	€983.68
Current Market Price	€989.50
Yield to Maturity	4.19%
Macaulay Duration	7.63 years
Modified Duration	7.32
Price change for 1% increase in yield	€-72.00
Trading Status	Premium of €5.82 (0.59%)

Table 14. WMT 1.8% 09/22/2031 Analysis (As of 2025-04-19)

Parameter	Value
Face Value	$1,000.00
Coupon Rate	1.80%
Risk-Free Rate	4.27%
Years to Maturity	6.43 years
Payment Frequency	Semiannual
Fair Value (using risk-free rate)	$861.09
Current Market Price	$859.90
Yield to Maturity	4.29%
Macaulay Duration	6.13 years
Modified Duration	6.00
Price change for 1% increase in yield	$-51.68
Trading Status	Discount of $1.19 (0.14%)

Table 15. Expected Returns, Risk, and Covariance Analysis

Parameter	Walmart	Stellantis
Expected Return	0.0797	0.1259
Standard Deviation	0.2024	0.4196
Covariance Matrix		
Walmart	0.040953	0.005218
Stellantis	0.005218	0.176066