



Complete the Valuation Analysis with Discounted Cashflow Valuation and Multiple Valuations of Enterprise Value Multiple, Price to Earning, and Pricing to Book Value

Take the Woolworth Group under Epidemic as an Illustration

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Abstract

The paper analyzes a valuation analysis method that is based on the Discounted Cash Flow (DCF) valuation model and supplemented with other valuation models such as Enterprise Value Multiple (EVM), Price to Earnings (P/E), and Price to Book Value (P/B). To exemplify our methodologies' reliability, practicality, and correctness, we shall utilize the Woolworth Group as an example. We evaluate the expected share price for the balance sheet and income statement data under the same predictions applying these four methodologies in an organized manner. The discounted cash flow model indicates substantial profit potential, and the share price is expected to increase within a few years of the forecast. Similarly, the Enterprise Value Multiple (EVM) model with a multiple-based valuation reveals a favorable comparison to comparable companies, implying an upward trend in the share price. However, an asset-based valuation of the Price to Earnings (P/E) ratio suggests that the company's assets are unlikely to change much. Therefore, the share price is unlikely to move significantly. Simultaneously, the price to book assets ratio model predicts the opposite consequence: a share price decline. Thus, the four models are weighted and averaged to obtain a final Woolworth Group share price valuation. Woolworth's share price is estimated to be \$39.51 using the valuation model. The valuation analysis's final conclusion was fairly close to the actual future share price. Therefore, the method's practicality is demonstrated by comparison to the actual future share price.

Keywords-*component; Discounted Cash Flow (DCF) valuation; Enterprise Value Multiple (EVM); Price to Earnings (P/E); Price to Book Value (P/B); Firm valuation techniques*

1. INTRODUCTION

In this paper, considering the trend provided by historical data from 2011 to 2020, we construct a comprehensive valuation model primarily based on the historical operations of Woolworths to determine an estimated share price. Founded in 1924, Woolworths and Coles form a near duopoly of supermarkets and grocery shops in Australia, accounting for approximately 80% of the Australian market. Its dominance is rooted in a solid lead in diversified fresh food categories, a wide range of businesses, and a family bias. Woolworths is one of the top 10 companies listed on the Australian Stock Exchange, with a market capitalization of over \$49.12 billion. The retail sector experienced significant volatility in 2020 due

to the pandemic. Despite the upturn in supermarket sales, Woolworth's profitability is somewhat suffering from substantial investment in shop security, supply chain, and widespread closure of ALH. As a transformational year, Woolworths saw a surge in the expansion of its digital and e-commerce business, with online sales up 41.8% to \$3.5 billion compared to 2019. These factors will lead to steady revenue growth and material EBIT improvement in the coming years.

In addition, Woolworth Group Limited operates in a high-cost, capital-intensive, and highly differentiated industry. There is not only moderate competition and threatening power among incumbents and new entrants, but also weak threats in terms of suppliers' and buyers' bargaining power and alternative products or services.

In recent years, many research papers and articles have been devoted to establishing more accurate estimation methods. Obviously, these research papers offer new perspectives on improving estimates; however, implementing these methods is not easy. For example, some approaches require immense time and money, and some lack focus and consistency in particular industries. This paper aims to find an integrated and consistent forecasting approach to obtain the most accurate results, thus making investment decisions safer.

2. DISCOUNTED CASH FLOW VALUATION

2.1. Methodology introduction

The DCF analysis is a valuation technique that can estimate the attractiveness of an investment project and the value of an enterprise [1]. A DCF analysis uses the discounted future cash flow—wherein the discount rate is the basis for the discounting—to derive present value, the future sum of the stream of cash flows converted to the current value [2]. The discount rate includes the cost of risky investments or the uncertainty of future values [3].

Financial statements and balance sheets from 2011 to 2020 provide enough information to predict the company's finances in the future. They also suggest that future trends based on the company's past performance analysis help indicate the different projects' average growth rates and cash flows.

2.2. Predictions of Key Drivers

2.2.1. Revenue Growth

We used the average value of three methods for the projected conclusion: the growth drivers' model, store rollout model, and top-down model.

The growth drivers model identifies 5 main macroeconomic drivers for revenue growth. We anticipate each driver's annual growth rate using COVID-19 and specific government tweaks. Since there is no evidence that other drivers contribute to revenue growth, we simply take the inflation rate plus the average of the other four elements.

The store rollout model estimates the equivalent mature stores and value expected in the next five years based on the annual new store number and value created. We may also anticipate total revenue and growth by estimating revenue per equivalent store, utilizing the growth rate.

The top-down method was established by dividing Woolworth's business areas and projecting market share according to the past data. This forecasting model projects consumer purchasing power considering the net household value and Woolworth's business categories.

The annual growth rate can be calculated using Woolworth's market share in each sector.

TABLE 1. FORECAST REVENUE GROWTH RATE

	2021	2022	2023	2024	2025
Growth Driver					
Model	4.48%	4.57%	3.82%	3.79%	3.81%
Store Rollout					
Model	4.55%	5.03%	4.29%	3.51%	3.51%
Top-Down					
Model	4.82%	5.60%	5.75%	5.50%	5.73%
Revenue Growth					
Rate	4.62%	5.07%	4.62%	4.27%	4.35%

2.2.2. Return on Invested Capital(ROIC)

Return on invested capital refers to the ratio of invested and/ or used funds to related returns (typically stated as interest or profit-sharing). ROIC measures the return on invested capital. A high ROIC suggests a corporation can make more money with less cash. We studied Woolworth's ROIC model and forecasted for the following five years, i.e., from 2021 to 2025.

Figure II shows that Woolworth's ROIC with and without Goodwill have the same changing pattern. Woolworth's ROIC was usually higher than WACC in recent years. WACC represents a company's average cost of capital, meaning Woolworth's investment is typically meaningful and profitable. However, due to the COVID-19 impact on the overall economic environment, Woolworth's ROIC declined in 2019 and 2020, even falling below WACC at times. COVID-19 impeded Woolworth's investment capacity in 2020.

Woolworth's ROIC will gradually grow after the fiscal year 2020, as Woolworth gains additional opportunities and returns from other aspects. The first reason is that Woolworth is heavily investing in digitalization. Over the next few years, these technologies will drive all business. According to the financial report, Woolworth's online sales are predicted to reach \$3.5 billion in the fiscal year 2020. Woolworth will benefit from online shopping and automated services. Secondly, COVID-19 is a black swan event. Companies can't escape this risk, and it harms the market. Retail traffic in Australia has fallen between 24% and 49%. Many small retail businesses cannot survive. But Woolworth is unlike these tiny businesses. It has the strength to keep running smoothly and acquire other companies, thus improving its products and achieving a competitive advantage. COVID-19 has reduced Woolworth's competitors. Therefore, while Woolworth's market share declined in 2020, it will continue to rise in the next following years.

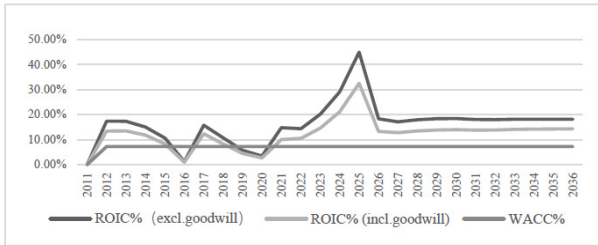


Figure 1. ROIC(Goodwill)

2.2.3. Margins

NOPLAT analyzes the efficiency of leveraged enterprises. NOPLAT Margin is calculated by dividing net operating profit after tax by revenue. The more significant NOPLAT Margin indicates the company's products are more competitive and sales-able. Woolworth's NOPLAT Margin dropped in 2019 and 2020. Even though the revenue is high, the net operating profit after tax is smaller, still influenced by the economic situation. Then, because Woolworth is a highly competitive company, we expect its NOPLAT Margin to revert to normal as soon as possible.

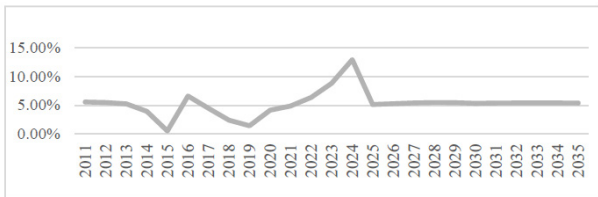


Figure 2. NOPLAT Margin

2.2.4. Capital Turnover

Capital turnover rate (1) reflects capital turnover speed. Normally, the higher the capital turnover rate, the greater the corporate capital use effect. Figure IV points out that Capital Turnover ROIC with and without Goodwill have the same trend.

$$Capital\ Turnover = \frac{Revenue}{Capital\ Expenditure} \quad (1)$$

Woolworth's Capital Turnover rose significantly in 2020. Woolworth's revenue of \$62639 was more than prior years, while capital expenditure was lower. Woolworth spent the most on its main business, Australian food. We expect Woolworth to improve and expand revenue year after year, which means CAPEX will climb in the next five years.

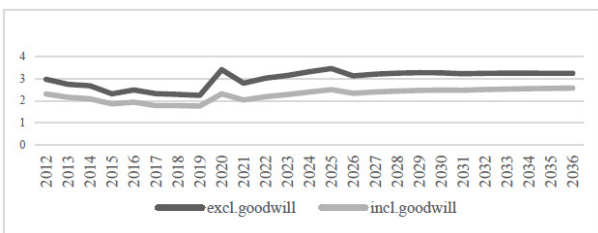


Figure 3. Capital Turnover

2.2.5. CAPEX

Figure V shows that Woolworth's CAPEX decreased from 2019 to 2020, while total operations remained steady. Woolworth is a retail store, where most of the items sold are essentials. COVID-19 will damage Woolworth, but not as much as other corporations. The company's stores (warehouses, factories, etc.) fluctuate slightly. After 2020, we expect CAPEX to continue to fall with no noteworthy swings. Woolworth will rapidly revert to normal operations after the crisis.

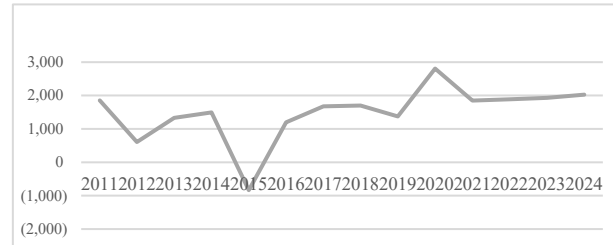


Figure 4. CAPEX

2.3. Valuation Analysis

The DCF model uses average monthly and weekly returns to reduce over-sensitivity to short-term economic swings, excluding outliers. We believe Woolworth's risks have risen in the short term due to the global pandemic and the Big W store issue. We think Woolworth risks diminishing in the long run as its main business is the retail and COVID -19 containment in Australia.

- The COVID-19 has shaken the Woolworth supply chain and corporate operations in the short to medium term. Estimating the recovery takes time.

- Woolworth's future operating risks will diminish as its core business is retailing, stable demand for Australia People. And the group will have a solid long-term development.

COVID-19 has shifted inhabitants' consumption notions and orientations downward. However, the pandemic and economic slowdown will not significantly reduce demand for necessary products so that retail expenditure will account for a larger share of total spending by people. To implement the DCF technique, we used an average beta of 0.68 instead of a single beta.

TABLE 2. DCF VALUATION RESULT

Value of Operations: Economic Profit			
Year	Economic Profit	Discount Factor	PV of EP
2021	757	0.933	706
2022	1,035	0.870	900
2023	2,321	0.811	1,882
2024	4,361	0.756	3,298

2025	7,885	0.705	5,561
2026	1,882	0.658	1,238
2027	1,913	0.613	1,173
2028	2,143	0.572	1,226
2029	2,308	0.533	1,231
2030	2,394	0.497	1,191
2031	2,377	0.464	1,103
2032	2,486	0.433	1,076
2033	2,615	0.403	1,055
2034	2,718	0.376	1,023
2035	2,807	0.351	985
Cont. Value	40,043	0.351	14,051
Present Value of Economic Profit			37,699
Invested Capital (incl. goodwill)			26,961
Operating Value			64,660
Mid -Year Adjustment Factor			1.058
Operating Value (Adjusted)			68,407

Value of Equity	
Operating Value	68,407
Excess Mkt Securities	795
Financial Investments	2,420
Excess Pension Assets	0
Enterprise Value	71,621
Debt	(18,676)
Capitalized Operating Leases	0
Retirement Related Liability	(38)
Preferred Stock	0
Minority Interest	(290)
Long-Term Operating Provision	0
Restructuring Provision	(377)
Future Stock Options	0
Stock options	0
Equity Value	52,240
No. shares (million)	1,263
Value per Share	41.36
-High	43.96
-Low	32.12
Value Difference - High	-5.9%
Value Difference - Low	28.8%

3. COMPOSITE VALUATION

We also apply an external composite valuation independent of the initial DCF for more accurate and reliable valuations. It includes a price to book value ratio [4], an asset-based valuation consisting of price-to-

earnings (P/E) ratios [5], and a multiple-based valuation composed of enterprise value multiples (EVM) [6]. And we assigned weights to the various valuations based on their influence.

3.1. P/E Valuation

To accurately value Woolworth using the P/E, we considered the principal components of Earnings per Share (EPS), Absolute P/E, and Relative P/E.

3.1.1. Earnings per Share (EPS)

Our Woolworth model uses EPS to modify normalized profits and eliminate the effects of seasonality, odd transactions, and tax expense reconciliation. EPS is calculated by normalizing 2019 and 2020 reported earnings. The same goes for 2020. The diluted normalized EPS of \$1.75 per share has been determined for 2021 after considering prior abnormal transactions and potential expense contributions.

3.1.2. Absolute P/E

Woolworth's P/E valuation is influenced by three factors: cost of capital, earnings quality, and growth potential. Based on our industry, the group's dominant position and scale have allowed it to maintain a lower cost of capital than Metcash but better than Westfarmer. Woolworth's future growth prospects are constrained because it focuses on the currently established ANZ market. Thus, we deduce Woolworth is worth more than Metcash but less than West farmer. Woolworth's stock price is evaluated at \$38.74 based on historical P/E statistics and present operating conditions.

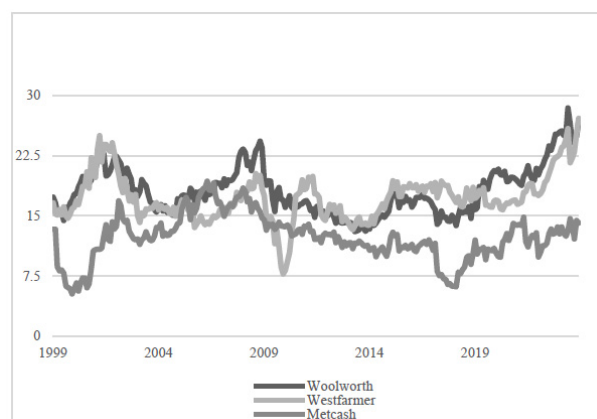


Figure 5. Woolworth forward P/E v.s. Comparable companies

3.1.3. Relative P/E

Woolworth is the industry pioneer in ANZ for retailing solutions. And this also applies to Australia and the global markets /consumer staples. Following this premise, 60% of the audience weight was allocated to

Australia Consumer Staples. For Woolworth, global capacity generates profits. With a P/E of 22.90 and an EPS of 1.74, Woolworth's stock is worth \$39.95.

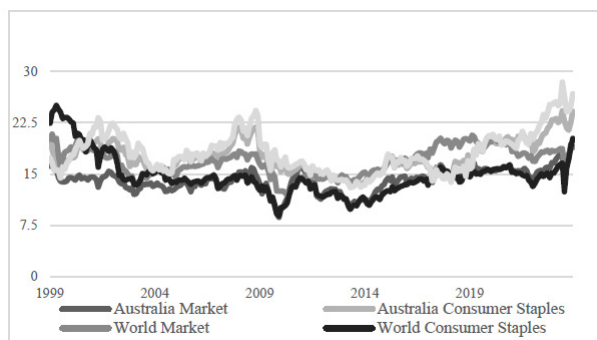


Figure 6 Woolworth forward P/E v.s. Market P/E

3.2. EVM Valuation

The EVM valuation is split into two parts: comparable company Wesfarmers and Metcash and fundamental determinants. These two parameters are weighted to produce the final EVM. The fundamental determinant is weighted at 65% since it reflects the COVID-19 epidemic and Woolworth's projection. Wesfarmers and Woolworth have separate principal businesses, and Metcash has a pretty tiny enterprise value. Using this final EVM, the stock price is \$41.52.

TABLE 3. EVM RESULT

Method	EVM	Weight
Comparable Companies	14.89	35%
Fundamental Determinants	12.53	65%
Final EVM	13.36	100%

3.3. P/B Valuation

The modified P/B ratio and Woolworth's book value were utilized to calculate the P/B valuation. The P/B ratio is adjusted by comparing Woolworths' historical P/B ratio with comparable companies like Wesfarmers and Metcash. The value per share is obtained by multiplying the two ratios with Woolworths' book value. In light of an improved industry outlook, the P/B ratio was set at \$31.92.

TABLE 4. P/B RESULT

Value per share			
Final P/B Ratio	3.64255	Average P/B Ratio	2.43676
Book Value (WOW)	8.742	Book Value (WOW)	8.742
Value per share	31.84	Value per share	21.30

4. SCENARIO ANALYSIS

We built three scenarios based on the present

economic climate and technological advancements that Woolworth may face in the next five years.

The three instances are: (1) economic boom or bust, focused on COVID-19's long-term influence; (2) technological advances, such as internet purchasing; and (3) tax rate changes.

Furthermore, Woolworth's significant investment in technology has led to a boom in online shopping. As a result, the government will not make big tax changes in Woolworth's area. The ultimate stock price estimated is \$42.11.

TABLE 5. SHARE PRICE UNDER SCENARIOS

	Scenario 1	Scenario 2	Scenario 3	Total
Value per share	35.986	50.404	41.362	42.107
Probability	45%	35%	20%	100%

5. CONCLUSION

DCF valuation captures key business factors such as WACC and growth rate and allows investors to factor in business strategy into the valuation model. It also relies on free cash flow, a real measure of capital that is not influenced by industry or market valuation extremes.

However, DCF valuation has some weaknesses, such as relying on erroneous future cash flow predictions and discounting the present value via WACC, which ignores unexpected risks. The sensitiveness of growth rates and discount rates may result in forecast inaccuracies. To overcome these constraints, the DCF value is 50% weighted.

50% is dedicated to multiple asset valuations, simple methodologies used to calculate comparable company valuations. On the contrary, all external appraisals simplify complex facts, ignoring aspects like corporate growth that impact Woolworth's intrinsic value. The EVM is underweighted since it overlooks capital expenditures, resulting in an unduly profitable outcome. Because of the stable EPS, the P/BV technique is not required. As a result, P/E, EVM, and P/BV are weighted 30%, 10%, and 10%, respectively.

TABLE 6. SHARE PRICES OF VALUATIONS

Valuation Method	Share Price	Weight
DCF	\$ 41.36	50%
Absolute P/E	\$ 37.93	20%
Relative P/E	\$ 39.12	10%
EVM	\$ 41.52	10%
PB	\$ 31.84	10%
Aggregate	\$ 39.51	100%

Based on extensive market research and multi-dimensional appraisals, we believe Woolworth Limited is

a profitable retailer with scale and market share advantages in Australia and New Zealand. Initially, we estimated that the COVID-19 and Big W operating crises had temporarily shaken the financial positions and hampered the group's future growth. Our Composite Valuation model estimates Woolworth's share price at \$39.51. The final result of the valuation analysis was quite close to the actual future share price, i.e., the average share price of \$39.310551 from January 20, 2021, to January 20, 2022, thus proving the practicality of this method.

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