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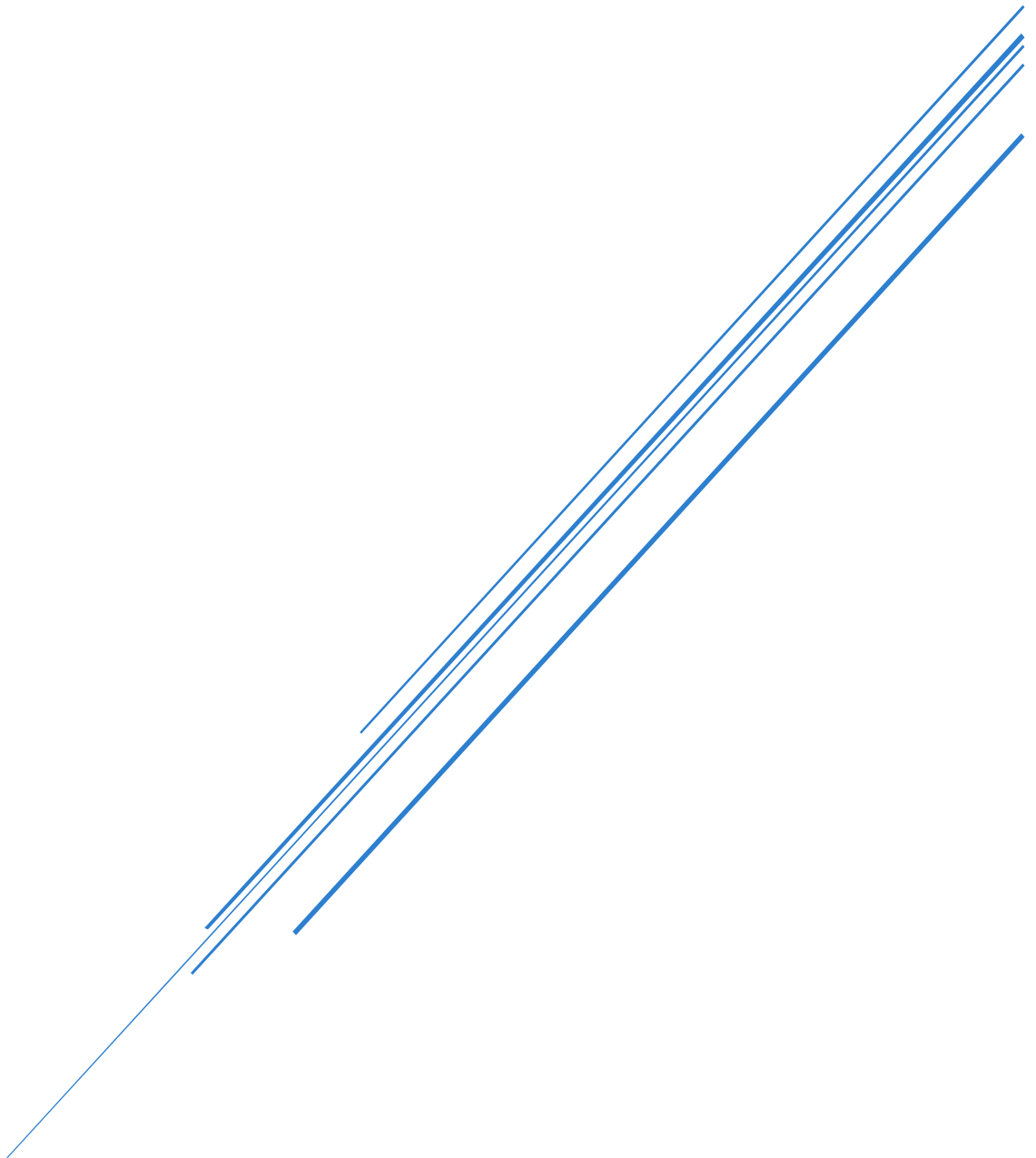
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Investment

Sample





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Introduction

The Australian Equities Team at Supernova Retirement Fund (SuRF) have been tasked to prepare a valuation report on two equity securities Rio Tinto (RIO) and Fortescue Metals Group (FMG) as of 30 June 2024. This report is to provide guidance to SuRF's portfolio management team on which securities should hold and sell.

Methodology (Q1)

SuRF's Discount Cash Flow (DCF) model uses the Free Cash Flow (FCF) method rather than Net After-Tax Profit (NATP) for the following reasons:

- **Reflects cash flow variability:** The mining industry experiences significant fluctuations in commodity prices, production volumes and operational costs. FCF captures these dynamics and reflects them through changes to revenue, costs and capital expenditure. NATP, which focuses on accounting profits may not accurately illustrate these cash flow variations.
- **Adaptable to company specific:** FCF model can accommodate complex company structures such as RIO's diverse range of commodities for which demand, production and price varies. This flexibility is crucial when modelling mining companies as they have many different operations.
- **Capital Expenditure considerations:** Mining companies continuously seek growth through new opportunities (i.e. new mines, research, improving safety, new energy generation) all which would require significant upfront capital. FCF reflects changes in capital expenditure within its cash flow projections, which NATP overlooks.
- **Includes non-cash items:** FCF provides a clear picture of actual cash flow generated by the company as it considers non-cash items such as depreciation, amortisation and changes in working capital. Including these items makes the cash flows more reflective of the cash available to distribute to shareholders. This would be of particular interest to SuRF as it's **focused on generating returns to its investors**. NPAT on the other hand focuses on the accounting profit, which doesn't directly translate to cash available to investors, making it less useful for SuRF's purposes.
- **Stable Metric:** Unlike NATP, FCF is not affected by changes in the company's capital structure, making FCF a more stable and reliable metric for valuation.

FCF calculation is as follows:

$$FCF = \text{Earnings before interest and tax (EBIT)} * (1 - \text{Corporate tax rate}) \\ + \text{Depreciation} - \text{Capital} - \text{Increase in net working capital}$$

The DCF model features a 5-year projection period, aligning to SuRF's has minimum preferred holding period. This timeframe is sufficient to capture the cyclical cash flows of the mining industry.

Total security value is determined using the following formula:

$$\sum_{t=1}^5 \frac{FCFF_t}{(1 + WACC)^t} + \frac{FCFF_5 * (1 + WACC)^{-5}}{(\text{Terminal Discount Rate} - \text{Terminal Growth Rate})}$$



Operations (Q2)

FMG

A key operational consideration for FMG is China's demand for iron ore. With more than 90% of FMG's iron ore sold to China¹, FMG is highly dependent on China's iron ore consumption. If demand falls as has been recently observed, iron ore price will also fall making FMG a price taker. Therefore, iron ore price assumption is critical in future cash flow projections as the revenue will be largely driven by it. Rio Tinto on the other hand produces a number of commodities, therefore, assumptions about future iron ore prices will not have as big of an impact as for FMG.

Another operational consideration is FMG's focus on ESG initiatives through its Green Energy project which FMG has committed significant capital expenditure. As these large-scale projects take several years to scale up and commercialise, they won't necessarily produce immediate revenue to the company. This results in large upfront costs without corresponding revenue until the project is completed years later. Consequently, projecting future cash flows becomes challenging, as it's difficult to quantify the expected revenue such projects will generate.

RIO

Unlike FMG which is heavily reliant on iron ore, RIO has a diverse portfolio, including copper. The increased global demand for copper is driven by its extensive use in electric vehicles and renewable energy. RIO will increase copper production to meet growing demand through its expansion of Oyu Tolgoi copper mine and an additional three copper projects, requiring significant capital expenditure. If demand continues these investments could generate significant revenue.

Another operational consideration is RIO's operations which spans 35 countries, all requiring extensive monitoring of production, revenue and expenses. Further, the diverse regulatory conditions can lead to additional costs, limiting the opportunities of cost savings that could be achieved by centralising operations. In contrast, the vast majority of FMG operations are in Australia making it simple to operationalise and improve costs.

Issues Affecting Security Demand (Q3)

FMG

An issue that could affect FMG's security price is the demand of iron ore and the fluctuations in the iron ore price, as the majority of FMG's revenue is derived from it. This creates concentration risk, which may deter investors and make them cautious about investing in FMG, consequently reducing demand for the security and ultimately lowering its price. Failing to consider this in the model could lead to optimistic revenue projection and undervalued discount rate. In contrast, this is not a significant concern for RIO which has a diversified portfolio of commodities.

Another issue affecting FMG are the recent operational changes, with up to 700 jobs cuts² at reduced costs streamline the business. The DCF model should account for the potential savings from the job cuts, leading to improved earnings which could be viewed favourably by investors. Failing to consider this in the model could lead to an overestimation of costs and underestimation of earnings.

RIO

An issue that could affect RIO's security price is RIO's diversified commodity portfolio. While this diversification has benefits, it also means that the company is exposed to more volatility from multiple commodities and has less concentration risk than FMG. The DCF model would need to consider the varying market dynamics, commodity prices and trends. If not properly considered it could lead to inaccurate revenue and discount rate projections.

Another issue affecting RIO is risk of legal challenges during new ventures such as the lawsuit against Serbia for the Jadar project³. These disputes could delay or even suspend projects resulting in reduced potential revenue

¹ <https://www.abc.net.au/news/2022-08-26/china-will-want-australian-iron-ore-for-a-long-time-to-come/101347466>

² <https://www.abc.net.au/news/2024-07-17/andrew-forrest-fmg-fortescue-announces-700-job-cuts/104110506>

³ <https://balkanenergynews.com/rio-tinto-filed-nine-lawsuits-against-serbia/>



and an increase in costs. This could also deter investors as they are concerned about when projects will commence and if there are further legal costs.

Cash Flow Assumptions (Q4)

As outlined in *Methodology* section, determining FCF involves revenue and expense components each with their own assumptions.

The first step is to determine revenue for each projected year and for each commodity using the following formula:

$$\text{Revenue per commodity} = \text{production amount} * \text{unit price per commodity}$$

After calculating revenue for each commodity, then determine EBIT using the following formula:

$$\text{EBIT} = \text{Sum of total revenue for all commodities} * \text{Revenue adjustment (\%)}$$

By forecasting the cashflows separately for each year, the model can cater for annual changes that may occur as a result of fluctuations in commodity demand, company strategy changes or external events beyond the company's control (i.e. bad weather causing derailments which had occurred for FMG in 2024).

Revenue	
Commodity Production Amount	Commodities are the primary revenue driver for both companies, therefore assessing changes in future production is crucial as it directly impacts EBIT. Production amounts are influenced by global demand which in turn guides the company's strategic investment decisions. Increased production increases EBIT (for the same level of price) and vice versa. The DCF model assumes that all current and future mines will operate as expected without unforeseen events affecting production. RIO which has diversified portfolio will have different production volumes for each commodity, whereas FMG which is solely focused on iron ore.
Commodity Prices	The DCF model assumes a single price per commodity for each projected year. However in reality commodity prices are highly volatile, fluctuating daily due to economic global supply and demand dynamics. Higher prices boost EBIT for the same level of production and also influence the company's strategic decision on production and capital expenditure.
FMG Specific: Green Energy	FMG Green Energy division generated \$US26million in revenue for the six months ending Dec2023 ⁴ , representing just 0.27% of total group revenue. Given significant time is required to scale this division and the lack of detailed publicly available information about long term prospects, revenue from segment is deemed immaterial for the projection period.
Revenue adjustment	Total revenue for each projected year is adjusted by the historical EBIT margin. This adjustment implicitly allows for operating costs which are not explicitly modelled. The DCF models assume a constant adjustment % for each projected year.

Expense	
Capital Expenditure (CapEx)	Capex which reduces FCF, accounts for a significant portion of the final cash flow due to the substantial amount needed for future exploration, drilling and new mines. CapEx amounts vary year to year as the company's future projects and developments are approved or initiated at different times.
Depreciation	Has a positive impact on FCF as it reduces the revenue by the depreciation amount being added back to EBIT.
Net working capital (NWC)	Increases in NWC reduces FCF as it means that the company is using more cash and vice versa.
Terminal Growth Rate (TGR)	This is based on the 10-year US government bond yield. If the terminal growth rate increases it also increases the final cash flow as it reflects that future cash flows are expected to grow.
Tax Rate	Tax rate is applied to the EBIT amount. In the DCF model it's assumed to be constant for each projected year.

⁴ https://cdn.fortescue.com/docs/default-source/announcements-and-reports/fy24-half-year-report-with-appendix-4d.pdf?sfvrsn=b8d365a8_7



Other	
USD/AUD Exchange Rate	Assumed constant for years. In reality, the exchange rates fluctuate daily and affect the revenue at the time that commodity is sold.

Discount Rate Derivation (Q5)

The discount rate has been derived using the WACC formula:

$$WACC = (Weight\ of\ equity * Cost\ of\ equity) + (Weight\ of\ debt * Cost\ of\ debt * (1 - Corporate\ tax\ rate))$$

Refer to Appendix 1 for further breakdown of components.

Item	RIO	FMG	Description	Explanation
Cost of equity	9.8%	14.6%	Uses cost of equity formula. Price/Earnings ratio is based on 5-year historical average with an -1% adjustment.	Inflation began increasing early 2021 but has from mid-2023. The Federal reserve is still targeting an inflation target of 2% ⁵ so we expected cost of equity to reduce, hence a slight adjustment has been made.
Cost of Debt	3.4%	4.8%	Uses cost of debt formula.	The US government bond yield will vary by the projected year (i.e. for 2025 use the 12-month yield, for 2029 use the 5-year yield etc).
Weight of equity	78.7.1%	77.2%	Uses weight of equity formula. Total equity and total capital are based on the 5 year-historical averages.	No material changes expected.
Weight of debt	21.3%	22.8%	Uses weight of debt formula. Total debt and total capital are based on 5-year historical averages.	No material changes expected
Terminal WACC	8.8%	12.8%	Uses WACC formula.	Higher terminal WACC for FMG mainly driven by higher cost of equity.

Cash Flow Derivation (Q6)

RIO's cash flows have been projected from January 2024 until December 2028. Historical financials are sourced from the Morningstar forecast file provided in the LMS and only consider the most recent five-year period, from 2019 to 2023.

Historical commodity production volumes and realised prices have been obtained from RIO's annual reports⁶.

RIO		
Item	Assumption	Supporting Information
Iron Ore		
Production Volume	<ul style="list-style-type: none">2024: consistent with prior year.2025: Increase by 10%2026/27: Increase by 2.5% p.a.	2024 is as per the Rio's operational second quarter operational results ⁷ . The first production of Western Range and Simandou iron ore mines expected in 2025 resulting in a significant increase in 2025 and small increases thereafter ⁸ .
Price	Decrease by 5% p.a. ⁹ over the next 3 years then remain stable thereafter.	The decline in China's urban residential construction sector since late 2021 is expected to continue, ¹⁰ resulting in weaker demand and lower iron ore prices.

⁵ https://ycharts.com/indicators/us_inflation_rate#:~:text=US%20Inflation%20Rate%20is%20at,in%20price%20over%20a%20year.

⁶ <https://www.riotinto.com/en/invest/reports/annual-report>

⁷ <https://www.riotinto.com/en/news/releases/2024/rio-tinto-releases-second-quarter-production-results>

⁸ <https://cdn-rio.dataweavers.io/-/media/content/documents/invest/financial-news-and-performance/production/2024/2024-2qor-pdf.pdf?rev=ee1cbb46e4473cb77c8a495ea284c4>

⁹ <https://www.fool.com.au/2024/03/14/heres-the-iron-ore-price-forecast-through-to-2027/>

¹⁰ <https://www.rba.gov.au/publications/bulletin/2024/apr/urban-residential-construction-and-steel-demand-in-china.html>



Aluminium		
Production Volume	Increase by 1% p.a.	Based on the historical average production growth rate. The new smelter in Quebec, the smelter will replace the Arvida Smelter ¹¹ which is expected to close. As a result, no significant increase in production volume.
Price	Increase by 2% p.a. over the next two years then increase at a decreasing rate.	Demand for aluminium is expected to continue, primarily driven by China and the global energy transition. Prices are predicted to reach up to \$2,900 by the end of the decade ¹² which is what the assumption increase is based on.
Copper		
Production Volume	Increase by 44% in 2024 and further increases thereafter.	Copper production increases are due to 250,000 tones and 500,000 tones of further production from Kennecott Production mine and Oyu Tolgoi mines respectively ¹⁰ .
Price	Increase by 5% p.a.	An increase copper demand is expected due to its critical use in energy transformation industries which are growing. Prices are predicted to reach up to \$4.90/pound in 2025 ¹³ and increase further, which is what the assumption increase is based on.
Other Minerals		
Production Volume & Price	Aligned to historical 5-year average.	Other Minerals account for 10% of total revenue, which is relatively small compared to other commodities. Based on RIO's financial report there are no significant changes to production of these.
FCF		
Capital Expenditure	Increase to \$10M in 2024 & 2025 then to historical 5-year average.	Increase in CapEx is due to iron ore and copper mine developments as RIO continues to be focused on growth ¹⁴ of these commodities.
Terminal growth rate	3.84% based on 10-year US government bond.	Strong demand outlook for aluminium and copper is likely to be counteracted by lower demand from iron ore ¹⁵ so growth is likely to follow the long-term economic growth.

FMG cash flows have been projected from January 2024 until December 2028. Historical financials are sourced from the Morningstar forecast file provided in the LMS and only consider the most recent five-year period, from 2019 to 2023.

Historical commodity production volumes and realised prices have been obtained from FMG's annual reports.

FMG		
Parameter	Assumption	Explanation
Iron Ore		
Production Volume	Increase by up to 5% p.a. for two years then stabilise.	Increase in production is mainly driven by Iron Bridge mine which commenced its first production in 2024 and expected to deliver 22Mt p.a. over the long term ¹⁶ .
Price	Same as RIO.	Same as RIO.
FCF		
Capital Expenditure	FY25 increase by US\$700million. Remaining years based on historical 5-year average.	Capital expenditure has been increasing year on year. Due to large investment in its Green Energy division, FMG has provided guidance that FY25 will have increased capital expenditure ¹⁷ .
Terminal growth rate	3.34% based on 10-year US government bond with a downward adjustment of 0.5%.	As iron ore is the main revenue source and due to its bleak demand outlook, the company may grow more slowly than the broader economy in the long term, therefore a slightly downward adjustment has been included.

¹¹ <https://cdn-rio.dataweavers.io/-/media/content/documents/invest/reports/annual-reports/rt-annual-report-strategic-2023.pdf?rev=514d2463690749bcb8519c5899239cd1>

¹² <https://www.techopedia.com/investing/aluminum-price-forecast>

¹³ <https://www.techopedia.com/investing/copper-price-forecast>

¹⁴ <https://www.spglobal.com/marketintelligence/en/news-insights/research/capex-for-30-biggest-spending-miners-to-rise-6-2-in-2023>

¹⁵ <https://minerals.org.au/wp-content/uploads/2022/12/Commodity-Outlook-2030.pdf>

¹⁶ https://cdn.fortescue.com/docs/default-source/announcements-and-reports/fy24-half-year-report-with-appendix-4d.pdf?sfvrsn=b8d365a8_7

¹⁷ https://cdn.fortescue.com/docs/default-source/announcements-and-reports/june-2024-quarterly-production-report.pdf?sfvrsn=68db1e95_7



Applies to FMG & RIO		
Parameter	Assumption	Explanation
FCF Components		
Revenue Adjustment	Aligned with 5-year historical average.	This is appropriate as EBIT margins are generally stable year on year.
Depreciation & Increase in NWC	Aligned with 5-year historical average ratio of tax over profit before tax.	These can be volatile and is subjective making it difficult to predict precise future changes.
Tax rate	30% p.a. based on 5-year historical average.	This is subjective however historically tax rate has been relatively stable.

Cash Flow Sensitivity Analysis (Q7 & Q8)

RIO

Assumptions considered are commodity prices which are highly volatile, and adjustment to the terminal growth rate which is challenging to accurately quantify.

Each commodity has been modelled independently of each other with adjustments made in 5% increments, both positively and negatively, to account for potential fluctuations.

Figure 1.1 illustrates that there's a linear relationship between change in assumptions and FCF. Largest absolute change is observed for the terminal growth rate as it accounts for approx. 80% of total FCF. Largest commodity change is iron ore as it accounts for a significant portion of total operations.

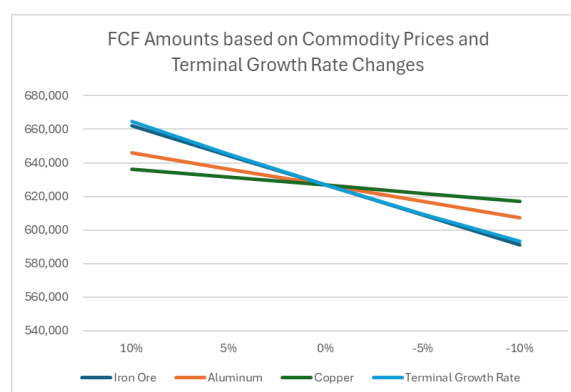


Figure 1.1

FMG

Similar analysis was performed for FMG however the only commodity applicable to consider is iron ore.

Figure 1.2 illustrates that FCF amounts are not highly sensitive to changes in ore price and even less to changes in the terminal growth rate. This contrasts with RIO, where variations to iron ore price and terminal growth rate show a consistent FCF impact.

This suggests that for FMG there greater emphasis should be places on modelling iron ore price fluctuations as they would have the most significant impact on FCF amounts.

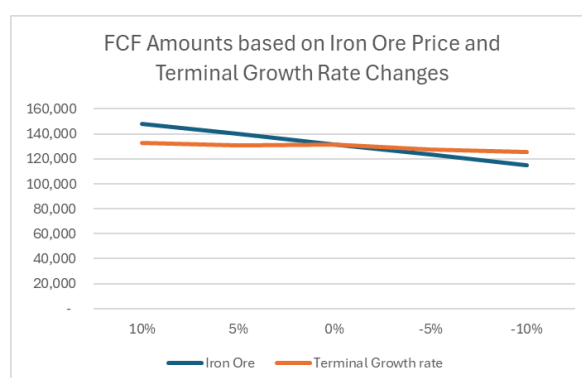


Figure 1.2

(Q8) To further understand how above assumptions changes impact equity value refer to Appendix 3 and 5.



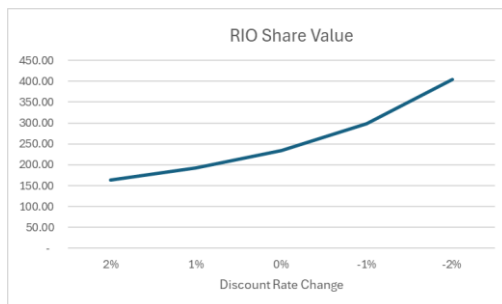
WACC Sensitivity Testing (Q9)

Sensitivity testing has been conducted on WACC using 1% increments on the best estimate, as illustrated in **Table 1.1** and **Table 1.2** for RIO and FMG respectively. The results in the tables and graphs demonstrate:

- Increasing discount rate will reduce share value and vice versa.
- A small change in discount rate results in a significant absolute change in share value.
- The impact of a discount rate decrease on share value is greater than an increase, as illustrated by the graph's convexity. RIO's shows greater convexity, which indicating a stronger sensitivity to changes in discount rate.

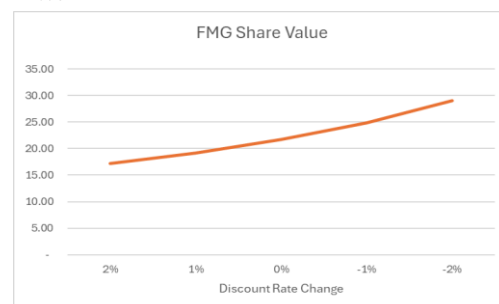
Discount Rate Change	Share Value	% Change
2%	163.65	-30%
1%	192.98	-18%
0%	234.48	0%
-1%	297.63	27%
-2%	405.09	73%

Table 1.1



Discount Rate Change	Share Value	% Change
2%	17.15	-21%
1%	19.20	-12%
0%	21.72	0%
-1%	24.90	15%
-2%	29.05	34%

Table 1.2



Recommendations (Q10)

RIO	\$AUD	Explanation
Best Estimate Share Value	234.51	Best estimate is well above the market value, suggesting that RIO is undervalued.
Share Value as at 28/06/2024	119.0 ¹⁸	
Buy Price	140.70	40% below best estimate as it's expected that current value will increase.
Sell Price	246.23	5% above best estimate as there's a large variation between best estimate and market value. Therefore we would only want to capture a small profit as the deviation creates uncertainty of how high the share value will reach.
Current ASX 200 weighting	1.72%	Provided in LMS.
Proposed active weighting	3.44%	Double ASX200 weighting as best estimate is almost double that of market value.

FMG	\$AUD	Explanation
Best Estimate Share Value	21.72	Best estimate is closely aligned to market value suggesting that FMG is appropriately priced.
Share Value as at 28/06/2024	21.41 ¹⁹	
Buy Price	19.55	10% below best estimate value to account for further risks from iron ore price changes.
Sell Price	24.97	15% above best estimate to capture any profits.
Current ASX 200 weighting	1.22%	Provided in LMS.
Proposed active weighting	1.22%	Align with ASX200 weighting as intrinsic value is close to market value so would follow the index weighting.

¹⁸ https://finance.yahoo.com/quote/RIO.AX/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLnNvbS8&guce_referrer_sig=AQAAAMKBwLw3IOUqRmCcf3_KUhgJUPKv5WpbkmwQtEMYU5el1-5aTO_PWOL6MqXXsO48Z6mdk16npqbGU1QrfaRVzsNKbpyD_3UXQ25pyUeTdCMO_9ULKUkhEL63WwnB2P4qK9BHS2PcZw26xd0eM6Njb7Q3_bK7ldJhWYIMiZl

¹⁹ <https://finance.yahoo.com/quote/FMG.AX/>



(3,000 words excluding footnotes, contents, title page and appendix)

Appendix

Appendix 1: WACC formula breakdown

The WACC consists of the following components:

- Cost of debt = US government bond yield + Credit Spread
- Cost of equity = $1 / (\text{Price/Earnings})$
- Weight of Debt = Total Debt / Total Capital, where Total Debt = Short Term + Long Term Debt
- Weight of equity = Total Equity / Total Capital

Appendix 2: FMG Valuation Details

FMG ANALYSIS													
	Unit	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	Terminal
OPERATIONS		HISTORICAL						FORECASTED					
METALS													
Pilbara Hematite iron ore	m wmt					192	188	189	190	191	192	193	194
Iron Bridge iron ore	m wmt					0	2.1	5	15	22	22	22	22
Ore processed		177	176	186	189	192	190	194	205	213	214	215	216
Ore sold	m wmt	168	177	181	189	192	191	194	205	213	214	215	216
Iron Ore Price	US\$	70	90	170	130	105	100	95	90	86	86	86	86
Iron Ore Price Change								-5%	-5%	-5%	0%	0%	0%
Iron Ore Prices	AUD\$	95	130	220	178	140	135	136	129	123	123	123	123
FINANCIALS													
Total Revenue Actuals - Morningstar	AUD\$ millions	14,103	19,247	29,875	24,083	25,188	27,870						
Total Revenue Estimated - HISTORICAL	AUD\$ millions	15,913	23,036	39,842	33,571	26,936	25,799						
Difference (actual vs. estimated) historical		88.6%	83.6%	75.0%	71.7%	93.5%	108.0%						
Revenue Adjustment							86.7%						
Forecasted Revenue	AUD\$ millions							26,372	26,469	26,122	26,239	26,357	26,475
EBIT	AUD\$ million	6,750	10,330	20,038	12,464	10,481	13,991	13,946	13,997	13,813	13,875	13,937	14,000
Tax	AUD\$ million	1,935	2,922	5,935	3,669	3,120	4,112	4,176	4,192	4,137	4,155	4,174	4,192
Depreciation	AUD\$ million	1,674	2,092	1,831	2,116	2,604	2,650	2,259	2,259	2,259	2,259	2,259	2,259
Capital Expenditure	AUD\$ million	1,460	2,896	4,861	3,876	4,255	4,722	5,725	4,122	4,122	4,122	4,122	4,122
Current Assets	AUD\$ million	5,056	9,411	12,011	9,554	9,085	9,531	9,918	9,918	9,918	9,918	9,918	9,918
Current Liabilities	AUD\$ million	3,704	4,177	5,202	3,347	3,683	3,535	3,989	3,989	3,989	3,989	3,989	3,989
Net working capital	AUD\$ million	1,352	5,234	6,809	6,207	5,402	5,995	5,929	5,929	5,929	5,929	5,929	5,929
Increase in Net Working Capital	AUD\$ million		3,882	1,575	602	805	594	66	-	-	-	-	-
Terminal growth rate													3.34%
Free cashflow	AUD\$ million	5,029	10,486	12,648	6,433	4,904	8,400	6,237	7,942	7,813	7,857	7,900	93,779
Price/Earnings		3.8	4.5	4.5	7	7.4	8.6	6.4	6.4	6.4	6.4	6.4	6.4
Cost of equity		26.3%	22.2%	22.2%	14.3%	13.5%	11.6%	14.6%	14.6%	14.6%	14.6%	14.6%	14.6%
US gov bond yield								4.4%	4.0%	3.9%	3.8%	3.7%	3.8%
Credit Spread								0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
Cost of debt		7.1%	5.3%	5.6%	2.9%	5.2%	5.3%	5.4%	4.9%	4.8%	4.7%	4.6%	4.8%
Short-Term Debt	AUD\$ million	120	278	224	240	246	250	248	248	248	248	248	248
Total Long-Term Debt	AUD\$ million	5,412	7,364	5,477	8,212	7,698	7,051	7,160	7,160	7,160	7,160	7,160	7,160
Total Debt	AUD\$ million	5,532	7,642	5,701	8,452	7,944	7,301	7,408	7,408	7,408	7,408	7,408	7,408
Total equity	AUD\$ million	14,839	19,794	23,777	24,020	26,871	30,603	25,013	25,013	25,013	25,013	25,013	25,013
Total Capital	AUD\$ million	20,371	27,435	29,477	32,472	34,815	37,904	32,421	32,421	32,421	32,421	32,421	32,421
Weight of equity		72.8%	72.1%	80.7%	74.0%	77.2%	80.7%	77.2%	77.2%	77.2%	77.2%	77.2%	77.2%
Weight of debt		27.2%	27.9%	19.3%	26.0%	22.8%	19.3%	22.8%	22.8%	22.8%	22.8%	22.8%	22.8%
Corporate tax rate		29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%	29.9%
WACC		20.5%	17.1%	18.7%	11.1%	11.3%	10.1%	12.1%	12.1%	12.1%	12.0%	12.0%	12.0%
Present value	AUD\$ million							5,562	6,323	5,553	4,986	4,478	47,395
VALUATION													
Value of FMG	AUD\$ million	74,297											
Total Debt	AUD\$ million	7,408											
Weighted average number of shares		3,080											
Value of FMG per share	\$AUD	21.72											
			Price	% Change									
Buy Price	\$AUD	19.55		-10%									
Sell Price	\$AUD	24.97		15%									
USD/AUD EXCHANGE RATE													
Average USD/AUD Exchange Rate		0.72	0.67	0.75	0.72	0.67	0.66						
							0.70						



Investment Sample

Appendix 3: FMG Sensitivity Analysis

Note, the analysis assume changes are independent of each other

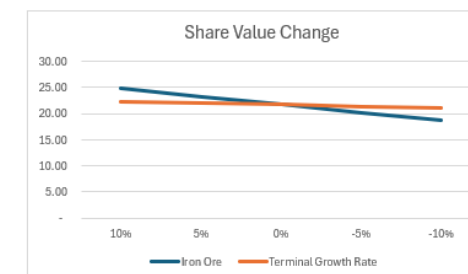
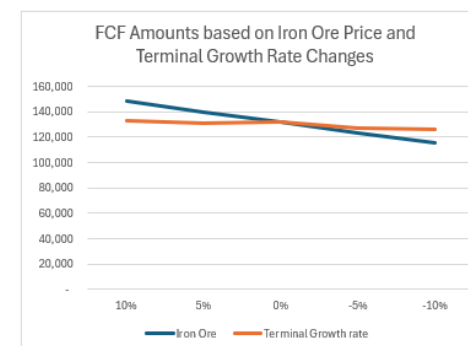
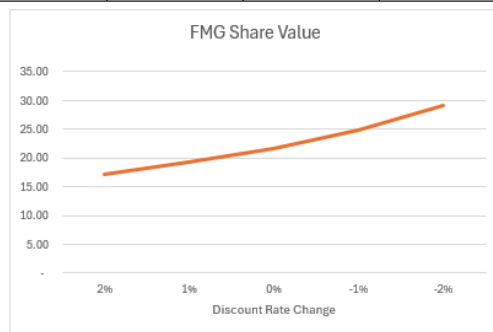
Adjust this cell to show change.

Prepopulated based on yellow cell having being changed. Values have been hardcoded.

Iron Ore Price Change	FCF						Total	% Change	Share Value	% Change
	FY25	FY26	FY27	FY28	FY29	Terminal				
10%	7,214	8,922	8,781	8,829	8,876	105,369	147,991	13%	24.76	14%
5%	6,725	8,432	8,297	8,343	8,388	99,574	139,759	6%	23.24	7%
0%	6,237	7,942	7,813	7,857	7,900	93,779	131,527	0%	21.72	0%
-5%	5,748	7,451	7,329	7,371	7,412	87,984	123,295	-6%	20.20	-7%
-10%	5,260	6,961	6,845	6,885	6,924	82,189	115,063	-13%	18.68	-14%

Terminal Growth Rate Change	FCF						Total	% Change	Share Value	% Change
	FY25	FY26	FY27	FY28	FY29	Terminal				
10%	7,117	7,534	7,406	7,449	7,492	95,845	132,843	1%	22.38	3%
5%	7,117	7,534	7,406	7,449	7,492	93,974	130,972	0%	22.04	2%
0%	6,237	7,942	7,813	7,857	7,900	93,779	131,527	0%	21.72	0%
-5%	7,117	7,534	7,406	7,449	7,492	90,427	127,425	-3%	21.40	-1%
-10%	7,117	7,534	7,406	7,449	7,492	86,744	125,742	-4%	21.10	-3%

Discount Rate Change	Share Value	% Change
2%	17.15	-21%
1%	19.20	-12%
0%	21.72	0%
-1%	24.90	15%
-2%	29.05	34%





Appendix 4: RIO Valuation Details

RIO ANALYSIS														
	Units	CY18	CY19	CY20	CY21	CY22	CY23	CY24	CY25	CY26	CY27	CY28	CY29	Terminal
CURRENT OPERATIONS														
Iron Ore														
Produced	million tonnes	338	327	333	320	324	332	331	338	353	353	353	353	353
Shipped	million tonnes	338	327	331	322	322	332	331	331	331	331	331	331	331
Shipped Rate Change			97%	101%	97%	100%	103%							
Shipped/Produced Rate		100%	100%	99%	101%	99%	100%	100%	100%	100%	100%	100%	100%	100%
Salt Production	million tonnes	6	5	5	6	6	6	6	6	6	6	6	6	6
Revenue Actual	US\$ millions	18,731	24,075	27,508	39,582	30,906	32,249							
Realized Price	US\$ per dry met	63	86	99	144	106	108	107	102	96	92	92	92	92
Forecast Price Adjustment									-5%	-5%	-5%	0%	0%	0%
New Production														
Western Range Iron Ore	million tonnes							25	25	25	25	25	25	25
Simandou Iron Ore	million tonnes							9	18	27	27	27	27	27
Total Iron Ore	million tonnes							331	365	374	383	383	383	383
Estimated Revenue		21,239	28,124	32,696	46,246	34,122	35,967	35,314	36,999	36,017	35,041	35,041	35,041	35,041
Estimated Revenue Change								100.0%	110.3%	102.5%	102.4%	100.0%	100.0%	100.0%
Aluminum														
Bauxite production	000 tonnes	50,421	55,105	56,131	54,326	54,618	54,619	55,815	56,693	57,406	58,127	58,858	59,597	60,346
Alumina production	000 tonnes	7,360	7,744	8,033	7,834	7,544	7,537	7,206	7,788	7,886	7,965	8,085	8,167	8,230
Aluminium production	000 tonnes	3,231	3,171	3,180	3,151	3,009	3,272	3,321	3,323	3,371	3,413	3,456	3,500	3,544
Aluminium production growth rate			7%	2%	-3%	0%	0%	1%	1%	1%	1%	1%	1%	1%
Revenue Actual	US\$ millions	12,191	10,340	9,314	12,695	14,109	12,285							
Realized Price	US\$ per tonne	2,470	2,132	1,946	2,899	3,330	2,738	2,661	2,714	2,758	2,791	2,813	2,825	2,825
Realized Price change rate			-14%	-9%	49%	15%	-18%	2%	2%	2%	1%	1%	0%	0%
Estimated Revenue		7,981	6,761	6,188	9,135	10,020	8,959	8,838	9,036	18,936	19,404	19,805	20,134	20,387
Copper														
Mined copper production	000 tonnes	636	577	528	494	607	620	651	684	718	754	791	831	872
Refined copper production	000 tonnes	275	260	155	202	209	175	245	232	244	256	269	282	296
Copper Production Growth rate			-6%	-40%	30%	3%	-16%	5%	5%	5%	5%	5%	5%	5%
Kennecott underground copper - production	000 tonnes							250	250	250	250	250	250	250
Oyu Tolgoi underground copper - Additional	000 tonnes											500	500	500
Total Production		910	837	683	696	816	795	1,146	1,166	1,211	1,253	1,810	1,863	1,918
Total Production Change Rate								44%	2%	4%	4%	44%	3%	3%
Diamonds Production	000 tonnes	18,427	17,030	14,676	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Revenue Actual	US\$ millions	6,468	5,815	4,969	7,827	6,639	6,678							
Realized Price	US cents per po	297	275	283	424	403	390	410	430	451	474	498	523	549
Realized Price Growth Rate			-7%	3%	50%	-5%	-3%	5%	5%	5%	5%	5%	5%	5%
Estimated Revenue		2,704	2,302	1,933	2,951	3,288	3,101	4,693	5,012	5,469	5,970	9,009	9,736	10,528
Minerals														
Iron ore pellets and concentrates production	000 tonnes	9	11	10	10	10	10	10	11	10	10	10	10	10
Titanium dioxide slag production	000 tonnes	1,116	1,206	1,120	1,014	1,200	1,111	1,031	1,176	1,122	1,122	1,122	1,122	1,122
Borates production	000 tonnes	512	520	480	488	532	495	499	507	504	504	504	504	504
Diamonds production	000 tonnes	-	-	-	3,847	4,651	3,340			1,973	1,973	1,973	1,973	1,973
Uranium production	000 tonnes	6,764	2,640	2,870	-	-	-	-	-	-	-	-	-	-
Revenue	US\$ millions	5,697	5,150	5,014	6,481	6,754	5,334	5,867	5,867	5,867	5,867	5,867	5,867	5,867
Total Estimate Revenue	US\$ billion							102.4	110.9	117.0	123.3	378.1	396.7	416.3

FINANCIALS														
Total Revenue Actuals (sum of operations)	US\$ millions	43,087	45,380	46,805	66,585	58,468	57,146							
Total Revenue Actuals (sum of operations)	AUD\$ millions	57,817	65,186	67,406	88,817	84,326	86,071							
Total Revenue Actuals - Morningstar	AUD\$ millions	54,029	57,553	64,392	85,000	80,199	81,436							
Total Revenue Estimated	US\$ millions	37,620	42,336	45,832	64,813	54,184	53,960							
Total Revenue Estimated	AUD\$ millions	50,482	60,814	66,004	86,453	78,147	81,273							
Difference (actual vs. estimated) historical		107%	95%	98%	98%	103%	100%							
Revenue Adjustment							100%							
Forecasted Revenue	AUD\$ millions							83,642	81,539	94,953	94,952	100,235	101,772	103,295
EBIT	AUD\$ millions	23,943	14,763	21,458	40,121	26,045	20,405	31,215	30,431	35,437	35,436	37,408	37,981	38,550
Tax	AUD\$ millions	5,656	5,529	7,204	11,055	8,105	5,775	9,705	9,461	11,017	11,017	11,630	11,809	11,985
Depreciation	AUD\$ millions	5,212	5,696	5,881	6,058	7,032	7,499	10,000	10,000	6,433	6,433	6,433	6,433	6,433
Capital Expenditure	AUD\$ millions	7,240	7,317	8,333	9,885	9,745	10,678	9,312	9,312	9,312	9,312	9,312	9,312	9,312
Current Assets	AUD\$ millions	27,869	23,071	30,103	32,707	27,390	32,414	29,137	29,137	29,137	29,137	29,137	29,137	29,137
Current Liabilities	AUD\$ millions	14,487	14,833	16,754	16,904	16,750	19,203	16,889	16,889	16,889	16,889	16,889	16,889	16,889
Net working capital	AUD\$ millions	13,383	8,237	13,349	15,803	10,640	13,211	12,248	12,248	12,248	12,248	12,248	12,248	12,248
Increase in Net Working Capital	AUD\$ millions	-	5,145	5,111	2,455	5,164	2,572	963	-	-	-	-	-	-
Terminal growth rate														3.34%
Free cashflow	AUD\$ millions		2,467	16,312	27,693	10,064	14,023	21,235	21,658	21,540	21,540	22,899	23,294	494,517
Price/Earnings		11.5	11.2	8.8	6.4	9.0	10.8	9.2	9.2	9.2	9.2	9.2	9.2	9.2
Cost of equity		8.7%	8.3%	11.4%	15.6%	11.1%	9.3%	9.8%	9.8%	9.8%	9.8%	9.8%	9.8%	9.8%
US gov bond yield								4.4%	4.0%	3.9%	3.8%	3.7%	3.7%	3.8%
Credit Spread								-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%
Cost of debt		4.0%	3.8%	1.9%	1.7%	2.5%	6.4%	4.0%	3.5%	3.4%	3.3%	3.2%	3.2%	3.4%
Short-Term Debt	AUD\$ millions	1,431	1,829	876	1,849	1,854	2,173	1,716	1,716	1,716	1,716	1,716	1,716	1,716
Total Long-Term Debt	AUD\$ millions	17,129	17,788	19,353	17,119	17,266	20,639	18,433	18,433	18,433	18,433	18,433	18,433	18,433
Total Debt	AUD\$ millions	18,560	19,617	20,230	18,968	19,119	22,812	20,149	20,149	20,149	20,149	20,149	20,149	20,149
Total equity	AUD\$ millions	66,431	60,323	74,918	75,756	76,138	84,902	74,407	74,407	74,407	74,407	74,407	74,407	74,407
Total Capital	AUD\$ millions	84,991	79,940	95,147	94,724	95,258	107,714	94,557	94,557	94,557	94,557	94,557	94,557	94,557
Weight of equity		78.2%	75.5%	78.7%	80.0%	79.9%	78.6%	78.7%	78.7%	78.7%	78.7%	78.7%	78.7%	78.7%
Weight of debt		21.8%	24.5%	21.3%	20.0%	20.1%	21.2%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%	21.3%
Corporate tax rate assumption		24.0%	38.3%	33.9%	27.7%	31.4%	29.2%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
WACC		7.5%	7.3%	9.2%	12.7%	9.2%	8.3%	8.3%	8.2%	8.2%	8.2%	8.2%	8.2%	8.2%
Present value	AUD\$ millions							20,406	19,235	17,682	16,346	16,069	15,109	296,142
VALUATION														
Value of RIO	AUD\$ million\$	400,989												
Total Debt	AUD\$ million\$	20,149												
Weighted average number of shares		1624												
Value of RIO per share	\$AUD	234.51												
Buy Price		140.70												
Sell Price		246.23												
			Price	% Change										
				-40%										
				5%										



Investment Sample

Appendix 5: RIO Sensitivity Analysis

Note, the analysis assume changes are independent of each other

Adjust this cell to show change.

Prepopulated based on yellow cell having being changed. Values have been hardcoded.

Iron Ore Price Change	FCF								Terminal	Total FCF	% Change	Share Value	% Change
	CY24	CY25	CY26	CY27	CY28	CY29							
10%	22,581	23,019	22,865	22,829	24,187	24,583			521,876	661,940	6%	248.48	6%
5%	21,888	22,338	22,203	22,185	23,543	23,938			508,196	644,292	3%	241.48	3%
0%	21,235	21,658	21,540	21,540	22,899	23,294			494,517	626,684	0%	234.51	0%
-5%	20,502	20,978	20,878	20,896	22,254	22,650			480,838	608,996	-3%	227.49	-3%
-10%	19,809	20,297	20,216	20,252	21,610	22,005			467,158	591,348	-6%	220.49	-6%

Aluminum Price Change	FCF								Terminal	Total FCF	% Change	Share Value	% Change
	CY24	CY25	CY26	CY27	CY28	CY29							
10%	21,542	21,990	22,237	22,254	23,627	24,034			510,235	645,919	3%	241.96	3%
5%	21,369	21,824	21,889	21,897	23,263	23,664			502,376	636,281	2%	238.22	2%
0%	21,235	21,658	21,540	21,540	22,899	23,294			494,517	626,684	0%	234.51	0%
-5%	21,022	21,492	21,192	21,184	22,535	22,924			486,658	617,006	-2%	230.74	-2%
-10%	20,848	21,326	20,844	20,827	22,170	22,554			478,799	607,368	-3%	227.01	-3%

Copper Price Change	FCF								Terminal	Total FCF	% Change	Share Value	% Change
	CY24	CY25	CY26	CY27	CY28	CY29							
10%	21,379	21,846	21,746	21,764	23,244	23,667			502,423	636,069	1%	238.12	2%
5%	21,287	21,752	21,643	21,652	23,071	23,480			498,470	631,356	1%	236.30	1%
0%	21,235	21,658	21,540	21,540	22,899	23,294			494,517	626,684	0%	234.51	0%
-5%	21,103	21,564	21,438	21,428	22,726	23,108			490,564	621,931	-1%	232.67	-1%
-10%	21,011	21,470	21,335	21,316	22,554	22,922			486,610	617,218	-2%	230.85	-2%

Terminal Growth Rate	FCF								Terminal	Total FCF	% Change	Share Value	% Change
	CY24	CY25	CY26	CY27	CY28	CY29							
10%	21,195	21,658	21,541	21,540	22,899	23,294			532,663	664,790	6%	248.55	6%
5%	21,195	21,658	21,541	21,540	22,899	23,294			512,913	645,039	3%	241.27	3%
0%	21,235	21,658	21,540	21,540	22,899	23,294			494,517	626,684	0%	234.51	0%
-5%	21,195	21,658	21,541	21,540	22,899	23,294			477,342	609,468	-3%	228.15	-3%
-10%	21,195	21,658	21,541	21,540	22,899	23,294			461,269	593,396	-5%	222.22	-5%

Discount Rate Change	Share Value	% Change
2%	163.65	-30%
1%	192.98	-18%
0%	234.51	0%
-1%	297.63	27%
-2%	405.09	73%

