

# **APPLIED FINANCIAL STATEMENT ANALYSIS AND VALUATION GROUP PROJECT**

## **AMAZON**

### **Deliverable 4: Forecasting and Common Equity Valuation**

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## Executive Summary

Amazon, a worldwide leader in online retail and cloud services, has a varied and strong business strategy, which includes its leading online platform, the profitable Amazon Web Services (AWS), and a rising influence in digital media with Amazon Prime Video. Its advantages are based on a solid brand image for innovation and customer satisfaction, a huge and effective distribution network, and the capacity to create and maintain customer loyalty, especially through the Amazon Prime membership scheme. Financially, Amazon is on firm footing with steady revenue growth and substantial profitability, particularly from high-margin segments like AWS. However, the company also faces several difficulties. Its heavy dependence on the North American market exposes it to regional economic changes, and despite its enormous size, many of its retail activities struggle with low profit margins due to intense competition and high operational expenses. The management of vast customer data puts it at the core of privacy and security concerns, which are increasingly vital in today's digital environment. Moreover, Amazon operates in highly competitive industries, where it constantly competes against both well-established giants and agile startups. These challenges, though important, are contrasted with Amazon's demonstrated ability to innovate, adapt, and grow, even in the face of changing market situations and external pressures.

Based on the strengths of Amazon's business model, the forecasting and valuation that we have performed, we believe Amazon offers a promising investment opportunity based on our DCF Valuation price of \$164.44 which is a 10.48% increase from the current stock price of \$148.84 and also a positive outlook in the sensitivity analysis. The company's varied business strategy, featuring the solid performance of Amazon Web Services (AWS) and its extensive online retail platform, places it firmly in high-growth markets. Hence, our investment recommendation is to purchase the shares of Amazon because Amazon's steady revenue growth, especially in its high-margin AWS segment, and spending on new technologies like artificial intelligence indicate significant growth potential. Despite challenges like market fluctuations and regulatory pressure, Amazon's innovation, market adaptation, and strategic vision make it a desirable investment choice for long-term investors with moderate to high-risk tolerance.

Amazon, Inc. has high creditworthiness due to its varied business operations and a solid financial performance. It has a AA rating from S&P and its revenue streams, especially its high-margin AWS segment, boost profitability and cash flow stability. Amazon maintains a robust balance sheet with healthy liquidity and manageable debt levels. Moreover, the credit rating analysis done using ratios and HZ Model before shows that Amazon has a strong credit profile which is also supported by the positive outlook of rating agencies. Based on this, we suggest giving credit to the firm based on its positive and credit worthy history.

## Financial Forecasting

Our financial projections cover a 10-year period from 2023 to 2032 to increase the revenue steadily, before falling to the long-term growth rate, as Amazon has a powerful growth story and can boost its revenues with its AWS and technology offerings. We estimate that Amazon's profitability will improve over time, while its efficiency and capital structure will remain constant. This is based on the fact that Amazon had unusually high operating expenses in 2022, which were driven by inflation and increased costs of shipping, fulfillment and other operations. We do not expect these factors to continue in the future. Therefore, our base case scenario differs from the historical trend in terms of profitability.

In the below section, we will explain in detail the forecasting parameters used for each financial statement line item in the Income Statement and Balance Sheet:

**Revenue:** The scenario that we are modeling is a gradual increase in revenue after which it declines to the long term growth rate. Historically, Amazon has seen significant growth in its revenue year over year within a low growth in 2022 attributable to a global supply chain crisis. Based on Amazon's historical performance, we see that the revenue growth rate peaked in 2022 at 37.62%. The average revenue growth rate from 2018 to 2021 was 22.29%. We project that the revenue will continue to grow steadily by 2.94% every year till it achieves a peak of 30% in 2029, and then gradually decrease to the long-term growth rate of 3.19%, which is equal to the long-term GDP growth rate. This is supported by the robust growth story, the rising demand for technology outcomes, premium brand value and plethora of product offerings, along with a better outlook for the global supply chain situation.

According to the trend analysis, Amazon is shifting its focus from product sales to service sales. Based on this trend, we project that the product sales will drop to 35% of the total revenue by 2027 and stay there afterwards. Conversely, the service sales will rise to 65% of the total revenue by 2027 and remain there afterwards, in line with its strategy.

**Gross Profit Margin:** In 2022, Amazon reached its highest gross margin ever, at 43.81% of revenue. We estimate that this will persist in the future and project the gross profit margins to stay at 43.81% for the entire forecast period, given Amazon's economies of scale.

Now, we shift focus to the operating expenses in Amazon's operations.

**Technology and content expenses:** Amazon's technology and content expenses have been rising in recent years, which aligns with its strategy of expanding its AWS segment. In 2022, Amazon reached its peak of technology and content expenses as a fraction of sales of 14.24%. We think that this is a positive sign, but we do not project such a high level to continue in the forecast period in the base case scenario. Therefore, we have forecasted the technology and content expenses to drop to 12.49% of sales, by 2024, which is the historical average of the years 2018-2022.

**Selling, General & Administration (SG&A) expenses:** In 2022, the firm reached its peak of 2.31% in SG&A expenses margin, mainly because of inflation and rising costs. We anticipate that inflation will decrease in the future and reach a normalized level, which will lead to a reduction in SG&A expenses to a historical average of 1.86% by 2024 and stay at that level.

**Fulfillment expenses:** Like SG&A, fulfillment expenses margin also reached their highest level of 16.40% in 2022 due to higher shipping costs and inflation. We expect that inflation will improve in the future, which will result in a decrease in fulfillment expenses to 15.03% of sales by 2024, which is the historical average of 2018-2021. We do not project that 2022 levels will continue in the future, as Amazon has a large scale of operations and bargaining power.

**Marketing expenses:** Amazon's brand value is huge and we think that the marketing expenses will not be a major part of the operating expenses. In 2022, the marketing expenses as a fraction of sales reached their peak of 8.22%. We have projected the marketing expenses to stay at 6.32% of sales in the forecast period, as the historical average of 2018-2021 is a good estimate of marketing expenses to continue in the future, considering Amazon's marketing strength and increased brand power.

**Other operating (expenses) income:** These are not a major part of Amazon's operating expenses, so we have estimated that they will not change from 2022 levels. We have forecasted these expenses to be \$349 million, which is the historical average of the years 2018 to 2022.

After accounting for the operating expenses, we have projected the following EBIT margins for Amazon in the base case scenario. This shows an increase in the EBIT Margins as we have estimated that Amazon will reduce its operating expenses due to its size. There is a jump in the EBIT margin from 2.31% in 2022 to 5.31% in 2023 to 8.06% in 2024 before it stabilizes and stays around 8.0% for the rest of the forecast period.

INCOME STATEMENT																
Fiscal year	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F	
Fiscal year end date	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32	
Net Product Sales	141,915	160,408	215,915	241,787	242,901	258,724	281,951	314,050	357,157	414,264	526,352	684,257	828,384	928,840	958,470	
Product sales as a % of revenue	60.94%	57.18%	55.93%	51.46%	47.26%	44.81%	42.36%	39.90%	37.45%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	
Net Service Sales	90,972	120,114	170,149	228,035	271,082	318,697	383,731	472,975	596,490	769,347	977,510	1,270,763	1,538,428	1,724,988	1,780,015	
Service sales as a % of revenue	39.06%	42.82%	44.07%	48.54%	52.74%	55.19%	57.64%	60.10%	62.55%	65.00%	65.00%	65.00%	65.00%	65.00%	65.00%	
Revenue	232,887	280,522	386,064	469,822	513,983	577,421	665,682	787,024	953,647	1,183,611	1,503,862	1,955,020	2,366,812	2,653,828	2,738,485	
% growth		20.45%	37.62%	21.70%	9.40%	12.34%	15.29%	18.23%	21.17%	24.11%	27.06%	30.00%	21.06%	12.13%	3.19%	
Cost of sales	139,156	165,536	233,307	272,344	288,831	324,480	374,078	442,266	535,899	665,126	845,090	1,098,617	1,330,022	1,491,310	1,538,882	
Gross Profit	93,731	114,986	152,757	197,478	225,152	252,941	291,604	344,759	417,748	518,485	658,772	856,403	1,036,790	1,162,518	1,199,603	
Gross Margin	40.25%	40.99%	39.57%	42.03%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	43.81%	
Technology & Content Expenses	28,837	35,931	42,740	56,052	73,213	77,177	83,126	98,278	119,085	147,801	187,792	244,129	295,551	331,391	341,963	
% Sales	12.38%	12.81%	11.07%	11.93%	14.24%	13.37%	12.49%	12.49%	12.49%	12.49%	12.49%	12.49%	12.49%	12.49%	12.49%	
Selling, general & administrative	4,336	5,203	6,668	8,823	11,891	12,044	12,370	14,625	17,721	21,995	27,946	36,329	43,981	49,315	50,888	
% Sales	1.86%	1.85%	1.73%	1.88%	2.31%	2.09%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	1.86%	
Fulfillment Expenses	34,027	40,232	58,517	75,111	84,299	90,732	100,022	118,254	143,290	177,843	225,962	293,750	355,624	398,749	411,469	
% Sales	14.61%	14.34%	15.16%	15.99%	16.40%	15.71%	15.03%	15.03%	15.03%	15.03%	15.03%	15.03%	15.03%	15.03%	15.03%	
Marketing Expenses	13,814	18,878	22,008	32,551	42,238	41,973	42,073	49,743	60,274	74,808	95,049	123,564	149,590	167,731	173,081	
% Sales	5.93%	6.73%	5.70%	6.93%	8.22%	7.27%	6.32%	6.32%	6.32%	6.32%	6.32%	6.32%	6.32%	6.32%	6.32%	
Other Operation (Expense) Income	296	201	(75)	62	1,263	349	349	349	349	349	349	349	349	349	349	
Operating profit (EBIT)	12,421	14,541	22,899	24,879	12,248	30,666	53,664	63,510	77,030	95,689	121,674	158,281	191,694	214,983	221,852	
EBIT Margin	5.33%	5.18%	5.93%	5.30%	2.38%	5.31%	8.06%	8.07%	8.08%	8.08%	8.09%	8.10%	8.10%	8.10%	8.10%	

Before we project the other items after EBIT in the Income Statement, we should review the forecasting parameters for the Balance Sheet. We have estimated that the current levels in the balance sheet are optimal and there would be no change in efficiency in Amazon's operations. Based on this scenario, we have projected that the balance sheet items from the common size statements as a fraction of sales/ total assets would **stay the same in the forecasting period at 2022 levels**. Most of the assets are projected as a fraction of sales since these are the assets that help generate the sales, so it makes sense to use sales for projection. Likewise, most of the liabilities items are projected as a fraction of sales as these are used to fund the assets which ultimately generate the sales.

Focusing on the Assets section of the Balance Sheet, below are the forecasting parameters we have estimated.

**Cash & equivalents and Marketable securities:** We project Cash & equivalents to be 10.48% of sales and Marketable securities to be 3.14%. We treat Marketable securities as cash balances for simplicity, since they are not operating assets.

**Inventories:** We forecast Inventories to be 11.91% of Cost of Goods Sold (COGS) rather than Sales. This is because the Inventory turnover ratio depends on COGS not Sales. To match how we calculate Inventory efficiency with the Inventory turnover ratio, we use COGS to forecast Inventory.

**Accounts Receivable:** We project Accounts receivable to stay at 8.24% of sales for the entire forecast period.

**Property, Plant and Equipment (PP&E):** We forecast PP&E to be 30.44% of the sales, using the historical average to maintain the same level of efficiency. We have used a forecasting parameter of Net PP&E as a % of sales because the assets are used to produce the level of sales we project.

The Net PP&E levels depend on the Depreciation & Amortization (D&A) expenses and the Capital Expenditure (CAPEX) that the firm makes every year. We forecast that the efficiency will remain the same in the forecast period, so we project a constant depreciation rate of 14.4% of net PP&E. This is based on the historical average of depreciation rate. The CAPEX is then simply Ending Net PP&E - Beginning Net PP&E + D&A.

Besides Net PP&E, Amazon also has some intangible assets with a finite life span that are part of "Other Non-Current Assets". The D&A for these assets is estimated using a forecasting parameter of % of revenue. For the forecast period, we have set this to 4.56%, which is the historical average of D&A on Non-Current Assets as a % of sales.

The D&A for both Net PP&E and the non-current assets are added to Net Income while computing the Operating Cash Flows in the Statement of CashFlows as Depreciation and Amortization is a non-cash expense.

*\*Refer to 'Property, Plant and Equipment' Schedule in the Appendix*

Below is a view of the Assets Section of the forecasted Balance Sheet.

BALANCE SHEET															
Fiscal year	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Cash & equivalents	31,750	36,092	42,122	36,220	53,888	60,539	69,793	82,515	99,984	124,094	157,671	204,972	248,146	278,238	287,114
Marketable Securities	9,500	18,929	42,274	59,829	16,138	18,130	20,901	24,711	29,943	37,163	47,218	61,384	74,313	83,325	85,983
Inventories	17,174	20,497	23,795	32,640	34,405	38,651	44,559	52,682	63,835	79,229	100,666	130,865	158,430	177,642	183,309
Accounts Receivable	16,677	20,816	24,542	32,891	42,360	47,588	54,862	64,863	78,595	97,548	123,941	161,123	195,061	218,716	225,693
Property, plant & equipment (net)	61,797	72,705	113,114	160,281	186,715	175,761	202,626	239,562	290,280	360,278	457,759	595,087	720,432	807,796	833,565
Operating Leases	-	25,141	37,553	56,082	66,123	74,284	85,639	101,249	122,685	152,269	193,469	251,510	304,486	341,410	352,301
Goodwill	14,548	14,754	15,017	15,371	20,288	20,288	20,288	20,288	20,288	20,288	20,288	20,288	20,288	20,288	20,288
Other non current assets	11,202	16,314	22,778	27,235	42,758	48,035	55,378	65,472	79,333	98,464	125,106	162,637	196,894	220,771	227,813
Total assets	162,648	225,248	321,195	420,549	462,675	483,277	554,046	651,341	784,943	969,333	1,226,117	1,587,866	1,918,050	2,148,185	2,216,065

**Operating Leases:** For the forecasted period of 2023- 2032, we estimate that these will account for 12.86% of sales.

**Goodwill:** Amazon's goodwill accounts have been consistent over time. The only exception was in 2022, when Amazon's goodwill balance increased because of its acquisitions. Since acquisitions rely on future events, we forecast the goodwill amount to stay at \$20,288 million for the forecast period.

**Other non current assets:** We estimate these as a fraction of sales at the 2022 level of 8.32%, like the other assets.

Next, we look at the Liabilities section to see how the assets will be funded by either using operating liabilities that do not bear interest, external debt or equity financing.

**Accounts Payable:** We project Accounts Payable to be 27.56% of COGS for the entire forecast period, based on the Accounts Payable turnover ratio that uses COGS. Amazon efficiently runs its operations with liabilities that do not bear interest and we forecast these levels will continue in the future.

**Accrued Expenses:** Accrued expenses are forecasted as 12.17% of the revenue.

**Deferred (Unearned) revenue:** Like Accrued expenses, we also project deferred revenue as a percentage of revenue. The 2.57% revenue level in 2022 is estimated to continue for the entire forecast period.

**Long Term Debt:** Long Term Debt is used by a firm to fund its assets that are essential for its business activities and revenue generation. We project Long-Term Debt to be 14.51% of the total assets for the entire forecast period, based on the common size level of 2022.

**Long Term Capital Lease Obligations:** The long-term capital lease obligations are projected to be 14.20% of the annual revenue.

**Other Long Term Liabilities:** Other long-term liabilities, which are a minor portion of the total liabilities, are projected as a percentage of revenue, at 4.56% of revenue based on 2022 levels.

Below is a view of the liabilities section of the forecasted Balance Sheet.

BALANCE SHEET															
Fiscal year	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Accounts payable	38,192	47,183	72,539	78,664	79,600	89,425	103,093	121,886	147,690	183,305	232,901	302,772	366,546	410,996	424,106
Accrued Expenses	23,663	32,439	44,138	51,775	62,566	70,288	81,032	95,803	116,085	144,078	183,062	237,980	288,107	323,045	333,350
Deferred revenue (current)	6,536	8,190	9,708	11,827	13,227	14,860	17,131	20,254	24,541	30,459	38,701	50,311	60,908	68,294	70,473
Total Current Liabilities	68,391	87,812	126,385	142,266	155,393	174,572	201,256	237,942	288,317	357,842	454,664	591,063	715,561	802,334	827,929
Long Term Debt	23,495	23,414	31,816	48,744	67,150	70,140	80,411	94,532	113,922	140,683	177,952	230,454	278,375	311,775	321,627
Long Term Capital Lease Obligations	9,650	39,791	52,573	67,651	72,968	81,974	94,504	111,731	135,385	168,032	213,497	277,546	336,006	376,753	388,771
Other Long term liabilities	17,563	12,171	17,017	23,643	21,121	26,359	30,388	35,927	43,534	54,032	68,651	89,246	108,044	121,147	125,011
Total Long Term Liabilities	50,708	75,376	101,406	140,038	161,239	178,473	205,303	242,190	292,841	362,747	460,099	597,246	722,426	809,675	835,409
Total liabilities	119,099	163,188	227,791	282,304	316,632	353,045	406,560	480,132	581,158	720,590	914,763	1,188,309	1,437,986	1,612,009	1,663,338

After determining our Debt Levels, we can estimate the interest expense on these debt balances that bear interest.

**Interest expense:** To forecast the interest expenses, we have used the historical weighted average of interest rate on debt that bears interest. For Amazon, the debt that bears interest consists of Long-Term Debt and Finance Lease Obligations, which are a component of the Long-Term Capital Lease Obligations. The Finance Lease Obligations are calculated using the footnotes in 10K, which is (Prior Year Finance Lease / Prior Year Long-Term Capital Lease Obligations) \* Current Year Long-Term Capital Lease Obligations.

We expect Amazon to have more debt every year as its sales and assets grow. Therefore, we estimate that the interest rate of Amazon will rise by 0.1% due to the high interest rate scenario from its current 4.08% in 2022 until it reaches a 4.58% interest rate in 2027, and then stays at that level for the rest of the forecast period. This is a realistic estimation and is lower than its historical weighted average interest of 5.3%. We think that the 4.5% levels are ideal since Amazon has a large scale of operations and bargaining power that enable it to obtain external financing at these levels.

*\*Refer to 'Interest Income and Interest Expense' Schedule in the Appendix*

**Interest income:** We earn interest income on the cash and equivalents and the marketable securities. We have calculated the historical interest earned on these cash balances. The weighted average interest rate for 2022 is 1.19%, which we estimate will continue in the future. We use this weighted average interest rate and the projected cash balances that we determined earlier to generate our forecasts of interest income in the Income Statement.

*\*Refer to 'Interest Income and Interest Expense' Schedule in the Appendix*

Next, we will look at the minor components of the income statement to complete our projected income statement.

**Other (income) expense:** These are insignificant non-operating items that we estimate to stay at a steady level of \$(797) million throughout the forecast period, based on the historical average of the other (income) expense amounts in the period 2018-2020. The reason to exclude 2021 and 2022 levels in our forecast is due to the significant fluctuations in valuations gains and losses due to Amazon's investment in Rivian. To avoid the impact of outliers, we have excluded these levels from our historical average since we do not expect these to occur in the future.

After forecasting all the income statement items, we calculate the pre tax profit as EBIT minus Interest expense plus Interest Income minus Other (income) expense.

**Equity in income (Loss) of unconsolidated affiliates:** We projected this income statement item based on the historical average of \$2 million and estimated it to remain unchanged in the future. Because this item does not reflect the firm's operations and relies on outside factors, we kept the values steady for the forecast period.

**Provision (Benefit) for Income Taxes:** We computed the tax rate by dividing the provision (benefit) for income taxes by the pre-tax profit for each historical year. For the forecast period, we used a historical average of the tax rates from 2018 to 2021, except for 2022, which had an income tax benefit due to Amazon's pre-tax loss. This is set at 13% and it differs from the statutory tax rate because the Income Statement tax expenses are calculated using US GAAP rules while the cash tax paid follows the statutory tax rate set by IRS code. We then multiplied the forecasted tax rate by the pre-tax profits to get the tax expense.

With this, we have our net income which is Pre Tax Profit - Provision (Benefit) for Income Taxes) + Equity in income (loss) of unconsolidated affiliates.

INCOME STATEMENT															
Fiscal year	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Operating profit (EBIT)	12,421	14,541	22,899	24,879	12,248	30,666	53,664	63,510	77,030	95,689	121,674	158,281	191,694	214,983	221,852
EBIT Margin	5.33%	5.18%	5.93%	5.30%	2.38%	5.31%	8.06%	8.07%	8.08%	8.08%	8.09%	8.10%	8.10%	8.10%	8.10%
Interest income	440	832	555	448	989	885	1,009	1,179	1,412	1,734	2,180	2,806	3,506	4,073	4,375
Interest expense	1,417	1,600	1,647	1,809	2,367	2,873	3,225	3,835	4,674	5,837	7,304	9,362	11,664	13,529	14,520
Other (income) expense	183	(203)	(2,371)	(14,633)	16,806	(797)	(797)	(797)	(797)	(797)	(797)	(797)	(797)	(797)	(797)
Equity in Income (Loss) of unconsolidated affiliates, net	9	(14)	16	4	(3)	2	2	2	2	2	2	2	2	2	2
Pretax profit	11,261	13,976	24,178	38,151	(5,936)	29,476	52,247	61,653	74,567	92,386	117,350	152,525	184,336	206,327	212,506
Provision (Benefit) for Income Taxes	1,197	2,374	2,863	4,791	(3,217)	3,833	6,794	8,017	9,697	12,014	15,260	19,834	23,971	26,830	27,634
Tax Rate	10.63%	16.99%	11.84%	12.56%	54.19%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%
Net income	10,073	11,588	21,331	33,364	(2,722)	25,645	45,453	53,635	64,871	80,372	102,090	132,691	160,365	179,497	184,872
Net Margin	4.33%	4.13%	5.53%	7.10%	-0.53%	4.44%	6.83%	6.81%	6.80%	6.79%	6.79%	6.79%	6.78%	6.76%	6.75%

Amazon's Net Income dropped in 2022 because of its huge losses in Rivian investment. This is unrelated to Amazon's operations and core business strategy, so we expect the situation to improve in the future for Amazon. Based on all the forecasting parameters we have applied so far, Amazon's net income is



expected to increase in 2023 at 4.44% of net income margin. After 2023, the net income is expected to stay stable at 6.75-6.83% of net income margin, reaching 6.75% in 2032. This is higher than the historical average of net income, but we think that Amazon has a solid business strategy and a positive growth story that enables it to achieve such a level.

**Stock Based Compensation:** The stock based compensation for Amazon is correlated to its revenue. We forecasted stock-based compensations as a percentage of revenue for the forecast period. Based on the historical average ratio of stock based compensation to revenue, we estimated it to be 2.74% of the revenue for the entire forecast period.

Now we move our attention to the parameter choices used for the Equity section of the forecasted Balance Sheet.

**Retained Earnings:** Retained Earnings is a balancing figure rather than a forecasted item. We calculate the End of Period Retained Earnings as Beginning of Period Retained Earnings plus Net Income minus Dividends, after we have the net income of the current year. Amazon has never paid any dividends in the past, so we estimate that this trend will continue and the management will not declare any dividends in the forecast period. The End of Period Retained Earnings then goes to the Equity section of the Balance Sheet.

**Other Comprehensive Income (OCI):** We have taken a conservative approach, estimating no growth or changes in Other Comprehensive Income year over year for the entire forecast period. As a result, OCI is projected to stay at a steady level of \$(4,487) million for the whole forecast period.

*\*Refer to 'Retained Earnings' Schedule in Appendix*

**Net Common Stock:** The Net Common Stock is a balancing figure in the Balance Sheet that indicates the amount of equity financing required to fund the assets if they exceed the liabilities and the other stockholders equity or the amount of share buyback if the current operations can fund the assets. Based on the projected balance sheet parameters, the Net Common Stock balance decreases year after year which implies that Amazon will raise the level of share buybacks in the projected period as it will have substantial financing from its operations to finance the assets. Also, since Amazon does not pay dividends to its shareholders, it is logical that it boosts its share buybacks to provide cash to the equity shareholders.

*\*Refer to 'Net Common Stock' Schedule in Appendix*

Below is the view of the Equity section of the forecasted Balance Sheet.

BALANCE SHEET															
Fiscal year	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Common stock	5	5	5	106	108										
Additional Paid in Capital	26,791	33,658	42,865	55,437	75,066										
Treasury Stock	(1,837)	(1,837)	(1,837)	(1,837)	(7,837)										
Net Common Stock	24,959	31,826	41,033	53,706	67,337	25,880	(2,317)	(32,230)	(64,525)	(99,939)	(139,418)	(183,906)	(263,765)	(387,149)	(555,471)
Retained earnings	19,625	31,220	52,551	85,915	83,193	108,838	154,291	207,926	272,797	353,169	455,259	587,950	748,315	927,812	1,112,685
Other comprehensive income	(1,035)	(986)	(180)	(1,376)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)	(4,487)
Total equity	43,549	62,060	93,404	138,245	146,043	130,231	147,487	171,210	203,785	248,744	311,354	399,557	480,064	536,176	552,727

After preparing the projected income statement and balance sheet, the Statement of Cash flows is derived from the changes in the balance sheet accounts and some corrections of non-cash expenses from the income statement. Based on our forecasting parameters and the resulting income statement and balance sheet, below is a view of the Statement of Cash flow for Amazon.

CASH FLOW STATEMENT															
Fiscal year	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F					
Fiscal year end date	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32					
Net income	25,645	45,453	53,635	64,871	80,372	102,090	132,691	160,365	179,497	184,872					
Depreciation and amortization	52,464	57,635	67,767	81,685	100,873	127,551	165,051	202,767	231,192	243,212					
Stock based compensation	20,158	20,710	21,277	21,860	22,459	23,074	23,705	24,354	25,021	25,706					
Decreases / (Increases) in working capital assets	(9,475)	(13,182)	(18,123)	(24,886)	(34,346)	(47,830)	(67,382)	(61,503)	(42,867)	(12,644)					
Increases / (Decreases) in working capital liabilities	19,179	26,684	36,686	50,375	69,525	96,822	136,399	124,498	86,774	25,594					
Other non current liabilities	5,238	4,029	5,539	7,606	10,498	14,619	20,595	18,798	13,102	3,865					
Equity in Income (Loss) of unconsolidated affiliates	-	-	-	-	-	-	-	-	-	-					
Operating leases	(8,161)	(11,355)	(15,610)	(21,436)	(29,584)	(41,200)	(58,041)	(52,976)	(36,924)	(10,891)					
Other comprehensive income	-	-	-	-	-	-	-	-	-	-					
Cash from operating activities	105,049	129,974	151,172	180,075	219,797	275,125	353,019	416,304	455,796	459,715					
Capital expenditures	(15,194)	(54,162)	(68,834)	(88,940)	(116,928)	(156,492)	(213,278)	(220,244)	(197,607)	(144,173)					
Other non current assets	(31,594)	(37,681)	(45,963)	(57,324)	(73,074)	(95,181)	(126,633)	(142,125)	(144,826)	(131,850)					
Goodwill	-	-	-	-	-	-	-	-	-	-					
Long Term Capital Lease Obligations	9,006	12,530	17,226	23,655	32,647	45,465	64,049	58,460	40,746	12,018					
Cash from investing activities	(37,781)	(79,313)	(97,571)	(122,609)	(157,356)	(206,208)	(275,861)	(303,909)	(301,687)	(264,005)					
Long term debt	2,990	10,271	14,121	19,390	26,761	37,268	52,502	47,921	33,401	9,852					
Net Common Stocks	(61,615)	(48,908)	(51,190)	(54,155)	(57,872)	(62,553)	(68,193)	(104,213)	(148,406)	(194,028)					
Cash from financing activities	(58,625)	(38,637)	(37,069)	(34,765)	(31,111)	(25,285)	(15,691)	(56,292)	(115,005)	(184,176)					
Net change in cash during period	8,643	12,025	16,532	22,701	31,331	43,632	61,467	56,103	39,104	11,534					
CASH															
Beginning of period	70,026	78,669	90,694	107,226	129,927	161,257	204,889	266,356	322,459	361,562					
End of period	78,669	90,694	107,226	129,927	161,257	204,889	266,356	322,459	361,562	373,096					
Change in Cash	8,643	12,025	16,532	22,701	31,331	43,632	61,467	56,103	39,104	11,534					

We have projected no change in the balance of the investment in unconsolidated affiliates that are part of the Other non-current investments. Therefore, the change in equity in income (loss) of unconsolidated affiliates is zero. This forecasting parameter implies that the income statement amount of equity in income (loss) of unconsolidated affiliates matches the amounts of dividends received, leading to no change in cash flow.

After projecting the Income Statement and Balance Sheet and building the Statement of Cash Flows and balancing all the three statements, we move on to the Valuation part using the Discounted Cash flow (DCF) method.

# Common Equity Valuation

Before we explore the details of DCF valuation, we calculate the Weighted Average Cost of Capital (WACC) which is an essential part of the model as the Free Cash Flows to all investors are discounted using the WACC of the firm to determine the share price.

## WACC Calculation

WACC is a crucial factor in determining the feasibility of investment projects and making financial decisions as it provides the total cost of funding the project over a period of time by using a specified capital structure. It serves as a benchmark for evaluating attractiveness of potential investments.

### Components:

- **Cost of Debt:** Cost of debt is the interest expense the company pays on its interest bearing liabilities, often expressed as annual percentage rate (APR). For Amazon, we have estimated this to be at the same level of weighted average interest we projected in the Income Statement for 2024 to be at 4.18%.
- **Tax Rate:** Corporate Tax rate is used to determine after tax cost of debt as interest payments are tax deductible. This tax shield reduces the effective cost of debt, making it less expensive for a company compared to other forms of financing like equity. We have estimated this to be at the average historical effective tax rate of 13% in our forecasted income statement.
- **Cost of Equity:** Cost of equity is calculated using CAPM. It estimates the expected return on equity to shareholders.
  1. Risk Free Rate: It is the baseline rate of return. We applied the 30-year treasury rate 4.19% as of the valuation date of 12/13/2023 as the risk-free rate.
  2. Market Risk Premium: It is the additional return investors expect for taking on the risk of investing in the stock market. We applied 5.5%, which is recommended by professional agency Kroll Rating.
  3. Beta: It measures the stock volatility compared to the overall market. It reflects how much a stock price moves in relation to the market. Beta for Amazon is estimated at 0.9, i.e. it moves along with the volatility in the market. This has been taken from the leading Finance platform Felix.



Amazon.com, Inc. is a multinational technology company, which engages in the provision of online retail shopping services. It operates through the following segments: North America, International, and Amazon Web Services (AWS). The North America segment is involved in the retail sales of ...

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Latest 10-Q	Q2	2023-06-30	2023-08-04	PR	IS BS CFS
Latest 10-K	FY2022	2022-12-31	2023-02-03	PR	IS BS CFS

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52 week high \$150.57 low \$81.43

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PE FY1 Closing Share Price

VWAP share price 12m \$116.84

EV Bridge \*

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Share Price [AMZN] \$149.97

Basic shares (M) 10,317.8

Dilution adjustment (M) 384.4

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Calculating WACC	
Govt. bond yield*	10y
Eq. risk premium*	20y hist avg
Adj. beta	company
	0.90

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Based on the above parameters, we have estimated a cost of equity capital of 9.14% for Amazon.

- Shareholders Equity** - Firms % of shareholders equity with respect to total value of capital is used to calculate weighted average cost of equity in WACC. We forecasted the value to shareholders equity to reach \$1.7 Trillion based on the present value of all the cash flows available to the equity shareholders discounted at the cost of equity capital. Equity holds a weight of 99.0% in the capital structure based on the value to equity shareholders as calculated below.

#### Free Cash Flows to Common Equity (implemented for calculation of WACC)

Fiscal year	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Cash from operations (adjusted for stock-based compensation)	46,752	84,891	109,264	129,894	158,215	197,338	252,051	329,314	391,949	430,774	434,000
- Increase in operating cash	26,023	-8,643	-12,025	-16,532	-22,701	-31,331	-43,632	-61,467	-56,103	-39,104	-11,500
+ Cash from investing	-37,601	-37,781	-79,313	-97,571	-122,609	-157,356	-206,208	-275,861	-303,909	-301,687	-264,000
+ Increase in debt	14,122	4,395	12,226	16,809	23,081	31,856	44,362	62,496	57,043	39,759	11,720
- Dividends paid on preferred	-	-	-	-	-	-	-	-	-	-	-
+ Increase in preferred stock	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to common equity (FCFE)	49,296	42,862	30,153	32,601	35,986	40,508	46,574	54,482	88,981	129,742	170,195

#### Present value of FCF

	Val date	Yr 1 - Stub	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Date for discounting cash flows	12/13/2023	12/31/2023	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Free cash flows (FCF) stub adjusted	5.00%	2,143	30,153	32,601	35,986	40,508	46,574	54,482	88,981	129,742	170,195
Present value of free cash flows		2,134	27,502	27,245	27,556	28,420	29,933	32,083	48,009	64,140	77,070

#### Total enterprise value (TEV) calculation

Long term growth rate	3.19%
2032 FCFE x (1+g)	175,626
Terminal value in 2032	2,951,703
PV of terminal value	1,336,693
PV over finite forecast horizon	364,095
Forecast equity value before time adjustment	1,700,789

- Debtholders** - Firms % of Debt balance with respect to Total Value of capital is used to calculate weighted average cost of debt in WACC. We forecasted the debtholders value to reach \$16,540 million based on the present value of all the cash flows available to the debt capital providers

discounted at the cost of equity capital. Debt holds a weight of 1.0% in the capital structure based on the value to debt holders as calculated below.

Value to debt holders										
Fiscal year	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P
Fiscal year end date	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Interest payment	2,873	3,225	3,835	4,674	5,837	7,304	9,362	11,664	13,529	14,520
Minus debt issuance	4,395	12,226	16,809	23,081	31,856	44,362	62,496	57,043	39,759	11,727
FCF to Debt (stub adjusted)	(76)	(9,001)	(12,973)	(18,407)	(26,019)	(37,058)	(53,134)	(45,379)	(26,230)	2,799
PV of FCF to debt	(76)	(8,621)	(11,927)	(16,242)	(22,037)	(30,122)	(41,455)	(33,982)	(18,853)	1,927
2032 FCF to debt x (1+g)	2,882									
Terminal Value in 2032	289,720									
PV of Terminal Value	199,855									
PV of debt over finite life	-183,315									
Total value to debt holders	16,540									

## WACC Formula:

$$WACC = (E/V * Re) + (D/V * Rd) * (1 - T)$$

where:

E = market value of equity,

V = total market value of equity and debt, estimated through DCF of FCFE

Re = cost of equity,

D = market value of debt, estimated through DCF of FCF to debt

Rd = cost of debt, and

T = corporate effective tax rate.

## WACC Buildup

\$ and shares in millions, except per share data

### Cost of capital assumptions

		Source
Cost of debt	4.18%	Same as I/S parameter we used for forecast
Tax rate	13.00%	Same as I/S parameter we used for forecast
Cost of debt (after tax)	3.64%	Cost of debt x (1 - tax rate)
Risk free rate	4.19%	30-year treasury rate as of valuation date
Beta	0.90	Felix
Market risk premium	5.50%	Krol Rating
Cost of equity	9.14%	RfR + Beta x MRP

### Capital weights (capital structure)

	Current	Target (override)	% of total
Equity	\$1,700,788.57		99.1%
Debt	15,097		0.9%

<b>Cost of capital (WACC)</b>	<b>9.09%</b>
-------------------------------	--------------

## Comparison and Benchmarking

While Amazon's WACC stood at 9.09%, comparable companies such as Walmart, Costco, and Target's WACC stood at 8.94%, 10.63% and 10% respectively, which aligns with the industry trends.

Walmart Inc

NYS

Type a ticker

Walmart, Inc. engages in retail and wholesale business. The company offers an assortment of merchandise and services at everyday low prices. It operates through the following business segments: Walmart U.S., Walmart International, and Sam's Club. The Walmart U.S. segment operates as a ...

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Type	Period	Ended on	Filed	Press Release	Filing Extracts
Latest 10-Q	Q3	2023-10-31	2023-11-30	PR	JS BS CFS
Latest 10-K	FY2023	2023-01-31	2023-03-17	PR	JS BS CFS

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52 week high \$169.94 low \$136.09

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PE FY1 Closing Share Price

Dividend yield 1.49%

VWAP share price 12m \$152.14

Economic Data (15 Dec 2023)

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Corporate tax rate	21.00%
Historic real GDP growth rate	2.10%
Forecast real GDP growth rate	1.90%
Historic inflation rate	2.98%
Forecast inflation rate	2.00%
SOFR	5.31%
US 3 month Treasury Yield	5.44%

EV Bridge \*

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Share Price [WMT]	\$152.74
Basic shares (M)	2,692.2
Dilution adjustment (M)	2.6
Fully diluted shares out. (M)	2,694.9
Fully diluted mkt. cap (M)	411,612.9
NCL (\$M)	6,127.0
Debt and equivalents (\$M)	49,090.0
Net Pension Liability (M)	0.0
Investments (M)	0.0
Cash (\$M)	12,154.0
Enterprise value (\$M)	4,54,675.9

\* Share price date (15 Dec 2023), LTM date (31 Oct 2023)

Calculating WACC

Copy

Govt. bond yield*	10y	4.36%
Eq. risk premium*	20y hist avg	7.92%
Adj. beta	company	0.65
Est. cost of equity		9.53%
Unlevered beta		0.60
Credit spread*		0.61%
Cost of debt		4.97%
Credit rating (Moody's/S&P)		Aa2 / --
Total debt / capitalization		10.52%
Total debt / mkt. cap.		11.93%
WACC		8.94%

Target Corporation

NYS

Type a ticker

Target Corp. engages in the operation and ownership of general merchandise stores. It offers food assortments including perishables, dry grocery, dairy, and frozen items. The company was founded by George Draper Dayton in 1902 and is headquartered in Minneapolis, MN.

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Both 10-K 10-Q

Type	Period	Ended on	Filed	Press Release	Filing Extracts
Latest 10-Q	Q3	2023-10-28	2023-11-22	PR	JS BS CFS
Latest 10-K	FY2023	2023-01-28	2023-03-08	PR	JS BS CFS

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52 week high \$181.70 low \$102.93

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PE FY1 Closing Share Price

Dividend yield 3.15%

WWAP share price 12m \$136.60

Economic Data (15 Dec 2023)

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Corporate tax rate	21.00%
Historic real GDP growth rate	2.10%
Forecast real GDP growth rate	1.90%
Historic inflation rate	2.98%
Forecast inflation rate	2.00%
SOFR	5.31%
US 3 month Treasury Yield	5.44%

EV Bridge \*

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Share Price [TGT]	\$138.37
Basic shares (M)	461.7
Dilution adjustment (M)	3.4
Fully diluted shares out. (M)	465.1
Fully diluted mkt. cap (M)	64,349.7
NCI (\$M)	0.0
Debt and equivalents (\$M)	15,995.0
Net Pension Liability (M)	0.0
Investments (M)	1,343.0
Cash (\$M)	2,229.0
Enterprise value (\$M)	76,772.7

\* Share price date (15 Dec 2023), LTM date (31 Oct 2023)

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Calculating WACC

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Govt. bond yield*	10y	4.36%
Eq. risk premium*	20y hist avg	7.92%
Adj. beta	company	0.89
Est. cost of equity		11.44%
Unlevered beta		0.75
Credit spread*		0.97%
Cost of debt		5.33%
Credit rating (Moody's/S&P)		A2 / --
Total debt / capitalization		19.91%
Total debt / mkt. cap.		24.86%
WACC		10.00%

Costco Wholesale Corporation

NAS

Type a ticker

Costco Wholesale Corp. engages in the operation of membership warehouses through wholly owned subsidiaries. It operates through the following geographical segments: United States, Canada, and Other International Operations. The company was founded by James D. Sinegal and Jeffrey H. ...

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Both 10-K 10-Q

Type	Period	Ended on	Filed	Press Release	Filing Extracts
Latest 10-K	FY2023	2023-09-03	2023-10-11	PR	JS BS CFS
Latest 10-Q	Q3	2023-05-07	2023-06-01	PR	JS BS CFS

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52 week high \$661.88 low \$447.90

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PE FY1 Closing Share Price

Dividend yield 0.60%

WWAP share price 12m \$527.93

Economic Data (15 Dec 2023)

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Corporate tax rate	21.00%
Historic real GDP growth rate	2.10%
Forecast real GDP growth rate	1.90%
Historic inflation rate	2.98%
Forecast inflation rate	2.00%
SOFR	5.31%
US 3 month Treasury Yield	5.44%

EV Bridge \*

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Share Price [COST]	\$658.82
Basic shares (M)	442.7
Dilution adjustment (M)	3.4
Fully diluted shares out. (M)	446.2
Fully diluted mkt. cap (M)	2,93,958.6
NCI (\$M)	0.0
Debt and equivalents (\$M)	6,458.0
Net Pension Liability (M)	0.0
Investments (M)	1,534.0
Cash (\$M)	13,700.0
Enterprise value (\$M)	2,85,182.6

\* Share price date (15 Dec 2023), LTM date (30 Nov 2023)

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Change in management or...	2023-11-24
Change in management or...	2023-10-20

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Calculating WACC

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Govt. bond yield*	10y	4.36%
Eq. risk premium*	20y hist avg	7.92%
Adj. beta	company	0.81
Est. cost of equity		10.77%
Unlevered beta		0.80
Credit spread*		1.09%
Cost of debt		5.45%
Credit rating (Moody's/S&P)		-- / --
Total debt / capitalization		2.15%
Total debt / mkt. cap.		2.20%
WACC		10.63%

Challenges and Considerations:

We use CAPM to estimate the cost of equity from data in 10 K, Felix and Bloomberg data. But these estimates can be biased and may differ depending on the methods used. Also, WACC is not fixed and varies with changes in market conditions, interest rates and firms capital structure. We will do a sensitivity analysis later in the report to show the effect of the estimates of WACC and growth rate on the share price.

With the completion of the WACC, we can now finalize the Common Equity Valuation.

## **Common Equity DCF Valuation**

### **A. Discounted free cash flow to all investor (FCF)**

After completing the financial forecast and calculating the Weighted Average Cost of Capital (WACC), we computed the Free Cash Flow (FCF) to all investors using the following formula:

$$FCF \text{ to All Investors} = \text{Cash Flow from Operations (CFO)} - \text{Increase in Operating Cash} + \text{Cash Flow from Investing (CFI)} + \text{Interest Expense} - \text{Tax Shield on Interest}$$

**CFO (adjusted for stock-based compensation):** This is estimated as the projected cash flow from operating activities, corrected for stock-based compensation. The logic for this method is that each forecast year's stock compensation expense would be cashed out in each forecast year and that the cash amount would match the value of stock options, etc given in the forecast year.

**Increase in Operating Cash:** This was derived from the change in forecasted cash and marketable securities.

**CFI:** We employed the forecasted cash flow from investing activities.

**Interest Expense:** This was based on the forecasted interest expense in the income statement.

**Tax Shield on Interest:** We calculated this by multiplying the forecasted interest expense by the estimated tax rate of 13% to adjust for the benefit of taxes on the interest.

As our valuation date is on 12/13/2023, we made a stub adjustment to the FCF for 2023. We then discounted the FCF over a finite forecast horizon using WACC and calculated the terminal value using a long-term growth rate of 3.19%, which is the long run average of the U.S. GDP. This resulted in a present value of the terminal value in 2032 of \$1,361,844 million. By adding the



present value (PV) of the terminal value to the PV over the finite forecast period, we arrived at an estimated enterprise value of \$1,578,178 million.

Free Cash Flows											
Fiscal year	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Fiscal year end date	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Cash from operations (adjusted for stock-based compensation)	46,752	84,891	109,264	129,894	158,215	197,338	252,051	329,314	391,949	430,774	434,009
% growth		81.58%	28.71%	18.88%	21.80%	24.73%	27.73%	30.65%	19.02%	9.91%	0.75%
- Increase in operating cash	26,023	-8,643	-12,025	-16,532	-22,701	-31,331	-43,632	-61,467	-56,103	-39,104	-11,534
% growth		-133.21%	39.13%	37.48%	37.32%	38.01%	39.26%	40.88%	-8.73%	-30.30%	-70.50%
+ Cash from investing	-37,601	-37,781	-79,313	-97,571	-122,609	-157,356	-206,208	-275,861	-303,909	-301,687	-264,005
% growth		0.48%	109.93%	23.02%	25.66%	28.34%	31.05%	33.78%	10.17%	-0.73%	-12.49%
+ Interest expense	2,367	2,873	3,225	3,835	4,674	5,837	7,304	9,362	11,664	13,529	14,520
% growth		21.36%	12.28%	18.91%	21.87%	24.86%	25.15%	28.17%	24.59%	15.98%	7.33%
- Tax shield on interest	-1,283	-374	-419	-499	-608	-759	-950	-1,217	-1,517	-1,759	-1,888
Tax rate	54.19%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%
Free cash flows to All Investors (FCF)	36,258	40,966	20,732	19,128	16,972	13,730	8,566	130	42,085	101,753	171,102

#### Present value of FCF

	Val date	Yr 1 - Stub	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Date for discounting cash flows	12/13/2023	12/31/2023	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31
Free cash flows (FCF) stub adjusted	5.00%	2,048	20,732	19,128	16,972	13,730	8,566	130	42,085	101,753
Present value of free cash flows		2,040	18,919	16,002	13,015	9,652	5,519	77	22,785	50,500

#### Total enterprise value (TEV) calculation

Long term growth rate	3.19%
2032 FCF x (1+g)	176,560
Terminal value in 2032	2,994,048
PV of terminal value	1,361,844
PV over finite forecast horizon	216,334
Total enterprise value (TEV)	1,578,178
Terminal value as % of TEV	86.29%
Stage 1 cash flows as % of TEV	13.71%

## B. Discounted free cash flow to debt (FCFD)

To estimate the total value of debt, we employed the method of discounted FCF to debt. The formula used is as follows:

$$FCF \text{ to Debt} = \text{Interest Payment} + \text{Debt Repayment (or minus Debt Issuance)}$$

**Interest Payment:** This includes the scheduled interest payments on the existing interest bearing liabilities as forecasted in the income statement.

**Debt Repayment/Issuance:** This accounts for the repayment of existing interest bearing liabilities (Long-Term Debt & Finance Lease Obligations) or the issuance of new debt, as applicable.

For the discount rate, we used the pre-tax cost of debt, calculated at 4.18% in the forecasted income statement and WACC. This rate is used to discount the future cash flows related to debt. Additionally, the long-term growth rate is set at 3.19%, which aligns with the long-term growth rate of FCF to all investors.

This consistent application ensures coherence in our valuation approach. Following this methodology, the estimated total value of debt is calculated to be \$16,540 million.

Value to debt holders										
Fiscal year	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P	2031P	2032P
Fiscal year end date	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Interest payment	2,873	3,225	3,835	4,674	5,837	7,304	9,362	11,664	13,529	14,520
Minus debt issuance	4,395	12,226	16,809	23,081	31,856	44,362	62,496	57,043	39,759	11,727
FCF to Debt (stub adjusted)	(76)	(9,001)	(12,973)	(18,407)	(26,019)	(37,058)	(53,134)	(45,379)	(26,230)	2,793
PV of FCF to debt	(76)	(8,621)	(11,927)	(16,242)	(22,037)	(30,122)	(41,455)	(33,982)	(18,853)	1,927
2032 FCF to debt x (1+g)	2,882									
Terminal Value in 2032	289,720									
PV of Terminal Value	199,855									
PV of debt over finite life	-183,315									
Total value to debt holders	16,540									

## C. Estimated equity value and estimated share price calculation

To determine the equity value, we removed the value of debt from the Enterprise Value calculated above and then employed the following steps:

1. Calculation of Equity Value Before Time Adjustment:  
Formula: Equity Value (Before Time Adjustment) = Enterprise Value - Value of Debt  
**Enterprise Value:** As calculated above, \$1,578,178 million.  
**Value of Debt:** As calculated above, \$16,540 million.
2. Time Adjustment for Equity Value:  
Since our valuation date is 12/31/2023 and our most recent fiscal year-end is on 12/31/2022, we adjusted the equity value for this time gap.

**Adjusted Equity Value:** Equity Value (Before Adjustment) \* (1 + Cost of Equity \* 95%).  
This led us to the adjusted equity value of \$1,697,332 million.

### 3. Final Calculation of Equity Value:

Formula: Equity Value = Adjusted Equity Value + Excess Cash as of the valuation date - Value of Contingent Equity Claims.

**Excess Cash:** Based on Amazon's historical operating cash analysis, we observed a decrease in the operating cash-to-sales ratio to below 18%. We predict that Amazon's excess cash will be 0 on the valuation date, since historically the operating cash-to-sales ratio has been below the historical average of 18%

Excess cash analysis								
	2018A 12/31/18	2019A 12/31/19	2020A 12/31/20	2021A 12/31/21	2022A 12/31/22	2023Q3-A 9/30/23		
Operating cash	41,250	55,021	84,396	96,049	70,026	64,169		
Sales	232,887	280,522	386,064	469,822	513,983	404,824		
Retained earnings	19,625	31,220	52,551	85,915	83,193	102,994		
Operating cash/sales	17.71%	19.61%	21.86%	20.44%	13.62%	15.85%	Average:	18.18%

We do not estimate any contingent claims for Amazon.

The estimated equity value is \$1,697,332 million.

### 4. Estimation of Share Price:

Formula: Share Price = Equity Value / Common Shares Outstanding.

This results in an estimated share price of \$164.44 in the base case scenario, indicating a 10.48% increase compared to the stock price on 12/13/2023.

Valuation calculation	
	<u>Perpetuity</u>
Enterprise value	1,578,178
Less: value of debt	16,540
Forecast equity value before time adjustment	1,561,637
Forecast equity value as of valuation date	1,697,332
Plus: excess cash as of valuation date	0
Less: value of contingent equity claims	0
<b>Estimated equity value</b>	<b>1,697,332</b>
Common shares outstanding in million	10,322
<b>Estimated Price per Share</b>	<b>\$164.44</b>

## D. Sensitivity analysis

We implemented a sensitivity analysis to assess the impact of varying the long-term growth rate and the Weighted Average Cost of Capital (WACC) on Amazon's stock price. This analysis involved:

**Varying WACC:** We adjusted the WACC by a variance of  $\pm 0.5\%$ .

**Varying Long-Term Growth Rate:** We adjusted the long-term growth rate by a variance of  $\pm 0.1\%$ . The relatively lower variance is because the long-term growth is relatively stable over the long run.

Under the **most adverse conditions**, where both the long-term growth rate and WACC are unfavorable, Amazon's stock price is projected to decrease to \$130.84. This represents a 12% decrease compared to the current price.

Conversely, in the **most favorable conditions**, the stock price is projected to increase to \$206.03, which would be a 38% increase.

This pattern of results suggests a robust bullish position for Amazon. It indicates that while the stock price is sensitive to changes in key valuation parameters, the potential for growth outweighs the risks of decline under varying economic conditions.

#### Sensitivity Analysis

		Estimated Price Per Share				
		Long term growth rate (g):				
	\$164.44	3.0%	3.1%	3.2%	3.3%	3.4%
WACC:	8.1%	206.03	208.19	210.18	211.91	213.21
	8.6%	182.50	183.90	185.09	185.96	186.35
	9.1%	163.02	163.85	164.44	164.68	164.41
	9.6%	146.66	147.06	147.19	146.95	146.19
	10.1%	132.76	132.81	132.59	131.99	130.84

We have also performed an EPS and target price analysis.

EARNINGS PER SHARE															
	2018A	2019A	2020A	2021A	2022P	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Net income					(2,722)	25,645	45,453	53,635	64,871	80,372	102,090	132,691	160,365	179,497	184,872
Basic shares					10,322	9,973	9,755	9,543	9,334	9,123	8,908	8,687	8,322	7,805	7,159
Basic EPS Forecast					(\$0.26)	\$2.53	\$4.61	\$5.56	\$6.87	\$8.71	\$11.32	\$15.08	\$18.86	\$22.26	\$24.71
						(61,615)	(48,908)	(51,190)	(54,155)	(57,872)	(62,553)	(68,193)	(104,213)	(148,406)	(194,028)
\$ amount of shares repurchased						20,158	20,710	21,277	21,860	22,459	23,074	23,705	24,354	25,021	25,706
\$ amount of new shares issued						\$118.64	\$129.48	\$141.32	\$154.24	\$168.33	\$183.72	\$200.51	\$218.84	\$238.84	\$260.67
Average share price							9%	9%	9%	9%	9%	9%	9%	9%	9%
Share price increase															
Basic Shares - BOP	Reference from latest share count >					10,322	9,973	9,755	9,543	9,334	9,123	8,908	8,687	8,322	7,805
Net change in basic shares						(349)	(218)	(212)	(209)	(210)	(215)	(222)	(365)	(517)	(646)
Basic shares - EOP						9,973	9,755	9,543	9,334	9,123	8,908	8,687	8,322	7,805	7,159
Basic shares - average						10,147	9,864	9,649	9,438	9,229	9,016	8,798	8,504	8,063	7,482

## **Sources**

Amazon's 10k

Beta: Felix

Market Risk Premium: Krol Rating [Link: Krol Rating](#)

Risk-free rate: [Link: St. Louis Fed](#)

Long-term Growth Rate: [US Real GDP QoQ \(ycharts.com\)](#)

## Appendix

Refer to the attached excel files for detailed view of forecasted financial statement and the DCF Valuation.

### Schedules:

#### PROPERTY, PLANT & EQUIPMENT

<i>Fiscal year</i>	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
<i>Fiscal year end date</i>	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
Beginning of period		61,797	72,705	113,114	160,281	186,715	175,761	202,626	239,562	290,280	360,278	457,759	595,087	720,432	807,796
Capital Expenditure		23,910	53,868	65,252	44,930	15,194	54,162	68,834	88,940	116,928	156,492	213,278	220,244	197,607	144,173
Less: Depreciation		13,002	13,459	18,085	18,496	26,148	27,296	31,898	38,222	46,930	59,011	75,950	94,899	110,243	118,404
<b>End of period</b>	<b>61,797</b>	<b>72,705</b>	<b>113,114</b>	<b>160,281</b>	<b>186,715</b>	<b>175,761</b>	<b>202,626</b>	<b>239,562</b>	<b>290,280</b>	<b>360,278</b>	<b>457,759</b>	<b>595,087</b>	<b>720,432</b>	<b>807,796</b>	<b>833,565</b>
D&A related to PP&E as a % of Average PP&E		19.3%	14.5%	13.2%	10.7%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%	14.4%
<b>Residual D&amp;A</b>															
D&A not pertaining to PP&E		8,787	11,721	16,348	23,425	26,316	30,339	35,869	43,463	53,944	68,539	89,101	107,869	120,949	124,808
as % of sales		3.13%	3.04%	3.48%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%	4.56%
<b>Total D&amp;A</b>	<b>21,789</b>	<b>25,180</b>	<b>25,180</b>	<b>34,433</b>	<b>41,921</b>	<b>52,464</b>	<b>57,635</b>	<b>67,767</b>	<b>81,685</b>	<b>100,873</b>	<b>127,551</b>	<b>165,051</b>	<b>202,767</b>	<b>231,192</b>	<b>243,212</b>
<b>Other Non-Current Asset</b>															
Beginning of period		11,202	16,314	22,778	27,235	42,758	48,035	55,378	65,472	79,333	98,464	125,106	162,637	196,894	220,771
Less: Residual D&A		(8,787)	(11,721)	(16,348)	(23,425)	(26,316)	(30,339)	(35,869)	(43,463)	(53,944)	(68,539)	(89,101)	(107,869)	(120,949)	(124,808)
Plus: Addition		13,899	18,185	20,805	38,948	31,594	37,681	45,963	57,324	73,074	95,181	126,633	142,125	144,826	131,850
<b>End of period</b>	<b>16,314</b>	<b>22,778</b>	<b>22,778</b>	<b>27,235</b>	<b>42,758</b>	<b>48,035</b>	<b>55,378</b>	<b>65,472</b>	<b>79,333</b>	<b>98,464</b>	<b>125,106</b>	<b>162,637</b>	<b>196,894</b>	<b>220,771</b>	<b>227,813</b>

#### RETAINED EARNINGS

Beginning of period	8,636	19,625	31,220	52,551	85,915	83,193	108,838	154,291	207,926	272,797	353,169	455,259	587,950	748,315	927,812
Plus: Net income	10,073	11,588	21,331	33,364	(2,722)	25,645	45,453	53,635	64,871	80,372	102,090	132,691	160,365	179,497	184,872
Less: Dividends	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Less: Repurchases	-	-	-	-	6,000	-	-	-	-	-	-	-	-	-	-
<b>End of period</b>	<b>19,625</b>	<b>31,220</b>	<b>52,551</b>	<b>85,915</b>	<b>83,193</b>	<b>108,838</b>	<b>154,291</b>	<b>207,926</b>	<b>272,797</b>	<b>353,169</b>	<b>455,259</b>	<b>587,950</b>	<b>748,315</b>	<b>927,812</b>	<b>1,112,685</b>

#### NET COMMON STOCK

Total Assets	483,277	554,046	651,341	784,943	969,333	1,226,111	1,587,861	1,918,050	2,148,185	2,216,065					
Liabilities + Stockholder equity (excl Net Common Stock)	457,397	556,364	683,571	849,468	1,069,271	1,365,531	1,771,771	2,181,811	2,535,334	2,771,536					
Beginning of period	67,337	25,880	(2,317)	(32,230)	(64,525)	(99,939)	(139,418)	(183,906)	(263,765)	(387,149)					
Plus: Stock based compensation	20,158	20,710	21,277	21,860	22,459	23,074	23,705	24,354	25,021	25,706					
Less: Repurchases	(61,615)	(48,908)	(51,190)	(54,155)	(57,872)	(62,553)	(68,193)	(104,213)	(148,406)	(194,028)					
<b>End of period</b>	<b>25,880</b>	<b>(2,317)</b>	<b>(32,230)</b>	<b>(64,525)</b>	<b>(99,939)</b>	<b>(139,418)</b>	<b>(183,906)</b>	<b>(263,765)</b>	<b>(387,149)</b>	<b>(555,471)</b>					

#### INTEREST EXPENSE AND INTEREST INCOME

<i>Fiscal year</i>	2018A	2019A	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
<i>Fiscal year end date</i>	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	12/31/29	12/31/30	12/31/31	12/31/32
<b>Long term debt</b>															
Long-term debt (from B/S)	23,495	23,414	31,816	48,744	67,150	70,140	80,411	94,532	113,922	140,683	177,952	230,454	278,375	311,775	321,627
Finance lease (from 10k lease note)	22,696	17,095	18,060	15,670	11,386	12,791	14,747	17,435	21,126	26,220	33,314	43,309	52,431	58,789	60,664
Total interest-bearing debt	46,191	40,509	49,876	64,414	78,536	82,931	95,158	111,967	135,048	166,903	211,266	273,762	330,806	370,564	382,291
Weighted average interest rate	(6.82%)	(5.96%)	(4.49%)	(4.08%)	(4.08%)	(4.18%)	(4.28%)	(4.38%)	(4.48%)	(4.58%)	(4.58%)	(4.58%)	(4.58%)	(4.58%)	(4.58%)
Interest expense	(1,600)	(1,647)	(1,809)	(2,367)	(2,367)	(2,873)	(3,225)	(3,835)	(4,674)	(5,837)	(7,304)	(9,362)	(11,664)	(13,529)	(14,520)
<b>Interest rate on cash</b>															
End of period balance (from B/S)	41,250	55,021	84,396	96,049	70,026	78,669	90,694	107,226	129,927	161,257	204,889	266,356	322,459	361,562	373,096
Weighted average interest rate on cash		1.73%	0.80%	0.50%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%
Interest income	440	832	555	448	989	885	1,009	1,179	1,412	1,734	2,180	2,806	3,506	4,073	4,375