

Amazon: The Flywheel, AWS, and the Value of a Three-Engine Platform

Final Project | Student Handout

Corporate Valuation with LLMs

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Case question

Amazon is not one business. It is a retail and marketplace platform, an advertising and subscription flywheel, and a global cloud infrastructure franchise. The valuation question is therefore twofold: **what is Amazon worth on a DCF**, and **is the current AI / infrastructure spending cycle a temporary FCFF headwind or a sign of structurally heavier reinvestment?** Use trading multiples only as cross-checks.

Working rule

You will need a large source packet to solve this case well: annual reports, quarterly filings, earnings releases, call / webcast materials, and approved market data. Effective collaboration with LLMs is therefore **crucial**. Use LLMs to **extract, organize, challenge, and edit**. They are **not** data sources. Every number and quotation in the workbook or report must come from an official exhibit or linked official source document.

Workflow in one sentence

Architecture first, evidence second, judgment third, DCF last. Build the segment engine pack, recast the history, construct a fact bank and driver tree, then translate that logic into explicit-period FCFF, continuing value, WACC, the EV-to-equity bridge, sensitivity, and multiples cross-checks.

Case Overview

Amazon's valuation is interesting precisely because its economics are mixed and uneven:

- **North America** and **International** are commerce engines with very different margin profiles, foreign-exchange exposure, and operating leverage.
- **AWS** is a distinct infrastructure and platform engine with stronger margin quality but heavy reinvestment needs.
- Within commerce, **1P retail**, **3P seller services**, **advertising**, and **Prime / subscription services** influence mix, margin quality, and working-capital behavior even though Amazon does not disclose separate operating profit for each.
- FY2025 is a difficult valuation year because Amazon's **capital spending surged**, compressing free cash flow even as operating performance remained strong.

The project is therefore not a simple top-line forecast. The point is to build an **economic model**: segment growth, segment margin, reinvestment intensity, ROIC, FCFF, continuing value, and equity value per share must all connect.

Case Setup and Learning Goals

Role and decision context

Assume you are an analyst asked to produce a professional valuation on Amazon as of **February 6, 2026**, when Amazon released its most recent annual report. The final output should answer:

- What are the main engines of Amazon's value creation?
- How should the 2025 capex step-up affect explicit-period FCFF?
- What mature-state growth, ROIC, and reinvestment assumptions are defensible?
- Do multiples support or challenge the DCF?

Learning goals

By the end of the project, you should be able to:

- separate Amazon into forecastable economic engines;
- recast history into **NOPLAT, net investment, FCFF, invested capital, and ROIC**;
- connect **growth, reinvestment, and ROIC** rather than forecasting them independently;
- estimate **WACC, continuing value**, and the **EV-to-equity bridge** transparently; and
- use an LLM as an **auditable co-pilot** without outsourcing judgment.

1. Extract architecture

Segment engine pack, monetization map, and KPI spine.

2. Recast history

Statements, segment data, invested capital, ROIC, and FCFF history.

3. Retrieve evidence

Fact bank, driver tree, and assumption logic tied to sources.

4. Forecast and value

Explicit FCFF, continuing value, WACC, bridge, sensitivity, and multiples.

Workbook Map

Sheet	Purpose	What to do there
Read_Me	Orientation	Read the workflow and workbook rules before you begin.
Source_Log	Official exhibit list	Use the preloaded Amazon and peer source anchors. Add rows only if you rely on another official source.
Segment_Engine	Engine map + monetization map	Fix the unit of analysis before forecasting.
KPI_Spine	KPI / proxy ledger	Decide which metrics matter and which are only proxies.
Hist_IS, Hist_BS, Hist_CF	Raw historical statements	Enter the annual operating, balance-sheet, and cash-flow inputs yourself.
Hist_Segments	Segment history	Build the North America / International / AWS baseline.
Hist_Drivers	Historical economic spine	Compute growth, margins, NOPLAT, net investment, FCFF, invested capital, ROIC, and implied growth logic.
Fact_Bank	Evidence to assumption bridge	Organize exact facts, then map them to KPIs, forecast knobs, and valuation effects.
Driver_Tree	Forecast-ready logic	Translate the segment engine and facts into defensible driver nodes.
Forecast_Assumptions	Assumption sheet	Enter only assumptions that are supported by the historical spine and evidence tabs.
Forecast_Model	Explicit-period forecast	Convert assumptions into NOPLAT, reinvestment, FCFF, invested capital, and ROIC.
Continuing_Value_Note	Mature-state economics	State what has to be true in the steady state before you compute terminal value.
Market_Data	Price + bridge inputs	Record valuation-date market inputs and bridge facts from filings.
WACC	Discount-rate build	Estimate cost of equity, cost of debt, and market-value weights.
DCF	Valuation core	Present value, continuing value, EV-to-equity bridge, and value per share.
Sensitivity	Range analysis	Use WACC / g , WACC / terminal ROIC, and scenario analysis.
Multiples	Cross-checks	Use the pre-specified peers as complements to the DCF.
Prompt_Log	Optional prompt notes	Log prompts that materially shaped retrieval, assumptions, or writing.
Output	Final summary view	Use only after the model is complete and checked.

Modeling rule

Use **North America**, **International**, and **AWS** as the disclosed segment backbone. Within commerce, keep **1P retail**, **3P seller services**, **advertising services**, and **Prime / subscription services** explicit in your notes and driver tree. Do **not** invent standalone historical operating profit for undisclosed sub-lines.

Task Sequence**Q0 – Build the Segment Engine Pack**

Before forecasting, decide what Amazon *is* economically. Build:

1. a **segment engine map**;
2. a **monetization map**;
3. a **KPI spine** with at least eight useful KPIs or defensible proxies; and
4. two or three sentences on why Amazon should **not** be modeled as one blended engine.

Use the `Segment_Engine` and `KPI_Spine` tabs.

Q1 – Recast the history

Fill the historical tabs yourself from the raw exhibits, including:

- annual income-statement inputs;
- operating vs. financing balance-sheet items;
- cash-flow anchors for capex, D&A, SBC, and cross-checks; and
- full-year segment sales and segment operating income for North America, International, and AWS.

Do not start with assumptions. Start with the **reported structure** of the business.

Q2 – Build the historical driver spine

Use `Hist_Drivers` to convert the reported data into:

NOPLAT, net investment, FCFF, invested capital, ROIC, reinvestment rate, and $g \approx \text{ROIC} \times \text{reinvestment}$

This is the **quantitative spine** of the case. Your forecast assumptions should be built from `Hist_Drivers` together with `Segment_Engine`, `Fact_Bank`, and `Driver_Tree`.

Q3 – Build the Fact Bank and Driver Tree

Using the official exhibits, collect 14–20 decision-relevant facts and organize them into categories such as **growth**, **margin**, **reinvestment**, **bridge / capital structure**, **continuing value**, and **risk / falsifier**. Each row in the Fact Bank should include:

statement / quote | label | KPI or proxy | forecast knob | valuation effect | citation

Use the labels carefully:

- **FACT**: directly stated in the exhibit;
- **PROXY**: not directly disclosed, but a defensible measurable stand-in;
- **ASSUMPTION**: your modeling choice; and
- **INFERENCE**: a conclusion drawn from the evidence.

Then build the `Driver_Tree`. Each row should connect one business claim to one KPI or proxy, one forecast knob, and one short sentence on why that link matters economically.

Q4 – Forecast the explicit period

Use `Forecast_Assumptions` and `Forecast_Model` to build a six-year forecast from 2026E to 2031E, including:

- segment sales growth for North America, International, and AWS;
- segment operating margins;
- tax rate, D&A / sales, capex / sales, and OWC / sales;
- NOPLAT, net investment, FCFF, invested capital, and ROIC.

A good forecast keeps three things connected: **growth**, **reinvestment**, and **return on invested capital**.

Q5 – Lock continuing value, WACC, and the bridge

Before you compute terminal value, complete `Continuing_Value_Note`. Keep it short but explicit:

- what persists in AWS economics;
- what margin quality remains in commerce;
- what level of mature reinvestment is needed; and
- how quickly Amazon should fade toward maturity.

Then build:

1. **WACC** using market-value weights;
2. **continuing value** using mature growth and mature ROIC; and
3. the **EV-to-equity bridge** with cash, non-operating investments, debt, finance leases, operating leases, and diluted shares.

Consistency matters. If your debt and lease treatment changes in WACC, it must also change in the bridge.

Q6 – Sensitivity, scenarios, and multiples

Complete the sensitivity and multiples tabs after the DCF is working. At minimum, include:

- a **WACC / terminal growth** sensitivity;

- a **WACC / terminal ROIC** sensitivity;

Q7 – Write the report

Produce a concise, professional report that puts the answer up front. A strong report usually has:

1. investment conclusion and value per share;
2. business architecture and segment economics;
3. historical driver analysis;
4. forecast logic;
5. WACC, continuing value, and EV-to-equity bridge;
6. sensitivity; and
7. key risks and what would change your view.

LLM operating rules

- **Retrieve before you interpret.** Ask for exact quotations or exact tables first.
- **Quote before you paraphrase.** When wording matters, collect the original language.
- **Verify before you model.** No number goes into the model until you check it yourself.
- **Log material use.** If the LLM materially changed retrieval, assumptions, or writing, record it.

Deliverables

Deliverable	Required content	Format
Professional report	12–15 pages of main text is a sensible target. The report should be numerically aligned with the workbook.	PDF
Spreadsheet model	Use the provided template. Keep formulas live. Complete the main workflow tabs and the prompt log.	XLSX

Minimum exhibits in the report

At minimum, include a valuation summary table, segment history exhibit, historical ROIC / FCFE exhibit, forecast summary, WACC build, continuing-value assumptions, EV-to-equity bridge, sensitivity matrix, and peer-multiples cross-check table.

Appendix A. Official Exhibit List and Source Links

These are **raw exhibits**. You are expected to extract the relevant figures and quotations yourself. The linked source documents are official Amazon or SEC materials.

Exhibit	Document	Why it matters	Official link
Exhibit 1	Amazon FY2025 Form 10-K (SEC HTML)	Annual segment history, cash flow, leases, debt, SBC, tax notes, and MD&A framing.	https://www.sec.gov/Archives/edgar/data/1018724/000101872426000004/amzn-20251231.htm
Exhibit 2	Amazon FY2024 Form 10-K (SEC HTML)	Prior annual baseline for 2022–2024 history and disclosure continuity.	https://www.sec.gov/Archives/edgar/data/1018724/000101872425000004/amzn-20241231.htm
Exhibit 3	Amazon Q1 2025 Form 10-Q (SEC HTML)	Q1 segment trends, leases, debt, and MD&A updates.	https://www.sec.gov/Archives/edgar/data/1018724/000101872425000036/amzn-20250331.htm
Exhibit 4	Amazon Q2 2025 Form 10-Q (SEC HTML)	Q2 segment trends, Anthropoc investment notes, and bridge items.	https://www.sec.gov/Archives/edgar/data/1018724/000101872425000086/amzn-20250630.htm
Exhibit 5	Amazon Q3 2025 Form 10-Q (SEC HTML)	Q3 segment trends, AWS infrastructure commentary, and cash / investment notes.	https://www.sec.gov/Archives/edgar/data/1018724/000101872425000123/amzn-20250930.htm
Exhibit 6	Amazon Q1 2025 earnings release	Q1 segment sales, segment operating income, and trailing-twelve-month OCF / FCF.	https://ir.aboutamazon.com/news-release/news-release-details/2025/Amazon-com-Announces-First-Quarter-Results/default.aspx
Exhibit 7	Amazon Q2 2025 earnings release	Q2 segment sales, margins, and trailing-twelve-month cash-flow direction.	https://ir.aboutamazon.com/news-release/news-release-details/2025/Amazon-com-Announces-Second-Quarter-Results/default.aspx
Exhibit 8	Amazon Q3 2025 earnings release	Q3 segment sales, margins, special charges, and trailing-twelve-month cash-flow direction.	https://ir.aboutamazon.com/news-release/news-release-details/2025/Amazon-com-Announces-Third-Quarter-Results/
Exhibit 9	Amazon Q4 / FY2025 earnings release	FY2025 segment sales, segment operating income, and capex / FCF framing.	https://ir.aboutamazon.com/news-release/news-release-details/2026/Amazon-com-Announces-Fourth-Quarter-Results/
Exhibit 10	Amazon Q1 2025 earnings conference-call page	Official webcast anchor for management commentary.	https://ir.aboutamazon.com/events/event-details/2025/Q1-2025-Amazoncom-Inc-Earnings-Conference-Call/default.aspx
Exhibit 11	Amazon Q2 2025 earnings conference-call page	Official webcast anchor for management commentary.	https://ir.aboutamazon.com/events/event-details/2025/Q2-2025-Amazoncom-Inc-Earnings-Conference-Call/default.aspx
Exhibit 12	Amazon Q3 2025 earnings conference-call page	Official webcast anchor for management commentary.	https://ir.aboutamazon.com/events/event-details/2025/Q3-2025-Amazoncom-Inc-Earnings-Conference-Call/default.aspx
Exhibit 13	Amazon Q4 2025 earnings conference-call page	Official webcast anchor for management commentary.	https://ir.aboutamazon.com/events/event-details/2026/Q4-2025-Amazoncom-Inc-Earnings-Conference-Call/default.aspx

Exhibit	Document	Why it matters	Official link
Exhibit 14	Amazon annual reports / shareholder letters hub	Official source hub for annual reports, proxy, and shareholder letters.	https://ir.aboutamazon.com/annual-reports-proxies-and-shareholder-letters/default.aspx
Exhibit 15	Amazon quarterly results hub	Official source hub for quarterly releases, slides, and webcast links.	https://ir.aboutamazon.com/quarterly-results/default.aspx
Exhibit 16	Amazon SEC filings hub	Official source hub for 10-K, 10-Q, 8-K, and related filings.	https://ir.aboutamazon.com/sec-filings/default.aspx
