ALPHA CHALLENGE
Kenan–Flagler Business School
The University of North Carolina

November 24th, 2024

Team Number: 5

Students: Isabelle Dow, Justin Ferguson, Luis Cassius

Long: Abercrombie & Fitch Co (NYSE: ANF)

Current Price: \$136.81 (11/20/2024) | **1Y Price Target:** \$158.21 (15.6%)

Abercrombie & Fitch (NYSE: ANF) Overview

Key Financials:

Current Price ($)	140.54
52 Week High/Low ($)	65.60-196.99
Market Cap ($)	7330
Average Daily Volume:	0.67
Enterprise Value	7.48
Float	0.08
2024E Revenue	4.3 B
Revenue CARG '19-'23	10%
EV/2024 EBIDA	8.77
Operating Margin	0.16
Debt/Equity	0.74
2024E EPS (Diluted)	9.43
Dividend Yield	0.00
Current Ratio	1.59
Quick Ratio	1.10
Cash Ratio	0.93
Inventory Turnover	3.54

Company Description:

- Leading global retailer headquartered in New Albany, Ohio, offering casual, trend-forward apparel under its Abercrombie & Fitch, Abercrombie kids, and Hollister brands.
- **Scale and Operations**: Over 700 stores in the U.S., EMEA, and APAC regions
- **Target Market**: Focused on Millennial and Gen Z consumers, with inclusive sizing,
- **E-commerce Growth**: Accelerated digital transformation, with e-commerce contributing over 45% of total revenue, supported by in-store pickup and expedited delivery.

Driven by recent brand revitalization, ANF is positioned for sustainable growth in the coming years with increased operational efficiency and a strong digital strategy.

Source: Capital IQ, WSJ, Company Filings

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Abercrombie & Fitch (NYSE: ANF) Overview

Core Brands & Revenue Streams

ANF is highly diversified retail offerings, sales channels, and regionals sales

~ 47% Revenue

Everyday fashion for teenage customer

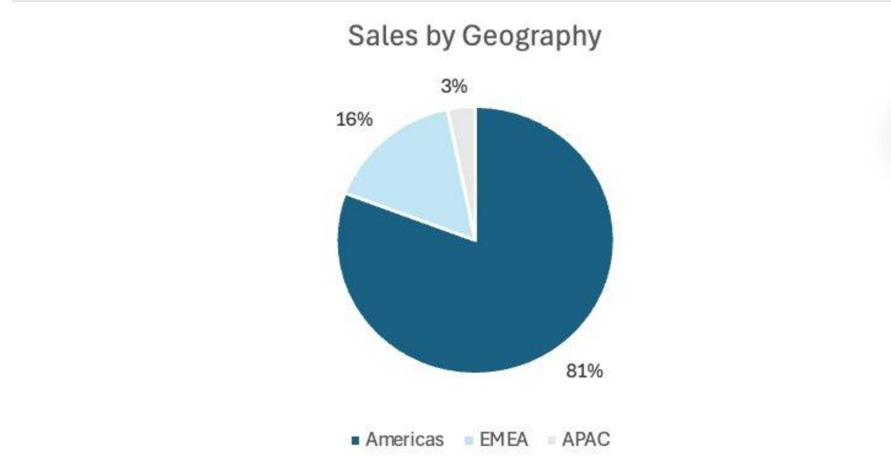
~53% Revenue

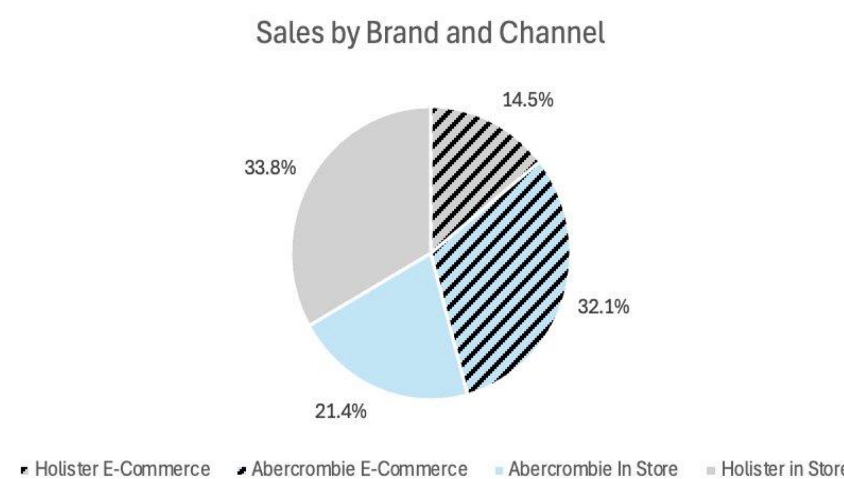
Abercrombie & Fitch

Targeting: GenZ and Millennial consumers

Additional Lines:

- Abercrombie Kids
- Abercrombie Wedding Shop (Spring 2024 Launch)



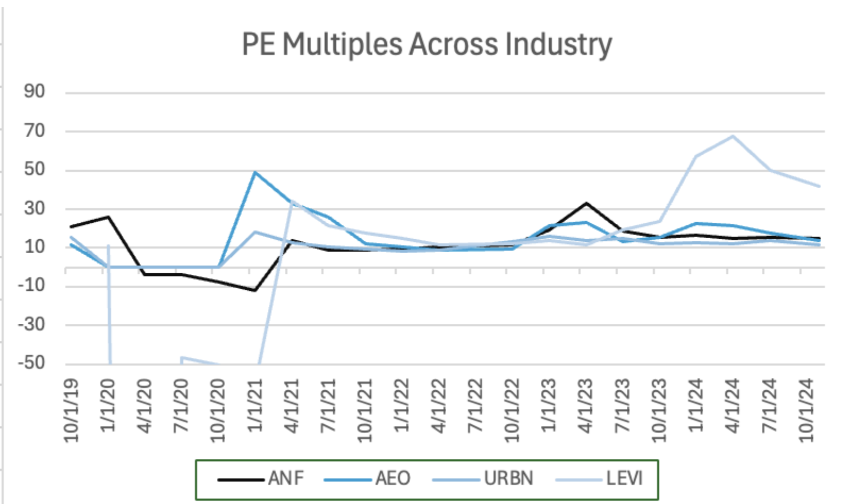


Source: Capital IQ, WSJ, Company Filings

Abercrombie & Fitch (NYSE: ANF)

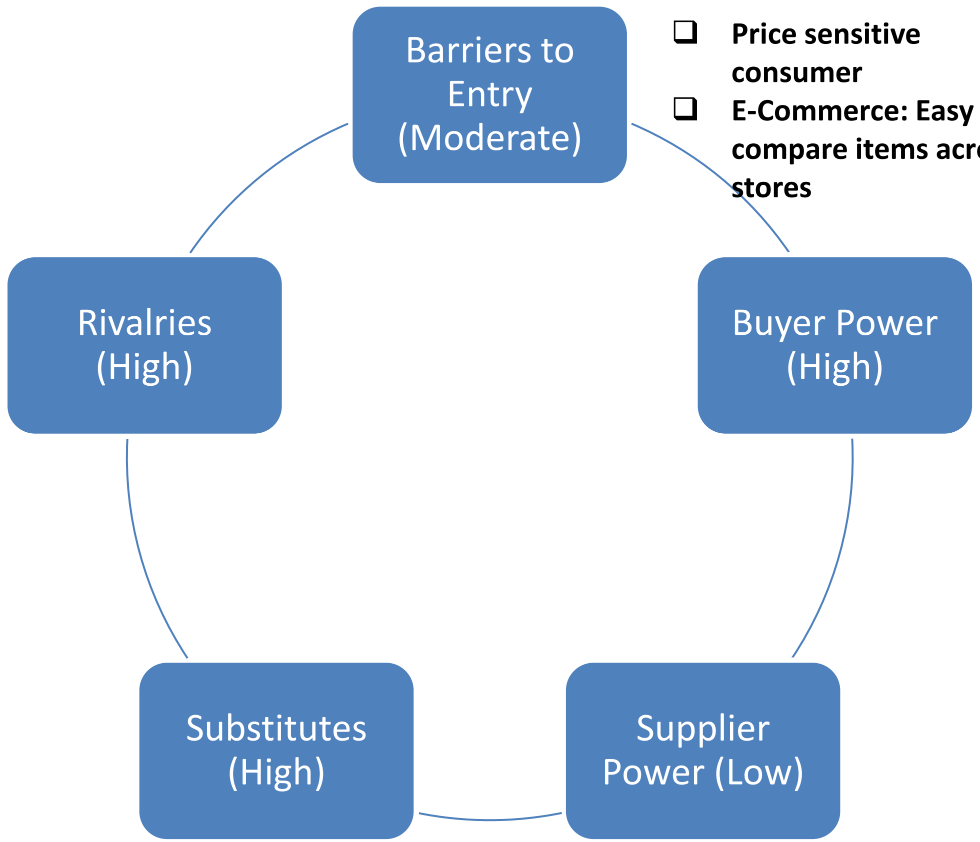
Market Analysis

Abercrombie is differentiated in the industry, opening a large growth opportunity in coming years



- ❑ **Brand recognition**
- ❑ **High capital requirements**
- ❑ **Sales channels**

- ❑ **Price sensitive consumer**
- ❑ **E-Commerce: Easy to compare items across stores**



- ❑ Fast Fashion
- ❑ Secondary Markets

- ❑ Sustainability & ethical sourcing concerns across market

Source: Capital IQ, WSJ, Company Filings

Why Does the Opportunity Exist?

Driven by recent brand revitalization, ANF is positioned for sustainable growth in the coming years with increased operational efficiency and a strong digital strategy.

2013: A Company in Shambles

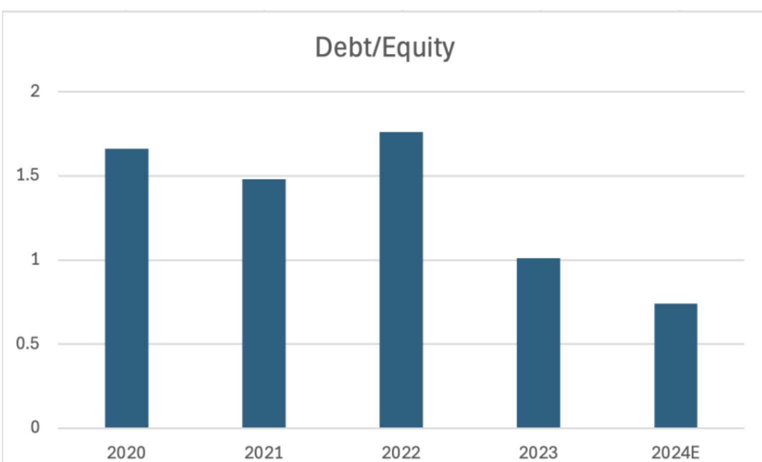
-From Q1 of 2013 revenues decline for 18 consecutive quarters.

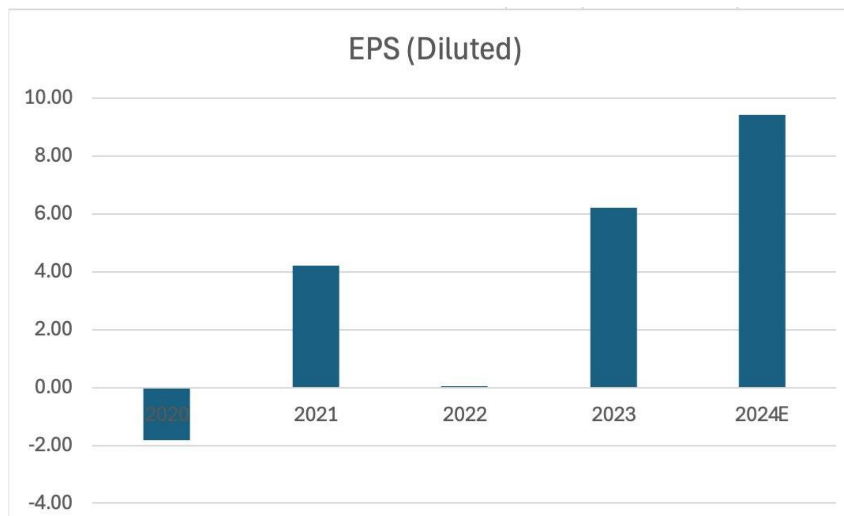
Decline Driven by:

- "Toxic" brand image
- Rise of fast fashion

2017: The Turnaround

- Appointment of CEO Fran Horowitz
- **Significant transformation of brand perception**
- **Notable changes in internal financial management reflected in statements**





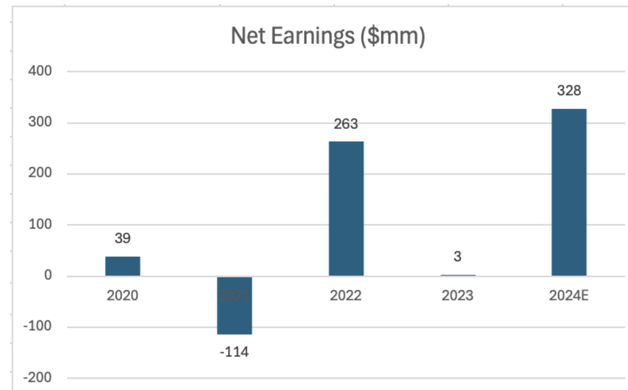
Source: Capital IQ, WSJ, Company Filings

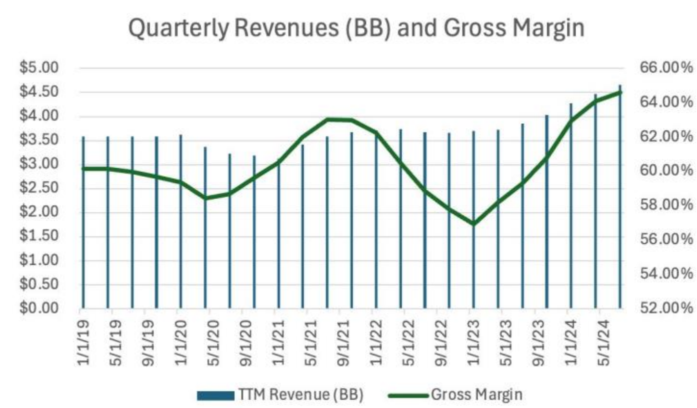
Operational Information

Driven by recent brand revitalization, ANF is positioned for sustainable growth in the coming years with increased operational efficiency and a strong digital strategy.

Operational Efficiency indicated by Strong Balance Sheet Turnaround

- ***EBIT Margin:*** 1.06% -> 11.47%   2013-2024E
- ***Increasing Inventory Turnover:***
  - 2023: 3.54, 5% increase from 2022
- ***Operating Margin:*** 10% growth since 2022
- ***Global Sales Growth Q2'24 :***
  - Abercrombie: 21%
  - Hollister: 15%
  - Comparable Sales growth
    - Americas: 18% EMEA: 17% APAC: 21%





The strong balance sheet reflects strong internal management which will carry ANF in the coming years.

What is driving this growth?

Source: Capital IQ, WSJ, Company Filings

How is the Market Currently Valuing Abercrombie?

Differentiation in the market will carry long term growth

Brand Momentum and Omnichannel Emphasis:

- **Brand differentiation: Strategic Abercrombie refocus on an older market**
    - Tracking Gen-Z as they age
        - Growth market with few competitors focusing on this age group
    - Accessible Price Point – at a premium
    - "The Bridal Shop"
- **"All press is good press" High Market Visibility**
    - Mike Jeffries, former CEO (1992-2014)
    - White Hot: The Rise & Fall of Abercrombie & Fitch
- **Embracing the Digital Age**
    - Flagship Stores & Omnichannel
    - Q1-2'24 Opened 18 stores, remodeled 30, closed 26
    - Marketing via Influencers
    - App enables ecommerce sales

2012 Abercrombie Campaign

Hollister, 2023

What growth can we expect to see from ANF in the coming years?

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Valuation Summary - DCF

12-Month Price Target of $158.21 (14.5% Upside)

Summary of Free Cash Flow Projections

FYE 12/31; $ mm	2023A	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034
	Management Projection					Extrapolation						Terminal Year
Net Sales	3,697.75	4,280.68	4,833.28	5,101.02	5,415.29	5,577.74	5,745.08	5,917.43	6,094.95	6,277.80	6,466.13	6,660.12
% growth		16%	13%	6%	6%	3%	3%	3%	3%	3%	3%	3%
Adj. EBITDA	238.92	630.11	879.33	897.48	958.21	986.95	1,016.56	1,047.06	1,078.47	1,110.82	1,144.15	1,178.47
% margin	6%	15%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Less: D&A	(132.00)	(141.00)	(153.40)	(168.35)	(173.00)	(167.33)	(172.35)	(177.52)	(182.85)	(188.33)	(193.98)	(199.80)
EBIT	106.92	489.11	725.93	729.13	785.21	819.62	844.21	869.53	895.62	922.49	950.16	978.67
% margin	3%	11%	15%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Less: Taxes	(79.73)	(149.00)	(182.39)	(199.63)	(206.51)	(215.56)	(222.03)	(228.69)	(235.55)	(242.61)	(249.89)	(257.39)
% tax rate	75%	30%	25%	27%	26%	26%	26%	26%	26%	26%	26%	26%
EBIAT	27.20	340.11	543.54	529.49	578.70	604.06	622.18	640.85	660.07	679.87	700.27	721.28
Plus: D&A	132.00	141.00	153.40	168.35	173.00	167.33	172.35	177.52	182.85	188.33	193.98	199.80
% capex	80%	89%	90%	100%	96%	100%	100%	100%	100%	100%	100%	100%
Less: Capex	(164.57)	(157.80)	(169.69)	(168.19)	(179.91)	(167.33)	(172.35)	(177.52)	(182.85)	(188.33)	(193.98)	(199.80)
% sales	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Plus: (Inc)/Dec in NWC	166.70	291.46	276.30	133.87	157.13	81.23	83.67	86.18	88.76	91.42	94.17	96.99
% of change in sales	1110%	-50%	-50%	-50%	-50%	-50%	-50%	-50%	-50%	-50%	-50%	-50%
Unlevered FCF	161.33	614.77	803.56	663.53	728.92	685.29	705.85	727.02	748.83	771.30	794.44	818.27
Discounted FCF		614.77	729.35	546.63	545.05	465.10	434.81	406.50	380.03	355.28	332.15	* 4,328.01

Sum	**9,137.69**
Debt Value	**1,056.23**
Equity Value	**8,081.46**
Shares Outstanding mm	**51.08**
Price/Share	**158.21**

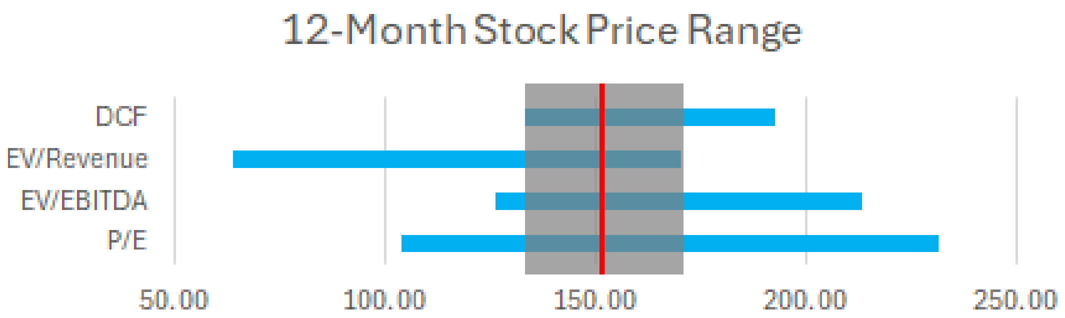
	Total Equity	Total Debt	10-Year Treasury	Beta	Market Risk Premium	Cost of Equity	Interest Expense	Total Debt	Cost of Debt	Tax Rate	WACC
$ mm	7,110	1,056	4.39%	1.17	6%	11.41%	$ 26.23	$ 1,056.23	2.48%	25.18%	10.17%
%	87%	13%									

WACC	Terminal Growth: **1%**	**2%**	**3%**	**4%**	**5%**
8.17%	172.44	193.03	221.56	263.77	332.56
9.17%	150.49	165.22	184.71	211.74	251.72
10.17%	133.37	144.27	**158.21**	176.67	202.25
11.17%	119.65	127.93	138.25	151.44	168.90
12.17%	108.40	114.84	122.67	132.43	144.91

** Terminal value calculated using CF 2034/(WACC-g) with g being 3% per year*

Valuation Summary – Multiples vs. DCF Analysis

Rationale for the Bull-Case



1. Above average Revenue growth
2. Above average productivity (Sales/Sqft)
3. Industry Leading Margins

Company Comp Set

Company Name	NTM EV/Revenue	NTM EV/EBITDA	NTM P/E	GM %	NIM %	LTM Rev G%	LTM NI G%	ND/EBITDA
American Eagle Outfitters, Inc. (NYSE:AEO)	0.82x	6.41x	9.71x	39%	5%	8%	22%	1.1
Urban Outfitters, Inc. (NasdaqGS:URBN)	0.68x	6.41x	9.93x	34%	6%	8%	37%	1.2
Victoria's Secret & Co. (NYSE:VSCO)	0.90x	9.85x	17.01x	45%	2%	-1%	-30%	2.7
The Gap, Inc. (NYSE:GAP)	0.75x	7.52x	10.95x	49%	5%	0%	610%	2
Guess?, Inc. (NYSE:GES)	0.67x	6.96x	6.48x	44%	6%	7%	20%	2.2
Deckers Outdoor Corporation (NYSE:DECK)	5.01x	21.73x	30.08x	57%	19%	19%	43%	0.2
Designer Brands Inc. (NYSE:DBI)	0.48x	8.90x	7.17x	31%	0%	-3%	-	3.7
Tapestry, Inc. (NYSE:TPR)	2.12x	9.60x	12.01x	74%	12%	0%	-14%	4.4
The TJX Companies, Inc. (NYSE:TJX)	2.43x	18.49x	26.78x	37%	9%	8%	19%	1.2
Under Armour, Inc. (NYSE:UAA)	0.92x	14.09x	35.08x	47%	0%	-8%	-	2.3

Company Name	NTM EV/Revenue	NTM EV/EBITDA	NTM P/E	GM %	NIM %	LTM Rev G%	LTM NI G%	ND/EBITDA
Abercrombie & Fitch Co. (NYSE:ANF)	1.49x	7.96x	13.49x	65%	11%	21%	358%	0.7
Rank	4	7	5	2	3	1	2	10

Summary Statistics	NTM EV/Revenue	NTM EV/EBITDA	NTM P/E	GM %	NIM %	LTM Rev G%	LTM NI G%	ND/EBITDA
High	5.01x	21.73x	35.08x	74%	19%	19%	610%	4.4
Low	0.48x	6.41x	6.48x	31%	0%	-8%	-30%	0.2
Mean	1.48x	10.99x	16.52x	46%	6%	4%	88%	2.1
Median	0.86x	9.25x	11.48x	44%	5%	4%	21%	2.1

Risks to Valuation

The Brand Turnaround Yields Positive Results

Decrease in Consumption	**Risk**: The apparel industry faces a potential decrease in consumption as the 3 pillars sustaining growth after COVID ended: 1) Cheap credit, 2) Increase in salaries through Job Hopping, and 3) Government transfers. **Mitigant**: Abercrombie has been growing faster than the industry and is a premium brand with lower price elasticity.	**Moderate**
Competition and Market Share	**Risk**: The threat of new entrants and competitors in Abercrombie's primary markets serving customers between 24 and 34 years old. **Mitigant**: Incumbents such as American Eagle and GAP have been steadily losing share to Abercrombie. Also, the brand portfolio has been outpacing womenswear market growth.	**Moderate**
Increase in Tariffs	**Risk**: The industry has a large portion of its production in China, and costs to replace inventory could quickly increase harming margins. **Mitigant**: Even though Abercrombie utilizes Chinese manufacturers, the majority of its supply chain is based in Bangladesh, Vietnam and India.	**Low**

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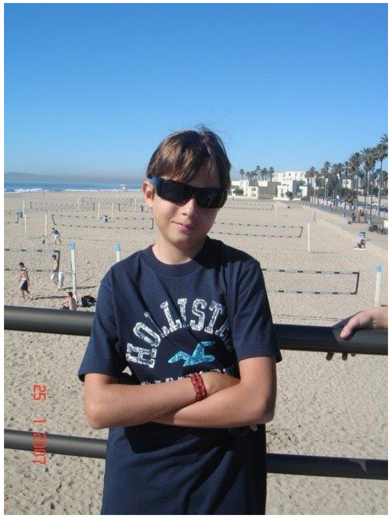
Q&A



Appendix

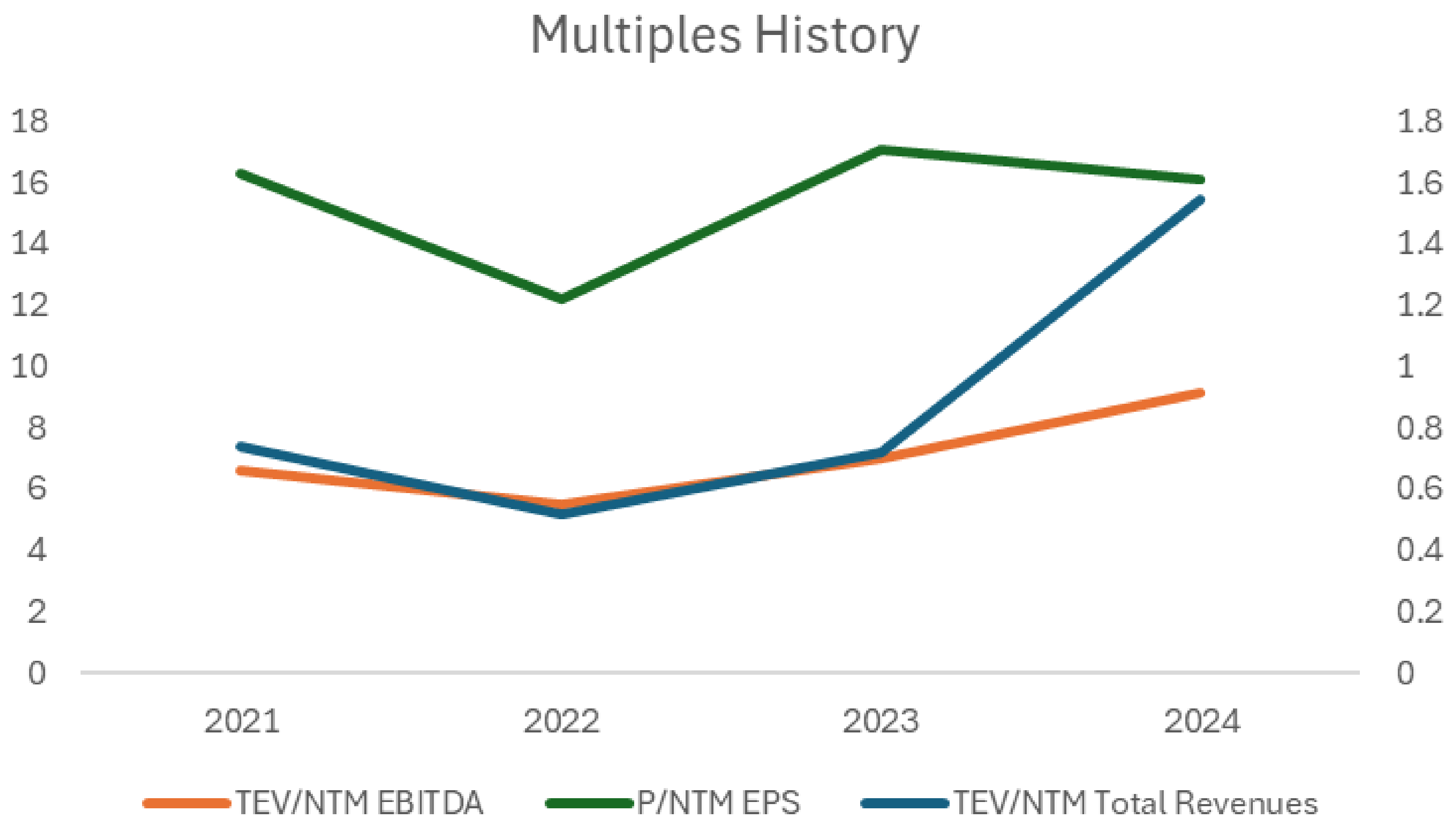
Multiples Calculation

Abercrombie & Fitch Co. (NYSE:ANF)

	LTM Total Revenue	LTM EBITDA	LTM EBIT	NTM Revenue	NTM EBITDA	LTM Basic EPS	NTM EPS	LTM TBV/Share
	4,664.00	816.90	671.10	4,998.99	936.47	9.87	10.57	23.63

	LTM TEV/Total Revenues	LTM TEV/EBITDA	LTM TEV/EBIT	NTM TEV/Forward Total Revenue	NTM TEV/Forward EBITDA	LTM P/Diluted EPS Before Extra	NTM Forward P/E	LTM P/TangBV
High	5.5x	20.4x	45.4x	5.01x	21.73x	31.0x	35.08x	32.6x
Low	0.5x	3.3x	8.9x	0.48x	6.41x	5.7x	6.48x	1.5x
Mean	1.6x	7.3x	18.8x	1.48x	10.99x	17.2x	16.52x	8.3x
Median	0.8x	4.8x	16.7x	0.86x	9.25x	15.0x	11.48x	2.7x
Implied Enterprise Value								
High	25,855.80	16,627.00	30,478.80	25,050.50	20,346.61			
Low	2,302.90	2,692.10	6,003.30	2,420.25	5,998.79			
Mean	7,232.80	5,987.20	12,586.80	7,386.46	10,295.91			
Median	3,953.80	3,898.60	11,221.00	4,289.91	8,660.57			
+ Total Cash	738.4	738.4	738.4	738.4	738.4			
- Total Debt	890.8	890.8	890.8	890.8	890.8			
- Minority Interest	14.62	14.62	14.62	14.62	14.62			
= Implied Equity Value								
High	25,688.7	16,459.9	30,311.7	24,883.43	20,179.54	15,652.68	18,941.12	39,303.55
Low	2,135.9	2,525.0	5,836.2	2,253.18	5,831.73	2,849.54	3,499.37	1,868.64
Mean	7,065.7	5,820.2	12,419.7	7,219.4	10,128.84	8,679.3	8,920.42	10,035.21
Median	3,786.8	3,731.6	11,054.0	4,122.85	8,493.5	7,570.23	6,197.32	3,284.57
/ Shares	51.08	51.08	51.08	51.08	51.08	51.08	51.08	51.08
= Implied Price per Share								
High	502.9	322.2	593.4	487.16	395.07	306.44	370.82	769.47
Low	41.8	49.4	114.3	44.11	114.17	55.79	68.51	36.58
Mean	138.3	113.9	243.1	141.34	198.3	169.92	174.64	196.47
Median	74.1	73.1	216.4	80.72	166.28	148.21	121.33	64.3

ANF Recent Multiples History



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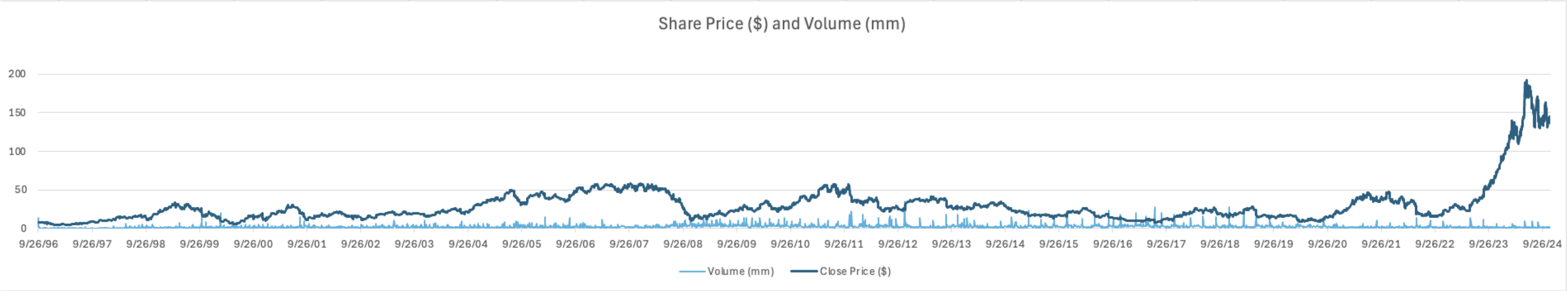
Share Price and Trading Volume

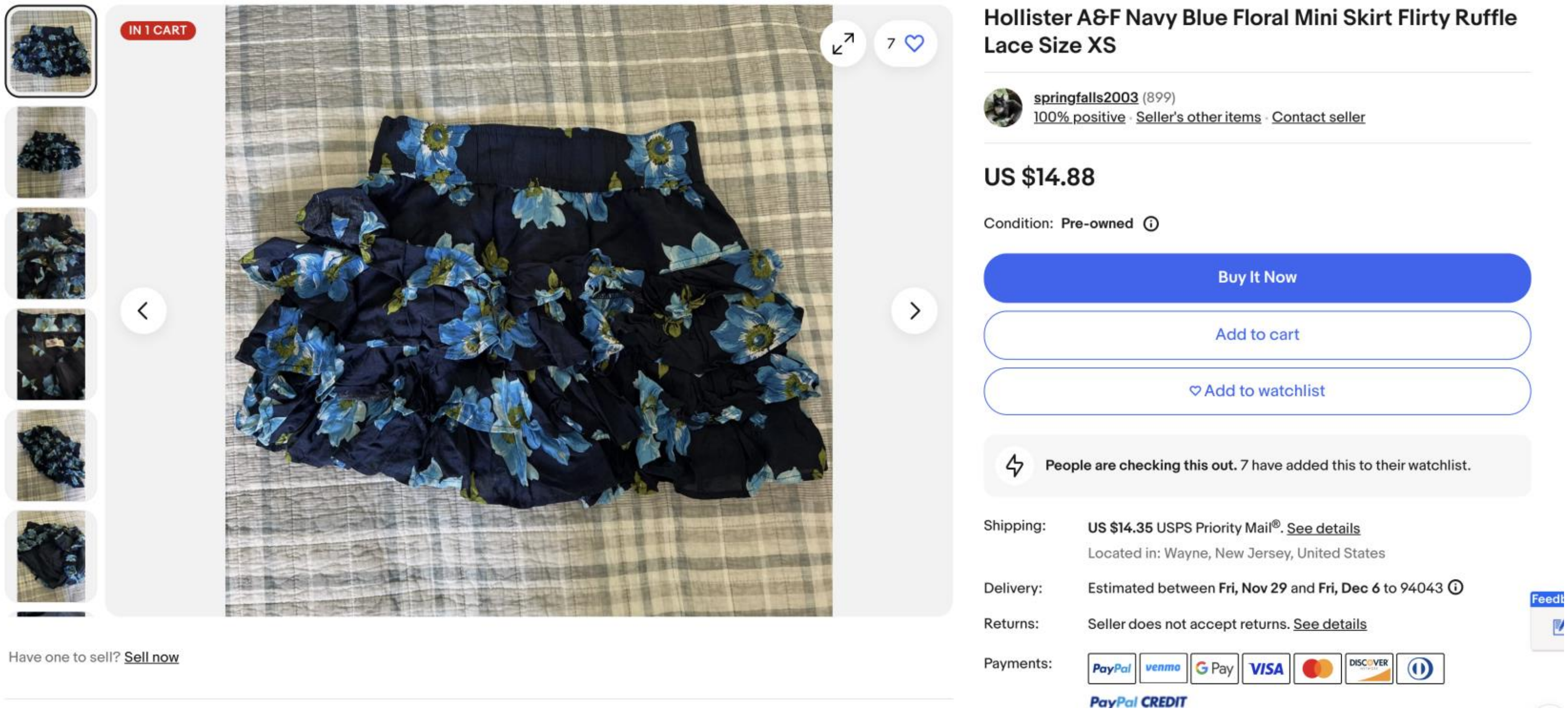


Appendix

ANF Operating Margins

Appendix

ANF in the 2010s



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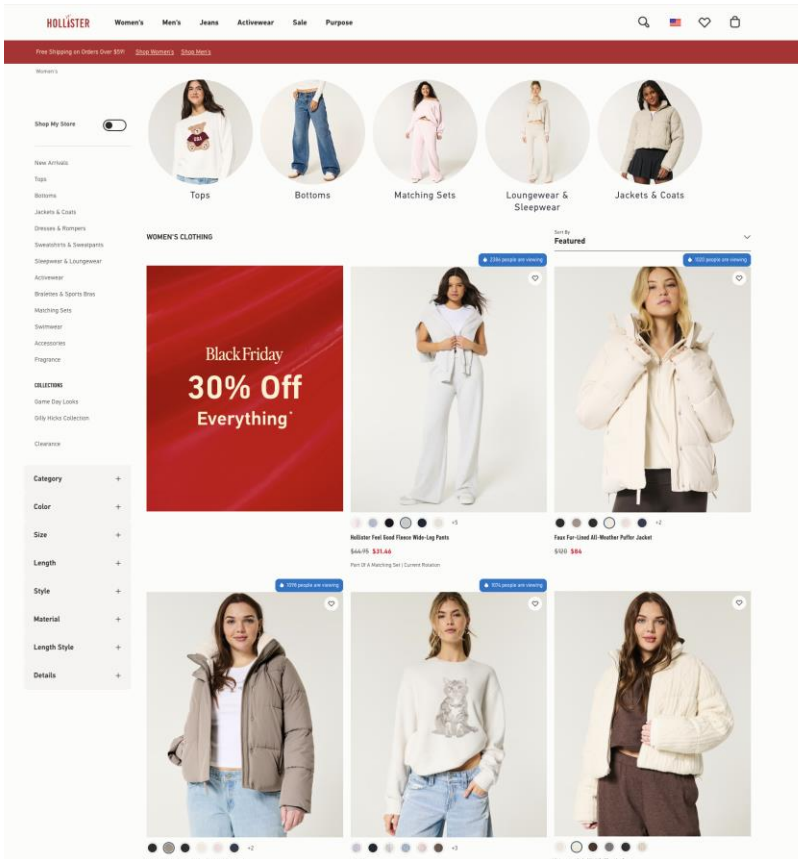
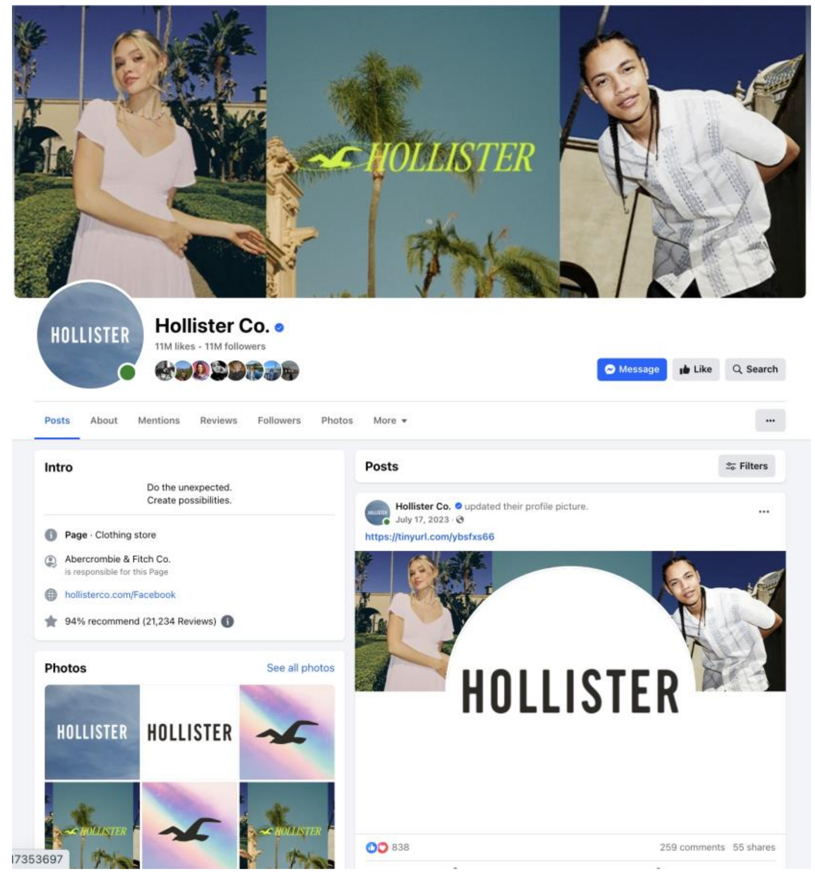
Appendix

Hollister: Online Presence





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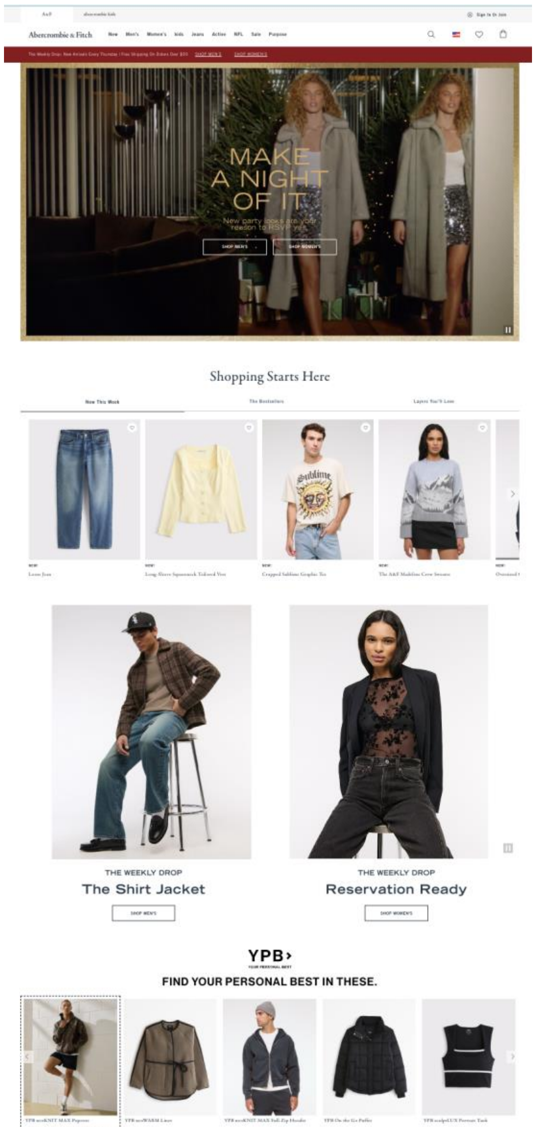
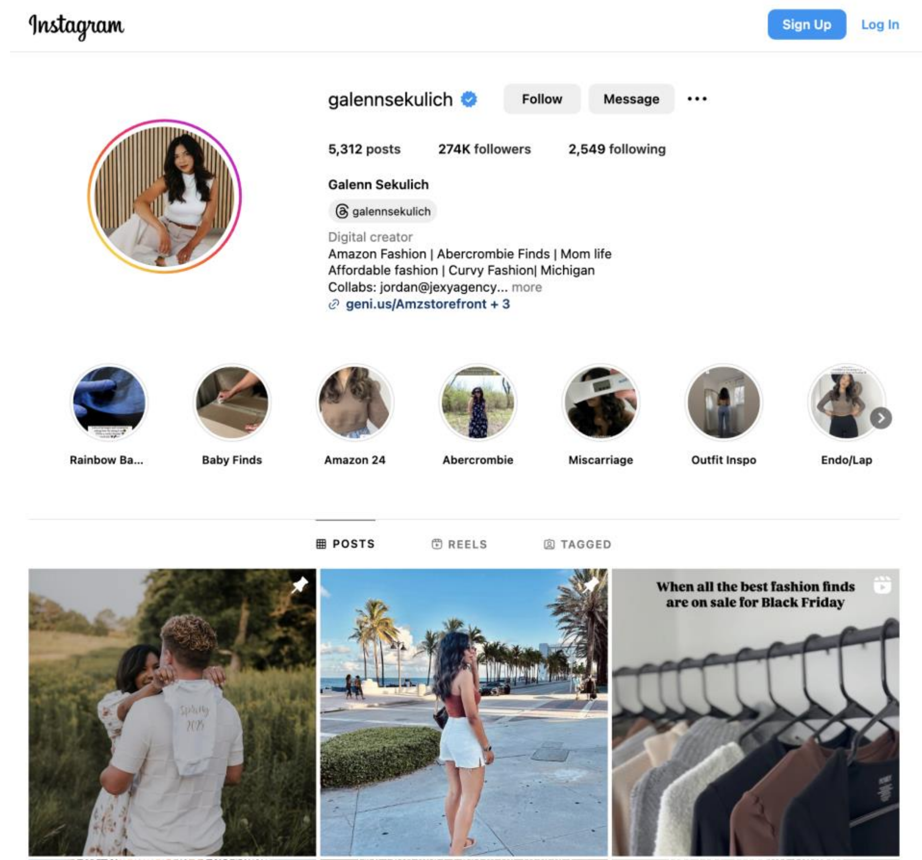
Abercrombie: Online Presence





Current Abercrombie Influencer Partnership

Appendix

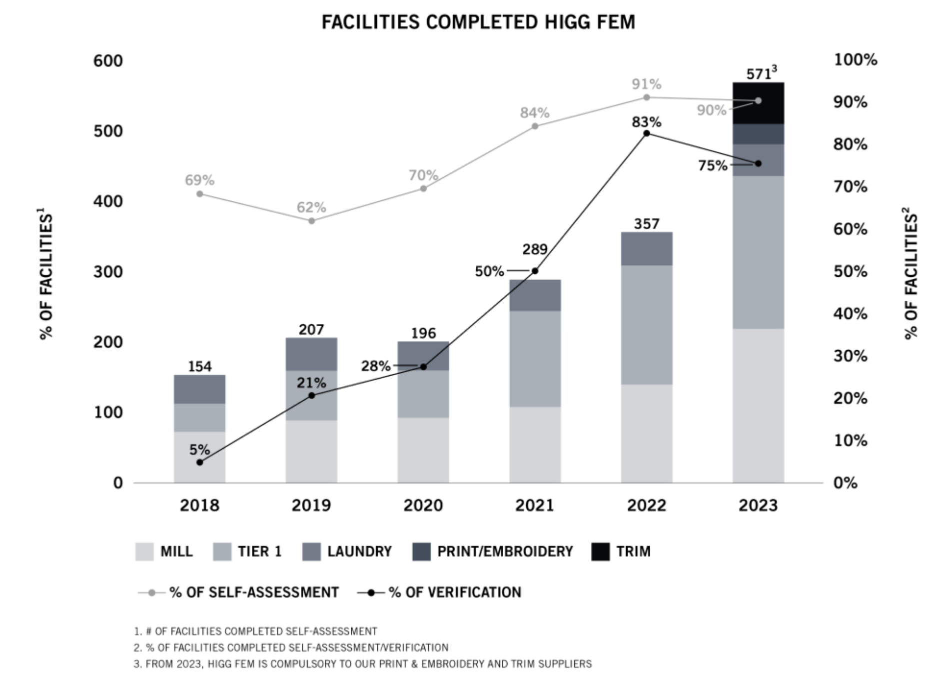
Key Management:

Fran Horowitz - CEO	Chief Executive Officer: Horowitz has been CEO since 2017, driving significant transformations across Abercrombie's portfolio. She has overseen a pivot to a customer-focused and digitally integrated business strategy, resulting in revitalized brand identities.
Scott Lipesky	EVP, Chief Financial Officer, and Chief Operating Officer: Lipesky manages the company's financial and operational strategies. His leadership has been critical in maintaining financial discipline and supporting enterprise-wide initiatives like digital advancements.
Samir Desai	EVP, Chief Digital and Technology Officer: Desai spearheads Abercrombie's digital transformation efforts, focusing on enhancing the e-commerce experience and integrating innovative technology across the company's operations.
Greg Henchel	EVP, General Counsel and Corporate Secretary: Henchel ensures legal and regulatory compliance while contributing to corporate governance and strategic decisions.
Jay Rust	EVP, Human Resources: Rust leads efforts to enhance workplace culture and inclusion, key to attracting and retaining talent in a competitive retail environment

Source: Company website

Appendix

Manufacturing – Sustainability Concerns



Source: Company website

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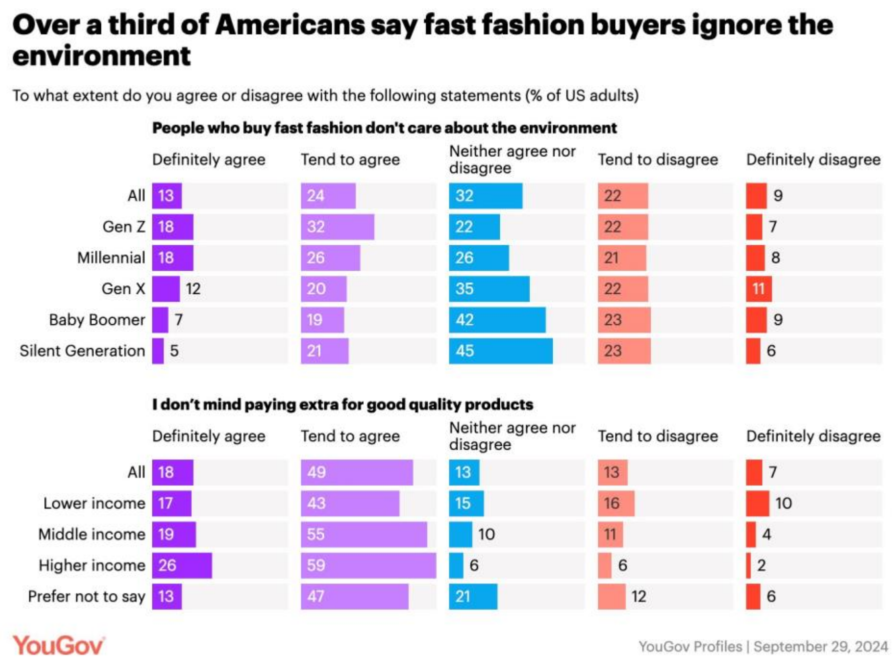
Appendix

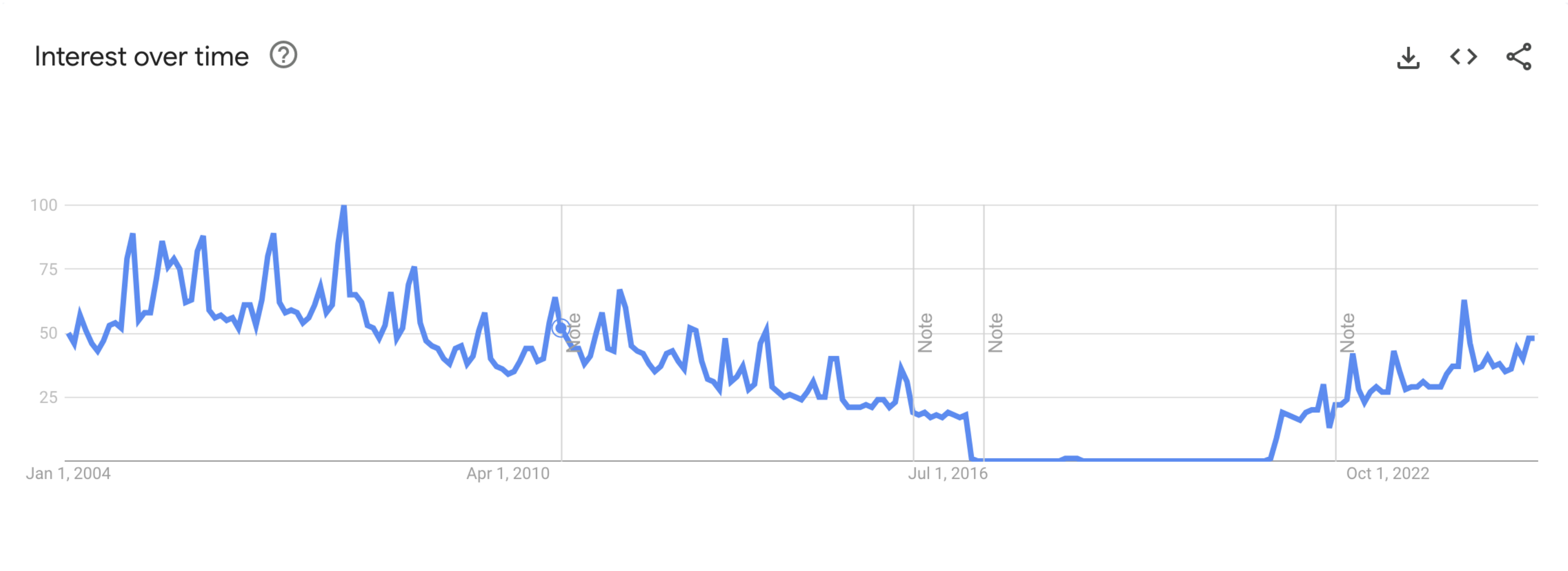
Attitudes towards Fast Fasion



Negative attitudes towards fast fashion will benefit ANF as they promote their sustainability goals

Appendix

Google Trends: Abercrombie Search



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December 5th , 2024

Team Number: 2

Students: Sarah Ashkar, Sid Balaji, Advik Shetty

Executive Summary

REPLIGEN
INSPIRING ADVANCES IN BIOPROCESSING

Company Overview

- Repligen is a life sciences company that develops and commercializes bioprocessing technologies and systems that increase efficiencies and flexibility in the process of manufacturing biological drugs
- Primary customers – Biopharmaceutical companies, contract development and manufacturing organizations (CDMOs) and other life science companies (integrators)
- The business is comprised of four segments: filtration (59% FY24 Rev.); chromatography (20% FY24 Rev.); process analytics (10% FY24 Rev.); and proteins (11% FY24 Rev.).

Investment Rationale

- Well-positioned to benefit from the biopharmaceutical sector's rebound, with increased capital utilization and improving margins.
- Stands to capitalize on the industry shift toward single-use bioprocessing solutions, which offer efficiency, flexibility, and lower contamination risk. With a strong product portfolio, Repligen can drive recurring revenues through consumable sales.
- Strategic account management has strengthened its relationships with top biopharma and CDMO clients. The company's new key account management strategy is yielding results, with orders from major accounts growing significantly.

Recommendation

- Repligen is currently trading at $142.6 with a market capitalization of $7.99 billion
- Based on our DCF model, we have derived a price target of $166.6 using a Weighted Average Cost of Capital (WACC) of 9.97% and an exit multiple of 18x, which incorporates a 20% discount compared to the valuation of industry peers.
- Our analysis indicates a 16.8% potential upside, suggesting Repligen presents an attractive opportunity for investors in the current market environment.

Source: Company Filings, Bloomberg

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REPLIGEN
INSPIRING ADVANCES IN BIOPROCESSING

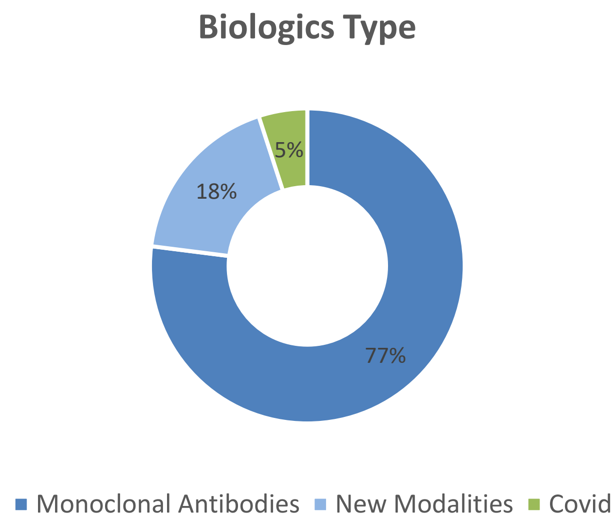
Overview

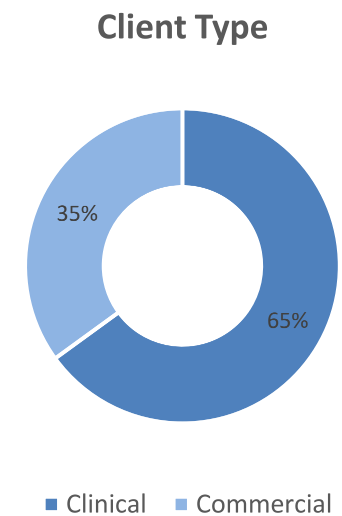
Repligen creates advanced bioprocessing tools that help make biologic drugs like vaccines, monoclonal antibodies, and gene therapies more efficiently and cost-effectively.

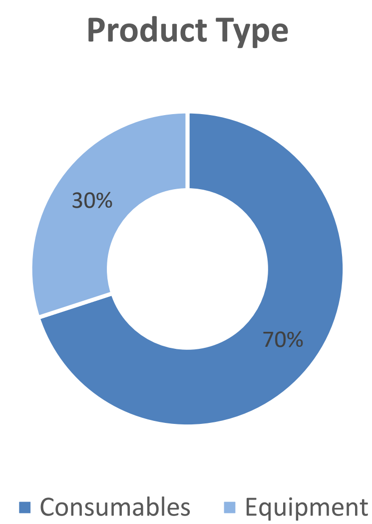
Founded in 1981 and headquartered in Waltham, Massachusetts.

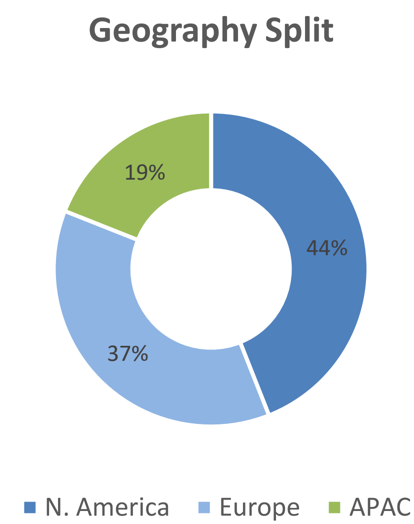
Introduced the first recombinant Protein A ligand in 1985. Starting in 2010, the company used acquisitions to transform from a single-product Protein A specialist into a diversified bioprocessing solutions supplier.

Operates worldwide, partnering with major pharmaceutical companies and contract manufacturers to improve drug production.









Source: Company Filings, Bloomberg. Charts from FY23 AR

Competitive Overview

Industry Overview

The bioprocessing equipment industry is dominated by five large players: Danaher (DHR), GE Healthcare (GE), Merck KGaA (MRK), Sartorius (SRT), and Thermo Fisher Scientific (TMO).

Competitive Positioning

Repligen is smaller than leading competitors, but size is not the sole determinant of competitive positioning. RGEN has a differentiated and focused product portfolio that aligns with industry trends toward single-use technology and continuous processing.

Strategic Focus

Larger players cover the entire bioprocessing workflow, but many of their products are mature and increasingly commoditized. Repligen consistently targets less crowded market areas with high growth potential, leveraging its nimbleness to stay competitive. It employs a dual strategy of acquisitions and internal R&D to maintain leadership in its focused areas.

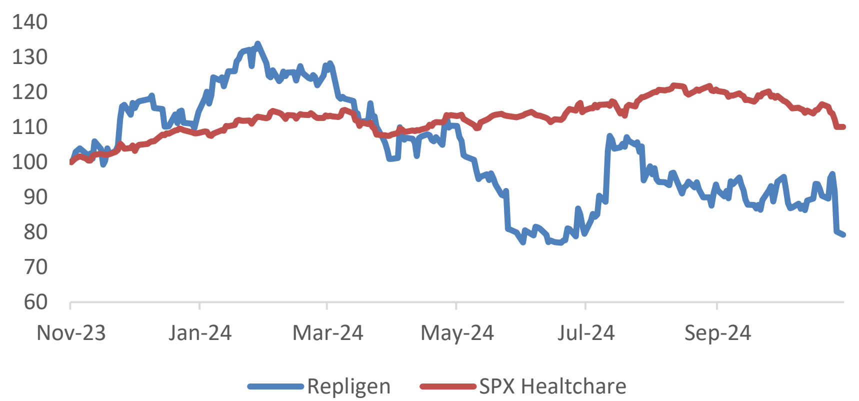
Product Leadership

Products like Spectrum and OPUS showcase Repligen's success in achieving and sustaining technological leadership in niche segments.

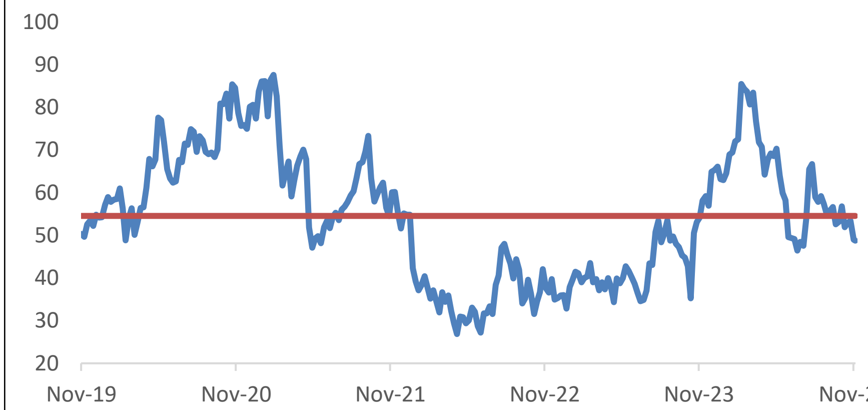
Source: Company Filings, Bloomberg

Price and Valuations

Price



1Y BF EV/ EBITDA Multiples



Trend Highlights

- Based on Repligen's Q3 FY24 results, the company is in a stronger position now compared to a year ago, supported by positive book-to-bill metrics. Despite this, the stock is down 21% over the past year, suggesting that recent market sentiment does not reflect these improvements.
- Although Repligen trades at higher valuation multiples relative to healthcare peers, this is justified by its strong positioning in the bioprocessing sector. Currently, the stock is trading below its 5-year mean multiple, signaling investor pessimism despite a recovery in business outlook.
- A reverse DCF analysis at current valuations suggests that investor expectations are currently conservative, hinting at potential upside if Repligen continues to execute on its growth strategy and the market reassesses its prospects.

Source: Company Filings, Bloomberg

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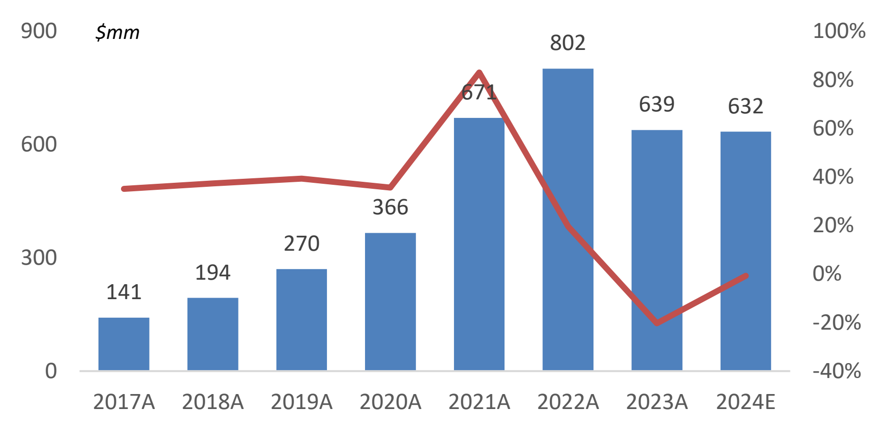
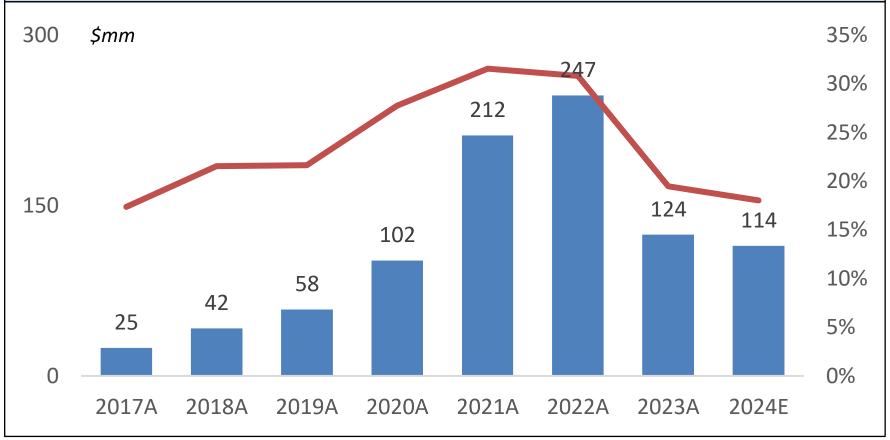
Financial Overview

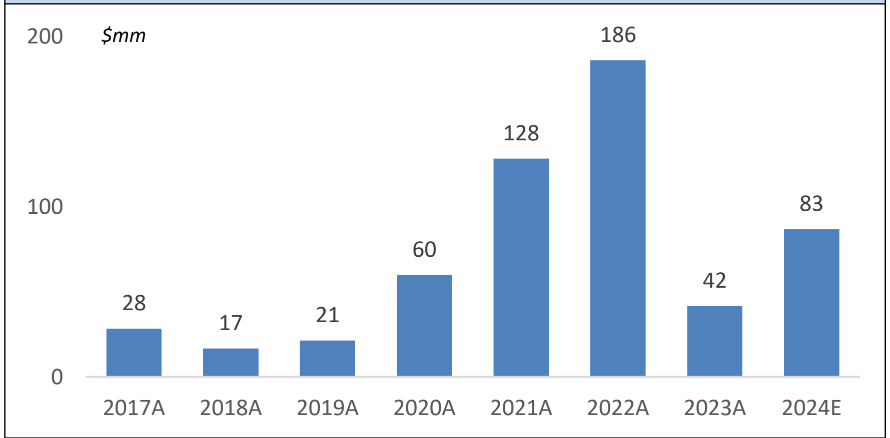
Revenue & Revenue Growth



EBITDA and EBITDA Margins



Net Income



Trend Highlights

- Despite the slowdown in revenues, Repligen has demonstrated a strong historical track record, achieving a +24% revenue CAGR from 2017A to 2024E.
- There has been major margin pressures caused by the COVID-19 revenue run-off, over $150M capacity investments between 2020-2022, and weaker base business demand in 2023-2024

Source: Company Filings, Bloomberg

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The Perfect Storm

	Consensus	Our View
Growth	▪ Sustained revenue slowdown over last 2 years has investors concerned if Repligen can replicate its past growth trajectory	▪ RGEN is well positioned to benefit from the industry tailwinds and has tech leadership in high growth areas
Margins	▪ EBITDA margin falls from ~35% in FY21 to ~18% in FY24. Uncertainty if margins can reach historical levels	▪ Operating leverage would lead to margin expansion to ~20% in 2025, with long-term EBITDA margin targets of ~28%, consistent with peers.
Management Transition	▪ Concerns if Olivier Loeillot would be able to replicate strong performance of past CEO Tony Hunt	▪ Olivier Loeillot has demonstrated strong execution skills as Chief Commerical Officer since joining Repligen and has strong in the biopharma space

Source: Company Filings, Bloomberg

Investment Rationale

Business Recovery

- **Biopharma Industry Recovery**: As the sector rebounds from COVID-related disruptions, Repligen is positioned to capitalize on increased capital utilization and higher order volumes.
- **Stabilizing Inventory Levels**: The impact of destocking is expected to diminish, leading to a more predictable demand environment from both pharmaceutical companies and CDMOs.

Transition in Single Use Products

- **Industry Shift**: The bioprocessing industry is increasingly adopting single-use systems, driven by the need for flexible, cost-efficient, and contamination-free manufacturing solutions.
- **Technology Leadership**: Repligen is a frontrunner in single-use innovations, such as alternating tangential flow (ATF) filtration and OPUS® pre-packed chromatography columns, which are critical for modern bioprocessing.

Strengthening Client Relationships

- **Strategic Account Management**: A dedicated key account team is driving deeper engagement with top pharmaceutical and CDMO clients, resulting in significant order growth.
- **Embedded Solutions**: Repligen's products become integral to clients' manufacturing processes, making them difficult to replace due to regulatory and cost hurdles, fostering long-term loyalty.

Source: Company Filings, Bloomberg

Thesis 1: Business Recovery

Bioprocessing Industry

- The industry is recovering from pandemic-driven disruptions, including inventory destocking and conservative capital spending by pharmaceutical companies. Many biopharma manufacturers accumulated excess inventories, leading to reduced orders, but this impact is starting to normalize.
- High inflation and funding constraints have particularly affected startup biotech firms. Additionally, economic headwinds in growth markets, such as China, have dampened growth prospects
- Governments and institutions are emphasizing biomanufacturing resilience, highlighted by initiatives like the Biosecure Act, which encourages localized production.

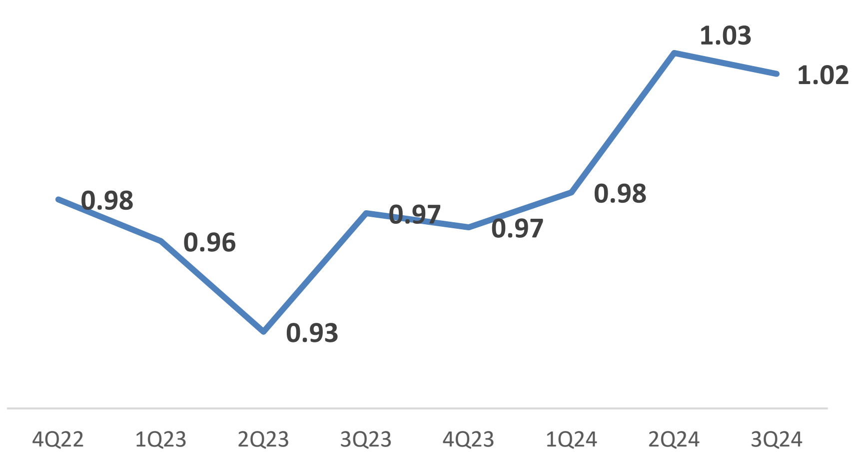
Monoclonal Antibodies	New Modalities	Biosimilars
175 Bn	7 Bn	8 Bn
Market in 2022	Market in 2022	Market in 2022
10% Growth	20% Growth	20% Growth

Source: Company Filings, Bloomberg

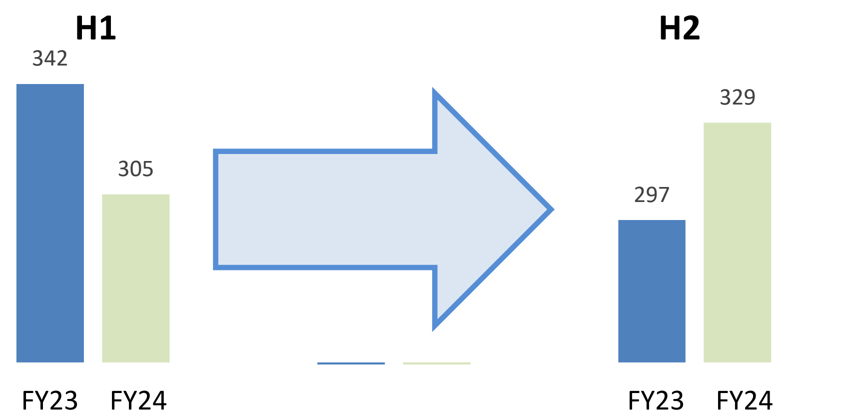
Thesis 1: Business Recovery

Business Segment	3QFY24 Management Commentary
Pharma	Grew mid-single digits y/y with ordering placements at the highest level since 2021.
CDMOs	Revenue and order growth of approximately +20% y/y, driven by increased orders from the top 10 customers and balanced distribution between top-tier and smaller CDMOs.
New Modalities	Grew >+20% y/y with revenue reaching its highest levels; orders up by low double digits y/y.
Equipment	Grew mid-single digits as large pharma customers utilized technologies to enhance productivity and explore new modalities.
Consumables	Grew +10% y/y, marking the highest level in the past five quarters; management believes destocking has concluded.

4 Quarter Average Book-to-bill



H1FY24 vs H2FY24e YoY Growth Trends



Source: Company Filings, Bloomberg

Thesis 2: Industry shift towards single-use products

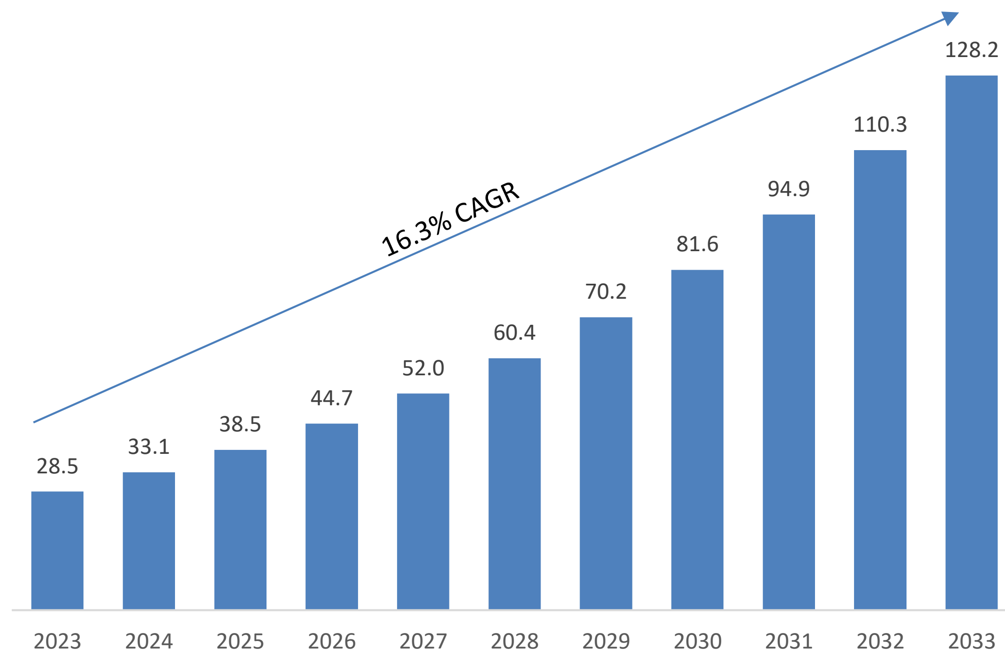
Advantages

Eliminates steps such as cleaning, repeat testing, flushing

Reduced capital expenditures

Increased clinical flexibility

Single Use Bioprocessing Market Size



Source: Company Filings, Bloomberg, Nova One Advisor

Thesis 2: Industry shift towards single-use products

TangenX SC TFF Device

TangenX SC devices are scalable within the product family and designed to be cross-scalable with single-use and reusable cassettes.

Xcell ATF

55% cheaper to implement compared to stainless steel versions. It also minimizes setup time and labor by up to 80%, as it eliminates the need for autoclaving and sterilization steps.

OPUS

While not traditionally single-use, products such as OPUS columns can support single-use product sales, offering versatility that Repligen's competitor lack.

Source: Company Filings, Bloomberg

Thesis 3: Strengthening Client Relationships

Key Account Strategy

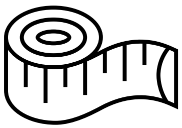
This strategy focuses on building relationships with high-level decision-makers at major pharmaceutical companies and CDMOs

Repligen expanded to seven members managing 20 accounts (16 pharma, 4 CDMOs), significantly increasing traction across multiple parts of Repligen’s portfolio.

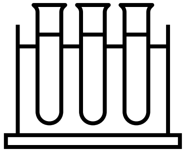
Orders from top 10 pharma accounts grew 20% year-over-year, while orders from top 10 CDMO accounts increased nearly 15%.

High Switching Cost

Regulatory Hurdles



Highly Customized Solutions



Production Risk

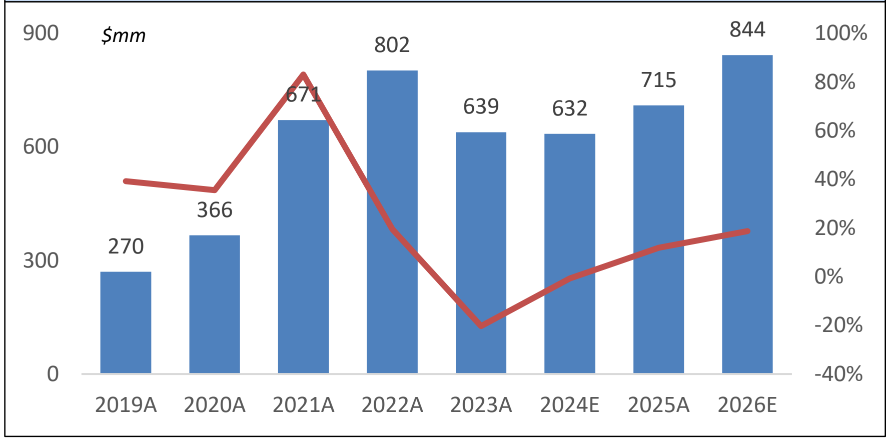
Repligen integrates its consumables with systems like chromatography skids and filtration units, which makes switching vendors more cumbersome for clients. These integrated solutions deliver high value and efficiency, making them indispensable for customers

The company's clinical exposure positions it for commercial scaling within 3-5 years, with Repligen's ATF systems integrated into nine late-phase studies since mid-2023.

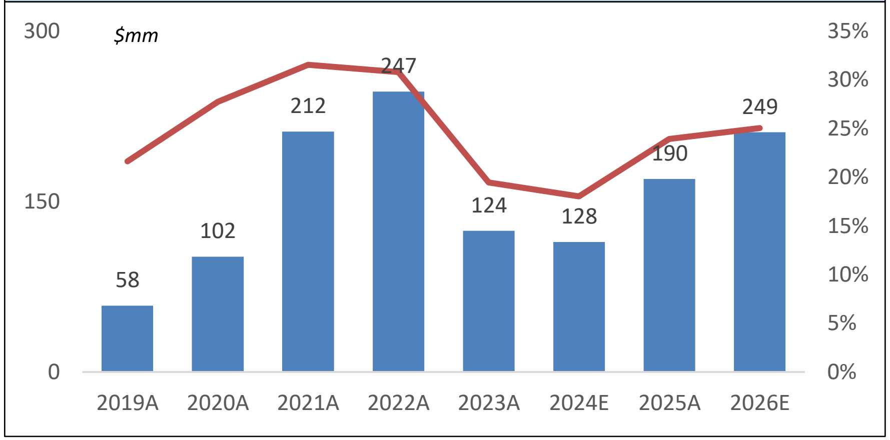
Source: Company Filings, Bloomberg

Financial Projections

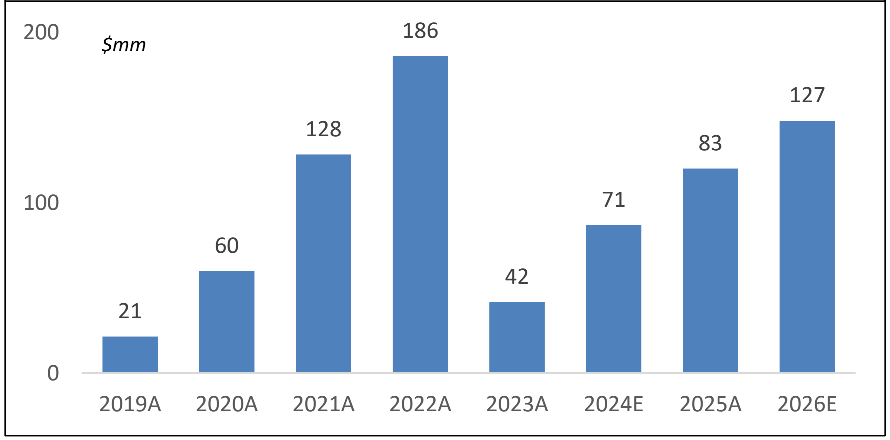
Revenue & Revenue Growth



EBITDA & EBITDA Margins



Net Income



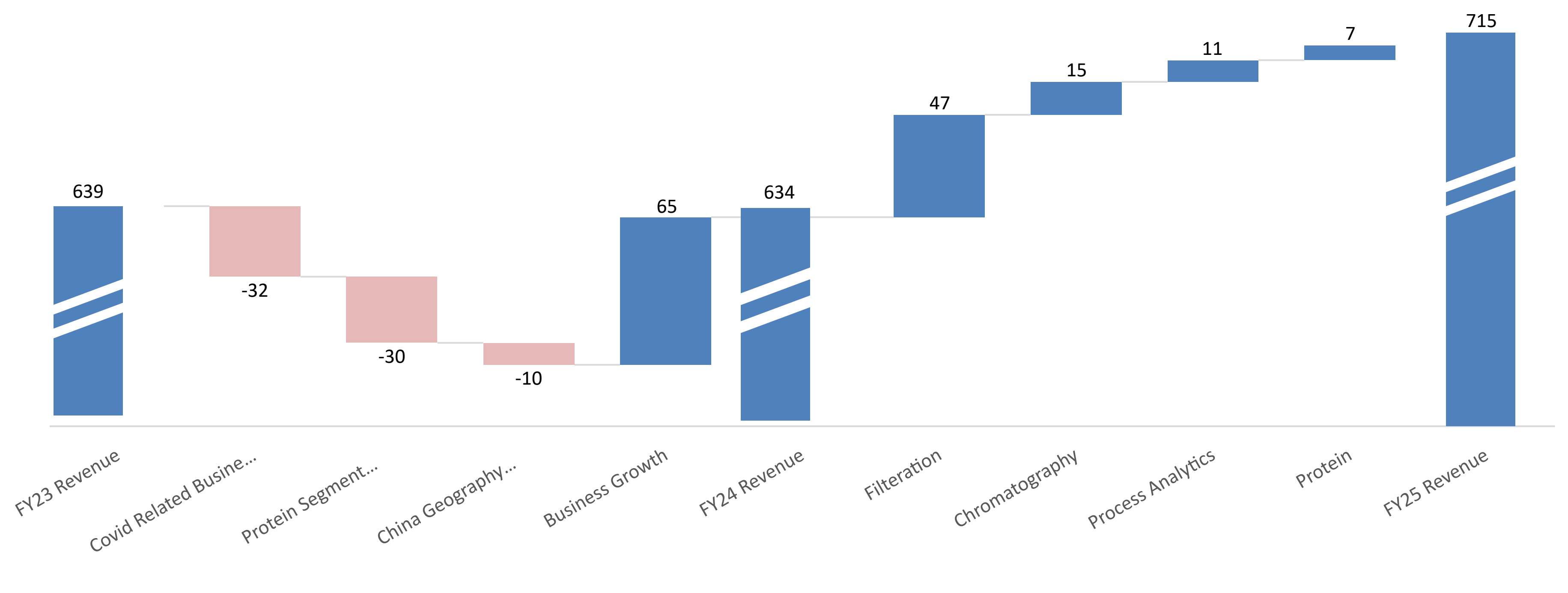
Projection Highlights

- Improving QoQ results, indicate resilience and set the stage for a bright future, reinforcing RGEN's position as a leading bioprocessing company.
- RGEN's history of outperforming peers with a +20% revenue growth sets a strong foundation. Margin pressures from COVID run-offs and capacity expansions are projected to ease by FY25, with EBITDA margins rebounding through improved operational efficiency.

Source: Company Filings, Bloomberg

Financial Assumptions

Revenue Build



Source: Company Filings, Bloomberg

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Valuations

	Bear Case			Base Case			Bull Case		
	FY24-26	FY27-30	FY31-33	FY24-26	FY27-30	FY31-33	FY24-26	FY27-30	FY31-33
Revenue %g	9.0%	15.0%	15.0%	10.0%	21.8%	22.0%	10.4%	23.5%	24.3%
Gross %m	51.5%	52.7%	52.7%	52.1%	53.9%	54.9%	52.1%	54.0%	55.1%
Operating %m	15.8%	21.8%	22.7%	16.2%	24.4%	26.9%	16.4%	24.8%	28.3%
Exit Multiple	14 EV/EBITDA Multiple (40% Discount to Peer Median)			18x EV/EBITDA Multiple (20% Discount to Peer Median)			22x EV/EBITDA Multiple (Peer Median)		
Target Price	$85.6			$166.6			$212.5		
Upside/ Downside	-39.9%			+16.8%			+49.0%		

Source: Company Filings, Bloomberg

Appendix

Historical Financials Summary

INCOME STATEMENT	FY '14 A 12/31/14	FY '15 A 12/31/15	FY '16 A 12/31/16	FY '17 A 12/31/17	FY '18 A 12/31/18	FY '19 A 12/31/19	FY '20 A 12/31/20	FY '21 A 12/31/21	FY '22 A 12/31/22	FY '23 A 12/31/23
Revenue	**64**	**84**	**105**	**141**	**194**	**270**	**366**	**671**	**802**	**639**
Revenue Growth (YoY)	*(6.8%)*	*31.5%*	*25.1%*	*35.1%*	*37.4%*	*39.3%*	*35.5%*	*83.1%*	*19.5%*	*(20.3%)*
Cost of Revenue	(28)	(35)	(47)	(67)	(87)	(119)	(156)	(276)	(345)	(354)
Gross Profit	**36**	**48**	**57**	**74**	**108**	**151**	**210**	**395**	**457**	**285**
Gross margin	*55.9%*	*57.8%*	*54.9%*	*52.5%*	*55.4%*	*55.9%*	*57.4%*	*58.9%*	*57.0%*	*44.6%*
Operating Expenses	(23)	(30)	(36)	(49)	(79)	(101)	(129)	(202)	(251)	(223)
Other Operating Expenses	-	-	*2*	*11*	*3*	*14*	*(0)*	*0*	*0*	*32.2*
Operating Income	**13**	**18**	**21**	**25**	**29**	**51**	**81**	**193**	**205**	**62**
Operating Margin	*20.1%*	*21.4%*	*20.5%*	*17.9%*	*14.9%*	*18.7%*	*22.1%*	*28.8%*	*25.6%*	*9.7%*
Non-Operating Income (Loss)	0	(0)	(4)	(7)	(5)	(4)	(11)	(14)	(6)	22
Interest Expense, Net	-	-	-	-	-	-	-	-	-	(10)
Other Non-Op Income (Loss)	0	(0)	(1)	(1)	0	(0)	(0)	(1)	(10)	8
Pretax Income	**13**	**18**	**17**	**19**	**24**	**46**	**70**	**180**	**200**	**84**
Income Taxes	(4)	(8)	(2)	(5)	(5)	(10)	(2)	(31)	(19)	(21)
Income (Loss) from Affiliates (After Tax)	-	-	-	-	-	-	-	-	-	-
Income (Loss) from Cont Ops	**8**	**9**	**12**	**28**	**17**	**21**	**60**	**128**	**186**	**42**
Net Income	**10**	**9**	**15**	**14**	**19**	**37**	**68**	**149**	**181**	**63**

Source: Company Filings, Bloomberg

Historical Financials Summary

CASH FLOW STATEMENT	FY '14 A 12/31/14	FY '15 A 12/31/15	FY '16 A 12/31/16	FY '17 A 12/31/17	FY '18 A 12/31/18	FY '19 A 12/31/19	FY '20 A 12/31/20	FY '21 A 12/31/21	FY '22 A 12/31/22	FY '23 A 12/31/23
Net Income	8	9	12	28	17	21	60	128	186	42
Dep & Amort	4	5	5	11	16	21	27	38	51	68
NonCash Items	3	10	6	(13)	14	27	27	56	4	17
Change in Working Capital	3	(9)	(15)	(8)	(14)	(2)	(51)	(104)	(69)	(13)
Net Cash From Disc Ops	-	-	-	-	-	-	-	-	-	-
Cash from Operations	**18**	**15**	**8**	**17**	**33**	**67**	**63**	**119**	**172**	**114**
Change in Fixed & Intang	**(6)**	**(3)**	**(4)**	**(5)**	**(12)**	**(23)**	**(26)**	**(71)**	**(133)**	**(39)**
Disp in Fixed & Intang	-	-	0	-	-	-	-	-	-	-
Acq of Fixed & Intang	(6)	(3)	(4)	(5)	(12)	(23)	(26)	(71)	(133)	(39)
Net Change in LT Investment	-	-	-	-	-	-	-	-	-	-
Net Cash From Acq & Div	**(21)**	-	**(45)**	**(113)**	-	**(182)**	**(175)**	**(150)**	-	**(187)**
Other Investing Activities	**7**	**7**	**(0)**	**20**	**(2)**	-	-	-	**(100)**	**102**
Net Cash From Disc Ops (inv)	-	-	-	-	-	-	-	-	-	-
Cash from Investing Activities	**(20)**	**5**	**(49)**	**(98)**	**(14)**	**(205)**	**(201)**	**(221)**	**(233)**	**(123)**
Dividends Paid	-	-	-	-	-	-	-	-	-	-
Cash From (Repayment) Debt	-	**(0)**	**(1)**	**(2)**	-	**163**	-	**(0)**	**(0)**	**290**
Cash (Repurchase) of Equity	**2**	**1**	**113**	**132**	**3**	**322**	**306**	**4**	**4**	**(13)**
Other Financing Activities	-	-	-	-	**(0)**	**(0)**	**(0)**	**(3)**	**(17)**	**(28)**
Net Cash From Disc Ops (fin)	-	-	-	-	-	-	-	-	-	-
Cash from Financing Activities	**2**	**1**	**112**	**130**	**3**	**485**	**306**	**1**	**(13)**	**249**

Source: Company Filings, Bloomberg

Historical Financials Summary

BALANCE SHEET	FY '14 A 12/31/14	FY '15 A 12/31/15	FY '16 A 12/31/16	FY '17 A 12/31/17	FY '18 A 12/31/18	FY '19 A 12/31/19	FY '20 A 12/31/20	FY '21 A 12/31/21	FY '22 A 12/31/22	FY '23 A 12/31/23
Cash, Cash Equivalents & STI	58	72	142	174	194	528	717	604	624	751
Accounts & Notes Receivable	8	11	15	28	33	43	71	117	116	124
Inventories	12	18	25	39	42	55	95	184	238	202
Other ST Assets	2	2	2	2	7	15	19	26	20	34
Total Current Assets	**81**	**103**	**184**	**243**	**276**	**642**	**902**	**932**	**998**	**1,111**
Property, Plant & Equip, Net	15	14	15	22	32	74	92	227	316	323
LT Investments & Receivables	4	2	-	-	-	-	-	-	-	-
Goodwill & Intangibles	29	27	89	472	462	681	905	1,198	1,209	1,394
Other LT Assets	0	0	0	6	5	3	3	3	2	3
Total Long-Term Assets	**47**	**43**	**105**	**501**	**499**	**758**	**1,001**	**1,427**	**1,527**	**1,720**
Total Assets	**128**	**146**	**289**	**744**	**775**	**1,400**	**1,903**	**2,358**	**2,525**	**2,831**
Payables & Accruals	11	19	21	20	22	40	55	97	79	60
Accounts Payable	4	7	5	7	10	11	17	36	28	20
Accruals & Other	7	12	16	12	12	28	38	61	52	40
ST Debt	-	-	-	-	-	4	249	264	292	75
Other ST Liabilities	-	-	-	6	108	5	15	15	33	30
Total Current Liabilities	**11**	**19**	**21**	**25**	**130**	**48**	**319**	**375**	**404**	**165**
LT Debt	-	-	95	99	-	260	26	102	131	637
Other LT Liabilities	6	5	4	28	29	32	28	131	78	65
Total Noncurrent Liabilities	**6**	**5**	**99**	**127**	**29**	**292**	**55**	**233**	**210**	**701**
Total Liabilities	**17**	**23**	**120**	**152**	**159**	**340**	**374**	**608**	**614**	**866**
Share Capital & APIC	198	203	242	629	643	1,069	1,461	1,573	1,548	1,570
Retained Earnings	(81)	(72)	(60)	(32)	(16)	6	66	194	397	433
Other Equity	(6)	(9)	(14)	(6)	(12)	(15)	2	(17)	(34)	(38)
Total Equity	112	123	169	592	616	1,060	1,529	1,750	1,911	1,965
Total Liabilities & Equity	128	146	289	744	775	1,400	1,903	2,358	2,525	2,831

Source: Company Filings, Bloomberg

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Reverse DCF: Assumptions

Income Statement	FY '23 A 12/31/23	FY '24 E 12/31/24	FY '25 E 12/31/25	FY '26 E 12/31/26	FY '27 E 12/31/27	FY '28 E 12/31/28	FY '29 E 12/31/29	FY '30 E 12/31/30	FY '31 E 12/31/31	FY '32 E 12/31/32	FY '33 E 12/31/33	Past 5Y	Next 10Y
Revenue	**639**	**632**	**715**	**844**	**1,004**	**1,205**	**1,446**	**1,735**	**2,082**	**2,498**	**2,998**		
Revenue Growth (YoY)	*(20.3%)*	*(1.0%)*	*13.1%*	*18.0%*	*19.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	26.9%	16.7%
Cost of Revenue	(354)	(314)	(338)	(395)	(470)	(564)	(677)	(812)	(974)	(1,169)	(1,403)		
Gross Profit	**285**	**318**	**377**	**449**	**534**	**641**	**769**	**923**	**1,108**	**1,329**	**1,595**		
Gross margin	*44.6%*	*50.3%*	*52.7%*	*53.2%*	*53.2%*	*53.2%*	*53.2%*	*53.2%*	*53.2%*	*53.2%*	*53.2%*		
Operating Expenses	(223)	(257)	(252)	(266)	(317)	(361)	(419)	(490)	(588)	(706)	(824)	54.8%	53.1%
Operating Income	**62**	**60**	**125**	**183**	**217**	**280**	**350**	**433**	**519**	**623**	**770**		
Operating Margin	*9.7%*	*9.6%*	*17.5%*	*21.7%*	*21.6%*	*23.2%*	*24.2%*	*25.0%*	*25.0%*	*25.0%*	*25.7%*	21.0%	23.2%
Non-Operating Income (Loss)	22	21	(28)	(28)	(29)	(31)	(33)	(35)	(38)	(42)	(46)		
Interest Expense, Net	(10)	(5)	(27)	(27)	(29)	(30)	(32)	(35)	(37)	(41)	(45)		
Other Non-Op Income (Loss)	8	(1)	(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(2)		
Pretax Income	**84**	**82**	**97**	**155**	**188**	**249**	**317**	**397**	**481**	**581**	**724**		
Income Taxes	(21)	(10)	(15)	(28)	(39)	(52)	(67)	(83)	(101)	(122)	(152)		
Net Income	**63**	**71**	**83**	**127**	**148**	**196**	**250**	**314**	**380**	**459**	**572**		

Additional Assumptions:

WACC: 9.97%
Terminal Growth Rate: 4%

Source: Company Filings, Bloomberg

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Valuation Base Case: Income Statement Projections

INCOME STATEMENT	FY '23 A 12/31/23	FY '24 E 12/31/24	FY '25 E 12/31/25	FY '26 E 12/31/26	FY '27 E 12/31/27	FY '28 E 12/31/28	FY '29 E 12/31/29	FY '30 E 12/31/30	FY '31 E 12/31/31	FY '32 E 12/31/32	FY '33 E 12/31/33
Revenue	**639**	**632**	**715**	**844**	**1,021**	**1,245**	**1,519**	**1,854**	**2,280**	**2,782**	**3,366**
Revenue Growth (YoY)	*(20.3%)*	*(1.0%)*	*13.1%*	*18.0%*	*21.0%*	*22.0%*	*22.0%*	*22.0%*	*23.0%*	*22.0%*	*21.0%*
Cost of Revenue	(354)	(314)	(338)	(395)	(473)	(577)	(696)	(849)	(1,033)	(1,260)	(1,508)
Gross Profit	**285**	**318**	**377**	**449**	**548**	**669**	**824**	**1,005**	**1,247**	**1,522**	**1,858**
Gross margin	*44.6%*	*50.3%*	*52.7%*	*53.2%*	*53.7%*	*53.7%*	*54.2%*	*54.2%*	*54.7%*	*54.7%*	*55.2%*
Operating Expenses	(223)	(257)	(252)	(266)	(317)	(374)	(441)	(524)	(644)	(786)	(926)
Operating Income	**62**	**60**	**125**	**183**	**231**	**295**	**383**	**481**	**603**	**736**	**932**
Operating Margin	*9.7%*	*9.6%*	*17.5%*	*21.7%*	*22.6%*	*23.7%*	*25.2%*	*26.0%*	*26.5%*	*26.5%*	*27.7%*
Non-Operating Income (Loss)	22	21	(28)	(28)	(29)	(31)	(33)	(36)	(40)	(44)	(49)
Interest Expense, Net	(10)	(5)	(27)	(27)	(29)	(30)	(33)	(35)	(39)	(43)	(48)
Other Non-Op Income (Loss)	8	(1)	(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(2)
Pretax Income	**84**	**82**	**97**	**155**	**202**	**264**	**350**	**445**	**563**	**692**	**883**
Income Taxes	(21)	(10)	(15)	(28)	(42)	(55)	(73)	(93)	(118)	(145)	(185)
Income (Loss) from Cont Ops	**42**	**71**	**83**	**127**	**159**	**209**	**276**	**351**	**445**	**546**	**698**
Net Income	**63**	**71**	**83**	**127**	**159**	**209**	**276**	**351**	**445**	**546**	**698**

Source: Company Filings, Bloomberg

Valuation Base Case: Balance Sheet Projections

Balance Sheet	FY '23 A 12/31/23	FY '24 E 12/31/24	FY '25 E 12/31/25	FY '26 E 12/31/26	FY '27 E 12/31/27	FY '28 E 12/31/28	FY '29 E 12/31/29	FY '30 E 12/31/30	FY '31 E 12/31/31	FY '32 E 12/31/32	FY '33 E 12/31/33
Cash, Cash Equivalents & STI	751	1,069	1,018	1,173	1,344	1,542	1,787	2,087	2,461	2,906	3,469
Accounts & Notes Receivable	124	119	124	147	177	216	264	322	396	482	585
Inventories	202	201	203	237	284	345	418	510	620	755	906
Other ST Assets	34	31	32	38	46	56	68	83	102	124	150
Total Current Assets	**1,111**	**1,419**	**1,377**	**1,595**	**1,851**	**2,159**	**2,537**	**3,002**	**3,579**	**4,267**	**5,109**
Property, Plant & Equip, Net	323	330	297	264	259	269	299	347	419	520	654
Goodwill & Intangibles	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394
Other LT Assets	3	1	1	1	1	1	1	1	1	1	1
Total Long-Term Assets	**1,720**	**1,724**	**1,692**	**1,659**	**1,654**	**1,664**	**1,694**	**1,742**	**1,814**	**1,915**	**2,049**
Total Assets	**2,831**	**3,144**	**3,069**	**3,254**	**3,505**	**3,823**	**4,231**	**4,744**	**5,393**	**6,182**	**7,158**
Payables & Accruals	60	99	100	113	143	174	210	257	312	380	456
Accounts Payable	20	34	34	37	52	63	76	93	113	137	165
Accruals & Other	40	65	65	76	91	111	134	164	199	242	291
ST Debt	75	216	224	264	320	390	476	581	715	872	1,055
Other ST Liabilities	30	24	24	29	35	43	52	63	78	95	115
Total Current Liabilities	**165**	**338**	**348**	**406**	**498**	**607**	**739**	**901**	**1,105**	**1,347**	**1,626**
LT Debt	637	660	660	660	660	660	660	660	660	660	660
Other LT Liabilities	65	28	28	28	28	28	28	28	28	28	28
Total Noncurrent Liabilities	**701**	**688**	**688**	**688**	**688**	**688**	**688**	**688**	**688**	**688**	**688**
Total Liabilities	**866**	**1,026**	**1,037**	**1,095**	**1,186**	**1,295**	**1,427**	**1,589**	**1,793**	**2,035**	**2,314**
Preferred Equity	-										
Share Capital & APIC	1,570	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610
Treasury Stock	-	-	-	-	-	-	-	-	-	-	-
Retained Earnings	433	507	422	549	708	917	1,193	1,545	1,990	2,536	3,234
Other Equity	(38)	-	-	-	-	-	-	-	-	-	-
Minority / Non Cont. Interest	-	-	-	-	-	-	-	-	-	-	-
Total Equity	1,965	**2,117**	**2,032**	**2,159**	**2,319**	**2,527**	**2,803**	**3,155**	**3,600**	**4,146**	**4,844**
Total Liabilities & Equity	2,831	**3,144**	**3,069**	**3,254**	**3,505**	**3,822**	**4,230**	**4,744**	**5,393**	**6,181**	**7,158**

Source: Company Filings, Bloomberg

Valuation Base Case: Cash Flow Statement Projections

Cash Flow Statements	FY '23 A 12/31/23	FY '24 E 12/31/24	FY '25 E 12/31/25	FY '26 E 12/31/26	FY '27 E 12/31/27	FY '28 E 12/31/28	FY '29 E 12/31/29	FY '30 E 12/31/30	FY '31 E 12/31/31	FY '32 E 12/31/32	FY '33 E 12/31/33
Net Income	42	71	83	127	159	209	276	351	445	546	698
Dep & Amort	68	67	65	66	67	65	61	63	65	66	68
NonCash Items	17	(23)	(0)	(1)	(2)	(2)	(3)	(3)	(4)	(5)	(6)
Change in Working Capital	(13)	46	(7)	(43)	(48)	(69)	(84)	(104)	(129)	(153)	(178)
Net Cash From Disc Ops	-										
Cash from Operations	**114**	**161**	**141**	**149**	**177**	**202**	**250**	**307**	**377**	**455**	**581**
Change in Fixed & Intang	**(39)**	**(12)**	**(33)**	**(34)**	**(61)**	**(75)**	**(91)**	**(111)**	**(137)**	**(167)**	**(202)**
Disp in Fixed & Intang	-	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Acq of Fixed & Intang	(39)	(24)	(33)	(34)	(61)	(75)	(91)	(111)	(137)	(167)	(202)
Net Cash From Acq & Div	**(187)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Other Investing Activities	**102**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Net Cash From Disc Ops (inv)	**-**										
Cash from Investing Activities	**(123)**	**(12)**	**(33)**	**(34)**	**(61)**	**(75)**	**(91)**	**(111)**	**(137)**	**(167)**	**(202)**
Dividends Paid	**-**	**-**	**(168)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cash From (Repayment) Debt	**290**	**141**	**8**	**40**	**56**	**70**	**86**	**105**	**134**	**157**	**183**
Cash (Repurchase) of Equity	**(13)**	**33**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Other Financing Activities	**(28)**										
Cash from Financing Activities	**249**	**174**	**(160)**	**40**	**56**	**70**	**86**	**105**	**134**	**157**	**183**
Net Changes in Cash	**228**	**323**	**(52)**	**156**	**171**	**198**	**245**	**300**	**374**	**445**	**563**
Free Cash Flow	**78**	**140**	**108**	**116**	**115**	**127**	**159**	**195**	**240**	**288**	**379**
Free Cash Flow to Firm	**85**	**191**	**131**	**138**	**138**	**151**	**185**	**223**	**270**	**322**	**417**

Source: Company Filings, Bloomberg

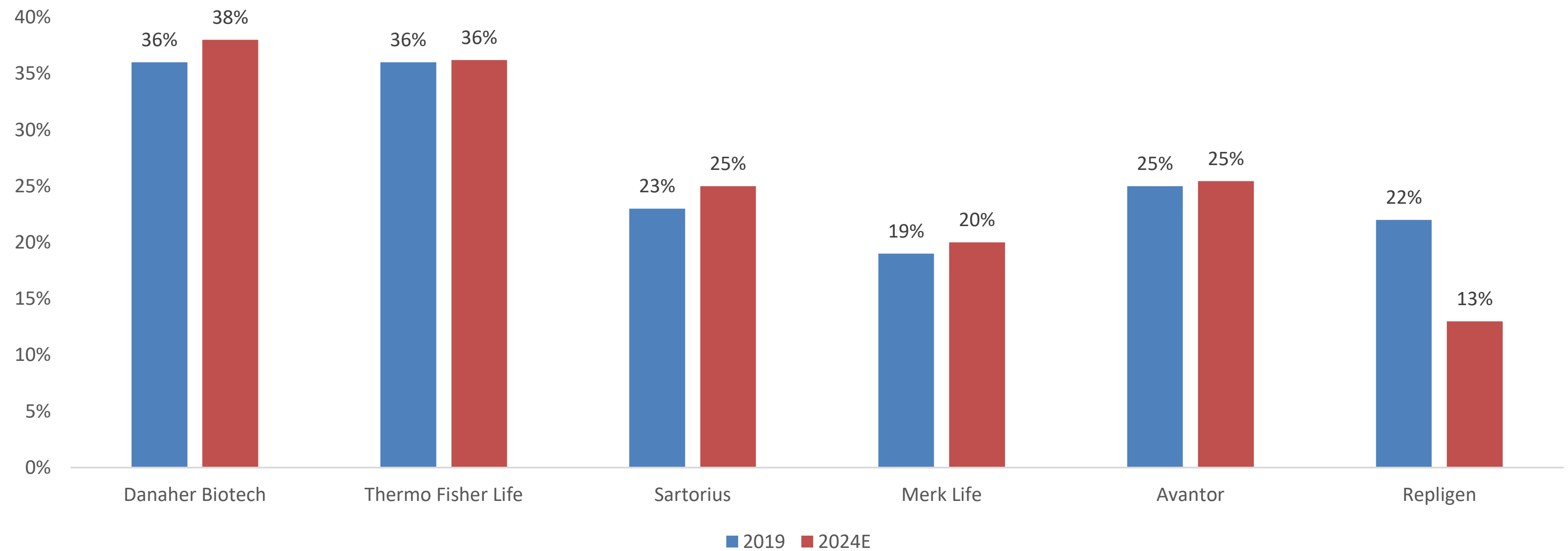
Comparable Companies

Name	Mkt Cap ($ Bn)	%1YR	5Y Sales CAGR	5Y EBITDA CAGR	BEst Sales YoY %g	EV/T12M EBITDA	EV/ 1YBF EBITDA
Thermo Fisher Scientific Inc	196.3	4.6	12.0	11.9	3.8	21.7	19.8
Bruker Corp	38.5	5.7	6.8	8.5	-1.0	22.9	19.9
Mettler-Toledo International	25.7	11.4	5.2	10.0	8.3	24.1	22.0
Mesa Laboratories Inc	22.2	33.2	4.1	3.0	4.5	24.0	21.2
Avantor Inc	14.1	2.3	3.5	7.1	0.0	18.1	14.9
Maravai Lifesciences Hldgs-A	13.6	24.4	-0.2	9.1	6.0	21.4	17.4
Waters Corp	9.3	7.0	3.1	73.5	0.0	17.3	12.2
Agilent Technologies Inc	8.7	-13.2	9.4	12.2	15.5	24.2	16.7
Bio-Rad Laboratories-A	1.4	-2.4	18.5	-20.0	-23.6	-	29.8
Revvity Inc	0.6	19.1	16.0	-	9.4	-	13.9
Repligen	8.0	-11.9	26.9	28.0	7.7	122.5	51.2
Median (Ex- Repligen)		6.3	6.0	9.1	4.2	22.3	18.6

Source: Company Filings, Bloomberg

Competitive Companies

EBIT Margins



Source: Company Filings, Bloomberg

Investment Risks and Mitigation

Continued Demand Uncertainty	Competitive Pressures	Change in Management
▪ Large CDMO players such as Lonza or Samsung have been announcing very significant deals lately. ▪ Repligen's business funnel is at the highest they have ever had, making the management confident about a real and sustained business turnaround- Q4FY24 and FY25.	▪ Growth is expected to continue, driven by their strategic focus on high-growth areas such as cell and gene therapies (CGTs) and mRNA (~21% of the mix), innovative products like the KrosFlo RS10 ▪ We do expect to be able to still achieve that 100 to 200 basis points of gross margin over the next few years - Q3FY24 Concall	▪ CEO Tony Hunt would transition to Executive Chair and be replaced by Olivier Loeillot who had joined RGEN in Oct '23 as President and CCO. ▪ He spent 12 years at Cytiva / GE Healthcare Life Sciences, the largest bioprocess company in the world,. Prior to Cytiva, he spent 12 years at Lonza, the largest CDMO in the world.

Source: Company Filings, Bloomberg

Conference Call Summary

Q2 FY24	Q3 FY24
▪ Book-to-bill ratios for key areas (e.g., CDMOs, consumables) exceeded 1.0, reflecting strong future commitments. ▪ Cost optimization efforts included further reductions in operating expenses, targeting a 7% reduction in the second half of 2024. ▪ North America and Europe demonstrated growth, but China's revenue dropped significantly, now expected to represent just 4% of 2024 sales. This required Repligen to downside the team. ▪ Significant recovery in Tier 2 CDMO orders, suggesting a broader industry rebound. CDMO order growth exceeded 20% both sequentially and YoY. ▪ The acquisition of Tantti Lab is expected to enhance capabilities in new modalities with the development of microporous bead technology. ▪ The newly implemented key account management program has positively impacted engagement with top pharma customers, with anticipated long-term benefits.	▪ Most of the momentum Repligen has seen in Q2 has carried into Q3. ▪ Encouraged by strengthening of CDMO business, which reached its highest revenue level in the last 18 months. ▪ Large CDMO players such as Lonza or Samsung are announcing very significant deals lately. ▪ Approximately 65% of Repligen's business is tied to clinical-phase projects. A gradual transition of these projects from early-phase to later-phase clinical trials has been driving an increase in consumable orders and sales over recent quarters, reflecting the progression of products toward advanced development stages. ▪ Even distribution of orders coming from both larger Tier 1 and the smaller Tier 2 CDMOs, showing the situation has really improved from a year ago. ▪ America revenues were up mid-teens, while Asia ex-China was up more than 40%.

Source: Company Filings, Bloomberg

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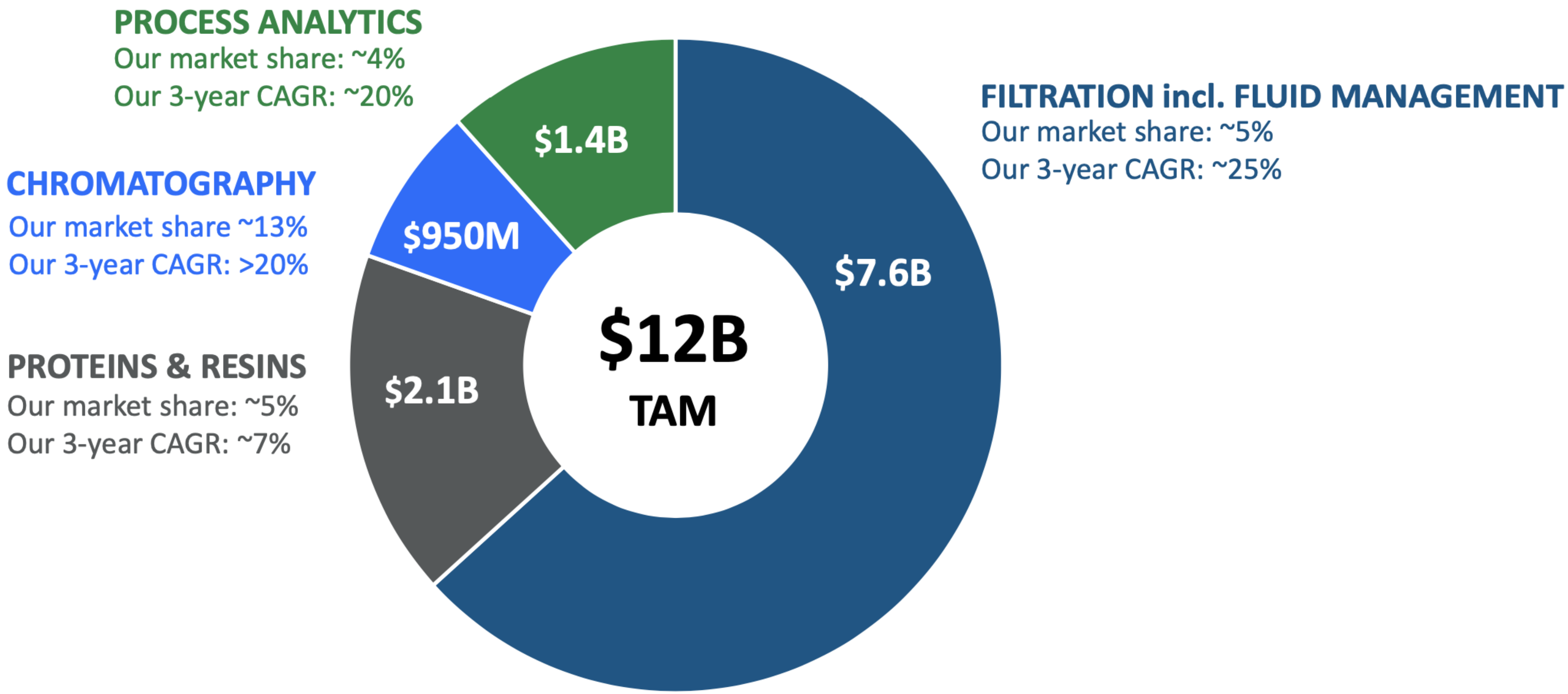
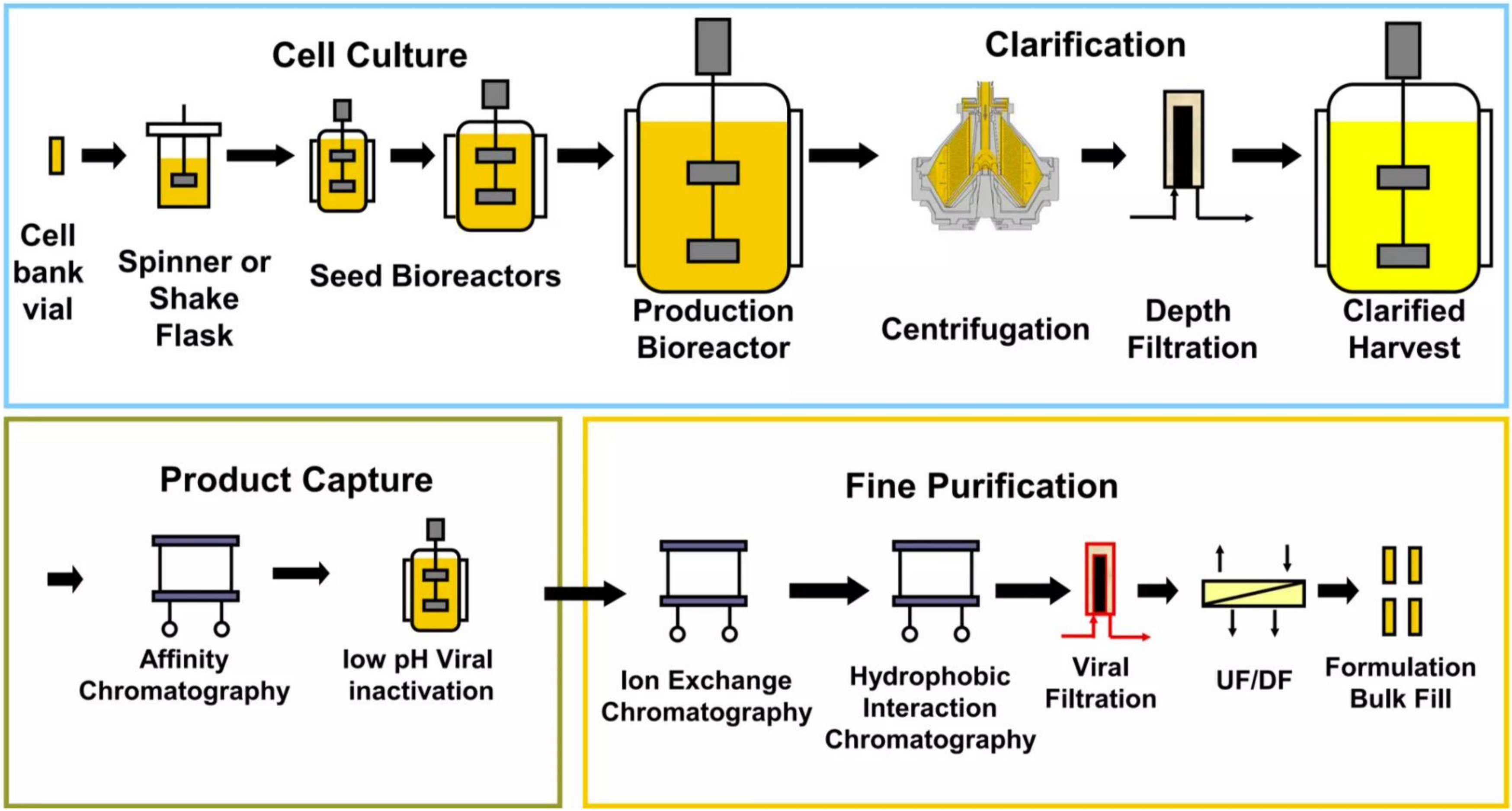
TAM Overview



Repligen Market Share 2023: ~5% TAM
3-Year Revenue CAGR (2020-2023): Repligen 20%

Source: Company Filings, Bloomberg

Overview of Biologics Manufacturing Process



Source: [Worcester Polytechnic Institute (WPI)]

Business Segment Summary

Filtration

- Repligen's Filtration unit focuses on advanced technologies for ultrafiltration and diafiltration, essential for purifying biological products. Their offerings include Tangential Flow Filtration (TFF) Systems, Hollow Fiber Filters, Flat Sheet Cassettes.

Chromatography

- The Chromatography unit provides solutions for the purification of biomolecules
- Chromatography Systems: These systems offer a scalable single-use platform designed for high recovery of complex biomolecules and new modalities.
- Chromatography Columns: These columns provide linear scale-up from process validation to commercial and GMP manufacturing.

Process Analytics

- This unit offers real-time monitoring and analytical tools to enhance process control and efficiency:
- Provides in-line GMP testing, this system provides reliable real-time results for concentration measurements during downstream processes.
- Enables line system utilizes variable pathlength technology to deliver rapid and accurate results without the need for dilution.

Protein

- Repligen's Proteins unit supplies critical components for bioprocessing:
- Protein A Ligands: These are essential for the purification of monoclonal antibodies, a cornerstone in biopharmaceutical manufacturing.
- Growth Factors: These products enhance cell culture productivity, supporting efficient upstream bioprocessing.

Source: Company Filings, Bloomberg

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Thank you

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The University of North Carolina

December 5th , 2024

Team Number: 11

Presented by:

- Alonso Meza, CFA
- Katherine Pérez, CFA
- Katherine Schlinke, CFA

Advanced Drainage Systems: Largest manufacturer of stormwater pipes in the US and the only national player in the industry

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Plastic pipe conversion to drive growth	Plastic pipe conversion will increase the size of the market, while ADS's scale and distribution network positions the company to capture those gains
Sustaining high prices & improving margins	Despite lower demand and raw material deflation, ADS will be capable of sustaining high pipe prices and improving margins through market power and cost relief
Leader in growth and M&A	Proven M&A capabilities and strong FCF generation to support continued market leadership. Also, in this ultra-fragmented industry, the M&A pipeline is rich with cooling valuations

Base case
Target Date: 11/22/25
Target Price: $168
Return: 27%

Bull Case
Target Price $203

Bear Case
Target Price: $131

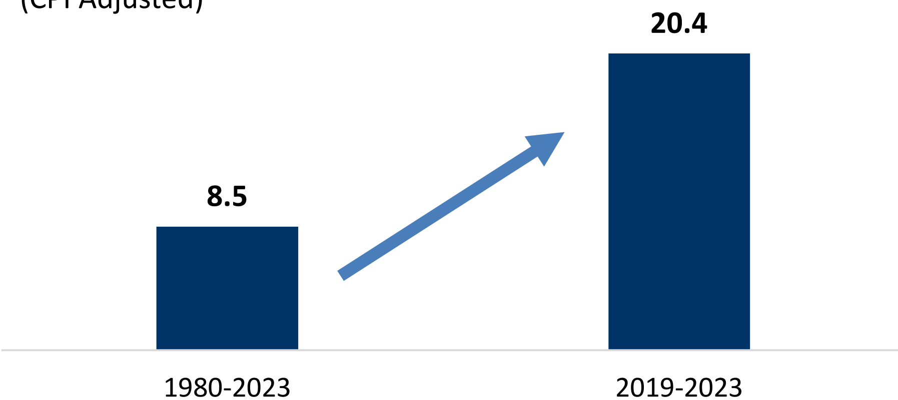
R/R Ratio: 4:1

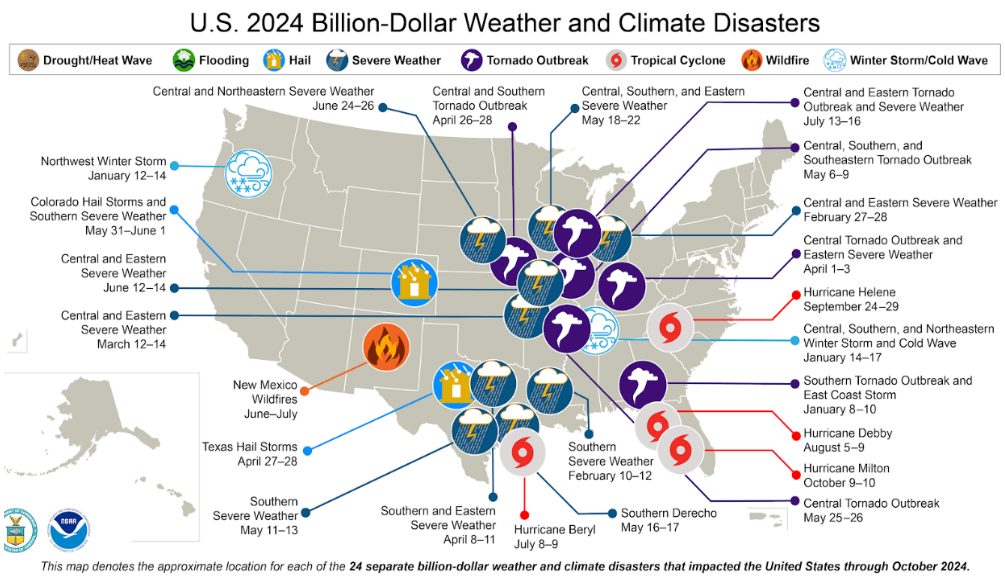
	2018	2019	2020	2021	2022	2023	2024	2025E
Revenue	$1,330	$1,385	$1,674	$1,983	$2,769	$3,071	$2,874	$2,985
% YoY	6%	4%	21%	18%	40%	11%	-6%	4%
Gross Profit	$302	$327	$316	$690	$847	$1,118	$1,146	$1,226
% YoY	2%	8%	-3%	118%	23%	32%	2%	7%
EBITDA	$210	$232	$362	$567	$667	$904	$923	$992
% Margin	16%	17%	22%	29%	24%	29%	32%	33%
FCF	$95	$108	$239	$373	$126	$541	$534	$522

Trading and Operating Stats	
IPO Date	25-Jul-14
Share Price	131.85
Shares Outstading	78,282
Market Cap ($m)	11,798
Less: Cash ($m)	542
Add: Debt ($m)	1,371
Enterp Value ($m)	12,757
Short Interest	2.1%
Volume Avg (65-day)	481
52 Week Range	$110-184

ADS is uniquely positioned to benefit from the structural necessity for improvements in sustainable stormwater management

Annual Average of $1 Billion+ Weather Related Disasters
(CPI Adjusted)





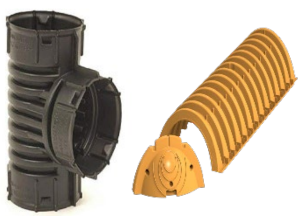
Source: NOAA, Company data

Climate change is driving the need for sustainable, efficient, stormwater solutions:

- Most existing solutions were designed to handle historical levels of weather severity
- This infrastructure has become increasingly insufficient to manage the more frequent, severe, and unpredictable levels of precipitation driven by climate change
- A survey conducted by ADS indicated that 51% of Americans are concerned about the current infrastructure in place to manage stormwater

Business & Competitive Landscape Overview

Pipes:	Gross Margin: 32.4%
54% of Revenue	Growth: HS



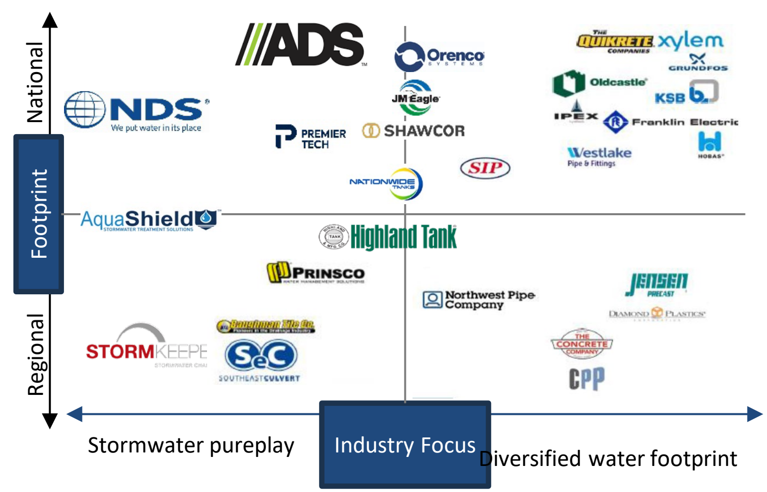
Allied:	Gross Margin: 57.4%
23% of Revenue	Growth: LD

Infiltrator:	Gross Margin: 52.8%
16% of Revenue	Growth: HDD

International:	Gross Margin: 28.2%
7% of Revenue	Growth: LSD

Manufacturing Plants and Distribution Facilities

Stormwater players by industry focus and footprint



Source: Company data, our estimates

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Advanced Drainage Systems: Largest manufacturer of stormwater pipes in the US and the only national player in the industry

Plastic pipe conversion to drive growth	Plastic pipe conversion will increase the size of the market, while ADS's scale and distribution network positions the company to capture those gains
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Return: 27%

Bull Case
Target Price $203

Bear Case
Target Price: $131

R/R Ratio: 4:1

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Revenue	$1,330	$1,385	$1,674	$1,983	$2,769	$3,071	$2,874	$2,985
% YoY	6%	4%	21%	18%	40%	11%	-6%	4%
Gross Profit	$302	$327	$316	$690	$847	$1,118	$1,146	$1,226
% YoY	2%	8%	-3%	118%	23%	32%	2%	7%
EBITDA	$210	$232	$362	$567	$667	$904	$923	$992
% Margin	16%	17%	22%	29%	24%	29%	32%	33%
FCF	$95	$108	$239	$373	$126	$541	$534	$522

Trading and Operating Stats	
IPO Date	25-Jul-14
Share Price	131.42
Shares Outstading	78,282
Market Cap ($m)	11,798
Less: Cash ($m)	542
Add: Debt ($m)	1,371
Enterp Value ($m)	12,757
Short Interest	2.1%
Volume Avg (65-day)	481
52 Week Range	$110-184

Thesis #1: Plastic pipe conversion will increase the size of the market, while ADS's scale and distribution network positions it to capture those gains

Variant View: The market expects 4-6% revenue growth between 2024-2029, explained by the rebound in construction activity; however, this is not pricing in the increase in the addressable market as a result of plastic pipe replacing traditional products

Broadening appreciation of stormwater challenges will grow the market at a faster rate:

- Number of billion-dollar accidents has soared. Existing stormwater infrastructure was not built to handle frequency and severity of current events. Disasters are triggering regulation changes
- Related damages rising from ~$3B per year in the 1980s to ~$7B annually in the 2000s, and now ~$22B per year in the 2020s

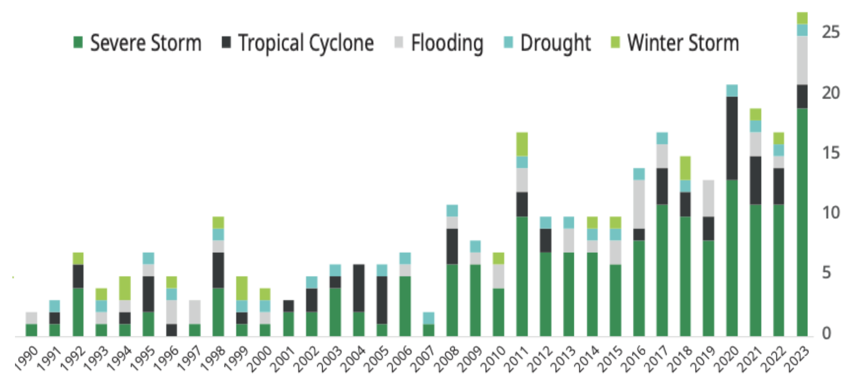
Strong value proposition vs concrete and metal pipes:

- Plastic pipes are 2x-3x faster to install, have a 20% cheaper installation, and are much more resistant to abrasion and corrosion
- Plastic only account for 40% of pipe market, and conversion rate (1-2% historically) should accelerate to 3% as cement prices soar given restricted capacity

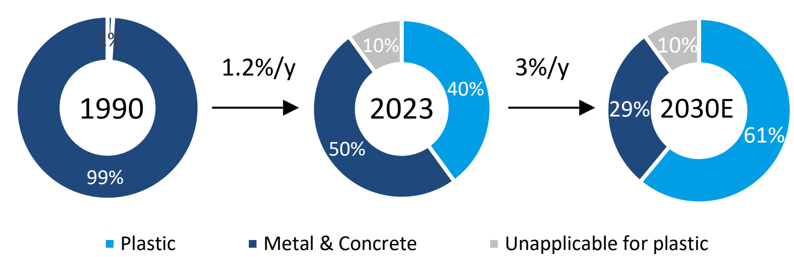
ADS is well positioned to capture additional growth:

- ADS's 3-year growth of 13.2% above peers of 9.9%
- 30% of its plants are located in Southern states, which account for 40% of projected stormwater infrastructure investment in 2024-30
- Largest industry distribution network with +3,000 partners

US Stormwater Management related disasters since 1990



Stormwater Material Market Share Gains



Source: Company data, our estimates, Bloomberg

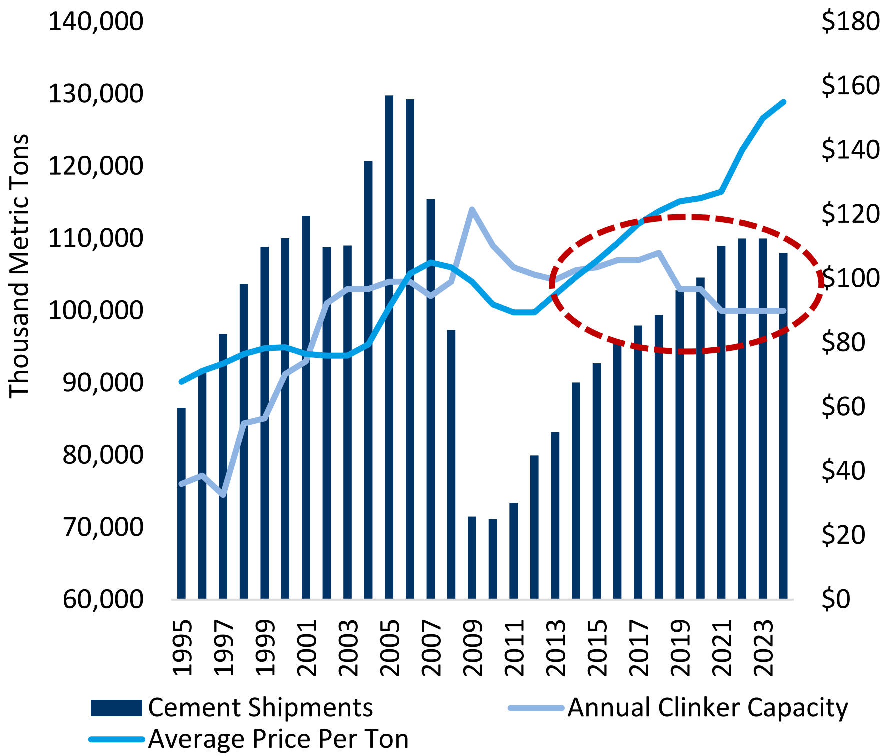
![Alpha Challenge logo]

Thesis #1: Plastic pipe conversion will the size of the market, while ADS's scale and distribution network positions it to capture those gains

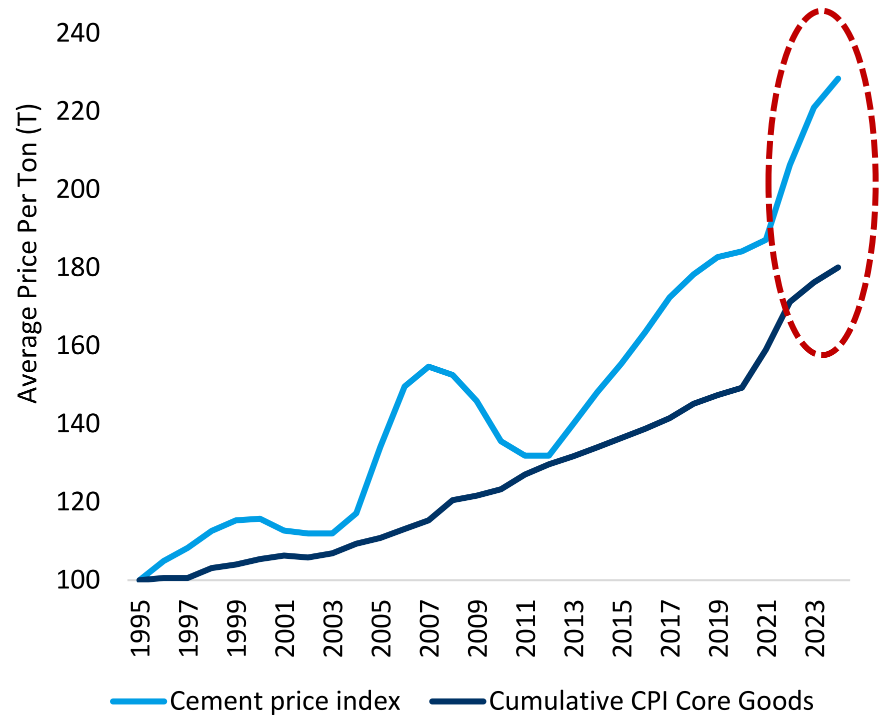
The cement industry supply is constrained with expectations for this to continue. This, combined with cost inflation provides pricing power for cement manufacturers…

… who have increased prices at a record level vs the rest of the general market, improving the relative value of plastic pipes (now 20-30% cheaper)

<u>Cement Shipments, Clinker Capacity and Prices</u>



<u>Cement Price Index vs Inflation</u>
(Base = 1995)



Source: Portland Cement Association, Bloomberg

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The University of North Carolina

Advanced Drainage Systems: Largest manufacturer of stormwater pipes in the US and the only national player in the industry

Plastic pipe conversion to drive growth	Plastic pipe conversion will increase the size of the market, while ADS's scale and distribution network positions the company to capture those gains
Sustaining high prices & improving margins	Despite lower demand and raw material deflation, ADS will be capable of sustaining high pipe prices and improving margins through market power and cost relief
Leader in growth and M&A	Proven M&A capabilities and strong FCF generation to support continued market leadership. Also, in this ultra-fragmented industry, the M&A pipeline is rich with cooling valuations

Base case
Target Date: 11/18/25
Target Price: $168
Return: 27%

Bull Case
Target Price $203

Bear Case
Target Price: $131

R/R Ratio: 4:1

Trading and Operating Stats	
IPO Date	25-Jul-14
Share Price	131.42
Shares Outstading	78,282
Market Cap ($m)	11,798
Less: Cash ($m)	542
Add: Debt ($m)	1,371
Enterp Value ($m)	12,757
Short Interest	2.1%
Volume Avg (65-day)	481
52 Week Range	$110-184

	2018	2019	2020	2021	2022	2023	2024	2025E
Revenue	$1,330	$1,385	$1,674	$1,983	$2,769	$3,071	$2,874	$2,985
% YoY	6%	4%	21%	18%	40%	11%	-6%	4%
Gross Profit	$302	$327	$316	$690	$847	$1,118	$1,146	$1,226
% YoY	2%	8%	-3%	118%	23%	32%	2%	7%
EBITDA	$210	$232	$362	$567	$667	$904	$923	$992
% Margin	16%	17%	22%	29%	24%	29%	32%	33%
FCF	$95	$108	$239	$373	$126	$541	$534	$522

Thesis #2: Despite lower demand and raw material deflation, ADS will sustain high prices and improve margins through market power and cost relief

Variant View: Explosive post-COVID demand and ADS's ability to pass on raw material inflation to prices explained impressive EBITDA margin growth. Despite demand normalization and correction in resin prices, we expect stable pricing, along with cost relief, to result in sustainably high margins.

Strongest profitability in the industry

- EBITDA Mg of 32% compares favorably to peer average of 20%
- ROIC of 19% compares favorably to peer average of 12%
- Shipping strategy differs from rivals: ADS ships manufacturing equipment instead of products

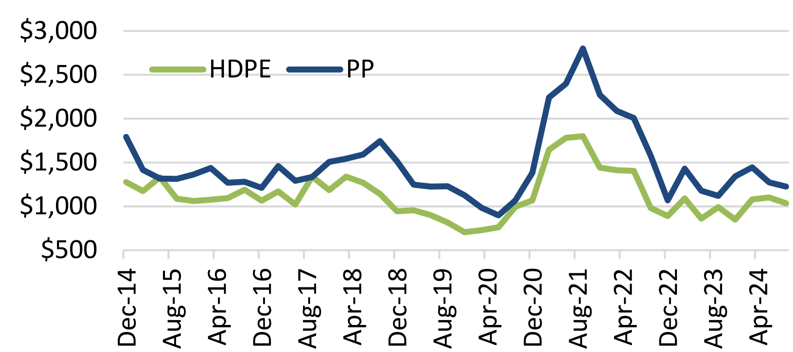
Lock on distribution as ADS's key advantage

- Being 10x larger than its closes competitor, and the only national player, ADS developed a lock on distribution via exclusivity contracts
- Restricted distribution leads to ADS setting the industry price

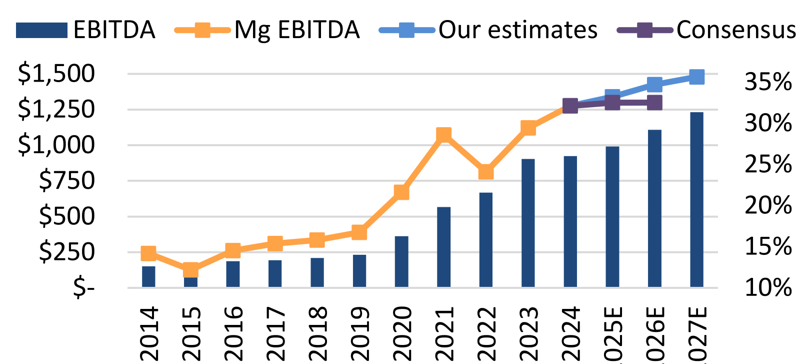
Cost relief measures

- ADS's mix of recycled materials, 20-25% cheaper than virgin resin, is 45% and should reach close 60% in 1-2 years. Each 5% move translates to +25pbs in gross margin
- Operating efficiency is projected to increase production per location in 2025E by 25% vs 2023 and double the production vs 2018.

Resin prices have declined by 50% from their peak…



… but we project margins to remain strong



Source: Company data, our estimates, Bloomberg

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Thesis #3: Proven M&A capabilities and strong FCF support market leadership in an ultra-fragmented industry with cooling valuations.

Variant View: Since plastic pipes are undifferentiated products, market fears that a national competitor appears in the medium-long term and pressure margins. However, proven M&A platform and impressive war chest will allow for continued market leadership

Well positioned for further acquisitions:

- Profitability has never been higher with Net Profit Margin of 17.1% vs 5Y average of 11%
- With a Net Debt/EBITDA of just 0.9x, ADS is well positioned for capital deployment going forward
- Track record of 8 acquisitions since 2015 for $1.3Bn

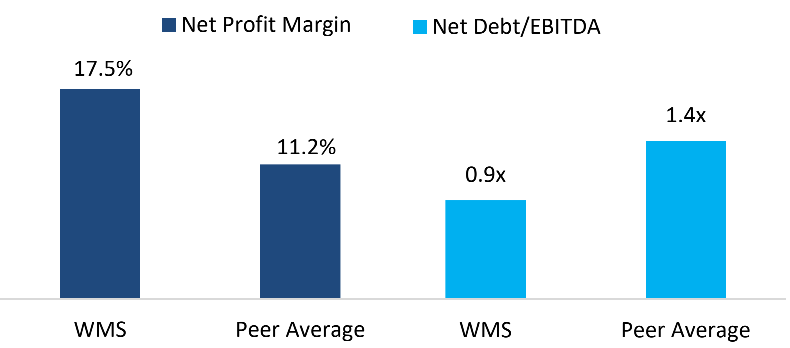
Strong FCF generation and access to markets:

- Given efficiency gains, and low interest payments and maintenance capex, cash is projected to reach 34% of total assets by 2027
- Public bonds spread has tightened by 50bps since issuance

$2.3Bn in dry powder = 31% in potential EPS accretion:

- Ultra-fragmented industry with many small private competitors
- We estimate accretion equivalent to ~31% of 2025E EPS if all available capacity is launched at once.
- Realistically, however, ADS aims at multiple small strategic bolt-on acquisitions

More profitable and less leveraged than peers



Negative momentum in potential targets' valuations

Peer	Potential synergies	Market Cap	Price Chg from 2024 peak
JHX	Diversification, expanded customer base	$13.618 MM	-24.7%
AZEK	Increased recycled materials processing	$6.452 MM	-11.2%
WTS	Expansion into potable water systems	$6.561 MM	-10.8%

Source: Company data, our estimates, Bloomberg

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Thesis #3: Proven M&A capabilities and strong FCF support market leadership in an ultra-fragmented industry with cooling valuations.

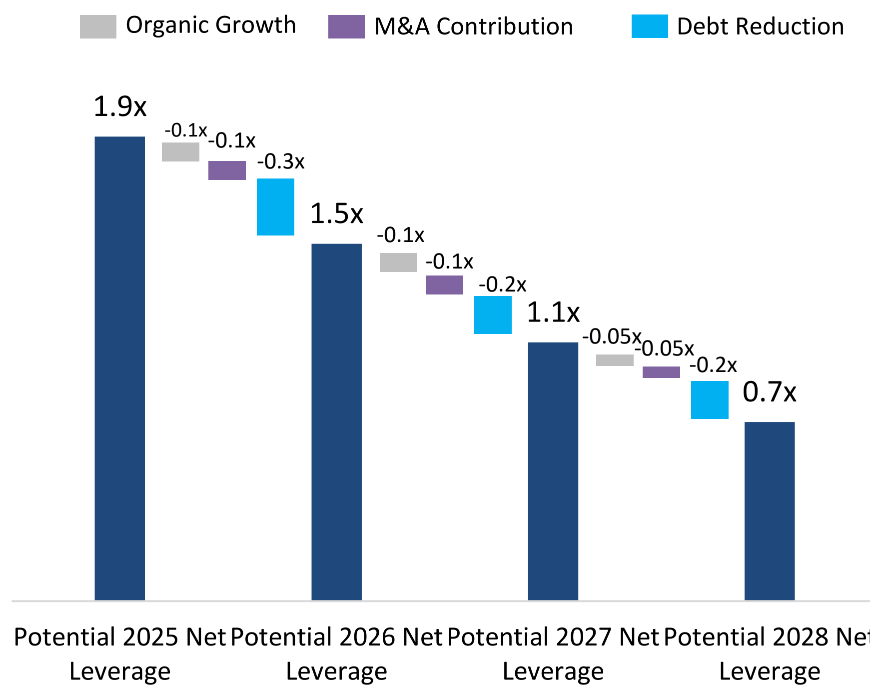
Assuming 10x EBITDA purchase multiples and US$ 2.3 Bn in total launchable capacity, we estimate potential accretion equivalent to 31% of EPS…

… and a very fast deleveraging schedule

Potential EPS upside

Dry Powder Analysis	US$	
2025 FCF	499	Own estimate
(-) Dividends	50	
(+) Cash of B/S	771	
(+) New Debt	1,100	Increases Net Leverage to 2.0x (5Y average: 1.5x)
Total Capacity	**2,320**	
Assumed deal multiple	10.0x	
Acquiered EBITDA	232	
Acquiered EBIT	**209**	
Cost Synergies	46	20% of EBITDA
EBIT + Synergies	255	
Interest expense	40	4% of New Debt
Implied accretion as % of 2025E EPS	**31%**	

Expected Deleverage Schedule 2025-28:



Source: Our estimates

Valuation: Solid fundamentals at a discount

Base case provides a 28% upside by 11/18/2025 on conservative projections and undemanding multiples. Returns >54% are possible in Bull case if macro cooperates, with a very attractive 4:1 R/R ratio.

Valuation Methodology

- Blend of DCF (50%) and relative valuation (50%)
- DCF allows as to incorporate free cash flow generation potential
- We introduce P/E and EV/EBITDA relative valuation because the market is primarily concerned with ADS's ability to sustain margins

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R/R Ratio: 4:1

Valuation	Bear	Base	Bull
DCF	$ 114	$ 160	$ 196
P/E			
2025E Earnings ($mm)	409	492	523
P/E Multiple	20.0x	25.2x	28.0x
Implied stock price	$ 104	$ 158	$ 187
EV/EBITDA			
2025E EBITDA ($mm)	785	892	936
EV/EBITDA Multiple	10.0x	14.5x	17.0x
Implied EV ($mm)	7,845	12,937	15,920
-Debt ($mm)	1,371	1,371	1,371
+Cash ($mm)	668	751	782
Equity value ($mm)	9,884	15,059	18,073
Implied stock price	$ 126	$ 192	$ 231
DCF (50%)	$ 114	$ 160	$ 196
P/E (25%)	$ 104	$ 158	$ 187
EV/EBITDA (25%)	$ 126	$ 192	$ 231
Blended-12mth Price Target	$ 115	$ 168	$ 203
Current Share Price (11/22/24)	131.85	131.85	131.85
Upside (%)	-13%	28%	54%

Source: Company data, our estimates, Bloomberg

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Valuation: Solid fundamentals at a discount

Material Conversion	Market Cap ($bn)	Enterprise Value ($bn)	Net Debt/EBITDA (x)	3Y Sales CAGR (%)	Gross Margin (%)	EBIT Margin (%)	FWD P/E	FWD EV/EBITDA
James Hardie Industries	13.7	14.5	1.1	10.6	40.3	19.5	19.2	12.2
Trex Co	7.6	7.7	0.7	7.5	41.3	25.2	33.5	20.9
Azek Company	6.4	6.7	1.0	15.1	31.9	19.5	32.7	16.4
Hayward Holdings	3.5	4.2	2.9	4.3	48.0	17.7	23.2	14.57
Latham Group	0.7	1.0	2.9	11.9	27.0	2.9	57.1	10.3
Mean	6.4	6.8	1.7	9.9	37.7	17.0	33.1	14.9

Building Products Manufacturers	Market Cap ($bn)	Enterprise Value ($bn)	Net Debt/EBITDA	3Y Sales CAGR	Gross Margin	EBIT Margin	FWD P/E	FWD EV/EBITDA
Masco Corp	17.6	20.4	1.7	3.5	35.6	16.9	18.6	12.9
Owens Corning	15.9	21.8	2.6	11.1	27.7	28.7	11.2	7.6
Fortune Brands Innovatns	10.6	13.3	3.0	-8.8	41.3	13.3	18.3	12.5
Simpson Manufacturing	7.7	7.9	0.4	20.4	47.2	21.5	21.8	13.8
Armstrong World Ind.	6.5	7.0	1.2	11.4	38.4	25	22.0	13.3
Jeld-Wen Holding	0.8	2.0	6.4	0.5	19.4	3.3	6.3	5.1
Mean	9.9	12.1	2.6	6.4	34.9	18.1	16.4	10.9

Water	Market Cap ($bn)	Enterprise Value ($bn)	Net Debt/EBITDA	3Y Sales CAGR	Gross Margin	EBIT Margin	FWD P/E	FWD EV/EBITDA
Xylem	29.3	30.6	1.0	14.7	36.9	8.9	26.2	16.4
Watts Water Technologies	6.5	6.4	0.1	10.9	46.7	17.1	22.4	14.3
Mueller Water Products	3.4	3.6	1.1	9.7	29.7	10.0	21.4	12.6
Mean	13.1	13.5	0.7	11.8	37.8	12.0	23.3	14.4

Maximum	29.3	30.6	6.4	20.4	48.0	28.7	57.1	20.9
Minimum	0.7	1	0.1	-8.8	19.4	2.9	6.3	5.1
Mean	9.8	10.8	1.7	9.3	36.8	15.7	24.3	13.4
Median	7.1	7.4	1.2	10.8	37.7	17.4	21.9	13.1
ADS	11.8	13	0.9	13.2	39.9	25.0	21.5	12.9

Source: Company data, our estimates, Bloomberg

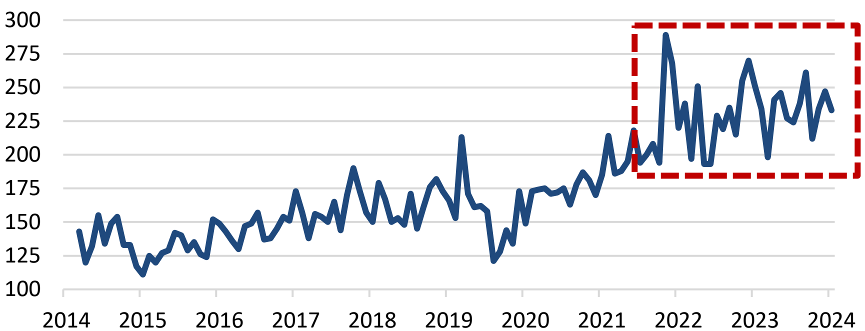
Mispricing Factors: Why this opportunity exists

ADS still trades at a notable discount to its intrinsic value and peers. We believe this is due to (1) fear of slow reactivation in the construction sector, (2) being a pure stormwater player

(1) Leading indicators have moderated but are still at healthy levels, especially in the Southern States

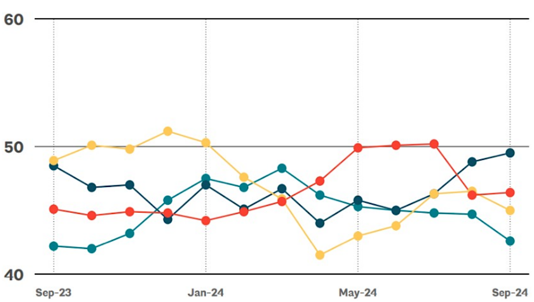
Dodge Construction Index

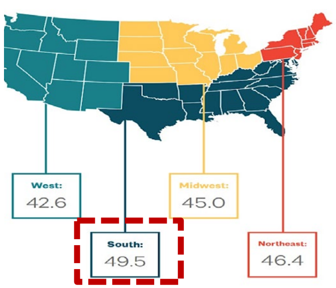
2000=100, Seasonally Adjusted



Architecture Billing Index (3-months MA)

Value>50 means expansion & Value<50 means contraction





(2) ADS is the only pure stormwater publicly traded company among peers

Peers have more broad product potfolios and fall into three categories:

- Water management
- Material conversion
- Building products manufacturing

➢ **However, this also means it is the most exposed player to the stormwater sector tailwinds**

Source: Bloomberg

Risk & Mitigants

- **Reactivation of the construction industry takes more time**
  - Current market price of $149 implies just 3-4% growth in 2026-2027
  - However, even if organic growth stagnates for a few years, plastic pipe market benefits from an additional 3% coming from conversion.
  - Inflation falling as expected and weakening job market create room for further rate cuts

- **Potential new national players**
  - Low leverage of just 0.9x ND/EBITDA, large FCF and US$ 2.3 Bn in dry powder to acquire rising competitors
  - Lock on distribution via exclusivity contracts

- **Sudden increase in resin prices**
  - Demonstrated capacity to set industry price
  - Currently much more profitable than competitors: EBITDA Mg of 30% vs peers' average of 20% and ROIC of 24% compares vs peers' average of 12%

Appendix: Revenue Breakdown

US$ MM	2018	2019	2020	2021	2022	2023	2024	2025E	2026E
Revenue by Segment	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24	Mar-25	Mar-26
Pipe	**$840**	**$869**	**$953**	**$1,053**	**$1,539**	**$1,717**	**$1,546**	**$1,590**	**$1,689**
% total	63%	63%	57%	53%	56%	56%	54%	53%	53%
% chg YoY	7%	3%	10%	11%	46%	12%	-10%	3%	6%
Allied Products	**$334**	**$355**	**$403**	**$442**	**$564**	**$692**	**$666**	**$705**	**$763**
% total	25%	26%	24%	22%	20%	23%	23%	24%	24%
% chg YoY	6%	6%	13%	10%	27%	23%	-4%	6%	8%
Infiltrator	**$0**	**$0**	**$169**	**$329**	**$461**	**$443**	**$449**	**$469**	**$504**
% total	0%	0%	10%	17%	17%	14%	16%	16%	16%
% chg YoY	-	-	-	94%	40%	-4%	2%	4%	8%
International	**$119**	**$123**	**$109**	**$121**	**$172**	**$180**	**$164**	**$175**	**$186**
% total	9%	9%	6%	6%	6%	6%	6%	6%	6%
% chg YoY	-3%	3%	-12%	12%	41%	5%	-9%	7%	6%
Net Sales	**$1,330**	**$1,385**	**$1,674**	**$1,983**	**$2,769**	**$3,071**	**$2,874**	**$2,985**	**$3,191**

Source: Company data, our estimates, Bloomberg

Appendix: Key Metrics

US$ MM	2018	2019	2020	2021	2022	2023	2024	2025E	2026E
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% growth	5.8%	4.1%	20.9%	18.5%	39.7%	10.9%	(6.4%)	3.8%	6.9%
Gross Profit	$302	$327	$316	$690	$847	$1,118	$1,146	$1,226	$1,361
Gross Profit Margin	22.7%	23.6%	18.9%	34.8%	30.6%	36.4%	39.9%	41.1%	42.7%
Adj. EBIT ($ mn)	$133	$159	$237	$421	$525	$759	$768	$830	$944
Adj. EBIT Margin %	10.0%	11.5%	14.2%	21.3%	19.0%	24.7%	26.7%	27.8%	29.6%
Adj. EBITDA ($ mn)	$210	$232	$362	$567	$667	$904	$923	$992	$1,107
Adj. EBITDA Margin %	15.8%	16.8%	21.6%	28.6%	24.1%	29.4%	32.1%	33.2%	34.7%
Adj. Diluted EPS	$0.79	$1.25	$0.90	$3.10	$3.98	$6.09	$6.31	$6.83	$7.76
Balance Sheet & Cash Flow									
Free Cash Flow ($ mn)	$95	$108	$239	$373	$126	$541	$534	$522	$576
FCF / Adj. EBITDA	45.4%	46.7%	65.9%	65.9%	18.9%	59.8%	57.9%	52.6%	52.0%
Net Debt ($ mn)	$362	$310	$988	$646	$925	$1,108	$861	$577	$157
Net Debt / Adj. EBITDA	1.7x	1.3x	2.7x	1.1x	1.4x	1.2x	0.9x	0.6x	0.1x
ROIC	6.3%	10.5%	-4.4%	11.4%	15.7%	21.2%	18.8%	18.6%	18.6%

Source: Company data, our estimates, Bloomberg

Kenan–Flagler Business School
ALPHA CHALLENGE
The University of North Carolina

December 5, 2024

Team Number: 12

Students: Genna Abele, Harry Kong, Willa Sun

Executive Summary

Thesis: Market is misunderstanding management's strategic shift to focus on enterprise & large mid-market customers which entails largely abandoning the less-profitable long tail

1. Market is overly worried about lower renewal rates and slowing customer number growth because it doesn't fully appreciate the potential of the strategy shift
2. In reality, focusing on enterprise customers will support BlackLine's goals of becoming an Office of the CFO platform (vs. point solution) and therefore drive sustainable (expand-driven) growth while improving profitability
    1. Extremely sticky, mission-critical product for enterprises
    2. No true competitors at the enterprise level
    3. Expand strategy will drive low teens growth with mid-20% operating margin
3. BlackLine should be valued in line with back-office software peers (~6.0x NTM Sales) as a slower-growth, high-profitability, mission-critical software
4. Risk/reward is extremely attractive since BlackLine has a private equity valuation takeout floor at 5.0x NTM Sales and would likely be purchased for at least 7.0x Sales

BlackLine Overview

Leading provider of enterprise financial close software

Company Description

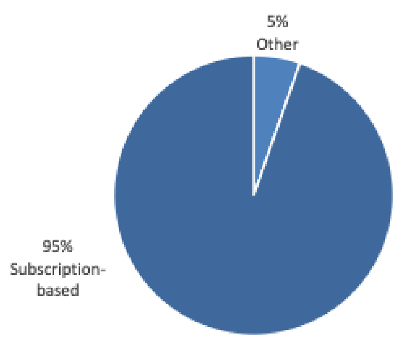
- Founded in 2001. First mover and market leader in financial close. Provides best-in-class software solution to a durable enterprise customer base with a gross retention rate of 90%+
- BlackLine's core product is financial close management (verifying account balances). Recent efforts have been to expand into accounts receivable automation and intercompany financial management (IFM)
- Today has >4,400 customers, a ~50% increase from 2019

Key Financials and Trading Statistics

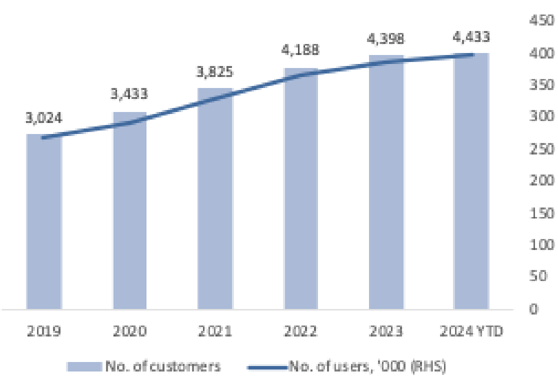
FY2024E Financial Summary	
Revenue	$652
Gross Profit	$517
% Margin	*79%*
EBITDA	$161
% Margin	*25%*
Net Income	169x
% Margin	*16%*
EPS	$2.23
Free Cash Flow	$170

Trading Summary	
Date	11/17/2024
Price ($)	$59
52-Week Range	$43 - $69
Market Cap ($M)	$3,923
Enterprise Value ($M	$4,023
EV / NTM Sales	6x
ADTV	$40
3Y Target Price	$96
Upside	62%

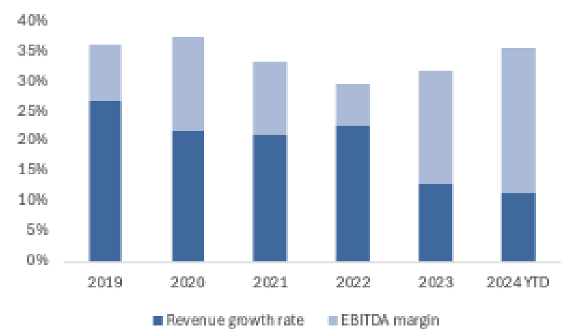
Revenue Breakdown



Customer Base Growth



"Rule of 40"

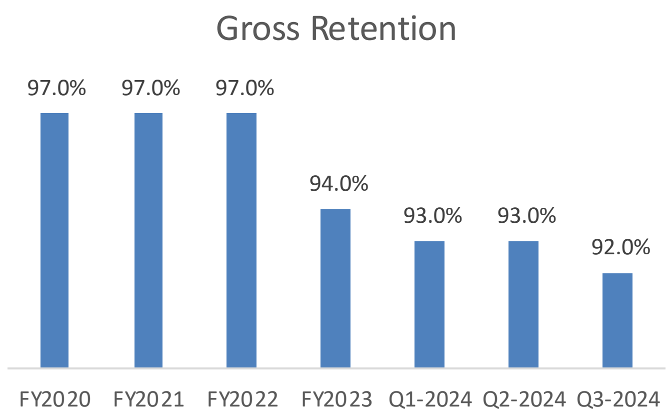


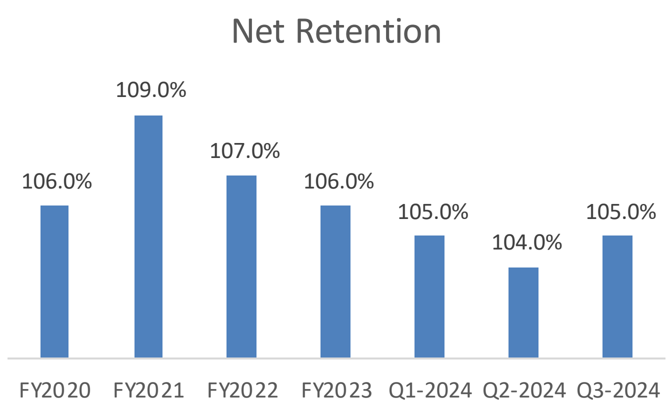
Misunderstood strategic change

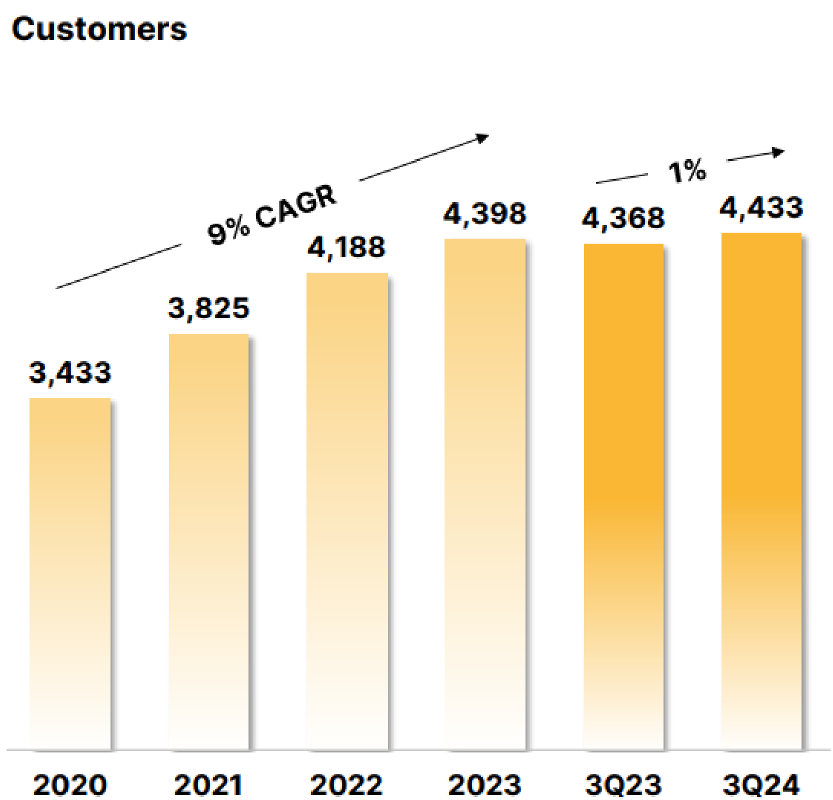
Markets are overly concerned with short-term headline metric dips caused by changing mid-market strategy

Management is driving a fundamental shift in go-to-market strategy to focus on enterprise clients through strategic parters, leading to short-term dips in headline metrics driven by the bottom 2% revenue contributors falling off

"Let me elaborate on the **strategic evolution in the middle market**. We continue to sharpen our focus on large enterprises as well as **mature or rapidly growing mid-market companies**…While our tighter focus on these middle market customers has **temporarily impacted our headline customer count and retention figures**, the economics are compelling."
– Owen Ryan, Co-CEO & Chairman of Board, Q3'24 Earnings



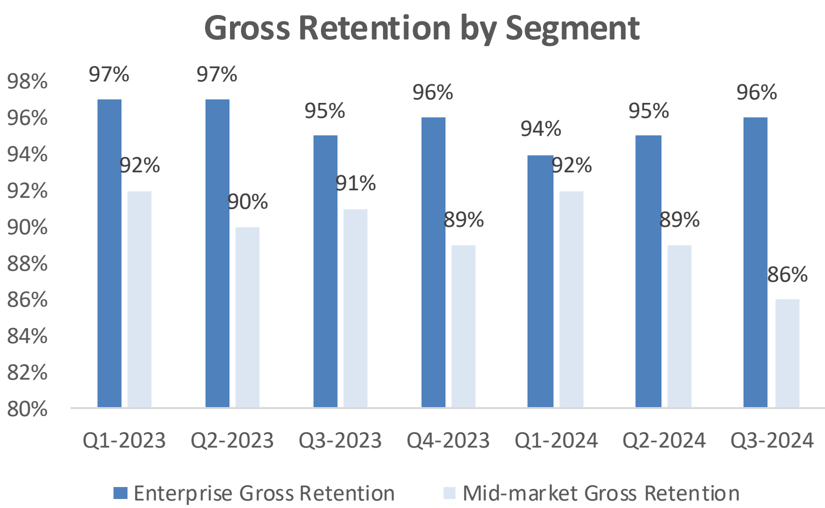




Misunderstood strategic change

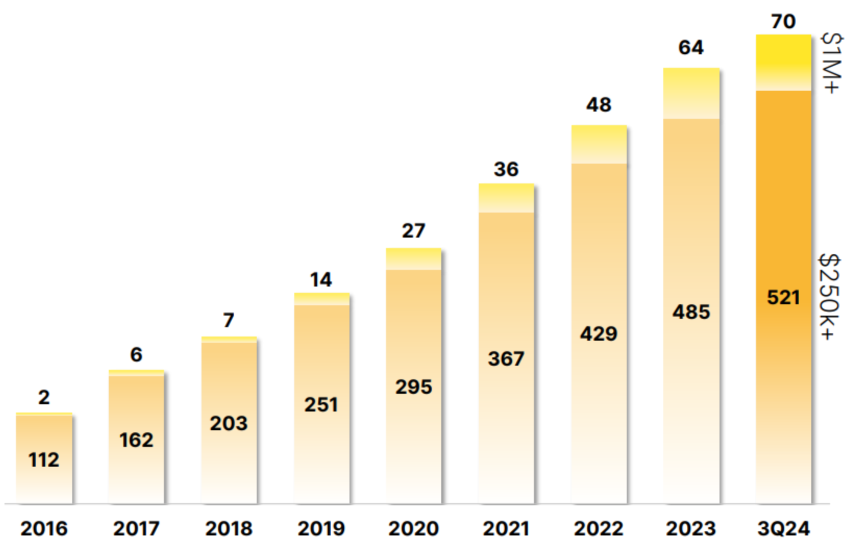
Meanwhile, strategic enterprise segment is healthier than ever

Improvement in enterprise gross retention hidden by decline in mid-market gross retention



- Mid-market represents 25% of ARR but half of customers
- BlackLine expects bottom 2% of revenue contributors to drop off by end of 2025 (signed 3-year contracts at the end of 2022).

Outsized growth in number of enterprise customers spending $250K+



- 58% CAGR in number of customers spending $1M or more
- 24% ARR CAGR in number of customers spending $250K or more
- Aligning sales team with strategic partners to acquire enterprise customers with more cost-efficient ways

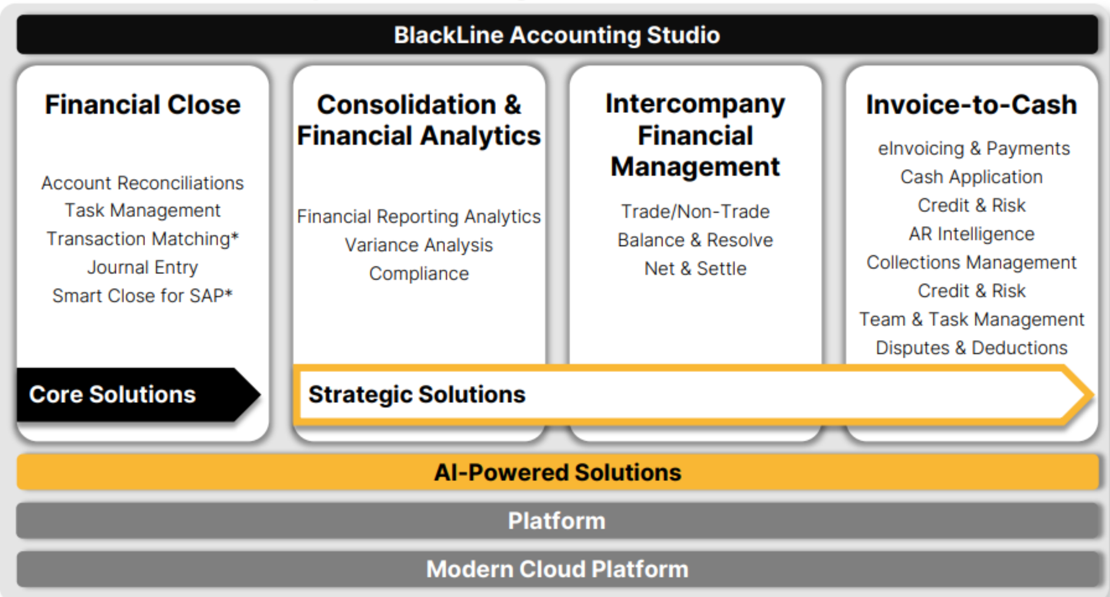
Enterprise focus enables platform growth

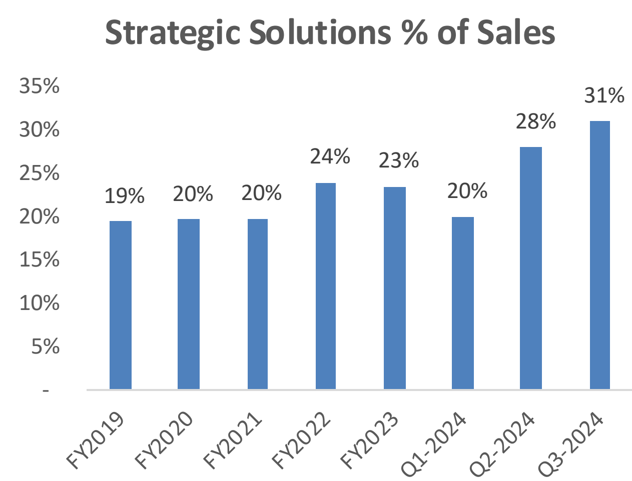
BlackLine is amidst transition from financial close point solution to broader Office of the CFO platform

BlackLine has expanded product offering into key strategic adjacencies beyond financial close

Strategic products show growing uptake among enterprises

BlackLine's Financial Operations Management Platform:





- BlackLine employs a classic land and expand sales model, with significant opportunity to capture additional revenue from its enterprise customer base by selling additional solutions, adding users, and driving further consumption
- Strategic Solutions portfolio significantly increases customer Annual Contract Value (ACV) when sold, with an estimated 20%-30% ACV increase due to the higher selling price (independent of user growth)
    - Upselling Strategic Solutions, which are currently growing faster than overall company revenue, is key to future growth

Mission-critical product with no true enterprise competitors

BlackLine's competitive positioning enables significant pricing power and will result in continued low enterprise churn

BlackLine is the recognized enterprise market leader; competitors cannot handle large enterprise complexity and focus down-market

- BlackLine is a mission-critical product for enterprise customers
  - BlackLine typically replaces spreadsheets and manual financial close processes that are error-prone
  - Accounting errors result in fines that scale with revenue, as well as reputational damage and often personal liability for management
  - Office of CFO tends conservative and slow to adopt new technology, but similarly unlikely to rip out existing solutions
- BlackLine is the only enterprise offering that can handle complexity of financial close and other strategic Controller processes
  - Trintech and FloQast are financial close point solutions but focus on mid-market customers
  - OneStream, Oracle, SAP, and similar are broader ERP / Office of the CFO software suites that lack a sophisticated financial close solution
    - SAP sells BlackLine as add-on to its ERP customers

- **Pricing power**
- **Low enterprise churn due to mission-critical product with no viable alternatives**

IDC MarketScape Worldwide Office of the CFO Record to Report, 2024

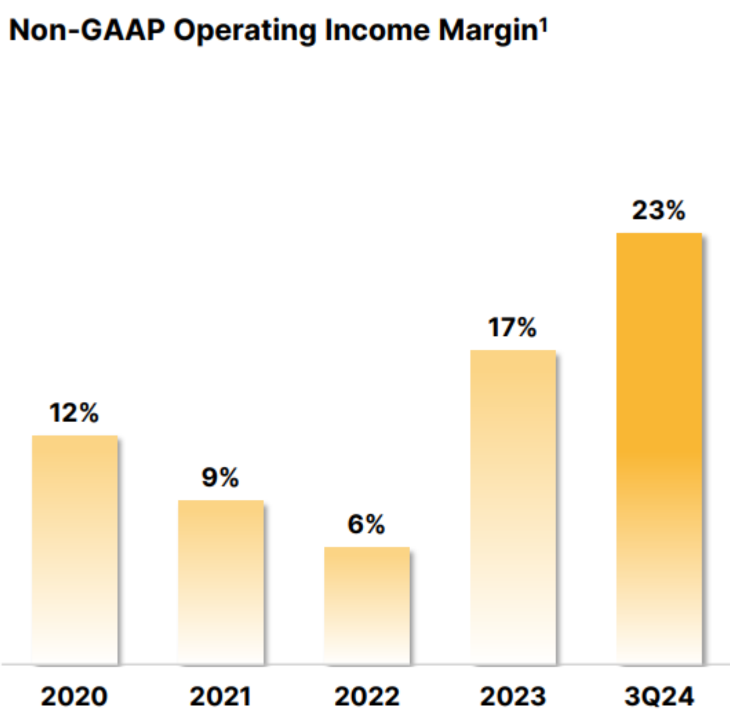
Source: IDC, 2024

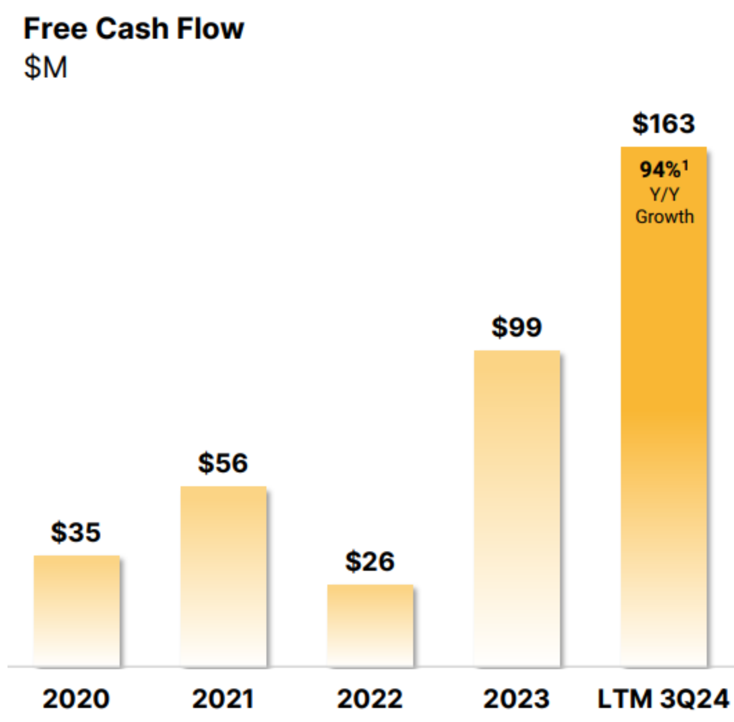
Enterprise expansion drives both growth and profitability

Landing and expanding with enterprises enables steady growth paired with increasing profitability

Enterprise focus has enabled BlackLine to lift margins and free cash flow, with further operating leverage to come from SAP partnership and land-and-expand strategy

- Enterprise and growth-mid-market customer focus improves Sales & Marketing spend efficiency
  - Acquisition and support cost for smallest customers drags down profitability
  - SAP partnership increases efficiency of “land” strategy among enterprises, since SAP reps incentivized to sell BlackLine
  - Significant operating leverage from “expand” strategy due to higher selling prices of Strategic Solutions products





Value BlackLine at 6.0x NTM Sales

1Y and 3Y price targets result in 29% and 62% upside, with 18% 3Y IRR

Financial Summary

	FY2023	FY2024	FY2025	FY2026	FY2027
Revenue	$590	$652	$725	$837	$972
% Growth	*13%*	*11%*	*11%*	*15%*	*16%*
Consensus Revenue	-	-	$711	$782	$829
% Growth	-	-	*9%*	*10%*	*6%*
Gross Profit	$469	$517	$586	$678	$797
% Margin	*79%*	*79%*	*81%*	*81%*	*82%*
EBITDA	$127	$161	$194	$223	$264
% Margin	*22%*	*25%*	*27%*	*27%*	*27%*
Net Income	$145	$169	$175	$205	$260
% Margin	*214%*	*16%*	*4%*	*17%*	*27%*
EPS	$1.95	$2.23	$2.52	$2.99	$3.70
% Growth	*208%*	*14%*	*13%*	*19%*	*24%*
Consensus EPS	-	-	$2.27	$2.56	-
% Growth	-	-	*2%*	*13%*	-
Capex	$28	$28	$48	$48	$48
Free Cash Flow	$99	$170	$195	$228	$292
Net Debt	$205	$29	($162)	$288	($2)

Valuation

	FY2025	FY2026	FY2027
NTM Sales	$837	$972	$1,135
EV/NTM Sales	6.0x	6.0x	6.0x
Enterprise Value	**$5,022**	**$5,835**	**$6,811**
Net Debt	($162)	$288	($2)
Noncontrolling Interest	$15	$3	($9)
Equity Value	**$5,169**	**$5,544**	**$6,822**
Diluted Shares Outstanding	67.6	69.2	70.9
Target Price	**$76.46**	**$80.09**	**$96.24**
Upside	***29%***	***35%***	***62%***
IRR	***29%***	***16%***	***18%***

Attractive risk / reward dynamics

Risk / reward is attractive given private equity takeout valuation floor

Recent private equity software take-privates have valued companies at a median of 9.0x NTM Sales; likely that BlackLine would be acquired for 7.0-9.0x NTM Sales if public market valuation falls below 5.0x

Company	Date	Acquirer	Offer Price Per Share	Enterprise Value ($M)	EV/Sales TTM	EV/Sales NTM	% Revenue Growth YoY	EV/Sales/Growth
Precedent Transactions								
Qualtrics	January 26, 2023	Silver Lake	$18.15	$11,625	8.0x	7.0x	14%	0.49x
Coupa	December 12, 2022	Thoma Bravo	$81.00	$8,000	9.8x	8.6x	14%	0.61x
KnowBe4	October 12, 2022	Vista Equity Partners	$24.90	$4,300	14.9x	11.6x	29%	0.40x
ForgeRock	October 11, 2022	Thoma Bravo	$23.25	$2,300	12.2x	8.8x	38%	0.23x
Avalara	August 8, 2022	Vista Equity Partners	$93.50	$8,400	11.2x	9.2x	21%	0.43x
Zendesk	June 24, 2022	Hellman & Friedman and Permira	$77.50	$10,200	6.4x	5.7x	14%	0.42x
SailPoint	April 11, 2022	Thoma Bravo	$65.25	$6,900	15.7x	13.2x	19%	0.71x
Anaplan	March 20, 2022	Thoma Bravo	$66.00	$10,400	17.6x	14.0x	26%	0.54x
Average					**12.0x**	**9.8x**	**22%**	**0.48x**
Median					**11.7x**	**9.0x**	**20%**	**0.46x**

- BlackLine has everything private equity firms look for in a software company:
  - High gross and net retention
  - High gross margins
  - Ability to increase operating margins to ~30%+ through cost reductions
  - Strong cash collection driven by upfront annual billing to support high leverage levels
  - Mission-critical product with large and diverse enterprise customer base
- Clearlake took a ~9% stake in BlackLine in 2022, and other firms have been rumored to be looking at the company as a takeout candidate

Trading History

BlackLine currently trades at a discount to C-suite software peers after historically trading in-line

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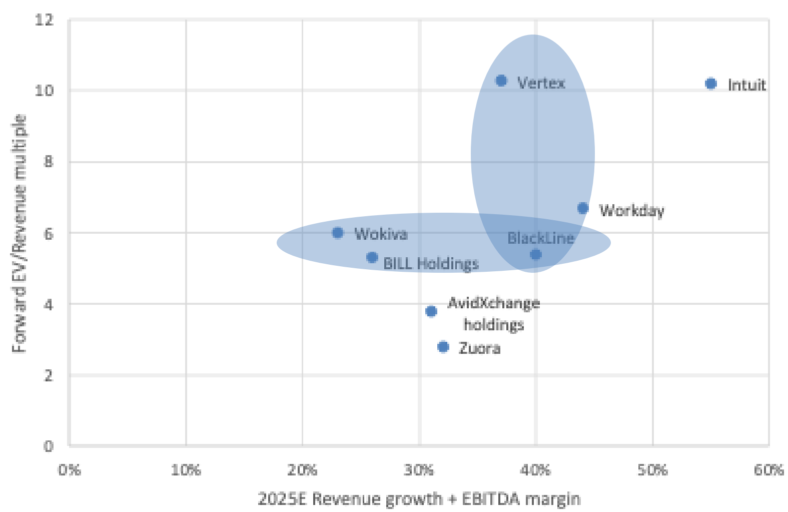
Trading Comps

BlackLine is trading at a discount to C-suite software peers

Public Comps as of 11/17/2024

	Stock Price	% LTM High	Market Cap	Enterprise Value	EV / Revenue CY2023A	EV / Revenue CY2024E	EV / Revenue CY2025E	EV / EBITDA CY2023A	EV / EBITDA CY2024E	EV / EBITDA CY2025E	Revenue Growth CY2023A	Revenue Growth CY2024E	Revenue Growth CY2025E	EBITDA Margin CY2023A	EBITDA Margin CY2024E	EBITDA Margin CY2025E
BlackLine, Inc. Consensus	**$59.31**	**86%**	**$3,729**	**$3,830**	**6.5x**	**5.9x**	**5.4x**	**30.2x**	**23.4x**	**21.1x**	**13%**	**11%**	**9%**	**22%**	**25%**	**26%**
Financial Software Peers																
AvidXchange Holdings, Inc.	$10.44	77%	$2,158	$1,845	4.8x	4.2x	3.8x	NM	23.3x	18.1x	20%	15%	10%	8%	18%	21%
BILL Holdings, Inc.	$84.69	93%	$8,765	$8,267	6.9x	6.0x	5.3x	47.5x	31.7x	37.0x	39%	16%	12%	15%	19%	14%
Intuit Inc.	$687.87	96%	$193,227	$195,720	13.0x	11.6x	10.2x	32.2x	28.9x	24.8x	10%	12%	14%	40%	40%	41%
Vertex, Inc.	$49.10	93%	$7,775	$7,841	13.7x	11.8x	10.3x	NM	NM	46.0x	16%	16%	15%	18%	22%	22%
Workday, Inc.	$259.41	83%	$68,482	$64,473	8.9x	7.7x	6.7x	31.9x	26.5x	22.1x	17%	16%	14%	28%	29%	30%
Workiva Inc.	$91.28	87%	$5,140	$5,155	8.2x	7.0x	6.0x	NM	NM	NM	17%	17%	16%	2%	5%	7%
Zuora, Inc.	$9.90	91%	$1,522	$1,384	3.2x	3.0x	2.8x	21.1x	13.4x	11.7x	9%	6%	8%	15%	22%	24%
Median					**8.2x**	**7.0x**	**6.0x**	**32.0x**	**26.5x**	**23.5x**	**17%**	**16%**	**14%**	**15%**	**22%**	**22%**



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Risks & Mitigants

BlackLine's enviable competitive position largely insulates it against longer-term risks

Risk	Likelihood	Mitigant
GenAI impact on number of accountant seats may hurt growth	Moderate	• Companies implementing BlackLine typically redirect their accountants' time to higher value-add activities rather than reducing number of seats • Office of CFO is typically more conservative and slower to adopt new technologies like genAI • BlackLine has pricing power so can price appropriately as more genAI tools are built into the products or change the pricing model entirely
ERP vendors like SAP may create competitive offering	Low	• SAP and BlackLine have a strategic partnership; market participants cite that customers often choose BlackLine first, and that SAP likes to promote BlackLine as a "quick win" with customers • Large multinational corporations often use multiple ERPs, and BlackLine is ERP-agnostic and can integrate across multiple
Enterprises could fail to adopt Strategic Solutions portfolio	Low	• Strategic Solutions portfolio has already shown steady uptake among enterprise customers, growing to over 30% of revenue in Q3'24 • Strategic Solutions products are more closely tied to cash-generating activities (i.e., working capital management), which have an easily demonstrable ROI

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Questions?

Primary Research Summary

Management access

- Investor day (virtual attendance)
- Call with IR (Matt Humphreys)

Tegus Transcripts

- System integration partners
  - Nordic Head of Cognizant Automation & AI Practice at Cognizant
  - Senior Director of Global Delivery at Cognizant
  - Senior Manager of Technology Delivery at Accenture
- Customers
  - Former Chief Financial Officer, Olam Agri at Olam International
  - Director of Internal Audit (Chief Audit Executive) at Ruiz Foods
- Competitors
  - Senior Strategic Product Manager at FloQast
  - Panel: Blackline and Accounting Software Solutions
- Former employees
  - Former Account Director at BlackLine

IR Takeaways

BlackLine IR provided insights on strategy shift: at/through most of churning and see promising potential from sales efforts aligned with partners/enterprise customers

Color on strategy shift

1). mid-market churn

- Expect bottom 2% of revenue contributors to drop off; don't expect to be a significant revenue headwind
- In practice: not allocating incremental resources to retain these customers (~$66k per year type) with 3-year contract. Have not grown since acquired in Nov/ Dec, 2022.
- Current progress: at or through the majority of it, expect to run for another 4 quarters and complete by end of 2025

2). Focus on enterprise clients by leveraging partner connections

- Go-to-market strategy focuses aligning sales teams with system integrator (SI) partners; productivity improvements not reflected in the numbers yet, but likely will overtime
- Benefits of leveraging partners: lower acquisition costs, higher renewal rates, more efficient sales process, higher operating leverage and contribution margin
- Economics: consistent across direct sale or through partners (resellers vs. referral partners which entail referral fees); dollar value in contracts the same

Pricing model shift

- Unlimited seats model and price based on volume/transaction based, allows to open up user base across the firm
- Expect incremental revenue capture beyond 2025
- Helps mitigate AI headwinds/reliance on per-head model

Capital allocation

- FCF generation: operating margin in the 26-30% (FCF similar); 1bn in FCF forecasted over 3-5years
- Cash on b/s: invest in organic growth, $200mn share repurchase + M&A focused on assets for complementarity or adjacency
- Convertible debts due, no more terms until 2020

R&D agenda

- 12-15month: build out development center in India, R&D team headcount in India for better efficiency
- Areas of focus: consolidation of internal reporting, platform investments, connectivity/API, maintain consistent spend with better productivity

Market Perspectives

Comments on market environment:

"24, there have not been any growth for any of these products, they are almost on the same level, but the next one, one and half years, I think, would be the game changer for them.

Why I'm saying 2025 or one and half years from now as a period where we can see this percentage to be drastically or at least in a double-digit figure changing just because what the companies have been promising since last one year or one and half years in the space of utilization of artificial intelligence and machine learning, that will be the time to showcase."

Risks associated with hyperscaler coming up with their own solution:
"None of these platforms, SAP or Oracle, offer a consolidated view between financial close, between financial planning, you have to do it in bits and pieces at a corporate level and then at a BU level."

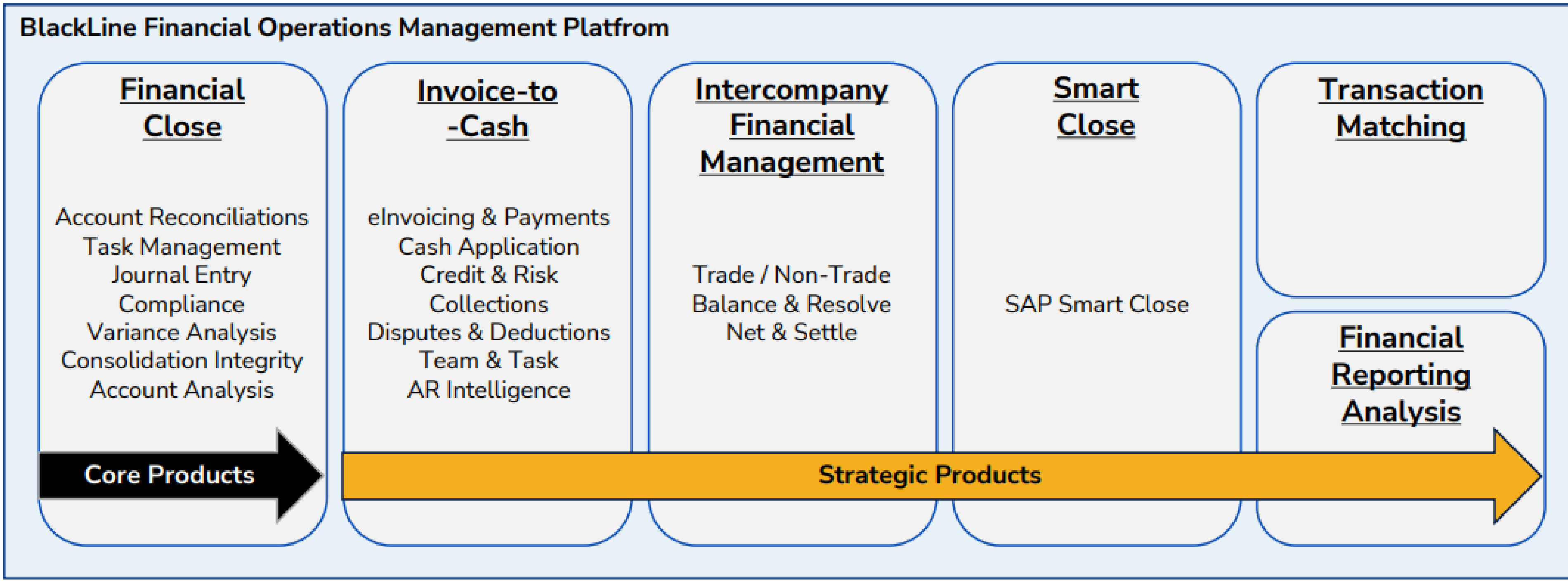
Growth runway:
"85% of organizations in my account, in my portfolio, still have key information residing on spreadsheets."

"Less than 13% of my customers in totality use either of these products. That represents a huge opportunity for me. I think that is pretty much a reflection of the overall industry. That is where 2025 should be a breakthrough year"

"Around 60%, 65% of the enterprise segment customer status is already occupied by some of these players and BlackLine is one of the prominent among those, but still, 30% to 35% of the customer space is there where it can be penetrated or there is a space to go through."

Customer churn:
"No customer has left BlackLine for the want of a feature or for the want of anything that BlackLine could offer. It was basically more of an organization's decision, and it was largely influenced by either Oracle or SAP."

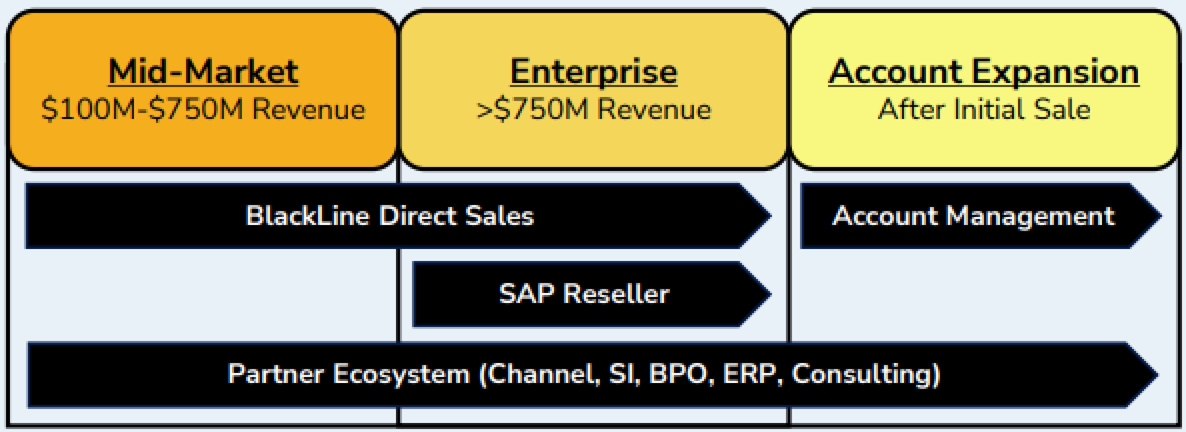
Product Suite



Customers & GTM

Customer Strength Across Geographies, Sectors, and Sizes

BlackLine GTM & Customer Strategy



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November 24, 2024

Team Number: Equity Team 14

Students: Shivi Lakhtakia, Anik Mehta, Taylor Lemmon

Executive Summary

Recommendation

Recommendation: BUY
Target price: $114
Current Price: $75
Upside: 53%

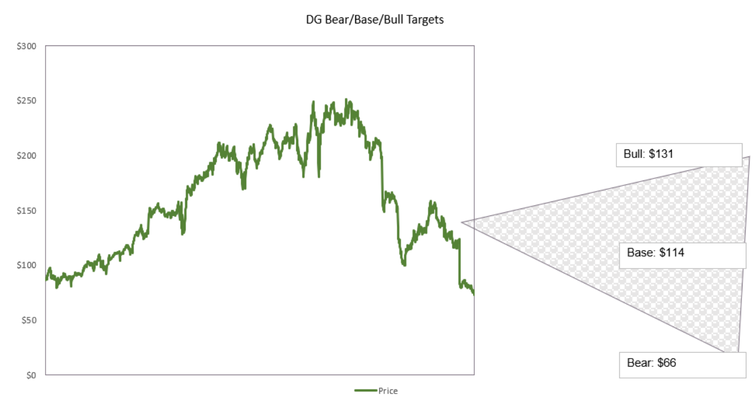
Key Metrics

Dollar General	2018	2019	2020	2021	2022	2023	2024	2025E	2026E	2027E
Revenue	23,471	25,625	27,754	33,747	34,220	37,845	38,692	40,599	42,517	44,635
		9.2%	8.3%	21.6%	1.4%	10.6%	2.2%	4.9%	4.7%	5.0%
EBITDA	2,421	2,570	2,838	4,129	3,862	4,053	3,295	2,879	3,066	3,286
	10.31%	10.03%	10.23%	12.24%	11.29%	10.71%	8.52%	7.09%	7.21%	7.36%
P/E								13.09	12.31	11.07
EV/EBITDA	11.66	12.49	14.88	12.85	14.40	14.84	12.12	9.63	9.16	8.65

Investment thesis

- Comps recovering as macro stabilizes and DG woos customers with “back to basics strategy”
- Margins expanding above street est. as GM headwinds subside
- Store growth math still sound and should aid top line growth
- Valuation where we see ~60% upside

Valuation overview



Company & Industry Overview

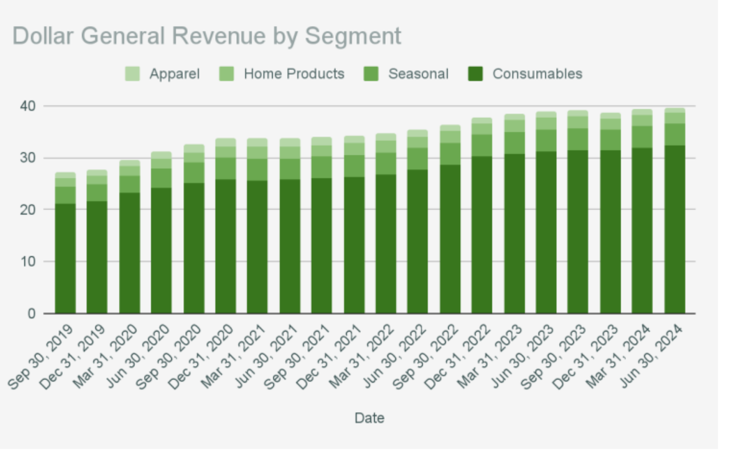
Company Overview

Dollar General operates a unique, value-focused retail model, offering a curated selection of low-cost household products, food, apparel, and seasonal goods. Its core competency lies in its operational efficiency, strategically located stores, and ability to deliver value to cost-conscious consumers.

~20K stores in 47 states

~70% Rural

Segment breakdown



Industry Overview

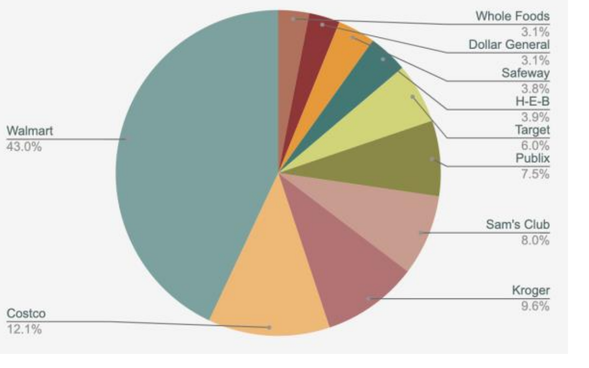
The U.S. value food retail industry serves budget-conscious consumers by offering **low-cost essentials and discretionary items** in convenient locations.

Dollar general primarily competes with Dollar Stores, including Family Dollar and Dollar Tree, as well as discount retailers such as Walmart, Target, Five Below etc.

Dollar general focuses on selling consumables and essentials to low income customers.

Store	Number of Stores (only U.S.)	Consumables mix %
Walmart	4,589	~50%
Target	1,956	~40%
Five Below	1598	Minimal
Family Dollar	8,359	~80%
Dollar Tree	7,641	~50%
Dollar General	**20,000**	**~80%**

*Family dollar is most similar to DG but there is minimal overlap; also Family Dollar stores have continued to underperform and be shut by Dollar Tree post merger



Source: Axios

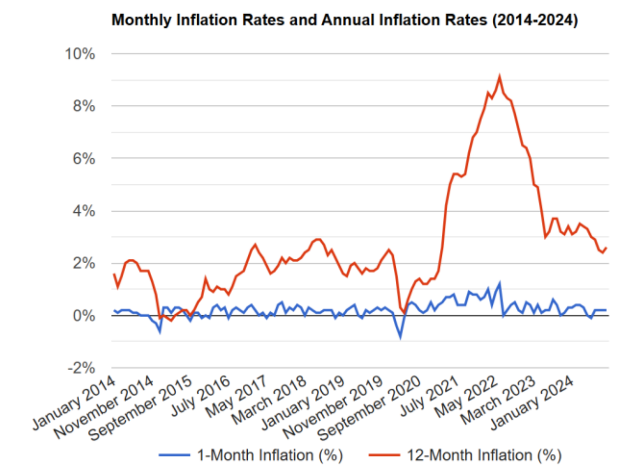
Why is DG trading at an all time low?

MACRO….has impacted DG's core customers the most

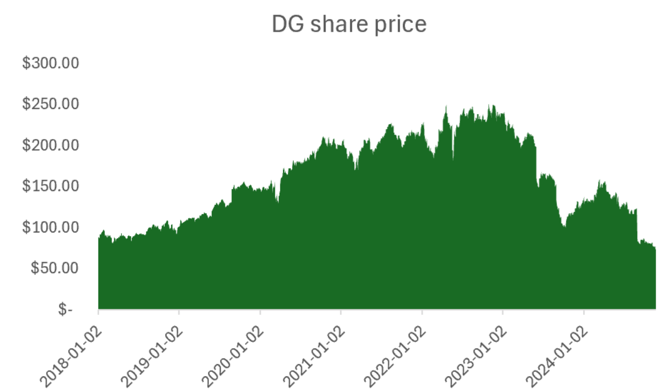
Following COVID-19, **U.S. inflation surged to a 40-year high of 9.1% in 2022** and is still normalizing

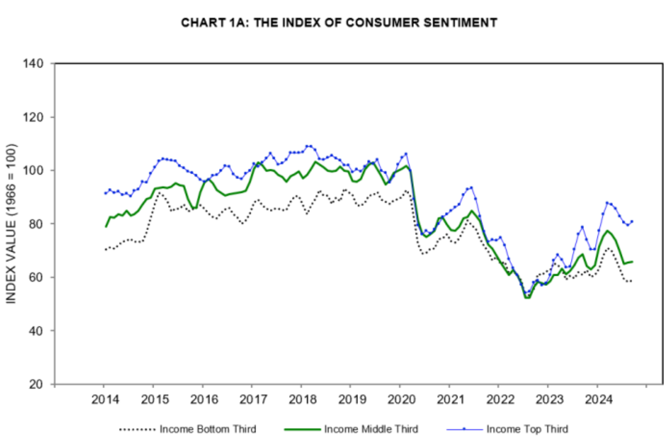
- This has **disproportionately impacted low income households** which spend more on essentials (Low income customers spends ~75% of their income on "essentials"
- **Decreased their purchasing power** for higher-margin discretionary goods
- The **rollback of Snap benefits also led to a sharp rise in food insufficiency** post the COVID-19 pandemic

All this has impacted **DG's core customer that targets customers making ~$35000 in the bottom quartile!**

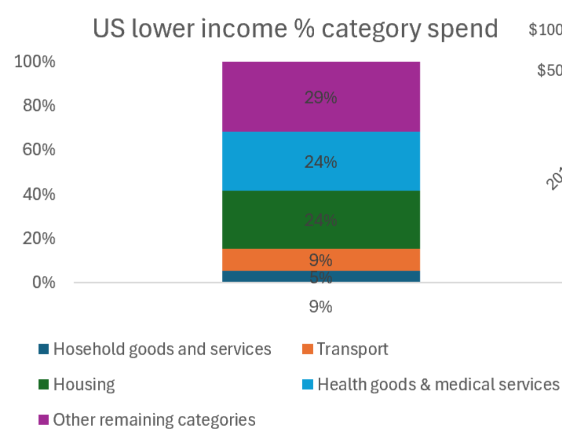


Source: usinflationcalculator.com





Source: University of Michigan



Source: Euromonitor

Why is DG trading at an all time low?

+ MANAGEMENT MIS-STEPS! Drove core consumers away

- Focus on **popshelf stores and discretionary** and **did not invest in pricing and essentials** category which is their **core differentiation**

- **Supply chain mis-execution**: In 2022 DG launched a "DGFresh" initiative to handle the supply of its fresh goods in house - but the shift was very poorly executed.. with increased shrink (loss due to inventory damage), stock outs and **~$95M in writedowns.**

- **Underinvestment in labour** - DG has some of the lowest employees per store - also leading to increase in shrink (due to theft) and consumers alienating the store due to poor hygiene conditions etc.

- **Executive turnover and miscommunication-** Issues led considerable turnover among senior management, particularly within **the supply chain and retail management teams.**
    - Jeff Owen's tenure (CEO from Nov 2022 to 2023) marred by mismanagement and miscommunications

Overall, company has lost share in the space to peers such as Walmart etc.

Source: company reports

Company	Rating /5	% Recommend working to a friend	CEO Approval rating
Dollar General	**2.7**	**31%**	**33%**
Dollar Tree	2.9	39%	55%
Family Dollar	2.8	40%	55%
Walmart	3.4	55%	58%
Target	3.5	58%	58%
Five Below	3.2	45%	62%

Source:glassdoor

DG has the poorest employee ratings vs peers!

Clutter might keep some consumers away, but Dollar General is the only choice for essential food items and home goods in many areas. Alex Bitter/Insider

Dollar General has reduced worker hours at many stores, leaving employees to choose between helping customers and stocking shelves

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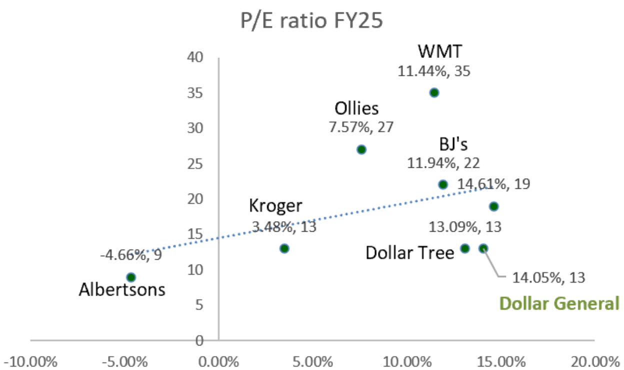
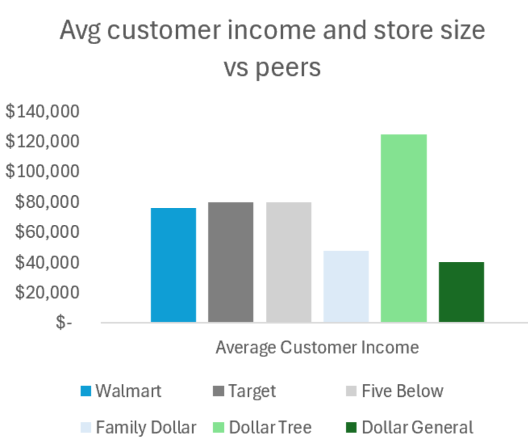
Why does the opportunity exists?

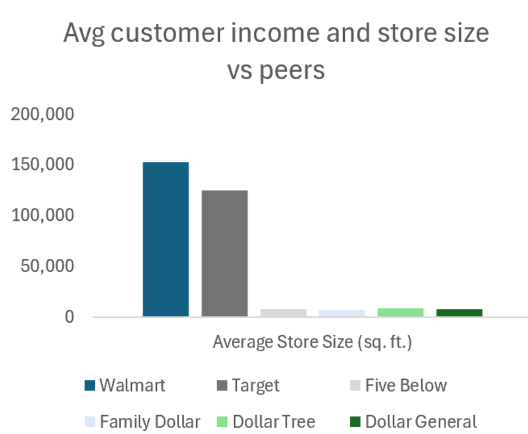
Market is valuing DG like a broken business…BUT we think it is fixable!

DG is valued attractively low for a DD EPS grower!



VS





DG's proposition remains unique and structurally relevant

DG's focus is on rural areas with **~70% of its stores in rural regions with <20000 population** vs peers are in more urban locations

DG **targets the low income consumer market with income <$40,000**

Avg basket size at Dollar general is ~$16 vs WMT at ~$50-60 with people shopping at DG for essentials and smaller packs as they cannot afford to go to WMT!

DG's **stores are much smaller with ~8000 sq ft. vs WMT's 150K sq ft**, made for customers to be in and out quickly!

The overlap between the Top 2 dollar chains is minimum with DLTR more urban, discretionary and higher income.

Where do we go from here? **We say UP!**

Comps recovering as macro stabilizes and DG woos customers with "back to basics strategy"

- Signs of macro stabilizing should ease pressure on DG's core consumer
- DG's "back to basics" strategy continues to drive customers back

Margins expanding above street est. as GM headwinds subside

- We see Gross margins recovering as shrink reduces and macro recovery leads to positive mix shift
- We see margins stabilizing at ~6.5%

Store growth Math still sound and should aid top line growth

- DG's store growth math is still sound and we expansion plans continuing to add to top-line albeit at a moderated pace

Valuation

- Pay ~11x P/E for a DD EPS grower
- ~70% upside and dividends and capital allocation add to the return story

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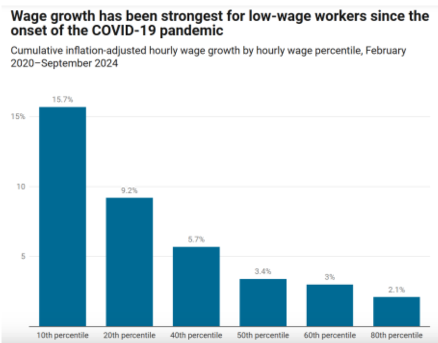
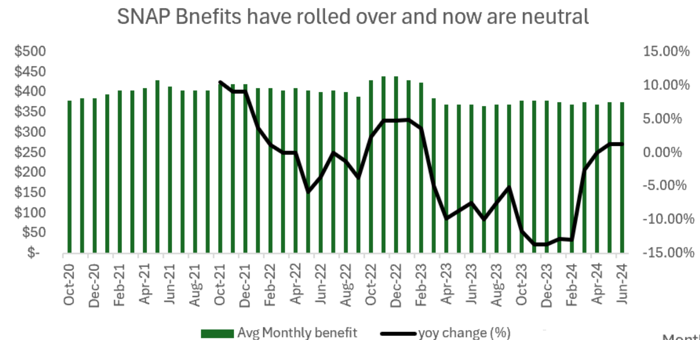
#1 Comps recovering as Macro stabilizes and DG woos customers with “back to basics” strategy

We see inflection in macro headwinds with inflation reduction and roll-over of snap benefits

Inflation is down to 2.6% on way to the target rate of ~2%; inflation reduction should aid purchasing power of the lower income consumer who remains employed and has seen wage growth above inflation



Source: Americanprogress.org



Source: USDA

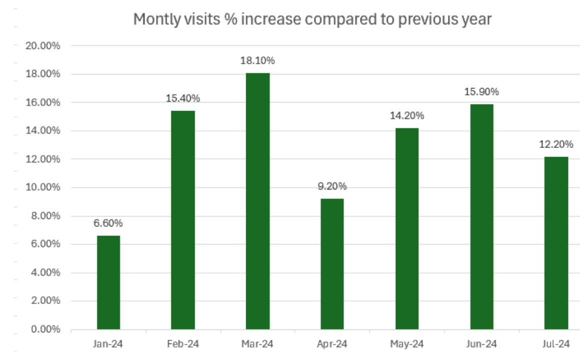
←Snap benefits are no longer a headwind to lower income consumer spend

DG’s “back to basics strategy” shows signs of traction

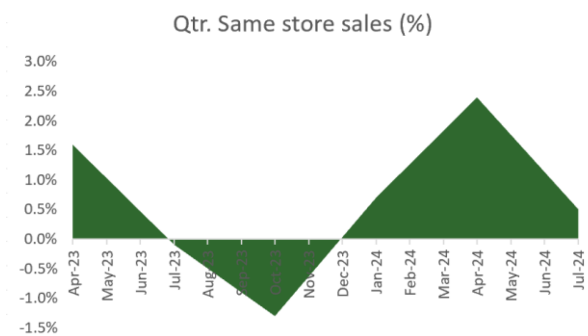
DG’s management is now focused on investing on its core value proposition in providing its customers with everyday essentials for value. DG calls it its “back to basics” strategy centered around its supply chain, store experience and merchandising. DG has

- **slowed pOpshelf (discretionary)** growth and focusing on essentials (previous target to reach 1000 stores by 2025 vs current ~231)
- Reduced no. of SKUs (~1000 SKUs expected to be reduced by 2024 end)
- Feels better regarding its price positioning and is investing in promotions
- Investing in customer experience and **increasing employee presence** to aid checkout

Efforts show traction with visits to store improving and DG sales inflecting positive



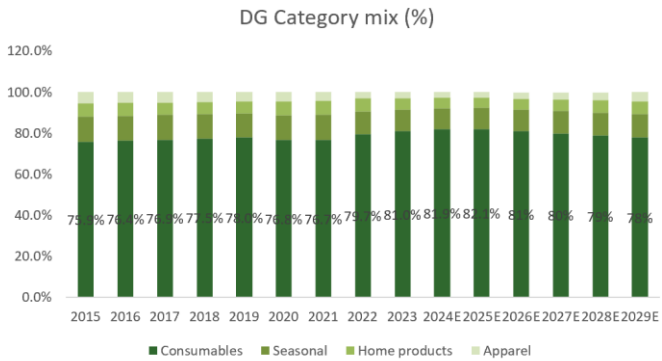
Source: Placer.ai



#2 Margins expanding above street est. as GM headwinds subside

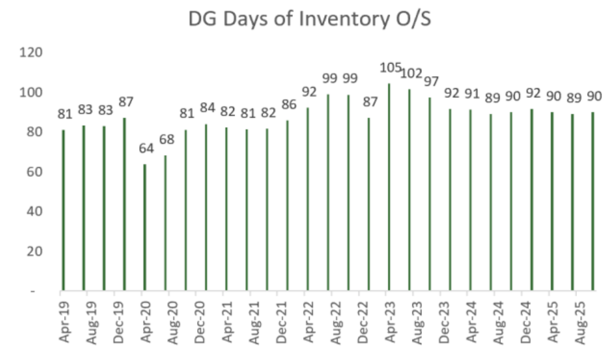
DG's Gross Margin **has been pressured due to negative mix shift and shrink headwinds,** but we see these headwinds **subsiding as macro headwinds and supply chain improves.**

Mix should improve due to shift back to discretionary



←We assume mix stabilizes for consumables at ~78% vs current high of ~82%

Supply chain stabilizing



←We assume inventory stabilizes at ~90 days

Potential Gross Margin Opportunity for DG	Description	Improvement
Shrink Reduction	Shrink has been a headwind for DG given increased inventory spoilage due to DGFresh and supply chain implementation and theft (~20bps headwind in 2024 alone). DG has noticed improvement in on-time and full deliveries, streamlined its distribution network and invested in labour to reduce spoilage which makes us confident this should improve.	**~50bps**
Category mix	DG's customers have been increasingly pressured and lowered their spending on discretionary goods at the store. This has pressured mix as Discretionary and seasonals are higher margin vs consumables. We expect this mix to trend positive as consumer headwinds subside	**~50-70bps**
DG media	DG has recognized a signficant opportunity with its Dollar General Media Networks business which is ~1-2% of its current business and provides a way for companies to access DG's customers. DGMN also expanded its capabilities by partnering with Meta, becoming the first retailer to offer closed-loop measurement of in-store sales through Meta platforms	**~15-20bps**
Total		**~115bps-140bps**

Management commentary makes us optimistic:
"We have made significant progress in stabilizing our supply chain operations, particularly with DG Fresh, leading to improved in-stock levels and overall efficiency" CEO Todd Vasos

←We conservatively estimate a margin uplift of ~100ps in total until 2029 from 2024

#2 Margins expanding above street est. as GM headwinds subside

We model LT margins below COVID-19 levels..driven by labour investments

While we see GM tailwinds and margins to recover we also expect DG's margins to be **below pre-COVID level primarily driven by the need to invest in labour.**

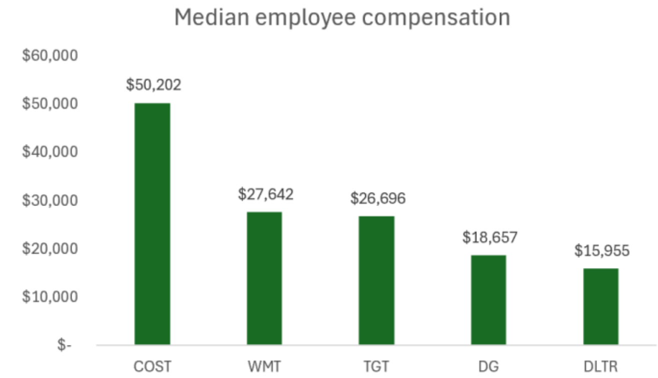
- DG has the **fewest employees per store**
- DG also **has some of the lowest median pay vs competitors**—>

While we believe DG has a structural advantage being in rural area to be able to pay lower $ to its customers, we also see the need for labour investments especially increasing employees per store.

We see labour impacting DG margins through following:

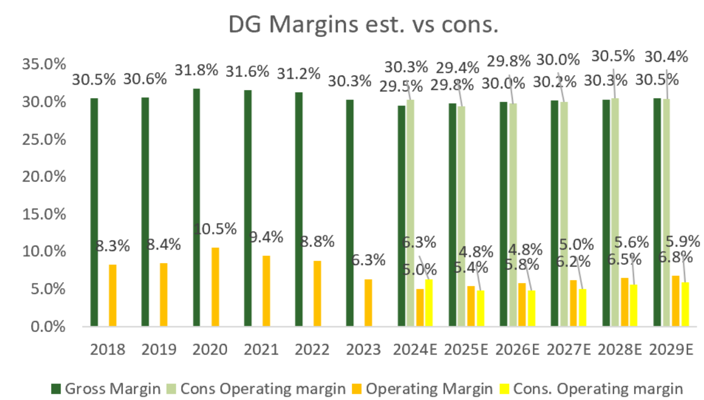
- DG outlined ~$150M investment in labour (increased from prev $100M) - **25bps headwind**
- **60 bps additional headwind** from additional labour (assuming DG adds 2 employees in busiest ⅓ stores)
- Increase in min. wage for its store employees in response to regulation (assuming it ups all its managers pay to ~58K from current ~$45K - **70bps headwind**

In total we see a ~100bps headwind from labour vs pre COVID-19; we conservatively **model margins ~1.5% below pre-COVID 19** level assuming negative relative mix and further investments in the business



Source: Company reports

Department of Labour has updated earnings threshold for exemptions from overtime and minimum wage requirements such that min. wage went up from ~$35K to ~44K; it is expected to go up further to ~$58K



#3 Store growth math still sound and should aid top-line growth

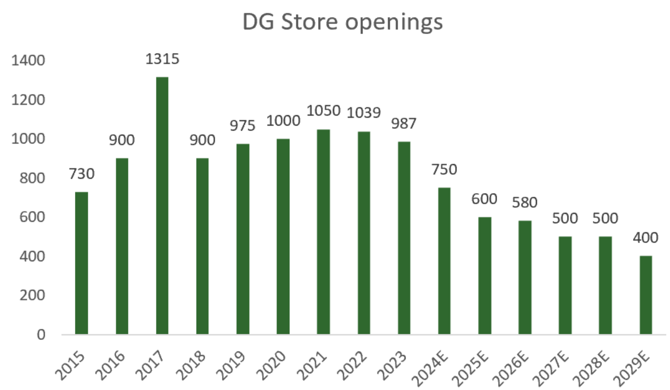
DG continues to see a significant store expansion opportunity

- Management had previously outlined it sees an opportunity of ~15K additional stores. DG was opening a ~1000K stores per year pre COVID-19 with growth now slowed to ~800 stores
- We give **DG the benefit of opening ~4500 stores over the next 10 years (1/3rd of their outlined opportunity), at a moderated pace of ~500-300 stores per year** consistent with the slight slowdown and DG's commentary to focus on its current stores
- We ran an IRR calculation to see return on a new store DG opens with new normalized margins. **IRR remains positive with levered IRR at ~44%** and thus, store expansion continues to create value for DG
- New stores add ~1-2% to DG's topline over our forecast horizon

New Store Economics (IRR Calculation)

Weighted Average Cost of Capital	9.00%
Cost of Debt (after-tax) =	4.00%
Perpetuity cash Flow Growth Rate	3.0%

Dollar General - New Store	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Terminal Value
Square Feet	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	7,300	
Sales per sq. ft		$208	$215	$221	$228	$234	$242	$249	$256	$264	$269	
Yr./Yr. Change			3%	3%	3%	3%	3%	3%	3%	3%	2%	
Store Productivity (assumes cannabalization in later years)		85%	95%	100%	97%	100%	100%	99%	98%	97%	97%	
Revenues ($M)		**$1.3**	**$1.5**	**$1.6**	**$1.6**	**$1.7**	**$1.8**	**$1.8**	**$1.8**	**$1.9**	**$1.9**	
yoy change			15.1%	8.4%	-0.1%	6.2%	3.0%	2.0%	2.0%	1.9%	2.0%	
Initial capex	($0.3)											
Pre-opening Expenses	$0.0											
Gross Margin		30.0%	30.2%	30.4%	30.5%	30.5%	30.5%	31.0%	31.0%	31.0%	31.0%	
Gross Profit		$0.4	$0.4	$0.5	$0.5	$0.5	$0.5	$0.6	$0.6	$0.6	$0.6	
Store Op. Exp (Store labor, & other)		24.0%	23.8%	23.7%	23.7%	23.7%	23.7%	23.7%	23.7%	23.7%	23.7%	
Store-Level EBITDA contribution	**$0.0**	**$0.08**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	**$0.1**	
Store-Level EBITDA Margin		**6.0%**	**6.4%**	**6.7%**	**6.8%**	**6.8%**	**6.8%**	**7.3%**	**7.3%**	**7.3%**	**7.3%**	
Cash Tax Expense (40.0% Rate)		($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.1)	($0.1)	($0.1)	($0.1)	
Incremental Working Capital (at 1.0% of Rev)		($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	
Maintenance CapEx (at 1.5% of Revs after Yr. 2)		$0.0	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	($0.0)	
Free Cash Flow, Unlevered	**($0.3)**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.6**
Annual Cash-on-Cash Return		13.2%	7.8%	9.6%	10.0%	10.6%	10.9%	13.3%	13.5%	13.8%	14.1%	
Project IRR, Unlevered	**16%**											
Discount Factor	1.00	0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46	0.42	0.39
PV of Yearly Cash Flow	($0.3)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2
Debt Balance	($0.3)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.1)	($0.1)	($0.1)	($0.1)	($0.0)	
Interest Expense	0.00	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	
Free Cash Flow, levered	**($0.1)**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.6**
Annual Cash-on-Cash Return		45.9%	20.9%	30.8%	33.8%	38.3%	41.4%	54.7%	58.2%	61.8%	65.7%	
Project IRR, Levered	**45%**											
Discount Factor	1.00	0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46	0.42	0.39
PV of Yearly Cash Flow	($0.1)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2



#4 Valuation

Market is underpaying for a DD EPS growth company. We expect **DG's EPS to grow by ~18% CAGR over the next 5 years** driven by fundamental recovery and share buy-backs.
We expect DG to **deliver total return of 60%** with

- ~53% upside in share price
- ~3% dividend
- ~4% share buy-back appreciation (albeit this is from 2026 and not included in our 1Y target)

Bear Case: $66
~12% downside

- We see comps stabilizing at ~1.5% LT
- New store growth adds 1% to top-line growth
- GM remains flat
- Margins stabilize at trough of ~5.4%

Base Case: $114
~53% upside

- We see comps stabilizing at ~2.5% LT
- New store growth adds 1-2% to top-line growth
- GM expands to ~30.5% (by 100 bps)
- Margins stabilize at 6.8% (150 bps below pre-COVID-19

Bull Case: $131
~76% upside

- We see comps stabilizing at ~2.5% LT
- New store growth adds 2% to top-line growth
- GM expands to ~30.8% (by 130 bps)
- Margins stabilize at 7%

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#4 Valuation

(mm's, except per share amounts)

								1	2	3	4	5	6	7	8	9	10
	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Revenues	$23,471	$25,625	$27,754	$33,747	$34,220	$37,845	$38,692	$40,371	$42,239	$44,087	$45,965	$47,844	$49,710	$51,558	$53,388	$55,195	$56,851
Revenue Growth (%)	7%	9%	8%	22%	1%	11%	2%	4.3%	4.6%	4.4%	4.3%	4.1%	3.9%	3.7%	3.5%	3.4%	3.0%
EBIT	2,017	2,116	2,333	3,555	3,221	3,328	2,446	2,029	2,261	2,558	2,828	3,087	3,356	3,481	3,605	3,727	3,839
EBIT Margin	9%	8%	8%	11%	9%	9%	6%	5.0%	5.4%	5.8%	6.2%	6.5%	6.8%	6.8%	6.8%	6.8%	6.8%
Taxes	682	426	496	749	664	701	458	393	447	514	575	633	694	722	750	777	864
Tax rate	35.6%	21.1%	22.2%	22.0%	21.7%	22.5%	21.6%	22.4%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%
After Tax EBIT	1,334	1,690	1,837	2,805	2,557	2,628	1,988	1,636	1,813	2,044	2,253	2,454	2,662	2,759	2,855	2,949	2,975
D&A	404	454	505	574	641	725	849	917	929	970	1,103	1,148	1,243	1,289	1,335	1,380	1,380
Capital Expenditures	-646	-734	-785	-1,028	-1,070	-1,561	-1,700	-1,397	-1,463	-1,433	-1,379	-1,316	-1,243	-1,289	-1,335	-1,380	-1,380
Change in WC	-52	-36	-92	532	-558	-1,995	-332	341	-944	-1,488	-4	-12	-24	-28	-40	-52	-52
FCFF	**$1,040**	**$1,374**	**$1,466**	**$2,883**	**$1,569**	**($203)**	**$805**	**$1,496**	**$336**	**$92**	**$1,973**	**$2,274**	**$2,638**	**$2,731**	**$2,815**	**$2,898**	**$2,923**
Yr./Yr. Growth (%)	-6%	32%	7%	97%	-46%	-113%	-496%	86%	-78%	-73%	2038%	15%	16%	4%	3%	3%	1%

Risk-free rate (10-year Treasuries) =	3.66%
Target debt to equity (market value) =	**15.0%**
Equity risk premium (a) =	**4.05%**
Beta =	**0.70**
Cost of Equity =	6.50%
Cost of Debt (after-tax) =	**3.89%**

WACC =	**9.00%**
Perpetuity Growth Rate =	**2.0%**
Cash Interest Rate =	**0.5%**

	11-24-24
Present Value of FCF	$11,203.8
Perpetuity PV	18,784.8
Enterprise Value	**29,988.6**
Cash	1,222.7
Less Value of Options Issued (a)	(190.8)
Less Book Value of Debt	6,235.2
Equity Value	**25,167.0**
Diluted Shares Outstanding	220.1
Target Share Value	**$114**

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Risks & Catalysts

Risks

Lower income consumer remains pressured- Inflation remains high pressuring lower income consumers and their purchasing power.

Mitigants: We see inflation normalizing; lower income consumer has experienced wage growth above inflation. Post headwind reset, consumers should return to higher discretionary spend.

Execution and margin risk- Management track record has been lackluster. While Todd Vasos has come back, execution may still play out well and margins may not recover

Mitigants: Management focused on key differentiation of business model and has acknowledged past mistakes. We see strategies resonating with consumer and model out margin recovery conservatively vs opportunity.

Increasing Competition - DG and Dollar Stores may be structurally challenged and cede share to Walmart

Mitigants: DG with its low-income consumer exposure, store size, and rural footprint is protected from Walmart. DG is used more for fill-in quick trips.

Catalysts

1. Earnings downgrade cycle is over
2. Management continues to execute on strategy and same store sales trend positively

Appendix

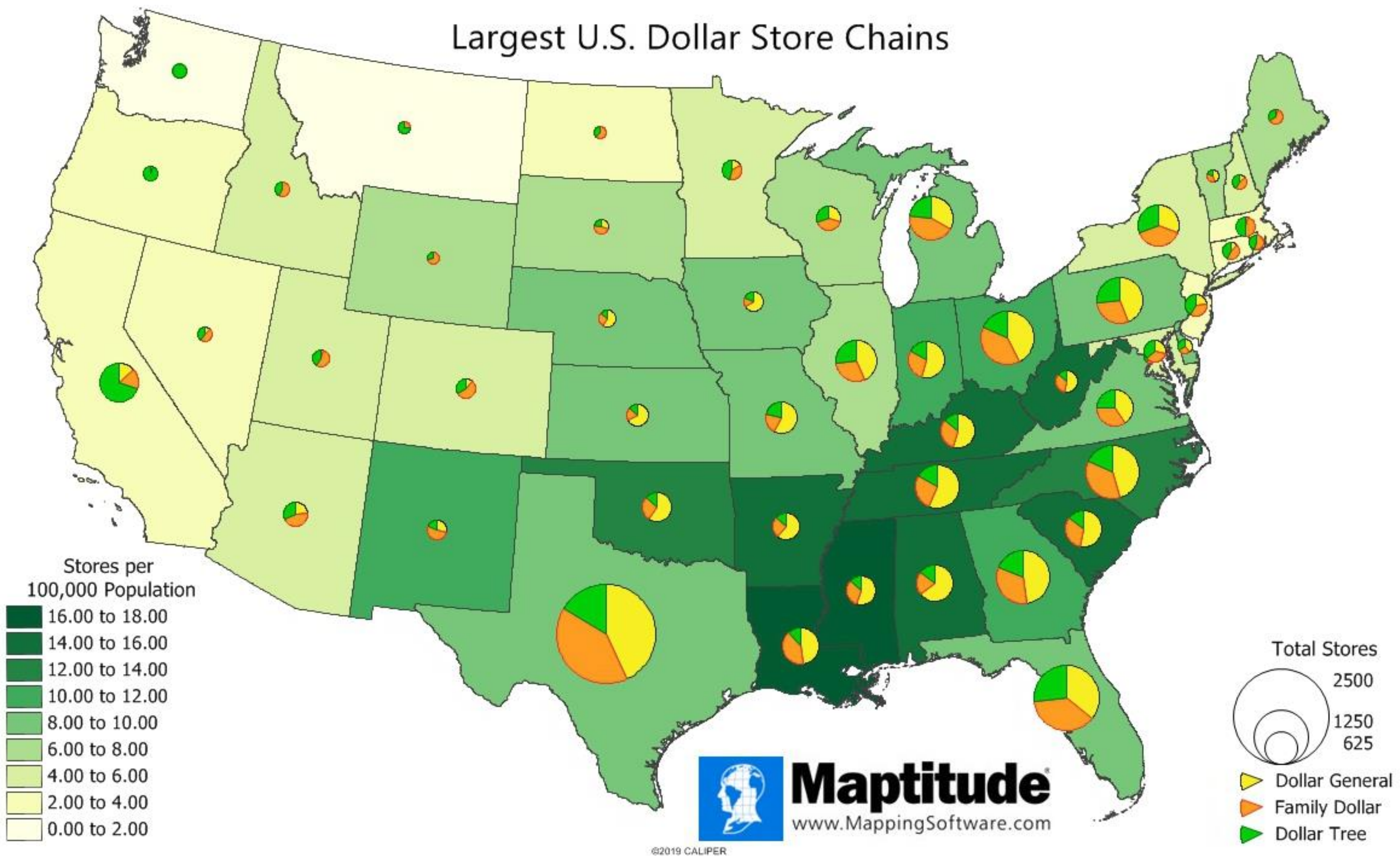
Appendix I

Relative Valuation

Company Name	Market Data: Price ($/share)	Mrkt. Cap ($M)	EV ($M)	Fwd P/E: NTM	FWD EV/EBITDA: NTM	FY24	FY25	FWD Sales Growth: FY2025	FY2026	Fwd EPS growth: FY2025	FY2026	FY2027	Net Debt/ EBITDA: Current
Albertsons Companies	$ 19.1	$ 11,222	23,286	8.57x	6.28x	5.39x	6.35x	1.77%	1.83%	-21%	0%	2%	1.83x
Dollar Tree, Inc	$ 66.4	$ 14,275	34,431	11.31x	8.76x	13.09x	9.14x	0.34%	3.67%	-8%	12%	13%	1.04x
Walmart, Inc	$ 90.4	$ 726,979	467,288	32.74x	16.82x	12.02x	17.86x	5.22%	0.42%	11%	11%	12%	0.88x
BJs Wholesale Club	$ 96.7	$ 12,826	11,510	22.43x	12.99x	10.64x	13.92x	3.20%	6.32%	-3%	10%	11%	2.68x
Ollie's Bargain Outlet Holdings, Inc	$ 94.6	$ 5,804	4,581	25.84x	17.60x		18.59x	8.70%	11.13%	12%	13%	10%	-1.28x
Dollar General	**$ 74.9**	**$ 16,478**	**39,942**	**12.80x**	**11.38x**	**12.12x**	**11.74x**	**4.93%**	**4.72%**	**-23%**	**6%**	**11%**	**1.96x**
Average	**$ 73.7**	**$ 131,264**	**96839.62**	**18.95x**	**12.31x**	**10.65x**	**12.93x**	**4.0%**	**4.7%**	**-5.2%**	**8.9%**	**9.9%**	1.19x

Appendix II

Dollar Stores Location



December 5th, 2024

Team: 17

Students: Francesco Brassesco, Sophia Mao, Silvio Guaita

Long: NVR (NYSE: NVR)

Current Price: $9,207 (11/26/2024) | **2025 Price Target:** $11,447 (25% Upside)

Company Overview – NVR Inc.

Leading the Residential Construction Industry with an Asset-Light Model and Strategic Focus

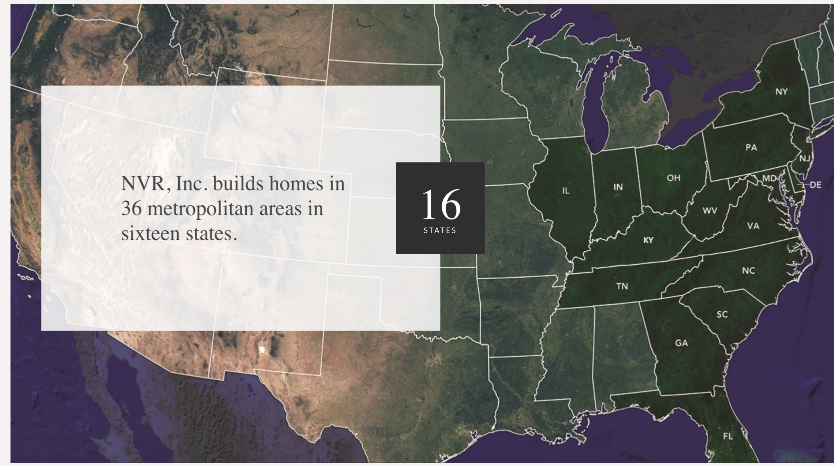
Company Overview

•Focused on the **construction and sale of homes** (~98% of consolidated revenues). All of which are constructed on a **pre-sold basis.**

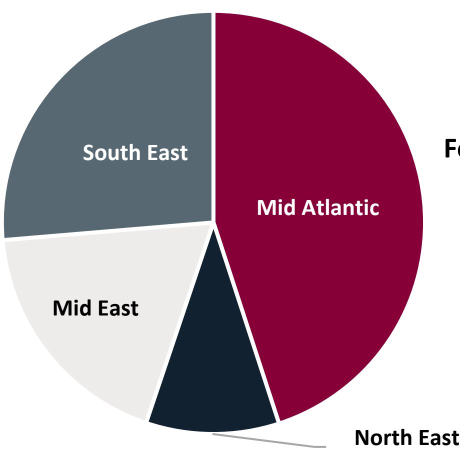
•Complemented by **mortgage banking** and title services, providing integrated support for homebuyers (~2% of consolidated revenues).

•Operates through **three brands**: Ryan Homes (entry-level and move-up), NVHomes, and Heartland Homes (luxury).

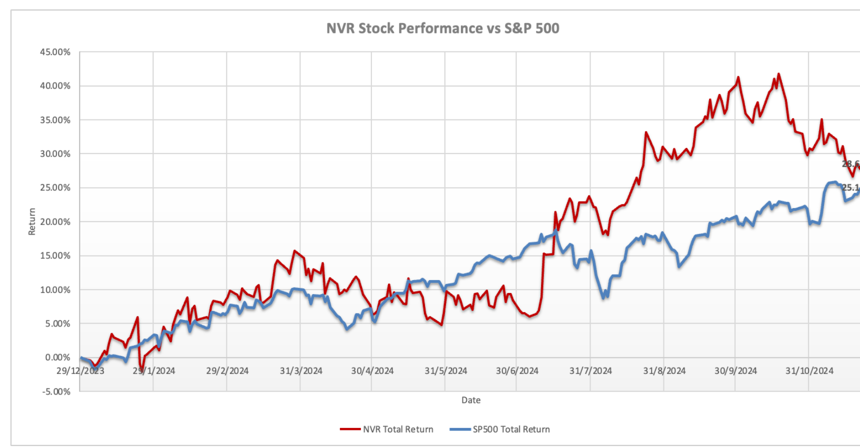
•Established in 1980, with 6,382 full-time employees as of 2023 is the fourth largest homebuilder in the US.



Revenue Breakdown FY2023



Focused on high-demand regions East of the Mississippi, capturing consistent growth opportunities



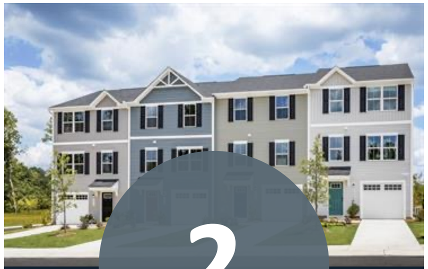
Sources: FactSet, Company Filings, Investor Presentations

Investment Thesis

Three Pillars of Our Investment Thesis: Market Opportunity, Operational Efficiency, and Resilience

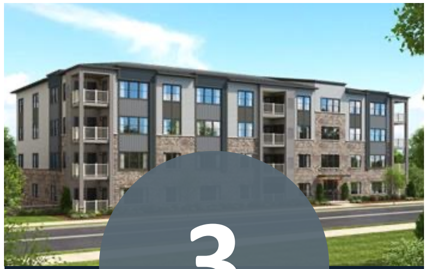
1

Positioned for Resilient Growth Amid Macro Shifts



2

Asset-Light Business Model Drives Superior Margins



3

Resilience Through Economic Downturns

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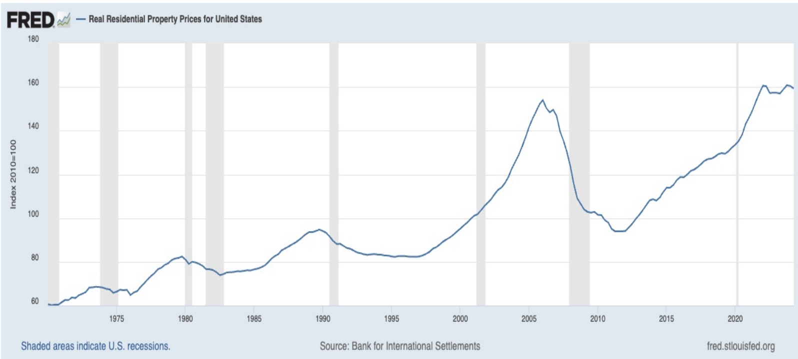
Investment Thesis #1

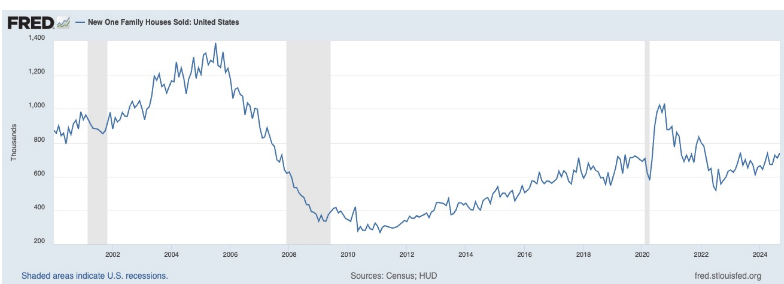
NVR is Positioned for Resilient Growth Amid Macro Shifts

Income stagnation increases demand for affordable houses which NVR specializes



- **Home prices have surged** far beyond income growth, squeezing potential buyers (+60% from 2000)
- **Real wages have stagnated** despite rising productivity, worsening housing affordability (+30% from 2000)
- Only **32.6% of U.S. households can afford a median-priced home**, down from 59.2% in 2019

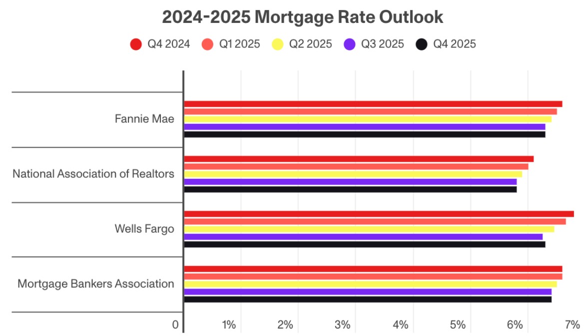
Stagnation in demand tightens the market



- Starter home production has plummeted (**-53%** since 2004), creating pent-up demand for smaller, affordable units where NVR excels
- U.S. housing inventory remains **40% below 2019 levels**, exacerbating the housing deficit
- Stable New home sales reflect **tightening affordability** and reduced market activity

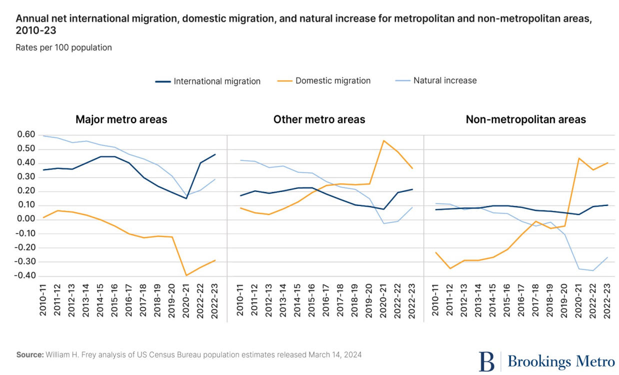
Source: 10K, FRED, Brokings, Team Analysis

Mortgages are expected to remain high disincentivizing market activity



Worsening credit market outlook is harming first time buyers disproportionately more

While housing supply is limited, demand remains robust, particularly for affordable suburban homes



- **Affordable suburban regions** attract first-time buyers and migrating families
- Urban centers like New York and Los Angeles require unaffordable salaries for median homes, **pushing demand to suburban markets**

NVR is the only home builder able to navigate these tight credit market conditions

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Investment Thesis #2

Asset-Light Business Model Drives Superior Margins

Lot Acquisition Strategy

- 95%+ of lots acquired via options
- Minimizes capital risk and inventory burden
- High turnover and operational efficiency

Focus On Selected Regions

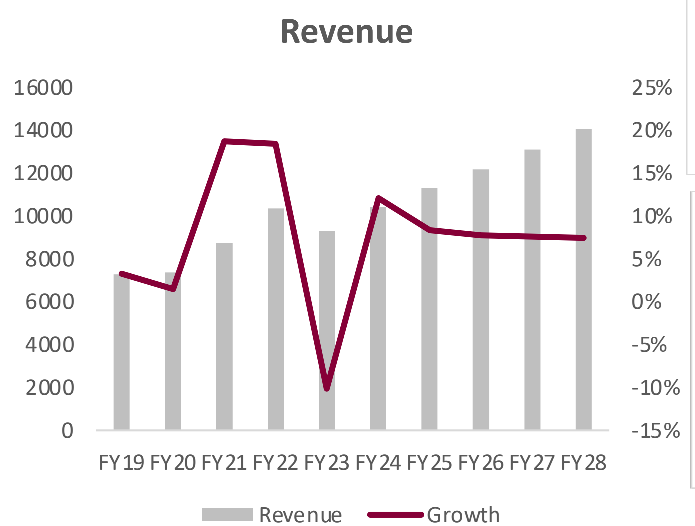
- Targeting affordable lots **~25 miles** from major metro centers
- Prioritizing the **Mid-Atlantic** and **Southeast** for growth opportunities

Operational Efficiency

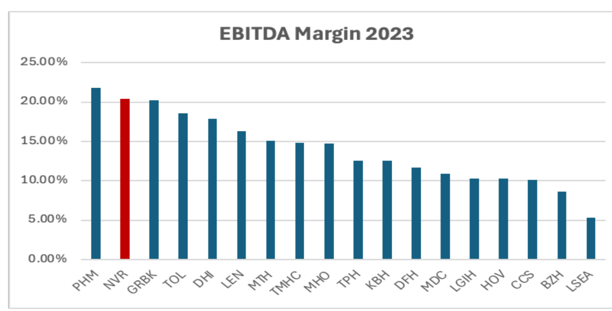
- Seven prefabrication factories reduce costs and ensure quality
- Scalable, weather-independent production model

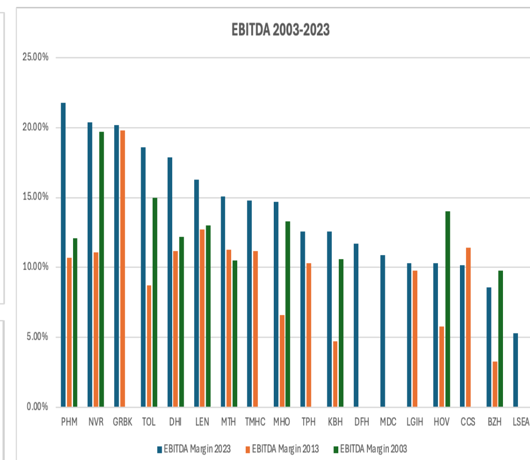
NVR's Unique Competitive Advantage Ensures Future Success

- **Mid-Atlantic**: Housing shortages, demand for low-income units → **6.6% CAGR (2023–2028)**
- **Southeast**: 25% of U.S. population, booming growth markets → **10.1% CAGR (2023–2028)**



NVR has been able to find efficiencies through their prefabrication network which off set the impact of their options strategy on margins





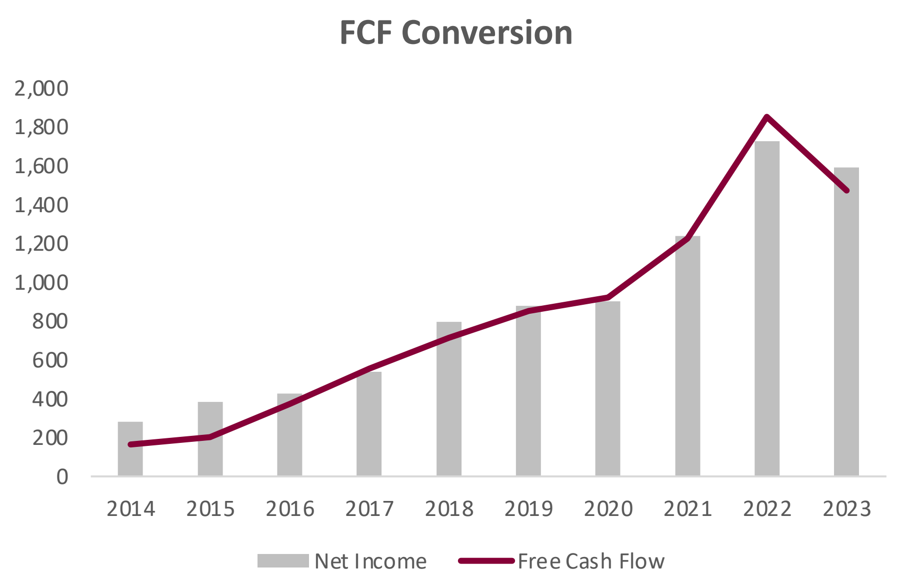
2019-2023	
Capital Expenditure Growth	10%
Revenue Growth	28%

Source: 10K, IBIS Report, Ensemble Capital, Team Analysis

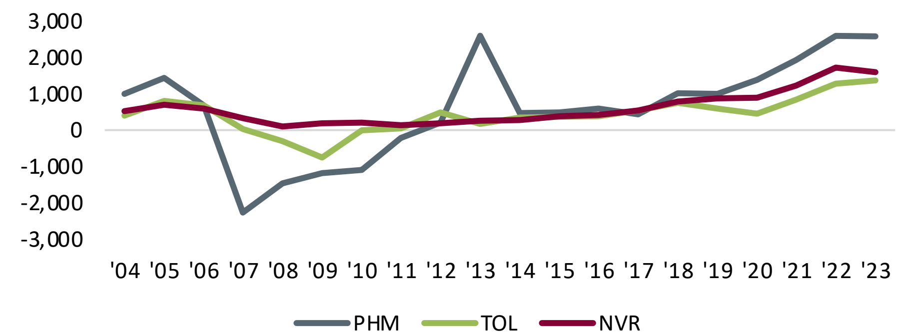
Investment Thesis #3

Resilience Through Economic Downturns

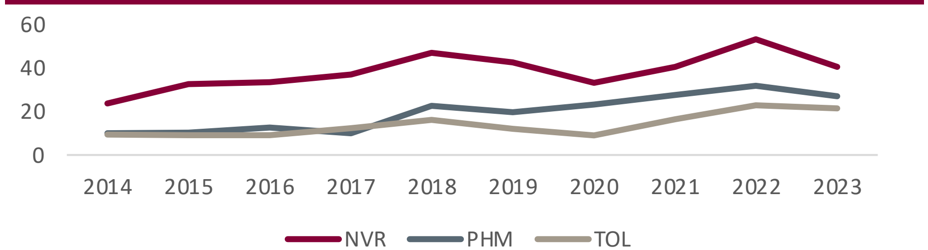
Strong FCF Results In Higher Quality Earnings Compared to Other Homebuilders



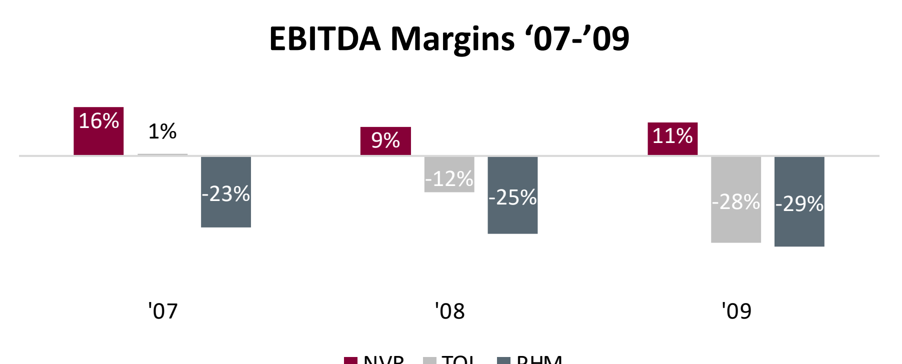
Maintained Profitability Throughout All Economic Cycles



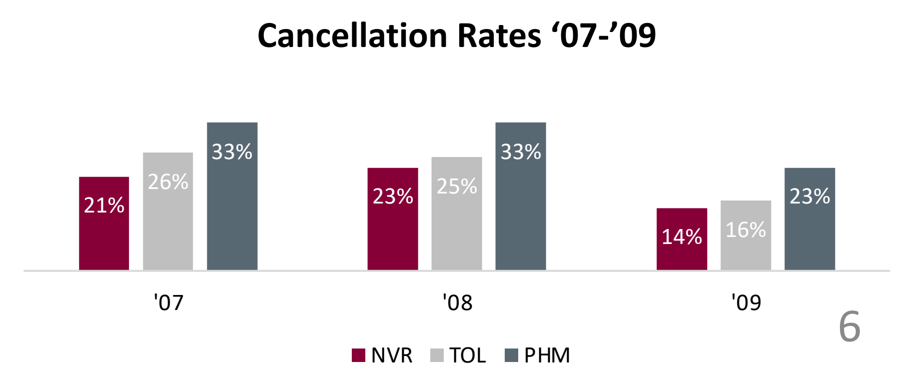
Strong ROE



Continued Profitability Through Durable Margins



Sales Durability Through Lower Cancellation



Source: 10K, IBIS Report, Ensemble Capital, Team Analysis

Valuation

12-Month Price Target of **$11,447** in the Base Case with **25% Upside**

Methodology: We used 2 different approaches for valuation (P/E Multiple and P/FCF Multiple), and we averaged the results to determine price target

Where we differ:

1. Higher growth thanks to presence in Mid-Atlantic and Southeast
2. Strong margins thanks to pre-fabrication network
3. Multiple appreciation due to higher quality earnings and greater resilience

Valuation Summary

Scenario Weighting	Base (50%)	Bull (20%)	Bear (30%)
P/E - Target Price	$10,756	$11,368	$7,455
Forward P/E	18x	19x	15x
2025 EPS	$578.71	$597.03	$506.13
Target Price	**$10,280 / 12% Upside**		
P/FCF - Target Price	$14,199	$16,084	$7,660
Forward P/FCF	20x	22x	17x
2025 FCF per Share	$698.88	$721.01	$459.40
Target Price	**$12,614 / 38% Upside**		
Final Target Price	**$11,447 / 25% Upside**		

Forecast vs. Consensus - Base Case

	2025			2026		
	Forecast	Consensus	Diff.	Forecast	Consensus	Diff.
Revenue	11,284	11,138	1%	12,154	11,650	4%
% growth	8%	6%		8%	5%	
Gross Profit	2,651	2,498	6%	2,856	2,617	9%
% margin	23%	22%		23%	22%	
EBITDA	2,170	2,112	3%	2,276	2,129	7%
% margin	19%	19%		19%	18%	
EPS	578.71	529.55	9%	623.15	583.33	7%

Our Assumptions vs. Consensus - Base Case

	2025			2026		
	Forecast	Consensus	Diff.	Forecast	Consensus	Diff.
Units Delivered	24,309	23,584	3%	25,993	24,829	5%
Average Unit Price	$455	$453	0%	$458	$453	1%
New Order Units	24,600	24,125	2%	26,224	25,284	4%
Backlog Units	11,001	11,035	(0%)	11,232	11,236	(0%)

Source: 10-K, FactSet, Team Analysis

Risks and Mitigations

NVR's asset-light model mitigates many risks inherent to homebuilding, though geographic concentration and reliance on developed lots present challenges in booming markets.

Economic Downturns	NVR's **asset-light strategy** reduces exposure to economic downturns. With 95% of lots controlled via options (vs. 49% TOL, 50% PHM), NVR **minimizes capital risk** and **enhances cash flow**. Unlike peers, NVR avoids land development, reducing financial burdens during macroeconomic uncertainty.
Geographic Risk	Operating east of the Mississippi River, NVR may miss opportunities in lower-cost regions like Texas, where competitors like PHM have broader geographic reach (46 markets across 26 states). Additionally, presence in Southeastern markets exposes NVR to adverse weather risks.
Potential Difficulties in Securing Land	In booming markets, securing land on favorable terms may be challenging. NVR's reliance on developed lots can compress margins compared to peers like TOL and PHM, who purchase raw land at lower costs and manage development in-house.

Questions?

NVR

NVR Mortgage

NVHomes

Ryan Homes

HEARTLAND HOMES

Appendix

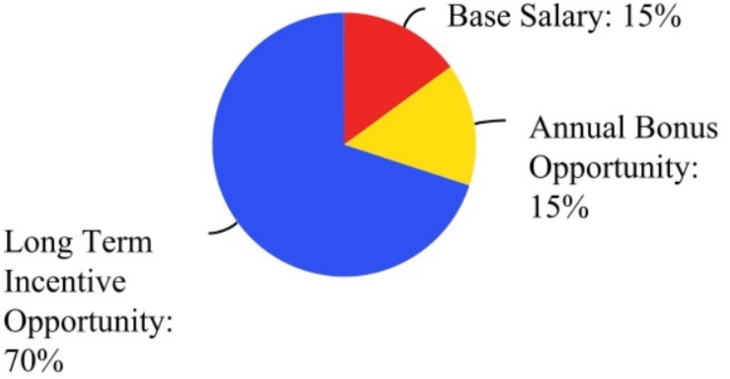
Management Overview

Name	Title	Experience
Saville, Paul C.	Executive Chairman of the Board	33 years at NVR, including 17 years as CEO and 12 years as CFO.
Bredow, Eugene James	President & CEO	20 years at NVR, 30 years of experience with accounting, finance and auditing
Malzahn, Daniel David	Senior VP, CFO & Treasurer	30 years at NVR, including 12 years as CFO and 13 years of experience in business planning experience
Kelpy, Matthew B.	Chief Accounting Officer & Controller	7 years at NVR, CPA with 30 years of experience in accounting

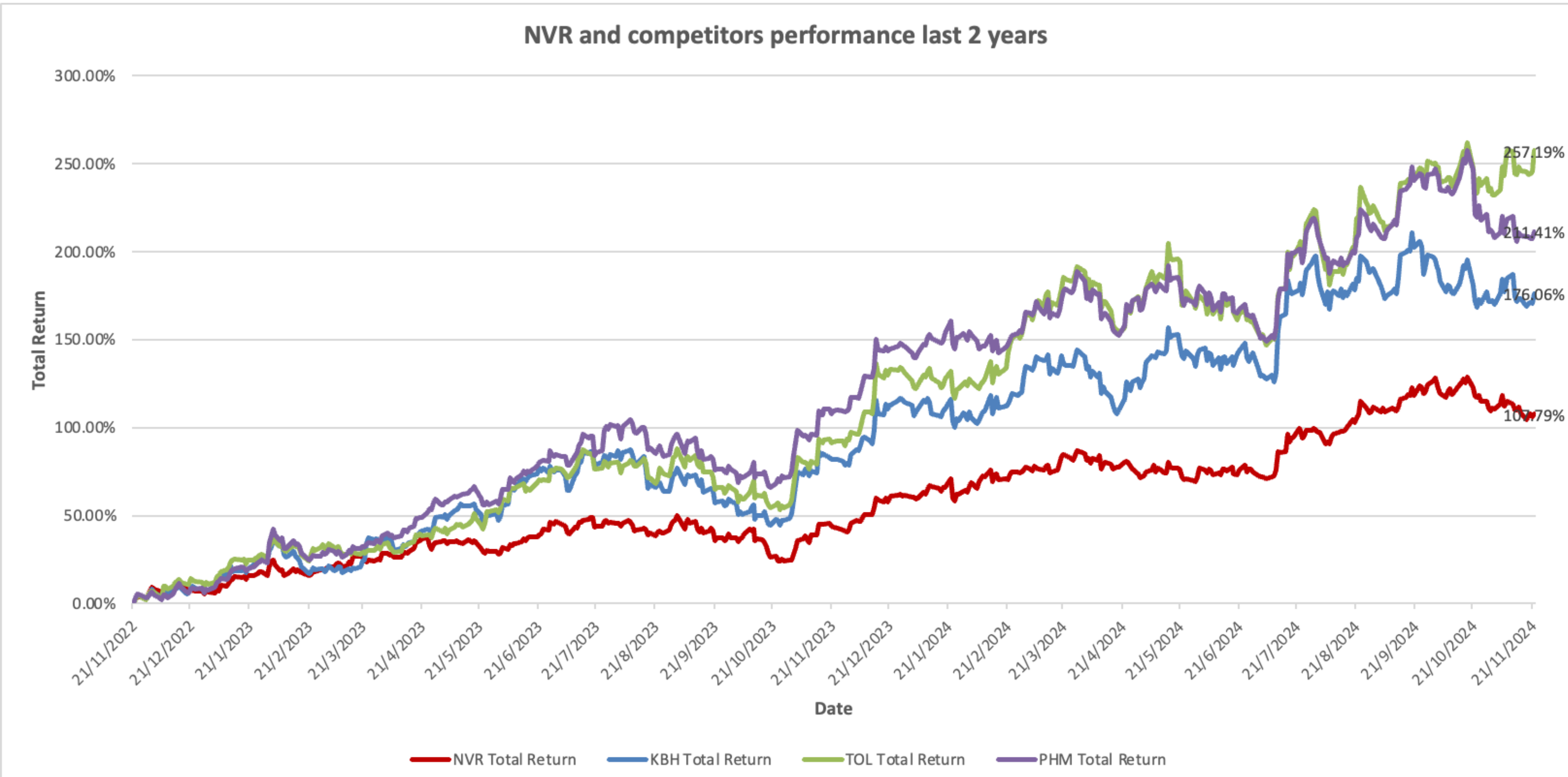
- **Compensation Structure**: The program includes base salary, an annual performance-based cash bonus, and long-term equity-based compensation tied to total shareholder return (TSR).

- **Annual Cash Bonus**: Capped at 100% of base salary, based 80% on pre-tax profit and 20% on new orders; earned proportionally upon achieving 80% of profit goals and 85% of order goals.

- **Long-Term Equity Incentives**: Significant equity incentives through stock options align executives with shareholders. Executives gain value only if the stock price increases between the grant date and the vesting date, encouraging long-term growth.



Relative stock performance



Source: Refinitiv

Top Shareholders

#	Investor Name	% Outstanding	Position (M)	Position Change (M)	Value ($, M)
1	The Vanguard Group, Inc.	11.09%	0.34	-0.01	3,335.23
2	BlackRock Institutional Trust Company, N	6.74%	0.21	+0.00	2,025.52
3	State Street Global Advisors (US)	4.67%	0.14	-0.00	1,403.19
4	Saville (Paul C)	3.72%	0.11	0	874.76
5	Capital Research Global Investors	3.14%	0.10	+0.00	945.19
6	Geode Capital Management, L.L.C.	2.57%	0.08	-0.00	772.75
7	Principal Global Investors (Equity)	1.70%	0.05	-0.00	510.11
8	Wellington Management Company, LLP	1.68%	0.05	-0.01	503.67
9	Boston Partners	1.64%	0.05	+0.00	492.94
10	Nuveen LLC	1.37%	0.04	+0.02	410.43
11	Capital World Investors	1.32%	0.04	+0.00	395.73
12	Diamond Hill Capital Management Inc.	1.27%	0.04	-0.02	383.14
13	Norges Bank Investment Management (N	1.20%	0.04	+0.00	279.75
14	Smead Capital Management, Inc.	1.18%	0.04	+0.00	355.36
15	Jennison Associates LLC	1.16%	0.04	+0.02	348.54
16	Fidelity Management & Research Compan	1.10%	0.03	-0.00	329.59
17	BlackRock Investment Management, LLC	0.96%	0.03	-0.00	288.62
18	Thrivent Asset Management, LLC	0.94%	0.03	-0.01	281.31
19	Dimensional Fund Advisors, L.P.	0.92%	0.03	-0.00	276.58
20	T. Rowe Price Associates, Inc.	0.90%	0.03	-0.00	270.39

Source: Refinitiv

Valuation – P/E Multiple and P/FCF Multiple

Comparable Company Valuation Multiples	**Market Data**				**P/E**		**P/FCF**		**Performance Metrics**			
Company	**Ticker**	**Stock Price**	**Mkt Cap ($M)**	**EV (M)**	**2025**	**2026**	**2025**	**2026**	**Sales**	**EBITDA**	**FCF Conversion**	**Net Debt / EBITDA**
NVR (Consensus)	NVR	$ 9,139	$ 31,768	$30,121	18.3x	17.3x	18.2x	17.4x	$ 9,299	$ 1,585	92%	(0.9x)
NVR (Our Estimates)					**18.8x**	**15.8x**						
Home Builders												
Toll Brothers	TOL	$ 147	$ 15,295	$16,223	10.0x	10.1x	-	-	$ 9,995	$ 1,858	55%	0.9x
Century Communities	CCS	89	2,921	4,481	8.4x	7.1x	-	-	3,678	356	-64%	3.4x
Lennar A	LEN	170	46,213	43,663	11.8x	10.6x	19.1x	16.8x	34,287	5,531	99%	(0.0x)
DR Horton	DHI	168	55,545	57,262	11.7x	10.6x	13.4x	11.3x	36,801	6,023	42%	0.4x
Pulte Home	PHM	128	26,541	27,021	9.5x	9.5x	13.8x	11.5x	16,062	3,477	45%	0.2x
Median					**10.0x**	**10.1x**	**13.8x**	**11.5x**	**$ 16,062**	**$ 3,477**	**45%**	**0.4x**
Lower Quartile					**9.5x**	**9.5x**	**13.6x**	**11.4x**				
Upper Quartile					**11.7x**	**10.6x**	**16.5x**	**14.1x**				
Household Durables												
TopBuild	BLD-US	$ 354	$ 10,767	$ 11,701	16.8x	15.6x	17.6x	15.6x	$ 5,195	$ 1,028	108%	1.1x
Mohawk Industries	MHK-US	134	8,582	10,352	13.9x	12.1x	10.0x	9.0x	11,135	1,618	88%	1.5x
PPG Industries	PPG-US	124	29,005	34,831	15.2x	14.0x	17.3x	16.8x	18,246	2,846	86%	2.0x
Fortune Brands Innovations	FBIN-US	84	10,543	13,131	19.5x	17.6x	23.2x	18.9x	4,626	845	110%	2.9x
Masco	MAS-US	80	17,299	19,985	19.6x	18.0x	21.0x	21.2x	7,967	1,485	118%	1.7x
Lennox	LII-US	603	21,757	22,664	28.7x	25.8x	35.5x	28.2x	4,982	928	92%	1.1x
Ferguson Enterprises	FERG-US	198	39,933	43,286	20.1x	17.7x	22.7x	21.3x	29,635	3,015	87%	1.6x
Median					**19.5x**	**17.6x**	**21.0x**	**18.9x**	**$ 7,967**	**$ 1,485**	**92%**	**1.6x**
Lower Quartile					**16.0x**	**14.8x**	**17.4x**	**16.2x**				
Upper Quartile					**19.9x**	**17.9x**	**23.0x**	**21.2x**				
Weighted Average (90% Household Durables, 10% Home Builders)					18.6x	16.8x	20.3x	18.2x	$ 8,776	$ 1,684	87%	1.5x
Lower Quartile (80% Durables, 20% Home Builders)					14.7x	13.8x	16.7x	15.2x				
Upper Quartile (90% Durables, 10% Home Builders)					19.0x	17.1x	22.3x	20.5x				

Target Price (P/E)	
Base Case x 50%	$ 10,756.04
Upside Case x 20%	$ 11,368.01
Downside Case x 30%	7455.5x
Target Price	**$ 10,279.53**
Upside	12.5%

Target Price (P/FCF)	
Base Case x 50%	$ 14,198.59
Upside Case x 20%	$ 16,083.62
Downside Case x 30%	7660.4x
Target Price	**$ 12,614.14**
Upside	38.0%

Weighted Target Price	**$ 11,446.83**
Upside	**25.2%**

Source: 10-K, Team Analysis

Three Statement Model – Revenue Assumptions (1/2)

NVR, Inc. - Revenue Build									
	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
($ in millions)	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec
Consolidated Segment Results									
Mid-Atlantic Region	$ 3,668,542	$ 4,049,871	$ 4,766,329	$ 4,189,957	$ 4,514,135	$ 4,816,385	$ 5,118,993	$ 5,433,065	$ 5,763,696
North East Region	538,772	767,828	892,543	948,289	1,137,629	1,310,170	1,477,650	1,646,146	1,819,109
Mid East Region	1,524,667	1,891,729	2,147,262	1,723,514	1,849,499	1,943,374	2,028,469	2,112,982	2,199,700
South East Region	1,596,908	1,992,265	2,520,636	2,452,845	2,706,797	2,979,702	3,279,927	3,611,272	3,976,740
Total home building sales	7,328,889	8,701,693	10,326,770	9,314,605	10,208,061	11,049,630	11,905,040	12,803,464	13,759,245
Mortgage banking	208,034	249,332	199,664	203,597	210,247	234,551	248,954	269,760	288,813
Consolidated Net Sales	**$ 7,536,923**	**$ 8,951,025**	**$ 10,526,434**	**$ 9,518,202**	**$ 10,418,308**	**$ 11,284,180**	**$ 12,153,993**	**$ 13,073,225**	**$ 14,048,058**
% Growth	-	18.8%	17.6%	(9.6%)	9.5%	8.3%	7.7%	7.6%	7.5%
<u>Total Homebuilding</u>									
Units Delivered	19,766	21,540	22,732	20,662	22,617	24,309	25,993	27,766	29,669
Average Delivered Price ($ Thousands)	371	404	454	451	451	455	458	461	464
Total New Orders	23,082	22,721	19,164	21,729	23,098	24,600	26,224	27,979	29,878
Total Backlog	11,549	12,730	9,162	10,229	10,710	11,001	11,232	11,446	11,655
Mid-Atlantic Region									
New Orders	10,846	9,614	9,131	9,672	10,252	10,867	11,520	12,211	12,943
% Growth	-	(11.4%)	(5.0%)	5.9%	6.0%	6.0%	6.0%	6.0%	6.0%
New Order Cancellation Rate	14.9%	9.0%	14.4%	12.8%	13.0%	13.0%	13.0%	13.0%	13.0%
Net New Order	9,230	8,749	7,816	8,434	8,920	9,455	10,022	10,623	11,261
Total Orders	12,842	13,228	12,734	12,126	13,014	13,718	14,379	15,047	15,739
Units Delivered	8,363	8,310	9,042	8,032	8,750	9,361	9,956	10,568	11,212
Units Delivered as % of Total Order	65.1%	62.8%	71.0%	66.2%	67.2%	68.2%	69.2%	70.2%	71.2%
Backlog	4,479	4,918	3,692	4,094	4,264	4,357	4,423	4,478	4,527
Average Delivered Price ($ Thousands)	439	487	527	522	516	515	514	514	514
% Growth		11.1%	8.2%	(1.1%)	(1.1%)	(0.3%)	(0.1%)	(0.0%)	(0.0%)
Revenue	**$ 3,668,542**	**$ 4,049,871**	**$ 4,766,329**	**$ 4,189,957**	**$ 4,514,135**	**$ 4,816,385**	**$ 5,118,993**	**$ 5,433,065**	**$ 5,763,696**

Source: 10-K, Team Analysis

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Three Statement Model – Revenue Assumptions (2/2)

North East Region									
New Orders	2,000	1,844	1,912	2,133	2,303	2,488	2,687	2,902	3,134
% Growth	-	(7.8%)	3.7%	11.5%	8.0%	8.0%	8.0%	8.0%	8.0%
New Order Cancellation Rate	13.1%	8.6%	12.2%	11.9%	12.0%	12.0%	12.0%	12.0%	12.0%
Net New Order	1,738	1,685	1,679	1,879	2,027	2,189	2,364	2,553	2,758
Total Orders	2,325	2,635	2,648	2,764	3,055	3,295	3,524	3,758	4,005
Units Delivered	1,375	1,666	1,763	1,736	1,949	2,135	2,319	2,511	2,716
Units Delivered as % of Total Order	59.1%	63.2%	66.6%	62.8%	63.8%	64.8%	65.8%	66.8%	67.8%
Backlog	950	969	885	1,028	1,106	1,160	1,205	1,247	1,289
Average Delivered Price ($ Thousands)	392	461	506	546	584	614	637	656	670
% Growth	-	17.6%	9.9%	7.9%	6.8%	5.1%	3.9%	2.9%	2.2%
Revenue	**$ 538,772**	**$ 767,828**	**$ 892,543**	**$ 948,289**	**$ 1,137,629**	**$ 1,310,170**	**$ 1,477,650**	**$ 1,646,146**	**$ 1,819,109**
Mid East Region									
New Orders	6,760	6,199	5,196	5,243	5,295	5,348	5,402	5,456	5,510
% Growth	-	(8.3%)	(16.2%)	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%
New Order Cancellation Rate	14.5%	10.2%	16.4%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%
Net New Order	5,780	5,567	4,344	4,514	4,559	4,605	4,651	4,697	4,744
Total Orders	7,593	8,441	7,371	6,367	6,535	6,568	6,558	6,536	6,511
Units Delivered	4,719	5,414	5,518	4,391	4,572	4,661	4,719	4,769	4,816
Units Delivered as % of Total Order	62.1%	64.1%	74.9%	69.0%	70.0%	71.0%	72.0%	73.0%	74.0%
Backlog	2,874	3,027	1,853	1,976	1,963	1,907	1,838	1,767	1,695
Average Delivered Price ($ Thousands)	323	349	389	392	405	417	430	443	457
% Growth	-	8.1%	11.4%	0.8%	3.1%	3.1%	3.1%	3.1%	3.1%
Revenue	**$ 1,524,667**	**$ 1,891,729**	**$ 2,147,262**	**$ 1,723,514**	**$ 1,849,499**	**$ 1,943,374**	**$ 2,028,469**	**$ 2,112,982**	**$ 2,199,700**
South East Region									
New Orders	7,523	7,368	6,093	7,870	8,657	9,523	10,475	11,522	12,675
% Growth	-	(2.0%)	(17.3%)	29.2%	10.0%	10.0%	10.0%	10.0%	10.0%
New Order Cancellation Rate	15.8%	8.8%	12.6%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
Net New Order	6,334	6,720	5,325	6,902	7,592	8,351	9,187	10,105	11,116
Total Orders	8,555	9,966	9,141	9,634	10,723	11,729	12,764	13,871	15,069
Units Delivered	5,309	6,150	6,409	6,503	7,345	8,152	8,999	9,917	10,925
Units Delivered as % of Total Order	62.1%	61.7%	70.1%	67.5%	68.5%	69.5%	70.5%	71.5%	72.5%
Backlog	3,246	3,816	2,732	3,131	3,378	3,577	3,765	3,953	4,144
Average Delivered Price ($ Thousands)	301	324	393	377	369	366	364	364	364
% Growth	-	7.7%	21.4%	(4.1%)	(2.3%)	(0.8%)	(0.3%)	(0.1%)	(0.0%)
Revenue	**$ 1,596,908**	**$ 1,992,265**	**$ 2,520,636**	**$ 2,452,845**	**$ 2,706,797**	**$ 2,979,702**	**$ 3,279,927**	**$ 3,611,272**	**$ 3,976,740**

Source: 10-K, Team Analysis

Three Statement Model – Income Statement

NVR, Inc. - Income Statement	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
($ in millions)	DEC-19A	DEC-20A	DEC-21A	DEC-22A	DEC-23A	DEC-24E	DEC-25E	DEC-26E	DEC-27E	DEC-28E
Revenues	$ 7,260.20	$ 7,366.70	$ 8,742.80	$ 10,348.10	$ 9,299.10	$ 10,418.3	$ 11,284.2	$ 12,154.0	$ 13,073.2	$ 14,048.1
Cost of revenues	(5,849.90)	(5,937.40)	(6,761.80)	(7,661.30)	(7,051.20)	(7,899.86)	(8,632.40)	(9,297.80)	(9,935.65)	(10,606.28)
Depreciation	20.82	21.99	19.46	17.40	16.92	24.13	26.13	28.15	30.28	32.53
Gross profit	**1,410.40**	**1,429.30**	**1,981.00**	**2,686.80**	**2,247.90**	**2,518.45**	**2,651.78**	**2,856.19**	**3,137.57**	**3,441.77**
Selling, general and administrative	(527.40)	(509.70)	(563.40)	(625.30)	(680.00)	(695.90)	(507.79)	(607.70)	(653.66)	(702.40)
Income / loss from operations	**883.00**	**919.60**	**1,417.60**	**2,061.50**	**1,567.90**	**1,822.55**	**2,143.99**	**2,248.49**	**2,483.91**	**2,739.37**
Other income, net	168.40	197.80	224.60	206.50	331.80	273.73	296.48	319.34	343.49	369.10
Interest Expense,net	(25.40)	(40.90)	(53.10)	(39.50)	(27.70)	(45.67)	(49.47)	(53.28)	(57.31)	(61.59)
Unusual Expense - Net	(0.20)	1.50	1.40	24.70	56.50	-	-	-	-	-
Income / loss before income taxes provision / benefit	**1,025.80**	**1,078.00**	**1,590.50**	**2,253.20**	**1,928.50**	**2,050.61**	**2,391.01**	**2,514.54**	**2,770.09**	**3,046.89**
Income Taxes	147.30	176.80	353.70	527.60	336.80	430.63	502.11	528.05	581.72	639.85
Net income	**$ 878.50**	**$ 901.20**	**$ 1,236.80**	**$ 1,725.60**	**$ 1,591.70**	**$ 1,619.98**	**$ 1,888.90**	**$ 1,986.49**	**$ 2,188.37**	**$ 2,407.04**
GAAP Basic Earnings per Share	**$ 241.30**	**$ 244.10**	**$ 345.40**	**$ 525.20**	**$ 491.50**	**$ 516.8**	**$ 616.5**	**$ 664.9**	**$ 753.1**	**$ 854.2**
Basic Weighted Average Shares	3.60	3.70	3.60	3.30	3.20	3.13	3.06	2.99	2.91	2.82
GAAP Diluted Earnings per Share	**$ 221.10**	**$ 230.10**	**$ 320.50**	**$ 491.80**	**$ 463.30**	**$ 485.8**	**$ 578.7**	**$ 623.1**	**$ 704.6**	**$ 797.6**
Diluted Weighted Average Shares	$ 4.00	$ 3.90	$ 3.90	$ 3.50	$ 3.40	$ 3.3	$ 3.3	$ 3.2	$ 3.1	$ 3.0
Model Assumptions										
Sales Growth	-	1.5%	18.7%	18.4%	(10.1%)	12.0%	8.3%	7.7%	7.6%	7.5%
Depreciation % of Sales	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Cost of Revenue as a % of Sales	(80.6%)	(80.6%)	(77.3%)	(74.0%)	(75.8%)	(75.8%)	(76.5%)	(76.5%)	(76.0%)	(75.5%)
SG&A as a % of Sales	(7.3%)	(6.9%)	(6.4%)	(6.0%)	(7.3%)	(6.7%)	(4.5%)	(5.0%)	(5.0%)	(5.0%)
Other income, net as a % of Sales	2.3%	2.7%	2.6%	2.0%	3.6%	2.6%	2.6%	2.6%	2.6%	2.6%
Unusual Expense - Net as a % of Sales	(0.0%)	0.0%	0.0%	0.2%	0.6%	0.2%	0.2%	0.2%	0.2%	0.2%
Interest Expense, net as a % of Sales	(0.3%)	(0.6%)	(0.6%)	(0.4%)	(0.3%)	(0.4%)	(0.4%)	(0.4%)	(0.4%)	(0.4%)
Tax rate	14.4%	16.4%	22.2%	23.4%	17.5%	21.0%	21.0%	21.0%	21.0%	21.0%
Key Performance Metrics										
Gross Margin	19.4%	19.4%	22.7%	26.0%	24.2%	24.2%	23.5%	23.5%	24.0%	24.5%
EBITDA	$ 903.82	941.59	1,437.06	2,078.90	1,584.82	1,846.68	2,170.13	2,276.64	2,514.19	2,771.90
EBITDA margin	12.4%	12.8%	16.4%	20.1%	17.0%	17.7%	19.2%	18.7%	19.2%	19.7%
EBIT margin	12.2%	12.5%	16.2%	19.9%	16.9%	17.5%	19.0%	18.5%	19.0%	19.5%
Pre-Tax Margin	14.1%	14.6%	18.2%	21.8%	20.7%	19.7%	21.2%	20.7%	21.2%	21.7%
Net Margin	12.1%	12.2%	14.1%	16.7%	17.1%	15.5%	16.7%	16.3%	16.7%	17.1%

Source: 10-K, Team Ancalysis

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Three Statement Model – Balance Sheet

NVR, Inc. - Balance Sheet	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
($ in Million)	DEC-19A	DEC-20A	DEC-21A	DEC-22A	DEC-23A	DEC-24E	DEC-25E	DEC-26E	DEC-27E	DEC-28E
Assets										
Cash and cash equivalents	$ 1,160.5	$ 2,809.5	$ 2,636.7	$ 2,574.3	$ 3,215.4	$ 4,401.7	$ 5,943.2	$ 7,476.9	$ 9,108.9	$ 10,862.8
Short-Term Receivables,net	18.28	18.30	18.55	20.84	29.00	23.89	25.88	27.87	29.98	32.22
Inventories, net	1,347.29	1,709.08	1,947.37	1,788.28	1,950.15	2,047.35	2,237.19	2,409.64	2,574.95	2,748.75
Total current assets	2,526.09	4,536.89	4,602.63	4,383.39	5,194.59	6,472.92	8,206.31	9,914.41	11,713.80	13,643.79
Net Property, Plant & Equipment	135.26	127.88	129.41	148.60	163.99	161.16	158.88	156.58	154.13	151.54
Long-Term Investments	541.06	506.62	361.85	370.61	330.64	330.64	330.64	330.64	330.64	330.64
Intangible Assets	49.37	48.93	48.93	48.93	48.93	48.93	48.93	48.93	48.93	48.93
Deferred Tax Assets	115.73	132.98	132.89	143.59	148.01	138.74	128.70	117.89	106.26	93.77
Other Assets	442.31	423.84	558.76	565.87	715.60	690.01	69.43	(125.72)	(366.81)	(608.02)
Total Assets	**$ 3,809.8**	**$ 5,777.1**	**$ 5,834.5**	**$ 5,661.0**	**$ 6,601.8**	**$ 7,842.4**	**$ 8,942.9**	**$ 10,442.7**	**$ 11,987.0**	**$ 13,660.6**
Liabilities & Shareholders' Equity										
Accounts payable	$ 288.5	$ 382.1	$ 366.6	$ 373.6	$ 456.6	$ 432.5	$ 472.6	$ 509.1	$ 544.0	$ 580.7
Current portion of long-term debt	-	-	-	-	-	-	-	-	-	-
Other Current Liabilities	496.42	701.93	874.72	772.84	766.08	920.72	671.84	804.03	864.84	929.33
Total current liabilities	784.89	1,084.02	1,241.28	1,146.45	1,222.73	1,353.25	1,144.47	1,313.10	1,408.83	1,510.04
Long-term debt	683.68	1,590.05	1,590.82	1,007.67	1,014.30	1,012.60	1,010.90	1,009.20	1,007.50	1,005.80
Total Liabilities	1,468.57	2,674.07	2,832.10	2,154.12	2,237.03	2,365.85	2,155.37	2,322.30	2,416.33	2,515.84
Additional Paid-in Capital	2,055.41	2,214.43	2,378.19	2,600.01	2,848.53	2,987.65	3,145.87	3,324.81	3,526.90	3,754.92
Treasury Stock	(7,641.15)	(7,939.39)	(9,440.57)	(10,883.50)	(11,865.74)	(12,513.03)	(13,249.17)	(14,081.69)	(15,021.95)	(16,082.84)
Retained earnings	7,909.87	8,811.12	10,047.84	11,773.41	13,365.03	14,985.01	16,873.90	18,860.39	21,048.76	23,455.80
Other	17.12	16.92	16.92	16.92	16.92	16.92	16.92	16.92	16.92	16.92
Total Equity	2,341.24	3,103.07	3,002.38	3,506.85	4,364.73	5,476.54	6,787.52	8,120.43	9,570.63	11,144.80
Total Liabilities and Equity	**$ 3,809.8**	**$ 5,777.1**	**$ 5,834.5**	**$ 5,661.0**	**$ 6,601.8**	**$ 7,842.4**	**$ 8,942.9**	**$ 10,442.7**	**$ 11,987.0**	**$ 13,660.6**
Check	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*	*Balances*

Source: 10-K, Team Analysis

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Three Statement Model – Cash Flow Statement

NVR, Inc. - Cash Flow Statement										
	FY19	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**	**FY28**
($ in millions)	**DEC-19A**	**DEC-20A**	**DEC-21A**	**DEC-22A**	**DEC-23A**	**DEC-24E**	**DEC-25E**	**DEC-26E**	**DEC-27E**	**DEC-28E**
Operating Activities										
Net income from operations	$ 878.5	$ 901.2	$ 1,236.8	$ 1,725.6	$ 1,591.7	$ 1,620.0	$ 1,888.9	$ 1,986.5	$ 2,188.4	$ 2,407.0
Depreciation & Amortization	$ 20.8	$ 22.0	$ 19.5	$ 17.4	$ 16.9	24	26	28	30	33
Changes in Working Capital	$ (72.6)	$ (104.6)	$ (199.6)	$ 14.1	$ (251.5)	68	232	211	202	213
Deferred Taxes & Investment Tax Credit	$ (4.1)	$ (17.6)	$ (0.2)	$ (11.1)	$ (3.7)	(9)	(10)	(11)	(12)	(12)
Other Funds	$ 52.1	$ 135.8	$ 186.1	$ 124.1	$ 144.9	155	168	181	195	209
Cash Flow from Operating Activities	**$ 874.7**	**$ 936.8**	**$ 1,242.6**	**$ 1,870.1**	**$ 1,498.3**	**$ 1,858.0**	**$ 2,305.0**	**$ 2,395.7**	**$ 2,604.1**	**$ 2,849.1**
Investing Activities										
Capital Expenditures	$ (22.7)	$ (16.1)	$ (17.9)	$ (18.4)	$ (24.9)	$ (21)	$ (24)	$ (26)	$ (28)	$ (30)
Net Assets from Acquisitions	$ -	$ -	$ -	$ -	$ -	-	-	-	-	-
Sale of Fixed Assets & Businesses	$ 1.9	$ 1.0	$ 1.0	$ 0.7	$ 2.4	2	1	1	1	1
Purchase/Sale of Investments	$ (0.7)	$ (0.4)	$ (1.3)	$ (9.7)	$ (1.8)	(3)	(3)	(3)	(4)	(4)
Other	$ -	$ -	$ -	$ -	$ -	-	-	-	-	-
Cash Flow from Investing Activities	**$ (21.5)**	**$ (15.6)**	**$ (18.2)**	**$ (27.4)**	**$ (24.3)**	**$ (22.8)**	**$ (25.6)**	**$ (27.9)**	**$ (30.2)**	**$ (32.6)**
Free Cash Flow	**$ 852.0**	**$ 920.7**	**$ 1,224.7**	**$ 1,851.7**	**$ 1,473.4**	**$ 1,837**	**$ 2,281**	**$ 2,370**	**$ 2,576**	**$ 2,819**
FCF per share						**$ 551**	**$ 699**	**$ 743**	**$ 829**	**$ 934**
Financing Activities										
Common Dividends	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Change in Capital Stock	$ (424.4)	$ (190.2)	$ (1,395.6)	$ (1,303.6)	$ (831.3)	(647)	(736)	(833)	(940)	(1,061)
Issuance/Reduction of Debt, Net	$ (0.3)	$ 917.9	$ (1.4)	$ (601.5)	$ (1.7)	(2)	(2)	(2)	(2)	(2)
Cash Flow from Financing Activities	**$ (424.7)**	**$ 727.7**	**$ (1,397.0)**	**$ (1,905.1)**	**$ (833.0)**	**$ (649.0)**	**$ (737.8)**	**$ (834.2)**	**$ (941.9)**	**$ (1,062.6)**
Cash, cash equivalents and restricted cash, beginning of period	$ 731.9	1,160.5	2,809.5	2,636.7	2,574.3	3,215.4	4,401.7	5,943.2	7,476.9	9,108.9
Net Change in Cash	$ 428.6	$ 1,649.0	$ (172.8)	$ (62.4)	$ 641.2	1,186	1,542	1,534	1,632	1,754
Cash and cash equivalents, end of period	**$ 1,160.5**	**$ 2,809.5**	**$ 2,636.7**	**$ 2,574.3**	**$ 3,215.4**	**$ 4,402**	**$ 5,943**	**$ 7,477**	**$ 9,109**	**$ 10,863**
Check	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*	*Reconciles*

Source: 10-K, Team Analysis

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Three Statement Model – Model Assumptions

Model Assumptions										
Days Sales Outstanding (DSO)		1 Days	1 Days	1 Days	1 Days	1 Days	1 Days	1 Days	1 Days	1 Days
Days Inventory Outstanding (DIO)		94 Days	99 Days	89 Days	97 Days	95 Days	95 Days	95 Days	95 Days	95 Days
Days Payable Outstanding (DPO)		21 Days	20 Days	18 Days	21 Days	20 Days	20 Days	20 Days	20 Days	20 Days
Cash Conversion		74 Days	79 Days	72 Days	76 Days	75 Days	75 Days	75 Days	75 Days	75 Days
Accounts receivable, net	18	18	19	21	29	24	26	28	30	32
Inventories, net	1,347	1,709	1,947	1,788	1,950	2,047	2,237	2,410	2,575	2,749
Accounts payable	288	382	367	374	457	433	473	509	544	581
Working Capital	1,654	2,109	2,332	2,183	2,436	2,504	2,736	2,947	3,149	3,362
Working Capital as a % of Sales	8.9%	12.1%	11.3%	10.7%	11.0%	9.8%	11.6%	11.7%	11.7%	11.6%
Other Liabilities as % of SG&A	(94.1%)	(137.7%)	(155.3%)	(123.6%)	(112.7%)	(132.3%)	(132.3%)	(132.3%)	(132.3%)	(132.3%)
Sale of Fixed Asset as % of PY PP&E, net		0.7%	0.8%	0.6%	1.6%	0.9%	0.9%	0.9%	0.9%	0.9%
CAPEX as % of PY Sales		(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)
CAPEX as % of PY PP&E, net		(11.9%)	(14.0%)	(14.2%)	(16.7%)	(13.0%)	(14.8%)	(16.3%)	(17.8%)	(19.4%)
Purchase/Sale of Investments as % of Sales	(0.0%)	(0.0%)	(0.0%)	(0.1%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Deferred Taxes & Investment Tax Credit as % of Sales	(0.1%)	(0.2%)	(0.0%)	(0.1%)	(0.0%)	(0.1%)	(0.1%)	(0.1%)	(0.1%)	(0.1%)
Other Funds as % of Sales	0.7%	1.8%	2.1%	1.2%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%
Shares Issued	0.0952150	0.0448460	0.2331710	(0.0237960)	0.1080850	0.0178760	0.0193617	0.0208541	0.0224314	0.0241040
% Sales	0.001%	0.001%	0.003%	(0.000%)	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%
Repurchase Amount	(0.220965)	(0.096346)	(0.294171)	(0.323652)	(0.181499)	(0.083168)	(0.090080)	(0.097024)	(0.104362)	(0.112144)
% Sales	(0.003%)	(0.001%)	(0.003%)	(0.003%)	(0.002%)	(0.001%)	(0.001%)	(0.001%)	(0.001%)	(0.001%)
Average Repurchase Price Assumption						7,783	8,172	8,580	9,009	9,460
Shares Repurchase (M)	(698)	(371)	(1,538)	(1,500)	(1,082)	(647)	(736)	(833)	(940)	(1,061)

Source: 10-K, Team Analysis

DCF - Valuation

Discount Rate (WACC)							
Weighted Average Cost of Capital (WACC)	**2,023**	**2,024**	**2,025**	**2,026**	**2,027**	**2,028**	**VT**
Risk free rate 5y	4.25%	4.25%	4.04%	3.84%	3.64%	3.46%	4.53%
Market Premium (Damodaran)	5.94%	5.94%	5.94%	5.94%	5.94%	5.94%	5.94%
Beta (Yahoo Finance)	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Market Premium adjusted by Beta	7.13%	7.13%	7.13%	7.13%	7.13%	7.13%	7.13%
Cost of Equity	**11.38%**	**11.38%**	**11.17%**	**10.97%**	**10.77%**	**10.59%**	**11.66%**
Estimated Debt Cost	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Estimated Debt Cost net tax rate	**2.44%**	**2.44%**	**2.44%**	**2.44%**	**2.44%**	**2.44%**	**2.44%**
Debt/(Debt+Equity)	18.86%	18.82%	18.79%	18.76%	18.73%	18.70%	18.70%
WACC	**9.69%**	**9.69%**	**9.53%**	**9.37%**	**9.21%**	**9.06%**	**9.93%**

Fiscal Year	2,023	2,024	2,025	2,026	2,027	2,028
Valuation Cash Flow		Proy.	Proy.	Proy.	Proy.	Proy.
EBITDA		1,846.7	2,170.1	2,276.6	2,514.2	2,771.9
EBITDA margin (%)		17.73%	19.23%	18.73%	19.23%	19.73%
Less: Changes in Working Capital		(68.0)	(231.9)	(210.9)	(202.3)	(212.8)
Income Tax 1		(430.6)	(502.1)	(528.1)	(581.7)	(639.8)
CAPEX		(21.3)	(23.9)	(25.8)	(27.8)	(29.9)
FCF		**1,326.8**	**1,412.2**	**1,511.9**	**1,702.3**	**1,889.4**
Terminal Value						**33,115**
Valuation Date	11/24/24					
Years from Valuation DATE		0.1	1.1	2.1	3.1	4.1
WACC Rate		0.1	0.1	0.1	0.1	0.1
Discount Factor		1.0	0.9	0.8	0.8	0.7
NPV of FCF		**1,314.7**	**1,277.6**	**1,252.9**	**1,296.3**	**1,324.3**
Valor Presente del Valor Terminal						**23,180.2**

Growth rate 4.00%

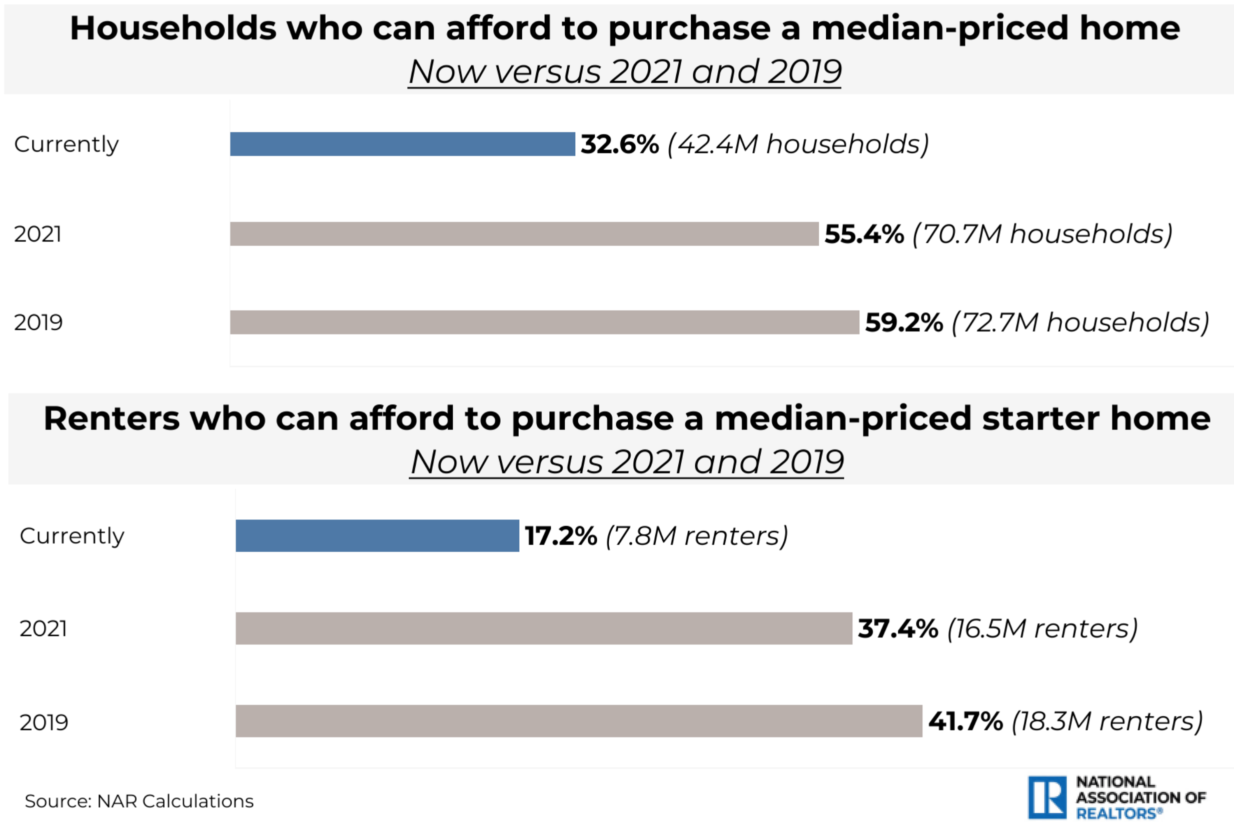
Company Value	**24,505**
Equity Value	**27,756**
Price per Share	**8,688**

Source: 10-K, Team Analysis

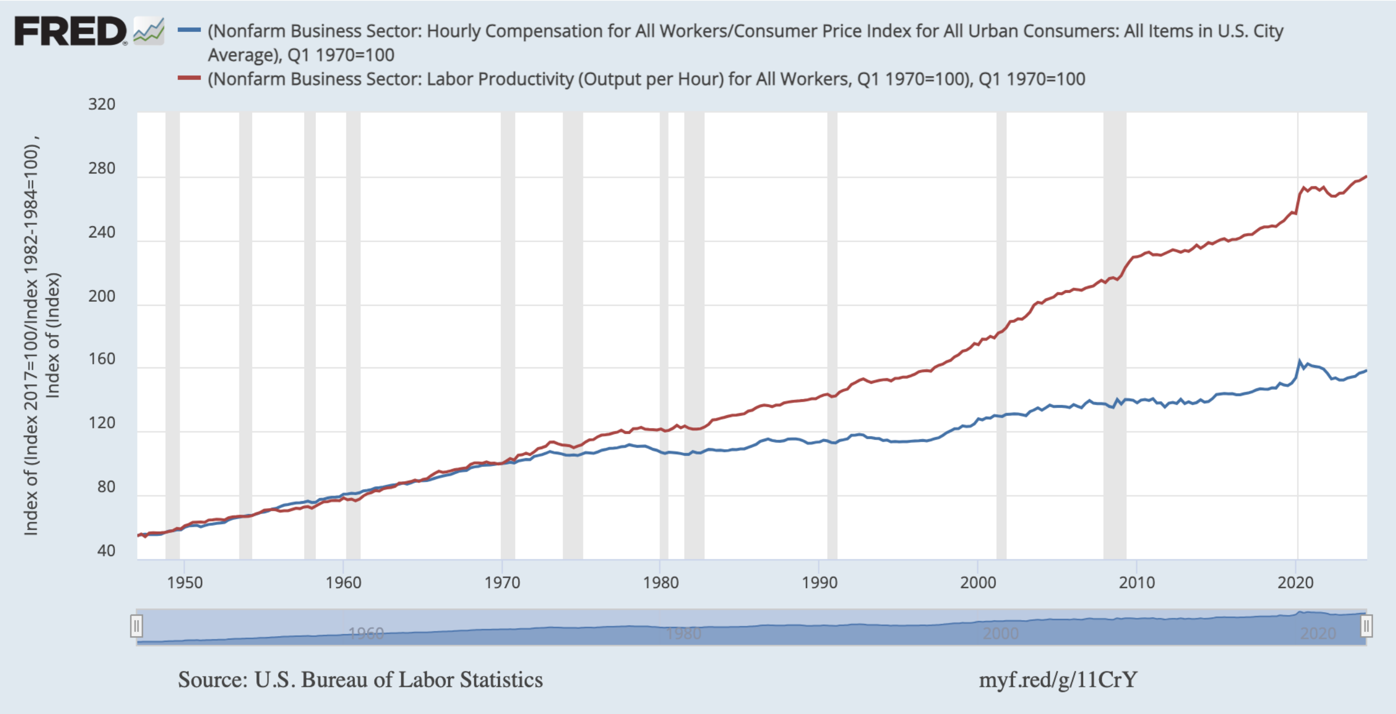
Company Benchmarking

	Toll Brothers	NVR Inc.	Pulte Group
	• Operates in **24 states** and in the District of Columbia • **End market:** luxury first-time, move-up, empty nester, active-adult, second home buyer	• Operates in 36 metropolitan areas in **16 states** and Washington, DC • **End market:** first-time, first-time move up across 16 states, and luxury in 5 states	• Operates in 46 markets across **26 states** • **End market:** first-time, move-up; active adult
	• Primarily build on **land** that they **develop and improve** / have a substantial amount of land under control • Control ~71K home sites (**41% optioned**/51% owned)	• **Do not engage in land development**; acquire finished building lots from 3rd party land developers pursuant to fixed price finished **lot purchasing agreements** that require deposits that may be forfeited (control ~141K lots)	• Generally, **purchase** zoned and developed **land**, but **directly engage** in developing land too • Control ~223K lots (**53% optioned**/ 47% owned)
	• Average unit price $1M • **Backlog:** as of October 31, 2023 - 6,578 units/ $6.9B	• Average unit price $460K • **Backlog:** as of December 31, 2023 - 10,229 units/$4.8B	• Average unit price $545K • **Backlog:** as of December 31, 2023 - 12,146 units/$7.3B

Affordability of Houses



Real Wages in the US



Source: Fred

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25 Most Expensive Metros

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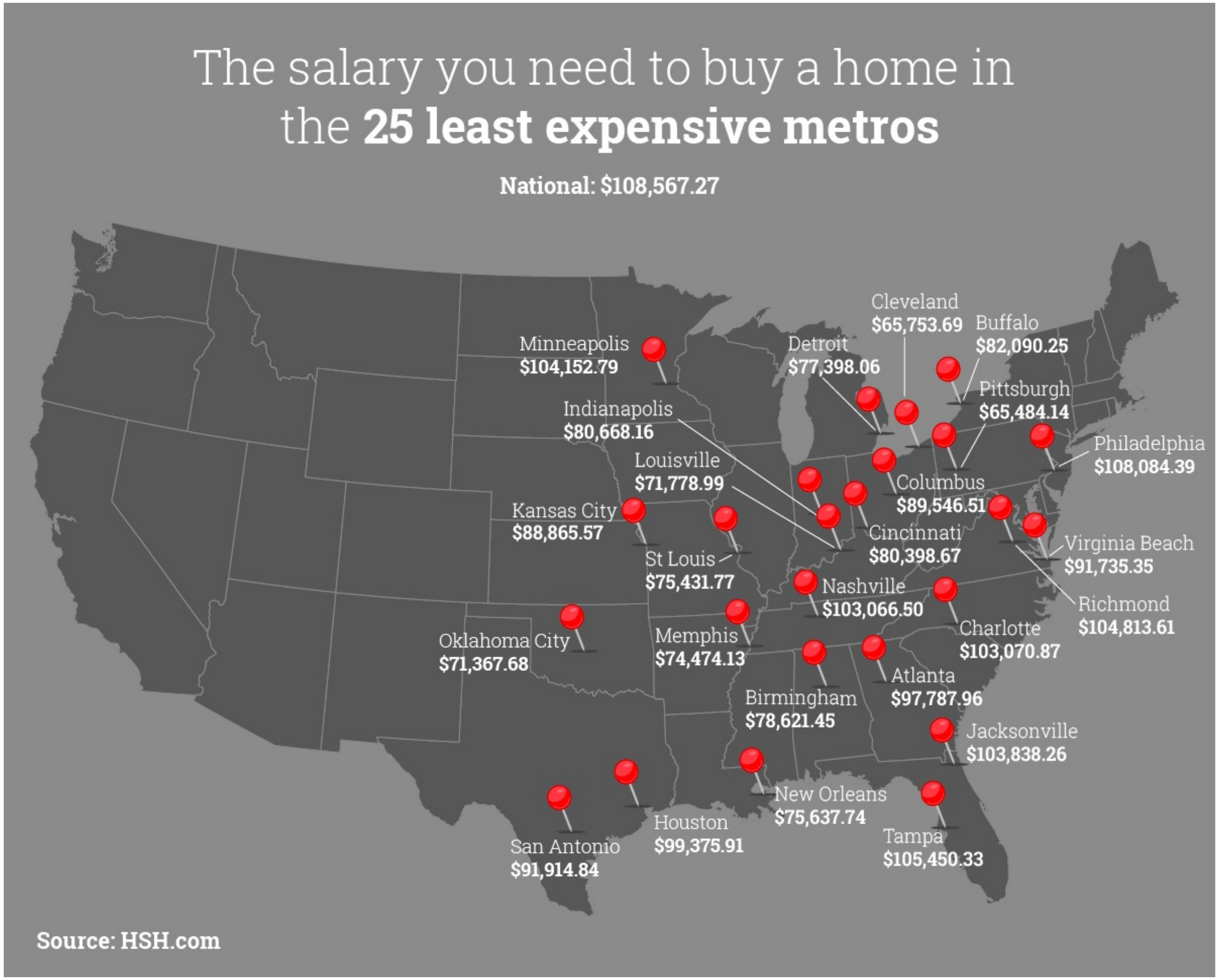
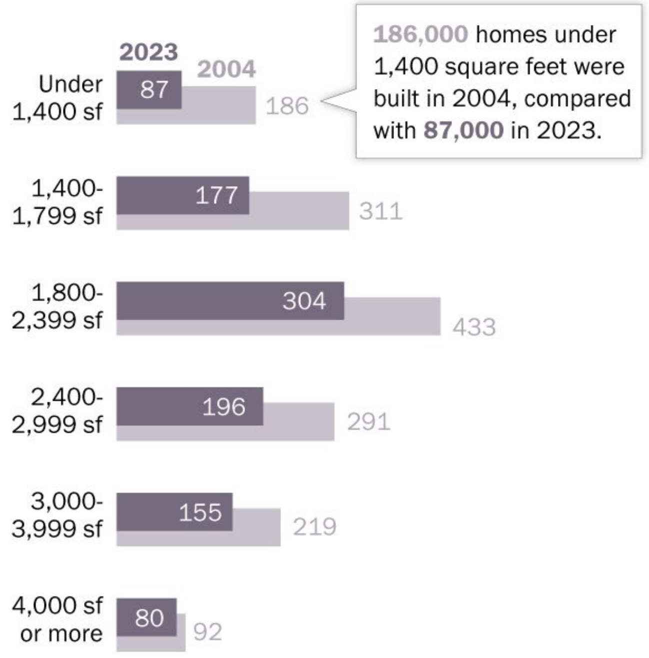
25 Least Expensive Metros



Fewer Starter homes

Fewer homes – especially starter homes – are being built now compared with about 2 decades ago

Newly built single-family homes in the U.S., by square footage (in thousands)



Source: Census Bureau, Survey of Construction.

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Housing Inventory

Source: Fred

NVR is meeting new construction demand

U.S. Migration Trends

Where are people moving to and from?

Top 5 states people are moving to

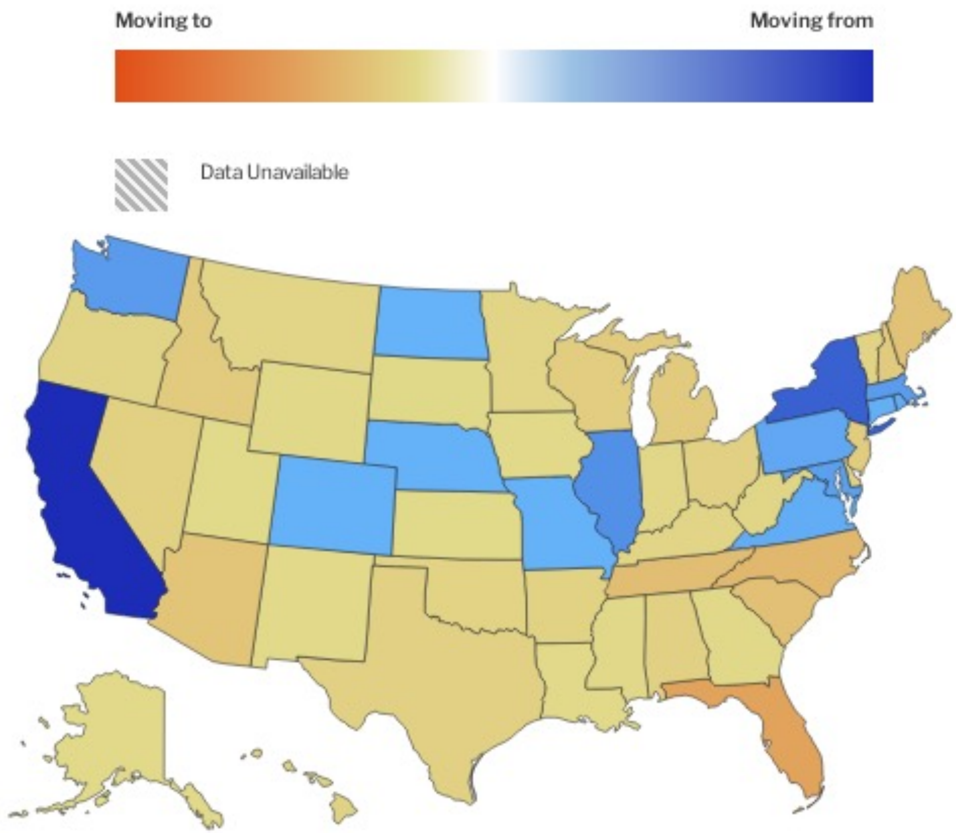
By Net Search Flow

1	Florida	19K
2	North Carolina	12K
3	Tennessee	10K
4	South Carolina	9K
5	Maine	8K

Top 5 states people are moving from

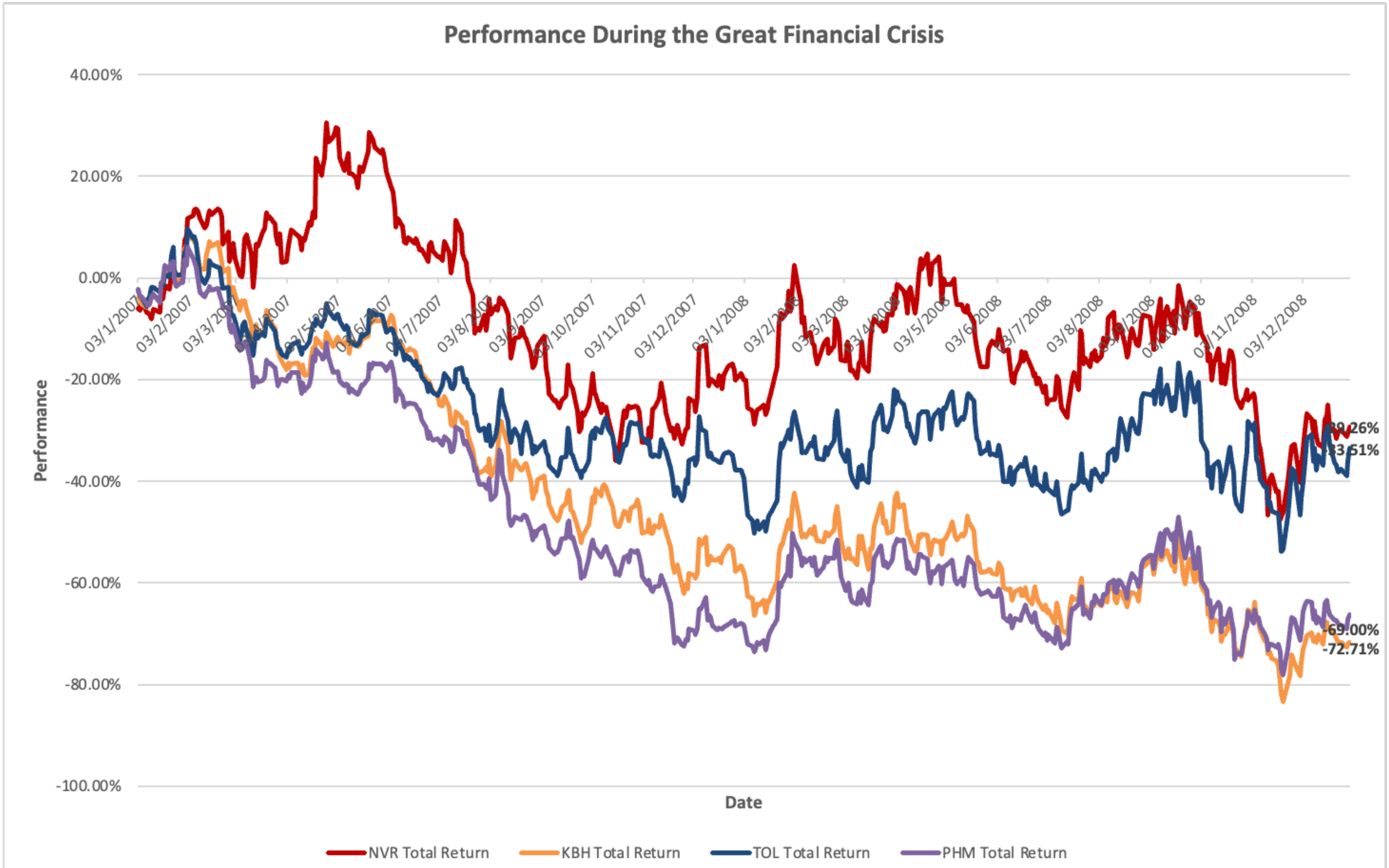
By Net Search Flow

1	California	49K
2	New York	30K
3	Illinois	13K
4	Washington	9K
5	Massachusetts	8K



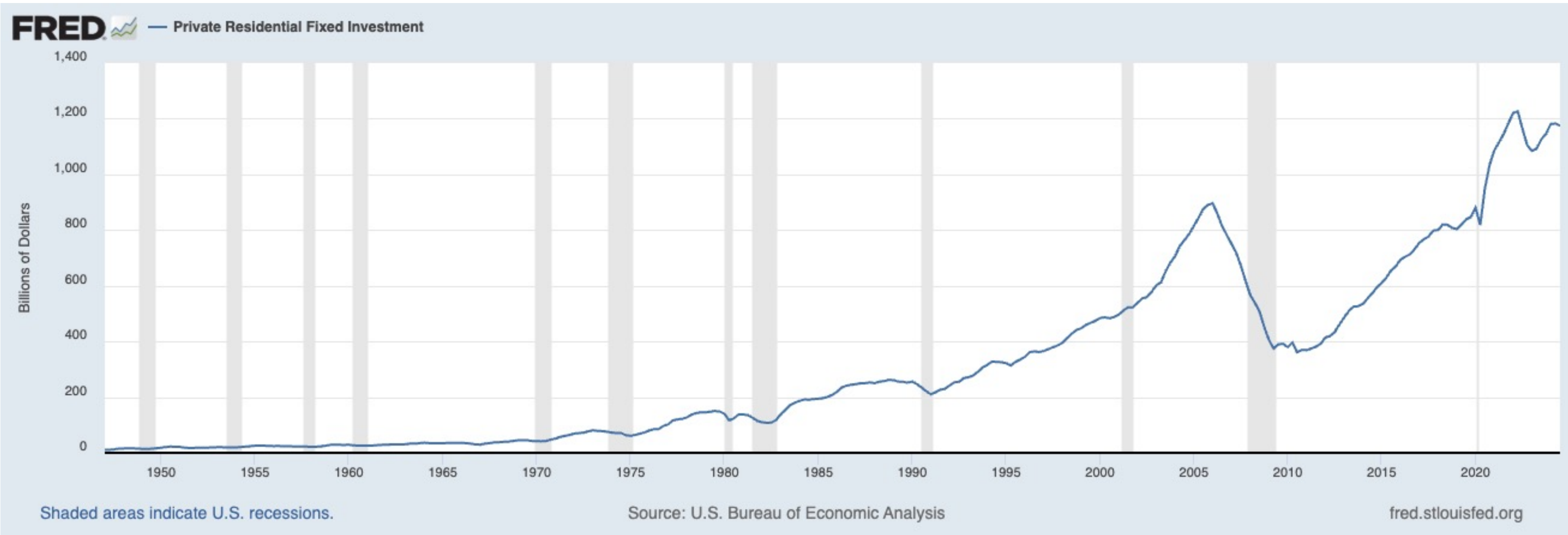
This data does not reflect actual moves. The latest migration analysis is based on a sample of about two million Redfin.com users who searched for homes across more than 100 metro areas. To be included in this dataset, a Redfin.com user must have viewed at least 10 homes in a three month period. This dataset excludes all rentals data.

Stock Performance During the Great Financial Crisis



Source: Refinitiv

Market Size – Residential Investment per year 1950-2024



Source: Fred

Foreign Buyers

Key Findings

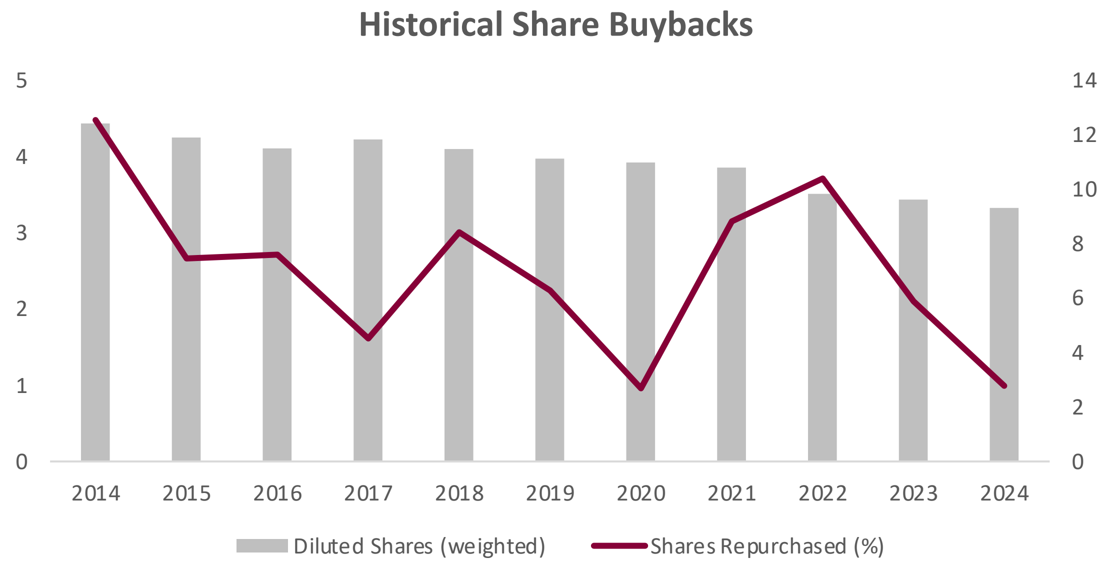
- **$42 Billion – Dollar volume of foreign buyer residential purchases** during April 2023–March 2024 (2.0% of $2.1 trillion of the dollar volume of existing-home sales)
- **54,300 – Number of foreign buyer existing-home purchases** during April 2023–March 2024 (1.3% of 4.06 million existing-home sales)
- **57% – Foreign buyers who reside in the United States** (recent immigrants; less than two years at the time of the transaction) or non-immigrant visa holders (Type B)
- **$475,000 – Foreign buyer median purchase price** (compared to $392,600 for all U.S. existing homes sold)
- **50% – Foreign buyers who paid all-cash** (compared to 28% among all existing-home buyers)
- **45% – Foreign buyers who purchased a property for use as a vacation home, rental, or both** (compared to 16% among all existing-home buyers)
- **76% – Foreign buyers who purchased a detached single-family home or townhome** (compared to 90% of all existing-home buyers)
- **45% – Foreign buyers who purchased in a suburban area** (similar to 47% among all existing-home buyers)

Source: NAR

Strong Level of Share Repurchase Activity Can Continue

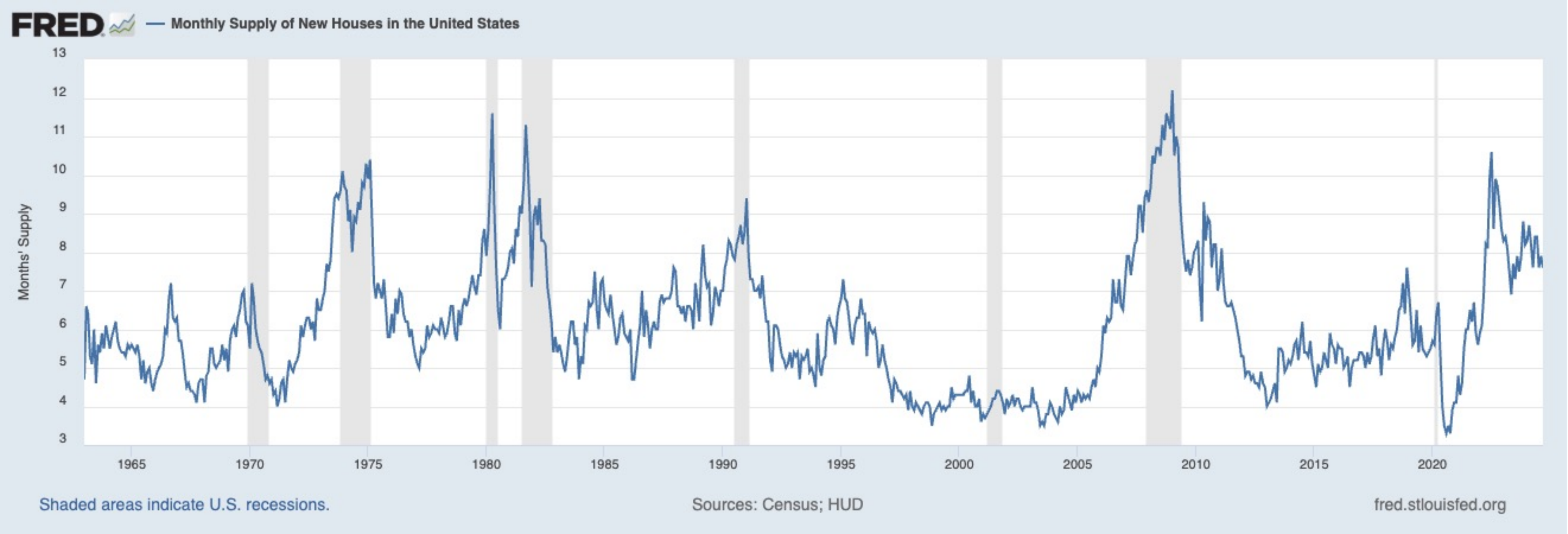
Management Team are Skilled Capital Allocators that Prioritize Strong Share Repurchase Activity

- NVR prioritizes tax-efficient share buybacks over dividends, reducing diluted shares by 25% since 2014 to enhance shareholder returns.
- With a ROIC of +32% (vs 14% TOL and 22% PHM) and negative Net Debt/EBITDA -1.45 (vs 0.84 TOL and 0.18 PHM), NVR leads the industry in capital efficiency compared to peers.



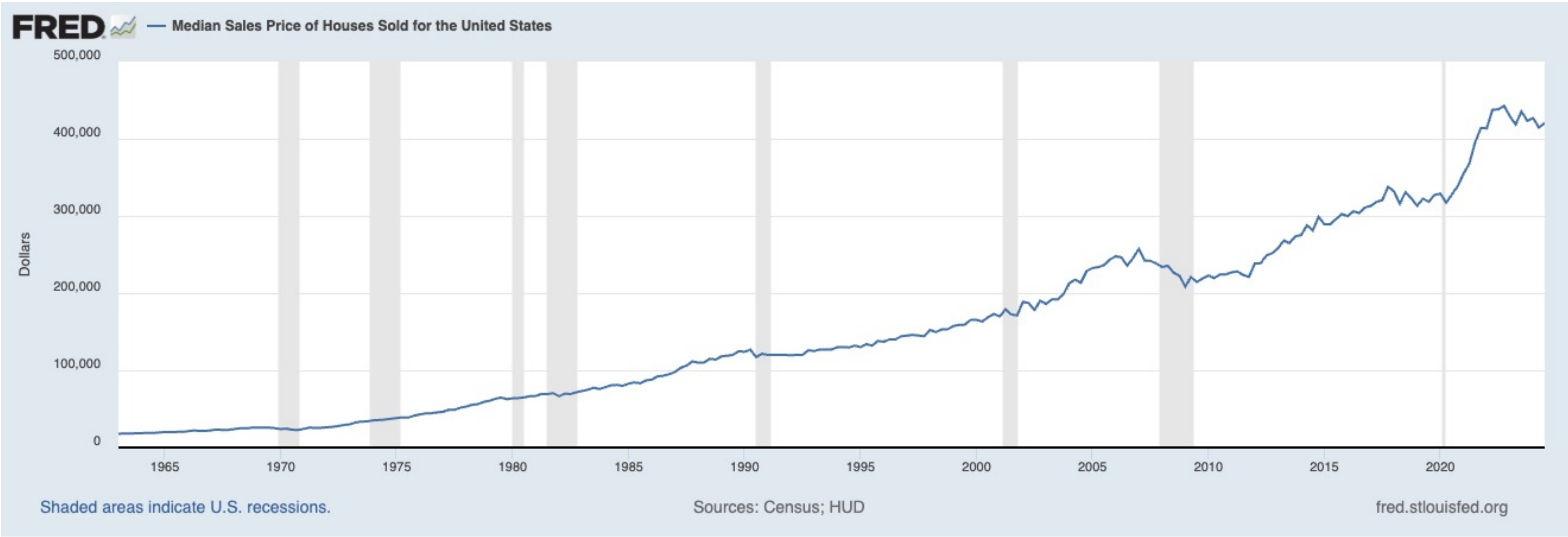
Source: FactSet, Team Analysis

Houses Supply US



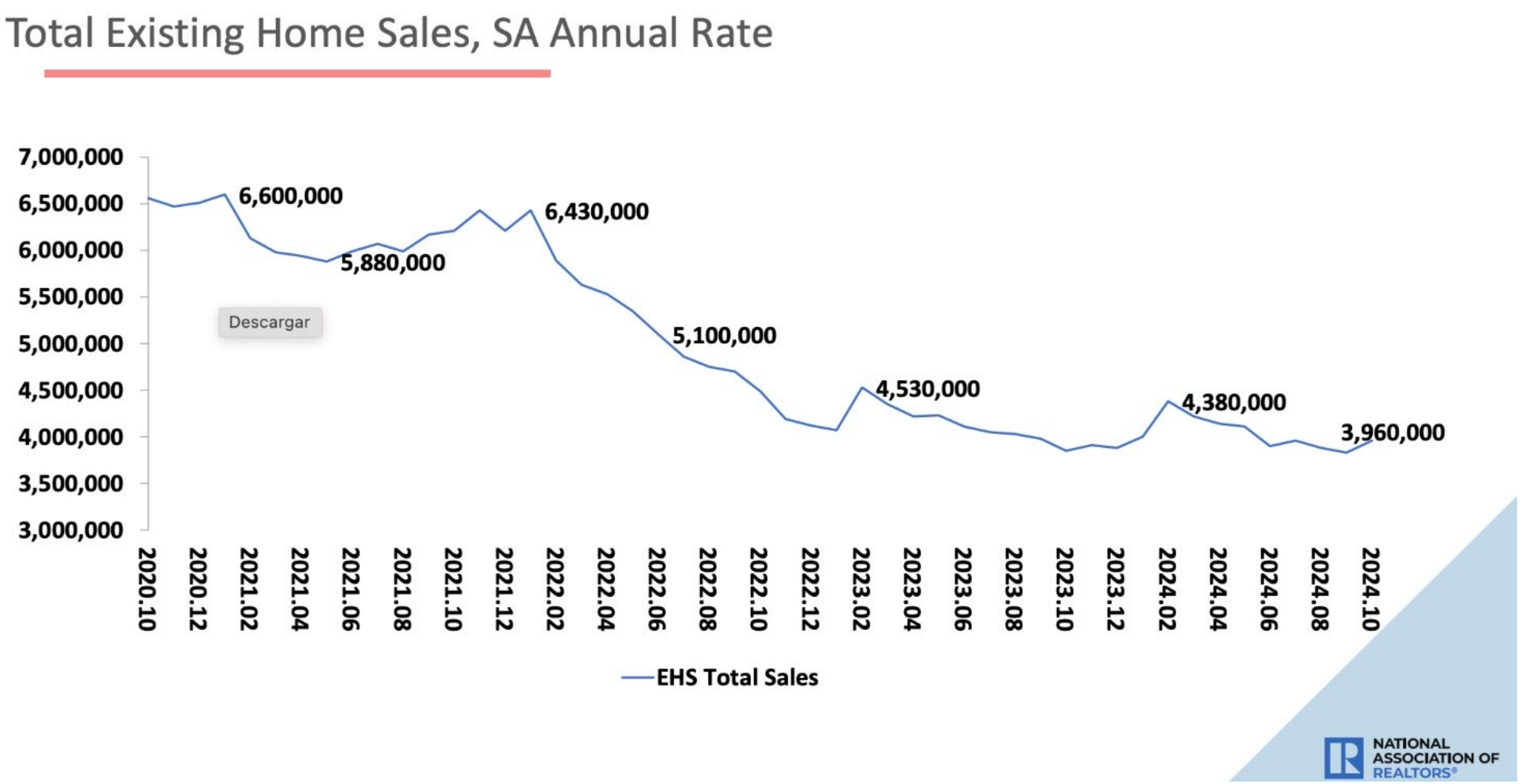
Source: Fred

Median Sale Price



Source: Fred

Total Existing Homes Sales



Source: NAR

Mortgage Rates

Mortgage rates are down from October 2023 peak but remain elevated

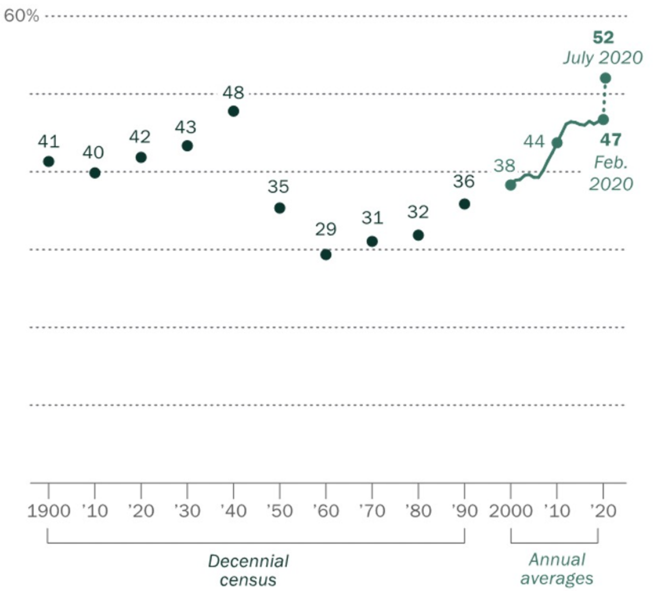
Average weekly rate for a 30-year fixed-rate mortgage in the U.S.

Note: Since Nov. 17, 2022, rates reflect national averages based on borrower applications for first-lien prime conventional conforming mortgages, for home purchases with a 20% down payment. Averages from the preceding time period were collected by surveying lenders.
Source: Freddie Mac.

Unsatisfied Demand

Share of young adults living with parents rises to levels not seen since the Great Depression era

% of 18- to 29-year-olds in U.S. living with a parent



Note: "Living with a parent" refers to those who are residing with at least one parent in the household. 1900-1990 shares based on household population.
Source: Pew Research Center analysis of decennial census 1900-1990; Current Population Survey annual averages 2000-2019; 2020 Current Population Survey monthly files (IPUMS).

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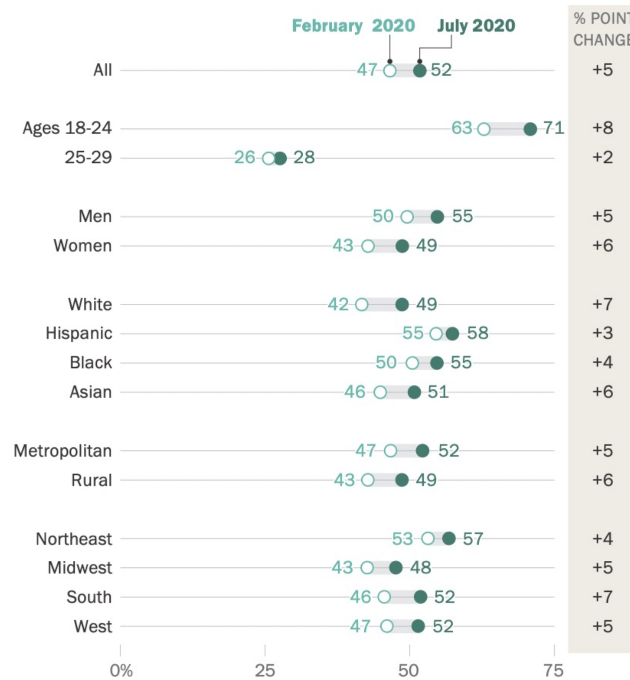
Increase in share of those living with their parents is more pronounced among 18- to 24-year-olds

% of 18- to 29-year-olds in U.S. living with a parent



Note: "Living with a parent" refers to those who are residing with at least one parent in the household. White, Black and Asian adults include those who report being only one race and are non-Hispanic. Hispanics are of any race. The percentage point changes are computed from unrounded shares.
Source: Pew Research Center analysis of 2020 Current Population Survey monthly files.

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