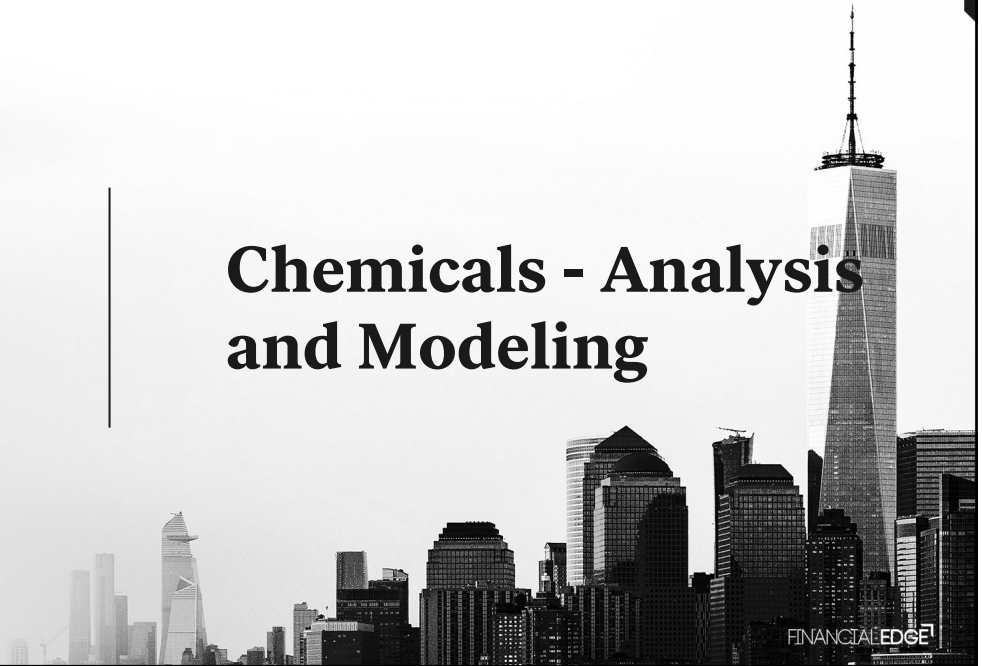




Chemicals - Analysis and Modeling



FINANCIALEDGE¹

Chemical Sector Players

FINANCIALEDGE¹

Chemical companies work a lot like industrial companies but are **closer to the raw materials**



CHEMICAL COMPANIES

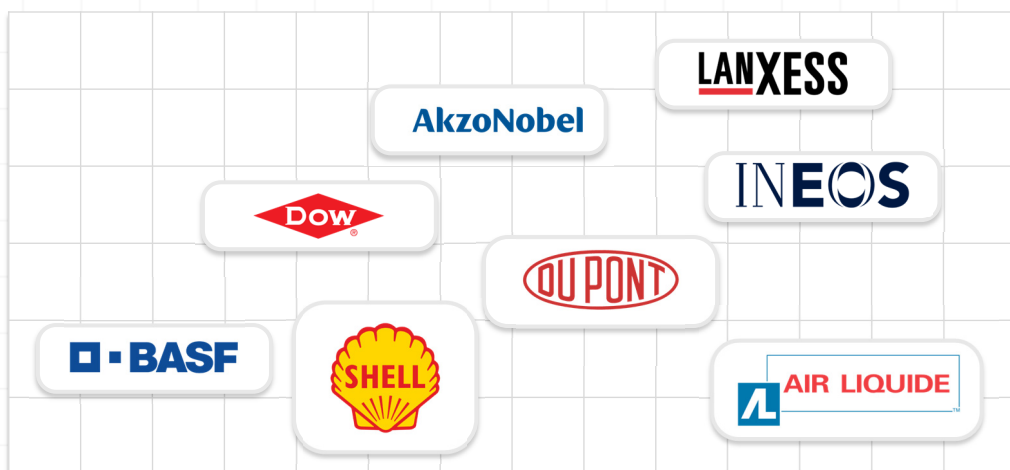


Diversified

Specialized

Small Cap

Large Cap



Air Liquide

Concentrates on one type of product



Company	Main Inputs	Main Products & % of Revenue	End-use Industries
	<ul style="list-style-type: none"> Ethylene Propylene Benzene Chlorine 	<ul style="list-style-type: none"> Packaging Performance Coatings Infrastructure 	<ul style="list-style-type: none"> Construction Automotive Consumer goods
	<ul style="list-style-type: none"> Titanium dioxide Resins Solvents Petrochemicals 	<ul style="list-style-type: none"> Decorative Paints Performance Coatings 	<ul style="list-style-type: none"> DIY/trade construction Marine Automotive Aerospace Industrials
	<ul style="list-style-type: none"> Air Hydrogen Argon 	<ul style="list-style-type: none"> Industrial Gases Other 	<ul style="list-style-type: none"> Healthcare Pharmaceuticals Energy Steel blast furnaces Semiconductors Electronics

What Makes Chemical Companies Special?

FINANCIALEDGE¹

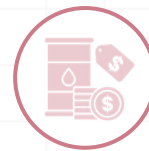
SCALE



OVERSUPPLY

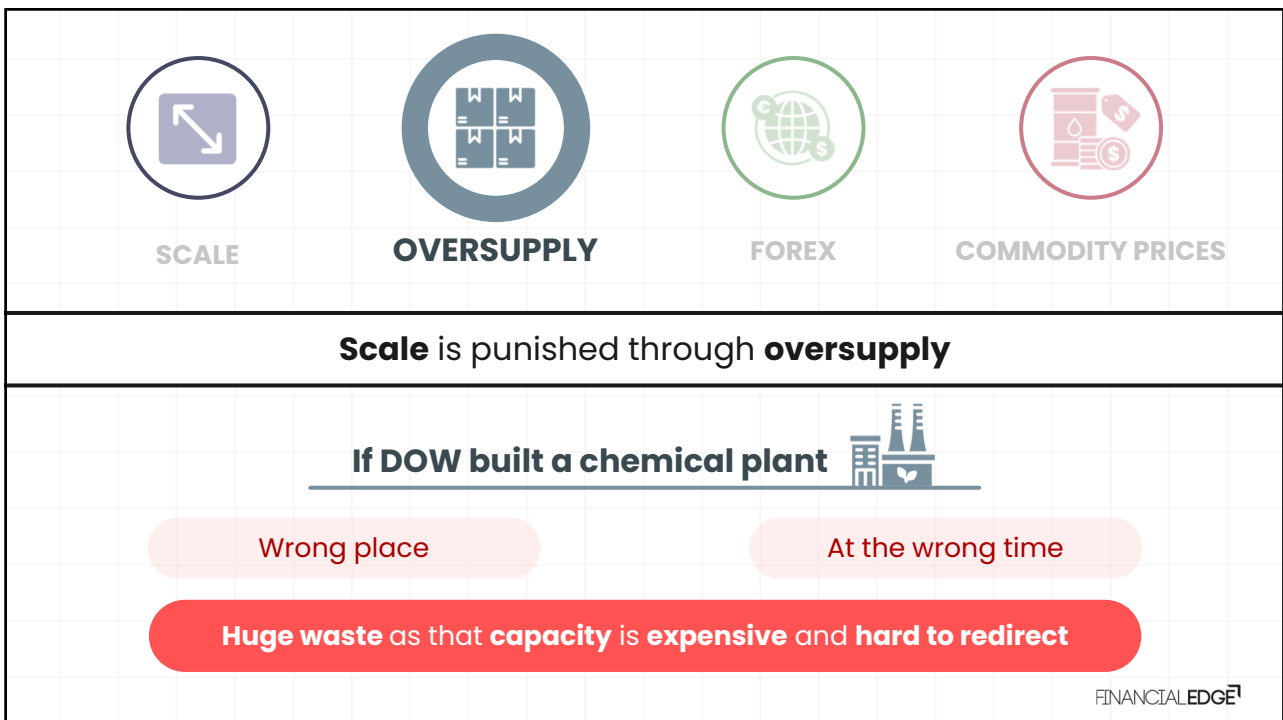
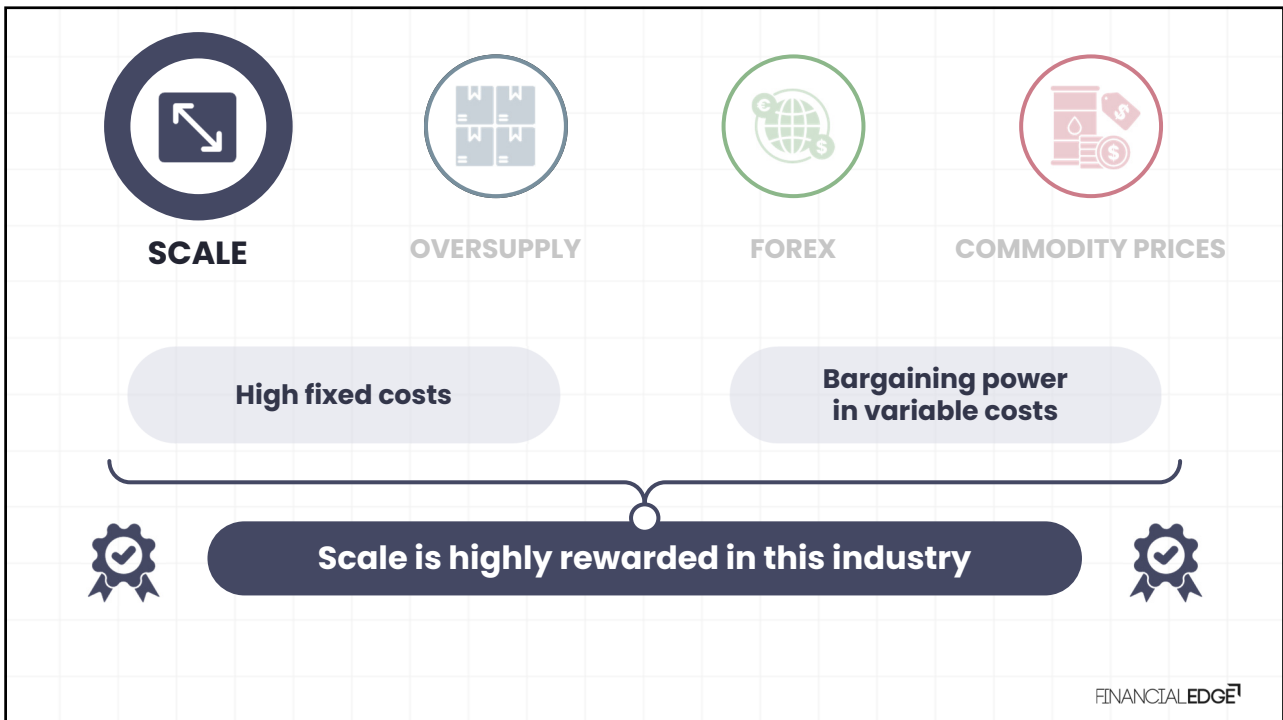


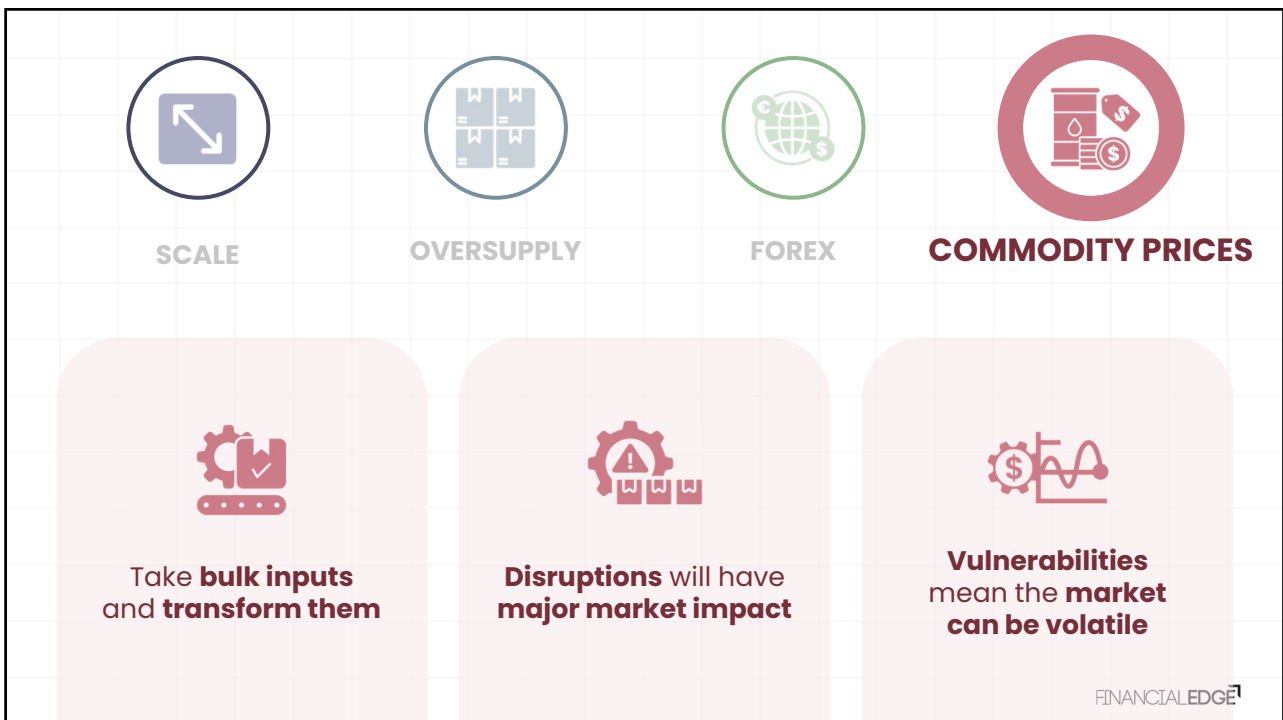
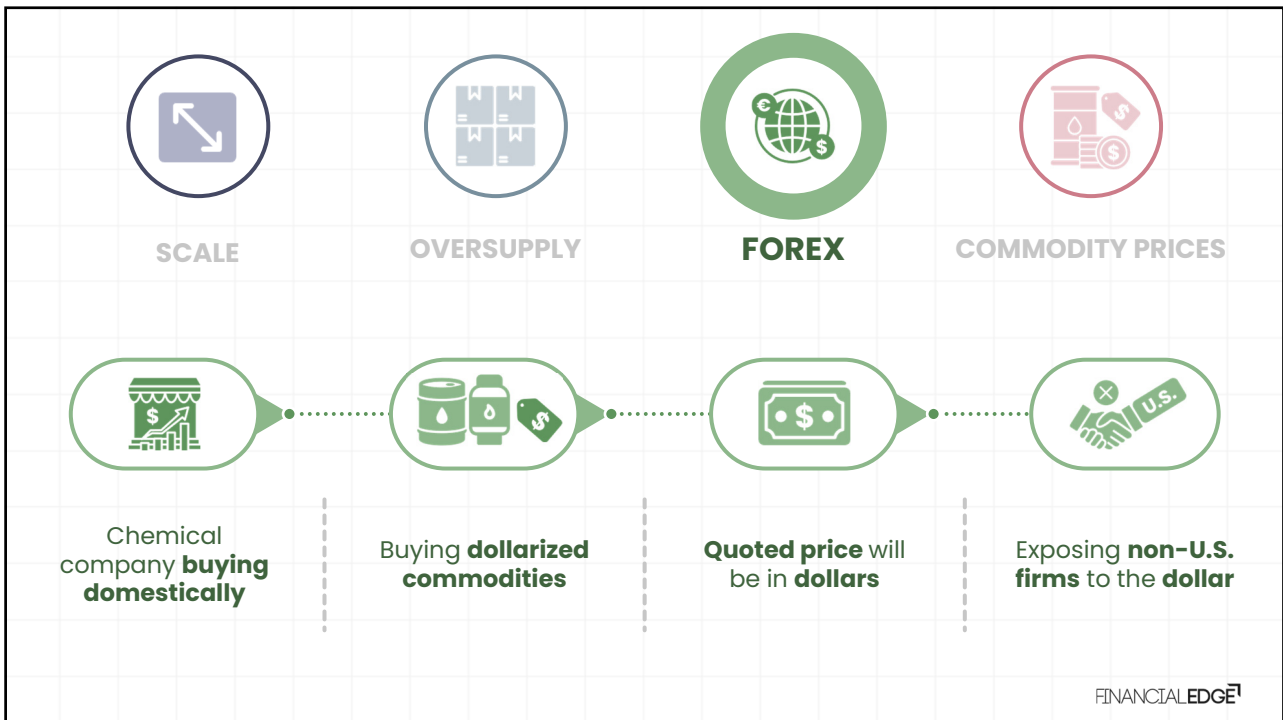
FOREX



COMMODITY PRICES

FINANCIALEDGE¹





Scale of Chemicals Companies - Examples

Shell's ethane cracker, a mammoth plastics plant near Pittsburgh, begins operations

10 years in the making, plant will turn ethane, a natural gas component, into pellets



Shin-Etsu outlines delayed US PVC expansion timeline

Market: Chemicals, Petrochemicals | 08/08/24

The Shell "Pennsylvania cracker"



Hydrocarbons



'Cracks' them into more useful parts

Adding around **4%** to **U.S. cracking capacity**

Shell's ethane cracker, a mammoth plastics plant near Pittsburgh, begins operations

10 years in the making, plant will turn ethane, a natural gas component, into pellets



Shin-Etsu outlines delayed US PVC expansion timeline

Market: Chemicals, Petrochemicals | 08/08/24

The Shell "Pennsylvania cracker"

One of the **first crackers** not in the **U.S. Gulf area**

Closer to the North East of America



Transport to customers in that area is **easier**



Shell's ethane cracker, a mammoth plastics plant near Pittsburgh, begins operations

10 years in the making, plant will turn ethane, a natural gas component, into pellets



Shin-Etsu outlines delayed US PVC expansion timeline

Market: Chemicals, Petrochemicals | 08/08/24

The Shell "Pennsylvania cracker"



Making a plant



A lot of **work** and **dialogue** with **local government**



The market can respond very early



The Louisiana PVC plant (planned by Shin-Etsu)

Disruptive to prices in the **chemical industry** years before it was **completed**

Shell's ethane cracker, a mammoth plastics plant near Pittsburgh, begins operations

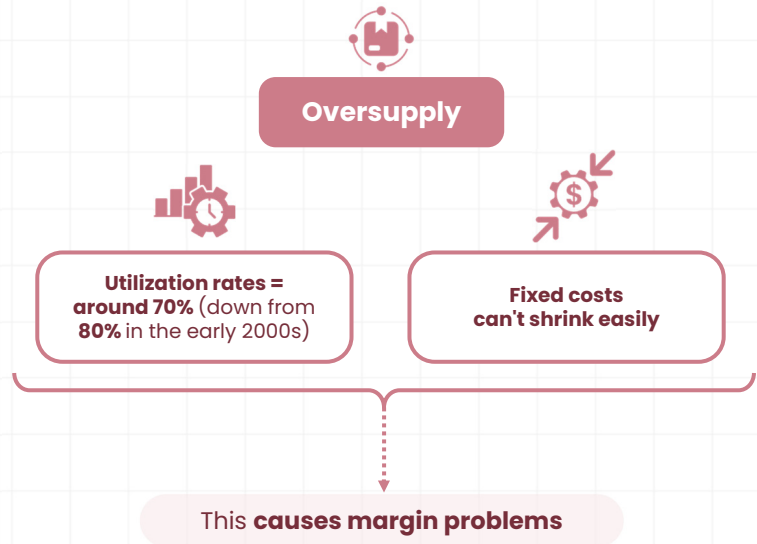
10 years in the making, plant will turn ethane, a natural gas component, into pellets



Shin-Etsu outlines delayed US PVC expansion timeline

Market: Chemicals, Petrochemicals | 08/08/24

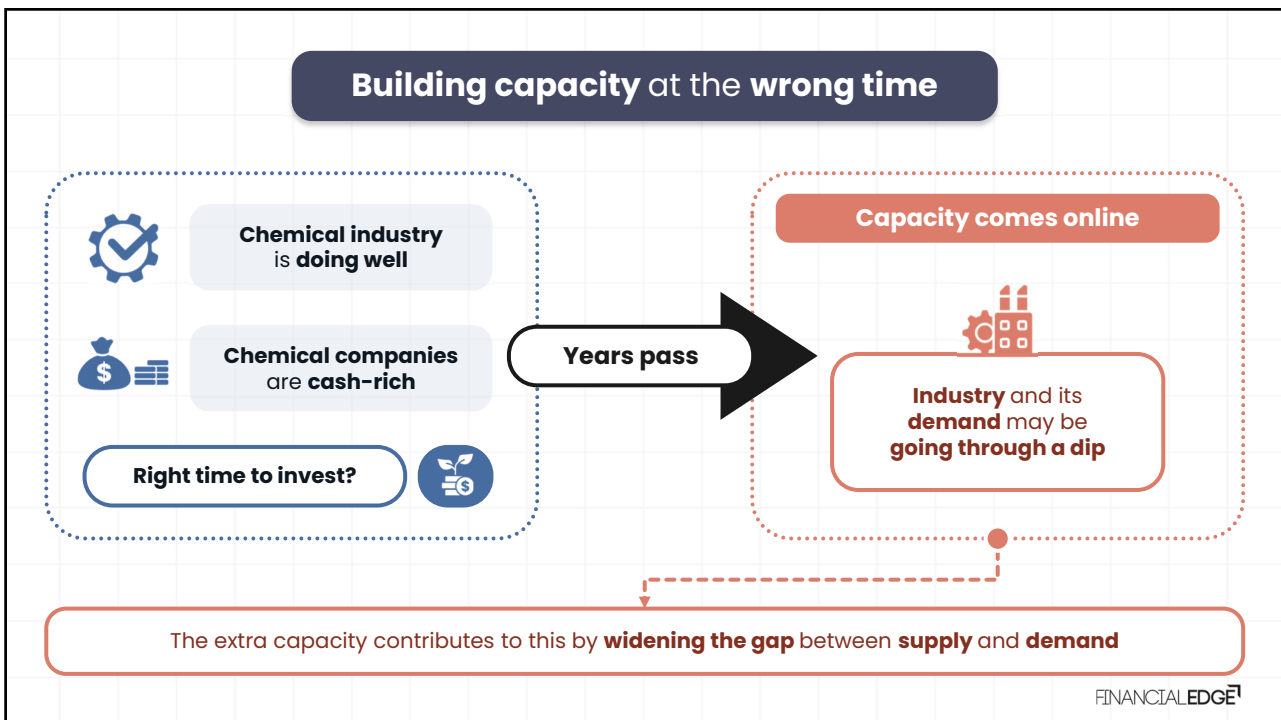
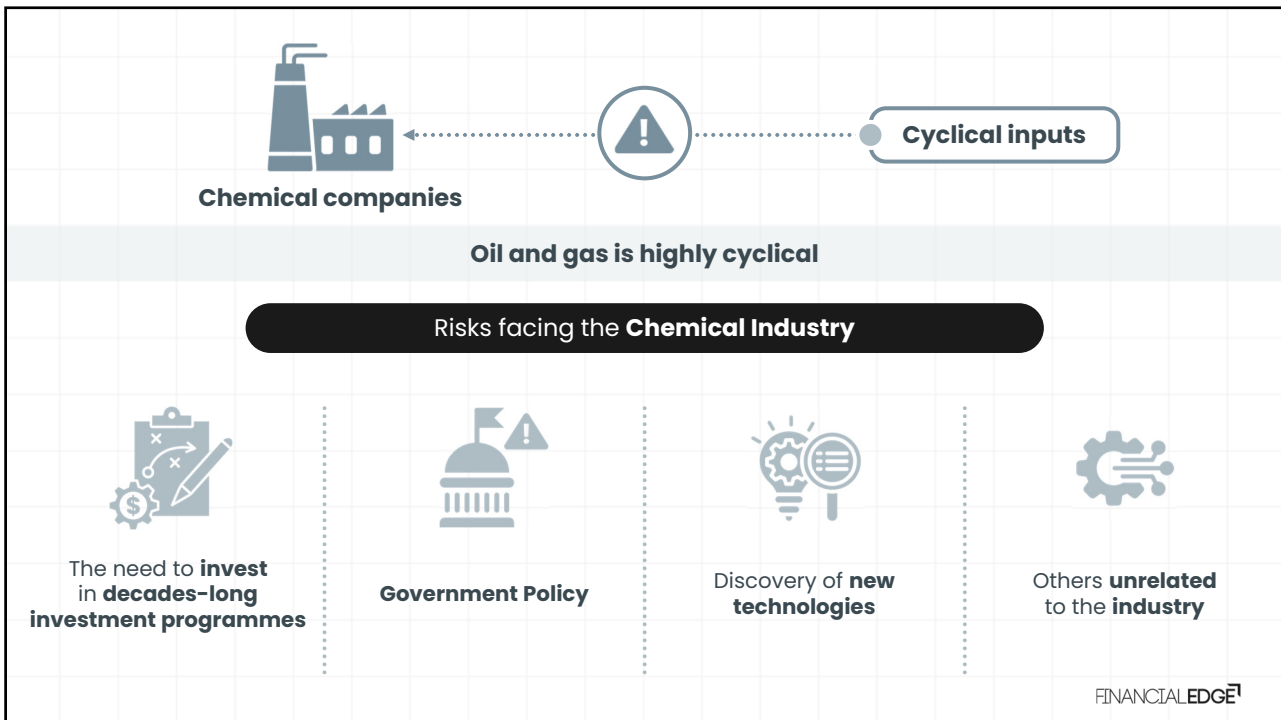
The Shell "Pennsylvania cracker"

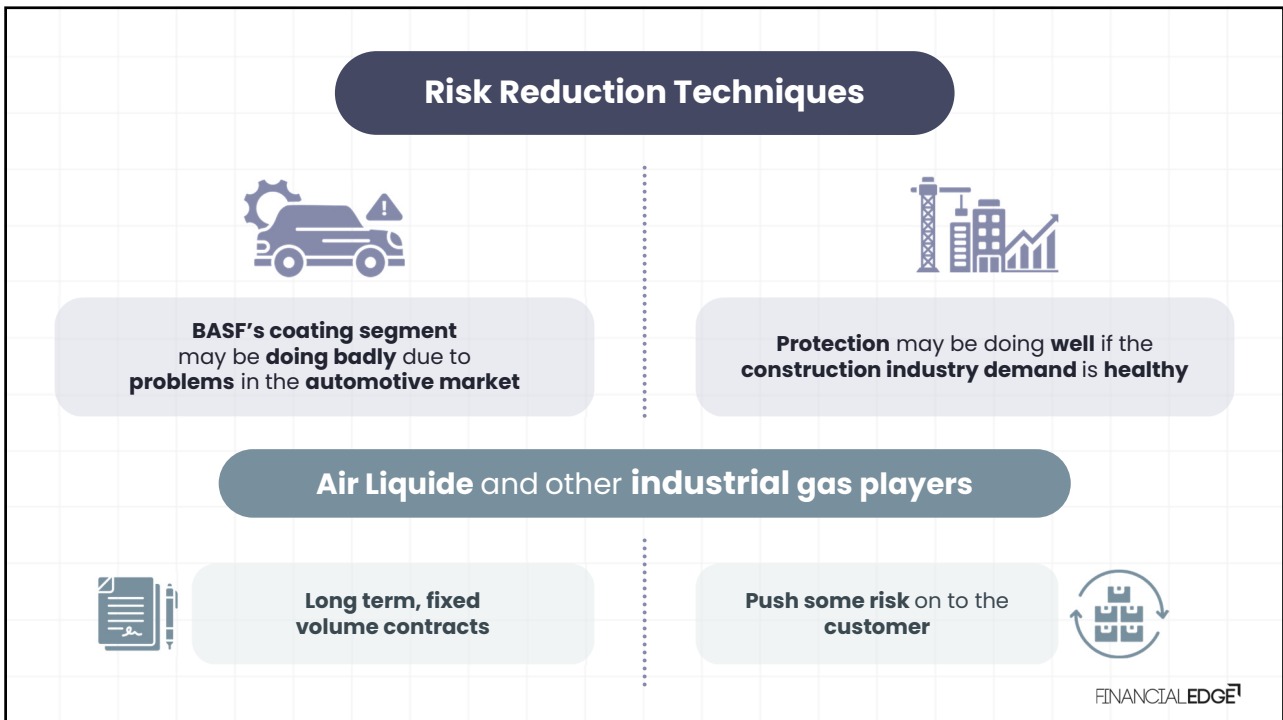


FINANCIALEDGE¹

Oversupply Problems in the Chemical Sector

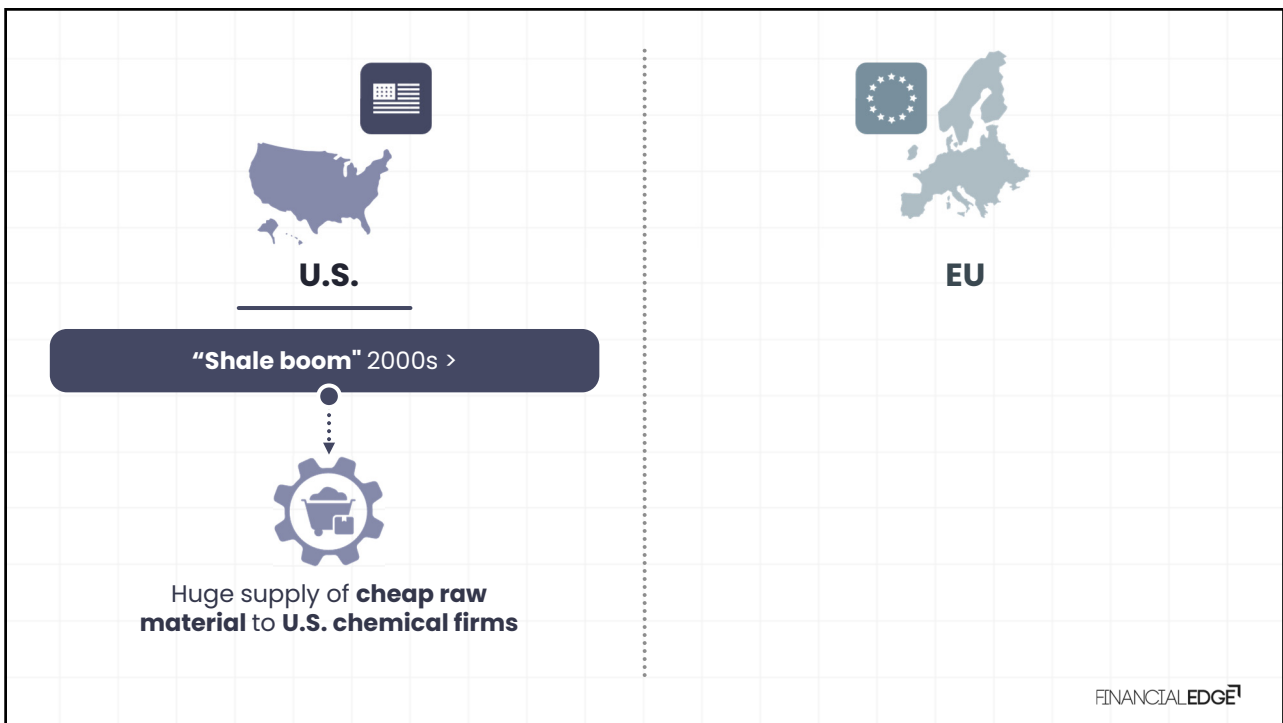
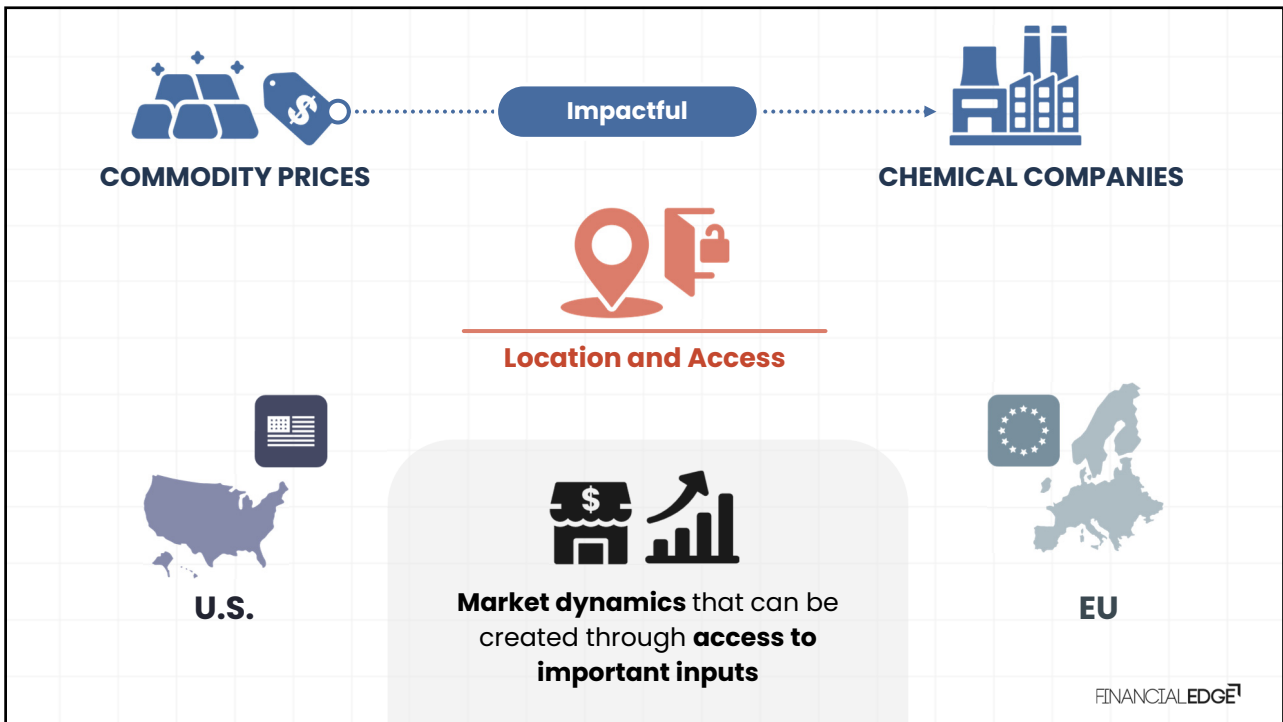
FINANCIALEDGE¹

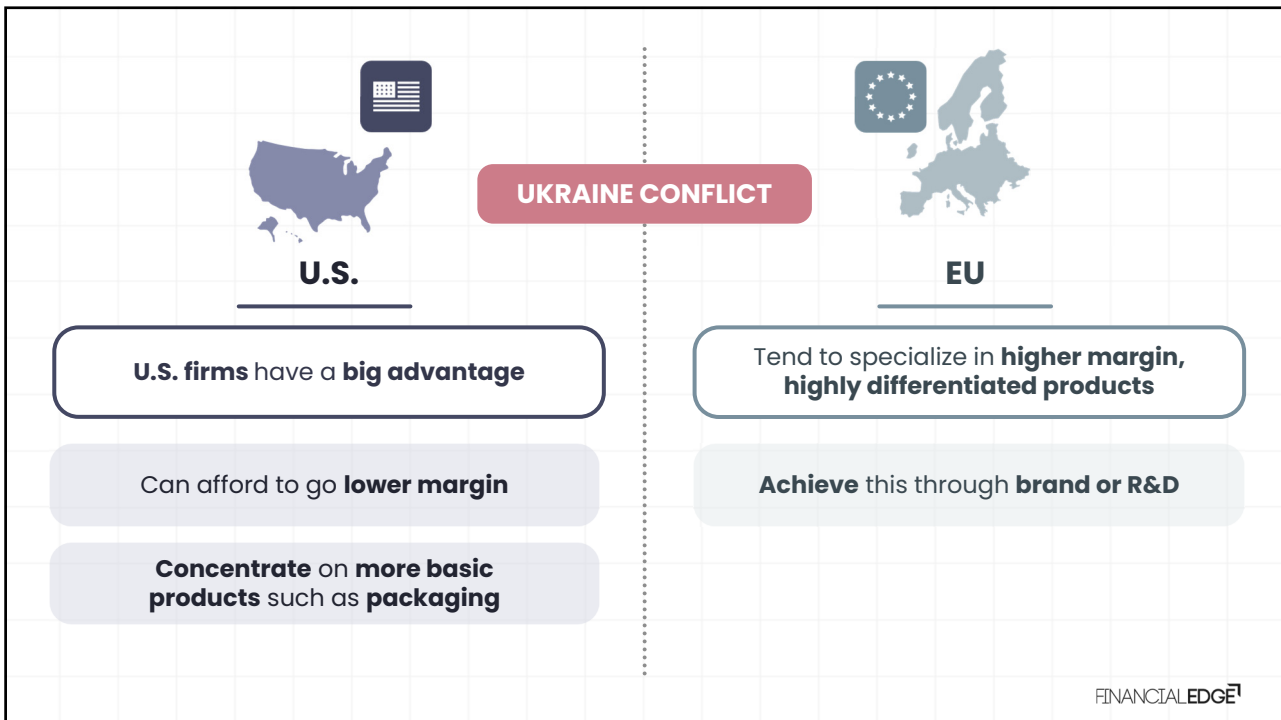




Commodity Prices

FINANCIALEDGE¹





Segmental Analysis

Extract From Lanxess Report

Key Data by Segment

	Consumer Protection		Specialty Additives		Advanced Intermediates		All other segments		LANXESS	
	2023	2024	2023	2024	2023	2024	2023	2024	2023	2024
€ million										
External sales	2,340	2,081	2,325	2,209	1,775	1,804	274	272	6,714	6,366
Inter-segment sales	75	78	18	9	42	109	(135)	(196)	-	-
Segment/Group sales	2,415	2,159	2,343	2,218	1,817	1,913	139	76	6,714	6,366
Segment result/EBITDA pre exceptionals	310	286	209	227	121	210	(128)	(109)	512	614
Exceptional items affecting EBITDA	(14)	0	(20)	(2)	(33)	0	(117)	(74)	(184)	(76)
Segment assets	3,129	3,145	2,615	2,661	1,182	1,198	1,477	905	8,403	7,909
Segment capital expenditures	112	105	133	130	94	97	61	35	400	367
Depreciation and amortization	197	184	182	191	109	113	74	72	562	560
Write-downs	262	0	149	2	21	4	2	0	434	6
Segment liabilities	429	424	380	445	404	440	665	531	1,878	1,840
Employees – as of Dec. 31	3,555	3,439	2,945	2,987	2,941	2,789	3,408	3,123	12,849	12,338
Employees – average for the year	3,579	3,473	2,973	3,014	3,006	2,828	3,472	3,136	13,030	12,451



Projecting using an overall revenue growth rate may be difficult

Trying to include what's happening to:

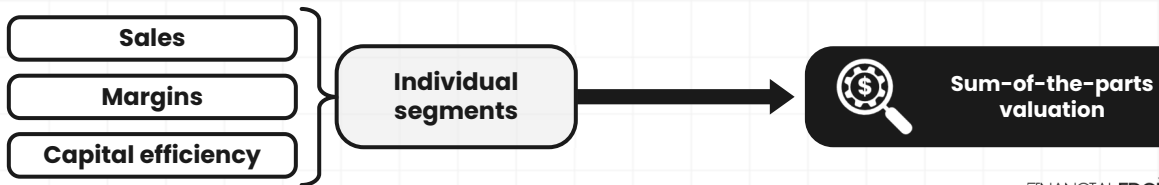
Consumer protection

Specialty additives

Extract From Lanxess Report

Key Data by Segment

	Consumer Protection		Specialty Additives		Advanced Intermediates		All other segments		LANXESS	
	2023	2024	2023	2024	2023	2024	2023	2024	2023	2024
€ million										
External sales	2,340	2,081	2,325	2,209	1,775	1,804	274	272	6,714	6,366
Inter-segment sales	75	78	18	9	42	109	(135)	(196)	-	-
Segment/Group sales	2,415	2,159	2,343	2,218	1,817	1,913	139	76	6,714	6,366
Segment result/EBITDA pre exceptionals	310	286	209	227	121	210	(128)	(109)	512	614
Exceptional items affecting EBITDA	(14)	0	(20)	(2)	(33)	0	(117)	(74)	(184)	(76)
Segment assets	3,129	3,145	2,615	2,661	1,182	1,198	1,477	905	8,403	7,909
Segment capital expenditures	112	105	133	130	94	97	61	35	400	367
Depreciation and amortization	197	184	182	191	109	113	74	72	562	560
Write-downs	262	0	149	2	21	4	2	0	434	6
Segment liabilities	429	424	380	445	404	440	665	531	1,878	1,840
Employees – as of Dec. 31	3,555	3,439	2,945	2,987	2,941	2,789	3,408	3,123	12,849	12,338
Employees – average for the year	3,579	3,473	2,973	3,014	3,006	2,828	3,472	3,136	13,030	12,451



Akzo Nobel's Model

	A	B	C	D	E	F	G	H
Revenue drivers								
1 Volume		6.0%	(8.0%)	0.2%	(0.3%)	1.7%		
2 Price		5.0%	11.0%	3.8%	1.3%	(0.2%)		
3 Organic growth		11.0%	3.0%	4.0%	1.0%	1.5%	=SUM(F2:F3)	
4 Growth		12.0%	10.0%	(1.0%)	1.0%	1.5%	=F4	
5 Revenue		3,979.0	4,344.0	4,300.0	4,343.0	4,408.1	=(1+F5)*E6	
6								
EBIT bridge								
7								
8 Pricing drop-through		102.4%	98.0%	99.4%	99.4%	99.4%		
9 Raw material inflation		8.0%	10.3%	(1.3%)	(2.7%)	1.7%		
10 Operating leverage		53.0%	40.0%	50.0%	54.0%	54.0%		
11								
12								
13 Beginning EBIT			580.4	393.0	500.3	495.0	=E18	
14 Pricing/Mix		177.2	428.9	164.1	55.6	(8.6)	=E6*F3*F9	
15 Raw materials		(286.0)	(411.8)	58.6	116.1	(74.3)	=E6*F10*-1	
16 Operating leverage			(127.3)	4.3	(7.0)	39.9	=F11*E6*F2	
17 Other costs		3.0	(72.0)	(123.0)	(170.0)	40.0		
18 Ending EBIT			580.4	393.0	500.3	495.0	=SUM(F13:F17)	

Volume and price are split out in their impact on revenue

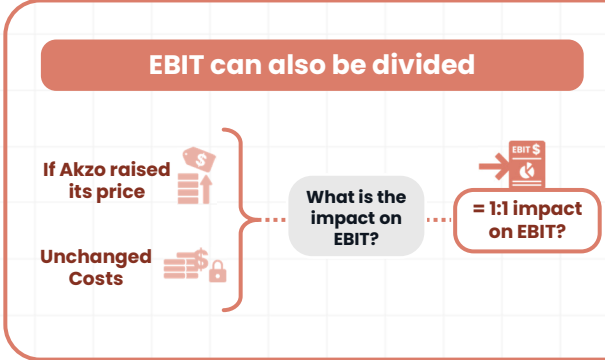


Akzo is really struggling to sell more

Chemical companies thrive on scale

Akzo Nobel's Model

	A	B	C	D	E	F	G	H
Revenue drivers								
Volume		6.0%	(8.0%)	0.2%	(0.3%)	1.7%		
Price		5.0%	11.0%	3.8%	1.3%	(0.2%)		
Organic growth		11.0%	3.0%	4.0%	1.0%	1.5%	=SUM(F2:F3)	
Growth		12.0%	10.0%	(1.0%)	1.0%	1.5%	=F4	
Revenue		3,979.0	4,344.0	4,300.0	4,343.0	4,408.1	= (1+F5)*E6	
EBIT bridge								
Pricing drop-through		102.4%	98.0%	99.4%	99.4%	99.4%		
Raw material inflation		8.0%	10.3%	(1.3%)	(2.7%)	1.7%		
Operating leverage		53.0%	40.0%	50.0%	54.0%	54.0%		
Beginning EBIT			580.4	393.0	500.3	495.0	=E18	
Pricing/Mix		177.2	428.9	164.1	55.6	(8.6)	=E6*F3*F9	
Raw materials		(286.0)	(411.8)	58.6	116.1	(74.3)	=E6*F10*-1	
Operating leverage			(127.3)	4.3	(7.0)	39.9	=F11*E6*F2	
Other costs		3.0	(72.0)	(123.0)	(170.0)	40.0		
Ending EBIT		580.4	393.0	500.3	495.0	492.0	=SUM(F13:F17)	



'Drop through'

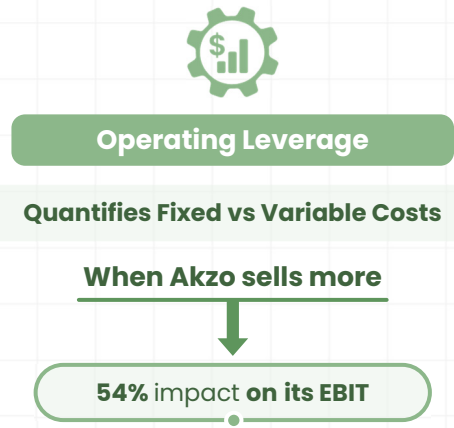
Predicting about a 99.4% impact

Pricing drop-through is the extent to which price increases convert to EBIT expansion



Akzo Nobel's Model

	A	B	C	D	E	F	G	H
Revenue drivers								
Volume		6.0%	(8.0%)	0.2%	(0.3%)	1.7%		
Price		5.0%	11.0%	3.8%	1.3%	(0.2%)		
Organic growth		11.0%	3.0%	4.0%	1.0%	1.5%	=SUM(F2:F3)	
Growth		12.0%	10.0%	(1.0%)	1.0%	1.5%	=F4	
Revenue		3,979.0	4,344.0	4,300.0	4,343.0	4,408.1	= (1+F5)*E6	
EBIT bridge								
Pricing drop-through		102.4%	98.0%	99.4%	99.4%	99.4%		
Raw material inflation		8.0%	10.3%	(1.3%)	(2.7%)	1.7%		
Operating leverage		53.0%	40.0%	50.0%	54.0%	54.0%		
Beginning EBIT			580.4	393.0	500.3	495.0	=E18	
Pricing/Mix		177.2	428.9	164.1	55.6	(8.6)	=E6*F3*F9	
Raw materials		(286.0)	(411.8)	58.6	116.1	(74.3)	=E6*F10*-1	
Operating leverage			(127.3)	4.3	(7.0)	39.9	=F11*E6*F2	
Other costs		3.0	(72.0)	(123.0)	(170.0)	40.0		
Ending EBIT		580.4	393.0	500.3	495.0	492.0	=SUM(F13:F17)	



Represents Akzo selling more products with the same production base

Akzo Nobel's Model

	A	B	C	D	E	F	G	H
1	Revenue drivers							
2	Volume	6.0%	(8.0%)	0.2%	(0.3%)	1.7%		
3	Price	5.0%	11.0%	3.8%	1.3%	(0.2%)		
4	Organic growth	11.0%	3.0%	4.0%	1.0%	1.5%	=SUM(F2:F3)	
5	Growth	12.0%	10.0%	(1.0%)	1.0%	1.5%	=F4	
6	Revenue	3,979.0	4,344.0	4,300.0	4,343.0	4,408.1	=(1+F5)*E6	
7								
8	EBIT bridge							
9	Pricing drop-through	102.4%	98.0%	99.4%	99.4%	99.4%		
10	Raw material inflation	8.0%	10.3%	(1.3%)	(2.7%)	1.7%		
11	Operating leverage	53.0%	40.0%	50.0%	54.0%	54.0%		
12								
13	Beginning EBIT		580.4	393.0	500.3	495.0	=E18	
14	Pricing/Mix	177.2	428.9	164.1	55.6	(8.6)	=E6*F3*F9	
15	Raw materials	(286.0)	(411.8)	58.6	116.1	(74.3)	=E6*F10*-1	
16	Operating leverage		(127.3)	4.3	(7.0)	39.9	=F11*E6*F2	
17	Other costs	3.0	(72.0)	(123.0)	(170.0)	40.0		
18	Ending EBIT	580.4	393.0	500.3	495.0	492.0	=SUM(F13:F17)	

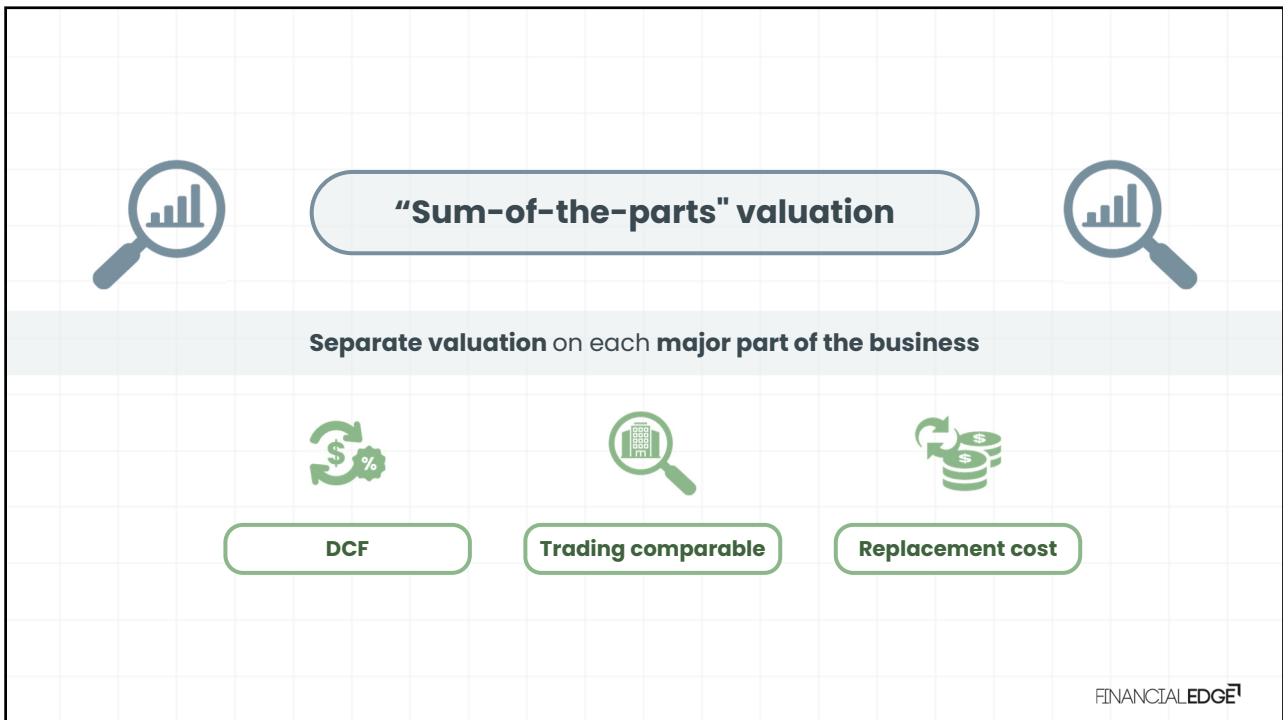
Akzo has **6 segments** it reports on



Would be possible to **calculate 2 bridges** for each

Analyze the **company's ability to use scale** for each of these

Sum of the Parts Valuation



Sum of the parts valuation of Chase corp.

Sum of the Parts Analysis

Perella Weinberg conducted a sum-of-the-parts analysis of Chase by performing separate financial analyses of each of Chase's individual business segments, consisting of (i) adhesives, sealants, and additives ("ASA"), (ii) industrial tapes ("IDT"), and (iii) corrosion protection and waterproofing ("CPW"), based on (x) a multiple applied to estimated 2023E EBITDA for each segment based on the Management Projections and (y) estimated 2023E EBITDA for each segment, excluding corporate expenses, based on the Management Projections. Perella Weinberg applied the implied blended multiple (calculated as the sum of the product of each segment's respective EBITDA, excluding corporate expenses, and each segment's respective multiple divided by total segment EBITDA, excluding corporate expenses) to corporate expenses. Perella Weinberg utilized management-provided 2023E segment EBITDA levels of \$68 million for ASA, \$50 million for IDT, and \$14 million for CPW.

51

[TABLE OF CONTENTS](#)

Based on Perella Weinberg's analyses of the various business segments and on professional judgments made by Perella Weinberg, Perella Weinberg selected a representative range of multiples to apply to 2023E EBITDA of 12.0x to 14.0x for ASA, 8.0x to 10.0x for IDT, and 9.0x to 11.0x for CPW to derive a range of implied values of approximately \$98.05 to \$118.71 per share of Chase Common Stock. Perella Weinberg compared this range to the Unaffected Share Price of \$123.08 per share, the Last Trading Share Price of \$127.94 per share and the Merger Consideration of \$127.50 per share to be received by the holders of Chase Common Stock pursuant to the Merger Agreement.

Segment	EV/EBITDA	2023E EBITDA \$m	Valuation \$m
Sealants	13x	68.0	884.0
Tapes	9x	50.0	450.0
Protection	10x	14.0	140.0
Total EV			1474.0
Cash*			49.0
Debt*			110.0
Equity			1413.0
Shares*			13.0
Valuation/share \$			109.0

Sum of the Parts

More accurate valuation

FINANCIALEDGE¹

Sum of the parts valuation of Chase corp.

Sum of the Parts Analysis

Perella Weinberg conducted a sum-of-the-parts analysis of Chase by performing separate financial analyses of each of Chase's individual business segments, consisting of (i) adhesives, sealants, and additives ("ASA"), (ii) industrial tapes ("IDT"), and (iii) corrosion protection and waterproofing ("CPW"), based on (x) a multiple applied to estimated 2023E EBITDA for each segment based on the Management Projections and (y) estimated 2023E EBITDA for each segment, excluding corporate expenses, based on the Management Projections. Perella Weinberg applied the implied blended multiple (calculated as the sum of the product of each segment's respective EBITDA, excluding corporate expenses, and each segment's respective multiple divided by total segment EBITDA, excluding corporate expenses) to corporate expenses. Perella Weinberg utilized management-provided 2023E segment EBITDA levels of \$68 million for ASA, \$50 million for IDT, and \$14 million for CPW.

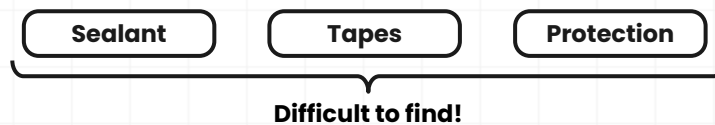
51

TABLE OF CONTENTS

Based on Perella Weinberg's analyses of the various business segments and on professional judgments made by Perella Weinberg, Perella Weinberg selected a representative range of multiples to apply to 2023E EBITDA of 12.0x to 14.0x for ASA, 8.0x to 10.0x for IDT, and 9.0x to 11.0x for CPW to derive a range of implied values of approximately \$98.05 to \$118.71 per share of Chase Common Stock. Perella Weinberg compared this range to the Unaffected Share Price of \$123.08 per share, the Last Trading Share Price of \$127.94 per share and the Merger Consideration of \$127.50 per share to be received by the holders of Chase Common Stock pursuant to the Merger Agreement.

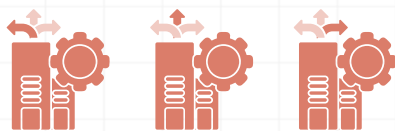
Segment	EV/EBITDA	2023E EBITDA \$m	Valuation \$m
Sealants	13x	68.0	884.0
Tapes	9x	50.0	450.0
Protection	10x	14.0	140.0
Total EV			1474.0
Cash*			49.0
Debt*			110.0
Equity			1413.0
Shares*			13.0
Valuation/share \$			109.0

To use one **overall multiple** you'd need a **comparable company** with the **same split of:**



Conglomerate Discount

A discount for very diverse company valuations



Necessary if the conglomerate is operating in **distinct segments** that **don't synergize very well**

DOW



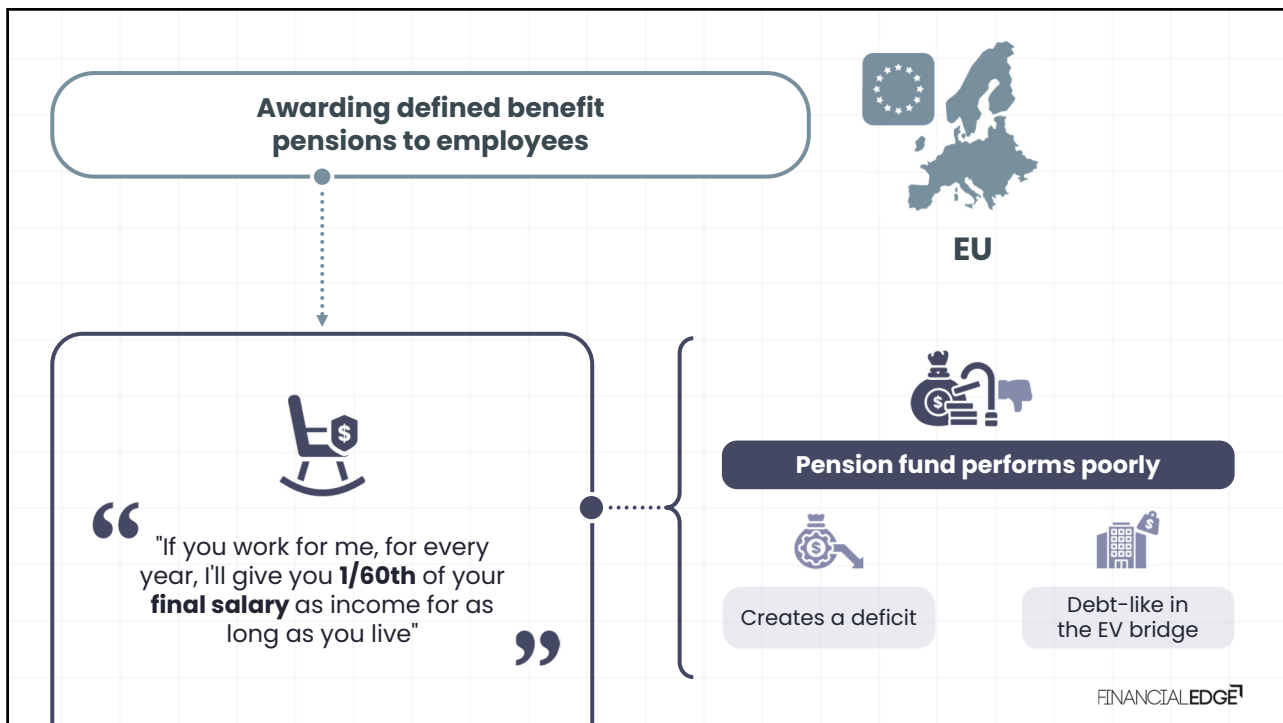
Commodity




Specialty chemicals

Different **production processes**


Pensions in the Chemical Sector





Pension footnote


Pension scheme and other post-retirement benefits



Funds in deficit would need to be noted

Debt-like in the valuation

Depending on the country this may be **tax-deductible**




Funds that are in surplus

Can be ignored


Very **unusual** for that money to be **accessible by a buyer**

FINANCIALEDGE¹




"Underfunded"

Which creates a **liability**



"Unfunded"

No **fund assets** (Pure deficit)



If you've got a medical plan
it's probably **unfunded**

FINANCIALEDGE¹

Analyzing Chemical Companies

FINANCIALEDGE¹

PROFITS

GROWTH

COSTS

Asset ratios in company reports

1 Plant utilization

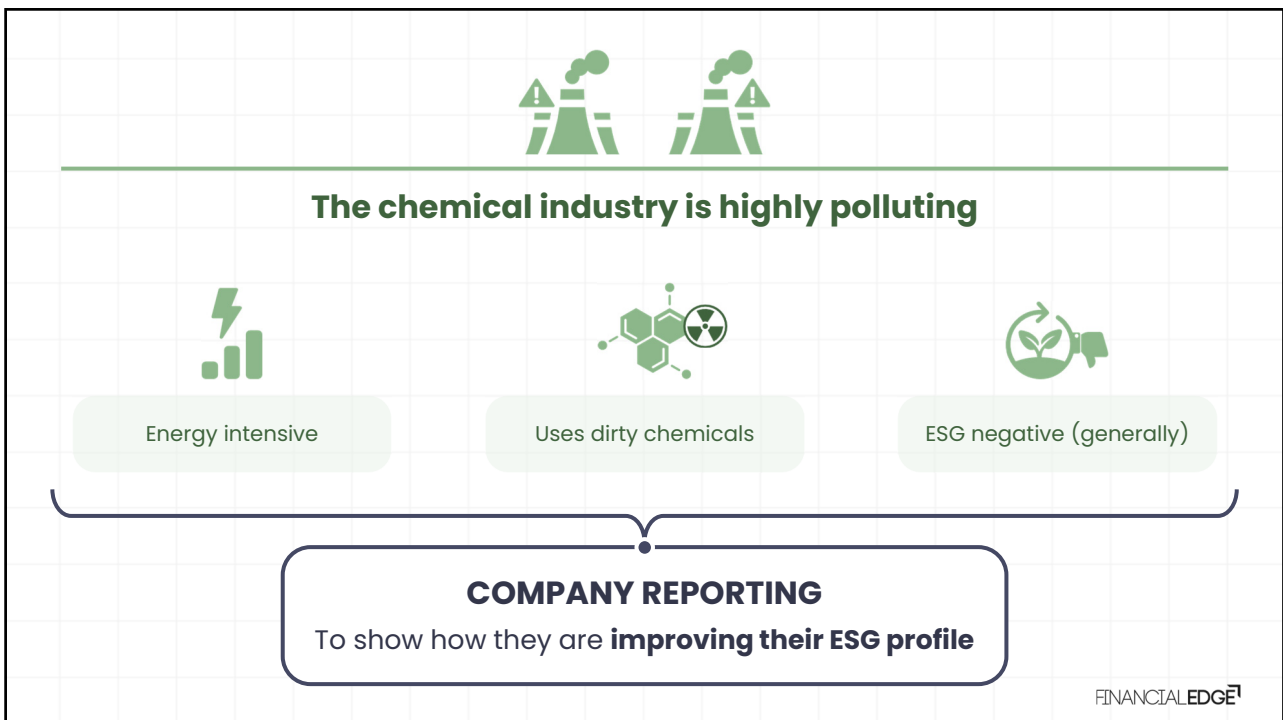
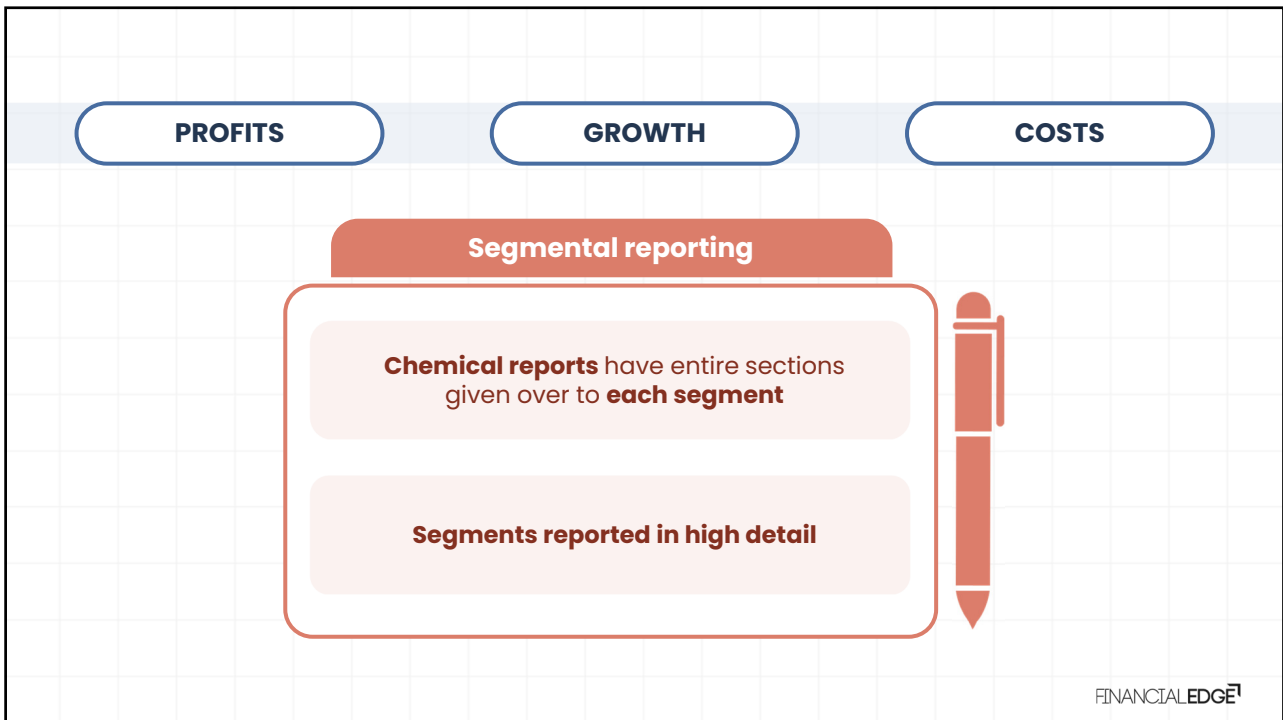


2 Asset turnover



3 Return on invested capital

FINANCIALEDGE¹





Valuation metrics



Chemical companies use the **same metrics** as **many other companies**

Sum-of-the-parts approach



May see **multiples used many times** rather than just once

Cyclicality



Forward years **may lose some usefulness** due to the uncertainty generated by **high levels of cyclicality**

FINANCIALEDGE¹

Case Study Company: AkzoNobel

FINANCIALEDGE¹



AkzoNobel



Dutch chemicals company best known for its paint



UK





India



Alabestor	Alba	alumGRIP	A	LESONAL	levis
Astral	AWLGRIP	Bruguer	Cetol	LUXOL at sea water	Marshall
Chartek	Chemcraft	Coral	Coral	Nordsjö	Ormaiztegui
cromadex	Corona	DEVOE COATINGS	Dulux	Polyfills	RELEST
Dulux TRADE	Flexa	HERBOL	Herbol	RELEST	SCHRAMM
Inca	Interlux	International	Interpon	Interpon	sikkens WOOD COATINGS
Interlux	LignuPro	sikkens	sikkens	sikkens	Soliant
mot6	NAUTICAL	Sparlack	Trimetal	Trimetal	
Polipol	Polyfills	WANDA	WANDA	WANDA	
RESICOAT	Sadolin	PrimerDirect	Vivchrom	Vivchrom	

FINANCIALEDGE¹



AkzoNobel




Diverse product offerings



Filling products
such as **polyfilla**





Akzo also serves a more B2B role

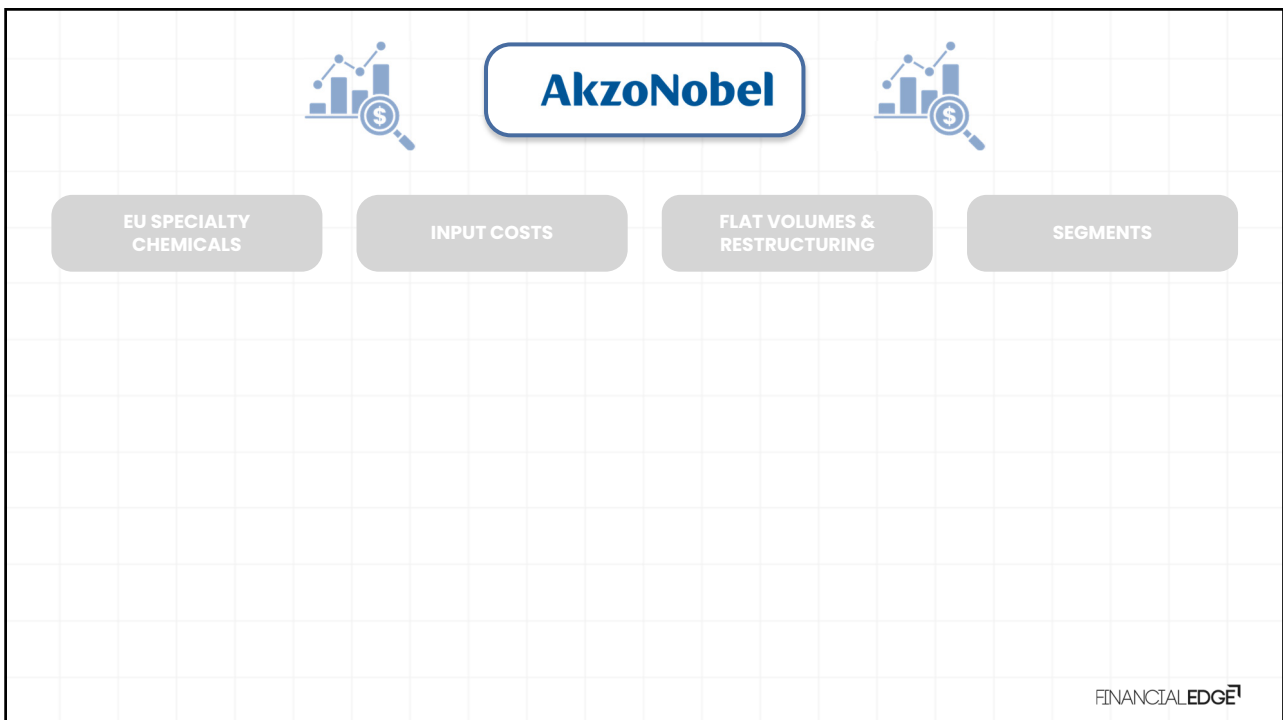
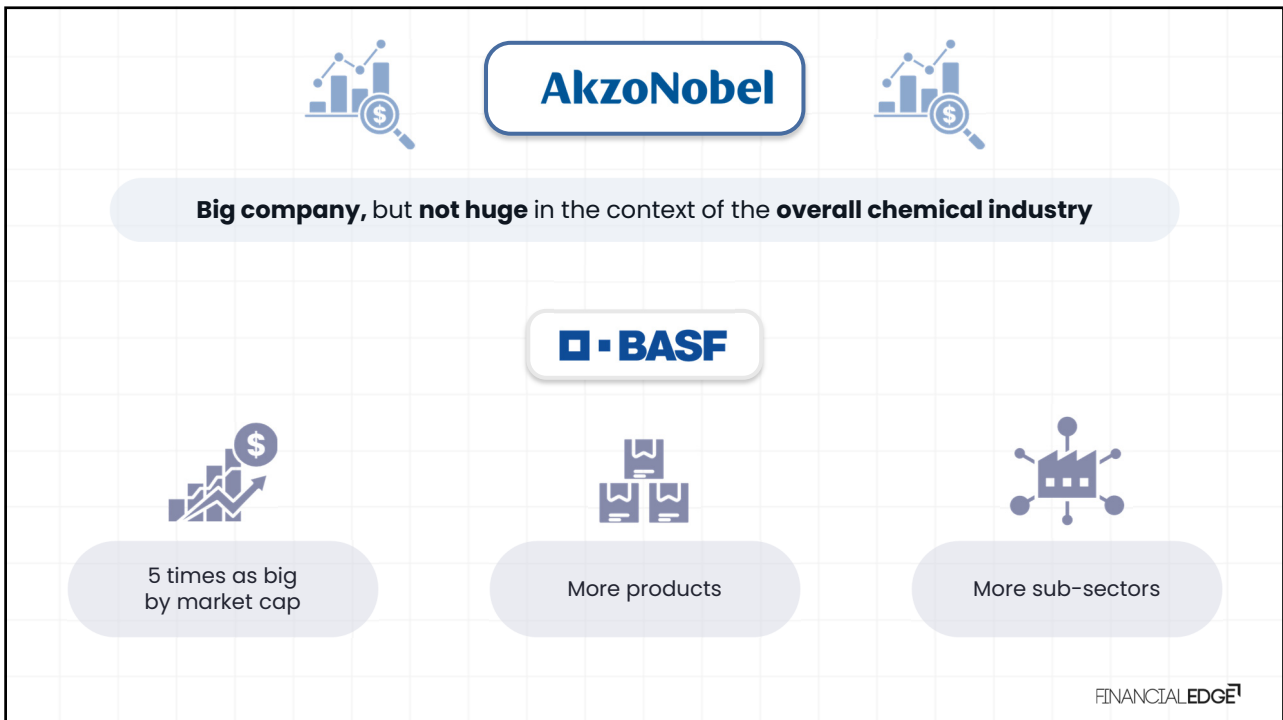


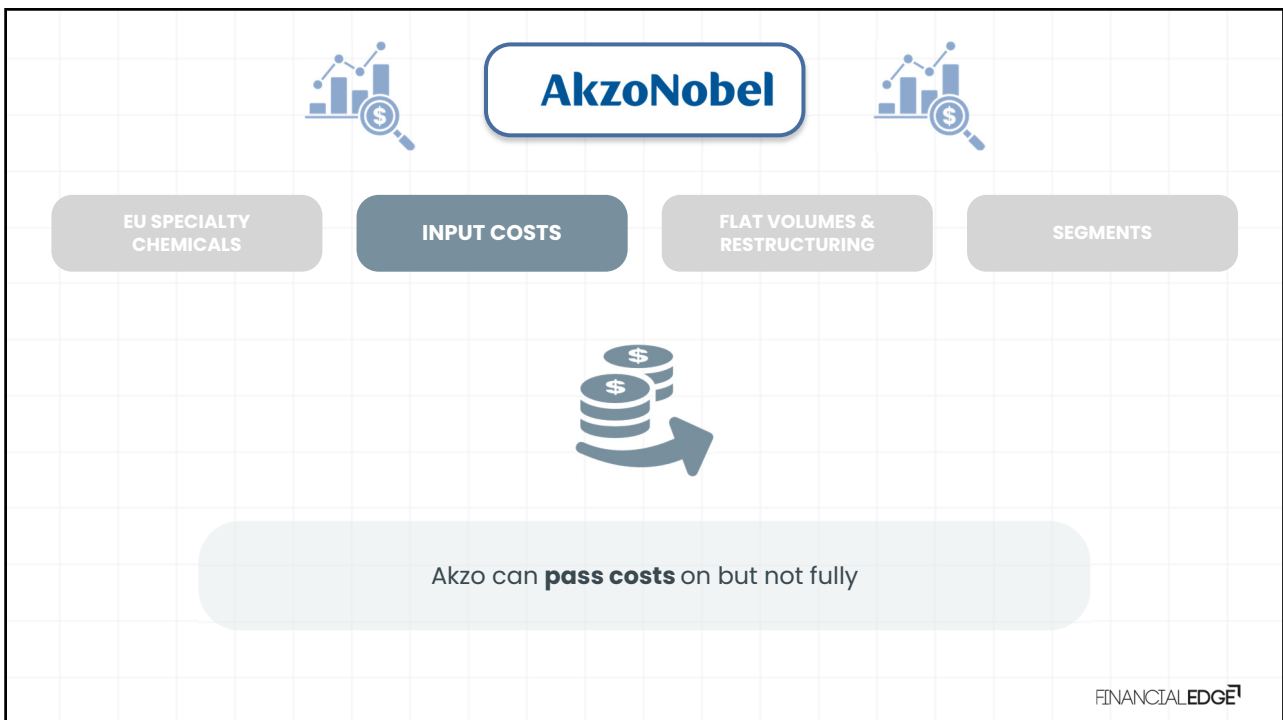
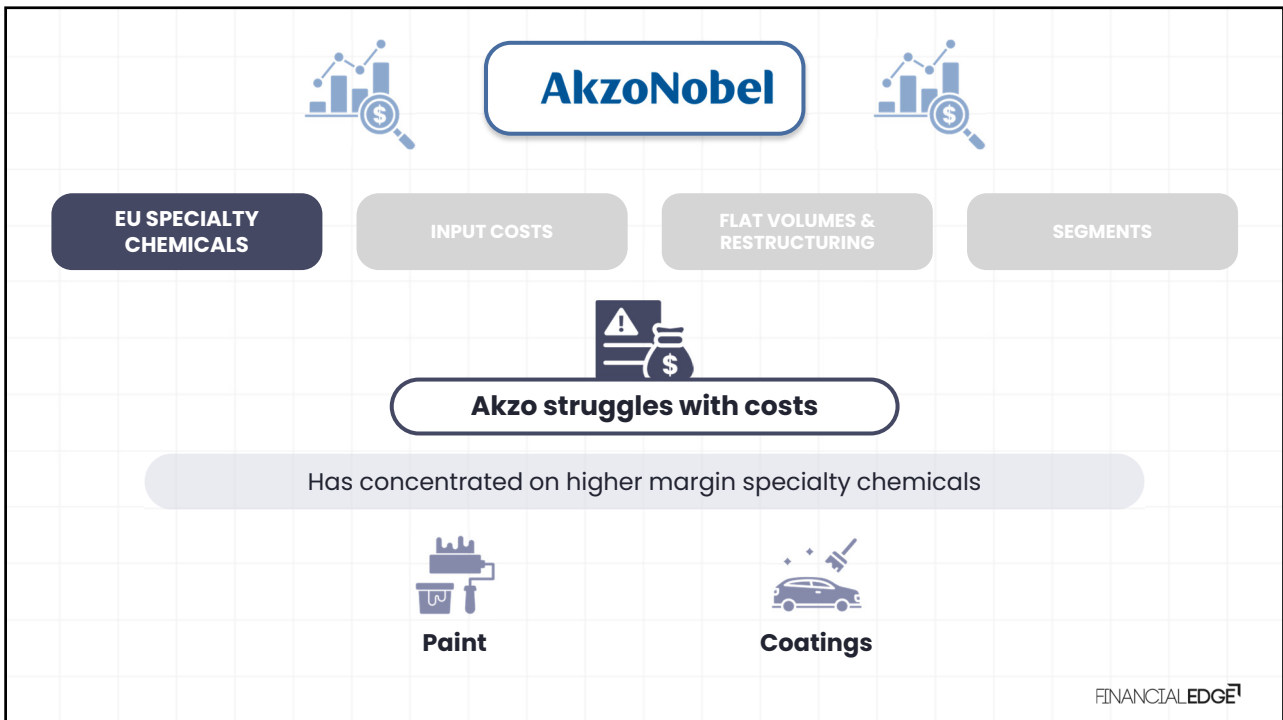
Wood stains

Car body coatings

Alabestor	Alba	alumGRIP	A	LESONAL	levis
Astral	AWLGRIP	Bruguer	Cetol	LUXOL at sea water	Marshall
Chartek	Chemcraft	Coral	Coral	Nordsjö	Ormaiztegui
cromadex	Corona	DEVOE COATINGS	Dulux	Polyfills	RELEST
Dulux TRADE	Flexa	HERBOL	Herbol	RELEST	SCHRAMM
Inca	Interlux	International	Interpon	Interpon	sikkens WOOD COATINGS
Interlux	LignuPro	sikkens	sikkens	sikkens	Soliant
mot6	NAUTICAL	Sparlack	Trimetal	Trimetal	
Polipol	Polyfills	WANDA	WANDA	WANDA	
RESICOAT	Sadolin	PrimerDirect	Vivchrom	Vivchrom	

FINANCIALEDGE¹





FINANCIALEDGE¹

www.FE.training

Please do not redistribute these materials without the
express permission of Financial Edge Training.



FINANCIALEDGE¹