

Desautels Capital Management

HIM Pitch – Albemarle (NYSE: ALB)

Honours in Investment Management (BCom)

Roy Chen Zhang, Senior Quantitative Analyst

Darius Kuddo, Junior Quantitative Analyst

Hashaam Nadeem, Junior Industrials Analyst

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Executive Summary



A leading global developer, manufacturer, and marketer of highly-engineered specialty chemicals

Itemized Agenda

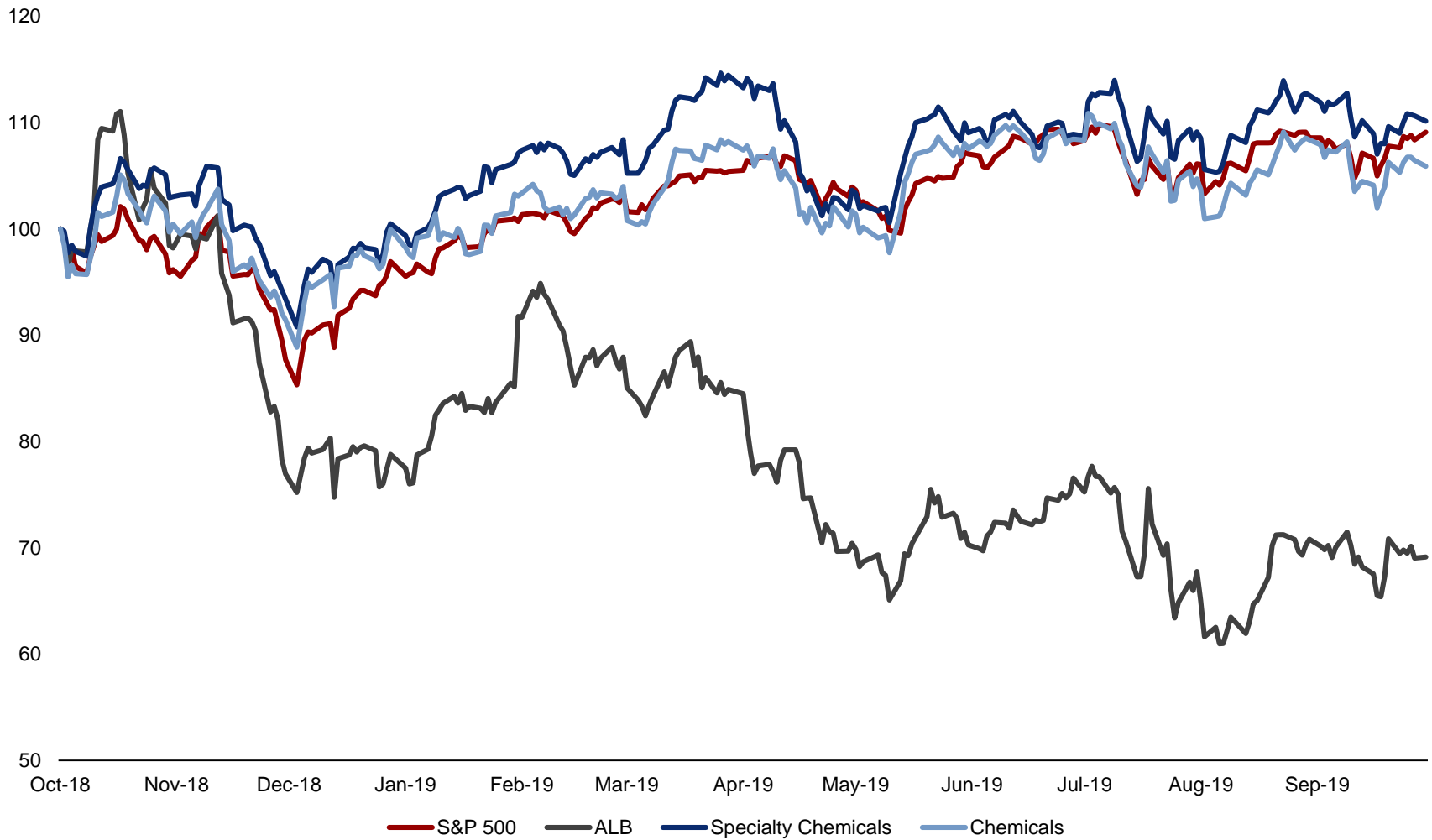
1	Specialty Chemicals	Weathering the Storm Ahead
2	Albemarle Overview	Business Model and Segments
3	Thesis 1:	<u>Future-Proofed to Capture Clean Energy Catalysts and Growth in Lithium</u>
4	Thesis 2 and Operational Risk Model:	<u>Strategic Exposures a Unique Driver of Stability</u>
5	Valuation + Conclusion	Discounted Cashflow, Real Options, Multiple Targeting, and Analyst Estimates

Company Financials

Albemarle Corp	NYSE: ALB		
Share Price			\$67.13
Shares Outstanding (mm)			105.99
Market Capitalization			\$7,115.11
- Cash and Short-Term Investments			\$398.2
+ Minority Interest			\$173.6
+ Total Debt			\$2,015.3
Enterprise Value			\$8,905.8
	2018A*	2019E	2020E
Revenue	\$3374.95	\$3507.35	\$3802.93
YoY		3.92%	8.43%
EV/Revenue	2.54x	2.34x	2.19x
EBITDA	\$918.31	\$923.71	\$1229.87
Margin %	27.21%	26.34%	32.34%
EV/EBITDA	9.64x	7.24x	6.48x

Buy with a Target Price of **\$88.00**

Key Segments vs. Sector

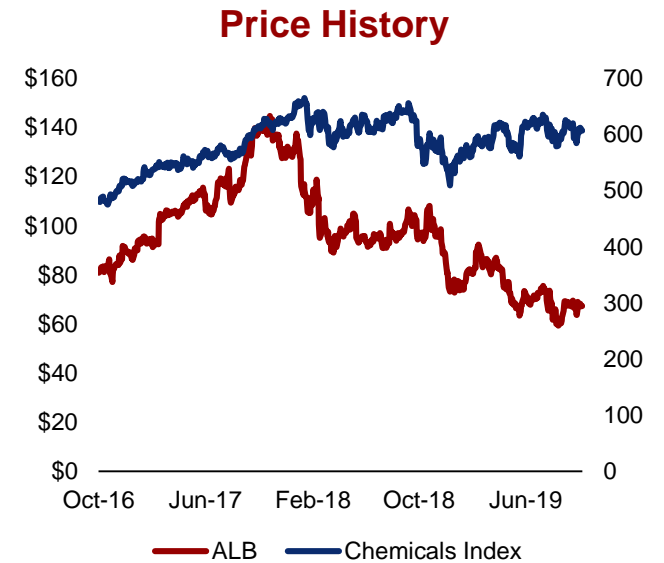
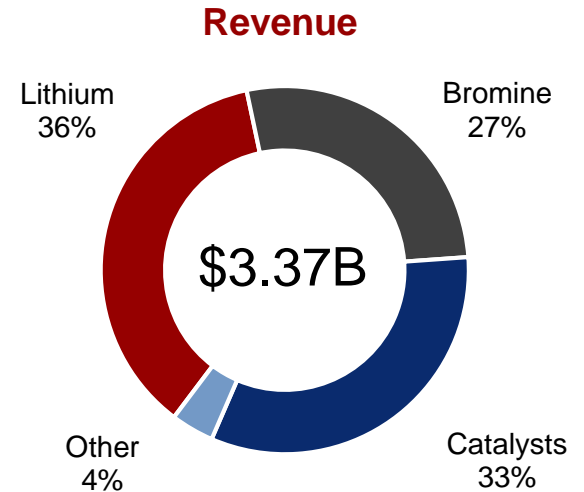


ALB Trading at a Significant Discount to Industry

Source: Bloomberg

A leading global developer, manufacturer, and marketer of highly-engineered specialty chemicals

Lithium	Bromine	Catalysts
Batteries	Fire Retardants	Clean Fuels Technologies (CFT)
Basic & Derivative Compounds	High-Heat Applications	Fluidized Catalytic Cracking (FCC)
Technical Services	Broad Industrial Applications	Refinery Market
Recycling		
Broad Geographic Exposure in Stable Countries		



Source: Bloomberg

Market Over-Punishing

Albemarle Facing Challenges in Catalyst Segment

- Catalysts segment net sales for 2Q 2019 decreased 7% compared to 2Q 2018
- The impact was primarily due to lower sales volume driven by the impact on FCC catalysts on lighter global crude

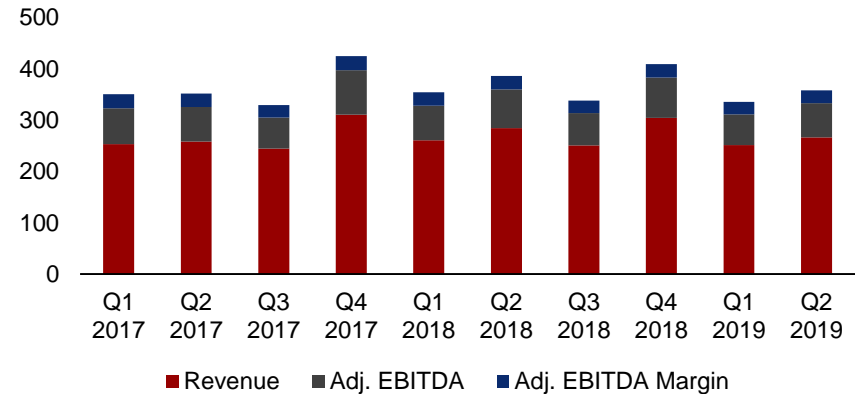


Catalyst Market Poised for Growth

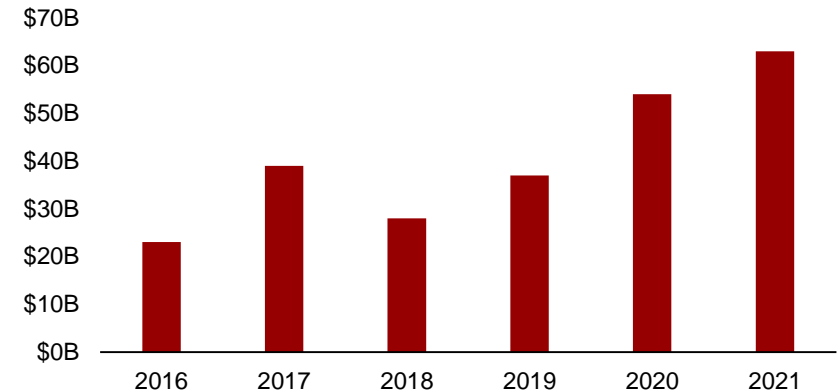
- Global refinery investments for greenfield and expansion projects expected to reach a total of \$409 billion, 2017-2026



Catalysts Segment Metrics



Global Refinery Greenfield CapEx Estimates

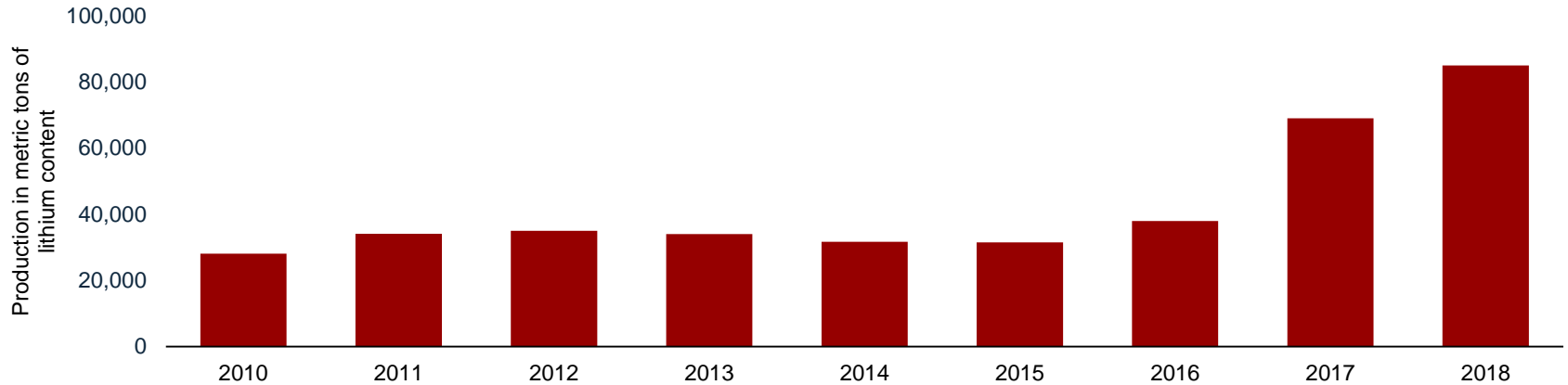


Albemarle is Over-punished for Short-Term Headwinds

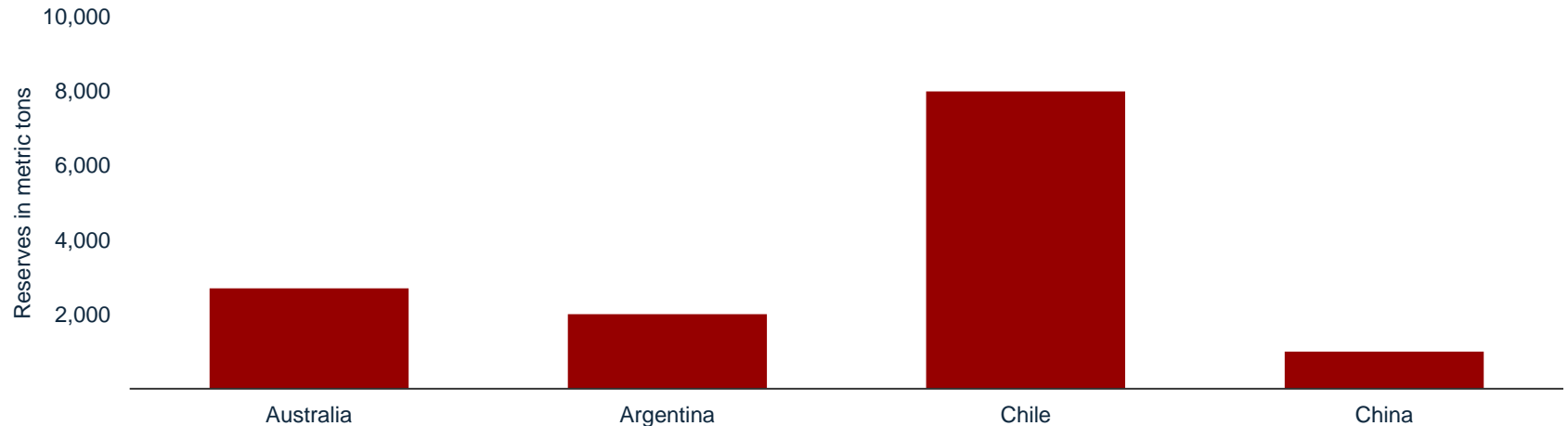
Sources: Bloomberg, company filings

Industry as a Whole

Lithium Global Supply (Metric Tons, 000s)



Lithium Global Reserves (Metric Tons, 000s)

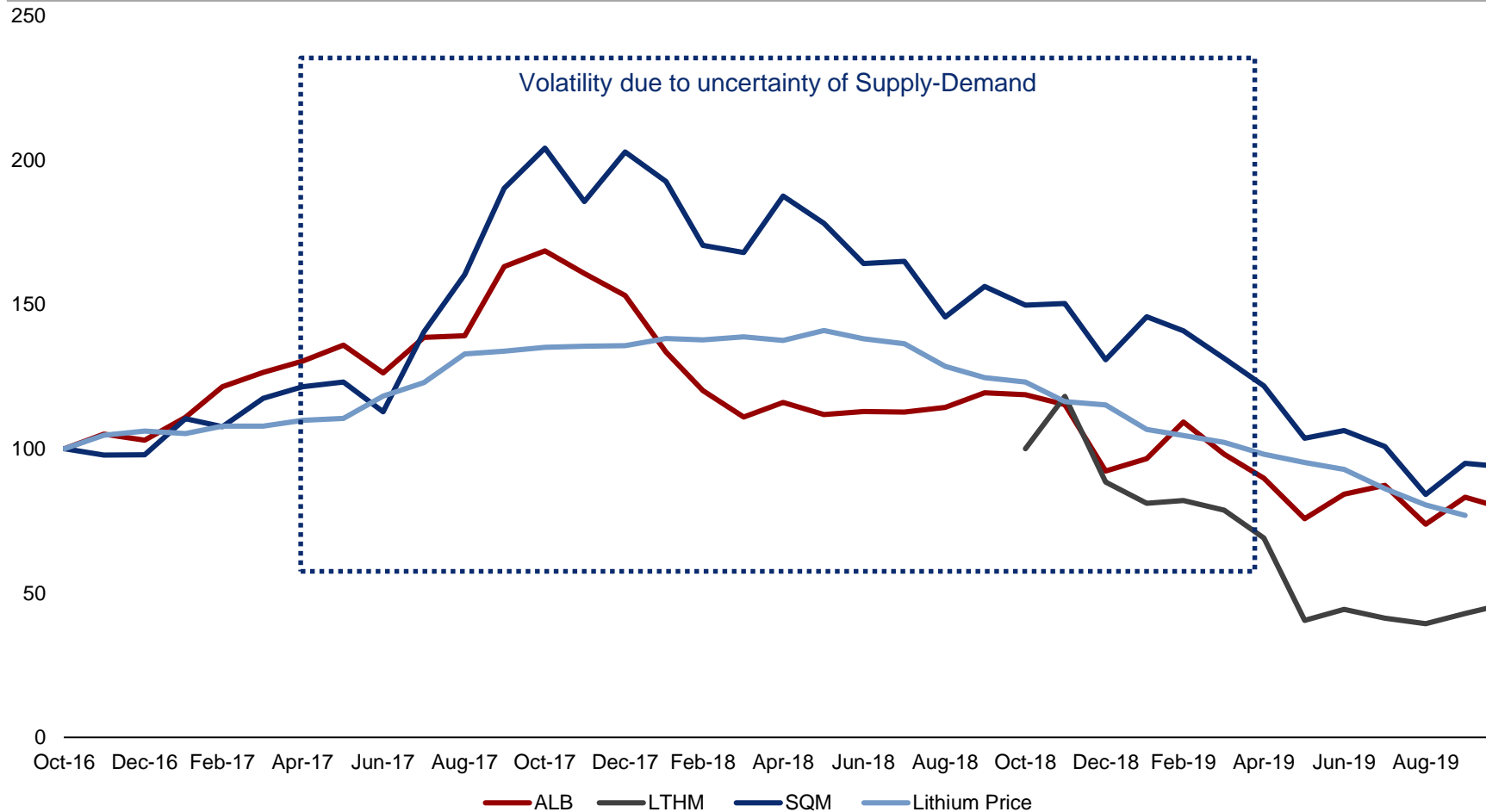


An Unusual Increase in Supply of Lithium

Source: Bloomberg, Statista

Industry as a Whole

Lithium vs. Lithium Producers' Returns



Lithium Prices Dip by Wave of New Supply and Stocks Turn Volatile

Source: Bloomberg.

Lithium Market Outlook

Global Lithium Demand Bound To Grow

- Total Lithium demand expected to grow at a CAGR of 17-23% due to EVs and Consumer Products through 2025

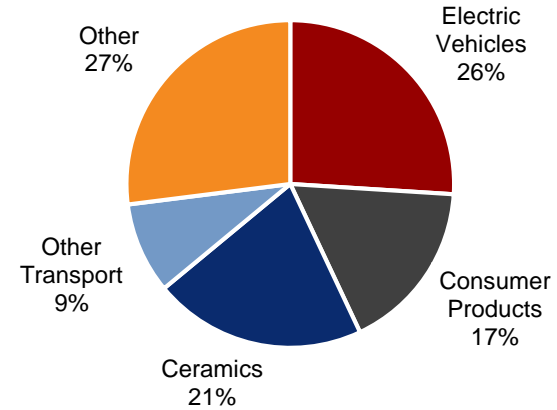


30-40% CAGR

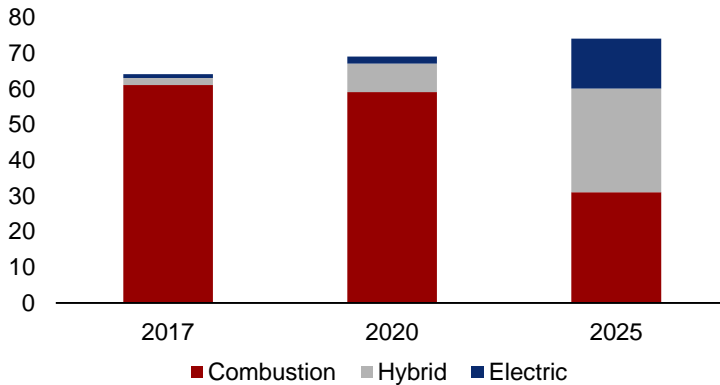


7-10% CAGR

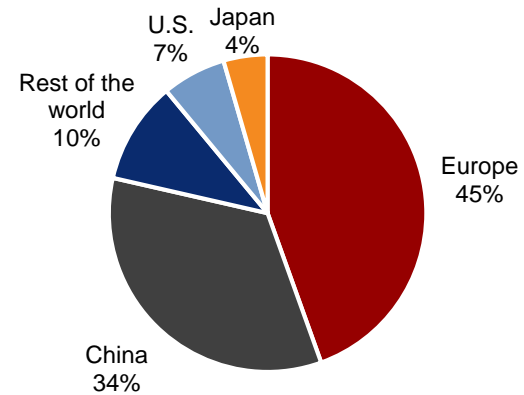
Key Lithium End-Markets



Projected Auto Sales by Propulsion Method, 2020 and 2025



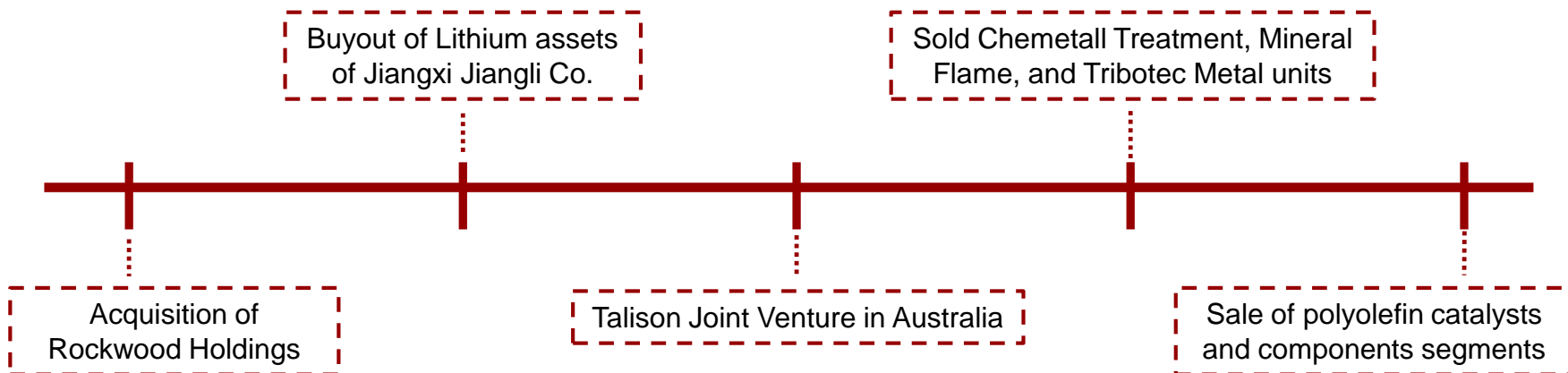
Projected Full Electric Vehicle Sales in 2025



Global Lithium Market Headed For Growth

Source: Bloomberg

Focus on Core-Business and Growth



- Albemarle is selling non-core businesses and assets to boost growth opportunities and focus on its key business segments

- Albemarle is also the largest Lithium producer allowing it to leverage their low-cost position and offtake agreements to capture majority of growth in demand

ALB's Market Share Poised to Grow

Albemarle has numerous characteristics that stabilize cash flows

Higher Quality Lithium

- Lithium Hydroxide is more energy dense than Lithium Carbonate
- Easy to expand capacity to meet demand with limited government regulations on output

Scale and Cost Power

- ALB is the #1 Lithium producer in the world by output
- ALB operates the lowest cost Carbonate and Hydroxide mines in the world

Contract Power

- 80% of ALB Lithium is under long term, fixed rate contracts
- SQM and Livent recently reported 13-31% declines in prices, ALB reported 2% increase

Diversification

- 64% of ALB's revenue is in Bromine and Catalysts

Stable Operations

- Lower FX/political risk operating in Chile and Australia vs. Argentina

World-Class Bromine

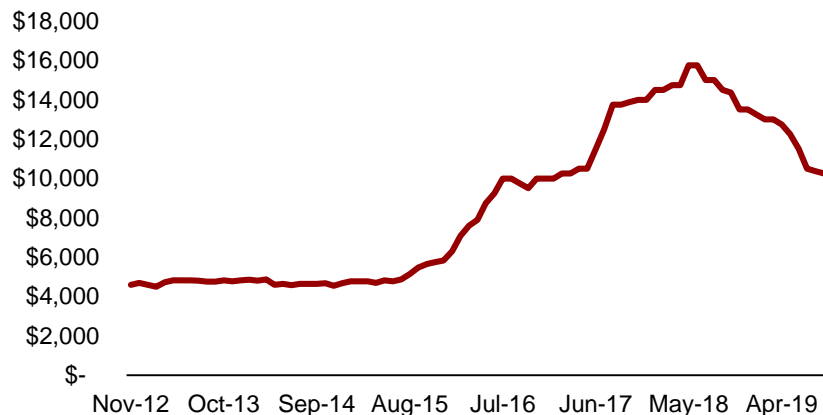
- Dead Sea/US facilities have 5x concentration of Indian reserves, up to 50x compared to Chinese

Sticky Catalyst Business

- Crude oil catalysts are individually customized based on local oil quality and refinery specifications

Main Drivers of Albemarle

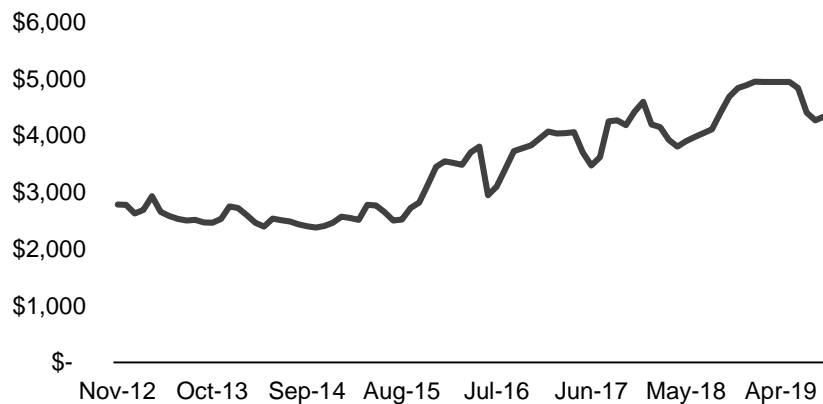
Lithium Price (\$/ton)



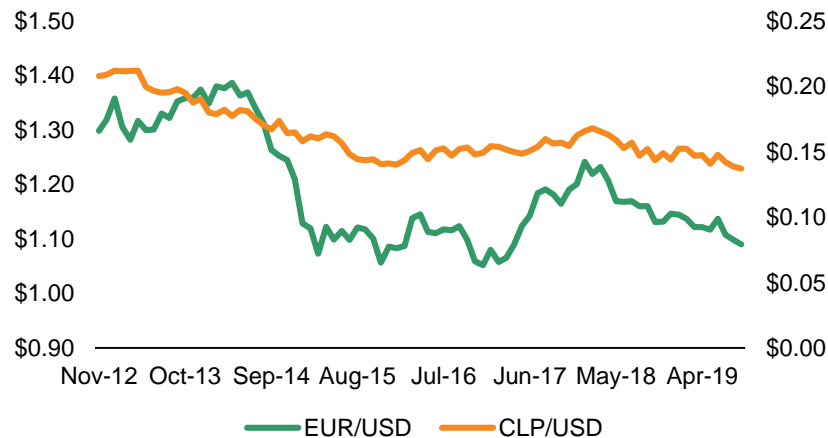
Brent Crude Oil (\$/barrel)



Bromine (\$/ton)

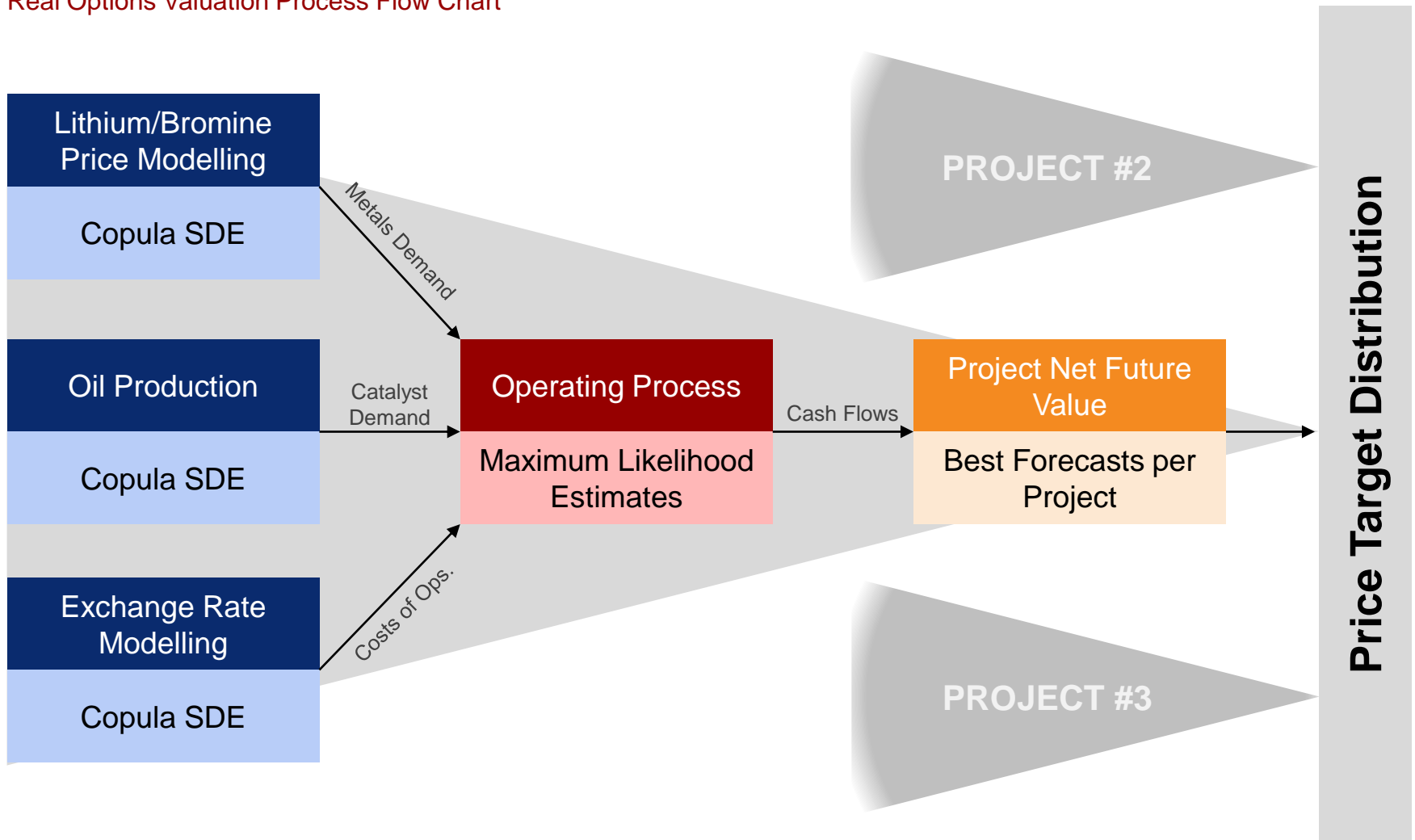


Exchange Rates



Source: Bloomberg

Real Options Valuation Process Flow Chart



Flexible Quantitative Methods for Determining Uncertainties in Firm Operations

We use a copula to generate random price movements

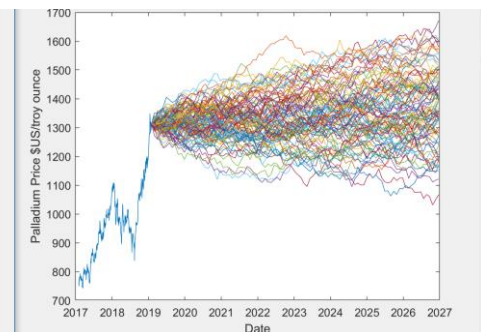
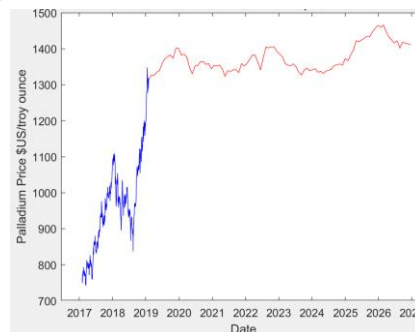
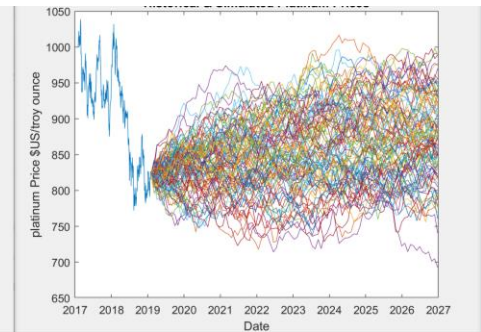
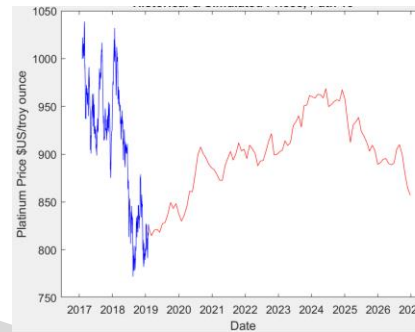
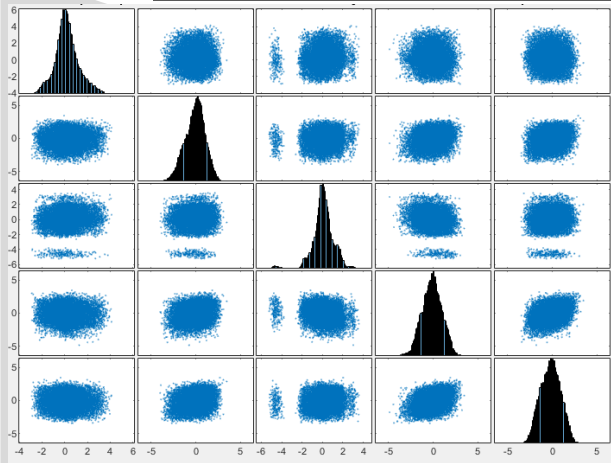
Copula SDE (with X being a matrix of all 5 prices):

$$dX_t = \underbrace{\mu}_{\text{Instantaneous Rates of Return}} * X_t * dt + \underbrace{\sigma}_{\text{GARCH Volatilities}} * X_t * \underbrace{dW_t}_{\text{Random Variations Sampled from Copula}}$$

Set of changes in all five drivers

All 5 drivers are simulated simultaneously to capture correlations

These Stochastic Price Movements are Correlated Across Each Random Trial



Real Options Valuation Results

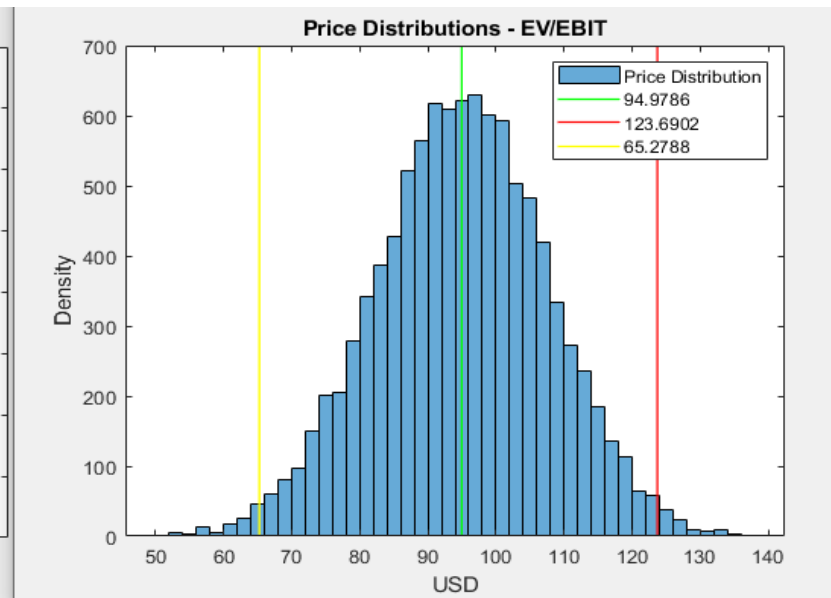
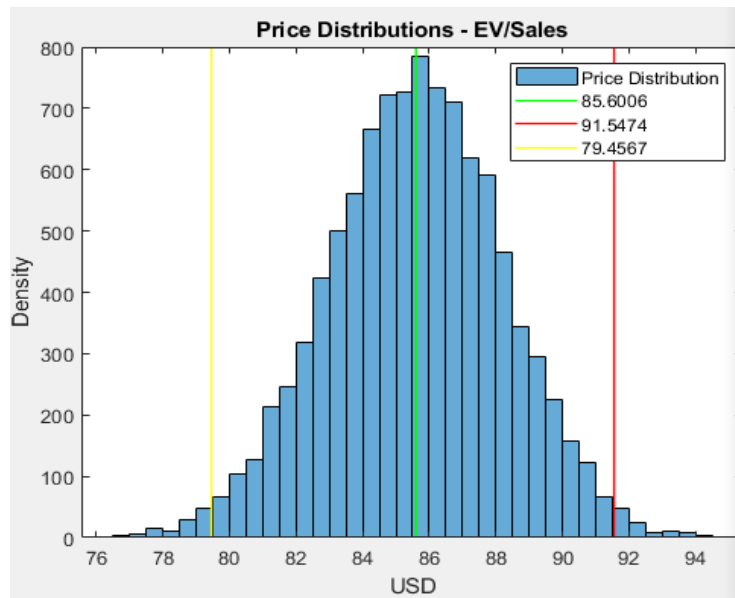
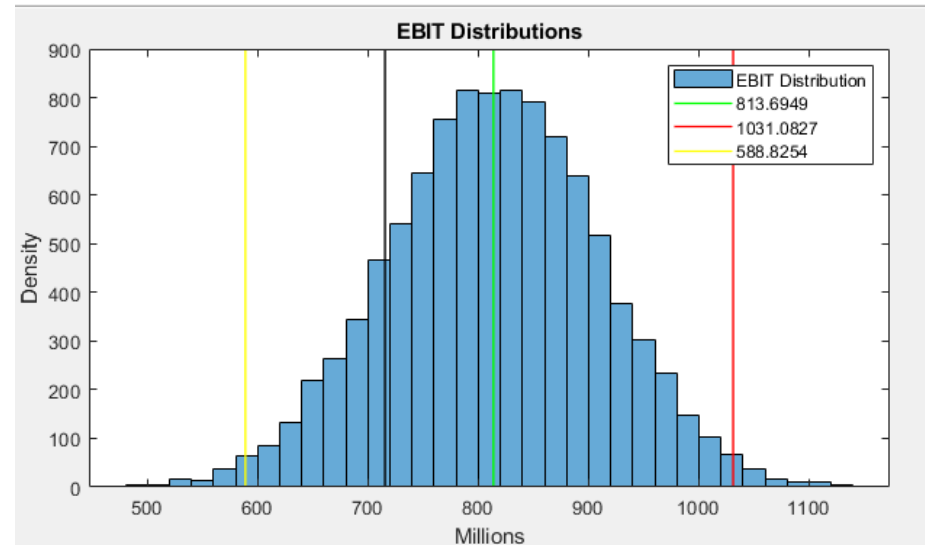
A Simple Dispatch Function

We use the following formula to simulate management optionality across our 10000 sims:

$$P(s) = E(P) * e^{average(r(Driver))*s}$$

Where the optionality comes from management adjusting production to how prices move: Higher Lithium and Bromine prices, Albemarle produces more. The converse is also true. s is a component that allows us to adjust for sensitivity.

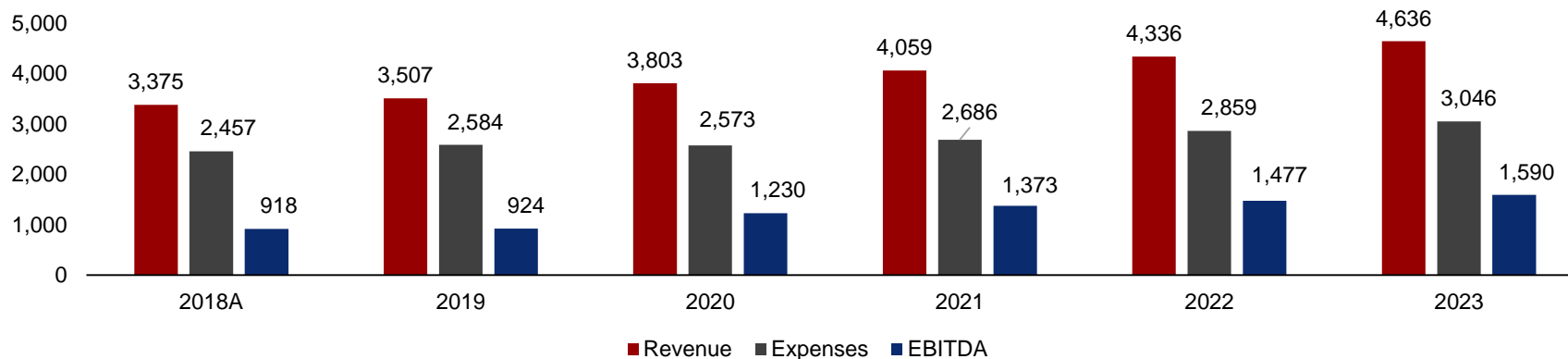
This makes intuitive sense, as nobody would produce the same regardless of prices: in unprofitable times, they can simply sell less.



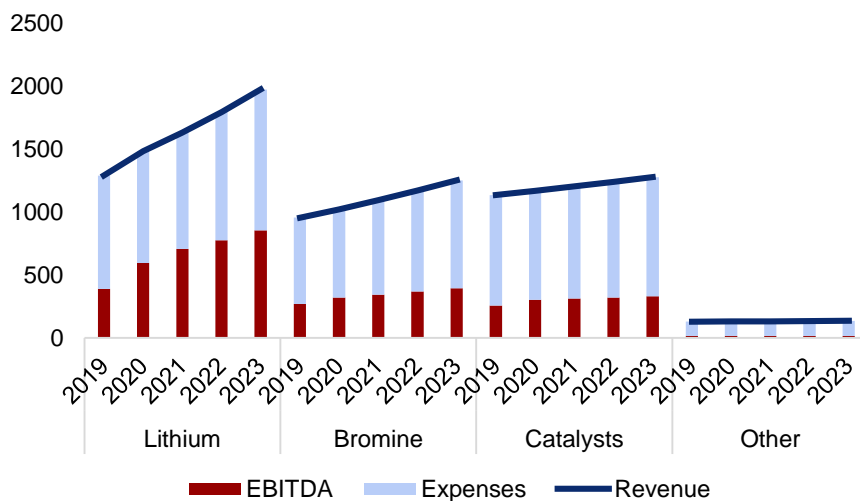
How do we see the future unfolding?

(in \$ millions, unless noted)

Operational Outputs



Segment-Level Outputs



Implied Enterprise Value	11,206
Implied EV/EBITDA 2018 Multiple	9.7x
Implied Terminal Value/EBITDA 2023 Multiple	11.0x
Implied Equity Value	9,883
Implied Share Price	\$93.57

39.4% Upside from Intrinsic Value

Relative Valuation



Albemarle trades at a discount to peers on EV/EBITDA and EV/Revenue multiples

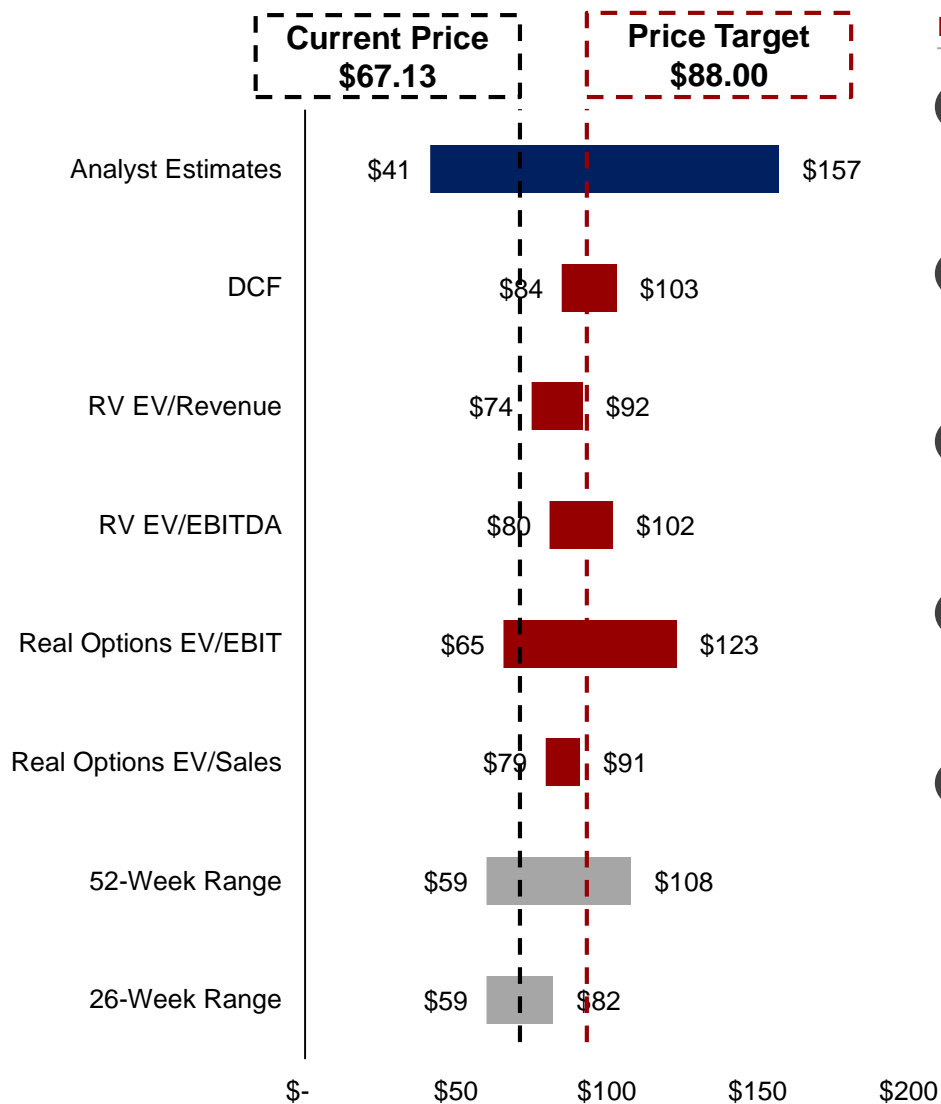
<i>(in USD\$ millions, unless noted)</i>								
Company	Summary		EV/EBITDA			EV/Revenue		
	Market Cap	EV	2019E	2020E	2021E	2019E	2020E	2021E
Lithium								
Livent Corp	1012	1067	8.23x	6.94x	5.62x	2.37x	2.20x	1.84x
Sociedad Quimica y Minera de Chile S.A.	7439	8098	11.77x	10.19x	9.25x	4.00x	3.55x	3.26x
Tianqi Lithium Corp	4206	9075	18.33x	15.08x	12.93x	10.95x	8.87x	7.21x
Ganfeng Lithium Corp	3807	4016	21.98x	17.28x	14.50x	4.74x	4.08x	3.81x
Mean			15.08x	12.37x	10.57x	5.52x	4.67x	4.03x
Median			15.05x	12.64x	11.09x	4.37x	3.81x	3.53x
Bromine								
Israel Chemicals Limited	6055	8718	6.94x	6.72x	6.53x	1.57x	1.51x	1.45x
LANXESS AG	5776	7866	6.99x	6.72x	6.38x	0.99x	0.97x	0.94x
Mean			6.96x	6.72x	6.46x	1.28x	1.24x	1.19x
Median			6.96x	6.72x	6.46x	1.28x	1.24x	1.19x
Catalysts								
W.R. Grace and Co	4396	6254	10.82x	9.85x	9.20x	3.13x	2.97x	2.82x
BASF Corp	67957	90427	9.91x	8.68x	8.05x	1.31x	1.27x	1.24x
Johnson Matthey PLC	7472	8640	8.83x	8.27x	7.69x	0.75x	0.75x	0.63x
Lonza Group	25380	28915	18.02x	16.24x	14.56x	4.87x	4.55x	4.22x
Mean			11.90x	10.76x	9.87x	2.51x	2.39x	2.23x
Median			10.37x	9.27x	8.62x	2.22x	2.12x	2.03x
Blended Mean			11.69x	10.22x	9.17x	3.29x	2.92x	2.61x
Blended Median			11.15x	9.80x	8.93x	2.76x	2.50x	2.35x
Albemarle	7,115	8,906	9.64x	7.24x	6.48x	2.54x	2.34x	2.19x

Source: Bloomberg

Football Field + Conclusion



Albemarle valued at a 31% upside



Recap

- 1 **Specialty Chemicals** Weathering the Storm Ahead
- 2 **Albemarle Overview** Business Model and Segments
- 3 **Thesis 1:** Future-Proofed to Capture Clean Energy Catalysts
- 4 **Thesis 2 and Operational Risk Model:** Strategic Exposures a Unique Driver of Stability
- 5 **Valuation + Conclusion** Discounted Cashflow, Real Options, Multiple Targeting, and Analyst Estimates

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in USDm Fiscal Year	Actuals			Forecasts					
	2016-12-31	2017-12-31	2018-12-31	2019-12-31	2020-12-31	2021-12-31	2022-12-31	2023-12-31	Terminal Year
Revenue	2,677.20	3,071.98	3,374.95	3,507.35	3,802.93	4,059.10	4,336.16	4,635.99	4,635.99
% Growth	-5.28%			3.92%	8.43%	6.74%	6.83%	6.91%	
EBITDA	742.64	817.55	918.31	923.71	1,229.87	1,373.35	1,477.34	1,590.34	1,590.34
% Growth	1.64%			0.59%	33.14%	11.67%	7.57%	7.65%	
% Margin	27.74%	26.61%	27.21%	26.34%	32.34%	33.83%	34.07%	34.30%	
Operating profit (EBIT)	516.47	620.62	717.61	715.48	997.13	1,130.81	1,166.34	1,358.54	1,358.54
% Growth	9.75%	20.17%	15.63%	-0.30%	39.36%	13.41%	3.14%	16.48%	
% Margin	19.29%	20.20%	21.26%	20.40%	26.22%	27.86%	26.90%	29.30%	
Marginal tax rate	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	22.00%
NOPAT	468.71	563.23	651.25	649.32	904.92	1,026.24	1,058.48	1,232.91	1,059.66
Depreciation and amortization	226.17	196.93	200.70	208.23	232.74	242.54	311.00	231.80	231.80
% Growth	-13.04%			3.75%	11.77%	4.21%	28.23%	-25.47%	
D&A as % of Net Sales	8.45%	6.41%	5.95%	5.94%	6.12%	5.98%	7.17%	5.00%	
Change in Working capital (WC)	-1,952.20			43.63	-27.00	-53.79	-58.18	-62.96	-62.96
Working Capital	2,166.52	1,276.64	815.25	771.62	798.62	852.41	910.59	973.56	973.56
WC capital as % of Net Sales	80.92%	41.56%	24.16%	22.00%	21.00%	21.00%	21.00%	21.00%	
Operating Cash Flows	-1,257.32	760.16	851.95	901.17	1,110.66	1,214.99	1,311.30	1,401.75	1,228.50
Capex - Additions to PP&E	-196.65	-317.70	-699.99	-958.66	-883.48	-616.63	-400.00	-387.50	-387.50
% Growth	-13.62%			36.95%	-7.84%	-30.20%	-35.13%	-3.13%	
Capex % of Revenue	7.35%	10.34%	20.74%	27.33%	23.23%	15.19%	9.22%	8.36%	
Unlevered FCF	-1,453.98	442.45	151.96	-57.48	227.18	598.36	911.30	1,014.25	862.02
Discount Rate (WACC)				12.93%	12.93%	12.93%	12.93%	12.93%	
Projection Year				1	2	3	4	5	
Discount Factor: $1/((1+WACC)^{Projection Year})$				0.8855	0.7841	0.6944	0.6149	0.5445	
Present Value of Unlevered FCF				-50.90	178.14	415.49	560.35	552.25	
YoY % change in PV of FCF					-449.97%	133.24%	34.86%	-1.44%	

APPENDIX: DCF



Discount Rate (WACC) Calculation	For Forecast Period	For Terminal Value Calculation
Weight of Equity - E/(D+E+P)	0.81	0.81
Weight of Preference - P/(D+E+P)	0.00	0.00
Weight of Debt - D/(D+E+P)	0.19	0.19
Post-tax Cost of Debt (Kd)	2.68%	2.31%
Cost of Equity (Ke)= Rf+Beta(Rm-Rf)	15.38%	15.38%
Risk Free rate - Rf	1.57%	1.57%
Levered Beta	1.28	1.28
Risk premium (Rm-Rf)	10.76%	10.76%
Cost of Preference (Kp)	0.00%	0.00%
Weighted Average Cost of Equity (E/(D+E+P)* Ke)	12.41%	12.41%
Weighted Average Cost of Preference (P/(D+E+P)* Kp)	0.00%	0.00%
Weighted Average Cost of Debt (D/(D+E+P)*Kd(1-T))	0.52%	0.45%
WACC=E/(D+E)* Ke+ D/(D+E)*Kd(1-T)	12.93%	12.86%

Terminal Value (TV) Calculation	
Sum of PV of Unlevered FCF	1,655.26
WACC	12.86%
Sustainable growth rate	2.5%
PV of TV (Perpetuity Method)	4,546.68
Exit EBITDA multiple	11.0x
PV of TV (Exit Multiple Method)	9,555.58
Present value of Terminal Value (Exit Multiple Method)	9,555.58
Terminal Value as % of Total Value	85.24%

Fair Value Calculation	
Implied Enterprise Value	11,210.84
Total Debt	1,705.21
Cash and short-term Investments	-555.32
Minority Interest	173.79
Preferred Stock	0.00
Implied Equity Value	9,887.16
Shares Outstanding	105.62

Fair Value Per Share	93.61
Premium / (Discount) to Current	39.5%

Current Market Cap	7,114.86
Current Enterprise Value	8,438.53
Current Share Price	67.13

	EXIT MULTIPLE: EV/EBITDA				
	10.0x	11.0x	12.0x	13.0x	14.0x
12.56%	86.49	94.83	103.16	111.50	119.83
12.66%	86.12	94.42	102.72	111.02	119.31
12.76%	85.75	94.02	102.28	110.54	118.80
12.86%	85.39	93.61	101.84	110.06	118.29
12.96%	85.03	93.21	101.40	109.59	117.78
13.06%	84.66	92.82	100.97	109.12	117.27
13.16%	84.30	92.42	100.54	108.65	116.77